IMPACTS OF THE OIL AND GAS INDUSTRY ON THE LIVELIHOODS OF MEN AND WOMEN WORKING IN THE FISHERIES: A STUDY OF SHAMA, GHANA.

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DEDICATION

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ABSTRACT

The discovery of oil and gas in Ghana in 2007 and subsequent production since 2010 have sparked high development and economic expectations in various sectors of the Ghanaian economy. The oil exploration and production may create changes in the predominant livelihood systems either to the benefit or detriment of fisher folk living along the coast. Fisheries in Ghana are organised along gender lines where men fish and women process and sell fish. This study examines the livelihood impacts of oil and gas activities in Shama, a coastal town located 20 kilometres east of Takoradi where most oil and gas exploration and related activities take place. I focused on Shama because fisher folk are predominantly engaged in deep sea fishing where oil and gas installations have been built. The main objective is to examine the gender differentiated impacts of offshore oil and gas extraction on the livelihoods of men and women working in the fisheries, and to examine whether there are particular categories of men and women who are either gaining additional livelihoods or losing livelihoods as a result of the emergent oil and gas industry.

Theoretically, the study draws on the Sustainable Livelihood Framework (SLF) and gender theories including intersectionality to examine the livelihood impacts of the oil and gas industry on fisher folk in Shama. The concept of vulnerability in the Sustainable Livelihood Framework is used to shed light on the obstacles created by the oil and gas offshore operations and how fishermen and fish traders cope with or adapt to them. The gender theory was used to establish the differences in the level of impacts on the livelihood categories of men and women and to show fisher folk who were either gaining or losing out. The study uses the qualitative research methodology to investigate the various issues. Specifically, I employed interviews and observation, and analysed the data through category interpretation and thematic analysis to reveal the gender differentiated impacts of the activities of the oil and gas industry.

The study's sample consisted of 42 informants (28 men and 14 women). It was identified that, there were different views about the impacts of the oil and gas industry on fishing livelihoods. From the perspectives of fisher folk, it is posing great harm to their livelihoods. For instance, the oil and gas operations are leading to the loss of access to fishing grounds. From the perspectives of the Ministry of Fisheries and Aquaculture Development and oil and gas companies, fisher folk exaggerate the effect the oil and gas has on their fishing livelihoods. These institutions claim that

the oil and gas activities have insignificant effects on fishermen and fish traders' livelihoods. Based on the claims from the different interest groups, it can be concluded that, the oil and gas industry has both positive and negative impacts on the livelihoods of men and women working in the fisheries. Fisher folk are benefiting from oil companies' Corporate Social Responsibilities (CSR) projects. They are however losing an important natural asset (fishing grounds) to the oil and gas industry.

The study also finds that fishermen, whose working space is offshore, are directly affected by the oil and gas industry. The impacts of the oil and gas exploration however vary among fishermen due to factors such as the types of fish caught, the type of fishing gear used as well as social position. Fish traders whose fish trading activities are complementary to that of fishing are also affected by offshore oil and gas activities. The impacts of the oil and gas on fish trader's livelihoods also vary as a result of their social positions and access to fish supply. It can therefore be concluded that although gender plays a vital role in the differential impacts of oil and gas activities on fishermen and fish traders, other factors (fishes caught, fishing gears used, social position and access to fish supply) also influence differences in the level of the impacts.

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ABBREVIATIONS

GDP:	Gross Domestic Product
GSS:	Ghana Statistical Survey
SLA:	Sustainable Livelihood Approach
SLF:	Sustainable Livelihood Framework
CSR:	Corporate Social Responsibility
MOFA:	Ministry of Food and Agriculture
FAO:	Food and Agriculture
FPSO:	Floating Production Storage and Offloading
ABS:	Albert Bosumtwi-Sam Fishing Harbour
WCED:	World Commission on Environment and Development

CARE: Cooperative for Assistance and Relief Everywhere

OXFAM: Oxford Committee for Famine and Relief

DFID: British Department for International Development

UNDP: United Nations Development Programme

CHAPTER ONE
INTRODUCTION TO THE STUDY

1.1 Introduction

Fishing plays an important role in the socio-economic development of Ghana. The country has a marine coastline of 550 kilometres that stretches from Aflao in the east to Half Assini in the west (BoG, 2008). Fishing accounted for 4% of the Gross Domestic Product in 2009 and in 2013 it accounted for an estimated 1.4% of GDP (GSS, 2014). According to Atta-Mills et al. (2004: 13), "the importance of fisheries for subsistence and economic development varies throughout West Africa. In Ghana, marine resources are an important source of food and economic activity". Fishing provides an important source of income especially for people living along the coasts.

The production of fish in Ghana comes from two main sources, marine and inland fisheries. 85% of the total fish landings come from the marine catches. The marine fishery sector which can be put into three main groups includes industrial deep sea, inshore and artisanal or canoe fishing (Britwum, 2009). This study focuses on the artisanal (canoe) fleet, which consists of both motorized and non-motorized dugout canoes. According to Amador et al. (2006), the artisanal fleet consists of approximately 11,213 canoes and employs about 124,229 fishermen. Of the total marine fish catch annually, the artisanal fleet accounts for 70-80 % of all marine fish landings in the country (Mensah et al., 2006).

Fish goes through the production processing and distribution stages (Britwum, 2009). The artisanal fishery is organized along gender lines in Ghana. Men fish while women process and sell, and also serve as financers to fisher folk (Harper et al., 2013). Some of these roles of women including giving credit to canoe owners play a vital role in ensuring fish supplies (Hernæs, 1991: 134). For instance, studies conducted on both Elmina and Apam showed that from the 1960s to the 1970s, an increasing number of women fishers financed fishermen in equipment and fishing trips (Walker, 2001). After the introduction of outboard motors in the artisanal sector in the early 1960s, fish traders began to invest in outboard motors themselves or gave canoe owners credit to buy one (Overå, 1992, 1998). Consequently, the increase in the utilization of the outboard motors contributed to "an increase in labour productivity and considerably the level of production" within the artisanal sector (ibid: 43). This increase in labour, coupled with erratic supply of

premix fuel and depletion of marine stocks through pair trawling by highly sophisticated industrialized fishing vessels (Nunoo et al., 2013) has contributed to the reduction in fish catch.

In June 2007, the Ghana National Petroleum Company, together with Tullow Oil and Kosmos Energy announced a significant discovery of crude oil, one of the largest finds in West Africa in recent years (Ministry of Energy, 2010). Ghana's oil and gas exploration and production is carried out offshore. The Jubilee Field (see map 1) is an oil field located 60 km off the coast between the Deep water Tano and West Cape Three Points blocks (Sakyi et al., 2012). This field was named the Jubilee Field because its discovery coincided with the 50 years Jubilee independence celebration of the country. Oil production began in December 2010 (Open oil, 2012) and first exports started in January 2011 (Tullow 2010; Nuwagira 2010; BBC News Africa, 2011). Oil and gas companies operating within the Jubilee fields are Tullow Oil, Anadarko Petroleum, Kosmos Energy, Ghana National Petroleum Corporation, and Sabre Oil and Gas (Obeng-Odoom, 2014). Tullow Oil is one of the major operators of the Jubilee field (Open oil, 2012).

Map 1: **Ghana's offshore oil fields.**

Source: http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=180464

The discovery of oil and gas sparked high development and economic expectations (Darkwa, 2010). Following the offshore oil exploration and production of Ghana's oil reserves, there have been public debates about the potential socio-economic and environmental impacts on towns and villages located along the coast in close proximity to the Jubilee Fields. According to Edjekumhene et al. (2010), the exploration and production of oil and gas may likely promote economic, social, environmental and cultural changes within the various fishing communities. This change could be both positive and negative. There is limited research on the impacts of the oil and gas industry on men and women working in the fisheries since the production of oil is quite new. It is in order to help fill some of these gaps that this research was considered.

1.2 Problem statement

The Western Region of Ghana is where oil and gas is being explored. The region is particularly famous for being the most natural resources endowed area in the country. It is located along the coast where marine resources can be found. It produces one-third of the fishing harvest in the country, although it is 1 of 10 regions (Coastal Resources Centre, 2010). Since fishing and offshore oil industries are intertwined in a complex relationship around the world, activities of oil and gas exploration and production is likely to have an impact on the men and women working in the fisheries in Ghana too.

The oil and gas industry can impact positively on fishing communities in the Western Region of Ghana. It can provide jobs and revenue accrued from the oil and gas could be used to support and strengthen the economies of fishing communities (Egyir, 2012). For example, investment in improved infrastructure, water supply, sewerage and waste treatment, health care and education would bring about improved welfare in such fishing communities (E&P/UNEP, 1997). According to a USAID report, some known Corporate Social Responsibilities (CSR) of oil companies in some fishing communities include the support for health initiatives that address preventable diseases by strengthening health systems as well as generating awareness and understanding of health issues (Kirkbride and Kenlay, 2012). For instance, Tullow Oil has contributed approximately US$40,000 to health checks run by the Ghana Health Service over the past year in underprivileged coastal areas in some fishing communities in the Western Region (ibid). It has also been reported to have spent US$8 million dollars on books and science equipment for Nsien Secondary School and medical screening in fishing communities in the

Western Region (Panford, 2010). Oil and gas also comes with other supporting economic activities such as hotel and restaurant services, transport activities, road construction, telecommunication, and many more allied services (Boohene and Peprah, 2011). Some of these facilities may be accessible for use by fishermen and fish traders. The springing up of new hotels and restaurant services, for instance, can provide new fish markets and the construction of good roads provides easy access to market centres.

The oil and gas industry can however also impact negatively on fishing communities (Badgely, 2011). An example is the case of coastal communities in the Niger Delta in Nigeria who have "suffered worst records of environmental pollution, violent deaths and chronic illnesses from regular pipeline and other explosions, oil rains, oil spills, oil fires, and water pollution" (des Clers, 2007: 31). Since the discovery and exploration of oil and gas in Ghana is quite new, the country is likely to suffer from potential risks and conflicts and consequential losses in the livelihoods of fishing families in coastal communities in the Western Region if it is not well managed.

Communities along the coast in the Western Region of Ghana depend on fishing and fish related activities for their livelihoods (Gary, 2009). With the discovery of oil and gas, 'no go' fishing zones have been created where fishermen have been prohibited from fishing (BBC News, 2010). The bright lights associated with the oil rigs have also attracted most of the fish into the 'no go' zone leading to a reduction in the levels of fish caught (Badgley, 2011). Fisher folk in the Jomoro district in Ghana for instance complain about oil rigs and the Floating Production Storage and Offloading (FPSO) vessel using a very strong lightening system hence attracting fish into the non-fishing zones leaving the unrestricted fishing areas almost empty (Graphic Business, 2013). Again, increasing reports about the Ghanaian Navy confiscating boats for fishing in 'no go' zones have also been received (Gary, 2009). Fishermen have also complained about destruction of their nets by huge foreign oil vessels without receiving compensation (Kow, 2012). Furthermore, there have been several complains from fishermen about increased vessel traffic which could mean more accidents and increased noise which scares fish away from the area (Badgley, 2011). The above mentioned factors can threaten the livelihoods of fishermen and fish traders. They can, for instance, lead to loss of expensive fishing equipment and reduced

levels of fish supply for the fishermen and fish traders since they receive either little or no compensation and have no insurance.

With all these concerns raised, the purpose of this research is to understand how fishermen and fish traders in Shama go about their daily livelihoods and how their livelihoods are impacted by offshore oil and gas activities. The study will particularly be of interest to policy makers, fisher folk, researchers, oil and gas companies, community and opinion leaders, NGOs in Ghana and all who are concerned with oil and gas and the fisheries.

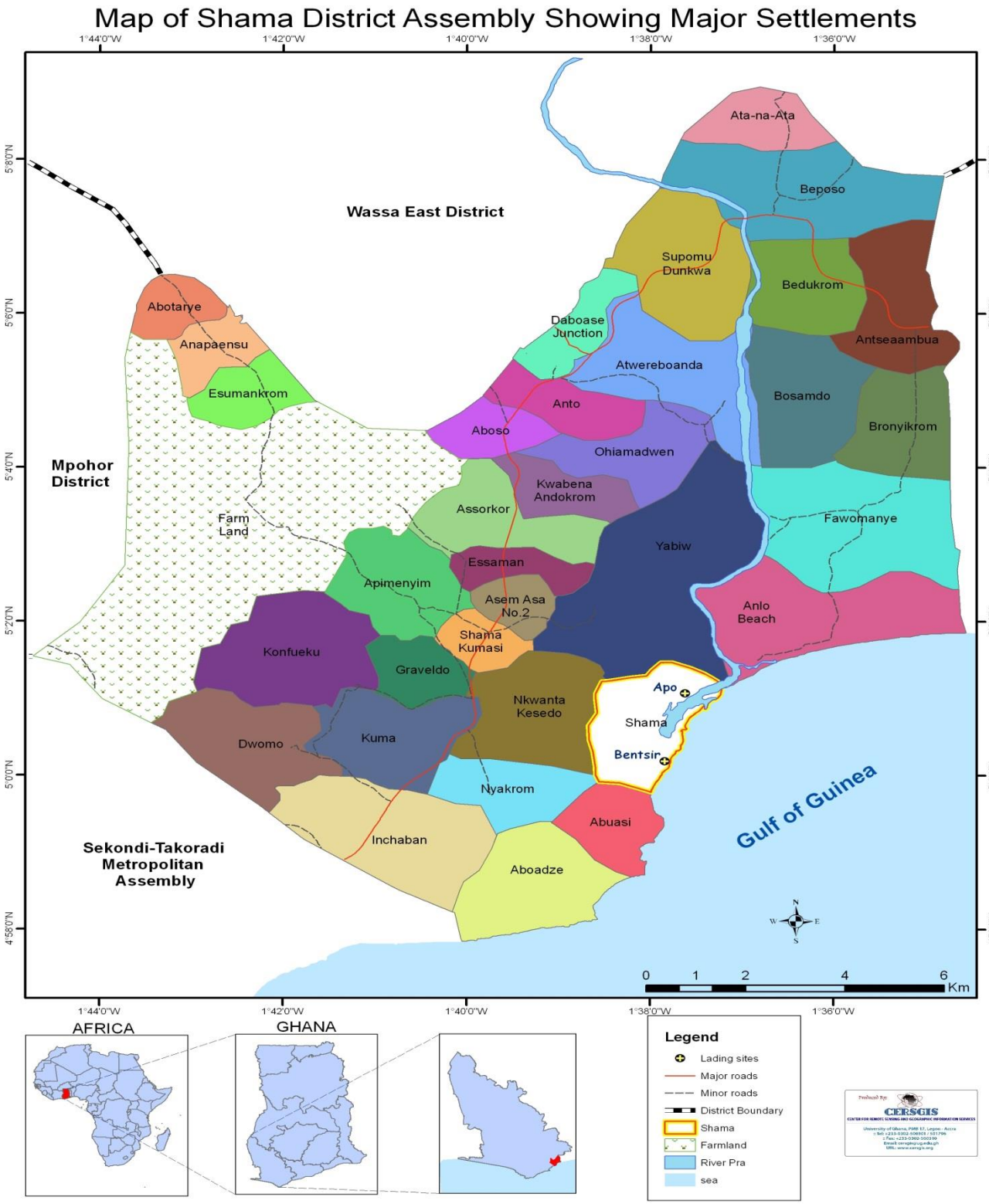
1.3 Study Area

The Shama District Assembly is located in the Western Region of Ghana. It was one of the newly created districts in 2008 (carved out of the Shama Ahanta East Metropolitan Assembly). It is bordered to the west by the Sekondi Takoradi Metropolitan Area to the east by the Komenda-Edina-Eguafo-Abrem District, to the north by the Mpohor Wassa East District and to the south by the Gulf of Guinea (Shama District Assembly, 2014). The Shama Distirct Assembly has 48 communities and covers an area of 215 square kilometres (ibid.).

The current total population of the district stands at 81,966 (GSS, 2010). The number of men is 38,704 as compared to 43,262 women (ibid.). The Shama district constitutes about 3.4% the size of the Western Region's population. At the current growth rate of 3.2% it is estimated that the population would be 90,089 by end of 2014 and 102,186 by 2017 (GSS, 2010). The phenomenal growth in population can be attributed to several factors including an increase in birth rates and a decrease in mortality rate over the period. This can also be partly due to the migration of people from the Sekondi-Takordi Metropolitan Assembly area towards the Shama district (Shama Distrcit Assembly, 2014). With the recent oil and gas development and increasing manufacturing activities, the cost of residential accommodation has doubled in the Sekondi-Takoradi metropolis hence people moving into the Shama District. The influx of people into the district has significant effects on land use and other infrastructural facilities. The 2010 census indicates that 21,273 (25%) persons living in the district are migrants (GSS, 2010). Of the total migrant population, 44% are migrants from the Sekondi Metropolis and other parts of the Western Region (ibid.).

Shama, located 20 km east of Takoradi, is the capital of the Shama District Assembly. With a total population of 10,886 (ibid.), Shama is the third largest town in the district. Fante is the dominant ethnic group in Shama constituting about 80% of the population (Shama District Assembly, 2014). The Ahantas constitute 3% and a number of other smaller tribes constitute the remaining 7% of the population (ibid.).

There are two main settlement areas that characterize Shama (See map 2). Located on the west is Shama Bentsir (Bentsir) which has its housing extending to the shoreline. Shama Apo (Apo), on the other hand, is located towards the east of Bentsir. It has the largest settlement area. Housing in Apo terminates at the south-eastern side of the town, where it is bordered by the Pra River. The territorial boundaries of Bentsir and Apo overlap slightly. However, while houses in Bentsir are interspersed with fish smoking ovens and processing facilities, most of the fish processing facilities in Apo are located towards the south-eastern edge of the community, separated from substantive housing units.



Map 2: **Map of study area in Shama District Assembly of the Western Region, Ghana.**

Source: CERGIS, University of Ghana, 2014.

Shama is a commercial centre. The main river is River Pra which enters the sea at Shama. The activities of small-scale gold miners (locally called *galamsey*) has led to the decolourization of the river leading to a reduction in the access to good quality or portable water for household, commercial and industrial consumption (Shama District Assembly, 2012). The economy of Shama however revolves around fishing (MOFA, 2013). Shama has a long history of fishing pre-dating the colonial era. The main gear used for harvesting fish is the Drift Gil Net (DGN) and fish species harvested include among others, *sardinellas* (herrings), tunas, marlins, sharks, sailfish, dolphins, burrito, barracuda, cassava fish, and lobsters. The major season for fishing is June to September while October to May has been identified as the lean season. Most women in Shama are involved in processing and distribution of fish. Smoking and salting are the main means of fish preservation. Other livelihood options are petty trading and vending undertaken by the small and micro businesses lined along the principal streets of the town. These streets are mostly tarred. There is however, an untarred road that links the landing beach at Apo. A market is located close to Apo (the area of population concentration).

Fishing migration is a common practice in Shama. This occurs at different levels and for various reasons. There is migration to other coastal areas in Ghana or coastal countries in the sub-region in response to availability of fish, the price of fish or the need to raise money to pay back accumulated debts or to invest (Odotei, 1992). Such migration could be short term (seasonal), long term or sometimes permanent (Odotei 1992, Overå, 2001). Some fish traders during the lean season also adopt the strategy of purchasing frozen fish from cold stores, which they later smoke for sale. These strategies are adopted in order to earn incomes to facilitate loan repayments and also cope with hardships associated with low fish catches. Farming is not practiced to any significant extent in Shama.

1.3.1 The Anlo Beach

Even though I make reference to the Anlo Beach, the main area of study is Shama. The Anlo Beach is under the paramountcy of the *omanhene* (paramount chief) of Shama but has its own chief who is a subordinate to the *omanhene* (Shama District Assembly, 2014). The Anlo Beach is located on the farthest south-east (see map 2). It is bounded on the south-west by the Pra river estuary. Backing the settlements are mangroves and wetlands associated with the Pra river delta which stretches from the north-eastern to the western side. In the south, the community is

bordered by the sea (ibid.). The first migration to this town occurred about nearly a century ago (Field data, 2014). This movement was associated with migrants who originate from the Volta Region of Ghana. Over the years, they acquired permanent residency in the community and presently constitute the dominant ethnic group. Canoe or boat transport is by far the major means of transportation from Shama to Anlo Beach.

The economy of the Anlo Beach revolves around fishing. Beach seine is the predominant fishing method practices in this community. The main fishing season in this community occurs in August where lobsters are mainly harvested. And between September-November, *silver fish* are the target species. In addition to the mentioned species, the beach seine is used to harvest *sardinellas* (herrings). Farming is however practiced intensely during lean fishing seasons. The farming season falls within April-July which coincides with the lean fishing season in this area. Major crops cultivated are cassava and maize.

1.4 Research questions

The livelihoods of fishermen in Shama centres on deep sea fishing which takes them closer to offshore oil and gas installations. As such, their fishing livelihoods may be affected by oil and gas operations. The study therefore seeks to find answers to these impacts and questions explored are as expatiated below.

The main research question is: What are the gender differentiated impacts of the emerging oil and gas industry on the livelihoods of men and women working in the fisheries in Shama?

The sub research questions are as follows:

1. What are the main livelihoods of men and women working in the fisheries?
2. What are the effects of oil and gas extraction on the livelihoods of
    a. Women working in the fisheries?
    b. Men working in the fisheries?
3. Which categories of women and men working in the fisheries have gained or lost livelihoods as a result of the impact of the oil and gas industry?

1.5 Organization of chapters

This thesis is organized into seven chapters. Chapter one comprises of a general introduction to the research. It contains the problem statement and the research questions. It also provides information about the study area including the location of the area in Ghana, the demography, the social and economic activities of the people living in the area.

Chapter two explores the theoretical underpinnings and reviews literatures used in the study. It deals with the concepts used by the sustainable livelihood development framework. It also discusses issues concerning gender as used in the gender theories and intersectionality.

Chapter three presents the research methodology. It presents the techniques and strategies used for data production data. It also elaborates on the status and roles of the researcher as well as the insider outsider perspectives. Research ethics, validity and reliability of data and challenges and limitations are also discussed.

Chapter four expands on fishing and fish trade in Shama. It probes into the organization of fishing and fishing fish trade, challenges faced by fisher folk and how they attempt to overcome these challenges.

Chapter five focuses on oil and gas exploration and production including issues concerning Corporate Social Responsibility, and its effect on the fishing community.

Chapter six discusses the findings in light of the theories used.

Chapter seven concludes the study and provides a summary of the key findings and recommendations.

CHAPTER TWO
THEORETICAL PERSPECTIVES AND CONCEPTS

2.0 Introduction

This chapter discusses the theories and concepts used in this study. The gender theory will provide tools to analyse gender differences between fishermen and fish traders in terms of their fishing and fish trading activities taking into consideration factors including gender roles and social networks. Since the aim of this study is to examine fishermen and fish traders' livelihoods and how they are affected by ramifications triggered by oil and gas production, the Sustainable Livelihoods Framework Approach (SLA) is used.

2.1 Gender theories

The term 'gender' has been defined in several ways by various scholars. FAO (1997, cited in FAO 2006: 13) defines gender as "the relations between men and women, both perceptual and material". This definition is emphasized by McDowell (1999), who describes gender as the social constructions of the categories men and women. In his book *'Gender and Sexuality: Critical Theories, Critical Thinkers'*, Beasely discusses contemporary meanings of gender in feminist and masculinity studies as "the social process of dividing up people and social practices along the lines of *sexed identities*" (2005: 11). This process, he says, creates hierarchies between the divisions leading to one or more of these 'categories' being privileged or undervalued (ibid).

Dixon and Jones III (2006: 42) draw out main three lines of gender research in feminist geography. These include gender as difference, as social relation and as social construction. Although these three lines hold gender as the centre of analysis, they provide different analysis for the term (ibid.). Explanation of these three main lines of research is of importance to this study since it focuses on differences in fishermen and fish traders' roles as well as the interplay of relations between them. This can help explain the differentiated impact of oil and gas extraction on the livelihoods of fishermen and fish traders in Shama.

2.1.1 Gender as difference: Fishing and fish trade as gender differentiated activity

The first main line of gender research in geography noted by Dixon and Jones III (2006: 42) is gender as difference, thus, "the spatial dimension of the difference between men and women across cultural, economic, political and environmental arenas". This is an area of research that

emphasizes the context of place hence changing research questions from "where does work take place?" to "who works where?" Changing the questions help to recognize and analyse the roles of women and men in an economy. McDowell (1997: 27) noted that ideologies about gender-appropriate behaviour, varies across space and time.

Gender roles of women and men are social constructions (FAO, 2004, cited in FAO, 2006). They are a set of social and behavioural norms that within a specific culture are widely considered to be socially appropriate for individuals of a specific sex. Gender-specific roles and responsibilities often condition household structure, access to resources, specific impacts of the global economy, and other locally relevant factors such as ecological conditions (FAO, 1997 cited in FAO, 2006).

