UNIVERSITY OF CAPE COAST

THE EFFECTS OF OIL AND GAS EXPLORATION ON THE SOCIO-ECONOMIC DEVELOPMENT OF JOMORO DISTRICT OF GHANA

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THE EFFECTS OF OIL AND GAS EXPLORATION ON THE SOCIO-ECONOMIC DEVELOPMENT OF JOMORO DISTRICT OF GHANA.

BY

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Dissertation submitted to the Institute of Oil and Gas, Department of Social Science, College of Humanities and Legal Studies, University of Cape Coast in Partial Fulfilment of the Requirements for Award of Master of Business Administration Degree in Oil and Gas Management.

APIRL 2019

DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature…… Date …….

Name: ……...……

Supervisor's declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature……Date ……..

Name: ……..……

ABSTRACT

Several works have explored the relationship between oil and gas exploration and the livelihood. Such works posit that the two are undeniable inversely related (Auty, 1993; Le Billon, 2005; Basedau, 2005). Inferring from the state of oil exploration and its effects on the livelihoods of the host communities, one observes the significant role oil and gas exploration play in the national economy while at the same time impoverishes the host communities. Thus, using the positivist approach mainly through interviews with semi - structured questionnaire, the study seeks to investigate the impact of oil and gas exploration on the livelihoods of the host communities, using the 24 affected communities at Jomoro District of the Western Region as a case study. The study revealed that there is an inverse relationship between oil and gas exploration and the livelihoods of the people in the host communities. The study however, pointed out that whilst majority of the people in the host communities have their livelihoods taken away from them, others saw improvement in their lives after getting themselves engaged in the oil and gas sector and other new businesses springing up in the communities. In view of this, it is recommended that Ghana should learn the best practices from countries like Norway that ensures that oil and gas resources benefit the entire populace while at the same time not impoverish the host communities. Also, government should craft the community local content law with community stakeholder involvement to ensure their interest are well served.

KEY WORDS

Oil and gas exploration

Oil exploitation

Oil production

Foreign Direct Investment

Livelihood

Standard of living

Employment

Socio – economic development

Oil and gas immediate community

Environmental pollution

Global warming Greenhouse gas

Gas flaring

Arable land

Cooperate social responsibility

Local Content Law (L. I. 2204) Oil spill

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DEDICATION

To my wife, sister and brother; Abu Hairatu, Zezebi Suweba and Zezebi Mohammed Lukman

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

FOA – Food and Agriculture

Oxfam – a confederation of 20 independent charitable organisations

CARE – a global humanitarian organization providing disaster reliefs to areas in crisis

DIFD – Department of International Development (UK department)

PIP – Personal Independence Payment (UK)

FDI – Foreign Direct Investment

TEN – Tweneboah, Enyenra, Ntomme

CHAPTER ONE

INTRODUCTION

The exploration and production of oil and gas is a major industrial development and regarded as a blessing. The sector is a major source of jobs and revenue for many oil and gas producing economies globally. Since 2010, Ghana's petroleum sector has generated over $3 billion dollars in revenue and currently the second most important sector for the economy and therefore expected to contribute to improved living conditions of Ghanaians in general, and citizens in the fishing communities around the oil and gas enclave in particular, through royalties. While most Ghanaians had high expectation for the sector as a catalyst for high income and wealth creation, others were apprehensive because no oil and gas producing country with a history of offshore hydrocarbon has escaped the negative impacts of the sector on citizens and socio-economic activities.

Therefore, the problem under study is the assessment of the effects of oil and gas exploration on the socio – economic development on the oil and gas immediate communities in the Western Region of Ghana. The findings of this study could be a good source of information for policy makers in oil and gas-rich African countries in making appropriate fiscal policy decisions and thus, safeguard the operations of the companies involving the exploration of oil and gas resources such that the safety of the indigenes and their livelihoods are not taken away from them.

This work gets its routes from the previous work done by ERIK Planitz Daniela Kuzu entitled 'Oil and gas Production and the transformation of

livelihoods of communities in Ghana' and seeks to provide the new insights on the phenomenon of oil and gas exploration and its effects on the well-being of the host communities.

