UNIVERSITY FOR DEVELOPMENT STUDIES

GHANA'S OIL INDUSTRY: THE LIVELIHOOD IMPLICATIONS FOR FISHING COMMUNITIES IN THE WESTERN REGION

IRIS YOEKO KOPHY

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THESIS SUBMITTED TO THE DEPARTMENT OF AGRICULTURAL EXTENSION, RURAL DEVELOPMENT AND GENDER STUDIES, FACULTY OF AGRIBUSINESS AND COMMUNICATION SCIENCES IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PHILOSOPHY DEGREE IN INNOVATION COMMUNICATION

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DECLARATION

I, Iris Yoeko Kophy hereby declare that apart from the references to the literature and other sources of information used for the study, which have been cited and duly acknowledged. This thesis is the result of my own original work for an M.Phil. Degree in Innovation Communication and that no part of it has been presented for any degree in this University or elsewhere.

Iris Yoeko Kophy …… …….

(Student) (Signature) (Date)

Supervisors

We hereby declare that the preparation and presentation of this thesis was supervised in accordance with the guidelines on supervision of thesis writing laid down by this University.

Dr. Jasper Ayelazuno …… ……..

(Main Supervisor) (Signature) (Date)

Dr. Hamza Adam …….. ……..

(Co-Supervisor) (Signature) (Date)

ABSTRACT

In 2010, Ghana started producing oil from its Jubilee Fields, off the coast of the Western Region. This study investigates the implications of the oil industry on the livelihoods of the fishing communities living along the coast of the offshore oil fields. Using the sustainable livelihood framework, the study collected and analysed the perceptions of fisher folks about the impacts of the oil industry on their livelihoods as well as factors that influence their engagement in alternative livelihood strategies. Results from 112 fishers and 12 focus group discussions showed that more than 75% believe that the impact of oil-production on their livelihoods has largely been negative. Also, results from the analysis of household incomes using t-test indicates that on average, income has reduced from GHS 3,567.80 (US$ 853.54) to GHS 1,167.90 (US$ 279.40) per annum. Some reasons given for this reduction include the ban on fishing in certain parts of the ocean and dwindling fish stocks. Also, about 80% respondents believe that, with the exception of some few corporate social responsibilities, oil production off their coast has produced fewer development projects such as schools, markets, affordable housing, among others in their communities. From the binary probit model, married fishers, fish marketers, natives, fishers with low social capital and those with greater human and physical capitals were more likely to engage in alternative livelihood strategies. Fishers who wish to stay in business should belong to fishing groups so as to have amplified voices and strengths to negotiate for good fishing environment.

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I thank my family for helping me financially and spiritually to pursue this programme.

DEDICATION

To my parents and loved ones.

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LIST OF ACRONYMS

ACET	African Centre for Economic Transformation
CIA	Central Intelligence Agency
CRSM	Corporate Social Responsibility Movement
DFID	Department for International Development
DR	Democratic Republic
FAO	Food & Agriculture Organization
FES	Friedrich-Ebert-Stiftung
FGD	Focus Group Discussion
FPSO	Floating Production Storage and Offloading
GDP	Gross Domestic Product
GIPC	Ghana Investment Promotion Centre
GNPC	Ghana National Petroleum Cooperation
GSS	Ghana Statistical Service
HIV/AIDS	Human Immune Virus/Acquired Immune Deficiency Syndrome
IMF	International Monetary Fund
LEAP	Livelihood Empowerment Against Poverty
MoFA	Ministry of Food and Agriculture
NGO	Non-governmental Organisation
OE	Euroffice
OPEC	Organization of Oil Petroleum-Exporting Countries
PIAC	Public Interest and Accountability Committee
SAP	Structural Adjustment Programme
SLA/F	Sustainable Livelihood Approach/Framework
STMA	Sekondi-Takoradi Metropolitan Assembly
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development

CHAPTER ONE

INTRODUCTION

1.1 Background

Ghana discovered oil in 2007 off the shores of Cape Three Points in the Gulf of Guinea, the Western Region of the country (see Figure 1.1). The oil discovery was made by Kosmos Energy, a USA company. Oil production in commercial quantities began in 2010 at the oil field named the Jubilee Field. The Jubilee Field covers an area of 110 km² (Offshore-Technology.com, 2011). It has two major blocks at the deep Atlantic waters off Ghana's western coast, approximately 63 kilometres from the coast and 132 kilometres southwest of the Takoradi city in the Western Region. These blocks are the West Cape Three Point block and the deep water Tano block (Figure 1.1). According to Manteaw (2009), the exploration of the West Cape Three Points block is led and managed by an American company called Kosmos Energy while the deep water Tano block is led and managed by an Anglo-Irish company called Tullow Oil. Further discoveries by Tullow Oil include: the Tweneboa, Enyenra and Ntomme (TEN) fields in 2010 located in the Deepwater Tano contract area. This is about 60 kilometres off the coast of Ghana which makes it the second major discovery of oil in the country (Gohoho *et al*., 2016).

Since 2010, the Jubilee field which is operated by Tullow started producing oil with an average daily production of 103,000 barrels per day (bpd). It was forecasted in 2018 that total production from Ghana's oil field could average 240,000 bpd in 2019. This is expected to potentially make the country the fourth largest producer of the resource in Sub Saharan Africa by 2020 (Mpoke, 2018).

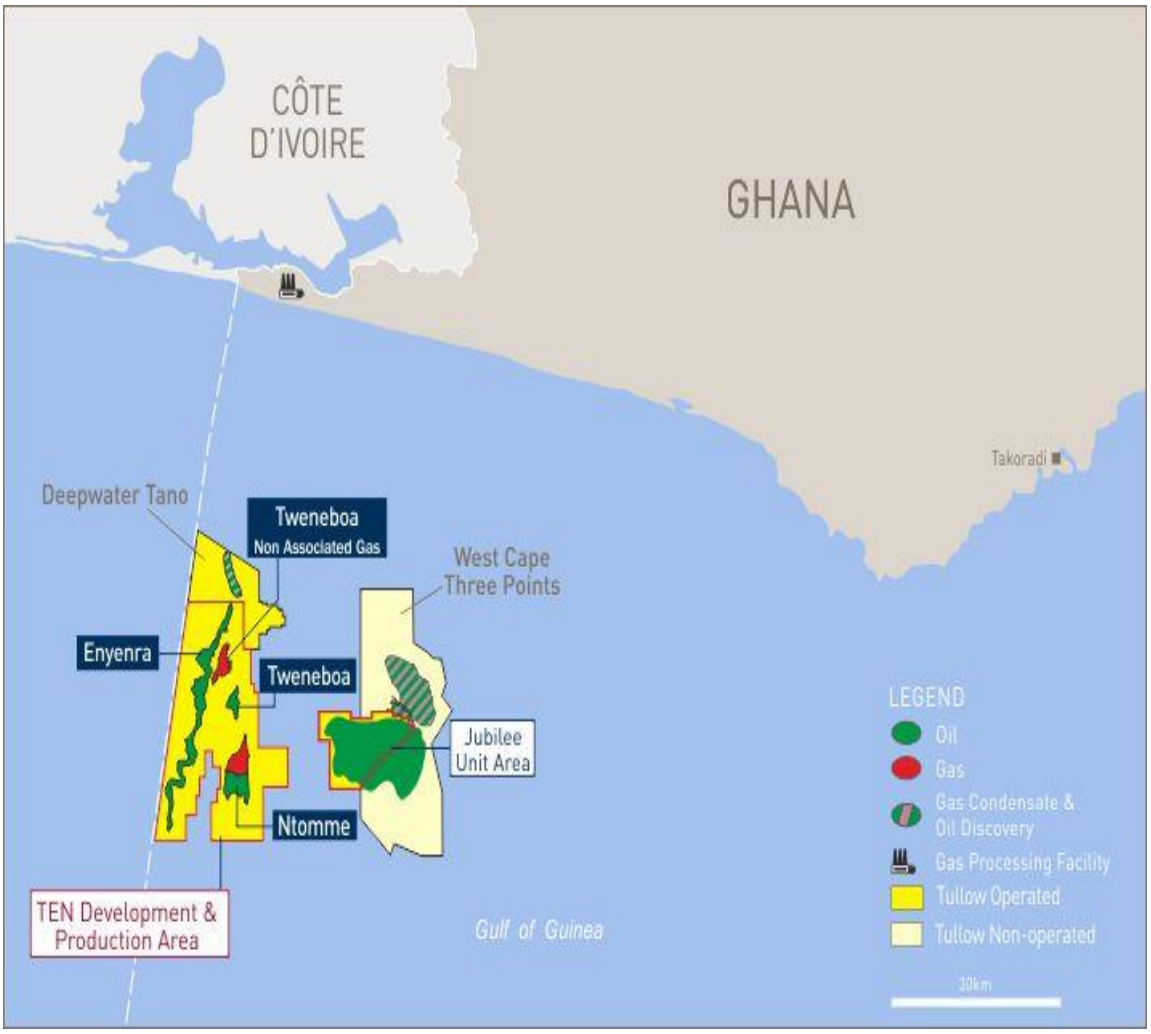


Figure 1. 1: Map showing the Two Major Oil Fields of Ghana
Source: Tullow Oil plc: http://www.tullowoil.com/operations/west-africa/ghana/jubilee-field

This discovery brought so much excitement about the opportunities of development that it offers, not only to the ordinary Ghanaian but also the political leaders of the country. It is in this light that then President of the Republic, His Excellency J. A. Kufuor made his famous statement "even without oil, we are doing so well. With oil as a shot in the arm, we're going to fly. Oil is money, and we need money to do the schools, the roads, the hospitals. If you find oil, you manage it well, can you complain about that?" (Ayelazuno, 2014; BBC, 2007; Gyampo, 2010).

Oil, also named “black liquid gold” supplies most of the world's energy demand in a form of gasoline, diesel and various forms of petrochemicals for various modes of transportation and electrical power generation (Darkwah, 2010). Oil production supports countries in multiple ways such as creating employment, generating foreign exchange earnings and alleviating poverty (Agbefu, 2011; Boohene *et al*., 2011). Oil is considered not only as a blessing for the current generation but it is also an important asset for engineering the prosperity of future generation because revenues from oil production can be used to modernize economies into a sustainable state (Planitz & Kuzu, 2015). For instance, governments of some producing countries such as Norway and Dubai have spent majority of their oil returns in building their economy with strong manufacturing base, tourism and enhanced human resource skills of its citizens. Due to the constant volatility in oil prices, and the curtail group of OPEC and other oil-producing countries, countries who discover crude oil are happy for price stability and affordability of oil products.

Despite the positivity and plentiful fortunes that come the way of countries who produce oil, otherwise called a “resource blessing”, many other oil producing countries such as Nigeria and DR Congo have suffered a multitude of problems which is referred to as “resource curse” (Ayelazuno, 2014; Gyampo, 2010). The government of Ghana, civil society groups and the general populace are keener about knowing the success story of the Ghana's oil production. The government of Ghana has therefore established institutions and laws to govern the industry for optimal results. Notable among them is the National Petroleum Commission which was set up to regulate activities within the sector. Also, the

Petroleum Management Bill, the Local Content Bill was inaugurated into the law and subsequently passage of the Exploration and Production Bills.

In Ghana, fishing is operated from two main sources namely marine and inland rivers and lakes, and aquaculture. Inland fishing is undertaken in lakes, lagoons and river in the country while the marine fishing industry consist of three main sectors thus the artisanal fishing (canoes), industrial deep sea and inshore fishing (Britwum, 2009). The fishery sub-sector employs over 2 million Ghanaians and account for about 5 percent of the agricultural GDP. Marine fishing is increasingly influenced by human activities, including the recent oil production.

1.2 Problem Statement

This study investigates the social and economic implications of Ghana's oil production on the livelihood of fisher folks in the Jomoro and Ahanta West Districts of the Western Region of Ghana. Marine fishing and related activities support the livelihoods of many people in Ghana, especially communities that live along coastal areas (Mensah, 2012). As a common livelihood activity, marine fishing is increasingly becoming unprofitable due to extraction pressure and destructive fishing methods (Pomeroy *et al*., 2006). In recent years, activities of stakeholders in the fishing industry have been described as unsustainable, and the fish population would need to grow by 70 per cent in order to catch up with the growing demand (Amponsah, 2015; FAO, 2012). The annual net growth in global fish catch is fast declining and moving toward extinction (FAO, 2012). In the Western Region, there is an increased competition between oil production and fishing, and this may affect the livelihood of many dwellers.

From literature, what is usually argued to be the most consequential problem with oil production is the pessimistic picture of exploitation, which is often referred to as "Natural Resource Curse" or the "Dutch Disease". For instance, oil production may reduce attention to agricultural and other skilled jobs, and increase the rate of environmental degradation (Elum *et al*., 2016; Sigal, 2016). A number of studies have been conducted to explore the nexus between oil production and livelihood of fisher folks in Ghana (Asafu-Adjaye, 2010; Dowokpor, 2015; Loe & Kelman, 2016; Mugisa, 2016). But there is no conclusion on these studies that in the presence of shocks emanating from the oil production, fishers are expected to adjust their production systems or engage in alternative livelihood strategies to cope with the situation.

Access to the sea and sea products not only depends upon the underlying social, cultural, economic and political institutions, but also on the asset base of the individuals whose living is derived from the sea. The choice of fishers' engagement in alternative livelihood strategies may depend not only on demographic and socio-economic factors, but how endowed they are in terms of assets. Nevertheless, the literature to date have not provided empirical evidence of the factors that influence fishers' to engage in alternative livelihood strategies as a result of oil and gas production, in Ghana and the Western Region in particular. The existing body of literature does not sufficiently focus on the perceived socio-economic effects of oil production on the livelihood of individuals and how affected persons cope or adapt to these changes by engaging in alternative livelihood strategies to the best of the researcher's knowledge. Also, the Sustainable Livelihood Framework (SLA) has not been used by the existing literature to understand the implications of the oil/gas

industry for the livelihoods of fishers in these communities but has been used to study communities and other extractive industries in Ghana, such as mining (Loe & Kelman, 2016; Sigal, 2016). The foregoing problems lead to the following research questions which the study seeks to find answers to.

The study seeks to address the following main question: what are the implications of Ghana's offshore oil production for the livelihoods of the fisher folks in the coastal communities close to the oil rig (and gas plant) in the Western Region?

1.3 Research Question

The study addresses the following specific research questions;

i. What are the perceptions of fisher folks in the study area about the negative effect of oil production on their livelihoods and livelihood strategies?

ii. What are the perceptions of fisher folks in the study area about the positive contributions of the oil industry to their livelihoods?

iii. What are the factors which influence the alternative livelihood strategies of the fisher folks in the study area as a result of the effects of the oil industry on their livelihood strategies?

iv. What is the effect of the oil industry on the income of the fisher folks in the study area?

1.4 Research Objectives

The main objective of the study is to determine the socio-economic implications of Ghana's oil production on the livelihoods of fishers in the Western Region of Ghana.

Specifically, this study seeks to;

i. Examine perceptions of fisher folks in the study area about the negative effect of oil production on their livelihoods and livelihood strategies.
ii. Examine perceptions of fisher folks in the study about the positive contributions of the oil industry to their livelihoods.
iii. Identify the factors which influence the alternative livelihood strategies of the fisher folks in the study area as a result of the effects of the oil industry on their livelihood strategies.
iv. Analyse the effect of the oil industry on the income of the fisher folks in the study area.

1.5 Justification of the Study

The fishery and oil sub-sectors are two important contributors to economic growth in Ghana. The discovery of oil in Ghana is a success story in terms of its contribution to the economy and the generally better welfare implications of the citizenry especially those in the exploration areas. It is therefore important to explore the effect of the oil exploration on the livelihood of fisher folks in the coastal areas along the shores of the Cape Three Point.

The findings of the study will add to a stock of literature on interplay between oil and gas production and the livelihoods of fisher folks. This is done by the methodological approach used by this study where the Sustainable Livelihood Framework/Approach (SLF/A) was used to assess the perceptions of fisher folks about the impacts of the oil industry on their livelihoods and livelihood strategies.

Also, this study combines the framework with an econometric approach to assess what factors influence the decisions of fisher folks to engage in alternative livelihood strategies as these are relatively few in the literature.

Additionally, it seeks to provide empirical evidence of fisher folks' engagement in alternative livelihood strategies as a result of oil and gas production. In general, very little is known about the effect of oil and gas production on income of fisher folks. The findings of the study will help address fisher folks' concerns about the negative impact of oil production on their livelihood.

Finally, knowledge on livelihood implications of oil production will inform policy to target interventions addressing the livelihoods assets and alternative livelihood strategies of fisher folks to improve their welfare in the context of oil production.

1.6 Structure of the Study

This study is organized into five (5) chapters.

Chapter 1 contains the introduction which gives the background to the study, problem statement, research questions and its corresponding objectives, research justification and the structure of the thesis.

Chapter 2 reviews literature on key concepts of the study. It elaborates on the livelihood activities of communities in the study area; history of oil exploration and production in Ghana. Furthermore, the sustainable livelihood framework is discussed in accordance with asset endowments of fishers and engagement in alternative livelihood strategies by fishers. Also, the chapter reviews literature on oil production and development in Ghana. Finally, the determinants of fishers' engagement in in alternative livelihood strategies are reviewed.

Chapter 3 discusses research methodology, which entails the study area, research design, and theoretical and conceptual frameworks of the study as well as the methods of data analysis. It specifically highlights the sampling technique and data collection procedures. In this chapter, the binary Probit model was used to analyse the factors determining fishers' engagement in alternative livelihood strategies.

Chapter 4 presents the descriptive and econometric results of the study. It provides the summary statistics (such as means, standard deviations, frequencies, percentages and statistical tests) of all the variables used in the study. The presentation of results is also followed by a detailed discussion where all finding were compared with previous studies in Ghana and beyond.

Chapter 5 starts with summary of the study. This was followed by the conclusions sections based on which policy recommendations were formulated.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Since the discovery of oil in Ghana, both scholarly and non-scholarly literature have been produced on the industry and its development prospects and challenges for Ghana and Ghanaians. This chapter reviews this body of work to illustrate the current debates and research findings on the development prospects and challenges of the Ghanaian oil industry. Section 2.1 examines livelihood activities of communities in the study area: fishing and fish mongering; this is followed by section 2.2 which presents a brief overview of the history of oil exploration and production in Ghana. Then section 2.3 discusses the sustainable livelihoods framework. In section 2.4, the relationship between oil production and development in Ghana is extensively discussed and section 2.5 concludes the chapter with detailed discussion on the sustainable livelihood framework, underlining and describing its key elements which will be used for the analysis in chapter four.

2.1 Livelihood Activities of Communities in the Study Area

Globally, average per capita fish consumption accounts for about 17% of the world protein intake. Although, small scale artisanal fisheries dominate world output, a growing percentage of the total fish supply is accounted for by aquaculture. The contribution from aquaculture rose from 13 percent in 1990 to about 40 percent in 2010. Close to about half (47%) of the world's fish supplies destined for direct human food consumption comes from aquaculture (FAO, 2013). Ghana's fisheries sector constitutes an important sector in national economic development. It is estimated that the fisheries sector contributes about

3% to total Gross Domestic Product (GDP) and about 5% to Agricultural Gross Domestic Product (AgGDP). The sector also contributes significantly to the national economy in terms of food security, employment, poverty reduction and foreign exchange earnings (Saagulo *et al*., 2017; FAO, 2013; BoG, 2008). The fisheries sector is that sector regarded as the agricultural industry that determines the well-to-do of the economy. In 2015, the fishery sector contributed 6.2% to the economic growth of the country; therefore the importance of the sector cannot be overstated (MoFA, 2016).