Gender division of labour is a common phenomenon within the fisheries in Ghana (Odotei, 2003). Men in Ghana fish while women do the processing and the marketing of fish (Britwum, 2009; Overå, 1998). A fisherman, according to Afful and Osafo-Gyimah (1979, cited in Britwum, 2009) is usually either a capitalist fisherman (a canoe owner) or a working fisherman (crew member). Studies by Overå (1998) and Odotei (2003) however show that there are also women canoe owners in Ghana. A canoe owner is therefore a man or woman who owns major fishing equipment such as a canoe, outboard motor and fishing net, and hires labour. His or her role is to provide fishing equipment and premix fuel for fishing. Canoe owners do not always go to sea (and never women) (Overå, 1998). Working fishermen, or crew members going to sea, are men who own no fishing equipment. They however generate income from their labour in catching fresh fish (Britwum, 2009).

The roles of a fisherman include the mending of fishing nets, drying of fishing net, dragging and anchoring of canoes, maintaining outboard motors, carving wood for canoes, and the building and repair of canoes. In addition, men are the traditional breadwinners of their families, hence their duty to contribute school fees and money for cooking (Overå, 1998), medical bills amongst others. In situations where the man is unable to perform such tasks due factors such as financial constraints, they often rely on the financial assistance of women. For instance, wives of fishermen are expected to run the household during the lean season when their husbands migrate to other coastal towns.

Women in fishing communities play multiple roles. Once the fresh fish has been landed on the beach, women take over the responsibility for processing and marketing. Thus, they dominate pre-and post-harvest activities such as finance, processing, and marketing of the catch (Harper et al., 2013). These roles are performed in addition to several roles such as the nurture and care of the family. Women are considered vital "for the continuity of the lineage and the community because they give birth" (Overå, 1998: 125). They are also expected as wives to cook good food for their husbands and children. The roles of a woman as a wife and mother and her occupational roles are therefore intertwined.

Some women process fish caught by their husbands. The processed fish is then sold for money. This role is significant because it adds value to fresh fish, prolonging its durability after the bumper season and converting it into its monetary value (Britwum, 2009: 73). Women in fishing communities are therefore "considered as a main source of family wealth and eventually, male wealth in the coastal fishing communities in Ghana" (ibid). Fishermen husbands believe they have fulfilled their household responsibilities once they provide fresh fish for processing. Women are expected to run the household on the profits from selling fresh and processed fish. Fish traders sometimes engage in non-fishing activities (such as the running of a small shop, a "chop bar", or the selling of food on tables) to supplement money from their fish trading activities (Tetteh, 2007).

Also, women offer financial support for their fishermen husbands. As Odotei (1992) noted fish traders in Fante towns act as their husbands' business partners in terms of sales of fish and their 'banks' (keeping of the money from the sale of fish). Some of the fish traders are also responsible for the provision of money for fuel purchases since they have the responsibility for turning fish into its monetary value (Britwum, 2009). They also provide contributions in the form of loans to fishermen to procure fishing equipment.

2.1.2 Gender as a social relation: Fishermen and fish trader's relations

The second research line, gender as social relation, goes beyond the simple study of gender differences to a look at the social relations that link men and women in complex ways (Dixon and Jones III, 2006: 42). Gender as social relation can be viewed in two aspects. One angle of looking at gender as social relation is patriarchy which has been defined as a "spatially and historically specific social structure that works to dominate women and children" (ibid.). As

such, social relations lead to patriarchal relations where women are always disadvantaged to men. In Ghanaian fishing communities, women's access to fisheries resources, as Porter (2006) argues, are often limited by several factors such as traditional beliefs, cultural norms and laws. For example, not only are women prohibited from fishing (by cultural taboos) but, the traditional inheritance system among the Fante (matrilineal inheritance) denies them access to their husband's wealth (Britwum, 2009). In matrilineal societies, family descent is through female ancestors who provide the blood link that constitutes lineages (binds families together) (Overå, 1998). This can be a detrimental scenario considering a woman can be left without inheritance of her husband's wealth.

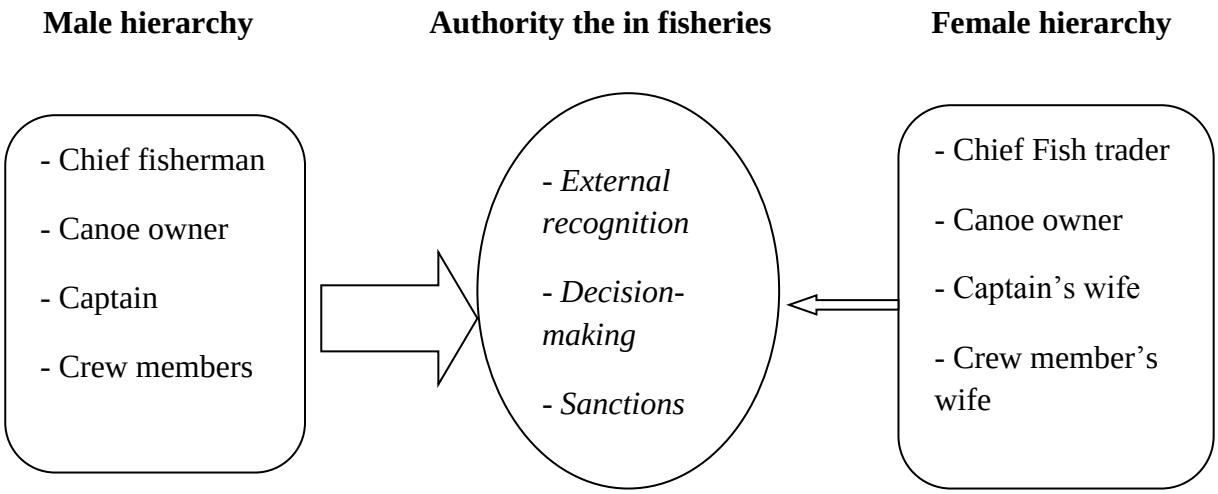
According to Britwum (2009), fresh fish is an important resource that provides wealth to people living in fishing communities. The fact that women sell their husband's share of fish does not automatically give them the right to control the income generated (ibid.). In addition, having the authority to refuse wives access to their share of fish strengthens fishermen husbands' position in their marital/economic relationship (ibid.).

Another angle of looking at gender as social relation is in terms of complementarity. The production of fish by fishermen and its transfer to fish traders for processing and distribution describes what Overå (2003: 51) refers to as a "gendered exchange system, where men provide fish for women's cooking pot, in which they transform fish into food - or money - with which children are provided for". This is what Schultz (2005) terms as a classic case of cooperation or complementarity where the organization of production systems makes female and male economic activities inter-dependent. Fish traders with whom the fishermen deal in daily life are often their mothers, wives, aunts, grandmothers or daughters (Overå, 1992). Crew members recruited for fishing are also often family relations or good friends. In the case of Fante women canoe owners for example, due to the matrilineal system, captains of their canoes are often their sons (Overå, 1998). In marriage, the conjugal union is at the same time an economic relationship embedded within a system of cooperation and dependence (Britwum, 2009: 74). Tradition obliges fishermen husbands to pass on their fresh fish to their wives for processing. Husbands, in turn, give their wives a percentage of the income earned from the sale of fish for household maintenance. Wives are obliged to process fresh fish for their husbands and generate income to maintain the household and supplement husbands' income for investment. The institutions of

marriage and kinship therefore play important roles in the system of fishing and fish trade (Overå, 1998).

Overå (2003: 51) notes that, fishing (male domain) and fish trade (female domain) each have their parallel gendered hierarchies. The power balance between female and male hierarchies is, however, often asymmetric - male leaders (such as chief fishermen) usually exercising their authority in society as a whole and the authority of female leaders (such as chief fish traders) seldom extending beyond women's domains (ibid.).

Figure 1: **Complementary but asymmetric relationship between fishermen and fish traders. The thicker the arrow, the higher the degree of authority.**



Source: Author's construct.

2.1.3 Gender as social construction: Masculinity in fishing and femininity in the fish market

The last line of research, gender as social construction, focuses on how discourses establish differences between people, aspects of meaning, experiences and landscape (Dixon and Jones III, 2006). Social construction seeks to study the various discursive categories used in defining the relationship between men and women. One of the main principles in this line of gender research is based on the principle that nothing is formed in 'space' but everything is socially constructed (ibid.). Accordingly, society's conception of what women and men are and what they are supposed to be is produced by the society. Thus, being 'male' or 'female' is socially constructed.

In Ghana, there are various social constructions about the masculinity in fishing and femininity in the market (Overå, 2003). For instance, men are regarded as feminine if they engage in fish trade (especially in rural communities) (Overå, 2007). Fishing in Ghana is considered a male field (Overå, 1998). To be regarded as a man in a fishing community involves having knowledge of building or manoeuvring a canoe, catching fish at sea, mending nets as well as maintaining an outboard motor. An ideal 'man' in a fishing community is one who owns property (such as a canoe and fishing equipment), shelter, and can provide for his wife(s) and children.

A 'woman' in a fishing community is responsible for the processing of fish. Fresh or processed fish is sold at the market place. Also, a 'woman' is one who is able to offer financial assistance to her fisherman husband in times of need (Odotei, 1992). The femininity of a woman also involves reproduction for the continuity of a family's lineage. She is also responsible as a wife for the cooking of food, care of her husband and family. Femaleness is therefore constructed around conjugal, reproductive and entrepreneurial skills (Britwum 2009: 79).

2.2 Intersectionality

McCall (2005: 1771) defines intersectionality as the "relationships among multiple dimensions and modalities of social relations and subject formations". Nash (2008: 2) defines intersectionality as "the notion that subjectivity is constituted by mutually reinforcing vectors of race, gender, class, and sexuality". The concept of intersectionality (in geography) is a result of black feminists' challenge of the use of women and gender "as unitary and homogenous categories reflecting the common essence of all women" (Valentine, 2007: 12). It was introduced and later elaborated by the Black feminist legal scholar Kimberlé Williams Crenshaw, one of the founders of Critical Race Theory in the U.S. legal academy. Intersectionality surfaced in the late 1980s and early 1990s from critical race studies (a scholarly movement) which emphasized the law's blindness, neutrality, and objectivity (Nash, 2008). From its inception, intersectionality has had a long-standing interest in one particular intersection, thus, the intersection of race and gender. It therefore rejects the 'single-axis framework' of gender often embraced by both feminist and anti-racist scholars and instead according to Creshaw (1991: 1244), "… the various ways in which race and gender interact to shape the multiple dimensions of Black women's … experiences".

Intersectionality is a theory that concentrates on the shift from 'woman' focus to a focus on 'multiple identities'. The intersectionality paradigm argues that, gender, race, class, sexuality, and nation are systems of oppression and privilege that interlock, overlap and mutually construct one another (McCall, 2005). Intersectionality therefore is the intersection of these different social categories of gender, race, class, ethnicity, sexuality among others (Valentine, 2007; Cope, 2002). The theory of intersectionality has been celebrated as the most important contribution that women's studies have made so far (McCall 2005: 1771). Given that the theory of intersectionality aids scholars to explain exclusion, marginalization and inequality in a much broader perspective, it is employed in this study to examine how fishermen and fish traders manoeuvre their ways in the fishing business due to their different identities.

In relating the theory to this study, there are various groups of men and women working in the fisheries and these groups are structured based on factors such as class seen in terms of for example income level, type of livelihood and ownership of asset (Walker, 2001). A chief fisherman (*apofohene*), found at the apex of the fishermen hierarchy, is one who combines the identities of being a canoe owner, an experienced fisherman and a leader of a fishing community (Odotei, 1999). This provides them access to several opportunities (Overå, 1998). For instance, since the chief fisherman serves as a link between his fishing community, NGOs, oil and gas companies and government agencies, he is the first to be exposed to any new fishing technology being introduced by the government. The chief fisherman also has several accesses to fish resources and equipment. Canoe owners also receive a larger share of the catch than crew members. The difference between these two groups is that, crew members are identified as fishermen who work for canoe owners. Being the owner of the means of production (Vercruijsse, 1984, cited in Overå, 1992) positions a canoe owner second on the fishermen hierarchy (after the chief fisherman). Crew members who are labourers working for the owner of the means of production (ibid.) are found at the bottom of the hierarchy.

Access to fresh fish is based on the institution of marriage and family ties strengthened by entrepreneurial skills, hence producing the direct and indirect type of access (Britwum, 2009). These types of access position women in a hierarchy. At the apex of this hierarchy is the *konkohene*, the chief fish trader who, together with the *apofohene* (chief fisherman), fix the price of fresh fish at the beach. A combination of her identities as an experienced and successful fish

trader, often a canoe owner and a leader of the fish traders gives her a lot of power (Odotei, 1999). Due to her position, she has several accesses to fish including that from her husband, her canoe and sometimes fish from other canoes.

A fish trader who owns a canoe is also well respected and commands a lot of authority. She has crew members working for her. Being a canoe owner as well as a wife of a canoe owner gives a woman several sources of fish supply (Overå, 1998). She is entitled to her husband's share of the fish catch and has access to fish from her own canoe. She is often a large scale fish trader who serves as a creditor to other male canoe owners. The wife of a crew member, on the other hand, has one main identity of a fish trader. Her only access to fish is therefore her husband's portion of the fish catch. She can also buy fish.

The various identities or what Vercruijsse (1984, cited in Overå, 1992: 16) terms as "class society" within the canoe fisheries (chief fisherman, chief fish trader canoe owners and their wives, crew members and their wives) will result in differences in the impacts of the oil and gas industry on fishermen and fish traders' livelihoods.

2.3 The Sustainable Livelihood Approach

Livelihood thinking dates back to the publication of the Brundlandt Commission Report by the World Commission on Environment and Development (WCED) in 1987. This report acknowledged the concept of basic needs of the poor thereby introducing concepts that were conceptualized later as sustainable livelihood development. Sustainable development as defined by the commission is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (It contains within it two key concepts: the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs)" (WCED, 1987: 43).

It is crucial to say that from the very beginning of livelihood research in the early 1990s different variants of the Sustainable Livelihoods Approach have been introduced. Particular international organization (such as CARE, Oxfam, UNDP and DFID) highlighted distinct aspects of the approach and changed the focus and design according to their priorities. In-depth research on

sustainable livelihoods as a concept was widely attributed to Robert Chambers (Chambers and Conway, 1992). According to Solesbury (2003: 5) Chambers and Conway presented sustainable livelihood as "a linking of the three extant concepts of capability, equity and sustainability. These concepts constitute the basics for the Sustainable Livelihoods Approach (SLA).

Starting from 1998, the British Department for International Development (DFID) integrated the approach in its program for development cooperation (ibid.). The DFID approach is based on livelihood analysis, which includes institutional and political issues. Allison and Ellis (2001) use this approach to understand the strategies used by artisanal fisher folk to tackle fluctuating fisheries resources. Although references will be made to the DFID's model, this study applies the model used by Allison and Ellis since it seeks to understand the complexities of fishing and fish trade as well as oil and gas impacts on such livelihoods in Shama.

2.3.1 Definition of the SLA

Most of the discussion on Sustainable Livelihood so far has focused on rural areas and situations where people make a living from some kind of primary self-managed production. The term livelihood has been defined in different ways by different authors. Chambers and Conway (1992: 7) define a livelihood as,

"A livelihood comprises of the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term".

According to this definition, a livelihood must possess the element of sustainability and must be able to recover from stress or shocks. Scholars such as Arce (2003: 202, cited in de Haan and Zoomers, 2005: 30) argue that, sustainability was not the focus of Chambers and Conway's work but rather security and income. Scoones (1998: 5) modified the initial definition by defining a sustainable livelihood as, "…comprising the capabilities, assets, (including both material and social resources) and activities required as a means of living. Thus, it is resilient in the face of external shocks and stresses, it is not dependent upon external support, and it is able to maintain

the long-term productivity of natural resources and when it does not undermine the livelihood options of others".

This study draws heavily on the definition by Ellis. According to Ellis (2000, cited in Allison and Ellis, 2001: 379) "a livelihood comprises of assets (which could be natural, physical, human, financial and social), the activities, access to these (mediated by institutions and relations) that together determine the living gained by the individual or household". The Sustainable Livelihood Approach is a clear people-centred approach. Thus, people rather than the resources they use are the priority concern. It seeks to identify the most pressing constraints faced by people regardless of where these occur (i.e. which sector, geographical space) as well as to understand how to tackle the challenges these people are faced with. It also seeks to understand the different capabilities of people to cope in times of intense danger such as droughts, climatic and seasonal changes. In this study for instance, sustainable livelihoods means the ability of fishermen and fish traders to use their assets such as canoes and fishing equipment to maintain their productivity in the advent of any major disturbance (Conway, 1985, cited in Allison and Ellis, 2001).

Aims of the Sustainable Livelihood Framework Approach, according to Allison and Horemans (2006), includes assisting people in using poverty indicators determined by themselves to realize a long lasting livelihood improvement. It tries to close the gap between the macro and micro levels. Kollmair and Gamper (2002: 4) emphasize that, "as people are often affected from decisions at the macro policy level and vice-versa, this relation needs to be considered in order to achieve sustainable development".

2.3.2 The Sustainable Livelihood Framework

The livelihoods approach is set up in the form of a framework that brings together the main factors that are thought to act in accordance with the livelihoods definition. The framework describes the assets owned, controlled, claimed, or in other ways accessed by the household (Swift 1989, cited in Allison and Ellis, 2001). It is crucial to mention that assets are not limited to cash, savings or other material means but include other non-material aspects such as "health, their labour, their knowledge and skills, their friends and family" (Rakodi, 2002: 10). The livelihoods assets are put into five main capitals. In the following, the core ideas represented in the SLF are explained and defined in the way that should be understood in this context.

2.3.3 Livelihood Assets

The livelihoods approach is concerned first and foremost with people. Therefore "an accurate and realistic understanding of people's strengths (here called "assets" or "capital") is crucial to analyse how they endeavour to convert their assets into positive livelihood outcomes" (Bezemer and Lerman, 2002 cited in Eneyew and Bekele, 2013: 1). People require a range of assets to achieve their self-defined goals. These assets or capital include the human capital, social capital, financial capital, natural capital and the physical capital.

Human capital - In the field of development studies, "human capital" is a very widely used term with various meanings. However, in the context of the SLF it is defined as follows: "Human capital represents the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives" (DFID, 2000). Human capital includes the issues of labour market, education and health (Serrat, 2008). According to Allison and Ellis (2001), this form of capital is one of the most important assets possessed by people living in rural communities. The value of human capital is boosted by investing in training and education and is also determined by one's skills acquired through work experience. When a person is free of illness and other health challenges, he is more effective at work (Ellis, 2000). Other factors like death, birth and migration also affect human capital.

Oil and gas exploration often triggers exaggerated expectations especially from the local population in terms of employment opportunities. The oil and gas industry, according to (Basedau, 2005) employs mainly high-skilled workers. The only opportunity to be employed temporarily as an unskilled person can be during the construction phase (Waskow and Welch, 2005: 122). Fishermen and fish traders do not have such high requisite skills. The high job expectations may therefore likely not be met.

Financial capital - The financial resource used by people in achieving their livelihoods is represented by financial capital (DFID, 2000). Among the five categories of assets financial capital is probably the most versatile as it can easily be converted into other types of capital or it can be used for direct achievement of livelihood outcomes (e.g. purchasing of canoe for fishing or purchasing fish to process and sell). Financial capital could be in the form of savings, credit, wages, proceeds from work and living costs. The production of oil and gas in the Western Region will most likely lead to an influx of foreigners which can lead to a significant increase in

the prices of goods and services. The local population will therefore be unable to pay for such goods and services that were previously payable (Waskow and Welch, 2005). In-migration will also lead to price inflation of goods and services (such as rent). If, in addition to inflation, environmental pollution or offshore production activities threaten the fish stocks resulting in a lack of yields from fishing, the local community would be confronted with serious economic problems.

Natural capital - According to Kollmair and Gamper (2012), natural capital is "the term used for the natural resource stocks from which resource flows and services (such as land, water, forests, air quality, erosion protection, biodiversity degree and rate of change) useful for livelihoods are derived". It includes water (fishing grounds) and aquatic resources (Serrat, 2008) within fisheries. Natural capital is important for people (especially in rural areas) who derive all or parts of their livelihoods from natural resources. Within the Sustainable Livelihood Framework a particularly close relationship exists between natural capital and the vulnerability context and many of the devastating shocks for livelihoods are natural processes that destroy natural capital (e.g. fires, floods, drowning). The steps involved in oil production from its production stage serves as a potential threat to fishing and to the environment. "Oil rigs that are stationed in breeding grounds for fish or other ocean animals can disrupt breeding patterns and affect populations (Waskow and Welch, 2005: 105). In the event of oil spillages that can occur during the drilling, caused by pipeline leaks or the transfer-procedure of oil to tankers, the oil pollution could lead to the killing or harming of fish (ibid.). The bright lights associated with the oil rigs also attract most of the fish into 'no go' zones where fishermen are banned from fishing (Badgley, 2011). The consequences these potential risks will have on fishing and fish trading activities in Shama will be discussed later in this study.

Physical capital ('produced' or 'economic' capital) - Physical capital comprises the basic infrastructure and producer goods needed to support livelihoods, such as affordable premix fuel, fishing nets, canoes, smoking ovens, secure homes and buildings, adequate water supply and sanitation, clean, affordable energy (firewood for fish traders) and access to information. More houses such as hotels and guest houses spring up with the advent of an oil and gas discovery due to the influx of people (Boohene and Peprah, 2011). This could in turn affect the prices of goods

and services particularly that of housing. According to Rud and Aragon (2013), the high demand for land and housing will lead to an increase in the prices of rents.

Social capital - There is much debate about what exactly is meant by the term "social capital" and the aspects it comprises. The term Social capital is related to issues of social and community networks. According to Bourdieu and Wacquant (1992: 119 cited in Palloni et al., 2001), "Social capital is the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition". Social capital emphasizes the importance of social interactions and structures to individuals and households. In the context of the SLA it is taken to mean the social resources upon which people draw in seeking for their livelihood outcomes, such as networks and connectedness, that increase people's trust and ability to cooperate or membership in more formalized groups and their systems of rules, norms and sanctions. It also serves as security network when fisher folk experience 'shocks'. Quite often access and amount of social capital is determined through birth, age, gender or kinship and may even differ within a household. Exploration of oil and gas in an area can result in in-migration or out-migration. These can either strengthen or destroy existing social networks.

The Sustainable Livelihood Framework (SLF) has been represented in many different diagrams. SLF as used by Allison and Ellis (2001) has six main components (see table 1). The framework begins with the assets (physical, human, financial, natural and social capital) (Allison and Ellis, 2001). Also, social relations, institutions and organizations obstruct or enable access to assets and activities. External factors (also referred to as the vulnerability context, which comprises trends and shocks that cannot be controlled by the household) also affects access to assets and activities. This is followed by the construction of livelihood strategies which comprises of a group of activities, some of which may be natural resource based and others non-natural resource based. Finally, this framework concludes with outcomes of livelihood strategies which are categorized into livelihood security effects and environmental sustainability effects (Allison and Ellis, 2001).

Table 1: **A framework for micro policy analysis of rural livelihoods (modified from Ellis, 2000, p. 30).**

A	B	C	D	E	F
Livelihood Platform	Access modified by	In context of	Resulting in	Composed of	With effects on
Assets Natural capital Physical capital Human capital Financial capital Social capital	*Social relations* Gender Class Age Ethnicity *Institutions* Rules & customs Land and sea tenure Markets in practice *Organizations* Associations NGOs Local admin State agencies	*Trends* Population Migration Technological change Relative prices Macro policy National econ trends World econ trends *Shocks* Storms Recruitment failures Diseases Civil war	Livelihood strategies	*NR based activities* Fishing Cultivation (food) Cultivation(Non-food) Livestock Non-farm NR *Non-NR based* Rural trade Other services Rural manufacture Remittances Other transfers	*Livelihood security* Income level Income stability Seasonality Degrees of risk *Env. Sustainability* Soils and land quality Water Fish stocks Forests Biodiversity

2.3.4 The vulnerability context

The efforts of people to secure their livelihoods and assets are strongly influenced by several factors. The SL framework emphasizes the concept of vulnerability. Vulnerability can be defined as being powerless, uncertain, and being exposed to risks, shocks and stress (Chambers, 1989). It includes external threats such as climatic factors, market forces or unexpected and unforeseen disasters (Allison and Ellis, 2001: 378). The concept of vulnerability as used in analysing the SL Framework encompasses three elements: shocks, seasonality and critical trends. Vulnerabilities are external to the local people, yet have the capacity of determining their livelihoods and establishing which strategies should be put in place to realize them. Vulnerabilities include diseases, deaths, floods, storms, droughts, famine, and changes in prices of goods and services and new technology (Serrat, 2008).