Background to the Study

The exploration and exploitation of the environment dates back to the existence of man on earth (Ekundayo, 1988). His exploration and exploitation activities continue to reveal complex implications in spite of improvement in the technology adopted in carrying out these activities. Oil and gas exploration and exploitation are few of such activities which started at different times in different parts of the world.

Exploration refers to mining or exploration of mineral resources from the land and sea using technological know-how. According to Nigerian Environmental Study/Action Team (1991) as highlighted by Mba (1995), there are three (3) categories of mineral resources namely fuel mineral, metallic mineral and industrial minerals and their exploration processes differ. Fuel mineral exploration activities involve exploration, extraction, processing and transportation as well as storage and consumption of petroleum, natural gas, coal, lignite and uranium.

The production and export of oil and gas in Ghana has a long-standing history and can be traced back to the 1970s when oil and gas was first drilled along the Western Coast of Ghana. The production reached substantial amounts and began to play a role in the structure of the Ghanaian economy in 2007 when oil and gas was discovered in commercial quantities.

Oil and gas was found offshore along Cape Three Points in the Western Region by a consortium after years of prospecting. The discovery which unitized two production wells in the Deep-water Tano block and the West Cape Three Points block was named Jubilee Field in commemoration of Ghana's 50th anniversary as an independent nation. Other major discoveries have resulted in current production in a second oil and gas field, the Tano Enyire Ntomme (TEN) which began production in 2014.

Jubilee Field started with a daily production of 80,000 barrels per day and has currently reached a production level of 110,000 barrels per day which is almost at the expected peak of 120.000 barrels per day (Tullow, 2013).

As the law prescribes, a percentage of oil and gas revenue is made available for funding the annual budget and is deposited into a Consolidated Account. Annual government spending since oil and gas production began has increased. The Ministry of Finance is in charge of utilizing this revenue to support the national budget with parliamentary approval (Terkper, 2013).

According to the Ministry, oil and gas revenues so far have been spent on four focal areas: "Expenditure and Amortization of Loans for Oil and gas Infrastructure; Road and Other Infrastructure; Agricultural Modernization; and Capacity Building (including Oil and gas)" (Terkper, 2013:10). This spending pattern has been rejected by some civil society organizations on the grounds that the justification for spending about 80 percent of the revenues on road infrastructure while neglecting the provision of basic service, such as health and education is not right.

The nation also lacks a comprehensive development plan which sets the agenda for the country to follow the selection of projects to be funded by the revenue from oil and gas have not been based on an established pattern. Political influence and preferential treatment for certain projects are seen to determine the choice of the areas which have benefited from the increased revenue spending.

Although the claim of traditional chiefs of the Western Region for guaranteed revenue allocation of 10 percent to their region has been neglected in the legislative procedures, it is noticeable that the Western Region has got exactly 10 percent of the revenues. However, other regions got a significant higher stake of the oil and gas revenues. So the question arises if the local chiefs would have done better to avoid a clear claim (Amin, 2011).

For the year 2013, the Minister of Finance expected an increase by about 40 million US dollars to a total amount of 581 million US Dollars (Reuters, 2013). It is worth noting that the small oil and gas field at Saltpond is producing oil and gas since 1978 with current production levels of about 550 barrels per day (GNPC, 2013).

The production of oil and gas in Ghana has also attracted high expectations especially among the youth of the nation as a previous study of Friedrich-Ebert-Stiftung (FES) and You-net on "Youth and Oil and gas & Gas Governance in Ghana" revealed in 2011. These expectations are not baseless and unfounded. According to World Bank, increased revenue from oil and gas is believed to have fuelled the growth of many oil and gas producing countries in the world. Norway, in over twenty years after oil and gas discovery and exploration

has experienced unprecedented growth and development. Mexico and Malaysia have also fared well in oil and gas related growth. Since 1970, oil and gas has consistently accounted for almost 90% of Nigeria's export income. Growth in revenues since oil and gas was discovered is evidenced by the over US$ 350 billion Nigeria cumulatively earned over the period of 35 years. The worry is these huge growth figures in Nigeria's revenues have however not translated into reduced poverty for many people in the resource endowed nation. The percentage of Nigerians living below the poverty has risen from 27 in 1980 to 66 in 1996 and to 70 in 2000.