The role of the sector in terms of poverty reduction is very important. Many poor and vulnerable people rely on the fisheries sector either directly or indirectly for their livelihoods (FAO, 2005; Saagulo, 2017). They employ over 90 percent of the world's capture fishers and fish workers about half of which are women. In addition to full and part time fishers and fish workers, seasonal or occasional fishing and related activities often provide vital supplements to other livelihood activities, in times of difficulties or as a recurrent side-line activity. Small-scale fisheries contribute about half of global fish catches and when considering catches destined for direct human consumption, the share contributed by the sector increases to two-thirds (FAO, 2012). Fisheries also support the livelihoods of an estimated 540 million people – or 8% of the world's population (UNEP, 2012). In fishing communities across the world and especially in the Western region, small-scale fisheries generate income, provide food for local, national and international markets and make important contributions to nutrition. Many small-scale fishers and fish workers (employed in associated jobs, in particular in fish processing, distribution and marketing) are self-employed and engaged both in directly providing food for their household and in

commercial fishing, processing and marketing (FAO, 2012). Small-scale fisheries, include fishing and fish farming, provide a vital source of food, employment, recreation, trade and economic well-being for people throughout the world and should therefore be developed in an environmentally sustainable manner. Fishing communities are commonly located in remote areas and tend to have limited access to modern technology, capital and markets, basic infrastructure or social services and lack alternative livelihoods. Competition and/or conflict with other sectors is high (Vincent-Akpu *et al*., 2015).

The fisheries sector is typically characterized by remote landing sites and periodic, decentralized postharvest and marketing activities that hinder efforts to collect data illustrating their scope, impact, importance and economic value. This substantial lack of data causes fisheries policies across the globe to neglect small-scale fisheries, and generally hampers efforts to ensure their long-term ecological sustainability and resilience. Moreover, because the contribution of small-scale fisheries to local, national and regional economies is often poorly quantified, they are habitually overlooked at the national policy level. Over-exploitation of resources and threats to habitats and ecosystems such as pollution, removal of coastal mangroves and other coastal habitats negatively affect fisheries resources. All these factors make it difficult for their voices to be heard, defend their human rights and tenure rights, and secure the sustainable use of their fishery resources (Vincent-Akpu *et al.*, 2015). In effect, small-scale fishers, who are typically already disadvantaged by their socioeconomic, political, cultural and physical remoteness, are often further marginalized by national fisheries policies that typically favour large-scale industrialized fishing sectors (Barnes-Mauthe *et al*., 2013). This seemingly precarious is

compounded in the western region and the Jubilee field for that matter by the exploration of oil and gas.

The factors that influence the fisher folks' engagement in alternative livelihood opportunities due to oil production activities within the local settlements include cultural factors, such as caste and the effect of these factors cannot be overemphasized. In fact, the benefit and elasticity of more affluent households to embark on varied revenue streams and adjust to varying conditions can be counteracted. Coulthard (2005) in his study described the situation of a South Indian fishing community where better-off fishermen destined by their caste, specialized skills and status were powerless to differentiate their fishing methods, and in the end, unable to manage the disparities in fish catches and exploit niche fish kinds than planned social group commonly known as "unprofessional fishers', who were allowed to utilize an extensive sort of fishing mechanisms.

Another factor considered to have an influence on the kind of income creating undertakings is said to be gender. For example, the various researches done in fishing communities of Tanzania and Kenya have established the fact that whereas fishing was not a significant business for women's associations, fish dealing was vital undertaking for them, but second to farming (MRAG, 2003). Moreover, in the study of Gnimadi *et al*. (2006) and Massamba (2005) it was proved beyond reasonable doubt that mostly men's activities come to a halt when fishing as a result of low catches.

All the same, the generated revenue from fishing activity can confidently be said to be a stepping stone for most households in local communities to have access to services and better education, participate and invest in diverse but corresponding undertakings. The fact

is that, some studies have taken into consideration the variety of pursuits of fishers, clarified by the productivity of the environs in which they reside, the range of the abundant natural resources at their disposal, and their social and cultural background. Thus, the variety of biosphere of the land-water interface is projected to have however, bring about both opportunities and extortions to those living there, especially if they are poor and in the setting of growing climate change-associated hesitations (FAO, 2008).

2.2. Overview of oil exploration and production in Ghana

Ghana's petroleum activity can be traced back to the turn of the 20th century. In the early 1990s, the Keta and Tano Basins had small-scale productions with the Saltpond field having been operating since the 1970s. However, Ghana achieved a commercial oil production status with the discovery of the offshore Jubilee field in 2007 (Skaten, 2018). Ghana's oil industry known as the Jubilee field can be found in the Gulf of Guinea. It is about 60 km off the Ghanaian coast, close to the Côte d'Ivoire border. It is widely ranged within the Deepwater Tano and West Cape Three Points blocks. Its wells are estimated to be at a water depth of 1,100 and 1,300 meters and at an overall depth between 3,400 and 4,200 meters. It covers an area of 110 km², which is approximately the size of 155 football grounds (Offshore-Technology.com, 2011).

In addition, the second field known as the Tweneboa field which is about 6 km east of Jubilee was brought to light in March, 2009. Owing to these discoveries, the Owo-1 drilling attested the rationally huge sums of the field in July, 2010. So far a considerable depth of 4,000 meters has been drilled. Studies however show that there is no underwater network linkage between these fields: Tweneboa and the Jubilee field. Besides these key

discoveries, it has been confirmed that there are other smaller wells nearby. In all-inclusive, the corporations involved in the exploration have uncovered over 15 wells within the Western sea zone of the country.

The precise locations of the wells within the borders of Cote d'Ivoire and Ghana have made the discoveries of the oil entertaining, as the Côte d'Ivoire government probed, if all drillings had been undertaken within the terrain of Ghana. Owing to this reason, a clear-cut agreement regarding maritime boundary has been established by the Boundary Commission. These drillings positions however have not been made known to the Ghanaians, although the coordinates of wells of the Jubilee field have been broadcast and therefore proves that they are situated within the terrain of Ghana (Vos, 2016).

2.3 Oil Production and Sustainable Livelihoods of Fishers

The recent discovery and production of oil and gas in commercial quantities in June 2007 in the Ghana has ignited the debate on resource extraction and its tendency to cause livelihood deprivation, conflict and whether peace will endure or not in the country and especially in the Western region. Some experts argue that the exploitation and production of oil in Ghana will make the economy resilient and to grow fast, leading to jobs creation, and an improvement in the wellbeing of the poor in fishing communities (Béné *et al*., 2010; Akabzaa, 2007; Egyir, 2012). For example, they assert that investment in improved infrastructure, water supply, sewerage and waste treatment, health care and education would help bring about improved welfare in such fishing communities (E&P Forum-UNEP, 1997).

In 2011, Ghana was recorded a middle-income country after showing robust growth (Ghana Living Standards Survey Round 5 (GLSS 5)). Further, a report by the World Bank and the International Monetary Fund (IMF) showed that Ghana has demonstrated significant growth ever since it was registered on to the Structural Adjustment Programme (SAP). In the fishing industry for instance, fishing contributed to about 4% of the Gross National Product in 2009 and in 2013 it accounted for an estimated 1.4% of its GDP (GSS, 2014). A survey by Atta-Mills *et al.* (2004), claims that the importance of fisheries for subsistence and economic development varies throughout West Africa.

In Ghana, marine resources are seen as a significant birthplace of food and economic activity". This implies that the fishing sector delivers an imperative source of income for people residing along the coasts. Those who support this argument see the discovery of oil as an opportunity for the improvement in the livelihoods of Ghanaians and the deepening of peace and stability in the country. In contrast, there are those who are not so optimistic. They believe that the oil industry will cripple the development of agriculture in the area of production and bring about oil related conflicts and livelihood deprivation on the fishing communities and Ghana at large. They also assert that oil production will bring about terrorism, conflicts, child labour, rural–urban migration, loss of marine life; unemployment and degradation of the natural environment (Badgely, 2011).

Ghana's major operation's in the oil industry is projected to focus in six (6) districts in the Western Region. These operational areas are coastal and include communities whose major livelihood activity is fishing. There have been several fora to deliberate on the potential impact of the exploration of oil and gas on these fishing communities within the affected

districts and how well the resource could be managed for the ultimate good of all Ghanaians. Friedrich-Ebert-Stiftung (FES) collaborating with the Corporate Social Responsibility Movement (CSRM) organized a National Forum to exchange views about the shock of oil discovery activities on fisheries and its environs in Ghana in 2009. The key stakeholders who were involved in the discussion were the Government, players in the Oil Industries, Traditional Authorities, Fisher folks and CSOs. Among the socio-economic anticipations from the effect of the oil extraction activities included the loss of livelihoods, most importantly the fishing; flooding by migrants for jobs leading to high unemployment rate in the region; inflating the prices of items such as food, accommodation, leisure; increasing social vices such as crime, drug abuse, commercial sex work, drug and its associated health implications from pollution.

It is evident that in Ghana, the artisanal fishery activities are structured along gender lines. Men fish while women do the processing and the marketing of fish, and also serve as financiers to other fisher folk (Britwum, 2009; Harper *et al*., 2013; Overå, 2006). Hernæs (1991) also argued that some of the roles of women such as giving substantial credit to canoe owners play an important role in facilitating fish supplies. According to Scheffer (2001), there are categories of men and women performing activities in the fishing industries and these groups are regulated based on certain factors including class that are perceived in terms of for instance income level, type of livelihood and ownership of asset. This goes a long way to offer them access to diverse opportunities (Overå, 1998). Taking the chief fisherman (also called apofohene) into consideration, he plays a key role in linking his fishing community to government, NGOs, oil and gas companies and other government

agencies. In adoption of new technology, he is the first person the technology is introduced to. The chief fisherman is equally entitled to many other fish resources and equipment. They own a larger percentage of the catch than crew members (Vercruijsse, 1984, cited in Overå, 1992). Thus, access to fresh fish is centred on the institution of marriage and family ties reinforced by entrepreneurial skills, hence producing the direct and indirect type of access (Britwum, 2009).

However, there are other submissions which suggest that the oil rigs and operations around the rigs have attracted most of the fish into the 'no go' zone and this has led to a decrease in the levels of catch (Badgley, 2011). For example, the fisher folk in the Jomoro district have protested against the oil rigs and the Floating Production Storage and Offloading (FPSO) vessel. They claim that the use of a very strong lightening system for attracting fish into the non-fishing zones has led to the unrestricted fishing areas virtually empty. Fishermen have also lodged a complaint about the destruction of their nets by huge foreign oil vessels without being compensated for it. Adding to the foregoing, there have been series of protests from fishermen about increased vessel traffic which could mean more accidents and increased noise which scares fish away from the area (Badgley, 2011). According to Ayelazuno (2014), the ramifications of the activities of the oil sector for regional and local developments project that, a large proportion of the Western Region predominantly Sekondi-Takoradi which are the capital of the region would most probably experience enormous revolution with oil production activities. They asserted that living and housing costs for both local and domestic workers are likely to rise astronomically. Majority have also articulated reservations about subsequent hikes in rents and costs of

land in the region. For instance, land prices are predicted to double in Sekondi-Takoradi where demand is high and is expected to growth higher. They explain that the increase in cost is due to the growing need for accommodation and facilities for storage (Yalley and Darko, 2012). Some CSOs also contend the excuse for expenses of precise 80% of the oil revenues on construction of the road infrastructure while disregarding the quest to provide basic services such as education and health is legitimately not right (Tekper, 2013).

According to Amin (2011) though the demand for 10% share of the oil revenue by the traditional chiefs of the Western Region to the region's development has been turned down in the legislative framework, it is obvious that the region has received the absolute 10% of the generated oil revenues. This agitation is due to the fact that, other regions of the country have had their fair share of the oil revenues. This affirms the statement made by the Vice President of the Western Regional House of Chiefs and the Omanhene of Lower Discove, Nana Kwesi Agyemang (IX) who in his speech delivery said, "We will continue to demand our fair share because if you look at what Public Interest and Accountability Committee (PIAC) has been presenting over the years, the distribution has not been fair to the region. As the bread basket, we get between 15 and 20 percent of the national allocation and for us; if you consider the pressure on our infrastructure, we should get more to be able to maintain them". He added that the discovery of oil is good news to the country but now, it is not pleasant for the people of the Western Region as most of the employment is done in Accra which places those of the Western Region in a relative disadvantaged position, (Eduku, 2016. Retrieved from www.citibusinessnews.com/Ghana). So the question still

remains: “If the local chiefs would have done better to avoid a clear claim?” (Amin, 2011). The aforementioned factors can threaten the livelihoods of fishermen and fish traders.

Other development practitioners attribute these issues to the absence of comprehensive development plan that is vital in setting out the agenda for the state to chronologically follow the assortment of development projects that are to be underwritten by the revenue generated from the oil. They opine that these projects have not been founded on an established pattern. They submit that political influence and favouritism for specific projects are perceived to define the selection of the areas that have handsomely profited from the augmented revenue expenses (Plänitz & Kuzu, 2015). Importantly, further studies point out that different identities or what Vercruijsse (1984, cited in Overå, 1992) defines as “class society” within the canoe fishing industries will result in variation of the effects of the oil and gas industry on fishermen and fish traders’ livelihoods since oil has the tendency to induce a price increase in almost everything.

In that regard, the government of Ghana in its effort has established the necessary and significant measures to direct the oil extraction and its related revenue management operations in the sector (Plänitz & Kuzu, 2015). Like in many developed states, the development discussion itself however shifted attention from measuring development with economic indicators like GDP and GNP to human development indicators such as livelihood and sustainable livelihood approach after the Brundlandt Commission Report in 1987 which recognized the idea of providing basic needs for the deprived and insisted that it is mapped up sustainable development on the development plans for many nations. Thus, the concept of Sustainable Livelihood Approach (SLA) has been executed and embraced

by many third-world countries as directing code and key analytical tool for donor institutions.

As an analytical tool it has envisage for a suitable approach to identify the needs of the poor, to understand ways to handle the challenges faced by the poor and to improve on the disbursement of goal-directed aid of donor institutions (Plänitz & Kuzu, 2015). This concept has widely been accredited to Robert Chambers (Chambers and Conway, 1992).

According to Conway, the concept can be best understood as 'a clear people-centred approach'. It places emphasis on people rather than the resources. It seeks to underpin the most pressing limitations confronted by people particularly the poor irrespective of where these occur (i.e. which sector, geographical space). It also seeks to explain and understand the diverse capabilities of people to manage in times of extreme danger including climatic and seasonal changes and droughts. In this study, the term sustainable livelihoods signify the capability of fisher folks (fishermen and fish traders) to make use of their assets such as knowledge base, education, canoes and fishing equipment to sustain their productivity in the advent of any future unforeseen circumstances (Conway, 1985, cited in Allison and Ellis, 2001).

In a broader term, it serves as the linkage between the three core concepts namely, the capability, equity and sustainability (Solesbury, 2003). According to Serrat (2008), the assets own by these fisher folks are further categorized into five key capitals namely; the human capital, financial capital and natural capital. The other two include social capital and physical capital. These assets are pooled together with the abilities of the fisher folk groups which will in the long run assist in the creation and ownership of other assets.

More to this point is the fact that, the right to own appropriate capabilities and assets is reliant on the dominant changing systems and entities abridged as the vulnerability context. These changing systems and progressions as stated by (FAO, 2013) include the institutions, organizations, policies and legislation which regulate the access to the five categories of capital, terms of exchange between the diverse forms of capital and the economic as well as other proceeds from the livelihood policies."

From the perspective of Knight (1992), he argues that "To be a member of a community or society is to live within a set of social institutions". He further explains that social systems or organizations will always be in existence; they take different forms and differ from each other. These social entities present reservations which encroach on the livelihoods of rural individuals resulting into livelihood change arising in societies that are enriched in abundant natural resources such as oil and could be a product of benefits to the surviving societies. Other views suggest that a secure livelihood may suffer from unceasing threat given the levels of vulnerability encompassing what is termed as "trends, shocks and seasonality". In that manner, strategic measures emerge over time to combat the trends, shocks and seasonality. And so a livelihood strategy or activity which could adapt these devices is what is described today as 'sustainable' (Knight, 1992).

For the purposes of clarity and development of human welfare, the Sustainable Livelihood Approach framework was further simplified and modified. Its aims as proposed by Allison and Allison & Horemans (2006), constitutes the following: first, to assist people in making use of poverty indicators determined by themselves to appreciate an everlasting livelihood enhancement. Second, to bridge the gap between the macro and micro levels. Also,

Kollmair and Gamper (2002) justify 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". In that regard, below represents a diagram of the Sustainable Livelihood Framework Approach proposed by Carney (1998).

2. 4 Oil Production and Development in Ghana

The relationship between oil/gas and the development of the country so endowed with these resources, in this case, Ghana, has engendered a vast body of literature, debating various theories and policies. Some of the key theoretical and policy debates are reviewed under this section, encompassing the oil-rush in Africa and ocean grabs, the resource curse and the paradox of the plenty debate, the local content debate and the petrol-development state and corporate social responsibilities.

2.4.1 The oil-rush in Africa and ocean grabs

Africa possesses quite a modest share of the world's petroleum reserves. About 9.4% of proven world reserves, compared with the Middle East that has 61.7% are on the African continent. This notwithstanding, the USA, China and Western European countries are the world's major oil-consuming nations. In recent years these major consumers have exhibited extraordinary interest in the development of African oil reserves by making huge bids for whatever exploration blocks are available and investing large sums in drilling platforms, pipelines, loading facilities and other production infrastructure. The rush to develop the oil sector on the continent has enormous implications for producers on the continent of Africa and for major oil-importing countries. For the continent's producing countries it promises both wealth and a likelihood for severe internal dissonance over the

allocation of oil revenues. However, for consuming countries it entails growing reliance on imports of an essential substance from a region of protracted instability, with obvious implications for national security (Klare and Volman, 2006).

Ocean grabs are phenomena associated with oil discovery and exploration on the continent and elsewhere. The phenomenon refers to the "capturing of control by powerful economic actors of crucial decision-making around fisheries, including the power to decide how and for what purposes marine resources are used, conserved and managed now and in the future" (Franco *et al*., 2014; cited in Ayelazuno and Adusah-Karikari, 2016). It is not just land and other related natural resources that are the targets of finance speculation. The ocean and its related resources are also targets of finance speculation; for example, when finance capital tries to reinvent itself out of its cyclical crises by capitalising many natural resources including portions of the ocean. The nature of the resources that global capital needs to grab as well as the mechanisms of physically grabbing them are often and inherently together, entangled and inseparable. The place of land for crop farming without water is non-existent. The availability of arable land for farming is what drives land-grabbing in Africa, but this is linked not only to the fertility of the land. The availability of rainwater and irrigable water for farming are but two factors also driving land grabs in Africa. In order to address the global energy crises, oil and gas are needed but they cannot be grabbed, in terms of the mechanics for doing that, without first grabbing the land and ocean in whose bellies they are buried (Ayelazuno, 2018; Ayelazuno and Adusah-Karikari, 2016).