Fishing families, according to Allison and Ellis (2001: 380), "are no less prone than other rural dwellers to adverse events (shocks) and trends, with natural fluctuations in fish stocks being especially critical for them". These shocks may also include changes in the weather, illness or death of a family member, the drowning of a fisherman, the destruction of a fishing boat or fishing nets and a reduction in the level of fish stocks. The death of a family member for instance can be a great shock especially if that person was a breadwinner. Often in the event of a family member dying, for instance, the extended family system practiced allows the extended family to cater for the dependents of the deceased. Another shock can result from the demarcation and prevention of fishermen from fishing around 'no go' zones which leads to dispossession of fishing grounds (Benjaminsen and Bryceson, 2012). There is also the potential risk of an oil spillage which can have a drastic impact on the livelihoods of men and women working in the fisheries (Westlund et al., 2007).

Shocks, trends and seasonalities could have long term or short term effects, and may have an impact on coastal economies. In the short term, investors will invest in the region. Job opportunities will be opened for some local people (Egyir, 2012). Through Corporate Social Responsibility projects, the oil and gas companies and government institutions will embark on development programmes such as the building of new schools or refurbishing old ones, provision of potable drinking water and the construction of road networks (E and P/UNEP, 1997). In the long term, if not managed well, oil and gas can result in tensions between the local people, oil and gas companies and the government. This could lead to the loss of livelihoods. This study therefore examines the vulnerabilities of men and women working in the fisheries and their coping strategies during the times of such circumstances.

Transforming structures and processes

Transforming structures and processes shape livelihoods. These transforming structures and processes are the "institutions (formal and informal), organizations, policies and legislation which determine access to the five different types of capital, terms of exchange between the different types of capital and the economic and other returns from livelihood strategies" (FAO, 2013). A livelihood's success or failure is influenced by these prevailing transforming structures. Structures include the public and private organizations which formulate and implement policies; deliver services, and purchase, trade and perform all sorts of other functions that have an impact on livelihoods (Serrat, 2008). These structures may be formal or informal, and local, national or international. An absence of well working structures often constitutes an obstacle to sustainable development and makes simple asset creation difficult.

Structures cannot operate in the absence of institutions and organizations. North (1990: 3) defines institutions as "the formal rules, conventions, and informal codes of behaviour that comprise constraints on human interaction". In the context of artisanal fishing, state regulations and community based rules influence access to resources (Allison and Ellis, 2001: 380). Organizations such as the Ministry of Fisheries and Aquaculture Development and the Naval Base at Sekondi-Takoradi in Shama, for instance, are examined in this study. Their importance to this study (see chapter five) is revealed in ways by which their interactions with fishermen and fish traders enables or obstructs access to resources (assets). Local institutions such as the *apofohene* (chief fisherman) and *konkohene* (chief fish trader) and alongside associations within Shama are also studied. A combination of the activities of the aforementioned organizations affects fishing and fish trade. While some of these obstruct access to assets, some of them create an enabling environment for fishing and activities in Shama.

Social relations can also determine who has access to fishing opportunities (e.g. the ethnicity of fishing families may differ from other families in coastal communities, and roles within fishing activities are often strongly gender-differentiated). It is however worth noting that the Sustainable Livelihood Approach has been critiqued for focusing more on assets or resources of people than on the social and power relations which underpin people's access to assets or resources (de Haans and Zoomers, 2005: 33). According to Scoones (2009: 186), how livelihoods are structured by relations of class, gender, ethnicity, and cultural identity should be at the centre stage of any livelihood analysis. The various stratifications in terms of class,

gender and ethnicity among fisher folk and how they influence their access to assets will therefore be emphasized in this study.

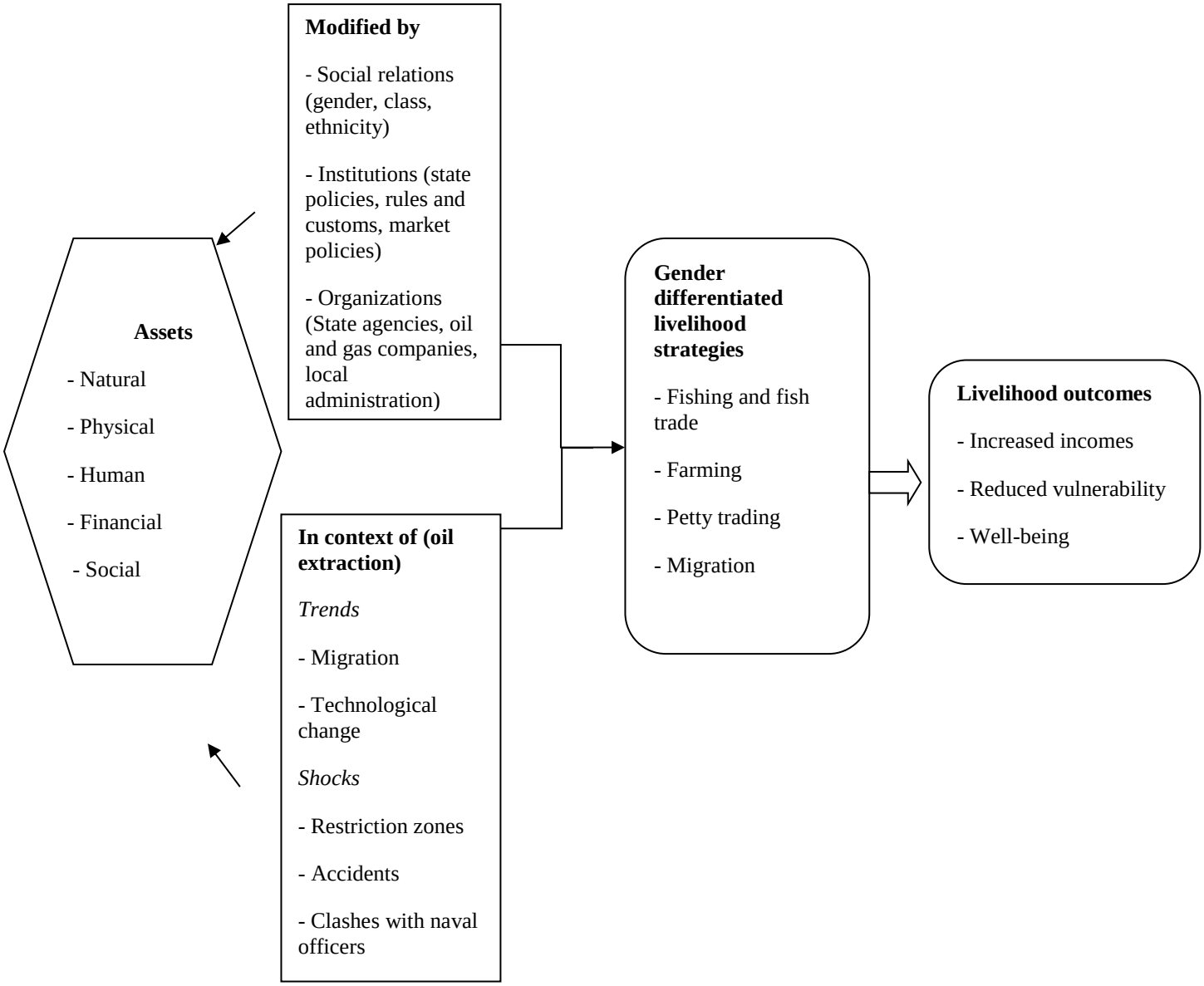
Livelihood strategies and outcomes

Livelihood strategies comprise the range and combination of activities and choices that people undertake in order to achieve their livelihood goals (DFID, 2000). Ellis (2000: 41) describes these activities as natural-resource based activities and non-natural resource based activities. Natural-resource-based activities may include gathering of firewood, cultivation or harvesting of food crops such as corn and rearing livestock (ibid.). Non-natural resource based activities may include petty trade. They have to be understood as a dynamic process in which people combine activities to meet their various needs at different times and on different geographical or economical levels, whereas they may even differ within a household (ibid.). Due to the seasonality of their occupation, fishermen and fish traders engage in various coping strategies in order to survive.

2.3.5 Application of the theory to the study

The Sustainable Livelihood Framework portrays fishermen and fish traders as people who have access to certain assets (see figure 2). These assets include natural, physical, human, financial and social capital. Prevailing transforming structures and processes such as social relations, institutions and organizations influence this access leading to the adoption of livelihood strategies and outcomes.

Figure 2: **The Sustainable Livelihood Framework adapted from Allison and Ellis, 2001.**



Source: Author's construct.

The Sustainable Livelihood Approach relates to this study in a number of ways. Firstly, through the concept of livelihood assets, I examine what assets are available to fishermen and fish traders in Shama. I use the concept of vulnerability as used in the framework to show the shocks, trends and seasonalities that fishermen and fish traders are prone to as a result of oil and gas activities. This will also help reveal the various livelihood strategies adopted by these fisher folks in Shama. In all, the gender differentiated impact of the oil and gas on the livelihoods of fisher folks will be examined.

CHAPTER THREE
METHODOLOGY

3.0 Introduction

Research is an organized and systematic way of finding answers to research questions. This organized and systematic process has different stages which includes conceptualization of the problem, going to the field, analysing and write up of the thesis. The fieldwork began in May and ended in September 2014. This chapter discusses the techniques used in producing data for answering the research questions. It describes the process of gaining access to the field, the statuses and roles I was ascribed as well as my positionality, discussing the outsider and insider perspectives. It also describes the tools used in producing data. It concludes by discussing the validity and reliability of the data produced during the field work.

3.1 Methodology in Social Research

The choices we make about relevant models, cases, data gathering and forms of data analysis in planning and actually carrying out research is referred to as methodology (Silverman, 2006). In social research, researchers decide the type of research method to use for collecting data to answer their research questions **(**Bhattacherjee, 2012). Such methods include quantitative methods, qualitative methods or possibly a combination of both often referred to as the mixed method. Methods used for collecting data can be broadly categorized into qualitative and the quantitative methods (ibid). Clifford et al. (2010), define the quantitative method as using concepts and reasoning to comprehend geographical phenomena. It involves the explanation of phenomena through the collection and analysis of numerical data using mathematically based methods (Aliaga and Gunderson, 2005). The quantitative method is widely used by the natural sciences. Its paradigm is based on positivism or realism. Positivists argue that the main purpose of research is to uncover reality. They argue that, there is only one truth, an objective reality that exists independent of human perception. It involves testing a theory or hypotheses using methods such as experimenting in laboratories and survey research. It usually involves large sample sizes.

The qualitative research according to Merriam (2009) is used by researchers who are interested in understanding how people make sense of their world and the experiences they have in the world. It can also be defined as the use of research methods such as participant observation or case studies which produces a narrative or description of a setting **(**Parkinson and Drislane, 2011). The qualitative paradigm is based on interpretivism which argues that

human actors socially construct knowledge of reality and so do researchers (Walsham, 1993). There is no objective reality which can be discovered by researchers and replicated by others, in contrast to the assumptions of positivist science. That objectivity or objective reality cannot be found by a researcher and repeated by others. In Denzin's words, "Objective reality will never be captured. In-depth understanding, the use of multiple validities, not a single validity, a commitment to dialogue is sought in any interpretive study" (Denzin, 2010: 271). As such, interpretivism is based on the idea that qualitative research efforts must be focused on revealing multiple realities as opposed to searching for one objective reality. The qualitative methodology uses methods such as in-depth interviews, group interviews and participant observation. In contrast with the quantitative methodology, qualitative studies use smaller sample sizes which can provide important information that might not be provided when dealing with a larger one (Bryman, 2012).

3.2 Methodological approach used

The qualitative research methodology was the main methodological approach used for this study since it was better suited for the aims and objectives. The qualitative methodology allows for exploration into intentions, meaning and values (Clifford, 2010), and in this context, of men and women working in the fisheries. The qualitative method was an ideal choice for this study because data derived from the use of this method provides a deeper understanding of issues (Tewksbury, 2009). Its flexibility allows researchers to probe into responses or observations and obtain more detailed descriptions and explanations of experiences, behaviours, and beliefs. The purpose of this study is to understand the complex livelihoods of men and women working in the fisheries and how these livelihoods are being impacted by oil and gas exploration and production. By considering the accounts of informants, the qualitative methodology broadened my scope of knowledge about the daily activities of men and women working in the fisheries in Shama.

The four main qualitative methods used include simple observation, participant observation, semi-structured interviews and group interviews. These methods generated primary and secondary data. The primary data comprise of data generated in the field. The secondary data were gathered from various sources including documents from the Ministry of Fisheries and Aquaculture Development at Takoradi, the Fisheries Research Unit located in Tema, the Shama District Assembly, the District Education Office at Shama and the Albert Bosumtwi-Sam Fishing Harbour located in Sekondi.

3.3 Pre-fieldwork arrangements

After two weeks in Accra, the capital city of Ghana, I was ready to travel to Shama. I had never travelled to the Western Region where Shama, my area of study, is located and I had never visited a fishing community and was curious to know about activities there. Upon arrival at Shama, I enquired about the chief of Shama who also served as the *omanhene* (paramount chief) of the Shama district. I was informed that he passed away two years ago. I was therefore directed to the chief of Yabiw (see map 2) who was the acting *omanhene*. Unfortunately, the chief of Yabiw had a meeting with some government officials. I was therefore unable to meet him. I took the opportunity to walk through the streets of the town and observed how the built area was structured. I tried to observe developments which would signal a direct contact between oil and gas companies and the town. Most of the buildings were old. The streets were lined up with small shops. Some of these shops sold equipment for fishing such as nets, fishing floats, fishing hooks amongst others. This showed the importance of fishing in the town. There were also provision shops. I also observed vendors selling food on tables along the streets. Children of school going age were playing in the streets and the seaside during school hours. I travelled back to Accra on the same day with a positive impression about Shama since I had imagined the town to be a rural area with residents living in mud houses.

On my next trip to Shama, a week later, I came into contact with the chief of Yabiw. He became a gate keeper who granted me access into Shama and the Shama District. In the research setting, gatekeepers are those who have the power and authority to grant or deny access to the researcher to a set population (Bound, 2012). On the day I met the chief of Yabiw, I performed the necessary customary rites. This required offering the chief a drink. I introduced myself as a student from the University of Bergen in Norway. I also informed him about the reason for my presence in Shama and the purpose of my research. He was very happy to see me and gave me a warm welcome. He provided information about Shama and other settlements within the Shama District. We also discussed the livelihoods of the people living in the town. This broadened my scope of knowledge about Shama.

The second and third gate keepers were the two chief fishermen of Apo and Bentsir and the chief fish trader of Bentsir. I was able to establish contact with them through a native of the town. The chief fishermen granted me access into their landing beaches. The chief fish trader introduced me to fish traders.

Fishermen and fish traders were difficult to approach during the early phase of the field work. This was due to the fact that the chief fishermen could not introduce me to the fishermen because of their busy schedule. I therefore had to rely on a fourth gatekeeper. He was an official at the Ministry of Fisheries and Aquaculture Development, a zonal officer, who was in charge of some landing beaches in the Shama District. This man was known by almost all fishermen and fish traders in Shama.

The first challenge I faced in the field was securing accommodation and I had to travel from Accra to Shama on three occasions until I was able to secure one. Prior to the third trip, I established contact with an elderly man who was a native of Shama but had lived in Europe for some years. We discussed issues about life in Europe and about my field work. This elderly man helped in a number of ways. He lived 20 minutes away from Shama and provided me with accommodation. He was a distant relative of the chief so he took me to the chief's palace and introduced me to the chief. He also introduced me to a woman who was a native of Shama who in turn introduced me to some key informants.

During the early phase of the field work, I spent a lot of time at the Apo and Bentsir landing beaches and made friends with some fishermen and fish traders. I observed their fishing and trading activities. I visited the two landing beaches in the early hours of the morning to watch fishermen go to sea and others landing their canoes and fish catch after returning from sea. Some sat under wooden structures or directly under the scotching sun mending their nets whiles others sat watching as canoes were being built or mended. I also listened to and participated in some discussions held by some fishermen and fish traders. It was during one of these visits I came into contact with an informant who became a very good friend. We had informal conversations during which he described how fishing was organized. He also narrated some of his encounters with bigger fishing vessels and naval officers at sea. This helped me gain some insights about what went on at sea. I observed fish traders who were either buying fish from fishermen or carrying fish from the landing beaches to their homes for processing and sale. I also observed how fish was sold including the bargaining process.

I also observed people at the beaches who are not directly involved in the fisheries such as net menders, carpenters, mechanics, food vendors to mention but a few. I kept a field notebook during such observations. Field notes are defined as "contemporaneous notes of observations or conversation taken during the conduct of qualitative research" (Thorpe, 2008: 98). Depending on the circumstances, the notes taken can be full (e.g. verbatim transcripts of

conversations taken by hand or recorded by a tape recorder) or brief notations that can be elaborated on later. The field notebook enabled me to record my observations on the field. This stage of the work gave a basic understanding of fishing activities in Shama.

3.4 Role and status during field work

Researchers are ascribed statuses and roles by informants. Status refers "to a position in a particular pattern" (Linton, 1936: 113). Statuses and roles come with rights and duties. When these rights and duties are put to use, then a role is being performed. Therefore, a role represents the way the status is performed. I was ascribed various statuses during my field work. My statuses changed over time and in relation to different informants. The statuses I occupied came with rights and duties. During the first few weeks of the field work, I was ascribed the status of a government worker. I was expected to associate myself with the 'big men' in the town. For example, I received a lot of greetings on the streets when I was seen walking around with an official from the Ministry of Fisheries and Aquaculture Development. This status changed when I began probing into issues about oil and gas activities. Then I was considered either as a worker in one of the operating oil companies or a worker for a prospective oil company. Fishermen and fish traders expected me to provide answers to their questions. They poured out their grievances and asked me to relay the information to 'my' company. Since I could not provide answers to their questions and had little knowledge about the oil and gas companies, my status changed to a worker from an NGO who was going to help solve their problems by offering assistance in any form. During this stage of the work, my actions were monitored and people were suspicious of my activities.

When I started with the interviews after a month in the field, some fishermen and fish traders saw me as a potential buyer of their fish. Anytime I approached them, they rushed to capture my attention expecting me to buy their fish. However, after I introduced myself, explained the purpose of my research and began to ask questions, my status changed. I was considered as a student researcher. After spending two months in the town interacting with people and engaging in various discussions, my status changed from a student researcher to a friend of some fishermen and fish traders. I was expected to participate in social events. I received invitations to some events including the wedding of an informant's daughter. It got to a point when some women and men referred to me as a daughter. I was therefore considered as a part of the community who was entitled to receive help anytime I faced difficulties. I was often asked if I was facing any challenges. This helped me a great deal since informants became more relaxed and were willing to provide me with information.

3.5 Insider-outsider perspectives

A central issue in producing data concerns how researchers are able to position themselves in order to gain access and information. This can have huge consequences on their work, and affect the final quality of the research. As realized by Mullings (1999), outsiders are not related in any way to the group they are studying and have little knowledge of them. The advantage of being an outsider is that by not belonging to any group under study, one is more likely to be perceived as neutral **(**Fonow and Cook 1991, in Mullings 1999). At the start of the fieldwork, I presented myself as a student researcher and therefore my expected roles were to ask questions. The student researcher status gave me an 'outsider' position. For instance, I was not part of the fish traders group and had little or no knowledge about their trading activities and livelihoods. What worsened my situation was the fact that I had never been to the Western Region or in a fishing community before. This position as an outsider was beneficial in the sense that informants were willing to provide and explain all the information I needed.

However, being an outsider could also restrict access to information. When I started my fieldwork, an official from an oil and gas company in Shama saw me as an outsider hence restricting my access to information. For instance after introducing myself to him, he said *"all the information you need can be found online. All you need to do is to Google it"*. He however granted me an interview after I explained the importance of the interview as a data generating tool for the study. Also, an official at the naval base after receiving my student identity card and introductory letter from my supervisor, said: *"But you could still be a spy".* Being an outsider therefore could impede access to information in some contexts. I therefore gave him my supervisor's complimentary card. I also presented a copy of my research proposal. This aroused his interest in my work, thereafter providing me with the necessary information I needed.

In addition to the above, the educational privilege which I currently enjoy (as a Ghanaian master student from Norway) also created some differences between myself and some of my informants, and positioned me an outsider in relation to them. For instance after introducing myself to a fisherman on the field, he said, *"What has your education got to do with me? I am neither your father nor a relative".* I therefore had to explain the purpose of my research. I explained the potential benefits of my study for various stakeholders, Shama and the nation as a whole.

However, I simultaneously gained an 'insider' status whereby a researcher belongs to the group he or she is studying. According to Mullings (1999: 340), insiders have the ability to utilize the knowledge about a group to get more intimate insights and have access to information. I was ascribed the 'insider' position due to my multi-lingual background and Ghanaian nationality. My ability to communicate with my informants in their native languages enabled me to gain their trust to some extent. I spoke Twi (the Ashanti language and lingua franca in Ghana) with fishermen living in Shama and Ewe with the Anlo-Ewe fishermen in the migrant town Anlo Beach. Also due to the insider position I was ascribed, I was allowed to participate in some activities that an outsider may not have been allowed to participate in, including joining some fish traders in the smoking of fish for the market.

3.6 The sampling process

Selecting participants for participant observation, group interviews and semi-structured interviews is very important since the type of informants influence the type of data received. Sampling is a method that allows researchers to infer information about a population, without having to investigate every individual. According to Rice (2010: 230), sampling entails gathering "information about a relatively small part of a larger group or population in order to make inferential generalization about the larger group".

The sampling techniques used in this study were the purposive and snowball sampling methods. Researchers using the purposive sampling technique handpick the informants to be included in the sample on the basis of their judgment of typicality or possession of particular characteristics being sought (Cohen, 2007). As its name implies, samples are selected for specific purposes. Usually, it is used in order to access 'knowledgeable people', i.e. those who have in-depth knowledge about particular issues, maybe by virtue of their professional role, power, access to networks, expertise or experience (Ball, 1990, cited in Cohen, 2007: 115). I purposively sampled key informants who I considered as having in-depth knowledge about fishing activities and about the livelihoods of people working in the fisheries.

The snowball sampling technique was used to get access to some fish traders and fishermen. Snowball sampling involves selecting informants with 'necessary characteristics' who through their recommendations help the researcher in finding other informants (Seale et al., 2004: 449; Bryman, 2008: 184). For instance, I was introduced to my first informant who was a canoe owner and he in turn introduced me to some other canoe owners.

My sample population consisted of 42 informants (10 government officials (table 2), four local leaders (table 3), and 28 fisher folk (table 4). 28 of the 42 informants were men and 14 were women. More men than women were interviewed because most of the fish traders were not readily available. This was due to the nature of their work. They went to the market place every day with Sunday as the only day they rested at home. Most of them were also not comfortable with granting interviews in the market places because they were either busily attending to buyers and customers or trying to catch the attention of potential buyers. Due to this, I visited them in their homes on Sundays. The 14 women interviewed comprised of fish traders, wives of previously interviewed fishermen and government officials. The 28 men also comprised of crew members and canoe owners, some of whom were retired fishermen who only saw to the day to day administration of their canoes and others who were still active fishermen. All interviews were conducted either in English and or Ewe and Twi without the use of an interpreter.

Table 2: **Local leaders interviewed using an interview guide.**

Leaders	**Gender**
Chief of Yabiw	Male
Chief fisherman of the Apo landing beach	Male
Chief fisherman of the Bentsir landing beach	Male
Chief fish trader of Bentsir	Female
Total	4

Source: Field data, 2014.

Table 3: **Government officials interviewed using an interview guide.**

Government Officials	**Gender**
District Assembly Planning Officer	Male
Official of Tullow Oil Company	Male
Official of the Ministry of Fisheries and Aqua. Dev't	Female
Zonal officer for the Shama District	Male
Official of the Fisheries Research Unit	Male
Official of the District Health Centre	Male
Deputy Finance Officer of the District Edu. Office	Male
Director for supervision of the District Edu. Office	Female
Officer of the Naval Base	Male
Senior Traffic Officer of the Sekondi Fishing Harbour	Male
Total	10

Source: Field data, 2014

Table 4: **Fishermen and fish traders interviewed using an interview guide.**

Fishermen and fish traders	**Male**	**Female**
Canoe owners	6	1
Crew members	6	-
Migrant fishermen	5	-
Fish traders		10
Total	17	11

Source: Field data, 2014.

3.6.1 Semi-structured interviews

Semi-structured interview is defined as "a verbal interchange where one person, the interviewer, attempts to elicit information from another person by asking questions" (Longhurst, 1996, cited in Clifford and Valentine, 2010: 103). According to Longhurst (2010), talking to people is an excellent way of gathering information. It usually unfolds in a conversational manner and offers the participants the chance to explore issues they feel are important. The semi-structured interview was chosen since it allows flexibility to probe for answers, follow-up of original questions and to pursue new lines of questions (Denscombe, 2007). Using the semi-structured interviews granted access to the various stories and narratives through which informants described their world (Creswell, 2009).