The Nigerian economy has also experienced consistently instability in revenue earnings due to its overdependence on oil and gas. Other economic activities such as agriculture which were engines of growth in the Nigerian economy prior to oil and gas discovery have gradually degenerated over the years and become almost non- existent. The most significant and discussed aspect of oil and gas development in Nigeria has been the resource fuelled conflicts of the Niger Delta (Central Bank of Nigeria, 2002).

After almost fifty years of oil and gas development in Nigeria, environmental destruction is chief amongst the effects of oil and gas exploration in the Niger Delta Region. A total of 6,000 wells have been sunk, roughly every ten square kilometers in the oil and gas rich states of the Delta. Abandoned oil and gas fields with slow emissions continue to pollute the atmosphere. In addition, oil and gas has destroyed the subsistent farming and fishing activities especially of women in the region (Turner & Brownhill, 2004). The resultant destruction of the

livelihoods of the communities in the Delta Region has fuelled massive violence and persistent conflicts amongst the various ethnic groups. The region is recognized as one of the most volatile in the oil and gas producing regions of the world.

Yet the Niger Delta is where oil and gas exploration and production activity is concentrated and it is through this sector that Nigeria still earns over 90% of its export revenue Olakunle (2010). The region is said to be poorer than what pertains as the national average. At the national level there are still conflicts which center on the sharing of oil and gas revenues and the allocation of public goods which communities of the Delta State insist should be provided to adequately compensate for the damages the region continues to experience.

The major part of the Ghana's oil and gas sector activity is predicted to concentrate in six districts in the Western Region. These districts are coastal districts and have communities which are dependent on fishing as a main means of livelihood. Several forums have been carried to discuss the likely impact of oil and gas discovery on communities in affected districts and in the management of the wealth for the benefit of all Ghanaians. Friedrich-Ebert-Stiftung (FES) in partnership with the Corporate Social Responsibility Movement (CSRM) held a National Forum to discuss the impact of oil and gas exploration Activities on Fisheries in Ghana in March 2009. Amongst the major stakeholders were the Government, Companies involved in oil and gas extraction, Traditional Authorities, Fisher folks and Civil Society Organizations.

Some of the major socioeconomic effects expected from the impact of oil and gas activities were loss of livelihoods, especially fishing; flooding by migrants for jobs increasing the unemployment rate in the region; inflation and increasing prices of items such as accommodation, food, leisure; increasing social vices such as commercial sex work, drug abuse, crime and the health implications from pollution.

Other studies have also been carried out on the livelihoods of women in fishing communities in Cape Three Points and concluded that there are challenges likely to be faced by the women which include their inability to find jobs in the oil and gas sector since they lack the requisite skills (Boohene & Preprah, 2011). This phenomenon is noted to have occurred in Nigeria. Olusegun (2009) discusses how oil and gas activity caused incomes to rise and this resulted in the commercialization of sex by women in the Niger Delta Region.

Another study discusses the implications of oil and gas activity for regional and local development projects that a greater part of the Western region especially the capital Sekondi-Takoradi is likely to experience massive transformation with the oil and gas activity (Owusu et al & Baffoe et al, 2011).

Visible signs of the occurring socio- economic changes have been recounted especially in Sekondi-Takoradi, the capital city of the Western Region. This area has been referred to as “the oil and gas city” of Ghana. It has experienced increasingly fast developments in the infrastructure and service sectors to meet the demands of the oil and gas sector. There is an expected influx of foreign and domestic workers which will most likely be accompanied by an

increase of living and housing costs. Many people have expressed their fears about this resultant increase in rents and costs of land in the region. Land prices for instance are said to have doubled in the capital of the Western Region, Sekondi-Takoradi where demand for it is high. It has been suggested that this is related to the increased need for storage and accommodation facility (Owusu, 2011; Yalley & Ofori- Darko, 2012).

Oil and gas production will become a decisive turning point for local communities all over Ghana and not only those of the Western Region. The price changes in basic commodities are not peculiar to the Western Region alone. Whereas the effects on the communities in the Western Region have so far been discussed in academia, the media and by many civil society groups, the implications for the middle and northern regions is veiled and appears to be drowned in the euphoria of what oil and gas will do for the Ghanaian economy.