2.4.2 The resource curse and the paradox of the plenty debate

Through history, natural resources have played an important role for wealth in a number of the countries that we now describe as developed. However, during the last 5 decades, there have been relatively fewer examples of countries rich in natural resources that have grown rich. Instead, it appears that countries rich in resources such as oil or diamonds on average do worse in terms of growth or economic development more generally, a phenomenon that has been termed the resource curse (Kolstad and Wiig, 2009). Resource curse refers to a situation where there is the likelihood that a country could fail to harness their resources for national development and could even be harmed by these resources in some cases (Shaxson, 2007). It simply explains a situation where the possession of oil, natural gas, or other valuable mineral deposits or natural resources do not necessarily imply economic growth. In many African countries such as Angola, Nigeria, Sudan, the Congo and recently Ghana, there are vast and rich reserves of oil, diamonds, and/or other minerals and yet the standard of living in these countries is low with high poverty rates especially in rural areas. Meanwhile, East Asian economies such as Japan, Korea, Taiwan, Singapore and Hong Kong have achieved standards of living comparable to those in western countries with virtually no explorable and exportable natural resources (Frankel, 2010). The phrase the natural resources curse was coined to explain this baffling phenomenon. An upsurge in oil production such as is the case today would temporarily lead economic growth. However, this is quickly followed by hangovers so deep that growth in the very long term is often lower than it would have been without the resource. In this circumstance, the dependence on mineral is seen rather as a curse than a blessing that can spearhead economic growth. It could also be a curse in terms of its risks of violent conflict, greater inequality,

less democracy and even more corruption. The poorer and weaker a country is before the oil discovery, the more likely it is to be harmed by it (Shaxson, 2007). It may seem paradoxical that a "gift" from nature of abundant gemstones, gold, or oil tends to cause economic distress (World Bank, 2003). A 2002 report by the World Bank which assessed the economic performance in the 1990s of countries that have mining sectors found that countries with medium-sized mining sectors (between 6 and 15 percent of all exports), their GDP per capita fell at an average of 0.7% annually over a ten year period. Countries with large mining-sector (between 15 and 50% of exports), GDP per capita dropped by an average of 1.1% annually over the same period. For countries with more than 50% of all exports, GDP per capita fell by an astonishing 2.3% a year. Since the discovery of oil in Ghana, the resource curse approach or theory has been used to analyse the prospects and challenges of oil-based development in Ghana. Examples of studies that used the resource curse approach to assess Ghana's oils sector challenges include (Ayelazuno, 2014; Kopiński *et al*., 2015; Okpanachi & Andrews, 2012; Phillips *et al*., 2015).

2.4.3 The local content debate and the petrol-development state

Local content refers the strategy of using tariffs and quota restrictions on imports, controlled access to foreign exchange and other forms of state protection to encourage domestic industry to supply product previously only available through exports. The domestic industries engaged in the strategy may be locally owned (private or by the state) or even foreign owned (Ovadia, 2015). The simple implementation of policies and mechanisms that ensure that the locals are not disadvantaged by the discovery and exploration of any natural resource is undertaken. The phenomenon is important because

it focuses on supporting and protecting key sectors of the economy. Until recently, the development prospects of sub-Saharan Africa looked bleak. As part of a global capitalist system, the continent did not benefit from capitalist development. In these countries, the state functioned not on the basis of domestic taxation but on the basis of external sources of income from petroleum rent. Despite the amount of income generated from this extraction by oil producing countries, the quality of life of its citizenry kept declining. However, the situation has vastly improved now with economic growth and social development transformed now in oil producing countries on the continent. This has open opportunities for state led development and transformations that are deemed capitalists. At the centre of these shifts from declining livelihood standards to an improved livelihood status are local content policies, which open the path for economic development through natural resources.

Ghana's local content seeks to promote linkages with other sectors of the economy. This the country seeks to achieve through four main pillars: local employment opportunities, in-country spending and procurement of local goods and services, technology and skills transfer, and local participation through equity and management. In the oil and gas sector, actions by the government to promote local content have been satisfactory, even though this assessment could be coming too early. However, there remains a lot to be done. Though Ghana is doing well in the employment of local worker, the country is doing less in the area of service contracts, procurement of local good and also local equity and management. The country is also, not doing so well in terms of technology transfer. The major obstacles have been the limited capacity, high cost of operating local companies, inadequate financial support, poor certification standards and the inability to meet high industry standards. The

prospects depend on how the industry, local businesses, and state institutions work together to overcome the obstacles facing local content opportunities (ACET, 2015).

2.4.4 Corporate Social Responsibility (CSR)

Corporate social responsibility has been conceptualized rather as the managerial obligation to take action to protect and improve both the welfare of society as a whole and the interest of organizations. Other views on the place of companies and firms in the broader social environment have prompted multiple conceptualizations of CSR, ranging from a purely economic one to more recently a comprehensive proactive social responsiveness view that articulates a firm's long-term role in a dynamic social system (Sen and Bhattacharya, 2001). Similarly, Wood (1991; cited in Moir, 2001) states that the fundamental idea of any corporate social responsibility is to have businesses and societies intertwined rather than distinct entities. He further intimated that for businesses and firms to engage in corporate social responsibilities and the forms that these responsibilities should take should depend on the economic perspective of the firm that is adopted. Moir (2001) simplified CSR to mean "the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large. Corporate social responsibility initiatives are into six (6) broad domains and these include; community support (example, support of arts and health programmes, education and housing initiatives for economically disadvantaged, generous/innovative giving); diversity (e.g., sex, race, family, sexual orientation, and disability based diversity record and initiatives, or lack thereof, within and outside the firm); employee support (e.g., concern for safety, job security, profit sharing, union relations, employee involvement). Others include;

environment (e.g., environment-friendly products, hazardous-waste management, use of ozone-depleting chemicals, animal testing, pollution control, recycling); and Product (e.g., product safety, research and development/innovation, marketing/contracting controversies, antitrust disputes).

Also, Dahlsrud (2008) argued that corporate social responsibilities can be put into some five (5) dimensions and these include; the environmental dimension defined as the natural environment (e.g. a cleaner environment, environmental stewardship and environmental concerns in business operations); the social dimension defined to be the relationship that exists between business and society (e.g. contribute to a better society, integrate social concerns in their business operations, and consider the full scope of their impact on communities, among others); the stakeholder dimension defined as stakeholders or stakeholder groups (e.g. interaction with stakeholders, how organisations interact with their employees, suppliers, customers and communities) and the voluntariness dimension defined by actions not prescribed by law (e.g. based on ethical values, beyond legal obligations and voluntary).

Modern CSR was birthed during the 1992 Earth Summit in Rio as an unequivocal confirmation of voluntary measures rather than mandatory regulation. But what moved CSR forward in the 1990s was a combination of corporate disasters in which the oil sector proved integral and the growing effectiveness of the human rights advocacy network. It was Shell's handling of two public relations disasters, the Brent Spar incident in the North Sea in 1995 and the hanging of Ken Saro-Wiwa in Nigeria in 1995 launched the social investment movement. By 1997, Shell had launched its cornerstone creation, the

"Statement of General Business Principles," which included that the company actively seeking out NGOs for policy dialogue, and BP's "What we stand for" statement was released in 1998 (Watts, 2005). In Ghana, scholars have written on the role of corporate social responsibilities. However, some projects undertaken under corporate social responsibilities include market construction in Akwidaa in the Ahanta West District and the provision of potable drinking water at Mangyea and Effasu in the Jomoro districts. Some studies that have examined the role of corporate social responsibilities on the livelihoods of fisher folks include; Ackah-Baidoo (2013) and Okpanachi & Andrews (2012).

2.5. Sustainable Livelihood Approach

This study adopts the sustainable livelihood approach to analyse its research questions and objectives stated above. The concept of Sustainable Livelihood Approach (SLA) was designed in 1999 and has been accepted as a regulatory principle and a foremost analytical tool for aid organisations. As a widely used tool in development planning and projects, it has enabled a suitable work plan for addressing the needs of the poor and marginalized as well as understanding how to tackle challenges that are faced by these groups and to improve the sharing of goal-directed support from donor and international agencies at large.

In the early 1990s when the livelihood research commenced, several variations of the SLA have been introduced and used. The SLA model used in this study is a clear people-centred approach which focuses on access to assets. This approach to analysing livelihoods take account of institutional and policy issues. Other ways of addressing livelihood challenges

have been used by such organisations as CARE, OXFAM and the UNDP. The UNDP model in particular differs from the SLA developed by the DFID in that it promotes adaptive strategies rather than transforming structures and processes (Planitz & Kuzu, 2015). These model however have the tendency to disregard salient aspects that should be considered in this study that has the aim of assessing the livelihood implications of Ghana's oil industry for fishing communities in the Western Region (Carney, 1998). The DFID model has been used severally over the years and in different countries and environments such as the one which this study considers. This model has in the centre of its analysis, the access to assets of any group of people e.g. households.

The sustainable livelihood framework shows how, in different contexts, sustainable livelihoods are achieved through access to a variety of livelihood resources (natural, economic, human and social capitals) which are combined in the pursuit of different livelihood strategies.

The conceptualization of poverty and development can be integrated into a theory of Sustainable Livelihood Approach or framework, which then can be perceived as a theory, so far as it draws its source on the broader perspective of poverty and development (Morse, 2009). Development practitioners have noted that SLA has been created from the term 'intentional' approach to development (Morse & McNamara, 2013). However, due to the contested nature of development, no single definition has been attributed to it and from the perspectives of Cowen & Shenton (1998), there are two basic forms namely: The immanent and the intentional development.

The immanent development (also known as the inherent development) involves a broad process in which social units are compelled by a host of factors such as evolutions in science, the arts, communication to mention among others. It is driven by several procedures including the global integration which aids the sharing of new notions and the scientific technologies. The intentional (also called interventionist) development emphasizes the involvement of both the government and NGOs to reinforce the implementation of development projects and its related programmes towards the eradication of poverty among the poor in a social set up.

In all, the sustainable livelihoods approach is a framework that brings together the core factors that are assumed to act in agreement with the livelihoods definition. The framework defines the assets owned, controlled, claimed, or in other ways accessed by and are available to the household (Swift 1989, cited in Allison and Ellis, 2001). It is fundamental to remark that assets are not only narrowed to cash, savings or other material sources but comprises of other non-material characteristics. These includes "health, labour, knowledge and skills, friends and family" (Rakodi, 2002: 10). The livelihoods assets are grouped into five major capitals. Also, within the framework, the concept of vulnerability underlines the shocks, trends and seasonalities that the fishermen and fish traders are exposed to due to oil and gas activities. This helps to reveal the various livelihood strategies adopted by the fisher folks in the Western Region of Ghana. With regards to that effect, the impact of the oil and gas on the livelihoods of fisher folks will further be critically assessed.

In addition to the above, development practitioners have noted that SLA has been created from the term 'intentional' approach to development. With the contested nature of

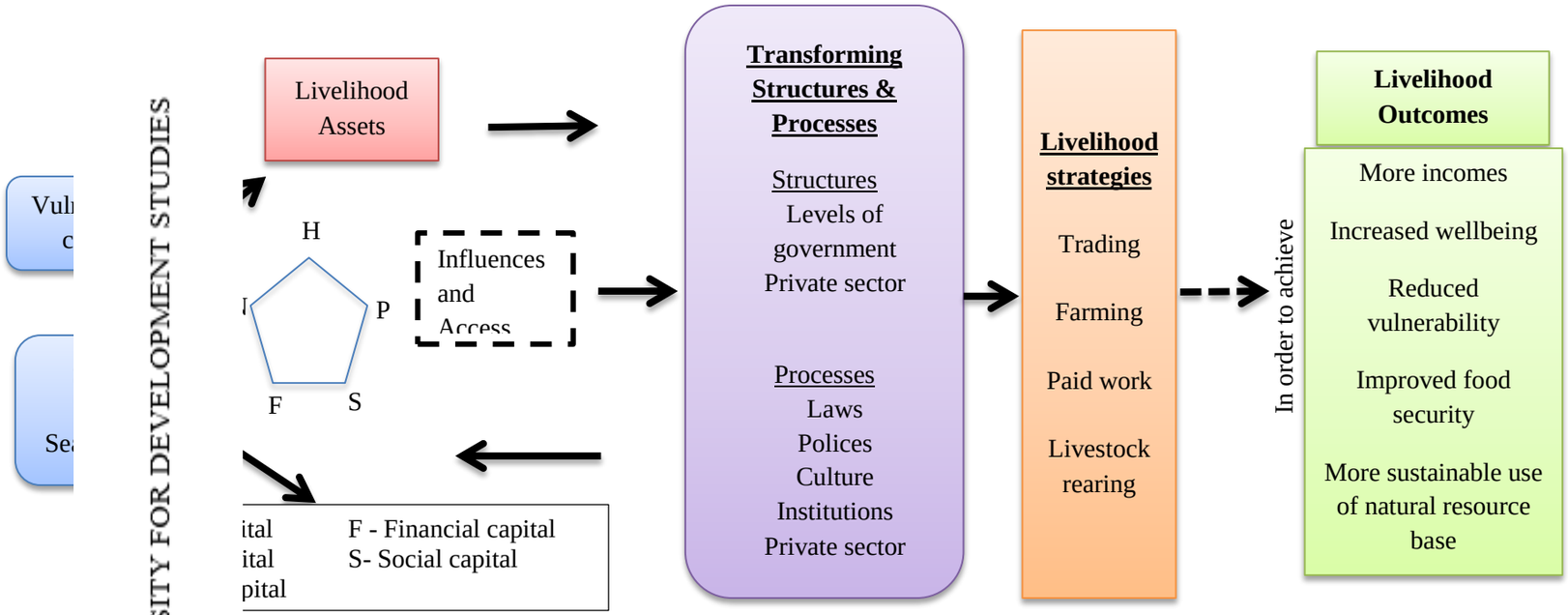
development, no single definition has been attributed to it and from the perspectives of Cowen & Shenton (1998), there are two basic forms namely: The immanent and the intentional development. The immanent development (also known as the inherent development) involves a broad process in which social units are compelled by a host of factors such as evolutions in science, the arts, communication to mention but a few. It is driven by several procedures including the global integration which aids the sharing of new notions and the scientific technologies.

On the other hand, the intentional (also called interventionist) development emphasizes the involvement of both the government and NGOs to reinforce the implementation of development projects and its related programmes towards the eradication of poverty among the poor in a social set up. These projects are usually time and resource bound, but with the supposition that the benefits attained would be sustained after the completion of the project.

Again, in the review of other development practitioners, it shows a considerable number of psychological factors that can effectively harness development. They explain that psychology as a discipline plays a significant role in reinforcing development due to its explicit focus on individual factor. Fundamentally, it is fascinating to figure out whether the doctrines of the SLA can be sustained by other theories and empirical evidences, and also as to whether these can equally develop the SLA from the psychological perspective (Petersen *et al.*, 2010).

These deliberate efforts tend to strengthen the analysis and the planning of undertakings resulting from development policies and its related programmes more sustainable as it

seeks to exterminate or reduce abject poverty. They are of the view that a holistic approach to development, with socio-economic, subjective factors and the practical realities taking into account should be the central focus if only we desire for better living conditions (Petersen *et al.*, 2010).



F **tainable Livelihood Frameworks**

A FID (1999)

2.5.1 Livelihood Asset Endowments

Sustainable livelihood has been centred on rural areas and situations where people make a living from some kind of rudimentary self-managed activities. Chambers & Conway (1992) defined livelihood as, "the composition of the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. Livelihood is said to be sustainable when it 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".

Some development practitioners contend that sustainability was not the central focus of Conway and Chamber's work instead it is actually about income and security (Arce, 2003). Further, Scoones (1998) modified this concept by focusing on what a 'sustainable livelihood' is. He described sustainable livelihood as, "comprising the capabilities, assets, (including both material and social resources) and activities required as a means of living. Consequently, 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".

More importantly, Ellis (2000, cited in Allison and Ellis, 2001, pp. 379) also submits that "a livelihood consists of the 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". This implies that the livelihoods context is much more concerned about people. In that regard, there is the need for "an accurate and realistic understanding of people's strengths (also termed as "assets"

or "capital") to be examined on how they struggle or put in their effort to transform these assets into positive livelihood outcomes" (Bezemer and Lerman, 2002 cited in Eneyew and Bekele, 2013).

Livelihood also means that our livelihoods assets are denoted by a series of capitals which are relevant to the attainment of our life-time objectives. In relation to the oil discovery and its production, it indicates that oil has a deterministic impact on each form of asset and also has the capacity to shape the consequential livelihood method the individual or the household will adjust to. These assets or capital as stated by (Bezemer and Lerman, 2002 cited in Eneyew and Bekele, 2013) comprises the human capital, social capital, financial capital, natural capital and the physical capital and are explained as follows:

2.5.2. Human Capital

In most development discourse, this term is widely adopted with diverse connotations. Nonetheless, within the framework of sustainable livelihood, "it represents the skills, knowledge, ability to work and good health that together facilitate people to pursue different livelihood strategies and attain their livelihood objectives" (DFID, 2000). It comprises the matters of labour market, education and health status or environment (Serrat, 2008).

The absence of skill and education which constitute the building block of human capital is perceived to impact the capability of securing a livelihood more openly in urban labour markets than in rural centres negatively" (Rakodi 2002a:10). Also, when a person is free of "killer" diseases and other health complications, she/he becomes active in service delivery (Ellis, 2000). Basedau (2005) proposes that the discovery and extraction of oil and

gas mostly raises tension among the local community members and the oil companies so far as they possess high anticipations of job creation.

Also, a huge bunch of high-skilled labourers are usually absorbed in the oil and gas sector to carry out certain undertakings such as the daily operations of the off-shore oil platforms and other on-shore infrastructure, including pipelines and refineries while the unskilled workforce is only given the opportunity to be employed temporarily during the construction phase (Waskow and Welch, 2005). In instances where fisher folks (i.e. Fishermen and fish traders) lack such technological know-how, their expectations of job creation would probably be dashed, crippling their means of livelihood.

Again, a 2009 report by UNEP reveals that environmental pollution and violent conflicts which comes about as a result of the extraction of natural resources in its raw state affects human capital by raising health risks to the local communities. Moreover, in the work of it points out that in the case of oil production, it is not only the raw material which is seen as a frontline source of danger but rather the invasion by foreign workforce of the oil resource country end up "introducing all kinds of debilitating diseases such as HIV/AIDS among the indigenous communities", which is made possible through the act of prostitution, alcohol and drug abuse (cf. Waskow and Welch, 2005:122).

2.5.3 Financial Capital

Another important resource used by the people in realizing their livelihoods as quoted by DFID (2000) is known as the financial capital/asset. Among development practitioners, it is agreed that with all the other types of assets, financial capital is perhaps the most resourceful as it can effortlessly be processed into some other categories of capital or can

be directly utilized for realization of livelihood outcomes. An example is the purchasing of canoe for fishing or purchasing fish to process and marketing it.

Moreover, financial capital could be represented in the form of credit, wages savings, proceeds, savings, credit, wages from work and living costs. Nonetheless, in rural centres where losses in revenues are mostly cushioned by subsistence form of life, income is vital to survival in urban settings.

In that view, increasing costs of living which does not accord with revenue accumulation ends up becoming a liability for most households whose income creating avenues are restricted. In the case of oil and gas production in Western Region for example, there is the projection that there is the likelihood for a significant increase in the demand for certain goods and services upon the arrival of high-trained foreign technicians in the region. There is also a submission that the unmet demand has eventually led to a rise in prices.

Regardless of these percentage increase, income sources frequently remain unaltered thereby restraining the ability of local frontier communities who do not have any established links to the oil industry to pay for commodities and other services that were once easy to come by (Waskow and Welch, 2005). In effect, this indicates lower savings and less financial capital accrual (ibid: 122). Adding to the above, environmental pollution or offshore production activities has the tendency to threaten the fish stocks leading to a decline in the yields from fishing, which in turn have affected the local community with serious economic difficulties (Dowokpor, 2015).