All the key informant interviews were recorded with a digital audio recorder. These recorded interviews took place either on the landing beaches, at the informant's office or in their homes. The recorder was also used during the two group interviews. The recorder enabled me to make observations of events in their natural settings since I did not have to focus too much on writing. I used an interview guide (see appendix) during the key informant and group interviews.

The people I interviewed can be put into three main categories; government officials including a worker at one of the oil and gas companies, leaders of the two landing beaches, and fishermen and fish traders both at Shama and the Anlo Beach.

Government officials were key informants. They included a zonal officer of the Ministry of Fisheries and Aquaculture Development, a naval officer, and two officials of the District Education Service among others. The zonal officer was in charge of some landing beaches in the Shama District including the two landing beaches in Shama. He was also a retired fisherman who owned a number of canoes in Shama. He offered a lot of information about fishing activities in Shama and narrated some of his personal experiences as a retired fisherman and a canoe owner. In addition, he explained the government's role in fishing. I also interviewed a naval officer at the Sekondi naval base. He was a technical instructor to naval officers who guard oil and gas installations. This officer offered information about the activities of naval officers at sea. He also narrated stories of encounters they had with fishermen.

The two officials of the District Education Service were the officer in charge of finance and the officer in charge of supervision. We discussed issues concerning education in the Shama

District. They also broadened my scope of knowledge about activities of the oil and gas companies and how some of these activities impacted on the lives of people working in the fisheries. I encountered several challenges during interviews with government officials. One of the challenges I faced was getting access to some of the government officials who were usually very busy. Meetings were rescheduled on several occasions. Also, getting access to secondary data from the government institutions was another challenge. For instance, after being granted an interview by the Senior Traffic Officer at the Albert-Bosumtwi-Sam Fishing Harbour, I had to travel from Shama to Sekondi (where the fishing harbour is located) on four occasions before I was able to obtain some written documents about the harbour.

The second category of informants was the local leaders of the two landing beaches. These were key informants who explained a lot of issues. They comprised of the two chief fishermen, the *apofohene*, at the Apo and Bentsir landing beaches and a leader of the fish traders, the *konkohene*, in Bentsir. The chief fishermen provided information about their fishing activities and how they were organized. They also narrated their roles and experiences as leaders including some successes and challenges they encounter when performing their duties. The chief fish trader also enlightened me about the scope of their trading activities. The 78 year old woman recounted stories about how trading activities were organized. Since these interviews were held at their workplaces, there were many interruptions. However, all the questions on the interview guide were discussed.

The last category of informants interviewed was fishermen and fish traders. They included fishermen and fish traders at Apo and Bentsir and migrant fishermen at the Anlo Beach. In all, 17 fishermen and 11 fish traders were interviewed (see table 4). They provided information about their age and educational level. The age range of the respondents was 30 years and above. This was chosen because fisher folk who are within this age range would be able to provide more detailed description about their fishing activities before and after the exploration and production of oil and gas. In terms of their educational status, the level of literacy is low. All the 28 fisher folk interviewed have not received tertiary education. Out of the 28, one had received Senior High Education. Six of them had attained Junior High Education. 13 of them dropped out of school in primary and eight of them had never been to school (see table 5).

Table 5: **Educational level of fisher folk.**

Gender	**None**	**Primary**	**JHS**	**SHS**
Men	3	8	5	1
Women	5	5	1	
Total	**8**	**13**	**6**	**1**

Source: Field data, 2014

Fishermen in Shama and Anlo Beach provided a lot of information about their daily activities. They recounted stories about their experiences while at sea. They also informed me about their travels within and outside Ghana, their challenges and how they were able to overcome them. The fish traders also gave accounts of their personal experiences involving their trading business. They talked about their day to day roles as well as their lives at home and the market place. Their successes, challenges and their coping strategies were also discussed during the interviews.

Demands and expectations from fishermen and fish traders was a key challenge due to past experiences from NGOs. Some of the fisher folk would ask for money before partaking in interviews. In such instances, I would explain that I am a student. I showed them an introductory letter from my supervisor and explained that the study is for academic purposes.

3.6.2 Group interviews

The group interview method according to Hay (2010) entails a small group of people having discussions of issues presented by a researcher. A number of six to ten people are normally used and the interviews last between one or two hours. An important feature of a group interview is the interaction and discussions between the members of the group. Usually, people with similar characteristics, homogenous groups, are selected (Clifford and Valentine, 2010). Group interviews elicit information in a way which allows researchers to find out why an issue is salient, as well as what is salient about it (Morgan, 1997). As a result, the gap between what people say and what they do can be better understood (Lankshear, 1993). This helps generate several perspectives about the researcher's research questions. The significance of the group interview is that, when an informant misunderstands a question, makes an exaggeration or an understatement of issues, others step in and correct them or offer

explanations. However, group interviews tend to become influenced by one or two dominant people in the session, thus making the output biased.

During the field work, I organized two group interviews, one for fishermen and one for fish traders. A group interview was organized for fishermen at the Bentsir landing beach. It was difficult getting access to individual fishermen at the Bentsir landing beach. This was because most of the fishermen who formed part of the Bentsir group landed their canoes at the Apo landing beach since Bentsir has a rough landing beach with very strong sea waves. I was however fortunate one day when I chanced upon a group of fishermen who had come to buy premix fuel around the chief fisherman's office. I quickly sought permission from the chief fisherman and organized a group interview. The group interview comprised of six canoe owners and four crew members. An incident happened during this group interview. After introducing myself and explaining the purpose of my study, one of the fishermen passed a comment, *"If I had known this was going to be about oil and gas, I wouldn't have accepted to join in this discussion".* Immediately after passing this comment, six of the fishermen, including himself, got up angrily and left. It took the intervention of the chief fisherman and some other fishermen to calm their nerves and bring them back for the interview. This incident showed the unhappiness of fishermen concerning issues about the oil and gas industry. The group interview was important because informants provided diverse viewpoints and several perspectives on issues discussed. The canoe owners complained, claiming that the oil exploration was affecting their business by bringing about a reduction in fish catch.

The crew members also had different stories to tell. Since it was the crew members (and not the canoe owners) who went out to sea, they narrated some of their unpleasant experiences at sea including how they are sometimes maltreated by naval officers who spotted them close to the 500 meter radius which has been marked as a 'no go' fishing zone. I therefore followed up to the naval base to get more information about issues the fishermen had raised. After the group interview, I was also able to establish individual contacts with the fishermen and later followed up with semi-structured interviews.

Organizing a group interview for the fish traders also proved difficult at the initial stages since most of the women were busy throughout the course of the week. I was however able to talk to some fish traders and a group interview was organized on a Sunday morning. The venue was a room offered by one of the fish traders. Some of the fish traders I had already interviewed came along with their friends. In all, 10 women were present. The interview

started with six fish traders. Four other fish traders joined later. This extended the scheduled time for the interview because questions were repeated.

It was during this interview I was able to interact with the wife of the chief fisherman at Bentsir. I was introduced to her earlier on by her husband but was unfortunately denied an interview because she was travelling out of Shama at that time. She however agreed to be present for the group interview. I observed how knowledgeable she was about fish trade as well as her influence on the fish traders during the group interview. Anytime I asked a question, she was the first person to answer and the other fish traders only spoke after she had expressed her views. We discussed many issues including the model school that had been built by an oil company at Amenano. Amenano is a relatively small community located at the South-western border of Shama. Although the fish traders were ignorant about who built the school, they told me how beneficial it was for them. The school was a safe place to keep their children when they are performing their daily activities. They also talked about how strict enforcement of fishing limits in the waters around the oil field has severely reduced the fish harvest and was subsequently affecting their livelihoods.

3.6.3 Participant observation

Participant observation involves staying in communities, interacting with people for a period of time in order to understand them (Clifford and Valentine, 2010). In participant observation, the researcher participates and observes using data production tools such as field-notes and photographs. Four types of participant observation have been identified based on the roles that the researcher takes (Eyles and Smith, 1988). These four are on a continuum of involvement. They include the complete participant, the participant-as-observer, the observer-as-participant and the complete observer.

I was mostly an observer-as-participant in the field. I established contacts with some fish traders after I had been introduced to them by the *konkohene*. Before the start of the field work, I decided to follow some fish traders from the sea shore where fish is bought, to the market centres where their fish is sold. I followed some of these fish traders from Shama to the Sekondi market place. During such trips, I had informal conversations and discussed a lot of issues with them. I sat by these fish traders as they sold their fish. I inquired about how their marketing activities were organized. I also got a lot of information about their daily lives in the market places, for instance who their customers are, the bargaining process, their daily expenditure and so on. This gave me more insights into women's fish trade.

Plate 1: **Talking to fish traders from Shama in the Sekondi market.**

I also assisted some fish traders in the smoking of fish for the market centres. The methods used in the processing of fish were limited to smoking, keeping fish in refrigerators, salting and drying. The dominant method however used was the smoking of fish where fish was put on ovens commonly known as the "chorkor smoker". I had the opportunity of helping one of these fish traders who always referred to me as a daughter. Participating in the smoking of fish enabled me to understand some of the challenges these fish traders faced such as their complaints about eye problems.

Plate 2: **Helping a fish trader to smoke fish.**

Also, I had an interesting and quite adventurous trip crossing the River Pra. In Shama, women are not allowed to go fishing in canoes on the high seas but are allowed to cross the River Pra by canoe in search of firewood for the smoking of fish and well us domestic uses. This trip

informed me about gender issues. I also learnt about some contributions made by Tullow Oil in terms of the introduction of a newly improved sample oven to the town.

One other thing I was privileged to partake in was the mending of a fishing net. Since fishing in Ghana is organized along gender lines, the mending of a fishing net is considered a man's work. I was however allowed to assist a crew member to mend his net after they had encountered an accident offshore. I engaged in informal discussions with him and learnt a lot about fishing and gender issues. He also narrated some of the challenges faced both offshore and onshore and the risks involved in the fishing occupation.

Plate 3: **A crew member teaching me how to mend a fishing net.**

3.7 Analyses and interpretation of data

Considering the number of methods used for producing data for the research, which were mostly qualitative, appropriate tools for interpreting and analysing data collected are important. Qualitative methods can generate large, cumbersome amounts of data (Bryman, 2012: 565). Finding ways of interpreting and analysing such data can be challenging, more so as there are no clear ways of doing this (Bryman and Burgess, 1994). I analysed words, expressions, metaphors and photos obtained through observations and interviews (key informant, semi-structured and group interviews).

In processing the data, recorded interviews were transcribed verbatim. The interpretation and analysis are linked closely to the concepts of livelihood, sustainable livelihood, alternative livelihood and coping strategies. Narrative analysis emphasizes the telling of stories from the perspective of the informants and allows avenues for exploration of competing narratives

(Bryman, 2012: 584) and this was appropriate for this study as there were different stakeholders providing their own tales of the same story. Research questions were kept in mind all the time in order to answer them adequately and themes were identified that could illuminate answers to the research questions.

3.8 Ethical Issues in Research

A researcher behaving in an ethical way helps to maintain public interest and prevents suspicion among informants (Clifford and Valentine, 2010). Diener and Crandall (1978, cited in Bryman, 2012: 135), argue that ethical issues usually centres around four basic areas including whether there is lack of informed consent, whether there is harm to participants, whether there is invasion of privacy and whether there is deception involved.

In relation to the issue of informed consent, everyone who participates in the study should have freely consented to participation, without being coerced or unfairly pressurised. This means they should be well-informed about what participation entails. The first thing I did was to seek consent from various groups of people before starting with the field work. I sought consent from the acting *omanhene* of the Shama District. I also sought the consent of the two chief fishermen at the two landing beaches in Shama. Their consent was needed because any issue involving fishing and its activities were brought before them. Without their consent, I would have been considered an intruder.

In addition to the community leaders' consent, I sought the consent of all informants before I started with an interview or any informal conversation, introducing myself as a Ghanaian student studying in Norway and showing them the introductory letter from my supervisor. I also explained to them the purpose of my research and its relevance. Most of the informants then became quite interested in the topic of my study. I developed this strategy after I had an encounter with an informant who wanted to know the relevance of my study before agreeing to grant me an interview. I also informed the informants that the interviews were voluntary and not obligatory, and they could refuse or withdraw from any interview.

Since I used a digital audio recorder during the key informant interviews, I sought the consent of the informants before the digital audio recorder was used. I also played the recorded audio to them afterwards. The photographs presented in this study were all taken with the informants' consent. I informed them about what the photographs would be used for, which they accepted.

It is not always easy or even possible to measure the dangers of a certain context to a given population, let alone to individuals. It is therefore essential to protect the identity of the person from whom you gather information. In order to prevent the invasion of privacy, the identities and records of informants in this study have been maintained as confidential. This is to ensure that informants are not identifiable. I assured participants that I would do my utmost to uphold confidentiality and anonymity. I therefore altered some specific details in the transcripts that could make an informant identifiable.

Researchers are obliged to provide informants with a complete account about what a study is all about. In order to prevent deception, I explained as much as possible the research process to my informants before an interview. The research was explained and interviews were granted willingly. This therefore established some level of trust.

3.8.1 Validity and Reliability of Data

Ensuring a high degree of validity and reliability is a very important aspect of qualitative research since it establishes its authenticity. Validity according to Hammersley (1990: 57 in Silverman, 2005: 210) is the extent to which a research finding 'represents the social phenomena' studied. Establishing the validity or in Guba's words "trustworthiness" of research depends on the criteria of credibility, transferability, dependability and confirmability (Guba, 1981 cited in Shenton 2004: 64).

Credibility or replicability involves ensuring that your research meets the expectations of your research questions or aims. It usually poses the question "How congruent are the findings with reality?" (Merriam, 1998 cited in Shenton, 2004: 64). Credibility can be enhanced through several factors including triangulation. Triangulation involves the use of different methods for producing data in the field (Oslen, 2004). In the social sciences it refers to the combination of two or more theories, data sources, or investigators in one study of a single phenomenon to converge on a single construct, and can be employed in both quantitative and qualitative studies. The use of data collection strategies including participant observation and simple observation, semi-structured interviews and group interviews helped in establishing credibility. According to Guba (1981, cited in Shenton, 2004: 65), using different methods in qualitative studies minimizes their individual shortcomings. The use of four different methods of data collection helps reduce the weakness and biases that may occur in single-method studies, single-observer and single-theory studies (Jakob, 2001). Comparing data from these methods therefore helped in making the study more credible. For instance, a crucial validity

issue is whether I asked the relevant questions or not, and whether both my informants and I had the same interpretation of the questions asked. Understanding and interpreting questions correctly depends on whether or not I conveyed the questions correctly to elicit the appropriate responses. To ensure a higher degree of validity, I rephrased questions in situations where informants misunderstood questions asked. For example during the initial stages of my interviews, when informants were asked: *How has the oil and gas industry affected your livelihoods?* Most of them provided only information about the negative impacts of the oil and gas exploration on their livelihoods. In such situations, the question was therefore rephrased as: *what has been the situation of fishing before the exploration and production of oil and gas and what has been the situation of your fishing activities after the exploration and production of oil and gas?* Alternatively, I asked the question in Twi. In this way, the informants and I had a similar understanding of the question to a large extent which improved validity of the data. Also, my positionality influenced the kind of answers I received. For instance, during the early phase of the fieldwork when I was ascribed various statuses such as a government official, a worker from an oil and gas company, a worker of an NGO, informants portrayed themselves as people facing a lot of challenges, affecting the answers they provided. I therefore had to explain who I was (a student researcher) and the purpose of my research. This helped in the improvement of the validity of data.

Transferability refers to the degree to which one's research findings can be applicable in similar situations (Shenton, 2004). Knowledge from a research or study can be transferred to other similar situations, "depending on the degree of temporal and contextual similarity" (Guba and Lincoln, 1982, cited in Gobo, 2008: 197). Schwandt stated that Lincoln and Guba "urge the investigator to provide sufficient details … so that readers can engage in reasonable but modest speculation about whether the findings are applicable to other cases" (1997: 58). A thick description of the research and the research process has been provided in this study.

Confirmability questions how the research findings are supported by the data collected. This is a process to establish whether the researcher has been bias during the study. This is due to the assumption that qualitative research allows the research to bring a unique perspective to the study. Lincoln and Guba (1985, cited in Shenton, 2004: 72) argue that confirmability can be established through the use of triangulation and "detailed methodological description". Triangulation and a vivid or detailed research process have been widely used in this study.

CHAPTER FOUR
FISHING AND FISH TRADE: MAKING A LIVELIHOOD IN SHAMA

4.0 Introduction

This chapter is divided into two parts. The first part focuses on artisanal fishing in Shama. It describes the types of gears used, the types of fish caught and fishermen's coping strategies in times of difficulty. The second part explores the fish trade business in Shama with focus on sources of fish supply, how fish is processed and the market destinations, transportation and sale of fish at the market centres. Each part of the chapter concludes with the challenges faced by fishermen and fish traders.

4.1 Fishing in Shama

Fishing is crucial for the local economy in Shama. Its importance in the town cannot be overemphasized. It serves as a source of food (protein, minerals and vitamins) for daily meals. It is also a source of income. As such, children develop an interest in the fishing business at an early stage in life. A 60 year old canoe owner narrated: *"I remembered having interest in fishing when I was in class three. Because of family issues* [lack of funding]*, I couldn't complete school. I started helping some people at the landing beaches. I was not trained in the field by then. During those times my dad had a canoe so we went to several places including Cape Coast"*. Another fisherman recounts how he used to escape from school to work on the beach. *"I used to run away from class to the seaside. I was not interested in school. I wanted to be in the fishing business and earn my own money".* The situation is still the same. Indeed during field work in the study area, I observed that children of school going ages are often seen around the landing beaches either playing or helping fishermen with their fishing activities.

4.1.1 Landing beaches

Ghana has a total of 334 landing beaches dotted along its coastline (Amador et al., 2006: 6). There are two landing beaches in Shama (See map 1). These are situated at Apo and Bentsir. Apo is located at the easternmost part of Shama. Its landing beach is located along the banks of the River Pra, close to the Pra Estuary. The currents of the river are much calmer hence the beach is a suitable location for the landing of canoes. A large number of canoes are usually landed at Apo. The landing beach at Bentsir, on the other hand, is located along the shores of the sea. Since the currents of the sea are strong, Bentsir has a rough landing beach. Many fishermen therefore prefer to land their canoes at Apo. Anlo Beach, a migrant town, has a

similar landing beach as Bentsir. It is also located along the shores of the sea hence has a rough beach. Since the town is located on a strip of land between the Pra River and the sea, fishermen prefer to land their canoes along the banks of the river.

4.1.2 Types of canoe and gears used

Dugout canoes are the main fishing vessels used in Shama. Wooden canoes are constructed from a single log of wood of the tree species, *Triplochiton scleroxylon*, which is locally known as *wawa*, and *Ceiba pentandra* locally known as *Onyina*. They vary in terms of size and the gears used, and have been classified into three main groups "the small-sized canoes, medium-sized canoes and large canoes" (Finegold et al., 2010: 8). The small-sized canoes are also known as 'one-man' canoes. Usually 4-5 meters long, small sized canoes are mainly driven by paddles (ibid.). The medium sized ones are 6-11 meters long and mostly propelled by sails, paddles and outboard motors, whereas the large ones are 11-17 meters long and are usually propelled by outboard motors (ibid.).

Fishermen in Apo and Bentsir operate different sizes of canoes. The medium and large sized canoes operating outboard motors are however the common canoes used. Almost all canoes in Shama are motorized since fishing is done in the deep seas. There are however small unmotorized canoes used by men and women for crossing the Pra River to neighbouring coastal towns and in search of firewood. Since 1986, Apo and Bentsir landing beaches have recorded an increase in the number of canoes from 257 to 489 canoes in 2004 (Amador et al., 2006). According to the chief fisherman of Bentsir, in 2014 he had about 300 canoes under his jurisdiction with about 200 canoe owners, six of which were women. Fishermen at the Anlo Beach however use small canoes for their beach seine fishing. Their canoes are often driven by paddling (ibid.) and have no outboard motors. At the Anlo Beach 20 canoes were recorded in 1986 and 30 canoes were recorded in 2004 showing a slight increase in the number of canoes (ibid.).

The artisanal sub-sector is characterized by the use of several types of gear. Marine fishing in Ghana is essentially a full-time occupation with fishermen fishing all year round. Due to this, fishermen operate different gears for harvesting different species of fish available during different times of the year. Some of these gears include purse seines (*ali/poli/watsa*), beach seines, gill nets (bottom set nets and the Drift Gill Nets (DGN)) (Amador et al., 2006). Artisanal fishermen also use the hook and line.

The *ali/poli/watsa* type of gear in the Ghanaian artisanal fleet operates on large canoes in the size range of 12-19.5 meters long and 1.2-2.4 meters wide (Amador et al., 2006: 4). This fishing gear is a purse seine which is made of three types of nets, *ali*, *poli* and *watsa* therefore it is called *ali/poli/watsa* (Koranteng, 1995). The *ali/poli/watsa* purse seine is the main artisanal fishing gear used for targeting mostly medium and small pelagic fish. It is used in the *sardinella* (herring) fishery for harvesting herrings. An official at the Ministry of Fisheries and Aquaculture Development who is a retired fisherman describes how the *ali/poli/watsa* fishing gears are used, *"With the ali/poli/watsa, they see the school of fish on the surface before they will circle their net around it. They pass ropes through rings and so when they see the school on the surface of the sea, they will round the school of the fish with their net and they will pull this particular ring until it closes up. The fish will be in the net like a basket. To collect the fish, they use a metal ring like a ladle to scoop all the fish* [into the canoes] *till the time the fish finishes in the net. They see the fish before they will catch it so if they feel they are not getting fish they use the lights". Ali/poli/watsa* canoes are often propelled by 25-40 hp outboard motors. They normally have a crew of up to and even exceeding 20 men (Sheeves, 1991).

Bottom set nets are a type gill net. They consist of a single netting wall kept more or less vertical by a float line and are fixed to the bottom or at a certain distance above by means of anchors or weights (Doyi, 1984, cited in Amador et al., 2006). A retired fisherman and a canoe owner describes how this type of fishing gear is used, *"The bottom set nets are used to catch fishes at the bottom of the sea. The cassava fish, the barracuda are some of the pelagic fishes found at the bottom of the sea. With the set net, you set under the bottom of the sea. You use a big stone to anchor making the net stable under the sea. The stone makes the net stay at one place. When you set your net here, it stays there until the next morning when you are ready to collect it".* Set nets target a variety of fish species such as pelagic, demersal and benthic species.

The dominant type of fishing gear operated in Shama is the Drift Gill Net (DGN). This is also a type of gill net and is popularly known as the *anifa-anifa* in this town. According to the chief fisherman of Apo, the DGN was introduced at a time when there was a shift from driving on the right to the left in Ghana hence the name *anifa-anifa* (*Anifa* means on the right hand side). It is different from the other nets in terms of its large size which measures 100-450 meters long and 15-20 meters deep (FAO, 2002). These nets are operated on the surface or at a certain distance below it. The DGN fleet operates beyond a 50 meter depth zone. With this

gear, the nets and the craft which are often attached together, drift freely with the current. A retired fisherman who is also an official at the Ministry of Fisheries and Aquaculture describes how the DGN is operated: *"With the drift gill net, you will go and start setting the net on the surface. If there are about 20 nets we set all the nets on the surface. The net is set vertically inside the sea. Then you put your lights* [reflectors] *on top of it for incoming vessels to know that there is a canoe on the sea. It is also used during the night. Every ship has got a radar. The radar picks anything on top of the sea so that the ship will not go and hit it. The canoe is far ahead of the nets and the sea will be drifting you. So the DGN* [canoes] *always uses compass because they go far".*

The *anifa-anifa* fishery is carried out in outboard driven canoes manned by four or more fishermen. The canoes usually drift along with the currents, hence the use of the compass. The compass enables them to find their way back to the shores. According to a canoe owner, some rich fishermen in Shama use the Geographic Positioning System (GPS) which costs about GH¢800 (US$266.7) (in June 2014, US$1 was equivalent to GH¢3). This device accurately determines a fishing vessel's position and course. According to one of the fishermen, the difference between the compass and the GPS is that the compass shows the direction of places but the GPS provides names and information about the places.