The prices of basic needs such as electricity and water, services and fuel have been on the rise all throughout the country and subsidies removed causing many to ponder on the current benefits of the country's increased growth in revenue and spending especially since oil and gas was first produced. There are several reported cases of expropriation of the revenues being earned and the assertions of environmental pollution have caused feelings of unsettlement on the benefits the resource is bringing in. Nevertheless Ghana is considered an icon of hope with its efficient establishment of the necessary and relevant laws to guide production and revenue management activities in the oil and gas sector.

In terms of job creation, Foreign Direct Investments (FDI) that were attracted into the country as a result of oil and gas exploration play an enormous role in Ghana and this also has a multiplier effect in the economy. According to the Ghana Investment Promotion Council (GIPC, 2009) estimates of registered projects, FDI has generated about 72,384 jobs for the Ghanaian population and about 4,652 for non-Ghanaians between the periods of 1994-2002. United Nations Conference on Trade and Development (UNCTAD) survey of small and medium sized enterprises (SMEs) with linkages to foreign firms or export activity shows that firm size has increased in the last five years (2003-2008). Out of 83 projects registered during the second quarter 0f 2009 alone, 56 (67.47%), were wholly-owned foreign enterprises and 27 (32.53%) were joint ventures between Ghanaians and their foreign partners with about 4,457 jobs believed to have been created. 92.15% (4,107) of the total jobs to be created will be for Ghanaians and the remaining 7.85% (350) for expatriates (GIPC, 2009).

FDI has also aided significantly to the increase in the stock of technology in Ghana by providing machinery and equipment and at the same time helped in the build-up of local industrial capabilities by contributing to skills formation. This is particularly evident in the area of natural resources exploration such as mining, where the use of capital-intensive technology has developed a pool of trained labour. Product improvement, constituted the most relevant support to local firms, followed by training, provision of machinery and equipment together with information on market opportunities (UNCTAD).

Even though the oil and gas resources in Nigeria, account for over 98% of the country's export earnings and 83% of the government's total revenue according to (Wikipedia, 2006), petroleum exploration has triggered adverse environmental impacts in the Delta region of Nigeria through incessant environmental, socio- economic and physical disasters that have accumulated over the years due to limited scrutiny and lack of assessment (Achi, 2003).

According to (Diop, 1993; Wikipedia, 2006), in Nigeria, immense tracts of mangrove forests have been destroyed as a result of petroleum exploration in the mangroves. These have not only caused degradation to the environment and destroyed the traditional livelihood of the region but have caused environmental pollution that has affected weather conditions, soil and gas fertility, waterways aquatic habitats and wildlife. This inhuman situation continues to attract the interest of environmental observers and calls for regular evaluation of the exploration and exploitation activities in the coastal areas of the country. The operations of the oil and gas industries have introduced pollutants as liquid discharges and oil and gas spills into the air, land, and water components of the environment (Omajemite, 2008).

This huge contribution to the Nigerian economy notwithstanding, the area has been subjected to serious degradation and the member of the host communities suffering untold hardship. The whole process of obtaining fuel mineral; from exploration, extraction, processing and transportation as well as storage and consumption generate one form of pollution or the other. For

example, during exploration, drill cutting, drilling mud and fluids are used for stimulating production.

During the transportation and marketing of crude oil and gas, damage to oil and gas pipeline and accident involving road trucks and tankers generate oil and gas spill and hydrocarbon emission. This have a far more reaching effect on the environment (FEPA, 2001).The entire process of oil and gas extraction negatively affects the environment basically through pollution which invariably leads to other kinds of problems. Elis & Simpson and Simpson (1994) stated the crude oil and gas is so dangerous that when the oil and gas touches the leaf of food crops or whatever economic tree in the area, the plants dries off immediately.

This destructive effect of petroleum on plants invariably leads to poor agricultural yield in the regions. Since Ondo state has the longest coastline among the oil and gas producing states in Nigeria, this paper evaluates the environmental implications of the exploration and exploitation activities in the coastal region in the state with a view to promoting sustainable development in the region.

Statement of the Problem

Benefits of oil and gas exploration abound. Oil and gas sector creates a lot of jobs in both services and manufacturing sectors. Among the jobs being created in the oil and gas sector are transportation, welding, hoteling etc. The amount of income generation by oil and gas producing countries of the world is not secret to persons or organizations outside the sector.