2.5.4 Natural Capital

With this type of asset, Kollmair and Gamper (2012), refer to it as "the natural resource stocks from which resource flows and services (including land, water, forests, air quality, erosion protection, biodiversity degree and rate of change) are valuable for obtaining livelihoods". To Serrat (2008), this comprises water (commonly known as fishing grounds) and aquatic resources surrounded by fisheries. The truth is, natural resources are essential for local communities who largely depend on it for their livelihoods. Within the ambit of Sustainable Livelihood Approach Framework, a principally close relationship does exist between natural capital and the vulnerability context and several of the overwhelming shocks for livelihoods are natural processes that damage natural capital (e.g. fires, floods, drowning).

According to additional studies, the processes involved in the extraction of oil from its production stage serves as a possible risk to the fishing communities and its environs. Further, it is argued that "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). Taking the event of oil spillages into consideration, it is stipulated that oil pollution has the tendency of contributing to the killing or damaging of fish. Development practitioners attribute this to the process of oil drilling which is caused by pipeline leaks or possibly the transfer-procedure of oil to tankers (ibid.). More so, the bright lights accompanying the oil rigs attract majority of the fish into 'no go' zones where fishermen are forbidden from fishing and this has affected the fishermen, fish traders and the fishing community in general negatively (Badgley, 2011).

2.5.5 Physical Capital ('produced' or 'economic' capital)

This fourth asset discusses two most important needs of a household namely; the basic infrastructure and producer goods required to support livelihoods, such as affordable premix fuel, transportation, roads, sanitation, fishing nets, canoes, smoking ovens, secure homes and buildings, sufficient water supply and sanitation, clean, economical energy (firewood for fish traders), tools and technology and the access to information (Dowokpor, 2015).

The point is the discovery and extraction of oil and gas in a producing country comes along with the establishment of hotels and guest accommodations because of the presence of the high-skilled foreign workers in the country (Boohene and Peprah, 2011). This often therefore leads to a price increase of goods and services. Also, from the study of (Aragon & Rud, 2013) there is the possibility for infrastructural supplies to be overstretched and even become the most expensive as there is increasingly continuous demand. This tends to put pressure on the owners of local land and houses who in turn increase the costs of rents than previously regardless of the consumer's origin or income.

2.5.6 Social Capital

Over the past decades, a number of forums have been held to discuss what the term "social capital" could be mean and what then can be used to characterize it. It was later discovered that the term Social capital relates to the subjects of social and community networks as well as the movement of people from one geographical area to another. In the study of Bourdieu and Wacquant (1992: 119 cited in Palloni *et al.*, 2001) for instance, the term social capital is defined as "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". They explain that social capital underscores the significance of social interactions and structures to individuals and households.

In the case of oil production, the effects on the indigenous social fabric can be keen. It is projected that the arrival of trained foreign- workers has some level of magnitudes on oil producing areas. Also, within the framework of the SLA it is understood that the social assets upon which people draw in looking for their livelihood outcomes, for example networks and connectedness, that upturn people's trust and ability to form cooperation or membership in more formalized groups and their systems of rules, norms and sanctions.

More so, the social capital serves as security network when fisher folk experience 'shocks'. This implies that in most instances, access and amount of social capital is determined through birth, age, gender or kinship and may even differ within a household. Adding to the argument, at times the social fabric within these oil producing communities could be stunned through "resentment among those who do not have jobs and the few that do" (ibid: 122).

Other practitioners affirm this submission with the statement that "the men who get jobs on a drilling site mostly abandon the traditional work and ways of life" (ibid: 102) and this could heighten tension within the local frontier community. With the exception of those security threats, the rise in the costs of living and accommodation has the tendency to cause social movements out of the local community that may lead to the destruction of the already established social networks.

2.5.7 Institutional Structures and Processes

Transforming Structures and Processes within the livelihoods framework are the institutions, organisations, policies and regulation that shape livelihoods. Their significance cannot be overlooked. These institutional policies and processes operate at all levels, from the local to the international oil and gas sector, and in all spheres, from the most private to the most public. They effectively determine; access (access to oil block, strategies in managing allocated oil block and to decision-making bodies and sources of influence that are likely to affect oil and gas resources) , the terms of exchange between different types of capital; and returns (economic and otherwise) to any given livelihood strategy (DFID, 2000).

Structures in the framework are the hardware – the organisations, both private and public which formulate and implement policies and legislation in relation to the management of oil and gas resources, deliver services, purchase of oil fields, trade and perform all manner of other functions that affect livelihoods. They draw their legitimacy from the basic governance framework. Structures exist at various levels. If structures can be thought of as hardware, processes can be thought of as software. They determine the way in which structures and individuals operate and interact within the oil and gas sector. Like software, they are both crucial and complex: not only are there many types of processes operating at a variety of different levels, but there is also overlap and conflict between them (Goldthau & Sovacool, 2012; Den Hertog & Bilderbeek, 1999, Scoones, 1998).

2.6. Vulnerability Context of the Ghanaian Fisher Folks in the Western Region

Development practitioners, especially those associated with the theory of Sustainable Livelihood Approach context, assert that the struggles of households to protect their source of livelihoods and assets are strongly championed by series of factors. They argue that the SLA stresses the notion of vulnerability. They explain the concept as being powerless, uncertain, and being exposed to all manner of risks, shocks and stresses (Chambers, 1989). Like all other societies, the underprivileged are left under the mercies of external shocks, stresses and crises. When they are hit by external threats such as climatic factors, market forces, or unexpected disasters, they mostly lack the means to recover (Allison and Ellis, 2001).

These unexpected events and shocks which are uncontrollable are summarized as the vulnerability context. Thus, the concept of vulnerability as used earlier in assessing the SLA covers three fundamental components. Among these are "the external side of stresses, shocks, seasonalities, and critical trends to which a livelihood is subject"; and "the internal side" which has to do with the ability to cope with these (Chambers and Conway, 1992).

These vulnerabilities are external to the local communities, yet have in their power to determine and develop strategies that will be set in place to ensure the full realization of them. According to Serrat (2008) diseases, deaths, storms, floods, droughts, famine and continuous changes in prices of commodities and services and new technologies are key examples of vulnerability.

Allison and Ellis (2001: 380) provided evidence to the fact that fishing folks are no less exposed than other rural dwellers to adverse events (shocks) and trends, with natural

instabilities in fish stocks being particularly critical for them". These tremors perhaps also comprise the changes in the weather, illness or death of a family member, the drowning of a fisherman, the ruin of a fishing boat or fishing nets and a decrease in the level of fish stocks. For instance, the death of a family member can be a great shock particularly if that fisher folk happened to be a family head. In another instance where a member of a family passes on, the extended family system customs permit the extended family to provide for the wards of the deceased. More to this point is the fact that shock resulting from the demarcation/discrimination and prevention of fishermen from fishing around 'no go' zones has the tendency of leading to the deprivation of fishing grounds. In addition, there is the possibility for oil spillage to have a radical impact on the livelihoods of men and women working in the fisheries (Benjaminsen and Bryceson, 2012).

Egyir (2012) attested to the fact that shocks, trends and seasonality might have long term or short term implications, and may hold influence on the coastal economies. Taking the short term into consideration, international investors will invest in the region. Doors to job avenues will be unlocked for some local people. Through Corporate Social Responsibility schemes, the government institutions, oil and gas companies and other development agencies will come on board to draw up development programs such as the construction of new and well equipped educational facilities or renovating the already existing ones, construction of sophisticated medical facilities, provision of potable drinking water and the construction of road networks (E&P/UNEP, 1997). With the long term implications, Egyir (2012) suggests that if the oil industry is not managed properly, its extraction activities can trigger tensions between the local frontier communities, oil and gas sectors and the

government in general. When this occurs the livelihoods of the poor (particularly the fisher folks) will be affected greatly.

In summary, development practitioners particularly those associated with the theory of economic growth have proposed that to avert the negative side effects of the discovery and extraction of oil such as the denial of the creation of job opportunities and the denial of role play in the management of the oil sector on the sustainable livelihoods of the fishing communities, the fisher folks should not only be inclusive when it comes to decision-making process but rather, their ideas or opinions need to be captured in the development policies. Again, measures should be set in place to reinforce growth in all sounding effects of offshore oil undertakings for both fishermen and fish traders (Dowokpor, 2015).

More so, since the state is a regulatory body, it must see to it that decent works and good salaries are made available to the Ghanaian citizens to promote self-entrepreneurs who are able to pay their bills at the close of every month without necessarily depending on external aid or state benefits. Also, the government must see to it that the revenue generated from the oil is used to provide infrastructure, education and health-care facilities for the local people particularly those in the Western Region. In doing so, it will go a long way to ensure the provision of equity and justice for all citizens of the state (Erik and Kuzu, 2015).

Mineral resources such as fossil fuels, gold, bauxite and gas resources play a major role driving economic growth of several countries in the world (Krausmann *et al*., 2009). These resources are distributed across the globe but varied by continents, regions and nations. According to Renard (2011) oil and gas resources not only offer employment opportunities but can also help turn around the continent's economy especially the economies of oil-rich

countries if utilized judiciously. For instance, the United Nations reported in 2007 reported that economic growth of Central and Northern Africa is directly associated with oil production.

However, Hinojosa *et al*. (2010) also argued that other countries enriched in natural resources performed abysmally on economic, social, and political growths. For instance, Nigeria for the past 50 years has been exploiting oil and is currently regarded as the world's fourth largest oil exporter. Yet, it is revealed that its human and physical capital development is estimated to be 400 percent lower than it would have been if the revenues accrued had been channelled into public funds, and if such funds had been properly used in the public interest to create more economic opportunities for all (Funk *et al*., 2008). This explains why the many issues of concern such as technical restrictions, pointless contract negotiations, inefficient taxation, inadequate auctioning of extraction rights and, the most vital of all, poor public expenditure prioritization and the absence of transparency in the use of oil revenues need to be given attention by the various African governments (Funk *et al*., 2008).

Further, the control over resources and related matters including policies on revenue allocation, employment, livelihood standards and environmental protection are said to be the logical measures that can help facilitate meaningful material and industrial progress in any country (Schneider *et al*., 2010).

Regarding the cases of corruption, studies have shown that it is quite low, and that there are no major issues relating to violent conflicts. Also, the macroeconomic structure is relatively resilient. The bedrock of its economy is agriculture and this sector is said to be

the chief contributor to the Gross Domestic Product (GDP) of approximately US$38.24 billion, the country, whereas the over-all state revenues generated, including grants, are about 30% of GDP. The core products that are mostly exported for foreign exchange are gold and cocoa (CIA World Factbook, 2011).

Nonetheless, to the surprise of the entire nation in 2004, the news reports showed that the state traded licenses for offshore oil discovery and exploitation (commonly named blocks) to quite a number of multilateral corporations. Moreover, in 2007, Tullow Oil and Kosmos Energy explored oil in large quantities in the Western Region of Ghana. They therefore called the area "Jubilee Field". The production site was then developed right away and in December, 2010 oil exploitation was legitimately inaugurated. On account of 2007 additional explorations have been undertaken. The Tweneboa field, for example, is considered to be the second major discovery in the country.

Adding to the foregoing, the former President Kuffour (2000-2008) declared unreservedly in 2007, "With oil as a shot in the arm, we're going to fly" (BBC News, 2007). Subsequently the nation has beheld an enormous public debate: How much revenue will accumulate from the exploitation of the oil? What will be done with the governmental revenues? How can the so called 'Resource Curse' be avoided? (Bategeka *et al*., 2009).

The success stories of oil-rich countries are dependent on appropriate policies, politics and management practices. For instance, the core factor to Norway's achievement is argued to rest largely in the existence of efficient policymakers and politicians who have refused to be induced with government funds; a recognizable effective judicial system that take legal action against the few so-called recalcitrant rent-seekers in the society in an immediate

manner without any sympathy, a transparent reporting system that offers necessary information to every citizen of Norway concerning the precise revenues accumulated from the oil sector with help of both the daily newspapers and the internet as well as a strong media that serves as a watchdog and a gatekeeper (Larsen, 2006; Stevens, 2003).

Similarly, oil related growth in Mexico and Malaysia has been fairly good (Plänitz and Kuzu, 2015). However, the economy of Nigeria has over centuries experienced unswerving unsteadiness in its revenue generation from the oil production. And this is as a result of its overdependence on oil. This explains the fact that these giant growths in revenues have not transformed into lower poverty situations for many of the people in the resource gifted countries (Erik and Kuzu, 2015).

In addition to the above, environmental deterioration is observed to be the key contributor to several effects of oil production to the regions of Niger Delta (Perkins *et al*., 2005). The ignored oil fields with slack discharges continue to contaminate the environment. More so, it has been discovered that oil exploitation has virtually damaged subsistent farming and the fishing businesses in the region of the Niger Delta (Perkins *et al*., 2005). This has resulted into the devastation of the livelihoods of the local frontier communities in the Delta zone and has therefore triggered substantial violence and consistent conflicts among the several cultural groups. In that regard, the region has been known to be one of the most instable in the oil extracting regions of the globe (Perkins *et al*., 2005).

Though the discovery and exploitation of oil and gas is mainly centred within the region of the Niger Delta, it is still seen as the poorest region in spite of the huge accumulated export revenue (over 90%) generated from it and it points to the failure of the government

to properly manage the huge hopes of oil and gas industry (Bategeka *et al.*, 2009; Baker & Baker, 2010). This clearly implies that at the national level, violence and persistent conflicts which mostly occurs as a result of the uneven sharing of the generated oil revenues and the allotment of properties that are owned publicly tend to make the communities of the region to demand for adequate compensation for the indemnities it stands to encounter in the distant future (Perkins *et al*., 2005).

Thus, this tragedy points out that Ghana is not too far from it in the sense that, considering the number of events that keeps emerging from the mind-sets of some Ghanaians especially the youth of the Western Region where the oil is extracted, a degree of their high expectations such as the job creation, provision of social amenities from the oil sector has been spelt out. Also, Pyagbara (2007) stated that growth would be delayed and life would be unbearable if oil had not come into existence. This explains why governments all over the continents have shown much concerned about oil.

The foregoing indicates that the current discovery of oil in Ghana is a blessing that should serve as a catalyst to drive investment to the country (Atta-Kesson, 2013). According to Bategeka *et al.* (2009) and Baker & Baker (2010), oil production said to have both positive and negative impacts on communities where it is extracted and the countries at large. Thus, the desire for better lives, such as the provision of infrastructural development like schools, hospitals, good road-networks construction, hotel and restaurant services, banking services, healthcare services, telecommunication, transport activities and many more allied services that are able to benefit the people (Peprah, 2017).

It must be emphasized that these services are realized only when the oil resources are well managed and economic development is conceptualized at the positive side of the expectations of people. Nonetheless, the notion of revenue distribution, deprivation and marginalization of oil communities, the cases of ecological pollution leading to youth agitations and militarianism in certain oil producing nations are seen as the negative effects the oil discovery is likely to impose on a country.

Jike (2004) in his effort to assess the environmental degradation, social disequilibrium and the dilemma of sustainable development in the Niger-Delta of Nigeria, identified that "the anxiety and expectations surrounding the discovery of oil has waned because the general livelihood of the people has not positively been affected by the discovery of oil" (Jike, 2004). This shows that the exploration of oil in Ghana, which was initially greeted by all, has developed the economy and livelihoods of some communities and also has the tendency of posing a menace to the stability of the oil drilling communities and the nation at large if drastic measures are not put in place to address the issues (Kathman & Shannon, 2011). For example, the youth in the oil communities have petitioned for a quota of jobs to be earmarked for them by virtue of the fact that oil is being drilled on their own land and they deserve nothing but the best. Also, an appeal to the government by the traditional chiefs in the western region through the legislative body, demanding for 10% of the generated revenue from the oil to be invested in capacity building and infrastructure development in the region emphasize the fact that the youth are scared of the underdevelopment in areas where there is oil exploration in other oil-rich countries (Kathman & Shannon, 2011; Ojimba, 2011).

They further explain that, the recent demands and anticipations by the chiefs and youth in the Western Region stresses the need for a serious look at their apparent rights to the oil discovery and laws, and strategies being merged by the state and oil industry to certify that harmony in the region is upheld. Hence, failure on the part of any of these parties in ensuring the effective enforcement of these laws and strategies may have the tendency in generating an undesired consequence as it has occurred in neighbouring nations such as Nigeria, Uganda, and others (Kathman & Shannon, 2011; Ojimba, 2011).

Oil is expected to generate widen the income inequalities which has the tendencies of terminating the beauty of a society and can become a bad omen instead of a blessing. Other studies that assessed the repercussions of oil movement for regional development, envisaged that a larger part of the Western Region particularly Sekondi-Takoradi, the capital city is possible to undergo a great revolution with the oil production (Ministry of Finance and Economic Planning, 2008).

However, the discovery and production of oil has led to several economic alteration in the country especially in the Western region. Over the past decade, the part of the country called as the oil city has seen overwhelming improvements in the infrastructure and services divisions with the aim of achieving the high demands of the oil industry. Also, it has been the expectation and is currently the case that the invasion of the region by both local employees and expatriates would likely increase the living and housing costs within the region. In that regard, majority of the people have openly aired their worries about this ensuing rise in rents and costs of land in the region (Yalley and Darko, 2012). For example, information reaching the attention of the general public confirms that the prices of land have doubled in Sekondi-Takoradi where demand for it is great. It has therefore been

proposed that this is peculiarly associated with the increased in demand for accommodation and storage (Yalley and Darko, 2012).

Other scientific works have assessed the gender dimensions of the vulnerabilities faced by the exploitation of oil. In this regard, the argument is that the exploitation of oil highly creates gender inequality by decreasing the presence of women participation in terms of employment opportunities within a country. Hence, this calls for an urgent need for supplementary livelihood source of working opportunities to aid the women in an almost oil extracting economies who may be side-lined in the oil and gas extraction. In most cases, it is contended that the opposite sex (men) are usually absorbed in the oil and gas sector while women are neglected to their own faith. Probably the reason only attributed is that, women normally do not possess what we call "technical know-how" to fully engage them in the oil and gas sector (Elson & Pearson, 1997). This therefore leads to marginalization of women in general since there is no consideration for the elementary and the welfare necessities of the pro-commons specifically women (Elson & Pearson, 1997). This has also led to the reduction in the aptitude and capability of most women folk to have equal break-through to wealth creation and good living standards. Clearly, women especially those in the Western Region of Ghana are not an exception from this situation in that, other studies conducted on the livelihoods of women in the local fishing communities in Cape Three Points have so far settled that perhaps there are future challenges to be experienced by the women which constitute their incapability to seek employments within the oil industry simply because they do not have the required skills for work (Boohene and Preprah, 2011). This situation is well-known to have befallen in the sister nation called Nigeria.

Also, Olusegun *et al*. (2009) and Omorodion (2004) both mentioned that oil extraction activities serve as agents to cause incomes to appreciate and therefore has the tendency of contributing to commercial sex workers in the Niger Delta Region where the oil labourers and local men purchase them as sexual partners with the generated oil income. Another argument proffered by (Plänitz and Kuzu, 2015) is that the extraction of oil stands a chance of becoming a pivotal break-through for the local frontier communities across the country and not just for those in the Western Region. Surprisingly, variations in prices of basic goods and services are not only strange to the people of Western Region (Plänitz and Kuzu, 2015).

For instance, the prices of basic necessities namely water, electricity, fuel and services have shot-up throughout the corners of the country and subventions detached is observed to have caused majority of Ghanaians to contemplate on the present advantages of the state's growth in revenue and expenditure principally in oil that was first manufactured. Conversely, Ghana is seen as a portrait of hope with its effective formation of the essential and appropriate rules to guide exploration and exploitation and revenue management undertakings in the oil industry (Plänitz & Kuzu, 2015).