Fishing is done in the deep seas and 9-10 crew members are deployed depending on the size of the canoe. Fishermen usually set off to sea as early as 6:00 GMT. Between three to four days is spent at sea. Previously, fishermen could go to sea and return on the same day. This trend has however changed. Enquiry into the issue revealed two key reasons. The first is technology. With the introduction of the ice box, which keeps ice blocks for some days, fishermen can now preserve their fish at sea. A crew member says: "*These days we take ice blocks along so we are able to spend days at sea. This was not so about 15 years ago. We returned the next day because we did not have good ice boxes to preserve it*". There is a small ice manufacturing factory situated at the outskirts of the town between Shama and Amenano. This factory provides ice for fishermen to take to sea. Ice is also sometimes used when transporting fresh fish to a more distant processing centre. The second reason given was the scarcity of fish. All the fishermen interviewed complained about the scarcity of fish. A frustrated fisherman poured out his heart, *"We spend the night at sea because we don't get fish to harvest. So we keep on casting our nets and spending the night until we get some fish catch".*

The hook and line fishing is a traditional way of catching fish in Ghana. Fish are attracted by natural or artificial bait placed on hooks fixed to lines. The hook is used in catching large pelagic fish. In Shama, the hook and lines are sometimes used in combination with the DGN to catch large fish such as shark. Fishermen who use the hook and line often stay out at sea for two to four days (Amador et al., 2006). They have ice boxes in which they keep the fish catch.

Although fishermen located in the migrant town Anlo Beach practice estuary fishing using cast nets (Coastal Resources Centre/Friends of the Nation, 2010), the dominant fishing gear they operate is the beach seine. Beach seine is a type of fishing gear which is usually operated either from the sea shore or from the banks of lagoons and lakes. A typical beach seine has weights attached to the lead line at the bottom of the net with floats attached to the float line at the top of the net. The nets are set vertically in the water. A large crew stands at the shore to pull the net. It is often set from shore to encircle a school of fish. An elder at the Anlo Beach describes how the beach seine fishing is done, "*We don't use the outboard motor as other fishermen. We use the paddle here. So very early in the morning, about 12 crew members will enter the canoe. They will wait for and count the waves. When the sea tide is very low, then they set off to cast their nets and paddle back to the shore. They hold the ropes and begin to pull it. There is a sack at the centre of the net. All the fish gets into the sack as the ropes are pulled. After the sack is pulled onshore, the fish harvested are packed into big pans using small baskets. A full pan of fish is termed as a 'crate' of fish*".

4.1.3 Management structure of a canoe and the sharing of proceeds

Fishermen working in a canoe are not a homogeneous group (see figure 1). They comprise different categories of people who perform different roles. There is the canoe owner, the clerk and the crew members (including the captain of the canoe). These groups can be placed in a form of a hierarchy. The owner of a canoe can either be a man or woman. The role of the owner is to provide premix fuel and fishing inputs. He or she also provides money for the maintenance of the canoe. A 40 year old canoe owner describes his roles, *"One of my roles as a canoe owner is to provide money for the buying of premix fuel to be used for fishing. I also provide fishing equipment such as nets, outboard motors and floats. Any problem encountered at sea is also communicated to me. When the canoe needs repairs, I provide money for the repairs".*

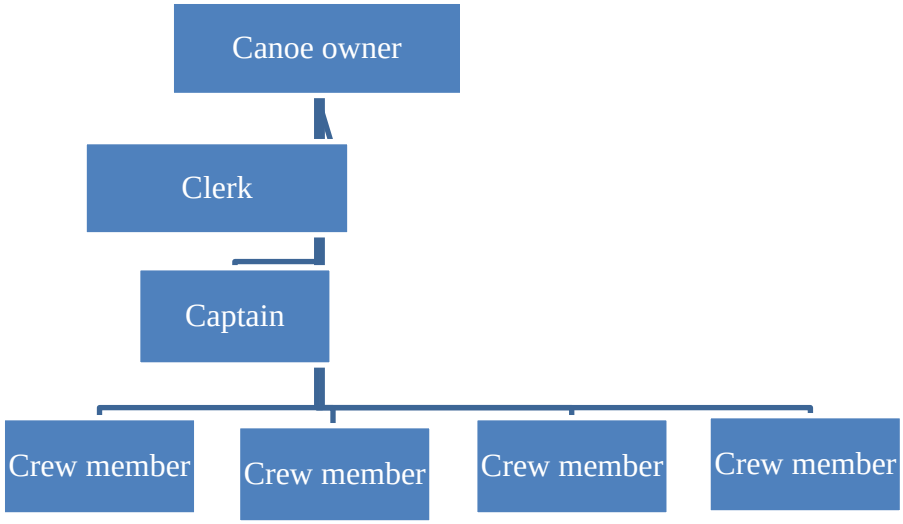
Canoe owners are often the clerks of their own canoes. Some however employ the services of other fishermen. These clerks are often friends or relatives of the canoe owner. The role of the clerk is to take records of all activities within a canoe and report back to the canoe owner. He assists the owner of the canoe to count fish, negotiate the price and sell fish on the beach. On canoes without clerks, this role is performed by the captain of the crew. One of the clerks interviewed was 35 years old and had a wife and eight children. He was a canoe owner but has been facing some financial difficulties. Therefore his canoe is lying idle and he has been working as a clerk on his friend's canoe for a year now. He describes the roles of a clerk as follows, *"What I do is to make sure I am at the landing beach before our canoe leaves for sea. I take records of the gallons of premix fuel, the nets, check the condition of the outboard motor and also check the food being taken to sea. I also check the number of the crew members. After the canoe is landed at the shores after a fishing trip, I record so many things including the amount and type of fish caught. All these records are reported back to the canoe owner".* Literacy in canoe fisheries (see also Maddox and Overå, 2009) is now becoming a precondition for clerks who have to document records of fish catches, debts and profits amongst others.

The crew members are made up of the captain, a steer's man and a "motor-man". The captain is the leader of the crew members (Overå, 1998: 120). He is the closest partner to the canoe owner and to the clerk (if the canoe has a clerk). Captains of canoes are therefore often good friends or relatives of the canoe owner. In the case of a woman owning a canoe, her son is often the captain of her canoe. Sons are often recruited as captains on their mother's canoes because of the matrilineal system of kinship practiced in Fante communities (Overå, 1998; Britwum, 2009). The captain is in charge of affairs at sea. He reports all issues encountered at sea to the clerk who in turn reports to the canoe owner. After the canoe is landed, the captain is in charge of assisting the canoe owner or the clerk in the counting of fish which must be done correctly. He also assists in price negotiations of fish.

The rest of the crew members help with fishing at sea. Crew members are often good friends or relatives of the canoe owner. Some are also non-relatives who have heard about a canoe owner needing helpers. They work with a canoe for one or more seasons and then shift to another canoe the next season (Overå, 1998). Some of these non-relatives are however able to work with a canoe owner for several years if they are loyal and trustworthy (ibid). The fishing business thrives on a system of kinship and trust (ibid: 143). Trustworthiness is an important quality people in the fishing business look out for. This was, for instance, revealed in an

informal conversation I had with the father of a key informant. The father was a 92 year old retired fisherman who had a two storey building located at Apo. He has four sons and two daughters and has seven canoes. According to him, when he decided to retire from his fishing business, he put all his canoes in charge of his third son. The reason he gave was that, his third son was his only child who had received formal education. He was also the only son he could trust. The issue of trust runs through the chain of fishing activities from the canoe owner employing trusted friends and relatives to trusting their wives in selling their portion of fish catch at the market centres.

Figure 3: **Management structure of a canoe.**



Source: Field data, 2014

Once the canoe is landed on the Bentsir and Apo landing beaches, crew members carry the fish from the canoe to the beach using "head pans". The fish is usually carried by children who are either part of the crew or working on the beach. Thereafter, the fish catch is shared. Fish is shared based on indicators such as age or social status. Accordingly, the elderly crew members receive more than the young ones and the canoe owner receives more than the clerk who also receives more than the captain of the crew members. The captain also receives more than the crew members. The income realized from fish sales are divided into two equal parts after the costs are deducted. After the operational and maintenance costs (petrol, gear repairs, outboards etc.) are deducted, the remaining part of the income from the catch is shared equally among the crew members and the canoe owner. The large canoes operate for up to two years before sharing proceeds while the small canoes share proceeds after every fishing

season. Fishermen however receive a little "chop fish" (which means fish for cooking) after a fishing trip.

The dominant criterion for sharing proceeds at the Anlo Beach is to share proceeds from fish after it has been sold. This sharing of proceedings is done at the end of the seventh or ninth month of operations. The proportion received by each fisherman depends on the labour they have contributed. A 35 year old fisherman explains this, "*What most of us do here is company work. We work for a period of nine months before the money accumulated is shared among us. We are able to earn about GH¢100 to GH¢200 (US$33.3 to US$66.7 dollars) when the accumulated money is shared".* They also receive a little "chop fish" after every fishing trip.

4.1.4 Seasonality of fish and coping strategies

Fish production is driven by the seasonal coastal upwelling of the western Gulf of Guinea (Kwadjosse, 2009). This consists of a yearly major upwelling and a minor upwelling duration. The fisheries are therefore highly seasonal. The rich fisheries resources made available during the major upwelling duration is what supports the total fishing industry in the Shama waters.

The bumper season in Shama occurs between July and September. According to the chief fisherman of Bentsir, *"Part of July, August and the following month September, we get a lot of fish. That is why the local name of August is "Di fuu", meaning plenty of fish or plenty of food. We also get a lot of fish in September. Thereafter the level of fish catch begins to decline".* Due to the bumper season, fishermen make a lot of profit. A crew member says, "*Our canoe catches a lot of big fishes. These include tuna, shark, marlin, sword fish* [etsietsi], *manta ray* [mbadei], *and skip jack. We also catch herrings. During the bumper season, we get a lot of fish catch which gives us a lot of profit".* Species harvested by fishermen are mostly pelagic species such as tuna, marlin, herring, skipjack, manta ray, sailfish, dolphins, sword fish etc. They also harvest shark.

Plate 4: **Dolphin (left) and young dolphin and sword fish with sword cut off (right) at landing beach in Shama.**

Fishermen at the Anlo Beach catch different species of fish. Species caught include cassava fish, lobsters and white shrimps. The type of fish caught depends on the particular season. According to one of the elders, the dominant fish caught is the long fin herring which is known as *kamfla* in the Ewe language. However, during the rainy season when the river enters the sea, the type of fish usually caught is the white shrimp, *seseo* in Ewe. Silver fish is also harvested between September and November.

The lean season occurs from January to June. Although fish catches are low during this season, fishermen in Shama continue fishing. Fishing in this season, according to them, is by luck. Debts are usually accrued after such fishing trips. These debts accumulate during the lean season and are paid off during the bumper season when huge profit margins are realized. One of the canoe owners explains, *"We always pray to God to give us more fish catch during the bumper season so that we can pay our debts".* Another says, *"We sometimes get a lot of profit, we sometimes incur losses and we keep on balancing the two in order to survive. It's usually during July, August and September, when there is a lot of fish catch we get a lot of profit. We then pay most of the debts we incurred during the lean season".*

Artisanal fishermen are well noted for having effective coping strategies in response to the natural fluctuations in upwelling dynamics (Allison and Ellis, 2001). Common among these strategies include seasonal or permanent migration, farming or help from friends or relatives.

Table 6: **Coping and survival strategies when faced with financial difficulties among the sampled 17 fishermen*.**

Coping strategies	**No. of fishermen**
Migrate	17
Use bank savings	13
Help from friends	6
Loans	10
Engage in non-fishing activities	1
Total	**47**

Source: Field data, 2014.***Note:** The informants could mention more than one coping strategy, therefore the total number of answers is higher than the total number of informants*.

Fishermen migrate for several reasons. One of the most basic reasons can be attributed to the seasonality of their occupation (Odotei, 1992). Fishermen try to keep up with the seasonality of their occupation by following the fish to the locality which is experiencing its glut season at any particular time (ibid.). Some of these movements only last for a season and the fishermen come home after the fishing season. All fishermen interviewed in Shama and Anlo Beach have migrated at one point in time or another. They usually migrate to neighbouring towns in search of fish during the lean season. This type of migration is short-term, *"I have travelled to Axim, Moree and even as far as Keta in the Volta Region using a canoe. I travelled because of fishing. I travelled there because I learnt there was a lot of fish over there"* (30 year old crew member).

However, some of the fishermen migrate to other neighbouring countries in search of fish. Migrants who stay longer attribute their long stay in these countries to factors such as "economic and political conditions" (Overå, 2001: 2). The price of fishing inputs such as premix fuel may also contribute to the decision to migrate. A 32 year old crew member in Shama explains his reason for migrating to neighbouring countries, *"I have travelled to some places outside Ghana. I have travelled to Cote D'Ivoire, Nigeria and Liberia. I went there in search of fish. Some of my friends are even in Cote D'Ivoire now. These days, fishing is no longer as profitable as it used to be in Ghana. The cost of premix fuel is also rising. We the*

fishermen therefore prefer to go to other countries to have our fishing business there". According to Marquette et al. (2002), reasons fishermen migrate to Cote D'Ivoire include among others "lower costs of living, better exchange rates and markets. Fishermen are therefore able to save some money during the lean season.

Another Ewe beach seine fisherman at the Anlo Beach narrates his story, *"I have been fishing for the past 20 years. I have travelled to many places. You know this town is a migrant town* [see chapter 1]. *All the people you see here are the descendants of our late forefathers who migrated from the Volta Region to Shama to fish. Migration is in our blood. It is part of us. I recently travelled to Cote D'Ivoire because these days the level of fish catch has reduced. I think the ali/poli/watsa fishermen are depleting our fish stocks".*

Farming as an additional livelihood is not practiced to any significant extent in Shama. All the fishermen interviewed were solely into the fishing business. An elder at the Apo landing beach who is a canoe owner says, *"To be honest with you, fishermen in Shama do not have any other additional livelihood. We do not farm. It is normally those in the Nzema areas who are involved in farming".* Another canoe owner asserts that, *"Apart from fishing, there is no other lucrative job here in Shama. You can sometimes open a small shop but all our big monies come from fishing".* Canoe owners are more interested in reinvesting in their fishing occupation than to engage in an additional livelihood. According to a 35 year old canoe owner, a father of eight children, four of whom are in school, "*We don't have any other source of livelihood. There are no jobs here. The only one we have is the fishing business. Anyway, I remember I became a bit frustrated three years back and so I decided to go to one of the farming communities in Takoradi to carry cocoa. After we were able to save some money and heard the fishing business was booming again, we decided to come back to fishing".* This emphasizes the fact that reinvesting money saved from other sources into the fishing business is a common phenomenon in Shama.

Fishermen in the migrant town, Anlo Beach, however had additional livelihoods. During the lean season when fish catch is low, most of these fishermen tend to their farms. These farms are located a few kilometres away from the town. The major crops grown include maize and cassava. Most of these crops are usually grown on a subsistence level, *"We grow cassava and maize on our farms. We usually farm during the lean season so our crops are mostly grown for family consumption"*, a fisherman at the Anlo Beach said. Occasionally, surplus produce is sold at the local market at Shama because the Anlo Beach has not got a market centre.

Another strategy used by fishermen (canoe owners and crew members) in Shama and the Anlo Beach is to go to a bank for a loan when faced with difficulties. According to one of the canoe owners, when faced with challenges, the first place he goes to is the bank. He saves at the Lower Pra Rural bank in Shama and either goes there to withdraw his bank savings or obtain a loan. Others also receive help from friends and relatives, *"I have been facing some financial problems for about a year now. So I have decided to leave my canoe lying idle and partner with a friend. I help him in the management and administration of his canoes for which I receive some little money. I am hoping by next year, I would be able to save enough money to buy an outboard motor for my canoe. My partner is a friend of mine"* (35 year old canoe owner). Social relations therefore serve as an important social capital on which fishermen draw on when faced with financial challenges.

Destruction of fishing equipment can serve as a big shock to canoe owners and crew members. Canoe owners complained about the rising cost of fishing equipment. Due to this, majority of canoe owners have adopted a strategy of repairing instead of replacing destroyed equipment. A 35 year old canoe owner explains how he deals with such an issue, *"The work is very difficult. Things are expensive now. We used to replace our damaged fishing equipment with new ones but that is no longer the case. What we do now is to repair the old one instead of buying a new one. An outboard motor now costs over GH¢12000 (US$4000)".* Fishing equipment has become expensive hence defective equipment were repaired instead of being replaced with new ones.

4.1.5 Sources of capital

Odotei (1992) acknowledges the important role played by women fish traders extending credit to the fishermen. Such credit goes into investment in canoes, outboard motors, fishing nets, premix fuel and the like. Some of the fishermen interviewed go to fish traders for capital for their fishing business. A 64 year old canoe owner with two canoes had an aunt pre-financing his fishing activities when he started his fishing business. He narrates his story, *"I started my work by assisting some fishermen. I worked for someone who paid me. Those days, I never knew I would even get money to buy a canoe. I used to work with some fish traders. I was however motivated by big fishermen I saw. Those times there were no rural banks in Shama. There was a Commercial bank at Sekondi and the Agric Development Bank at Takoradi. It is the fish traders who have helped me a great deal. Some of them were my aunties. We gave our fish catch to them, they sell and give our money back to us. Still, I sometimes go to them for loans when I am facing financial difficulties".*

However, some of the fishermen interviewed were not interested in seeking financial favours from these women fish traders. A 35 year old canoe owner offers his explanation, "*There are women who give money to fishermen. But I don't go for money from them because I am the shy type. I prefer to go to the banks".* Canoe owners and crew members interviewed go to banks or the credit unions to obtain loans for their fishing business. Fishermen save their money, especially part of the huge profits accrued during the bumper season. There are a number of financial institutions in the town including the Lower Pra Rural Bank, which has its headquarters in Shama where most of the sampled fishermen saved their money. There was also the SHACO credit union which has been in operation for almost 3 years (Coastal Resources/Friends of the Nation, 2010). Some fishermen use bank savings as their source of capital while others self-finance their fishing activities. In the case of fishermen at the Anlo Beach, three out of the five fishermen interviewed obtain their credit from their fish traders. Two of the fishermen self-finance their fishing trips.

Table 7: **Sources of capital among the sampled 17 fishermen*.**

Source of capital	**No. of fishermen**
Fish traders	6
Financial Institutions/ credit union	10
Self-financing	6
Family	2
Total	**24**

Source: Field data, 2014.***Note:** The informants could mention more than one source of capital, therefore the total number of answers is higher than the total number of informants*.

All the canoe owners interviewed started their fishing business by assisting either a relative or friend. They thereafter saved some money and acquired their own canoes and fishing equipment. One of the canoe owners responds, *"I formerly started fishing as a crew member. I however saved some money and later bought a canoe and a fishing net".* It was observed that canoe owners had been able to acquire more physical assets than crew members. One of the canoe owners says, *"I am building a house, a self-contained house. I have a car too. I am even deciding to start with another building project by the end of this fishing season".* Of the

6 crew members interviewed, only one 43 year old crew member had been able to build a house of his own in which he lives with his wife, who is a fish trader, and their seven children.

4.1.6 Institutions and organizations in Shama

The *apofohene* (chief fisherman) is the leader of the fishermen. His election is based on several factors including heritance, experience, intelligence and reputation (Overå, 2001). The duties of the chief fisherman range from presiding over the work of fishing; settling disputes and negotiations between fishermen (for example if they destroy each other's gears); he gives the fishermen advice; issues penalties and deals with actions required when there is accident at sea and, supervise the distribution of any communal inputs (Overå, 2001; Kraan, 2009). He collaborates with the law enforcement agencies to curb crime and injustices. Most cases in Shama were brought before the chief fishermen for settlement. The chief fisherman of Bentsir describes some of his roles, *"Matters arising from the sea are what I deal with. Some issues are not to be sent to the police station. Such issues are brought before me and I help in settling them".* For instance, he said, *"if someone owes somebody and refuses to pay, the issue is not supposed to be reported to the police station. It is brought before me. It doesn't matter whether you are a fisherman or not. So far as you are living within my locality, the issue is brought before me. We are all under the omanhene. So anytime we are unable to settle an issue, it is transferred to the omanhene. Those issues that are criminal cases are taken to the police station".*

The *apofohene* serves as a religious leader. He is both a Christian and a traditional believer (what is termed as syncretism). He leads fisher folk in prayers to God as well as in the performance of rituals. For instance, he leads fishermen in the performance of rituals for good fishing harvests. Also, when a fisherman drowns at sea, it is the responsibility of the chief fisherman to take the matter up and gather his people. The case is first and foremost reported at the police station. After the performance of some rituals, members of the town are then informed and a search party is dispatched in search of the body. While the search is on-going, the case is investigated at the chief fisherman's office and the appropriate verdict is given. There are instances when a fisherman is pushed into the sea by a colleague fisherman. The chief fisherman of Bentsir recently settled such a case. "*There was this boy, a crew member, who pushed another fisherman into the sea. They were fighting over food [gari and fish] they had prepared at sea. He wanted to kill him there. The case was brought here but the boy refused to cooperate. So the issue was transferred to the police station".* There was also

another case of a fisherman who owed another fisherman some money and refused to pay back. There was a misunderstanding between them and the issue was brought before the chief fisherman of Apo. After his investigation, it was revealed that the fisherman had some savings in the bank and was deliberately refusing to pay the money. He was given some days to bring the money to the chief fisherman's office and the case was settled.

Another role of the *apofohene* is to serve as a link between his fishermen and governmental institutions (see also Overå, 1998: 122). He attends meetings with government institutions. He also receives fishing equipment on behalf of his people. The *apofohene* of Bentsir for instance receives outboard motors from the government and helps in its distribution to fishermen under his authority.

The two chief fishermen of Apo and Bentsir are also heads of the Ghana National Canoe Fishermen Council (GNCFC) in Shama. This organisation has two branches; the Shama-Apo branch and the branch at Bentsir. At the Apo landing beach, the name of this council has been inscribed on a wooden structure. This wooden structure serves as a room for the storage and sale of premix fuel. The two landing beaches also had their own beach committees. That of Bentsir has been boldly inscribed on their conference room building.

Plate 5: **Fisher organisations in Shama.**

According to the fishermen, one of the aims of the GNCFC is to provide a common platform where issues concerning fishing and its related activities can be discussed. Another aim is to assist members in times of need. Fishermen however said that the organisation was not so effective because their occupation involved a lot of travelling, hence disabling them from

attending meetings. Also, as fishermen are either out at sea or resting, it is hard for them to participate unless meetings are held on days they are not working (especially on Tuesdays). Apart from the GNCFC and its beach committees, there were no other active fisherman associations in Shama.

At the Anlo Beach, associations revolve around people working in a canoe. Every canoe is organized into a 'company' which has about 12 to 15 members depending on the number of people working on the canoe. Each 'company' is considered as an association. 'Company' members help one another in times of need. A fisherman's reply to my question about associations at the Anlo Beach was, *"Company work also means associations. Every canoe company is an association".*

4.1.7 Fisheries related problems in Shama

Fishermen in Shama and the Anlo Beach complained about a number of challenges they face in their occupation. For instance, fishermen in Shama complained about the rising cost of premix fuel, *"The issue of premix fuel is now making our work very expensive. It is making our work very difficult".* The cost of a gallon of premix fuel is GH ¢3.50 (US$1.16). Depending on the size, the type of gear and the days spent at sea, a canoe averagely needs 150 gallons **(**GH ¢525 equivalent to US$175) for a fishing trip. The costs of outboard motors and fishing nets have also risen drastically. According to the chief fisherman of Bentsir, the price of an outboard motor has risen from GH¢5,900 (US$1,966) three years ago to GH¢110, 000 (US$36,666). This increase, he said, can be attributed to the depreciation of the Ghanaian cedi against the US dollar which affects the price of all imported goods. Fishermen at the Anlo Beach also complained about the rising cost of fishing nets.

Artisanal fishing has witnessed declining fish catches in the last decade. The chief fisherman of Bentsir complains *"Present times are not like the former times. Fishermen used to go to sea and return the same day. These days, the fish has reduced"*. Declining fish stocks, according to the fishermen interviewed, can be attributed to several factors (see chapter five) including bad fishing practices and the invasion of foreign fishing vessels in Ghanaian waters. Although fishermen attest to the fact that over fishing is a contributing factor to the declining fish stocks, they still insisted that the 'no go' fishing zones around offshore oil rigs and increased shipping traffic have had a harmful impact on their catch. A World Bank appraisal report for Ghana however attributes declining fishing stocks to poor management. It states, "The root cause of the declining profitability of Ghana's fisheries lies in the failure of the

Government to control access to the resources, so that there are too many vessels competing to catch too few fish, with little incentive to invest in management and value addition" (World Bank, 2011). According to Atta-Mills et al. (2004, cited in Nunoo et al., 2014), majority of the foreign fishing vessels operate illegally in Ghana. This, in addition to other illegal fishing methods practiced by fishermen is contributing to the depleting fish stocks.