The data reported by the Central Bank of Nigeria (1994), and Opuenebo and Nnah (1995) revealed that the total revenue from oil and gas rose from 7,253 million naira in 1983 (69.02% of the Total National Revenue) to 106,155.4 million naira in 1993 (76.44% of the Total National Revenue). The subsequent years never revealed a contrary trend in the income generated from oil and gas by the nation. Oil and gas has tremendously improved the socio-economic and cultural conditions of many petroleum producing nations of the world.

Besides, according to World Bank (2008), oil and gas discovery and its exploration brought about an average growth rate of 9% of Sudan's Economy during (2005 – 2006) putting Sudan among the fastest growing economies in Africa and also recently contributed to the improvement of economic performance and Foreign Direct Investment (FDI). Also, the situation in Ghana and other oil and gas producing countries are not different. According to Ghana Statistical Service, (2014), Ghana's economy grew by 14.4% in 2011 as a result of the exploration of oil and gas resources making it one of the fastest growing economies in the world.

While the exploration of oil and gas resources has, no doubt, enhanced socio-economic transformations in many oil and gas-prospecting and oil and gas-producing states and also create jobs for the people domicile in the area, the accompanying fallout, according to other literature painted a different picture as the situation remains tragic and disturbing in several states including Ghana (Gordon, 2010). According to (Diop, 1993; Wikipedia, 2006), immense tracts of mangrove forests have been destroyed as a result of petroleum exploration in the

mangroves in Nigeria, leading to the destruction of the traditional livelihood of the people in the region. Its effects also lead to environmental pollution that immensely affected weather conditions, soil fertility, waterways aquatic habitats and wildlife. The operations of the oil and gas industries have introduced pollutants as liquid discharges and oil and gas spills into the air, land, and water components of the environment (Omajemite, 2008).

Studies such as Omorodion (2004), Sherk (2002) and Olankunle (2010) have concentrated much on how oil and gas exploration has improved the economies of the host countries but not much has been done to assess the socio – economic developmental impact on the oil and gas immediate communities in Ghana. Therefore, the study, seeks to assess the impact of the oil and gas exploration on the socio-economic development of some selected communities domicile in the Jomoro District of the Western Region of Ghana.

Purpose of the Study

The overarching aim of the study was to investigate the effects of oil and gas exploration on socio-economic development of the host communities in Ghana. In line with this, the study sought to achieve the following objectives:

1. To assess the effects oil and gas exploration on the environment.
2. To assess the effects of oil and gas exploration on the livelihoods of communities.
3. To assess the effects of oil and gas exploration on the standard of living of communities.

Research Questions

1. What is the effect of oil and gas exploration on the environment?

2. Does oil and gas exploration affects the livelihoods of the communities?

3. Does oil and gas exploration affects the standard of living of the oil and gas communities?

Significant of the study

The significance of this study cannot be overemphasized, especially when in recent times there are so many resource abundant countries in Africa who are still wallowing in abject poverty, corruption and resource mismanagement. It is in this light that this paper seeks to highlight the effects of the exploration oil and gas resources on the socio-economic development of oil and gas communities in Ghana. This study is an addition to earlier researches that investigated the relationship between natural resources and its effects on economic development. The findings of this study could serve as a good source of information for policy makers in oil and gas-rich African countries in making appropriate fiscal policy decisions. Besides, the study would enable the law makers such as parliament to make laws that will help safeguard the operations of the companies involving the exploration of oil and gas resources such that the safety of the indigenes and their livelihood are not taken away from them.

The study provides the new insights on the phenomenon of oil and gas exploration and its effects on the well-being of the communities domiciled in the affected areas.

Finally, the study further paves the way into the discussion of how oil and gas exploration affects the socio-economic activities of the people. In effect, the study fills a void in the literature and serves as a reference point for policy makers to approach the all-important issues of oil and gas exploration. This study finally extends previous works on the subject and lays the foundation for further research in the area.