Even though several scholarly works have provided evidence of issues created by the oil and gas sector, it is in essence of this that, within the global context, the exploration and production of oil has immensely contributed to development in local communities where it is extracted. A study by the (National Academy of Sciences, 2003) reveals that in Northern Alaska for instance, oil production has profited the local communities in the Northern zones through the provision of employment avenues, medical services and schools. In that regard, if Ghana as a state, would imitate the Norwegian model and

implement efficient policies it will go a long way to ensure that the revenue generated from the discovery and production of oil in the jubilee year of our independence benefit the entire population (Darkwah, 2005).

In another instances, it is revealed that in Africa, a country like Nigeria is endowed with commercial oil and recorded as the world's fourth largest oil exporter, yet estimated to be 400 percent lower than it would have been in terms of its human and physical capital development if the accrued revenues had been channelled into public funds, and if such funds had been properly used to the full benefit of the population through the creation of economic opportunities (African Development Report, 2007).

Also, in the study of Kraus (2013), it is shown that "it is impossible for one to walk in Equatorial Guinea without tripping over a contradiction". This small, oil-rich producing country on the West Coast of central Africa is buoyant in wealth. However, the disparity between the "haves" and "have-not" in other oil producing nations like Angola is enormous. Undoubtedly, it is clear evident that the extremely poor people are found in cities classified as emerging where the people live in shacks and can barely afford to meet three square meals a day or provide their wards quality education and healthcare.

This raises a number of debates, concerns and deliberate efforts by various international and national agencies to design and to effectively implement development interventions to facilitate development and to as well bridge the inequality gap in the distribution of national and international abundant natural resources. However, these attempts failed to mark out the fundamental progress in poverty alleviation. The indications on this issue have therefore contributed to diverse understanding of the two (poverty and development) (Daw

et al., 2011). Thus, to conceive poverty as a relation to lack of economic resources, it is however understood today as a multi-dimensional concept such as the health and opportunities to choose over one's life. More so, it is agreed among development practitioners that development needs to be understood and commenced from the perspective of the deprived (specifically, their perspective about what being poor means, and what a better life comprises of) (Prasad *et al.*, 2007).

CHAPTER THREE

METHODOLOGY

Introduction

This chapter describes the research design and data-collection and analysis techniques used for both qualitative and quantitative data of the study. The chapter is structured in the following order. Section 3.1 describes the profile and geographical location of the districts and communities the research carried out. This is followed by a description and explanation of the research design in section 3.2. The next section, 3.3, describes and explains the data-collection strategies used in collecting both quantitative and qualitative of the study; the section, 3.4 describes and explains the strategies used to analyse the quantitative and quantitative data.

3.1 Study Area

The study was conducted in two districts of the Western Region of Ghana; namely, the Jomoro and Ahanta West districts. These two districts lie in the West Cape Three Point. The Ahanta West District is located at the southernmost point of the country and the entire West African Sub-Region with Agona Nkwanta as its capital. It is bounded on the East by the Sekondi Takoradi Metropolitan Assembly (STMA), on the West by the Nzema East Municipal, and the North by Mpohor Wassa East and Tarkwa Nsuem Districts and the Gulf of Guinea to the South (www.ghanaditrict.com). The district has a population of 106, 215. The female population is slightly higher (55, 216) than the male population (50, 999). The Ahanta West District has a total land area of 591 square kilometres and it is occupied by 95,140 people according to the 2000 Population and Housing Census report. There are

almost equal proportions of the population living in urban and rural areas. Figure 2.2 presents the map of the Ahanta West District.

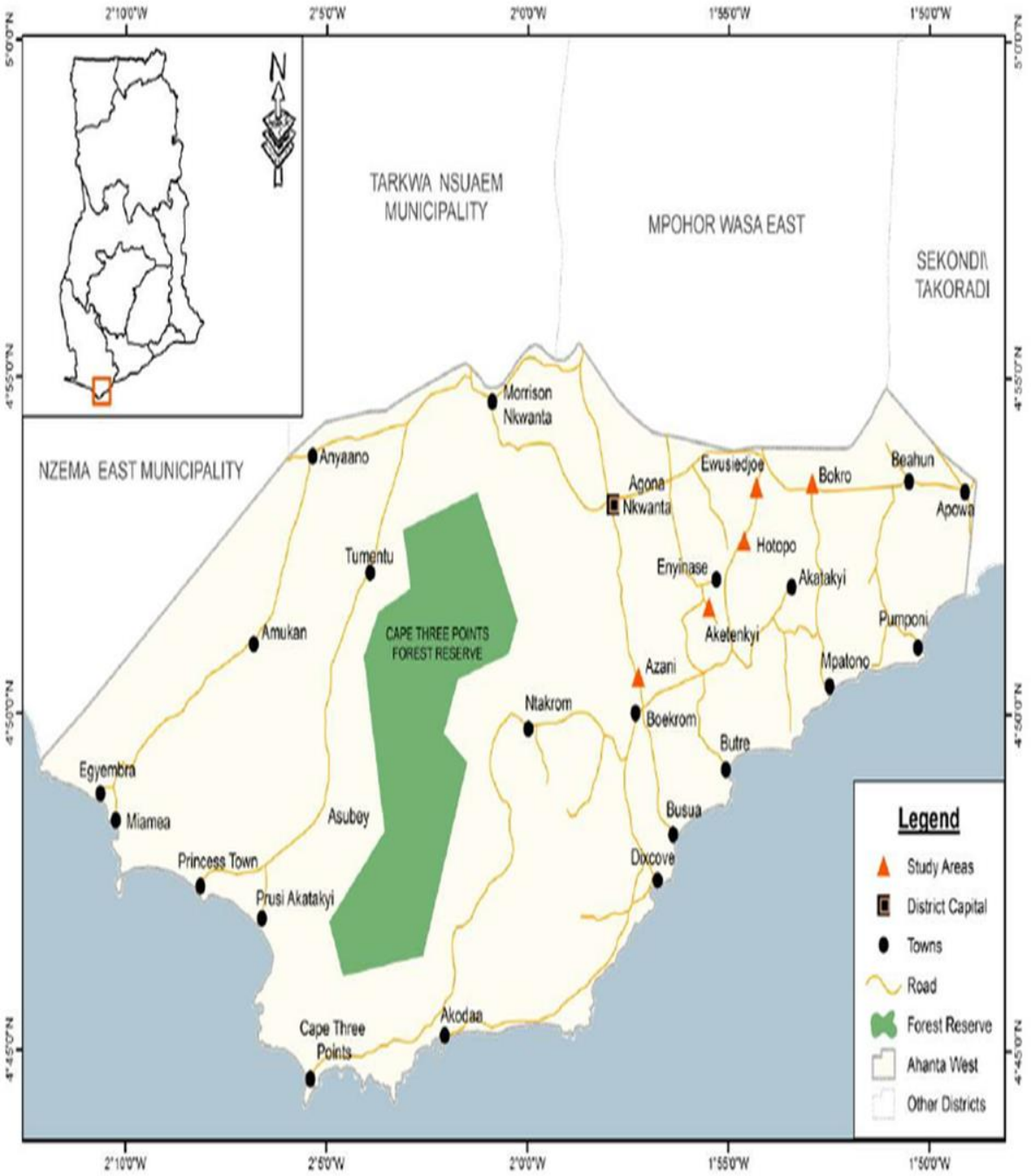


Figure 2. 2: Map of Ahanta West District
Source: Department of Geography and Regional Planning, University of Cape Coast, (2011)

The Jomoro District is located in the south western part of the western region of Ghana. It is located between Latitudes 4˚ 80'' N and 5˚ 21'' N and Longitudes 2˚ 35'' W and 3˚ 07'' W. It shares boundaries with Wassa-Amenfi and Aowin-Suaman to the North, Nzema East District to the East and La Côte D'Ivoire to the West and the Gulf of Guinea to the South. The district covers a total land area of 1,495 square kilometres. This is about 5.6 percent of the total land area of the Western Region (GSS, 2014). The district has a population of 150,107. The female population is slightly higher (76,546) representing 51.0% than the male population which makes up the rest 49.0%. About 65 percent of the population is in the rural areas and a little over a third of the population lives in the urban areas. The Jomoro District has a total land area of 1,495 square kilometres and this is about 5.6% of the total land area of the Western region (GSS, 2014). Figure 2.3 below shows the map of the Jomoro district.

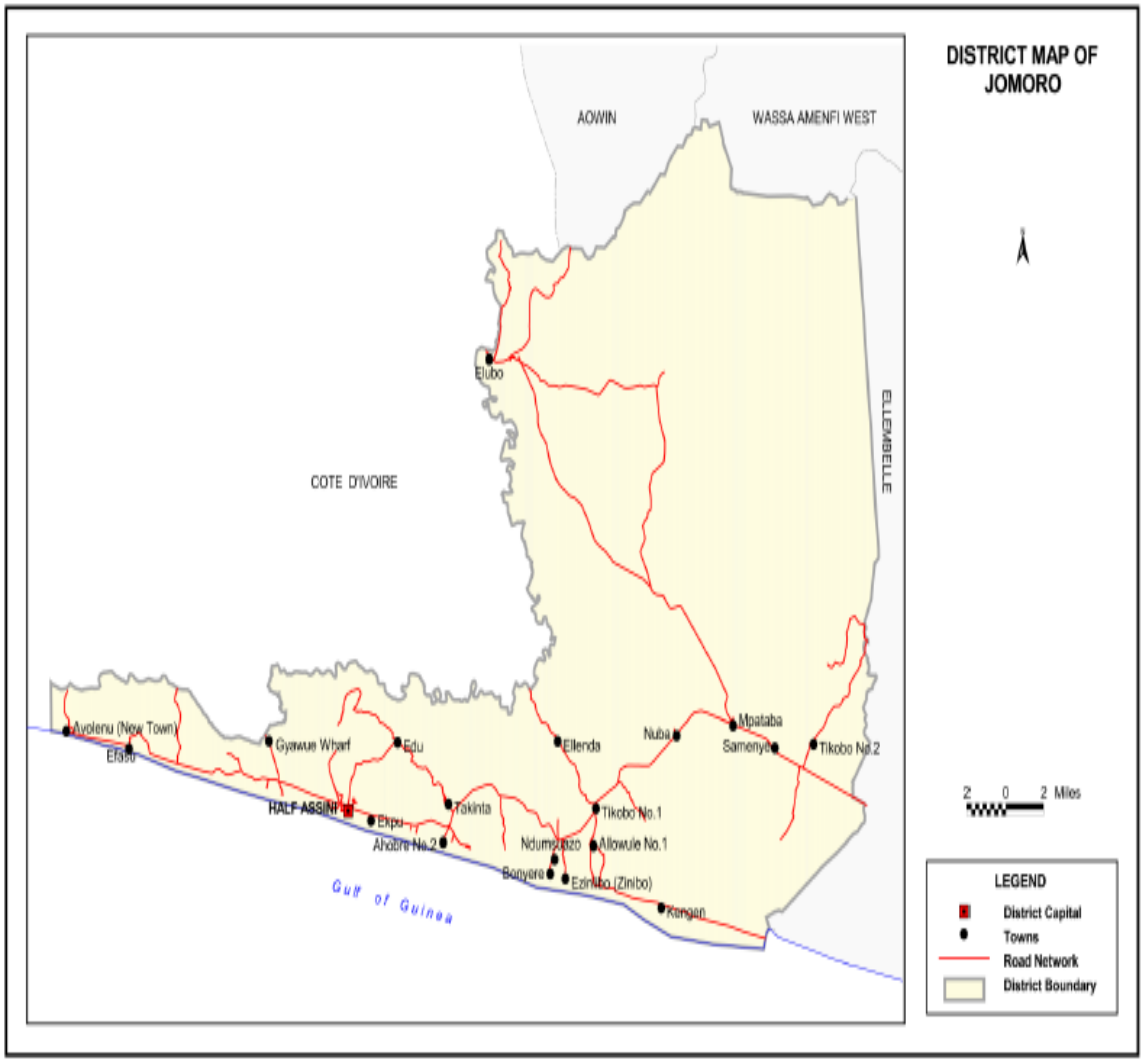


Figure 2. 3: Map of Jomoro District

Source: Ghana Statistical Service, 2014.

3.2 Research Design

Research design is the blueprint for conducting a study, and according to Burns & Grove (2010), research design is used for conducting a study with maximum control over factors that may interfere with the validity of the findings. As a plan of the research, it describes how, when and where data are collected and analysed (Parahoo, 1997). It can also be the

researcher's overall frame for answering the research question or testing research hypothesis (Polit & Beck, 2010).

For this study, cross-sectional survey research design was used for the study. A cross-sectional study is one that is done to investigate associations between risk factors and the outcome of interest. They are also done at one point in time unlike longitudinal and time series data. This limits it from giving a sequence of events whether exposure occurred before, after or during the onset of the outcome. This being so, it is impossible to infer causality (Levin, 2006). The study employed this design because it provides a framework that makes it easier to describe the characteristics of fisher folks within the population with respect to the impact of oil production on their livelihoods. Also, this approach was used because multiple variables can be studied at the time.

A mixed-method approach (quantitative and qualitative) was used to obtain data from fisher folks in the survey (using methods and tools such as, multi-stage random sampling, focus group discussions and questionnaire). Quantitative technique was used in the study because it helps the researcher to draw conclusion and make inferences about a phenomenon under study such as the effect of oil extraction on incomes of fisher folks. Qualitative techniques as well is best suited for this present study in the sense that it helps the researcher to obtain in-depth descriptions from participants in order to produce meaningful issues about what was expected and the current state of livelihood opportunities as a result of the oil extraction.

3.3 Data and Sampling

Data used for this study originated from primary sources. Two types of data were obtained. First quantitative data from fishermen and fishmongers was obtained with the help of a questionnaire and qualitative data using interview guide and checklist. For the quantitative data, multi-stage sampling procedure was adopted to select the respondents.

The data included variables on socio-demographic and economic characteristics (such as sex, age, education, marital status, occupation, religion), work experience, livelihood assets available, choice of livelihood option, business prospects (including income) and challenges of fisher folks. On the aspect of the effect of the oil extraction on livelihoods of fisher folks, days and time of work (fishing), type of production technologies employed, density of fishing population, cost of production, risk perceptions, freedom of work, catch level and income.

Sampling and sample size

The Ahanta West and Jomoro districts were purposively selected because of their proximity to the oil extraction points. Multi-stage sampling approach was adopted for the study. In the first-stage, three (3) communities each from Ahanta West and Jomoro districts were randomly selected. In the second-stage, the respondents were stratified according to gender to ensure that both fishermen and fishmongers were included in the sample. Twenty (20) respondents were selected from each of the selected communities (Table 3.1).

A total sample size of 120 respondents (both men and women) engaged in fishing activities were selected randomly for the study. The random sampling approach was used so that every fisher has a fair chance of being included in the sample (Fisher, 1925). The sample

size of 120 was arrived at using Fisher (1990) formula for sample size determination. The formula is stated as follows;

$$n = \frac{pqZ^2}{d^2} = \frac{0.085(0.915)*1.96^2}{0.05^2} = 120$$

where;

n=sample size for infinite population

z=1.96 (at 95% confidence level)

$q = 1 - p$

p=estimated proportion of fishermen and fishmongers (0.085)

d=precision of the estimate at 5% (0.05)

Table 3.1 presents the distribution of the communities and the number of respondents used in the study.

Table 3. 1: Sampling process

District	Name of communities	Number selected
Ahanta West	Dixcove	20
	Akwidaa	20
	West Cape Three Point	12
Jomoro	Half-Assini	20
	Mangyea	20
	Effasu	20

However, after data collection and cleaning 8 of the questionnaires were not properly completed and were not included in the analysis because they had incomplete responses. Therefore, the analysis and results presentation were based on data collected from 112 respondents.

3.4 Data Collection Methods

The aim of this study was to determine the livelihood effect of oil extraction in the Western Region. The study was organized for fisher folks; including fishermen and fishmongers. Questionnaire administration and Focus Group Discussions (FGDs) were the main methods used for data collection. In all, data were collected through face-to-face interviews, which occurred in the month of April. Respondents were contacted at their work premises. Quantitative data were obtained with the help of a questionnaire (Appendix A) whereas qualitative data were solicited using interview guide and checklist Appendix B). For the qualitative data, the survey was conducted through organization of fisher folks at the respective communities with pre-information through the chief fisherman.

3.4.1 Questionnaires

A close-ended/pre-coded questionnaire (Appendix A) was designed and used to collect data. The questionnaire was administered to a sample of 112 fishers randomly selected. The questionnaire was organised into three (3) sections: section (A) contained the demographic and socio-economic characteristics; section (B) provided questions on livelihood asset endowments of fishers as well as the socio-economic implications of Ghana's oil production and section (C) contained questions on livelihood strategies adopted by fishers. The questionnaire was pretested to check for consistency and poor wording in the data. The questionnaire was administered by the researcher and one other person both of whom went through the questionnaires at the pre-test stage. This was necessary to ensure that the questions were well understood and to remove excesses. Before the questionnaires were administered, the permission of the respondents was sought to ensure that responses were not forced for the purpose of accuracy and consistency.

3.4.2 Focus Group Discussions (FGDs)

Focus Group Discussions (FGDs) were organized in 6 communities in the Western Region of Ghana; three (3) from Ahanta West District; namely, Dixcove, Akwidaa and West Cape Three Point and three (3) from Jomoro District; namely, Half-Assini, Mangyea and Effasu) to elicit the views of communities about the socio-economic impacts of Ghana's oil production on the economy and citizens, in particular. The discussions were organized through chief fishermen and queen mongers at various communities. Both the researcher and the participants chose the appointment date and time for the meeting and group interviews. The discussion was conducted in Fanti and Twi languages and lasted for 1-2 hours. All discussions and interviews were obtained in audio taping and key protocols were written. Thus, discussions and interviews were recorded in an audiotape and later transcribed verbatim. Field notes were attached on all non-verbal observations during the interviews. For each group, an average of 8 fishers, both men and women aged 18 years or more were selected. The discussions took place at convenient locations in communities where all the fishers agreed to meet. The issues that were discussed include the general perception of fisher folks about oil and gas production on their fishing activities, the choice and determinants of alternative livelihood strategies and the impact of oil production on income and overall wellbeing.

3.5 Methods of Data Analysis

The quantitative data for objectives 1, 2, and 4 were analysed using descriptive statistics such as frequencies, percentages, means and standard deviations and results are presented in tables and graph. Objective 3 was analysed using the Probit model to assess the effect of the factors influencing the decisions of farmers to engage in other livelihood strategies.

The independent sample test statistic (T-test) was used to determine whether there exists statistically significant difference between perceived reduction in fishers' income before oil production (BOP) and after the oil production (AOP). Both descriptive and inferential analytical tools were employed to achieve the research objectives. The quantitative data was coded and entered in Stata 13 and the same software was used to analyse the data.

The qualitative data were collected using an audio recorder. After the focus group discussions were conducted, was transcribed. The transcribed data were organised into themes. These themes include; the general perception about oil and gas production on fishing activities, the choice of alternative livelihood strategies and the impact of oil production on income. Relationships between the themes were drawn and detail descriptions of issues provided. These were under the broader theme of finding out what the opinions of fishers' are on development issues associated with oil and gas production. This analysis was done manually and the results presented as descriptive narratives.