Table 8: **Annual fish catch estimates (for all gears) for Shama (Apo and Bentsir) from 2000-2012.**

Year	Fish catch (KG)
2000	6995,40
2001	7785,66
2002	9941,84
2003	8437,04
2004	16065,26
2005	13047,72
2006	20402,90
2007	24164,83
2008	69612,18
2009	22039,65
2010	18293,83
2011	11312,45
2012	10629,51

Source: Fisheries Research Unit Tema, 2012

Declining fish stocks is also prevalent at the Anlo Beach. According to a study by the Coastal Resources Centre/Friends of the Nation (2010: 44) fishermen at the Anlo Beach indicated that, "during the bumper harvest, an average of 60 pans of fish was harvested 20 years ago while the current maximum catch lies between 8 to 20 pans".

Bad fishing practices such as light fishing, the use of dynamite, carbide, DDT and small mesh sizes have been issues of great concern in most fishing communities. In Shama, traditional

laws enforced by the two chief fishermen, prohibit the use of such fishing methods. The chief fishermen said that their fishermen were not engaged in such bad fishing practices. They however accused fishermen in the other coastal towns within the Shama district as responsible. Prohibition of light fishing in Shama has contributed to rising conflicts at sea between artisanal fishers. This is because the fishery is open access and the fact that light fishing is prohibited by some communities does not exclude others from engaging in the practice in common fishing grounds.

At the Anlo Beach, inappropriate fishing methods were a great concern. Fishermen at the Anlo Beach blamed fishermen who went for deep sea fishing, especially fishermen at Shama, for light fishing. *"Light fishing is a key contributing factor to the reduction of fish. Since we do not go far into the deep seas, most of the fish that we usually catch are now being exploited by the light fishers. We no longer get so much fish".* An effort by the chief fisherman and his council to curb this proved futile. This is because fishermen from Shama also shifted the blame to fishermen living in other coastal towns.

Lower Pra Rural bank is a major creditor for fishermen. Canoe owners and crew members expressed the difficulty they encounter in accessing loans to operate their businesses. They referred to the issue of providing guarantors as one of the major constraints. Another problem was the high interest rates (over 30%) charged. Five of the fishermen interviewed expressed their worry about the high interest rates charged on loans received from the banks. *"It hasn't been easy at all for me these days because I take care of my parents and siblings in addition to my wife and children. I therefore always deal with the banks. Even with the banks too, we have to pay huge interest after taking loans" (*35 year old canoe owner*).*

During the lean season, some fishermen use part of the loans obtained from banks and credit unions to cater for their families. Since caring for one's family does not yield profit, fishermen are unable to pay back loans leading to the confiscation of their properties. A 35 year old crew member tells a story about a friend who moved out of Shama. His friend owned a canoe and his wife was a fish trader. His canoe needed maintenance so he went for a loan from the bank. Due to certain challenges, he could not repay the loan leading to the confiscation of his house. He therefore left Shama and settled elsewhere. Fishermen at the Anlo Beach also expressed similar problems particularly their inability to easily access loans from the bank. This was a main obstacle to the growth and development of their businesses.

The issue of weak institutions is a key problem at the Anlo Beach. The community had weak leadership in fisheries management compared with Shama. According to the fishermen interviewed, there was disunity, mistrust and conflicts among the leaders of this fishing community and members of the community. The chief fisherman was not proactive with regards to issues concerning fisheries. The issue of building a market centre for the trading of fish, for instance, has raised a lot of conflicts. The chief fisherman and his elders had decided to locate the market at a place where the youths are opposed to. All efforts by the chief fisherman and his elders to situate the market there have proved futile. An elder says, *"With the issue of the market, we are all migrants hence we come from different places* [in the Volta Region]. *The chief over here also comes from another place. So we have to unite, look for a land and build the market there. But the problem is we are not united".*

Fishermen at the Anlo Beach complained about the poor state of infrastructure development. The community lacked electricity and portable water supply. Water in most of the hand-dug wells is salty and not drinkable, so residents including fishermen travel by small paddle canoes to Apo for potable water. The main road network linking the community with other towns and villages was untarred and in a bad state. The community also lacked adequate toilet facilities. Residents therefore used the beach as their place of convenience. They also needed a market place to sell their fish. A combination of these factors is negatively affecting productivity in the community. Fishermen in Shama similarly complained about poor sanitation due to the lack of proper infrastructure. Due to the lack of garbage collection sites in Shama, wastes are dumped into the sea. These are washed back ashore to litter landing sites.

Plate 6: **Landing site at Apo beach.**

There have been several complaints of coastal erosion in Shama and Anlo Beach. Shama experiences occasional floods since the half-constructed sea defence wall along the shoreline

has done little to prevent sea erosion in some parts of Shama and nearby villages. The situation at the Anlo Beach is much severe with fishermen complaining about the destruction of their houses the school building by sea erosion. They attributed the cause of this coastal erosion to the construction of the Takoradi Harbour.

The above problems indicate that fishermen in Shama and Anlo Beach face a lot of challenges in order to secure their livelihood. These vulnerabilities, as shall be discussed later, may reduce or increase with the impacts of the emerging oil and gas industry.

4.2 FISH TRADE IN SHAMA

4.2.1 Fish supply and handling

After fish is landed on the beach, the *konkohene* (chief fish trader) or her representative negotiates a price with the first boat that arrives and this price is generally valid for the rest of the day. The fish is then handed over to the canoe owner's wife to be sold to the other fish traders. Women are entitled to their husband's share of the catch (Overå, 1998: 130) or are supplied fish from their relatives. Fish traders in Shama buy from their husband's canoe or buy from a 'standing woman'. A standing woman is a woman who acts as a link (in terms of credit or fish sales amongst others) between the canoe and the fish traders (Overå, 1992). The situation at the Anlo Beach is not so different from Shama. Women receive shares of fish from their husbands' canoe company.

Some fish traders in Shama and Anlo Beach buy fish on credit. In the past when fish catch was more abundant, fish traders could often buy fish on credit, especially from their husbands or relatives. This trend is however changing. Some of these changes are reflected in what a 35 year old fish trader says: *"Premix fuel has become expensive. Because of that, when they bring their fish here, they expect us to give them ready cash to buy petrol. So if you are a fish trader who has ready cash, then you can go and buy from them. Formerly, this was not so because petrol was not so expensive".* With high levels of inflation and limited access to formal bank credit, fishermen rely increasingly on their earnings as the main source of capital to invest in the purchase of equipment, to cater for their families and the like. This economic trend is gradually changing the traditionally arranged system of buying fish on credit and is replaced by a 'cash and carry' system.

Another reason was attributed to the behaviour of some fish traders. This issue came up during a group interview with fish traders. Some fish traders refuse to pay back their debt after buying fish on credit from fishermen. One of the fish traders explains, "*I would say some of us fish traders are also at fault. Some fish traders take fish from the fishermen and after selling refuse to pay the money back. This is making most canoes land at Sekondi".*

In the lean season when fish catches are low, fish traders in Shama travel to other coastal towns especially to Sekondi, for fish. Some women also purchase frozen fish from cold stores. Fish traders previously purchased their frozen fish from Tema. However, this changed after the completion of the cold store at the Albert Bosumtuwi-Sam (ABS) Fishing Harbour in 1998 in Sekondi. The ABS Fishing Harbour, according to a senior traffic officer at the

harbour, provides modern fish landing and handling support facilities or services for boats and large canoes. It has a large cold storage centre where fish traders buy frozen fish. Fish traders at the Anlo Beach during the lean season either travel to other coastal communities to buy fish or help with work on the farm.

After fish is bought at the landing beaches, they are carried in heavy pans to processing sites for processing. Some fish traders have ovens and smoking sheds within their homesteads. These ovens which are popularly known as "chorkor smokers" are built with red soil (clay) mixed with water, wooden boards and a wire mesh. According to the fish traders, they use such ovens because they are relatively cheap compared to the newly improved ovens (each improved oven costs about GH¢2500 equivalent to US$833.3) introduced by Tullow Oil. The cost of building a "chorkor smoker" was about GH¢200 (US$66.7). Processing sites are often located close to landing sites along the beaches. The processing sites in Shama however lack basic facilities. At the Apo landing beach for instance, due to the lack of running water, fish being processed are usually washed in the river Pra, although it is contaminated by mining activities upstream. Also, due to the lack of sanitation facilities, residents of Shama and the Anlo Beach usually use the beach as their place of convenience which is close to processing sites. This is the same place fish is sometimes sun-dried for sale.

Plate 7: **A fish processing site in Shama.**

Fish is processed in various forms for sale. Apart from frying or boiling as a method of preservation for immediate consumption, the most common methods of preserving fish are salting, sun-drying and fish smoking. Freezing is not a common method of preserving fish in

Shama. This is due to the limited number of freezing facilities. Shama lacks a cold storage facility where fish can be preserved during the fishing season. Freezing facilities are expensive, hence small refrigerators are used for preserving fish for household consumption, *"We don't have a cold store in Shama. During the bumper season, we are unable to store most of our fish. Our fish gets spoilt easily. So what we end up doing is to make sure we sell all the fish we get during the bumper season. The storage facilities are very expensive and they can make the price of fish rise. What I usually do is that during the bumper season, I keep some of the fish in my personal refrigerator for household consumption and sell the rest"* (35 year old fish trader).

Salting is also a method used for the preservation of fish in Shama. Salt is sprinkled on fish before it is smoked. It can also be sprinkled on fish before sun-drying. Sun-drying is often done when fish is spoiled either by heat or bad handling. Such fish are used to make what is locally referred to as *momone. Momone* is fermented fish and is prepared by airing it until it begins to rot. It is then placed in a mixture of salt and water and allowed to settle for a few days after which it is left in the sun to dry. Though none of the "spoilt" fish is discarded, it fetches around half the price of fresh fish. Fish that has been sun-dried can last for a period of three months or more. In Shama, fish of different species including the shark fish are mostly sun-dried for sale at the market.

The common type of preservation method used for fish processing in Shama is smoking. The types of fish species smoked include tuna, herring, mackerel, manta ray, skipjack, shark and dolphins. Fish is cleaned and arranged on stacked racks inside the oven. The big ones like sharks are cut in pieces before they are smoked. Then firewood is lit under the fish through an opening on the side of the oven. The fish is then turned from time to time until it is relatively evenly smoked. The way in which fish is smoked depends on the size and type of fish. Its durability also depends on the length of the smoking process and the storing practice. Some smoked fish can be kept for more than three months. Such fish is usually kept dry and re-smoked about once a week. The dominant method of processing fish at the Anlo Beach is also smoking. The difference between fish smoked at Shama and that at the Anlo Beach is the dryness of fish. Fish such as the long fin herrings are usually smoked dry to prevent spoilage.

4.2.2 Transporting and marketing of fish products

Fish traders in Shama usually sell fish in its processed form. Some however also sell fish in its fresh form mostly to residents living in Shama or travel to the ABS Fishing Harbour and sell

it there. After fish is processed, fish traders carefully arrange them in boxes or baskets ready for the market. Out of the 11 fish traders interviewed, seven of them do not sell their fish in the town. The common reason given was, "*We don't have enough customers here. Sekondi is a big market place where different people come to. Some customers come as far as Kumasi to buy fish at Sekondi. That is why we prefer Sekondi to Shama"* (Fish trader in group interview).

Marketing processed fish involves frequent travelling across Ghana to market centres in Accra, Kumasi, Tekyiman, Tamale and neighbouring countries such as Togo and Benin (Britwum, 2009). In Shama and Anlo Beach, the study revealed that market women sold their fish in neighbouring towns but the most important market centre during the bumper season is the Sekondi market. All the fish traders interviewed prefer to go to the market centre at Sekondi because it was affordable and easily accessible. Many of them had their customers there hence would not afford to lose them by going to other places. Other major market centres for fish harvested in Shama included Agona Nkwanta, Beposo, Inchaban, Takoradi and as far as Kumasi and Accra (see map 3).

Map 3: **Map showing market destinations of fish traders from Shama.**

Source: CERGIS, University of Ghana, 2014

On a typical market day, fish traders in Shama usually join a small truck to the market centres. These small trucks (minibus) are popularly known as *trotro*. There are some who go to the market individually. Many of them however usually hire the truck as a group since it is cheaper. Baskets of fish are packed on carriers fixed on top of these vehicles or packed at the back of the truck. Fish traders pay a fee for their packed fish in addition to the passenger fees. Fees paid varied according to the distance travelled and the amount of fish carried. When a truck arrives in Sekondi, fish traders employ the services of porters to carry their fish from the truck stations into the market centre.

In the Sekondi market, fish sellers are located close to the main entrance of the market where they sit under a big shed which has been allocated to them. Fish is usually arranged in large pans for sale. Some of the fish is sold in packs to retailers who in turn sell to consumers in the same market (individuals and food vendors) or transport it to smaller neighbouring markets

for retailing. Some of the fish is also sold to individual consumers. *"I sell my fish to anyone who has the ready cash. I also have some customers I give my fish to on credit. I give them some number of days to pay the money back"* (40 year old fish trader). Trust between a fish trader and her customer is therefore an important element on which a successful fish trade business thrives (Overå, 1998: 140).

4.2.3 Sources of capital, savings and loans

Due to the nature of their occupation fish traders in Shama and the Anlo Beach are engaged in a lot of savings. Banks and micro finance companies sites within the town as mentioned earlier include the Lower Pra Rural Bank, the Credit Union amongst others. Some of the fish traders also made mention of a new micro-finance company known as Sinapi Aba Trust (SAT), a micro-finance institution, which works with small-scale entrepreneurs and provides them with financial assistance to run their operations. According to the fish traders, their source of capital is mostly from these financial institutions. They save their monies in these financial institutions and apply for loans when they are in financial difficulties. A 30 year old fish trader asserts, "*We sometimes go to the banks for loans for our businesses. I work with the Lower Pra bank"***.**

Fish traders in Shama also engage in informal savings locally known as *susu*. Daily *susu* points (sometimes run from kiosks) have been established by some private individuals in the community. Some fish traders also register with *susu* collectors who go round daily. Deposits, often of low but regular value, are usually taken on a daily basis over the course of the month. At the end of this period the *susu* collector returns the accumulated savings to the client but keeps one day's savings as commission. *Susu* collectors may also provide 'advances' to their clients. The importance of such informal savings cannot be overemphasized. To varying degrees informal financial services such as the *susu* are characterized by easy access, flexibility in loan use, rapid processing, flexibility in interest rates and collateral requirements. In simple terms, it is an easy way to save and withdraw money. Some of the fish traders interviewed claimed that their *susu* savings help them in times of financial difficulties. This system of *susu* is built on trust and confidence. Fish traders seem to have trust in the *susu* operators due to communal bonding and transparency of transactions. In choosing to save with relatives, friends, and *susu* collectors, fish traders have the confidence that they will see the money keepers the next day. They usually know where such *susu* collectors live and know one or more people who are related to them. Therefore, dealing with these agents who are from their local community and who speak their language not only makes the transactions

easier, but also provides fish traders with a sense of trust. According to one of the fish traders, they enquire about such *susu* collectors from friends, relatives, co-fish traders and other reliable sources before trusting them with their money**.**

The income generated from fish trade in Shama is used for various purposes. All the fish traders interviewed emphasized the benefits of fish trade as having improved their living standards. Income is used in taking care of the family, paying school fees as well as providing food for the household. Four of the fish traders interviewed (who are the wives of canoe owners) are able to contribute to the renovation of their homes, contribute to funerals, weddings and provide loans to others. A 32 year old fish trader with a husband (who is a canoe owner) and eight children says, *"The fish trade, so far, has been good for my family. All my children are in school. I also sometimes help my husband when he is facing financial challenges".* None of the 11 fish traders interviewed had however been able to buy a piece of land or build a house.

4.2.4 Institutions and organizations in the fish trade business

Fish traders in Shama operate within a social hierarchy. This hierarchy, according to Britwum (2009: 75) results from "the nature and their access to fresh fish". At the apex of this hierarchy is the chief fish trader (*konkohene*). The *konkohene* is the leader of the women fish traders. Shama has two chief fish traders, one each for Bentsir and Apo. Election of a *konkohene* is based on qualities such as "experience in fish handling, patience, tolerance, time and concern for others, boldness, compassion and both mental and physical sharpness" (Odotei, 1999: 26). She carries a similar set of roles as the chief fisherman, but in her case exclusively for women who are involved in fish processing and trading. The *konkohene* has an influence in the pricing of fish. Both fishermen and fish traders can appeal to the *konkohene* when dissatisfied with price issues.

She is also responsible for the settling of disputes between fish traders. According to the 78 year old *konkohene* at Bentsir, cases such as conflicts arising from the payment of debts between fish traders, the buying or selling of fish at the landing beaches among others are brought before her. She consults her elders about the issue for investigations. After investigations, her final verdict is given settling the case. However, if one party is dissatisfied with her verdict, the matter is then referred to the Queen mother (*ohemma*) of Shama for settling. Criminal cases are also referred to the police.

Next to the *konkohene* are the women canoe owners. According to the chief fisherman of Bentsir, his landing beach has approximately six canoes owned by women. The chief fish trader is one of the few canoe owners. Women who own canoes in Shama have several sources of fish supply. In addition to receiving fish from their canoe, they have the privilege of receiving their husband's share of fish catch. Ownership of a canoe, in Shama, is a symbol of wealth (see also Overå, 1992), and women canoe owners exert a lot of authority. Apart from being big fish traders, canoe owners sometimes serve as financiers to fishermen (Walker, 2001) providing them with capital for their fishing business. Apart from the *konkohene*, I interviewed one fish trader who owned a canoe. She was 60 years old with six children, four of whom were men. She started her fish trading business at the age of 17 by assisting her mother to process and sell fish. According to her, she used to travel to Kumasi and Accra to sell smoked fish. At the age of 45, she had been able to save some money in the bank which she used to purchase a canoe and fishing gear. The canoe was registered in her name and she has been a canoe owner since. According to her, her canoe is managed by her second son because he is hardworking and trustworthy. The other reason was because her first son migrated to Nigeria some years back. Due to her wealth, she is part of the *konkohene's* council of elders and an influential member of the fish traders association.

The wife of a canoe owner receives her husband's share of fish catch. She also assists the captain of the crew members in the counting of fish and ensures that the sale of fish is done correctly. She also sees to it that everyone receives a fair share of fish they are entitled to. Being married to a canoe owner gives a fish trader an advantage. The canoe owner's wife receives a larger share of the fish than the wives of crew members since the canoe owner's share is larger than that of the crew members. The institution of marriage therefore plays a vital role in the access of fish.

Fish traders in Shama (Apo and Bentsir) under one *konkohene* have an organized group known as the *konkokuo,* meaning the fish traders group. The individual members of the group are known as *konkofo*. The group holds monthly meetings to discuss pressing problems facing fish traders. They also share information on prices and supplies of fish. Members of the group are required to pay monthly dues. These dues known as "welfare dues" are used for helping members in times of need. For instance, money from the dues can be donated to a member who has lost a relative or towards the marriage ceremony of a member. A member of the fish traders' group shares her experiences after she joined the group, *"I recently lost a relative. Apart from making a donation for the funeral, some members of the association were*

delegated to attend it. They were very supportive". The group however faces some challenges. Particularly was the payment of dues. Some members were reluctant to pay dues. This, according to the *konkohene,* was affecting the smooth running of the group.

4.2.5 The gendering of fish production

Fishing involves a lot of activities commencing from fishermen setting out to sea to the consumption of fish. Overå (1992) terms these as stages in a fish production, processing and distribution chain. Activities within these stages are organized along gender lines. Men are solely into the fish production stage (although there women who are indirectly involved as financiers and as canoe owners) while women are into the processing and distribution stages.

This gender division of labour is quite similar in Shama. Men are engaged in the production of fish. Women are prevented from going to sea. According to both fishermen and fish traders, women are weak and fragile hence cannot withstand the strong currents of the sea. There was also a narrative about women and fishing. According to the narrative women used to go to sea some centuries ago. One day, their boat capsized because they continued to fish even after their canoe was full. They drowned and died. According to the narrative, women were greedy. After this incident, women were banned from fishing. Women are "greedy" in the sense that they have to feed their children and families. Therefore women will tend to try various means of making a living in order to cater for their large families including trying to break the laws of the sea. The above narrative emphasizes the influence of cultural and traditional beliefs on the gendering of roles (see also Overå, 1998: 126).

Women are into the processing and distribution of fish. However, men tend to control and sell the profitable high value shark fins. According to the wife of the chief fisherman of Bentsir, "*Women are not allowed to keep shark fins. It is only in rare instances that women do the selling of the shark fins. This is when the women have their own canoe".* The shark fins are sold to middle men who are from the northern parts of Ghana. These middle men in turn sell the fins to Chinese companies for processing.

Plate 8: **Shark fins.**

4.2.6 Marketing issues in Shama

Fish traders complained about the decline in fish stocks. They also attributed this decline to bad fishing practices by some fishermen in other coastal towns and activities of the oil and gas companies. According to a fish trader, *"The oil and gas that is being explored is really disturbing our fishermen. 'No go' zones have been created where fishermen have been prevented from fishing. This has led to a reduction in the level of fish caught. It is really affecting fish traders because we don't get enough fish to sell. This is making life at home difficult for us".* Also, due to this reduction in the fish catches, most canoes land at the Sekondi fishing harbour where they receive on the spot payment. This is affecting women in Shama who rely on buying fish on credit. This is captured by what a 40 year old fish trader said, *"We used to have a lot of canoes landing here in Shama. These days, most of them land at Sekondi. We have to travel all the way to Sekondi where we pay on the spot for fish. Those of us who buy on credit are therefore finding life very difficult".*

Poor post-harvest handling and processing techniques are major constraints in Shama. This problem manifests itself in the lack of cold storage facilities as well as ineffective smoking and drying equipment. Consequently, fish is processed and handled under unhygienic conditions, particularly at the landing sites and processing sheds. According to the fish traders, this was leading to low profit margins. *"Because of the lack of storage facilities, most of our fish goes bad. We make such fish into fermented fish* [momone] *and this reduces our profit margins"* (45 year old fish trader).

Fish traders also complained about the difficulties they face in accessing loans from the bank due to the lack of collateral (since collateral such as fishing equipment and houses are generally owned by fishermen) and sometimes the untimely disbursement of loans. *"We don't get easy access to loans because we are always supposed to provide collateral. We sometimes don't get loans on time. This usually disturbs our fish trade business"* (30 year old fish trader). Most of the fish traders therefore rely on informal financial services such as money lenders and *susu*.

Fish traders especially those at the Anlo Beach complained about how destructive fishing methods such as the use of dynamite, carbide, DDT, as well as light fishing, was affecting the marketing of fish. According to them, fish caught through such methods are not durable. Fishes caught through the use of bad chemical substances also have a different taste. This was destroying their market since light fishers usually harvest the same fish species. *"We are losing our customers due to light fishing. Our customers mistake our fish* [not caught through destructive fishing methods] *with those caught by destructive fishing methods".*

Similar to the situation of fishermen, since fish traders in Shama and the Anlo Beach are vulnerable to the above mentioned challenges, impacts of the oil and gas on fish trading will either reduce or increase the vulnerability of fish traders.

CHAPTER FIVE
THE OIL AND GAS INDUSTRY

5.0 Introduction

This chapter reviews the oil and gas industry in Ghana. It looks at its impact on fishermen and fish traders' livelihoods. It also discusses the relationship between the oil and gas companies with people working in the fisheries in Shama.

5.1 Effects of oil and gas on livelihoods

Exploration and production of oil and gas often induce economic, social, environmental and cultural changes on coastal communities (E and P/UNEP, 1997). It can provide a number of opportunities as well as threats to residents living in coastal communities including those living in Shama. The opportunities would mainly be in the areas of employment, business, training and new or improved access to infrastructure and social amenities. The threats relate to the effects of the production activities on traditional economic activities (such as fishing) and the environment.

5.1.1 Opportunities in terms of Corporate Social Responsibility (CSR) projects

Apart from fulfilling their tax and other fiscal obligations as well as ensuring that the impact of their production on the environment is managed, oil and gas companies are not legally responsible for the development of the communities in which they operate. Development of communities is the responsibility of the government or local authorities who receive the state's share of oil revenues (Edjekumhene et al., 2010). Some oil companies, however, help in the development of some communities that are affected by their operations.

A report by Tullow Oil emphasizes one of the company's main aims, "creating shared responsibility in partnership" (Tullow Oil, 2013: 4). This means that the company expresses an aim to establish positive relationships with various stakeholders including the government and the local people through social and economic development contributions in local towns and countries within which they operate (ibid.). According to the company, it has its own responsibility package that it would offer to all who are affected by its operations. Tullow Oil has a representative in the Shama District Assembly. This person serves as a liaison between the Shama district and the oil company. According to the representative, Tullow Oil has supported Shama and the Shama District Assembly in a number of ways.

With regards to CSR projects Tullow Oil, according to the company's representative, funded a model Kindergarten (KG) Complex constructed by Sabre Trust for the children of Amenano in Shama. This KG School, which is a model school, is the first of its kind in the Western Region. It was built of bamboo and provides a light, airy, spacious and comfortable learning environment for children in Shama. According to the District Education Office in Shama, the school, which was established in 2013, accommodates over a hundred school children.