3.6 Econometric Procedure

The probit regression model was used to analyse objective 3 which assessed the decision of fishers to engage in alternative livelihood strategies due to the oil production. According to Maddala (1983), binary Probit or Logit models is applied to dependent variables which contain only two alternatives such as doing alternative work or not in AVCs.

The probit model differs from the logit model by their distribution. While the probit model follows the standard normal distribution functions, the logit model follows the logistic distribution. The interpretation of the parameter estimates using the log of odds from the Logit model is simplistic which the Probit model does not have.

Apart from that, both produce similar statistical results which makes it very difficult for the researcher to select one over the other as they all produce same results. Furthermore, the Probit and Logit models produce non-constant marginal effects and also overcome the problem of non-restricted probability interval of 0 and 1 which the linear probability model is not able to resolve (Maddala, 1983).

In building the Probit model, we first define the latent dependent variable expression which denotes the propensity of a fisher *i* to engage in an alternative livelihood work. The underlying latent (unobservable) variable Y_i^* which is linearly related to a deterministic component and an error term is defined by:

$$Y_i^* = \beta_0 + \sum_{i=1}^{n} \beta X_i + \varepsilon_i \qquad [1]$$

$$Y_i = \begin{cases} 1 \ if \ Y_i^* > 0 \\ 0 \ if \ Y_i^* \leq 0 \end{cases} \qquad [2]$$

where; Y_i^* is the latent (unobserved) dependent variable, βX_i is the deterministic component which consist of unknown parameters (β) and observable explanatory variables (X) and ε is the error term.

From Equation (1) the probability that a fisher engages in an alternative livelihood work can be specified as:

$$\begin{aligned} \Pr(Y_i = 1) &= \Pr ob(\varepsilon_i > -\beta X_i) \\ &= 1 - \Phi(-\beta X_i) \end{aligned} \qquad [3]$$

where, Φ is the cumulative distribution function of ε, and the likelihood function for calculating the probabilities for the observed value is defined by the following relation (Maddala, 1983):

$$\ell = \prod_{d_i=0} \Phi(-\beta X_i) \prod_{d_i=1} [1 - \Phi(-\beta X_i)] \qquad [4]$$

The empirical model for analysing the probability that a fisher engages in an alternative livelihood work given as:

$$Y_i^* = \beta_0 + \beta_1 X_{1,i} + \beta_2 X_{2,i} + \beta_3 X_{3,i} + \beta_4 X_{4,i} + \beta_5 X_{5,i} + \beta_6 X_{6,i} + \beta_7 X_{7,i} + \\ + \beta_8 X_{8,i} + \beta_9 X_{9,i} + \beta_{10} X_{10,i} + \beta_{11} X_{11,i} + \beta_{12} X_{12,i} + \beta_{13} X_{13,i} + \varepsilon_i \qquad [5]$$

The explanatory variables in Equation 5 are summarized in Table 3.2 below with their description, measurement and expected signs.

Table 3.2: Explanatory variables used in the Probit regression model

Variable	Description	Measurement	*A priori* Expectation
X_1	Gender	Dummy, 1 if respondent is male; 0 otherwise	+/-
X_2	Age	Years	+
X_3	Marital status	Dummy, 1 if respondent is married; 0 otherwise	+/-
X_4	Education	Dummy, 1 if respondent has formal education; 0 otherwise	+
X_5	Fishing status	Dummy, 1 if respondent does on-shore work; 0 otherwise	+/-
X_6	Residency	Dummy, 1 if respondent is a native; 0 otherwise	+/-
X_7	Fishing experience	Years	-
X_8	Household size	Number of people eating from the same pot	+
X_9	Human capital index	Average values	+
X_{10}	Physical capital index	Average values	+
X_{11}	Natural capital index	Average values	+
X_{12}	Financial capital index	Average values	+
X_{13}	Social capital index	Average values	+

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents findings on these objectives and questions, drawing on both the qualitative and quantitative data collected from the fieldwork;

i. Examine perceptions of fisher folks in the study area about the negative effect of oil production on their livelihoods and livelihood strategies.

ii. Examine perceptions of fisher folks in the study about the positive contributions of the oil industry to their livelihoods.

iii. Identify the factors which influence the alternative livelihood strategies of the fisher folks in the study area as a result of the effects of the oil industry on their livelihood strategies.

iv. Analyse the effect of the oil industry on the income of the fisher folks in the study area.

It is organised into 5 sections. Section 4.1 discusses respondents' characteristics and the livelihood assets endowments of fishers. Section 4.2 discusses the adverse effects and the socio-economic benefits of the oil and gas production are examined through fishers' perceptions. Qualitative findings on the effects of the oil and gas production on fishing activities, and the possibility for improving fishing in the study area are also presented in this chapter. In section 4.3, the perceived positive effects of oil and gas exploration for fishers has been discussed. Section 4.4 analyses the factors influencing fishers' engagement

in alternative livelihood strategies as a result of the oil and gas production. The section 4.5 concludes with an analysis of income effect of oil production on fishing activities in the study area.

4.1 Respondents' characteristics, alternative livelihood strategies and livelihood assets endowments

4.1.1 Socio-economic characteristics of Fishers

The study collected information on the socio-economic characteristics of the 112 respondents. This was done in order to understand the general the social and economic status of fishers. Data was taken on variables such as gender, age distribution of fishers, levels of education, household size and marital status.

4.1.1.1 Gender of Fishers

Of the 112 respondents, majority of respondents representing 69.6% were men and the remaining 30.4% were women (Table 4.1). This is plausible because fishing in the Western Region is largely a male-dominated activity; with men mostly engaged in the onshore activities like casting of nets whereas women are usually in the offshore activities like fish processing and trade. The present result depicts portrays the same trends with men largely in the on-shore net casting activities and the women engaged in the off-shore activities. This is consistent with Yuerlita (2013) who also found that men usually go for fishing alone and women contribute to fishing related activities such as collecting fish from the net, fish processing and marketing.

Table 4.1: Gender distribution of fishers in the study area

Gender	Frequency	Percentage (%)
Female	34	30.40
Male	78	69.60
Total	112	100.00

Source: Field Survey (2017)

4.1.1.2 Age of Fishers

The results in Table 4.2 indicate that about 29% of the fishers interviewed were between the ages of 36 and 45 years. This age range suggests a fairly active and youthful age, which is capable of working for at least 20 years. Owusu (2009) also reported that the Ghanaian fishing population is fairly youthful. However, he revealed that the highest percentage of his sample was between the ages of 20 and 29 years.

Table 4.2: Age distribution of fishers

Age	Frequency	Percent	Mean (SD)
<=25 years	8	7.10	41.9 (11.37)
26-35 years	27	24.10	
36-45 years	32	28.60	
46-55 years	31	27.70	
>55 years	14	12.50	
Total	**112**	**100.00**	

Source: Field Survey (2017)

4.1.1.3 Education of Fishers

The results of the study show that the highest portion (47.3%) of the sample had no formal education. Consistent with this result is Ainoo (2009), who found that 45.67% of fisher folks in Cape Coast, Ghana had no formal education whereas only 1% was educated up to the tertiary level. This result also agrees with the work of Owusu (2009), who found that more than 60% of his fisher folks had no formal education. Generally speaking, the level of formal education was low, considering the fact that none (0.0%) of the respondent was

educated up to the tertiary level. Education has a lot of implications for fishing operations and efficiency. According to Andoh (2007), education increases the skills and human capital of fisher folks, which in turn enables them to effectively and efficiently convert livelihood opportunities into wealth, thereby helping to alleviate poverty. Besides, fishery management is also driven by the flow of information, which is highly dependent on education (Ainoo, 2009).

Table 4.3: Distribution of level of education of fishers

Education	Frequency	Percentage
No formal	53	47.30
Non- formal	3	2.70
Primary school	30	26.80
JHS	24	21.40
SHS	1	0.90
Tertiary	0	0.00
Total	**112**	**100.00**

Source: Field Survey (2017)

4.1.1.4 Household size of Fishers

The results in Table 4.4 indicate that the household size of the fisher folks ranges from 2 to 44 people per household, with an average size of 7.5 people. Moreover, over half (50.8%) of the sample had household sizes with 6-10 people while the lowest percentage of the fisher folks had household sizes with over 15 people. The literature considers household size as an important source of family labour. For instance, Ainoo (2009) analogized that fisher folks who have larger household sizes could engage other economically active members of their household in the fishing business. His study realized that the highest portion (about 71%) of fisher folks had household size of 6 people and below. Besides, fisher folks with larger household sizes could also designate fishing

activities to other household members so that they can have much time to engage in other off-fishing work.

Table 4.4: Distribution of household size of respondents

Household size	Frequency	Percentage	Mean (SD)
Up to 5 people	37	32.50	7.59 (4.84)
6-10 people	58	50.88	
11-15 people	13	11.40	
> 15 people	6	5.26	
Total	**112**	**100.00**	

Source: Field Survey (2017)

4.1.1.5 Marital Status

The results in Table 4.5 show that majority (80.40%) of the fishers interviewed were married with 8% of them single (have not been married before). About 5% and 6% of the fishers were divorced and widowed, respectively. Also, about 69% of those interviewed were fishermen and the remaining 31% were into other fishing activities such as fish mongering. This result is in conformity with Ainoo (2014), who asserted that fishing operations in Ghana (Cape Coast) is predominantly done by married people.

Table 4.5: Distribution of marital status and fishing

Marital status	Frequency	Percentage
Married	90	80.40
Single	9	8.00
Divorced	6	5.40
Widowed	7	6.30
Total	112	100.00
Status in Fishing		
Fishermen	77	68.80
Fishmongers	35	31.20

Source: Field Data, 2017

4.1.2 Alternative Livelihood Activities

The Figure 4.1 presents what livelihood activities fishers are engaged in as a result of oil and gas production. From Figure 4.1, about 41% of the fishers were engaged in crop farming as an alternative venture. Twenty-three (23) percent of the fishers were into paid job/work (any other activities that a fisher earns some income from), 27% were engaged in trading and the remaining 8.9% were engaged in livestock production.

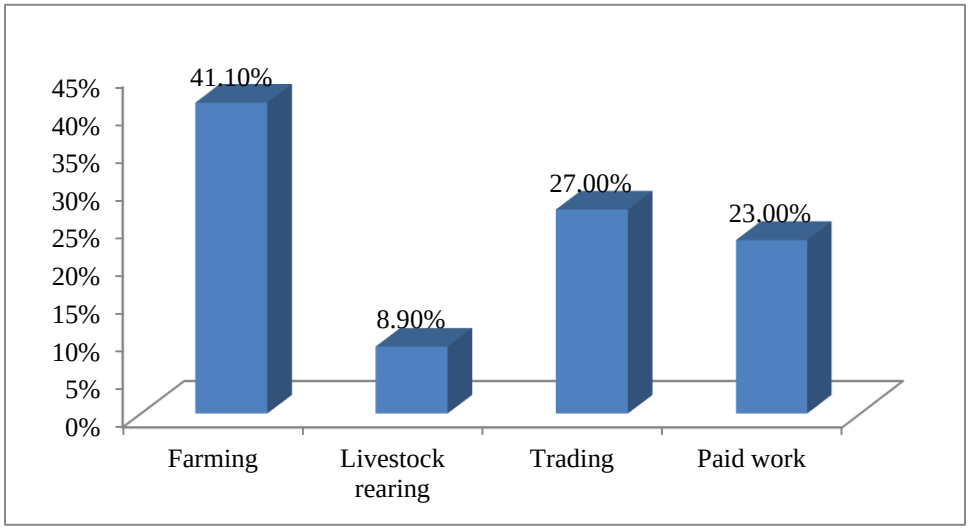


Figure 4. 1: Results of Alternative Economic Activities of Fishes
Source: Field Data, 2017

4.1.3 Access to Livelihood Assets

The section discusses the access to livelihood assets for fisher folks in the Ahanta West and Jomoro districts. Fisher folks mentioned access to several livelihood assets that promote their fishing businesses. These assets were grouped into physical, natural, financial, social and human capitals.

4.1.3.1 Physical Capital

With regards to the physical capitals, few fisher folks owned canoes (37.5%) and fishing nets (43.8%). This implies that most of the fishermen conduct their activities with rented

canoes or on behalf of canoe owners, hence the vulnerability of fishermen to loss of livelihood opportunities in fishing is considered to be high. From the perspective of fishermen, access to fishing materials is their major obstacle to achieving higher incomes.

4.1.3.2 Human Capital

In terms of ownership of human capital, the attainment of formal education was fairly high since the majority (52.7%) of the fisher folks had some form of formal education. This result contradicts the findings of Islam *et al*. (2006) who found that majority (60%) of the fishers had no formal education. Education can contribute to the acquisition and development of technical knowledge on fishing to increase efficiency. Lack of knowledge and expertise on farming makes it difficult to develop innovative strategies to improve livelihoods. Education can also improve the knowledge of fisher folks in managing resources and conforming to laws and regulations governing fishing and the oil production in the study area.

4.1.3.3 Financial Capital

With regards to financial capital ownership, only 11.6% of the fisher folks had access to credit to support their fishing businesses. The implication is that lack of access to credit can reduce fishing production and productivity due to the inability to purchase improved technologies for fishing. In Ghana as in other developing countries, fishing communities are considered as the poorest groups in the rural society and as such they have hardly any surplus income for savings (Harper *et al*., 2013). This result is in agreement with Islam *et al*. (2006), who attested that financial institutions play an important role in improving the

livelihood of poor fishers. Divakarannair (2007) also noted that lack of financial assets is one among the many limiting factors of improving fishers' livelihood.

4.1.3.4 Social Capital

One major problem associated with fisher folks is the lack of a functional organization. With access to fishing groups, fisher folks enjoy social capital, which improve their access to basic necessities for fishing. Fishing groups amplify the voices of fisher folks by helping them to fight illegal encroachers that cause reductions in fish catch. From the results, only 33.0% of the fisher folks belonged to fishing groups. This shows that most fisher folks lack access to fishing groups, which could in turn affect their cooperation with the fisheries administration and authorities. On the contrary, Islam *et al*. (2006) identified that fishers' membership in organizations as the most dominating social capital factor. For instance, the Ghanaian Artisanal Fishermen Association (GAFAL) provides assistance to members in terms of moral, social and minimum financial support. It is organized at the community level and comprised of members drawn from the community. Moreover, Islam *et al*. (2006) revealed that social capital contributes significantly to income of fishers.

4.1.3.5 Natural Capital

Natural capital endowments are a good indicator of income, welfare and livelihood. From the results, all the fisher folks had access to fishing resources, particularly fishes from their activities. These resources cannot be considered as sustainable because the sea is a common pool resource which is open to all fisher folks. Some fisher folks maintained that the use of small meshes that catch many juvenile fish show a declining trend of fish catch. In Indonesia, Yuerlita (2013) noted that fishers elude the decline and increased competition between uses, including hydropower. Besides, the lack of access to financial resources may

inhibit acquisition and use of appropriate fishing techniques. Furthermore, only 20.5% had access to land as a form of ownership of natural capital. This shows that small proportion of fishers have lands as productive assets. In Africa as in other parts of the developing world, land is an outmost resource of high economic importance. For many fishers, land is the most basic means to of agricultural production while financial resources in the form of savings, cash, or credit can improve the livelihood of coastal dwellers (Kleih *et al*., 2003).

Table 4.6: Results of Fishers' Access to Livelihood Assets

Livelihood Capital	Access Frequency (%)	No access Frequency (%)
Physical capital		
Canoe	42 (37.5%)	70 (62.5%)
Fishing net	49 (43.8%)	63 (56.3%)
Natural capital		
Land	23 (20.5%)	89 (79.5%)
Fishing resources (fish)	112 (100.0%)	0 (0.0%)
Financial capital		
Access to credit	13 (11.6%)	99 (88.4%)
Engagement in other income generating activities		
Social capital		
Membership in fishing organization	37 (33%)	75 (67%)
Human capital		
Education	59 (52.7%)	53 (47.3%)
Access to training		

Source: Field Data, 2017

4.1.3.6 Fishers' Access to Livelihood Assets by Sex

Access to fishing assets such as canoe, fishing nets among others are important factors for the smooth operation of the fisheries sector. These assets can determine the livelihood status of a fisher folk and his household. From the results in Table 4.7, about 47% and 15% male and female respectively had access to fishing canoes. This is quite an encouraging number when one considers that the canoe is a fundamental equipment in fishing. For fisher

folks without access to canoes but are interested in fishing, the available option may be to rent at a fee. This can potentially reduce revenue generated from the activity and consequently affect their standards of living. There were however significant differences between access to canoe for both male and female with a chi-square value of 10.82 significant at 1% simply implying that access to canoe for both male and female is not the same in the study area. Also, 56.41% male and 14.71% female had access to fishing net fishing net which is also another important fishing equipment. The results from the chi-square test indicates that there are significant differences between male and female fisher folks with chi-square value of 16.73 significant at 1%. This result, like the test outcome for access to canoe also implies that access to fishing net is not the same for male and female fishers which is expected. There was also significant difference between male and female fishers belonging to a fishing group. With a test value of 3.42 significant at 10%, 38.46% and 20.59% female were members of a fishing group. This is particularly important because it has added benefits of access to capital and other resources that may be needed apart from sharing ideas on how to improve activities in the sector. About 58% of the male respondents reported had education with some 41.18% female reportedly having some education. However, there was no significant difference between the education of male and female fisher folks (chi-square value of 2.59 and insignificant).

Table 4.7: Access to livelihood assets by fishers

Items	Male	Female	Chi-square
Canoe (%)	47.44	14.71	10.82***
Fishing net (%)	56.41	14.71	16.73***
Land (%)	26.92	5.88	6.42**
Membership in fishing group (%)	38.46	20.59	3.42*
Access to credit (%)	14.1	5.88	1.56
Education (%)	57.69	41.18	2.59

Source: Field Survey (2017)

4.1.4 Asset Endowments

Several factors were used to measure asset endowment in the fishing industry. The factor loading from the principal component of factor analysis was conducted after the varimax rotation. To obtain the rotated factor matrix, only items with a factor loading of 0.3 and above were considered valid.

Table 4.8: Fishers' Asset Endowment Index

LIVELIHOOD ASSETS	FACTOR LOADING
HUMAN CAPITAL	
Performance Indicator	
Physical capital	
1. Fishing status	0.719
2. Education	0.409
3. Fishing experience	0.222
Financial capital	
1. Access to credit	0.523
2. Engagement in alternative livelihood opportunities	0.44
Natural capital	
1. Fish products	0.68
2. Land and its products	0.641
3. Spiritual support from the sea	0.363
Social capital	
1. Membership in fishing organization	0.452
Physical capital	
1. Canoe	0.8
2. Fishing nets	0.843

Source: Field Data, 2017

4.1.5 Fishers' Knowledge of Fishing Regulations due to the Oil Production

The study further examined fishers' awareness of key regulations set up for fishing and related activities due to the oil production. As part of the discovery and production of oil in the Western region, certain regulations were enacted to control the activities of fisher folks. From the study, the two generally known regulations on fishing due to the oil production are "**no go zone**" (restrictions of 500m radius around the oil rig) and "**no light fishing**" (not using light to attract fishes). In terms of "**no go zone**", the majority (95.4%)

of the fishers cited that 500 meters radius ban has been placed around the oil extraction point while 60.7% of them also cited no light fishing around the oil extraction field and beyond as one of the regulations bonding fishing although this regulation existed before the inception of oil. These results indicate that fisher folks in the study area have basic knowledge of fishing regulations that were formulated and passed because of the oil discovery and production. In the interim, this has several implications for fishing. In the first place, these regulations could serve as a form of dissatisfaction to the fisher folks if their harvest and prospects are hampered. During the survey, most of the fisher folks mentioned that fishes turn to cluster more around the extraction point because of the deep lighting from the FPSO.

Table 4.9; Fishers' Knowledge of Oil production regulations

Knowledge items	Freq. (%)
No light fishing	
No	44 (39.3)
Yes	68 (60.7)
Total	**112 (100)**
No go zone	
No	5 (5.6)
Yes	105 (95.4)
Total	**110 (100)**

Source: Field Data, 2017

4.1.6 Fishers' opinions on development issues associated with Oil and Gas Production

Discovery and production of natural resources such as oil and gas in Ghana just as elsewhere in other producing countries are met by mix and varied opinions from the public, especially those living or working close to extraction point. As attested by Ayifli (2013), much of these issues related to the impact of oil and gas production on social-cultural systems, human development and the environment. The study however, conducted an

analysis of opinions using a five-point Likert-scale questionnaire in the following regards; social and economic stability, infrastructural development, environmental pollution, employment creation and political unrest due to the oil and gas production.

The results showed most fishers were unable to tell whether the oil and gas discovery and production has and would cause political unrest (37.84%), boost employment, particularly for the youth (42.86%), increase social and economic stability (45.95%). These findings mean that fishers could either expect the oil and gas production to bring "good" or "bad" fortunes to development and the wellbeing of the people living around the extraction point. On the other hand, majority (63.39%) of the respondents disagree that oil production in the area has led to infrastructural development. Similar, majority (58.93 %) of the respondents strongly agree that oil production in the area has led to environmental pollution.

In other words, half of the fishers expect the oil and gas production to contribute positively to development and on the wellbeing of the people living around the extraction point while the remaining half expect a negative contribution to development. The difference in perceived opinions and underlying developmental potentials of the oil and gas production could have several implications for social, economic and political stability, owing to whether individuals' expectations are met.

Table 4.10: Fishers' Opinion of Development Issues Associated with Oil and Gas Production

Items	*N*	SA	A	CT	D	SD	Mean (s.d.)
Social and Economic Stability	111	4.5	23.42	45.95	21.62	4.5	2.98 (0.90)
Infrastructural Development	112	2.68	27.68	4.46	63.39	1.79	3.21 (0.68)
Environmental pollution	112	58.93	4.46	0.0	34.82	1.79	3.17 (0.84)
Boost employment	112	5.36	14.29	42.86	36.61	0.89	3.13 (0.84)
Political Unrest	111	20.72	20.72	37.84	18.92	1.8	2.60 (1.07)

Note: *N* denotes for the total number of observations; s.d. denotes standard deviation; SA=strongly agree, A=agree, CT=can't tell, D=disagree and SD=strongly disagree.
Source: Field Data, 2017

Result of the focus group discussions categorised under three (3) themes namely; the general perception about oil and gas production on fishing activities, choice of other livelihood strategies and the impact of oil production on income. These were under the broader theme of finding out what the opinions of fishers' are on development issues associated with oil and gas production/discovery.

The quote of the focus group discussion coded under the theme finding out what are the perception of fishermen are about oil production supports the points made above.

> "*I suspected the oil and gas production would bring a lot of hardships to us because the fishes could move closer to the extraction point due to the high lights from the sites". (FGD with Fishermen, Dixcove, 14 April, 2017)*

Also, another fisherman from West Cape Three Point had this to say under the theme;

> ***"****I know that when a country finds oil and gas it makes a lot of money. For instance, Libya also extracts oil and it has been able to grow its economy and better the life of many people*". *(FGD with Fishermen, West Cape Three Point, 18 April, 2017).*

Again, the implication of these expectations that have not been met are that livelihoods are affected, resulting in lower standard of living and consequently worsening the poverty situations of respondents.

4.2 Fishers' Perceptions of the Negative Effects of Oil Production on their livelihood

This section addressed the first objective of assessing perceive negative effects of oil production by fishers on their livelihoods. From theoretical point of view, every economic activity has the potential to create an externality (adverse effect) on social groups and the economy as a whole, and the same can be said about the oil sector. As noted by Ayifli (2013), fishers in coastal areas where oil and gas production occurs usually lament about several problems that confront their livelihoods. This has important implications for development and policy analysis because of their associated social costs. The study results revealed that almost all the fisher folks in the study area are aware of the 500 meters ban in and around the extraction point. Furthermore, majority (64.29%) of the respondents agree that they have lost fishing grounds as a result of oil production activities in the area.

Moreover, majority (82.98%) of the respondents strongly agreed that they now have limited freedom in the fishing business due to the oil extraction activities in the area. Over half (56.7%) of them strongly agreed that they are frequently distracted by the oil company during fishing hours. As a result of the frequent distraction and disturbance by the oil companies' security guards, fish catch in the area has generally been low as most (60.24%) of the respondents strongly agreed to the assertion that they now obtain low fish catch in the area. Though, majority (78.49%) of the respondents' disagreed on the low quality of fish catch due to the activities of the oil production. Finally, the study results indicate that majority (60.87%) of the respondents strongly agreed that their incomes from fishing has reduced as a result of oil production activities.

Table 4.11: Fishers' Perceptions of Adverse Effects of Oil Production on Fishing Activities

Problems	*n*	SA	A	CT	D	SD	Mean (s.d.)
Do you agree that the oil production has led to loss of fishing grounds	112	13.1	64.29	4.76	10.71	7.14	3.42 (1.18)
Do you agree that the oil production has caused a reduction in your income	112	60.87	21.74	6.52	9.78	1.09	2.77 (0.76)
There has been increased prevalence of diseases due to the oil production	112	54.76	33.33	8.33	3.57	0.00	1.61 (0.79)
Do you agree that the oil production has led to increased distraction on fishing	112	56.7	17.53	3.09	21.65	1.03	3.00 (0.75)
Do you agree that the oil production has led to limited freedom in fishing	112	82.98	14.89	0.00	1.06	1.06	1.22 (0.61)
Do you agree that the oil production has led to low quality fish	112	7.53	11.83	2.15	78.49	0.00	1.39 (0.86)
Do you agree that the oil production has led to low fish catch	112	60.24	34.94	2.41	2.41	0.00	1.47 (0.69)

Note: *n* denotes for the total number of observations; s.d. denotes standard deviation; SA=strongly agree, A=agree, CT=can't tell, D=disagree and SD=strongly disagree.
Source: Field Data, 2017

The findings from the focus group discussions which was conducted to assess the perceptions of fishers about oil and gas production are presented as well as what informs their choices of alternative livelihood strategies, and the effect of oil production on incomes are presented below. When this farmer was asked about what his perceptions are about oil and gas production during a focus group discussion for fisher men in Mangyea, he had this to say: findings,

> "*Oil and gas production has caused a deep reduction in fish stock. He said that the light from the oil and gas rig attracts the fishes. Meanwhile, they have put in place, territorial security which is five hundred meters away from the rigs and large number of fishes moves into this territory. This is making life unbearable for the fishermen*". *(FGD with Fishermen, Mangyea, 10 April, 2017).*

Also another fisherman from the same community had this to say:

> **"***The oil and gas companies make a lot of money but they don't compensate us for the externalities they create. The oil they extract are not even brought here it is sent abroad and we can't even get petrol for our fishing boats. Even if you manage to get some premix and go for fishing the navy are also there to arrest you, we are really suffering here, we just waist the premix that we buy for over GHS 800 Ghana Cedis because the navy always sacks us sometimes we don't even go near the rig but they will sack us. This is our only source of livelihood so they should stop worrying us, we all cannot be doctors, lawyers, or teachers, and we are fishermen so they should leave us to also do our work*". *(FGD with Fishermen, Mangyea, 10 April, 2017).*

In order to find out if the perceptions are the same across all fishing villages and for actors in these areas, the focus group discussions were conducted at all these places. At Akwidaa, where the views of fishermen were sought on perceptions of oil and gas production on livelihood, this fisher had this to say:

> **"***If not because fishing is my lifeblood, I would have left it to do another work because the oil and gas companies are disturbing us a lot. We do not even have the space and freedom to do our fishing, and we will not let their exploration activities also continue in fact there will be a war on the sea*". *(FGD with Fishermen, Akwidaa, 16 April, 2017).*

Another fisherman in the same community who was not happy about activities of oil production and its impact on their livelihood and the community had this to say:

> **"***……..it has just come to destroy our fishing activities and we are starving here we are really suffering, before they started the oil extraction everything was going on well but now things are just getting worst every passing year. We are suffering; sometimes if the weeds come and you are standing at the shore you cannot see the sea. Our work is just going down day by day*." *(FGD with Fishermen, Akwidaa, 17 April, 2017).*

At Effasu community, the focus group discussion was conducted for fish mongers to assess their views about the impact of the oil and gas sector on their livelihoods and the community. This fish monger who was clearly unhappy about what the activities around the oil rig have done to their source of livelihood said that:

> **"***We believe that those of us by the sea it is our property, but now that the oil is here we do not see it as our property anymore. Also our business has collapse we do not even have money to take care of our children we are really suffering here a lot. If the fishermen don't get any catch we will not be able to get any fish to smoke hence no money to take care of our children*." *(FGD with Fishmongers, Effasu, 12 April, 2017).*

These responses from fisher folks clearly summarise their general thoughts and frustrations about oil and gas production and how it has impacted on their livelihoods.

At Half Assini, this was what a fisherman said during focus group discussion:

> "*The operations of the oil companies have not been beneficial to us at all we have far less catch now than before. There is also a lot of debris floating onshore because of their work. Now there are stones under the sea which was not the case before they came. We go and we catch nothing, it's really that bad*". *(FGD with Fishermen, Half Assini, 8 April, 2017)*

In the same community, a fisherman also said that:

> "*When you go fishing you can sometimes cast your net and it looks heavy then you are happy thinking it is a good catch only to be disappointed, because you have caught only sea weeds. This use not to be the case until this oil and gas people came on the scene. We have complained severally about this unfortunate situation to them. They have promised to do something about it and yet nothing has been done as we speak now*". *(FGD with Fishermen, Half Assini, 8 April, 2017)*

The study also, examined if there are income changes resulting from oil and gas production. This was necessary so the study can put into proper perspective if the cry of the fishers

about production activities depriving them of their livelihood or they were just crying foul about nothing. At Dixcove, this fisherman had this about incomes and oil production:

> "*Now our income levels have reduced drastically, and we the fishermen are praying very hard that the almighty God will take his oil away so that we the fishermen will be free. So we pray hard and hard so that the almighty God will take his oil away. Ever, since oil came to Ghana we the fishermen have been suffering and suffering*". *(FGD with Fishermen, Dixcove, 14 April, 2017)*

At the West Cape Three Point this Chief fisherman expressing his frustrations about the effect of oil and gas production on the quantity of catch said that:

> "*As a result of the reduced catch and small sizes of the fish our businesses have been affected. Now we cannot get the quantity that we want and even what we sell the prices has fallen because of the sizes of the fish. We do not make any profit*." *(FGD with Fishermen, West Cape Three Point, 18 April, 2017)*

A fish monger from the same community who was part of the FGD that assessed their views on whether oil companies deliver on their corporate social responsibilities said that:

> "*To be honest with you ever since the inception of this oil and gas companies we have not seen any form of benefit from it. Look, the situation is so bad that now the fishermen now catch a lot of seaweeds and no fish. If you want I can take you to the shoreline so you can see for yourself the seaweeds I am talking about. These weeds, we have never seen them before until this oil and gas companies started their operations. Left to me alone, there is no benefit to what they are doing with respect to my business as a fish monger*". *(FGD with Fishmongers, West Cape Three Point, 18 April, 2017)*

In the same community when the fishermen were asked about any health implications of oil and gas production, this fisherman had this to say:

> **"***It is only the weeds that are giving us problems because if they come onshore and they are very fresh they produce a very nauseating odour that is so strong that you cannot even eat and when it gets rotten it produces some kind of worms that are so big and it also causes our heads to ache as*

> *well as coughing and we spend a lot of money at the hospitals in treating ourselves. You can carry some of the weeds and send it to the president. Now that you have come here we want a respond from the government within one week.*" *(FGD with Fishermen, West Cape Three Point, 18 April, 2017)*

A fish monger from West Cape Three Point also had this to say during FGD:

> **"***We have just been experiencing negative changes because when the oil rig was not in the water, the fishermen could catch a lot of fish but now the story is different. Fish catch is now so small in quantity, our source of livelihood is being taken away from us gradually, at first I could get about 30 – 40 basket of fish, but now we only get 3 – 4 baskets, sometimes we do not even get what to eat". (FGD with Fishmongers, West Cape Three Point, 18 April, 2017).*

Generally, fisher folks have expressed dissatisfaction about the exploratory activities of the oil and gas companies. They have mentioned situations such as a reduction in catch which is as a result of a 500 metre fishing ban from the oil rig; no compensation for the negative externalities generated from the production of oil and gas and less freedom in their fishing activities. Also, the oil companies have reneged on their corporate social responsibilities which have left these already deprived communities in an even worse state. The overall implication of the above is living standards have worsened and would continue as well as an aggravation of an already worsening poverty situation.

4.3 Fishers' Perceptions of the Positive Effects of Oil Production on the economy and their Livelihoods

Generally, there is disagreement in terms of developments that oil production has brought to the two districts. Most of the respondents disagreed with the perception that the production of oil has brought about the construction of schools. Also, an equally large number of respondents (79.27%), disagreed with the perception that the production of oil has brought about the construction of more markets. This may be because of the deplorable nature of the markets in the communities. One would expect that, with oil production, there

would be some massive infrastructural development especially for districts close to the exploration site but that is not the case. Again, about 75% disagreed that there has been an increase in the construction of affordable housing due to oil production with about 17% reported not able to tell whether there has been construction of such housing or not. The nature of the roads are also in such deplorable states that, fisher folks wonder if the exploration is more of a curse than a blessing to them. The siting of the oil rig close to these districts provides no incentives for the construction of roads to improve the lives of these people. To worsen issues, almost all the respondents disagreed when it came to any benefits in terms of scholarships available to their wards. Again, in terms of jobs created by the production of oil, all the respondents (62.5% and 37.5% disagreed and strongly disagreed respectively) disagreed that the exploration of oil has provided them jobs. They think that it has rather taken away their source of livelihood as there are now restrictions on how far you can go fishing and how the areas around the oil rig are now restricted areas to fishing. Also, there is a general disagreement (100%) when it comes to receiving free health care. This means that there has not been any addition to the existing health infrastructure to improve access to health delivery or that the managers of the rig have failed on the delivery of their corporate social responsibilities. This is because with the exploration of oil, there are health and environmental issues and the least they can do is to organize some seasonal free health screenings for the affected people in the communities close to the exploration sites. With an average disagreement of more than 75% on the various issues interrogated, one can safely conclude that oil production in these districts has worsened the lives of fisher folks in terms of catch and income.

Table 4.12: Fishers' Perceptions of the Positive Contributions of Oil to Development

Gains	*n*	SA	A	CT	D	SD
There has been construction of more schools due to the oil production	112	5.36	7.14	8.93	66.96	11.61
There has been construction of more markets due to the oil production	112	2.7	6.31	11.71	64.86	14.41
There has been construction of affordable housing due to the oil production	112	3.57	4.46	16.96	60.71	14.29
The oil production has led to the construction of hospitals	112	3.57	0.89	14.29	66.96	14.29
The oil production has led to the construction of quality roads	112	3.57	1.79	10.71	70.54	13.39
Students have benefited from the oil production through scholarships	112	0.00	0.89	1.79	3.57	93.75
There has been an increased in employment due to the oil production	112	0.00	0.00	0.00	62.5	37.5
More people receive free health care due to the oil production	112	0.00	0.00	0.00	82.14	17.86

Note: *n* denotes for the total number of observations; SA=strongly agree, A=agree, CT=can't tell, D=disagree and SD=strongly disagree.
Source: Field Data, 2017

4.4 Determinants of Fishers' Engagement in Alternative Livelihood Strategies Due to the Oil Production

The probit model was used to identify the factors influencing fishers' engagement in alternative livelihood strategies due to the oil and gas production. From the results, marital status, fishing status (chief fisherman or otherwise), residency, human capital, physical capital and social capital were important predictors of fishers' engagement in alternative livelihood strategies. The chi square (χ^2) test results was 41.20 and significant at 1%, indicating that one or more of the explanatory variables have a significant influence on fishers' engagement in alternative livelihood strategies. The pseudo R^2 was 0.3865, which implies that about 38.65% of the probability of engaging in alternative livelihood strategies was explained by all the explanatory variables.

Marital status was significant and positive, indicating that married fishers were more likely to engage in other livelihood strategies, ceteris paribus. From the results, the marginal effect of marital status was 0.201, which implies that fishers who were married were more likely to engage in alternative livelihood strategies by 20.1%. Marriage plays an important role in decision-making and livelihood enhancement. Fisher folks who are married can assign fishing activities to the spouse in order to have an ample time to engage in another livelihood work. Also, being married comes with the added responsibility of feeding the spouse and probably children, therefore it stands to reason that married fisher folks were more likely to go into other livelihood strategies.

The marginal effect of main fishing status was negative and significant at 5% level. This means that other things held constant, fish mongers were more likely to engage in other livelihood strategies. The marginal effect value of -0.468 implies fish mongers had 0.468 chance to engage in other livelihood strategies.

Residency was another important factor influencing fishers' engagement in alternative livelihood strategies negatively. Natives were less likely to engage in other livelihood strategies, holding other factors constant. The marginal effect of residency was -0.240, indicating that natives had 0.240 probability lower to engage in other livelihood strategies compared to non-natives. This is unexpected by not unreasonable. This is because one would expect that natives would take advantage of their indigenous status and being spared most restrictions that would be put on migrants. However, it could also mean that natives are getting employments in and around the oil exploration area and other formal sectors contributing to the decreasing likelihood of them engaging in other livelihood strategies. This is inconsistent with the findings of Saagulo *et al*. (2017) who found no significant

differences between the residency status of fisher folks and their decisions to go into alternative livelihood activities.

Human capital factor is an important variable in determining fishers' engagement in other livelihood strategies. The marginal effect of human capital index was positive and significant, indicating greater human endowment increases fishers' engagement in alternative livelihood strategies, thus, holding other factors constant. Human capital factors such as education enable fishers in gaining knowledge that fits into formal employment, hence likely to engage in other livelihood strategies. From the results, a marginal increase in human capital index increases the probability of engaging in alternative livelihood strategies by 34.9%. This is consistent with the findings of Serrat (2008), who found that factors such as education (human capital) has the tendency of highly influence the decisions of individuals to go into alternative livelihood strategies. However, it is consistent with the findings of Saagulo *et al.* (2017) who found no relationship between human capital such as education and the decision to go into sustainable livelihood strategies.

Physical capital index was significant and positively related to fishers' engagement in other livelihood strategies, which implies that fishers with greater physical capital were more likely to engage in alternative livelihood strategies, ceteris paribus. The results show that a marginal increase in physical capital index increases the probability of engaging in alternative livelihood strategies by 10.1%. This is consistent with the findings of Saagulo *et al*. (2017), who found positive relationship between ownership of assets such as fishing net and canoes to influence the decisions of farmers to go into alternative livelihood choices.