Plate 9: **The Amenano Model School.**

This model school is beneficial to fisher folk residing in Shama and nearby villages. According to the director of supervision at the District Education Office in Shama, the school serves as a 'safe haven' where fish traders keep their children while they (fish traders) are away at the market places or at the landing beaches. Fish traders, when interviewed, attested to this. This is what a 30 year old fish trader says, *"The school is good news in this community because when we go out to the beach or to the market place, we need a place to put our children. Also, before the Amenano School was built, our children used to start school at a much older age (between 8 years and above) because the schools in Shama did not have nursery departments".* The school is therefore an important asset for the community since apart from its basic aim of providing education and training for their children, it helps the fish trading business by providing the children of fish traders with a day care facility.

Also, Tullow Oil has initiated the 'Livelihood Enhancement and Enterprise Development' project, in which they assist fishing and other communities with basic entrepreneurship skills including micro or small-enterprise development, livelihood training, and capacity building. The project involves business planning and book keeping, accessing credit, marketing of products, and alternative fishing livelihood skills such as carpentry and soap making. Training

sessions are organized for fishermen and fish traders. Out of the 28 fisher folk, only one of the canoe owners interviewed (secondary school graduate) commended Tullow Oil for this project, *"Pictures are taken of us and a lot of training sessions are organized for us. These training sessions are mostly about entrepreneurship and business strategies. They are mostly organized at our sports stadium here in Shama. I am part of them. I have even been a leader during one of the training programs. To be honest with you, some of the training organized enlighten us and are eye openers for the fishing business".* Since he was the only informant who has a secondary education, he has been able to utilize the knowledge about book keeping and business planning acquired from these training sessions while the lower educated and illiterate informants were unable to utilize the knowledge they had acquired.

Knowledge acquired from training about alternative livelihood skills (soap making and carpentry) was however not practiced by fisher folk. All the 28 fishermen and fish traders interviewed indicated that they had members of their last generations involved in fishing and fish trading activities into which they (fish traders and fishermen interviewed) were introduced. The importance of fishing on the social and cultural background of fishermen and fish traders should therefore not be underestimated. Also, the thought of starting a new business was not appealing to fisher folk. They are therefore reluctant diversifying into new livelihoods that would affect their cultural and social background, yield lesser profits and required new skills. Fishermen and fish traders claimed they rather needed direct fishery related assistance in the areas of rising costs of fishing inputs including premix fuel.

Furthermore, two improved fish preservation techniques have also been implemented in Shama by Tullow Oil. The first fish preservation technique is a safer and more environmentally friendly oven for fish traders. The use of the "chorkor smoker" for fish smoking exposes fish traders to harmful smoke which is detrimental to their health (Lawson et al., 2012). According to a representative of Tullow Oil, their company therefore thought it wise to introduce this new oven to fish traders. This oven is described as an improved version of the "chorkor smoker" used by fish traders. *"Also, we have improved the structure of their ovens. The ones they use give them eye problems because of the smoke. The improved version is expensive because the materials used in building it. It is around GH¢2500 [US$833.3]. What we have therefore done is to provide a model sample of that oven. We want them to sample it and see how good it is. And if you need one, we link you to the project implementers. It is for the six coastal districts and Shama also benefited from it"* (Official of Tullow Oil). Bentsir and Apo were provided with one sample oven each.

With regards to the oven's use and impact, fish traders in Shama claim that it was not beneficial to their smoking business. They attribute this to several reasons. The first reason given is the type of fish they smoke (large pelagic fishes such as tuna and shark). According to them, the oven is too small to accommodate all their fish and will therefore delay their fish smoking process. The second reason given is that the newly provided oven smokes the fish too dry. They argued that smoking the fish very dry yields lower prices in the market. Also, the new improved oven is expensive to build (GH¢2500 equivalent to US$833.3). Building a traditional oven is much cheaper costing GH¢200 (equivalent to US$66.7). The ovens have therefore been left unused.

Plate 10: **Sample oven at Apo landing beach. The picture on the right shows cobwebs inside the oven indicating that it has not been used for a long while.**

The second fish preservation technique is a low-cost ice box for storing fish. This ice box is an improved version of the ice boxes fishermen previously used. The new ice boxes help in preserving fish at sea because it can keep the ice blocks for a longer period of time. The Tullow Oil official at Shama says, *"Apart from the oven, we have trained carpenters in the new ice box construction. If you go to Shama you can see some of them there. They have one already but ours was an improved version that can keep the ice blocks for long. And what is unique about that training is that we have trained local people who can construct it*

themselves. I am talking about the ice box. If you need one, you just contact them and they will do it for you. And this project has gone on for two years".

An elder at the Apo landing beach attests to this, *"There is this new company* [Tullow Oil] *that has come to build a new oven for us. They also brought an improved form of the ice box we take to sea. When we use that ice box, the ice blocks take longer before they melt. They provided samples of these things so if you think you are interested then you can order for one".* The new improved ice box is now widely used by fishermen in Shama. Keeping fish in ice blocks, as indicated by Shawyer and Medina Pizzali (2003: 1), prolongs the length of time available for fishing trips thereby enhancing an increase in fish catch, makes available best-quality fish to the consumer and yields higher prices and better returns for fisher folk.

Plate 11: **An improved ice box.**

5.1.2 Employment opportunities

As previously mentioned, the oil and gas discovery sparked high expectations from Ghanaians, especially people working in the fisheries. It was perceived that oil and gas can provide jobs and that revenue accrued from the oil and gas can also be used to support and strengthen the economies of fishing communities (Egyir, 2012). When the oil production started, fishermen and fish traders hoped that revenue from the production would compensate their deteriorating livelihoods by improving their quality of life. This was going to be done through employment opportunities. However, the oil and gas industry is capital intensive and not labour intensive (Karl, 2007). Those who would be fortunate to gain employment must be highly skilled. The basic problem is that the fishermen and fish traders do not possess a high enough level of skills to be employed in the oil and gas sector. When interviewed about the

job opportunities created by the oil and gas companies in Shama, only four out of the 28 fishermen and fish traders had employment expectations. But in the near future, they said, the oil and gas industry may create employment opportunities for their children. One of the fish traders hoped that her 18 year old son would be employed by the oil and gas industry. Her son was a final year student at the Shama Senior High School. She says, *"Oil and gas is good for Ghana. It is going to be good for our children. I am hopeful that more jobs will be created and our children will be employed. My son might be one of them".*

However, most of the fishermen and fish traders interviewed did not see the question about working in the oil and gas sector as relevant for themselves. They were of the view that they have received little or no formal education hence do not have the requisite skills to work in the oil and gas industry. The highest educational level attained by the fishermen and fish traders interviewed was Secondary School. In the total sample of 28 fisher folk, only one fisherman had completed Senior High School. The others dropped out of school before they could attain Senior Secondary education. The construction of a pipeline and working on an oil rig however requires the operation of skilled specialist workers such as piping engineers and seismic data processors (Figgis and Standen, 2005). Consequently, fishermen and fish traders are aware about the fact that they can never be employed if they do not receive any form of training from the oil and gas companies. They were therefore angry because their employment expectations have not been met by the oil and gas companies or by the government. They had been optimistic that oil production would bring jobs, cheaper fuel and economic prosperity. But now, they feel that oil and gas instead of providing jobs is removing their only source of livelihood, fishing. Oil and gas activities are impeding their livelihoods. The cost of petroleum products has been on the rise instead of decreasing.

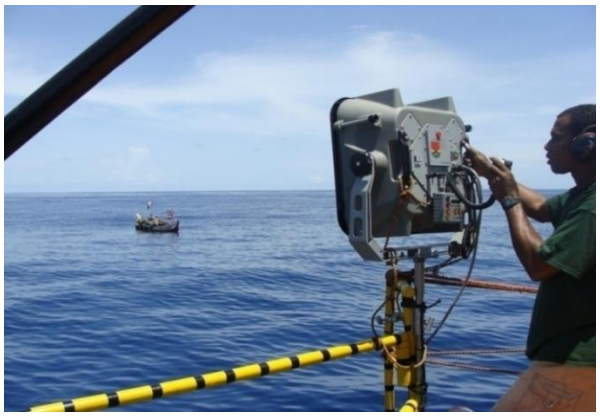
5.1.3 Negative impacts

In Shama, some negative effects of oil and gas activities were manifested. All the fishermen and fish traders interviewed emphasized the negative impact the oil and gas has had on their livelihoods. With the exploration and production of oil and gas, Safety Exclusion zones ('no go' zones) have been demarcated where fishermen have been prohibited from fishing (BBC News, 2010). According an officer at the Naval Base, two distinct exclusion zones have been marked around each oil rig. The first zone is a five nautical miles radius surrounding the oil rig. A naval ship lies on this mark. The duty of the officers in this ship is to warn fishermen about the oil rig ahead and if possible to direct their steering course away from the rig. The second exclusion zone is a 500 meter radius distance from the oil rig. A second naval ship lies

on this mark. The duty of officers in this ship is to drive away and in severe situations, confiscate nets and other fishing equipment of fishermen who refuse to adhere to the warning of the first naval ship. "*The Ghana Maritime Authority has demarcated a 500 meters radius around each of the offshore platforms. When fishermen's net get there, we do not spare them. We collect the net because in no time it is going to destroy the rig. We have also created a five nautical mile zone from the oil rig. There we can speak to them. We tell them the dangers to the assets, properties and their own life. We also have the FPSO, a ship that process the oil and stores it. We protect that vessel too. We have demarcated the 1000 meters zone around this vessel as a Safety Exclusion Zone"* (Naval officer).

Fishermen have participated in workshops and meetings organized by Tullow Oil, state agencies such as the Ministry of Fisheries and Aquaculture Development and the Naval Base. Meetings and workshops usually involve education about the dangers of fishing around an oil installation. Such meetings are attended by leaders of fishing communities (chief fishermen) who are expected to transfer the knowledge acquired from these meetings and workshops to their fishermen. According to the naval officer, education is not limited to workshops and meetings. Fishermen are also educated by naval officers at sea, *"On the naval vessel, we have a smaller life boat that we lower to be at the same height with the fisherman so that we can talk to them. There we educate them. We talk to them calmly"* (Naval officer).

Plate 12: **A naval officer communicating with a canoe.**



Source: Naval Base, 2014

The naval officer adds that, although education about fishing around an oil installation have contributed significantly to a reduction in the number of fishermen who venture into the 'no go' zones, there are a few fishermen who still fish around them. According to media reports authorities from the naval base are seizing fishing equipment of fishermen who violate the

law by fishing around the 'no go' zones (Badgely, 2011). Decisions are taken to arrest fishermen who venture such zones. According to one of the crew members interviewed, there have been encounters where some friends of his had been beaten by naval officers who spotted them fishing close to the demarcated zones.

The FPSO has powerful lights which attracts fish. The attraction of fish into these 'no go' zones, according to an official at the Ministry of Fisheries and Aquaculture Development, can lead to the conservation of fish species especially those that are under threat of going extinct. A naval officer attests to this, *"Since fish are attracted to lights, a lot of fish is found around it. My colleagues and I sometimes stand around to admire the beauty of different species swimming around us".* The 1000 meter radius demarcated around the FPSO (Edjekumhene et al., 2010) however forbids local fishermen from fishing around the FPSO. A fisherman complains; *"My sister, I feel like if the oil had not come, things would have been much better. The fish that were scattered in the ocean are now concentrated at one place, around the oil platforms. The oil people are however preventing us from fishing around the rigs".* Fishermen perceive this as resulting in a decline in fish catches. Declining fish stocks, however, cannot be exclusively attributed to the activities of oil and gas companies. According to Danson (1993, cited in Nunoo and Asiedu, 2013: 54) a contributory factor to the decline in the level of fish catch is "fishing pressure on fish by fishermen themselves". Bad fishing practices such as the use of inappropriate mesh sizes, light and dynamite fishing have been contributing factors (ibid.). When asked about the declining fish stocks, an official at the Ministry of Fisheries and Aquaculture had this to say, *"Decline in fish catch levels can be attributed to an increase in the number of fishing canoes. Some of the fishermen also use bad fishing methods to catch the already declining fish stocks. Illegal fishing in Ghanaian fishing waters by foreign trawlers has also been a key factor. This is putting pressure on the existing fish stock".* Illegal fisheries and overfishing have indeed been noted as the major contributory factors to depleting fish stocks (Nunoo et al., 2014).

An assessment of the impacts of oil and gas exploration and production on fishing by Tullow Oil emphasized three key areas (Edjekumhene et al., 2010). These included "Loss of access to areas around the FPSO during completions, installations and operations due to the presence of vessels, FPSO and safety exclusion zones; attraction of fish to the FPSO, due to the FPSO being stationary and acting as a fish aggregating device (FAD); and disturbance to fishing activities and damage to fishing gear from project support vessels and supply vessels transiting to and from Takoradi" (ibid: 27). For instance, there was a media report in 2007

when a supply ship ran over a fishing canoe at sea, killing four people on the spot. Two others died later from injuries (Badgely, 2011). According to the study however, the above impacts especially that of the demarcation of the exclusive zones, are too small to have significant negative effects on fish catches. Since the fisher folk perception, especially of those in the Western Region, contradict what authorities are saying, there seem to be great difficulties in controlling the demarcation zones. The 'ban' zones have therefore resulted in clashes between Ghanaian naval officers and fishermen (beatings and seizures of fishing equipment). A recent media report claims that three fishermen who decided to fish around the FPSO led to clashes between the fishermen and naval officers. This clash resulted in the damage of the fishermen's canoe (Citifm, 2015).

When asked about compensation received from the oil and gas companies, fishermen interviewed stated that they had not received compensation in any form both from the oil and gas companies or the government. The only compensations received were that from a collision or accident at sea with an oil vessel. When an oil vessel accidentally collides with a canoe, the case is brought before a chief fisherman. An enquiry into the issue begins and the issue is settled. The time taken to settle the issue depends on the facts of the case. It could be settled after some days or sometimes several weeks. Such cases are seldom taken to court. However, if one party is still dissatisfied with the chief fisherman's verdict, the case is transferred to the Ministry of Fisheries and Aquaculture Development and subsequently to the police station and processed to court. Both parties hire the services of a lawyer.

If the oil vessel is found guilty, all the damages are compensated. If a canoe was damaged, the canoe owner is given a sum of money to buy a new one. If the destruction involved a net, then a net is provided. For instance, one of the fishermen narrated: *"Accidents do not happen regularly. However, I have a friend who was involved in an accident. His canoe and nets were totally destroyed. He was compensated by the oil and gas company".* Fishermen are however not compensated for the period of non-fishing activity. There are some situations when fishermen are found guilty. The chief fisherman narrates how one of his fishermen lost his case in court: "*I remember an instance where I had to follow one fisherman to the High court. The fisherman didn't give the right responses so he was found guilty*. *He was asked about the time he spotted the vessel approaching. Instead of saying that it wasn't even up to a minute, he said he saw the ship about an hour before he began to move his canoe. That meant he stayed there intentionally for the boat to get close. He did not receive any compensation"*

(Chief fisherman of Bentsir). The above story clearly shows that compensation received from cases referred to the court depends on one's ability to secure a good lawyer or spokesperson.

Another fisherman also narrated an accident he encountered at sea two years ago for which they were not compensated. He said, *"Normally we rest for some time after casting our nets. We have small reflectors which bigger boats can detect. The bigger boats also have lights so we can tell when they are coming. I don't know what happened that day. Before we knew it, the vessel was very close to us. We had no option than to jump out of the canoe for our dear lives. The vessel hit our canoe and destroyed everything"* (33 year old crew member). The canoe owner and his crew, who were considered as careless, were judged to be guilty after the case was referred to the chief fisherman of Bentsir. Consequently, they did not receive any compensation. The canoe owner became more indebted and had to take a loan from the bank in order to replace the canoe and fishing net. What constitutes fair and adequate compensation is however much contested (depending on several factors) since some fishermen receive compensation while others do not.

The much contested issue of sea weeds (*Saragassum*) was also raised by fishermen but according to scientific evidence this may be a naturally occurring phenomenon (Ackah-Baidoo, 2013). According to Kraan's (2009) study, *Saragassum* (or *'green green'*) has been in existence long before the recent discovery of oil and gas in 2007. Kraan argues that, although various studies on '*green green'* showed that its origin was natural, "ideas that it is toxic and waste and that it has non-natural causes remains persistent" (ibid, 150). Similarly, fisher folk in Shama attribute the presence and increase of sea weeds to the recent exploration and production of oil and gas. According to a fisherman interviewed, sea weed entangle their nets and prevents them from catching fish. Another, a 44 year old canoe owner also claims, *"The recent exploration of oil and gas is giving us a lot of problems including bringing sea weeds which is affecting fish catch. These weeds get entangled around our fishing nets".* He further added that when nets get caught up with sea weeds, it does not only affect the amount of fish caught but also destroy their nets, which are expensive to replace. The time spent in removing sea weeds also adds to the cost of fuel since more fuel is needed. The above mentioned issues affect the profit fishermen earn from fishing. Little is however being done by the government or oil and gas companies to alleviate the concerns of fisher folk through information about the *'green green'* phenomena (Ackah-Baidoo, 2013). This is therefore intensifying the already significant community resentment towards the oil and gas industry.

The danger of an oil and gas spillage was also of great concern to fishermen and fish traders interviewed. According to Badgely (2012), there have been two occurrences of drilling and mud spillages. Kosmos Energy, one of the oil and gas companies in Ghana, in December 2009 spilled toxic drilling mud around the Jubilee Field (ibid.). The second occurred in late 2011 around the shoreline of the Ahanta West Region and fishermen spotted tar balls along their shores (ibid.). However, the authorities failed to initiate any cleaning of the waterfront and left it to the community to remediate the oil. The authorities claimed that these tar balls which may look like oil do not originate from oil and gas production but actually originate from ships washing their balance water, or seepages from underground (Musiime, 2012).

In the event of a major oil spill, fishing will however be difficult or impossible. Vessels and gear will be smeared in oil and fish catch will be spoiled. According to Badgely (2012), the government and oil and gas industries are still working on a compensation fund for fisher folk in the event of a major oil spill. Fishermen would therefore, for a period, be forced to suspend or temporary migrate to other coastal communities that have not been affected by oil spills. This will directly affect the livelihoods of fishermen and fish traders because it will prevent them from maintaining their fishing and fish trading livelihood.

5.2 The relationship between the oil and gas industry and the people of Shama

Oil companies must obtain a cordial relationship with communities within which they operate in order to work efficiently. When asked about their relationship with people working in the fisheries, an official of Tullow Oil claimed that they have a positive relationship. According to him, officials from the oil and gas companies pay frequent visits to Shama to ask fishermen and fish traders about their concerns in relation to the oil and gas industry and its activities. He says *"We build a relationship with the community and we invest a lot in them. We usually have daily interactions with the community. We also try to keep in touch with key representatives in the community including chief fishermen, chief fish traders and the omanhene"* (Official of Tullow Oil).

Fishermen and fish traders however express a different view about their relationship with the oil and gas companies. According to them, their relationship with the oil and gas companies is not the best. The fisher folk view the relationship between them and the oil companies as a master-servant relationship, a negative one, which they are not happy about. Oil companies and government agencies are the masters, and they (fishermen and fish traders) are the servants. One of the fishermen also narrated an encounter with naval officers during one of

their fishing trips. *"We were there when one of the naval boats approached us, asked for the captain, and threw a paper. The paper even fell into the water so as the captain I told one of the fishermen to go into the water to bring it. They asked us questions and I answered. They then asked us to pull our nets".* Since fishermen associate naval officers with oil and gas officials, this incident depicts what fishermen emphasize as a master-servant relationship.

Also, according to the fisher folk, several meetings have been organized by the oil and gas companies and their (fishermen and fish traders) views have been sought. The *konkohene* says, *"We are invited to several meetings. They ask about our work including the challenges and we tell them everything. What do they do? Nothing. There's no use going for their meetings anymore"*. Opinions of fishermen and fish traders are however rarely considered during meetings and consultations with oil and gas companies and state agencies. Consequently, some community development projects (for example the so-called improved ovens) which are introduced tend not to be beneficial to fisher folk.

Fisher folk also perceive their relationship with the oil and gas as a landlord-tenant relationship. Fisher folk claim they are the owners of the land and the sea. Their prevention from accessing their fishing grounds by the oil and gas companies (who constitute the tenants) was making them angry. Complicating this issue was the fact that several promises made by the oil and gas companies were not fulfilled. For instance, fishermen and fish traders were promised a 'market linkage' project where fishermen and fish traders would be introduced to potential customers such as restaurants springing up in the region as a result of oil and gas exploration and production. The promise of this 'market linkage' project by Tullow Oil is however yet to be fulfilled. This situation has developed mistrust between fishermen and the oil and gas companies.

CHAPTER SIX
DISCUSSION OF FINDINGS

6.0 Introduction

This chapter discusses the findings of the study in light of the Sustainable Livelihood Framework Approach and gender theories including intersectionality. The chapter begins by expatiating on the effects of the oil and gas exploration and production on fishing (being male-dominated) and fish trading (being female-dominated). Consequently, the vulnerabilities faced by these fishermen and fish traders are discussed. The chapter concludes by discussing the various manoeuvring strategies employed by fishermen and fish traders.

6.1 Gender differentiated impacts of the oil and gas industry

Oil and gas production, though offshore, affects the livelihoods of people residing in coastal communities (Adusah-Karkari, 2015). The impacts of offshore oil and gas activities in relation to the livelihoods of fisher folk are gender differentiated.

6.1.1 Effects on men's livelihoods

Fishermen are directly affected by oil and gas operations since they (fishermen) are engaged in offshore fishing. The 'no go' zones demarcated around oil and gas installations prevents them from fishing around these zones. This is leading to what Benjaminsen and Bryceson (2012: 1) term "blue grabbing" (paraphrasing the term "land grabbing") where fishermen are gradually losing access to their fishing grounds to oil and gas extractive activities. Fishermen increasingly feel and are actually to some degree dispossessed of their fishing grounds, especially those who are involved in deep sea drift gill net and hook and line fishing. Dispossession of fishing grounds is facilitated by government rules and regulations (what Allison and Ellis (2001: 379) refer to as 'policies and institutions') which are sometimes combined with the use of force from naval officers (maltreatments and beatings, confiscation of fishing gears and nets). Since natural resources or natural capital such as the sea and fish is central for obtaining livelihoods (WRI, 2005, cited in Lawson et al., 2012), being denied access to these restricted zones has serious implications on their livelihood.

Various stakeholders (fishermen, oil and gas companies and state agencies) have varying views on the negative impacts of the oil and gas industry. Variations in the views of actors are indications of the differences in their interests. Fishermen who value the sea as an important asset for fishing claim that all operations involving the oil and gas exploration and production affect the level of their fish catch (Badgely, 2011). Fishermen therefore accuse the oil and gas

industry as responsible for their poor fish harvest in recent times. Since the principal interest of fishermen is to catch fish, any offshore oil and gas activity are perceived as impediments. Some NGOs such as Friends of the Nation (an organization which works with grass root organizations and opinion leaders to ensure fair treatment of fishermen by the oil and gas companies) and media reports about fisher folk's deteriorating livelihoods seem to support the claims of fisher folk. State institutions, on the other hand, such as the Ministry of Fisheries and Aquaculture Development report of diverse reasons for declining fish stocks including, the use of small mesh sizes, dynamites and chemicals, light fishing and illegal pair trawling by foreign fishing vessels (Nunoo et al., 2014). State institutions and oil and gas companies have similar views claiming that the oil and gas exploration and production has insignificant effects on fishing.

Although fishermen in Shama stressed on the negative impacts of the oil and gas exploration and production on their occupation, some positive impacts were observed. From this study, an improved ice box has been introduced in Shama by Tullow Oil. The introduction of the improved ice box by Tullow Oil has helped fishermen preserve their fish and spend longer periods at sea during fishing trips. As a crucial physical capital (Allison and Ellis, 2001), the ice box has helped to reduce the rate at which fish catch gets spoilt and helps fishermen to bring good quality fish back ashore. The fishermen at the Anlo Beach who fish closer to the shoreline and fishermen who are unable to purchase the ice box, however, do not benefit from it.

Tullow Oil also organizes training sessions in entrepreneurial skills and alternative livelihoods (see chapter 5) for fishermen. One of the aims of this training is to equip fishermen with skills and knowledge that will enable them to find alternative livelihoods depicting what the Sustainable Livelihood Development Approach defines as 'human capital' (DFID, 2000). Only one out the 17 fishermen interviewed has benefitted from this livelihood enhancement training. He was a canoe owner and the only fisherman who had secondary education. It can therefore be argued that, his educational attainment enabled him to transfer the knowledge he had acquired to his fishing business. Fishermen who had a little or no formal education, on the other hand, could not apply the knowledge they had acquired. Also, fishermen do not have the financial capital to start up the new businesses (soap making and carpentry) being introduced by Tullow Oil. The applicability of the knowledge and skills acquired from these livelihood development projects depends on formal education and access to financial capital.