Finally, social capital index was significant and negatively related to fishers' engagement in other livelihood strategies, implying that greater human endowment decreases fishers' engagement in alternative livelihood strategies, thus, holding other factors constant. This means that fishers who have limited access to social capital factors like membership in fishing organizations or cooperatives were more likely to engage in other livelihood strategies. From the results, the marginal effect of social capital was -0.256, which means that a marginal increase in social capital index decreases the probability of engaging in alternative livelihood strategies by 25.6%. The implication is that belonging to social groups decrease the chances of going into other livelihood strategies. This is logical as not all social groups come with benefits that address bread and butter issues of fishers, therefore people who have a relatively low social capital were more likely to have time for other livelihood strategies. This is consistent with findings of Mulwa *et al*. (2017) who found negative relationships between membership of a farmer/social group and alternative livelihood strategies. However, it contradicts the findings of Shikuku *et al*. (2017) who found a positive relationship between the two variables.

Table 4.13: Maximum Likelihood Results of Factors Influencing Fishers' Engagement in Alternative Livelihood Strategies

Variables	Coefficient	Robust SE	P-value	Marginal Effects
Gender	0.180	0.425	0.672	0.060
Age	-0.017	0.021	0.408	-0.006
Marital status	**0.689***	**0.358**	**0.054**	**0.201**
Education	-0.508	0.340	0.135	-0.172
Fishing status	**-1.316****	**0.585**	**0.024**	**-0.468**
Residency	**-0.710****	**0.338**	**0.035**	**-0.240**
Fishing experience	-0.006	0.021	0.796	-0.002
Household size	0.003	0.029	0.921	0.001
Human capital index	**1.034*****	**0.194**	**0.000**	**0.349**
Physical capital index	**0.299****	**0.139**	**0.032**	**0.101**
Natural capital index	0.229	0.144	0.111	0.077
Financial capital index	-0.104	0.131	0.427	-0.035
Social capital index	**-0.759*****	**0.237**	**0.001**	**-0.256**
Constant	1.846	1.112	0.097	

Note: Number of Observation = 111; **Wald chi^2 (13)** = 41.20; **P-value** =0.000; **Pseudo R^2** = 0.3865. **Legends** (***), (**) and (*) denote significance levels at 1%, 5% and 10% respectively.
Source: Field Data, 2017

4.5 Effects of Oil Production on Fish Income

This section discusses a paired sample t-test that examined the effect of oil production on the incomes of fishers. This was done to assess if there exist any statistical significant differences in the incomes of fishers Before Oil Production (BOP) and After Oil Production (AOP). This analysis was necessary to establish if indeed oil production has adversely affected fishing activities in the study area or that the cry of the fishers was unjustified.

The outcome of the paired sample t-test was 4.2 and significant at 1% level, indicating there were statistically significant differences in incomes before and after the oil production

(Table 4.14). From the results, the mean income of fishers before the oil production (GH₵ 3567. 8) was significantly higher than the mean income after oil production (GH₵ 1167.9). This implies that oil production has impacted negatively on the incomes of fishers. This negative impact would most likely affect standards of living of these fishers especially as oil exploration has increase the cost of living in areas where the resource has been discovered. With the general disagreement of fishers about any positive impacts of oil production, the already deteriorating living standards of the fishers could further worsen.

Table 4.14: Perceived Effect of Oil production on Income

Variable	Mean (GH₵)	Std. Deviation	t	p-value
Income BOP	3567. 8	5556.7	4.2	0.000
Income AOP	1167.9	3842.6		
MEAN DIFF.	2399.8	6111.2		

Source: Field Survey (2017)

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter summarises the goal, objectives, research questions; methods used to collect and analyse the data; as well as the key findings of the study. It further highlights the major contribution of the topic, intellectually and in terms of policy interventions to improve the livelihoods of the oil producing communities and improve community-company relationship. Finally, the chapter offers some key intellectual and policy recommendations based on the findings of the study.

5.1 Summary

The study examined fishers' perceptions about the positive and negative impacts of Ghana's oil production on the economy and on their livelihoods. It also determined the factors influencing fishers' engagement in alternative livelihood strategies as a result of the oil production.

A cross-section of fishers (n=112) was randomly selected for the study through face-to-face interviews using semi-structured questionnaires. Descriptive statistics, mainly frequencies, percentages, means and standard deviations were used to present results of fishers' perceptions of the socio-economic impacts of Ghana's oil production on the economy as a whole and in particular, on their livelihood. Furthermore, a binary Probit model was used to determine the factors influencing fishers' engagement in alternative strategies due to the oil production whereas the Pearson chi-square test was also used to

examine whether there exist significant difference between perceived incomes of fishers before and after the oil production.

The low quantity of fish catch was cited as a key negative impact of the oil and gas production. Majority of the fishers believed that oil production had little positive impact on the economy through the construction of schools, markets, affordable housing, hospitals, roads, employment and free health care. Also, the study found that oil companies have done little to improve the living standards of fisher folks as the roads are still in very deplorable state and infrastructure in terms of housing, markets and schools are still underdeveloped. As in Table 4.13, marital status, fishing status, residency, human capital, physical capital and social capital are important factors influencing fishers' engagement in alternative livelihood strategies as a result of oil production. Also, incomes of fisher folks have dropped from GHS 3,567.80 per annum before oil production to GHS 1,167.90 per annum after oil production.

5.2 Conclusions

Oil is an important asset and perceived by fishers to have both positive and negative impacts on the economy and the livelihood of many people. Ghana's oil production has produced more negative consequences on the economy and the livelihoods of fishers than the benefits. Married couples who do fish marketing, native and those with greater human and physical capitals were more likely to engage in alternative livelihood strategies as a result of oil production; whereas fishers with lower social capital were more likely to engage in alternative livelihood strategies.

Also, the light used around the extraction points decreased fish catch. Communities in the study area had similar views about the positive and negative impacts of Ghana's oil and gas production on development and the livelihoods of fishers. Majority of the communities are of the view that oil production had brought more negative impacts than positive impacts. The exploration of oil and gas has done little to improve the living standards of fisher folks as the oil companies have seemingly reneged on the fulfilment of their corporate social responsibilities. With respect to the factors that influence the decisions of fisher folks to venture into alternative livelihood strategies, with marital status, fishing status, residency, human capital, physical capital and social capital as the main determinants. Also, exploration of oil and gas has reduced the incomes of fisher folks in communities where oil and gas are produced.

5.3 Recommendations

Based on the conclusions, the following recommendations were made;

i. Oil companies should put measures (diming or shielding light) in place to reduce the intensity of the lighting systems because according to the fishers, the deep lights from the oil rig attract fishes, and sometimes kills them. Also, oil companies should properly direct light to minimise light spill and trespass.

ii. Fisher folks should be educated and trained on extra artisanal skills in order to enable them engage in alternative livelihood activities seeing as the production of oil and gas has reduced quantity of fish catch.

iii. The study results indicate low income levels among fishers as a result of oil production activities. Hence government and oil companies should put a social

safety net (such as the LEAP programme enjoyed by extremely poor households in the country) as a measure of improving upon financial status of fisher folks in the area.

iv. Target based drilling i.e. government should place premium on the number of barrels oil companies drill per day to ensure control and regulation in environmental and resource pollution.

v. Massive infrastructural development such as clinics, school, roads and portable water supply should be provided by oil companies as part of their corporate social responsibility towards livelihood enhancement.

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APPENDICES

APPENDIX A: FIELD INSTRUMENTS

QUESTIONNAIRE FOR FISHER FOLKS IN THE WESTERN REGION

GHANA'S OFFSHORE OIL PRODUCTION: LIVELIHOOD IMPLICATIONS FOR FISHER FOLKS

Hello, my name is Iris Kophy Yeoko, an MPhil. Innovation Communication student of the University for Development Studies. I'm here to interact with you on your fishing activities and the oil production, which has been curved into the topic "Ghana's offshore oil production: Livelihood implications for fisher folks". This study is in partial fulfilment for the award of Master of Philosophy Degree in Innovation Communication. Enlisting you into the survey is random and any information you provide me will be kept strictly confidential, and for academic purposes only.

Location: Western Region **Q/No**: ……

District _____ **Community** _____

Date _____ **Enumerator's name** _____

Gender: Male [ ] Female [ ]

A: DEMOGRAPHIC DATA (Fill in where applicable)

Age (in years)	**Status in the ld** hold Head Husband child er/Sister s (Specify)	**Marital Status** 1. Married 2. Single 3. Divorced 4. Widowed	**Household size**	**Years of Schooling**	Highest educational Level *1. No formal* *2. Non-formal* *3. Primary* *4. JHS/MSL* *5. SHS/Voc/Tec* *6. Tertiary*	**Religious belonging** *1. Christian* *2. Muslim* *3. Traditionalist*	**Resident status** *1. Native* *2.Migrant*	**Status in the fishing** *1.Chief* *2. Fisherman* *3.Chief Monger* *4. None*

B. AWARENESS OF OIL PRODUCTION AND RELATED ACTIVITIES

1. Are you aware of oil production activities in this community? Yes ( ) No ( )
2. If yes, where do the activities take place?
   1. Offshore ( ) 2. Onshore ( ) 3. Both onshore and offshore ( )
3. What are some of the oil-production activities you are aware of?
   1. Exploration ( ) 2. Drilling ( ) 3. Lifting ( ) 4. Flaring ( ) 5. Natural gas production ( )
4. Who are the main actors in the oil industry?
   1. Foreign oil companies ( ) 2. National oil companies (GNPC) ( ) 3. Foreign gas companies ( ) 4. Local gas companies ( ) 5. Ghana government ( ) 6. Others (specify)……
5. Do you know that some regulation (s) on the oil industry binds your fishing activities? Yes ( ) No ( )
6. If yes, please mention some of these regulations :
   1. No go zone ( ) 2. No light fishing ( ) 3. Others (specify)……

B. OWNERSHIP AND ACCESS TO THE OCEAN AS PROPERTY/ LIVELIHOODS ASSET

7. Do you have properties which you depend on for your livelihoods?
   1. Yes ( ) 2. No ( )
8. If yes, do other members of your household also depend on these properties for their livelihoods?
   1. Yes ( ) 2. No ( )
9. What are these properties?
   a. Canoe ( ) b. Fishing net ( ) c. Land ( ) d. Sea ( ) e. Money ( ) f. Others (specify)
10. Why do you see the sea as your property?
    a. Inheritance from my ancestors ( ) b. It's part of my environment ( ) c. Gift from God to us e. I bought it ( ) f. Others (specify)
11. Who controls the use of the sea for your livelihoods?
    a. Family-head ( ) b. The village chief ( ) c. The chief fisherman ( ) d. Others (specify)
12. Is everyone allowed to use the sea for his/her livelihoods
    1. Yes ( ) 2. No ( )
13. If no, how do you get access to the sea for your livelihoods?
    a. Get permission from the chief fisherman ( ) b. Pay a money to use it ( ) c. Pay with the fish I get from the sea ( ) d. Rent it e. Others (specify)……..
14. If you make any form of payment to use the sea for your livelihoods, whom do you pay to? a. The chief of the community ( ) b. Chief fisherman ( ) c. Family-head ( ) d. Others…….
15. If yes, have you realized in any case that part of the sea and its assets have been taken from you?
    1. Strongly Agree () 2. Agree () 3. Can't tell ( ) 4. Disagree ( ) 5. Strongly Disagree ( )
16. Have you lost an asset (s) to the oil production? 1. Yes ( ) 2. No ( )

17. If yes, what type of asset) 1. Canoe ( ) 2. Net ( ) 3. Others (Please specify)……
18. Did you paid any money for the release of your asset? 1. Yes ( ) 2. No ( )
19. If yes, how much were you charged?

C. CULTURAL PRACTICES IN RELATION TO THE OCEAN AS A PROPERTY/LIVELIHOOD ASSET

20. Do you have spiritual relationship with the sea? a. Yes ( ) b. No ( )
21. If yes what sort of spirit is it?
    a. God ( ) b. god ( ) c. goddess ( ) d. Ancestor ( ) d. Others (specify)……
22. What spiritual support do you get from the sea?
    a. Food ( ) b. Income ( ) c. Protection against ill-health ( ) d. Bumper harvest of fish ( ) e. others (specify)……..
23. What do you do to the sea as a spirit?
    a. Sacrifice to it ( ) b. Observe taboos ( ) c. Pacify it when I offend it ( ) d. Others (specify)……
24. Who are the spiritual leaders of the sea?
    a. The sea priest ( ) b. The sea priestess ( ) d. chief fisherman ( ) e. Queen mother of the sea ( ) f. Others (specify)……
25. What are some of the taboos of the sea that you observe?
    a. No fishing on Tuesdays ( )
    b.…….
    c. …….
    cd……. (give the options)

E. OIL PRODUCTION AND IMPACT ON LIVELIHOOD

26. From the table rate the impact of oil production on national development. In your view, what are the most important impacts of oil production? (**NB: 1= strongly agree, 2=agree, 3=don't know, 4=disagree and 5=strongly disagree**)

Statement	1	2	3	4	5
1.1.Increase economic prosperity					
1.2.Increase corruption					
1.3. Increase economic and political instability.					
1.4.Promote infrastructural dev't (e.g., schools, roads, hospitals, etc.)					
1.5.Environmental pollution					

27. From the table rate the impact of oil production on your wellbeing. Do you think that there have been changes in the social and economic characteristics in your area since the oil production based on your expectations? (1=highly worsened, 2=worsened, 3=can't tell, 4=improved, 5=highly improved)

Socio-economic characteristic	1	2	3	4	5

Unemployment					
Migration					
Road construction					
Health facilities					
Accommodation/renting					
Prices					
Electricity/power					
Energy					
Risk of sexually-transmitted diseases					
Social vices (e.g., crime rate)					
Teenage pregnancies/prostitution					
Pressure on social amenities (e.g., drinking water)					
Transportation					
Sanitation					

F. EXPENDITURE AND INCOME

28. What is the average income and expenditure of this household?

	Before the oil production	***After the oil production***
Monthly Income (GHS)		
Weekly Expenditure (GHS)		

29. How important is your major sources of income? [1=very important, 2=important, 3=somewhat important, 4=less important, 0=not applicable]

Source of income	0	1	2	3	4
Fishing					
Mongering					
Farming					
Livestock rearing					
Petty trading					
Salaried work					
Wage work					
Pension					
Craftsman					
Assistance of family members					
Others (please specify)					

30. "Indicate the number of household members contributing to monthly income by Gender"

No. of males	No. of females

G. IDENTIFICATION OF FISHERMEN AND FISHING ACTIVITIES

31. For how long have you been in the fishing business? (in years) _____
32. Are you a member of any fishing group in this community? Yes ( ) No ( )
33. If yes, name the group? .....
34. If yes, do you hold any leadership position in the group? _____
35. What activities do you perform in the fishing business? preparing canoe ( ) paddling ( ) casting and pulling of net ( ) drain water from the canoe ( ) Selling ( ) Others
36. Where do you sell your fish? On shore ( ) Cold store ( ) Open market ( ) Supermarket ( ) others (please specify) ……
37. Are you satisfied with the income you get? Yes ( ) No ( )
38. If no explain……..

39. Where do you access capital for your fishing business? (Tick where applicable)

Source	***Before the oil production***	***After the oil production***
Personal savings		
Canoe owner		
Credit (bank loan)		
Assistance of relatives		
Government support		
NGOs		
Others (please specify)		

40. Do you access loan for your activities in the last season? 1. Yes ( ) 2. No ( )
41. If yes, how much did you receive? GHS ……..
42. Which organization (s) provided the credit? …….

H. LOSSES AND CONSTRAINTS FROM THE OIL PRODUCTION

43. Do you work more days on the sea now than before the oil production? 1. Yes ( ) 2. No ( )
44. If yes, how many days do you work on the sea?

	Before the oil production	***After the oil production***
Days		

45. Do you travel very far to fish on the sea now than before the oil production? 1. Yes ( ) 2. No ( )
46. If yes, how far (in kilometres) do you travel to fish on the seas?

Before the oil production	***Before the oil production***

47. Do you incur more cost to fish on the sea now than before?

	Before the oil production Variable Cost/activity	***After the oil production Variable Cost/activity***
Item (in GHC)	*Daily*	*Daily*
Premix fuel		
Food		
Labour		

Repairs of boat/nets		
Hiring of boat/equipment		
Others (please specify)		

48. Have you in any way been affected by the oil production? Yes [ ] No [ ]
49. If yes, what resources/opportunities have lost as a result of the oil production? [***NB: 1= strongly agree, 2=agree, 3=don't know, 4=disagree and 5=strongly disagree***]

Statements		1	2	3	4	5
i.	Loss of fishing grounds					
ii.	Reduced catch					
iii.	Reduced income					
iv.	Risk of disease contraction or oil spill					
v.	Lower prices					
vi.	Low quality of fish					
vii.	Increase destruction					
viii.	Limited freedom					
ix.	Growth of green algae					
x.	Taste of fish has change					
xi.	Light from the extraction site attract the fishes					
xii.	Others (please specify)					

I. HEALTH

50. Do you or any member of the household face any health problems?
51. If yes, what sort of health problem?
    1. Skin burns ( ) 2. Eye problem ( ) 3. Headache 4. Others (specify) …….
52. Do you believe that this problem is caused by the oil/gas production?
53. Did you require treatment as a result of the oil production within the last 12 months?
    1. Yes ( ) 2. No ( )
54. Did you seek medical attention from a nearby health facility? 1. Yes ( ) 2. No ( ) Were you satisfied with the service? 1. Very Satisfied ( ) 2. Satisfied ( ) 3. Somewhat satisfied ( ) 4. Unsatisfied ( ) 5. Highly unsatisfied ( )

J. BENEFITS OF THE OIL PRODUCTION

55. Have you received any support from the oil production? Yes ( ) No ( )
56. If yes, what kind of support have you gained from the oil producing?
    ……

57. Have you benefited from the following development in this community as a result of the oil production? [**NB: 1= strongly agree, 2=agree, 3=don't know, 4=disagree and 5=strongly disagree**]

Items	**1**	**2**	**3**	**4**	**5**
a. Schools					
b. Market					
c. Affordable Housing					
d. Hospitals					
e. Construction of roads					
f. Oil scholarships					

g. Employment					
h. Free health care					
i. Others (please specify)					

K. ALTERNATIVE LIVELIHOOD STRATEGIES ADAPTATION

58. Have you engaged in an alternative livelihood strategy (s) to compensate your losses?
    Yes [ ] No [ ]
59. If yes, what activities are you engaged in?

Strategy/Activity	Tick
Engage in non-fishing activities (e.g., petty trading, mining, etc.)	
Reduce household expenditure	
Sold asset	
Access credit or bank loan	
Engage household members in fishing activities	
Others (please specify)	

60. What reason (s) can you assign for the adoption of this new strategy or extra activity?
    ……

61. For how long have you been practicing this ***alternative livelihood strategy or*** activity?
    …….....

APPENDIX B: INTERVIEW GUIDE FOR FOCUS GROUP DISCUSSION

1) Tell me your interaction with the oil companies. Have you been consulted by them about your community's development priorities?
2) What has changed positively and negatively for the community in the last five years since oil was discovered (positives: added revenues, CSR- negatives: pollution, loss of livelihood)
3) Did any of this oil companies talk about scholarships?
4) How is employment issues here?
5) Did the oil and gas companies discuss issues of pollution with you?
6) Now and before the oil and gas companies arrived how would you describe your catch?
7) How was your income then and your income now?
8) Do you feel you have a good understanding of what the oil companies are doing in Ghana?
9) Has anyone left the fishing business due to the activities of the oil extraction?
10) For the past five years after the oil exploration what difference have you noticed in this community what have changed?
11) What about their corporate social responsibilities example building schools or hospitals or toilet facilities for you.
12) Do you see the sea as your property?
13) What general thing can you say about the oil company and your livelihoods?
14) Has the oil exploration brought you any health problems?