Consequently, since fishermen do not possess these requirements, they do not use this human capital (knowledge and skills).

A factor worth noting is that trainings organized by the oil and gas companies for fishermen do not include skills for securing employment in the oil and gas sector. As mentioned previously, the oil and gas exploration and production raised enormous expectations paired with future employment expectations among people residing in the coastal areas of the Western Region. Being employed in the oil and gas industry involves possessing high skills (Basedau, 2005) which is an essential human capital. As noted by Rakodi (2002), lacking human capital affects one's ability to secure a job hence the need for fishermen to receive training and education in order to work in the oil and gas industry. Fishermen, however, do not receive any such training which is actually relevant in the oil and gas industry. Until such oil and gas job training are held, it is likely that fishermen may never secure employment in the oil and gas industry.

6.1.2 Differences in the level of impact on fishermen

Impacts of the oil and gas on fishermen vary. There are factors which result in these differential impacts. The type of fishing gear used as well as the types of fish caught, for instance, determines the level of impact on fishermen's livelihoods. The Jubilee Field is located 60 kilometres off the shores of Cape Three Points (Sakyi et al., 2012). Fishermen in Shama (Bentsir and Apo) who are predominantly engaged in shark fishing go offshore, usually the same distance and sometimes further away from the Jubilee field. These fishermen claim that the type of fishing gear they use sometimes drifts them closer to the restricted areas of the Jubilee Field. Since they are being restricted from fishing in these zones, they feel that their livelihood is being taken away. Fishermen at the Anlo Beach, who are predominantly engaged in beach seine fishing close to the shore, do not experience such impacts. These beach seine fishers do not go deep seas, where these oil and gas installations have been sited. Thus, it can be argued that while offshore fishermen in Shama are directly affected by the institution of exclusion zones near oil and gas installations, onshore fishermen at the Anlo Beach are not affected.

Social position also plays an important role in the differential oil and gas impacts on fishermen. As Overå (2003) notes, one's social position is determined by a combination of his or her social statuses such as age, class and the like. As shown in this study, fishermen are positioned in a hierarchy. This hierarchy as explained by Vercuijsse (1984, cited in Overå,

1992: 14) is produced as a result of the "Penetration of capitalism". Crew members are regarded as labourers working for the canoe owner who owns the means of production. This 'class society' (ibid.) has resulted in the differences in the authority and roles performed by fishermen. Consequently, canoe owners exercise more authority and perform different roles compared to their workers (clerks, captain of the crew, crew members). The differences in the roles performed create differences in the impacts. Crew members are at the bottom of the fishermen hierarchy. It is their duty to go out to sea to fish. Crew members therefore experience physical impacts in the form of the beatings and harassments meted out to them by naval officials any time they venture into the restricted zones. Canoe owners are rather being affected financially. According to them, they no longer receive enough fish harvests. This is leading to financial difficulties since they have to pay their crew members, buy fishing inputs and at the same time care for their families. The confiscation of their fishing nets by naval officers and destruction of their canoes by oil and gas vessels is creating more financial difficulties.

6.1.3 Effects on women's livelihoods

Fish trading activities in Shama are also affected by the operations of oil and gas companies since fishing and fish trading activities are complementary (Shultz, 2005). Fish traders argue that the level of fish caught by the fishermen determines the quantity of fish they receive for processing and sale. Consequently, if fishermen do not bring fish home, then they would not get fish to sell. In addition, since all the fish traders interviewed are married to fishermen, their combined income will reduce and this will affect their household income. Thus, their financial capital (Allison and Ellis, 2001), which is an important livelihood asset, will reduce.

Some positive impacts of the oil and gas industry on fish trading activities, is the provision of a model school by Tullow Oil at Amenano, for the people of Shama. This school is a form of 'physical capital' since it serves as an important infrastructure for the town. Additionally, the school provides education and training for the children of fishermen and fish traders improving the human capital (Serrat, 2008) of the children. The school, according to the director for Supervision at the District Education Service, is highly patronised by fishermen and fish trader parents. However some rich fish traders, especially women canoe owners and the wives of canoe owners prefer to send their children to private schools. The issue of class (Valentine, 2007; Cope, 2002) therefore plays an important role in determining who benefits from the Amenano School.

Two sample ovens have been provided at Apo and Bentsir in Shama. Fish traders, at the time of the field work, were not patronizing the services of these ovens because they claimed it was not beneficial to their fish smoking business. According to the fish traders, officials from the Ministry of Fisheries and Aquaculture and those from oil and gas companies consider themselves as their 'masters' who ask about their opinions during meetings but do not consider them when implementing projects. Corporate Social Responsibility projects are therefore not necessarily based on what fish traders want but what oil and gas companies can afford or consider best for fish traders.

Fish traders are stratified as a result of their social position and access to fish supply (Overå, 1993; Walker, 2001). This stratification comprises of the chief fish trader at the apex of the hierarchy followed by, fish traders who own canoes, the wives of canoes owners and the wives of crew members at the bottom. The degree of the oil and gas industry's impacts depends on the category a fish trader belongs to. For instance, the *konkohene* of Bentsir who is one of the few women canoe owners in Shama argues that women canoe owners are affected by oil and gas activities since they must run their canoe companies based upon the little fish they receive from their own canoes and the equally hard hit canoes of their husbands. The wives of canoe owners and crew members are also affected since their share of fish catch has reduced.

6.2 Perceptions of fisher folk in Shama about the oil and gas industry

The choice of words used by oil and gas officials and fisher folk in Shama differed. The use of words (rhetoric) such as 'investment' by oil and gas officials depicts a positive and healthy relationship between the oil and gas companies and fisher folk in Shama. Tullow Oil claims that they invest in the town by interacting with key representatives and providing the town with CSR projects. Fisher folk, on the hand, use metaphors such 'master-servant' or 'landlord-tenant' to show their perceptions about the oil and gas industry. Recognizing their relationship as 'master-servant', for instance, indicates that fishermen feel they are being forced to abide by rules and regulations set by the government and oil and gas companies, which they are not happy about. A 40 year old captain recounted a story of how they encountered naval officers who instead of coming close to deliver a message threw a paper into the sea for them (fishermen). Such a story attests to the fact that fishermen are seen as 'servants' by government and oil and gas companies' officials. Furthermore perceiving themselves as 'owners of the land and sea', fisher folk feel they, as landlords and sea lords, must receive payments from the oil and gas companies who are using their property. Instead

of being paid ‘rent’ for the use of some parts of the sea, they are rather being restricted from some fishing grounds.

6.3 Vulnerability of fishermen and fish traders

Since fishing and fish trading are organized along gender lines (Odotei, 2003) it will be appropriate to discuss their vulnerabilities along these gender lines. Fishermen in Shama are vulnerable to several factors such as overfishing, increasing prices of fishing inputs like premix fuel, difficulty in accessing loans from the banks, competition from other fishers including industrial fishing fleets and pair trawlers (Mensah and Antwi, 2002). They are also vulnerable to high occupational risks such as accidents at sea (Bene et al., 2007: 26) and the seasonality (natural fluctuations) of fish stocks. People living along the coast, according to Lawson et al., (2012: 31) are also vulnerable to “shocks from climatic and non-climatic sources”. These factors are considered as external threats highlighted in the Sustainable Livelihood Framework (Allison and Ellis, 2001). Although external, they have the capacity to determine the livelihoods of fishermen as well as establish which strategies they can put in place. Declining fish catches due to illegal fishing by foreign vessels, for instance, is leading to an increase in the vulnerabilities of fishermen. Some fishermen (see section 6.3) are therefore resorting to destructive fishing practices for survival.

Rules and regulations instituted by the Ministry of Fisheries and Aquaculture Development and the oil and gas companies can be likened to the transforming structures and processes (Allison and Ellis, 2001). According to Serrat (2008), policies and services of institutions and organizations affect livelihoods. Such has been the effect of the demarcation of the ‘no go’ zones instituted by the government. Being restricted from accessing areas they used to fish for centuries has become a ‘shock’ (Allison and Ellis 2001) to fishermen. According to fishermen who were already vulnerable to natural fluctuations in fish stocks, being prevented from fishing in such areas is adding up to their woes (Badgely, 2013). A major oil spill or environmental pollution would also serve as a shock to fisher folk since fishing will be impossible (Sakyi et al., 2012) for a lengthy period of time and destroyed equipment will have to be replaced.

It must however be clarified that all the affected fishermen do not experience shocks to their livelihoods. Fishermen who are unfortunate to have clashes with naval officers or oil vessels experience a livelihood shock. An encounter with naval officers usually ends up with a warning, seizure of fishing nets, or severe cases such as the destruction of fishing nets or

canoes. Those who do not encounter such shocks are rather affected in terms of obstacles such as higher input costs, prevention from using certain fishing grounds, affecting fishermen's catches and fish traders' supplies. Additionally, fishermen who have other sources of livelihoods such as investments in small shops are less vulnerable. Those whose only source of livelihoods is fishing are the hardest hit.

Fish traders are vulnerable to external forces such as the fluctuating nature of fish stocks, market forces (price determinants of fish), access to loans from the banks, unexpected and unforeseen disasters (such as potential oil spill and the death of a husband) and the like. Fish traders also claim that they are vulnerable to the operations of the oil and gas since the portion of fish catch they receive depends on the amount of fish caught by fishermen. However, fish traders who have additional sources of livelihoods and several sources of fish supply are less vulnerable than those who depend solely on fish trade for survival.

6.4 Coping mechanisms of fishermen and fish traders

Fisher folk who experience coastal changes need assistance to be able to cope with these changes (Lawson et al., 2012). Alternative livelihoods enhancement programs provided by the government and oil and gas companies are however inadequate and not beneficial to fisher folk affected by oil and gas exploration and production. Consequently, fisher folks in Shama have developed strategies to protect their livelihoods in general, and to counter the influence of vulnerability aspects such as overfishing, increasing prices and competition as well as the new issue of oil and gas extraction. These adopted livelihood strategies differ and are influenced by gender.

According to Ellis (2000, cited in Bene et al, 2007: 29) rural people, and in this context fishermen, may "diversify into a range of marginal activities in order to piece together a livelihood". Coping mechanisms adopted by fishermen in Shama include drawing on their savings and seasonal or permanent migration (Adusah-Karikari, 2015) to richer fishing areas within and outside the country. Still others buy *second-hand* (used) canoes instead of new ones, repair old engines, buy cheaper fishing inputs, and save on fuel. There are however some fishermen who resort to destructive fishing practices as coping mechanisms. According to an official at the Ministry of Fisheries and Aquaculture Development, such destructive fishing practices include the use of lights, dynamites and smaller mesh sizes which was done in order to bring in larger quantities of fish. It is however important to note that these strategies adopted are not in fishermen's own long-term interests. For example, fishing with

dynamite may solve profitability problems in the short term. However, fishermen will be more vulnerable to accidents at sea, and canoe owners will risk losing their boats, their investments, and with it, their source of income. The vulnerability of these groups has thus increased, in the long run.

Relying on social relations such as social networks and trust (Overå, 2003) during the lean season is also of great importance to fishermen. To fishermen, social and community networks (social capital) are vital social resources upon which they draw in seeking for financial favours. A canoe owner interviewed, for instance, narrated how he had to hire himself out to work on a friend's canoe as a clerk for wages. This friendship relation serves as an important social capital or resource upon which he relied. The access and amount of social capital can be built and determined by factors such as birth, age, associations, kinship amongst others. It can be argued that the fisherman got the privilege of working as a clerk on his friend's canoe because he was previously part of the canoe owners' group.

Investing in social relations and groups for social and economic security (Overå, 1993) is also crucial for fish traders in Shama. Some depend on friends, relatives or their husbands when faced with difficulties. Others resort to petty trading (King, 2010). Petty trading, which includes the sales of groceries and sachet water *('iced water'*), is becoming a popular alternative economic activity in addition to fish trading. Fish traders at the Anlo Beach help their husbands in farming during the lean season. Hence, juggling jobs is appearing to be a major coping strategy for fish traders (ibid). There are however some fish traders who do not have any other means of survival aside fish trading.

CHAPTER SEVEN
CONCLUSION

7.0 Conclusions based on the findings

The main purpose of this study is to explore the impacts of the oil and gas industry on the livelihoods of men and women working in the fisheries. I focused on the impacts on fishermen and fish traders in Shama. I specifically sought to understand how fishing and fish trade activities are organized. This facilitated the understanding of the effects the oil and gas industry on fishermen and fish traders. The various categories of fishermen and fish traders who were either loosing or benefiting from this oil and gas exploration and production were also investigated. Consequently fishermen and fish traders who are vulnerable and the strategies adopted by these fishermen and fish traders were explored. In order to find answers to these questions, I engaged the theory of the Sustainable Livelihood Approach which helped in understanding the various assets of fishermen and fish traders in Shama and how these assets are important for their survival. The concept of vulnerability in the Sustainable Livelihood Framework was used to analyse the obstacles imposed by the oil and gas offshore operations and how fishermen and fish traders deal with them. The feminist concept of intersectionality highlighted the differential impacts of the oil and gas industry on fishermen and fish traders. Below is a summary of the findings.

The first research question of the study asked what the main livelihoods of men and women working in the fisheries were. The study has highlighted the vital role gender plays in the system of fishing and fish trade in Shama. The type of role performed by fisher folk in the fisheries depends on their being male or female. Fishing is considered as a male activity while fish trading is considered as a female activity. From the findings, it is realized that fishing in Shama is the sole occupation of fishermen. Fishermen in Shama are predominantly engaged in deep sea fishing while they at the Anlo Beach are engaged in beach seine fishing. Women are into the processing and marketing of fish. Fishermen can however sell shark fins to middle men who in turn sell the fins to Chinese companies for export. The gender theory revealed that the relationship between fishing and fish trade was complementary (Shultz, 2005) where fishing and fish trading activities are interdependent. This relationship is however asymmetric (Overå, 2003) since male leaders usually exercise their authority in society as a whole and the authority of women seldom extends beyond women's domains.

The second research question sought to explore the effects of the oil and gas industry on fisher folk. By using the Sustainable Livelihood Approach, it was observed that fishermen are directly affected by the offshore operations of the oil and gas industry. It affected their livelihoods both positively and negatively. Apart from the newly improved ice box which was widely utilised by fishermen, the training and the livelihood enhancement programs were not beneficial. With regards to the negative impacts of oil and gas on their livelihoods, different views came up. Fishermen claim factors such as 'no go' zones, bright lights, sea traffic, destruction of oil vessels, beatings and maltreatments by naval officers amongst others were affecting their fish catch. They claimed their fish catch was declining as a result of oil and gas activities. The biggest fear of fishermen was that of a major oil spill. The Ministry of Fisheries and Aquaculture Development however attribute the decline in fish stocks to destructive fishing practices by fishermen themselves in addition to illegal fishing by foreign fishing vessels. Officials from Tullow Oil also claim their assessment of oil and gas production on fishing proved that oil and gas has an insignificant effect on the livelihood of fishing. It can be concluded that, the impact of the oil and gas on fishing livelihoods depends on the angle from which it is observed. Looking at it from the perceptions of fisher folk, it is posing great harm to their livelihoods. Situating oil and gas installations in the sea and restricting them from fishing around these installations are leading to the loss of access to fishing grounds. This is obstructing their livelihoods. From the angle of the Ministry of Fisheries and Aquaculture Development and oil and gas companies, fisher folk exaggerate the effect the oil and gas has on their fishing livelihoods claiming that oil and gas operations do not affect the livelihoods of fishermen.

With regards to fish traders, they claimed they were affected by the production of oil and gas. According to the fish traders, a decline in the level of fish catch brought about by the oil and gas exploration, affects the fish they receive for sale. Without fish to sell, they cannot cater for their household. In terms of CSR projects, the only project that has been beneficial to fish traders in Shama is the model kindergarten where fish traders keep their children during the day. The sample ovens provided and the training sessions organised by Tullow Oil were however not relevant or beneficial to their fish trading business. This clearly shows that the contributions of fish traders during meetings are not taken into account. CSR projects are based on what oil and gas companies and the government decide as best for the fish traders.

In the third research question I sought to explore the categories of men and women who are either gaining or losing livelihoods as a result of the impact. In order to answer this question,

the concept of intersectionality (Creshaw, 1991) was used. It is observed from the study that fishermen in Shama who are engaged in deep sea fishing are losing their livelihoods. However, fishermen at the Anlo Beach, who are predominantly engaged in beach seine fishing, are not affected. Fish traders' livelihoods are affected since the fish catch they receive from their fishermen has declined. Also, Tullow Oil's promise of a 'market linkage' was yet to be fulfilled at the time of the field work. The livelihood enhancement program about soap making and carpentry introduced by Tullow Oil was considered as irrelevant by fishermen. It can therefore be concluded that fishermen and fish traders are losing their livelihoods. They have however not gained any additional livelihood.

7.1 Conclusion

In conclusion, the study sought to explore the impacts of the oil and gas industry on the livelihoods of men and women working in the fisheries. From the study, the negative impacts of the oil and gas industry on fisher folk currently outweighs that of the positive impacts. The oil and gas industry, which was expected to provide employment opportunities for fisher folk, are instead affecting fishing and fish trading livelihoods negatively. Also, the oil and gas industry's impact on fishermen and fish traders are gender differentiated. Fishermen are affected directly by the oil and gas extraction activities. Since fishing and fish trading are complementary, fish traders are also affected by the offshore oil and gas extraction activities.

It is recommended that fisher folk must not only be included in decision making processes but their views must be included in the policies. Also, strategies must be put in place to ensure an increase in the positive impacts of offshore oil and gas activities for fishermen and fish traders. Furthermore, since the study was conducted away from the working space of fishermen, it would be important to investigate the interaction between oil and gas offshore operations and the activities of fishermen at sea.

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APPENDIX 1: INTERVIEW GUIDE

The Impact Of The Oil And Gas Industry On The Livelihoods Of Men And Women Working In The Fisheries: A Study Of Shama, Ghana.

This interview is aimed at collecting data on the above topic in partial fulfilment of the requirement for the award of Master of Philosophy (MPhil) Degree in Development Geography at the University of Bergen. All information provided shall be treated confidentially.

Chief Fisherman

1. Age ……..
2. Marital Status …….
3. Number of Children ……
4. Ethnicity or place of birth ……
5. Nationality ……..
6. Religious background ……
7. Level of education ……
8. How long have you been working as a chief fisherman? ……
9. How many fishermen and canoes are inShama currently? ……....
10. What are your roles as the chief fisherman? ……
11. How are fishing activities organized? ……
12. What happens during the lean season? ……
13. What are the main types of fishes harvested? ……
14. What is the average number of fish harvested daily? ……
15. There have been media reports about shark fishing in Shama. Can you explain? ……

16. What are the types of fishing in Shama? ……

17. What has been situation of the fisheries

    a. Before the exploration and production of the oil and gas? .....

18. After the exploration and production of the oil and gas? .....

19. What are your relations with the oil and gas industry?

    a. In terms of development (Are there any projects by the oil and gas industry which has been beneficial to the fisheries?) ……

    b. In terms of employment possibilities or opportunities? ……

    c. In terms of challenges in relation to the oil and gas activities? ……

20. Do you have linkages with other institutions in the case of challenges with oil related activities? ……

21. Are there any arrangements for damages

    a. Compensation process?

    b. Any arrangements in case of court cases?

    c. Loans?

APPENDIX 2: INTERVIEW GUIDE

The Impact Of The Oil And Gas Industry On The Livelihoods Of Men And Women Working In The Fisheries: A Study Of Shama, Ghana.

This interview is aimed at collecting data on the above topic in partial fulfilment of the requirement for the award of Master of Philosophy (MPhil) Degree in Development Geography at the University of Bergen. All information provided shall be treated confidentially.

Chief fish trader

1. Age ……..
2. Marital Status ……
3. Number of Children …….....
4. Ethnicity or place of birth ……
5. Nationality ……
6. Religious background …….....
7. Level of education ……
8. How long have you been working as a chief fish trader? ……
9. What are your roles as the Chief fish trader? ……
10. How are the marketing activities organized? ……
11. How are price issues organized?
    a. How are the prices determined? ……
    b. Payment arrangements? ……
    c. Have there been changes in the prices of fish? Which factors have accounted for this change in prices?

12. What was the situation of marketing fish

    a. Before the exploration and production of oil and gas? ……

    b. After the exploration and production of oil and gas? ……..…..

13. Have there been changes in fish supply? ……

14. What are some of the market destinations of the fish harvested in Shama? ……

15. Is the fish sold in new ways? ……

16. Are there new groups of people entering into the marketing of fish? ……

    a. Are they marketing the fish in the same way?

17. What has been the contribution of the oil and gas industry to the marketing of fish?

    a. In terms of Projects ……

    b. In terms of Employment opportunities ……

18. What are your relations with oil and gas companies? ……

19. Are you involved in communicating with the government and oil and gas industry about the development of Shama? ……

    a. Who attends such meetings?

APPENDIX 3: INTERVIEW GUIDE

The Impact Of The Oil And Gas Industry On The Livelihoods Of Men And Women Working In The Fisheries: A Study Of Shama, Ghana.

This interview is aimed at collecting data on the above topic in partial fulfilment of the requirement for the award of Master of Philosophy (MPhil) Degree in Development Geography at the University of Bergen. All information provided shall be treated confidentially.

Fisherman

1. Age ……..
2. Marital Status …….
3. Number of Children (what do they do for a living?) ……
4. Ethnicity or place of birth ……
5. Nationality ……..
6. Religious background ……
7. Level of education ……

8. How long have you been fishing? ……..
9. Where is your fishing activity undertaken? ……
10. How many times do you go fishing in a month? ……
11. What is your expenditure for a fishing trip? ……
12. Have you gained any assets from fishing? ……
13. What are your sources of capital (loans from banks, friends and relatives etc.) ……
14. Do you have any other sources of income? ……....
15. Do you migrate? If yes, under what circumstances and to where? ……

16. What has been your personal experiences in fishing

    a. Before the exploration and production of oil and gas? ……

    b. After the exploration and production of oil and gas? ……

17. Do you experience lean seasons? ……

    a. What have been some of your coping strategies during the lean season? ……

18. Are there any projects by the oil and gas industry which has been beneficial to you as a fisherman? ……

19. Have there been any employment possibilities or opportunities? (for children, relatives?) .....

Note: Do women go fishing? If no, why? ……

APPENDIX 4: INTERVIEW GUIDE

The Impact Of The Oil And Gas Industry On The Livelihoods Of Men And Women Working In The Fisheries: A Study Of Shama, Ghana.

This interview is aimed at collecting data on the above topic in partial fulfilment of the requirement for the award of Master of Philosophy (MPhil) Degree in Development Geography at the University of Bergen. All information provided shall be treated confidentially.

Fish Trader

1. Age ……..
2. Marital Status …….
3. Number of Children ……
4. Ethnicity or place of birth ……
5. Nationality ……..
6. Religious background ……
7. Level of education ……

8. How long have you been a fish trader? ……
9. What type of fishes do you trade in? ……
10. Have there been changes in fish supply? ……
11. What are some of the market destinations of the fish in Shama? ……
12. What is your daily expenditure? ……
13. Have you gained any assets from the marketing of fish? ……
14. What are your sources of capital (loans from banks, friends and relatives etc.)? ……
15. Do you have other sources of income? ……

16. What has been your personal experiences as a fish trader

    a. Before the exploration and production of oil and gas? ……

    b. After the exploration and production of oil and gas? ……

17. Do you experience lean seasons? ……

    a. What have been some of your coping strategies during the lean season? ……

    b. Are there any projects by the oil and gas industry which has been beneficial to you as a market trader? …….....

    c. Have there been any employment possibilities or opportunities? ……

Note: Do women go fishing? If no, why? ……

APPENDIX 5: INTERVIEW GUIDE

The Impact Of The Oil And Gas Industry On The Livelihoods Of Men And Women Working In The Fisheries: A Study Of Shama, Ghana.

This interview is aimed at collecting data on the above topic in partial fulfilment of the requirement for the award of Master of Philosophy (MPhil) Degree in Development Geography at the University of Bergen. All information provided shall be treated confidentially.

Official at Tullow Oil

1. What position do you hold? .....
2. Can you give a brief history about the oil and gas industry in Ghana? .....
3. What is your outfit's role in the oil and gas industry? .....
4. What are some of the achievements of the company in Shama?
    a. Any projects? .....
    b. Employment possibilities or opportunities? .....
5. What are the effects of the activities of oil and gas companies on the livelihoods of people residing in Shama? .....
6. What form of compensation do you pay to fishermen whose canoes are destroyed by oil and gas operations? .....
7. How would you describe your relations between your company and the residents of Shama so far? .....
8. What are the challenges the company faces in Shama? .....