Delimitation

The scope of the study will investigate how oil and gas exploration contributes to the socio-economic development of the oil and gas communities. The variables that are to be measured in terms of the scope include standard of living, employment or job creation, environmental pollution and livelihood improvement of the oil and gas selected communities. The test for these variables will not only be based on the what the oil and gas companies provided directly but also include all subsidiary activities in relations to oil and gas exploration. The study will also limit its scope to only 24 oil and gas immediate communities in the Jomoro District of the Western of Ghana for which only members who are directly affected will have an opportunity to be part of the sample been interviewed with questionnaire. This sample population will be done such that it would be closed if not the true reflections of other affected communities. A good data analysis technique such as SPSS would be adopted to analyze the data.

Variables that are not included in the study include the type of legal regimes that the Government of Ghana entered into with the oil and gas companies (OCs). The study did not also look at the technical processes involve

in oil and gas exploration. The study did not deal deeper as to whether oil and gas operations breeds conflicts between the various stakeholders including the immediate oil and gas communities.

Limitations

The first limitation that the study faced is the size of the sample been used for the research. Apart from the fact that no sampling technique will give accurate results of the issues been investigated, the choice of the 24 communities out of 79 affected communities, if not done well will contribute more errors into the research.

Another limitation faced was the lack of available resources that would have enable the researcher to have considered the entire populace in the affected areas instead rather than resorting to sampling. Adequate and availability of resources could have aided the researcher consider all the communities affected to get an accurate picture of the issue.

Thirdly, the time allocated to the study is also very limited hence, all the variables that needed to have been investigated were not done and those that were chosen were done in haste.

The geographical location of the respondents is another limitation that the researcher faced. Apart from the fact that the respondents were very difficult to find, the communities were also sparse apart leading to the researcher travelling in long distances to find the respondents. In fact in many cases, the researcher has to cross rivers or streams in order to meet his respondents.

Besides, another limitation that the researcher faced is the language barrier. The languages spoken by selected communities are Nzema and Fante whilst the researcher is speaks Gonja hence, the researcher had to rely on interpreters to administer his questionnaire.

Definition of terms

Oil and gas exploration – 'is the search by petroleum geologists and geophysics for hydrocarbon deposits beneath the Earth's surface, such as oil and gas and natural gas.'

Oil and gas exploration – 'is the location, drilling, completion of wells necessary to produce the commercially recoverable oil and gas in a field'.

Oil and gas production – 'is the process of extracting the hydrocarbons and separating the mixture of liquid hydrocarbons, gas, water, and solids, removing the constituents that are non-saleable, and selling the liquid hydrocarbons and gas.'

Foreign Direct Investment – 'is an investment made by a company or individual in one country in business interests in another country, in the form of either establishing business operations or acquiring business assets in the other country, such as ownership or controlling interest in a foreign company.'

Livelihood – 'is a means of securing the necessities of life.'

Standard of living – 'is the degree of wealth and material comfort available to a person or community.'

Employment – 'is a relationship between two parties, usually based on a contract where work is paid for, where one party, which may be a corporation, for profit,

not-for – profit organization, co-operative or other entity is the employer and the other is the employee.'

Socio – economic development – 'is the process of social and economic development in a society.'

Oil and gas immediate community – 'refers to communities that suffer or benefit directly from oil and gas operations.'

Environmental pollution – 'is the introduction of contaminants into the natural environment that causes adverse change.'

Global warming – is the observed century – scale rise in the average temperature of the Earth's Crust.

Greenhouse gas – is a gas in an atmosphere that absorbs and emits radiant energy within the thermal infrared range.

Gas flaring – Burning of gas and releasing them into the atmosphere in order to collect the oil and gas from the associated gas in the refinery.

Arable land – Land capable of being ploughed or grow crops.

Cooperate social responsibility -The continuing commitment by business to behave ethically and contribute to sustainable economic development while improving the quality of life of the workforce and their families as well as of the local community and society (World Business Council for Sustainable Development).

Local Content Law (L. I. 2204) – is a Legislative Instrument crafted in 2013 to protect the local interest.

Oil and gas spill–is the release of a liquid petroleum hydrocarbon into the environment especially the marine ecosystem, due to human activity, and is a form of pollution.

FOA – Food and Agriculture

Oxfam – a confederation of 20 independent charitable organizations

CARE – a global humanitarian organization providing disaster reliefs to areas in crisis

DIFD – Department of International Development (UK department)

PIP – Personal Independence Payment (UK)

ENI- Ente Nationale Indrocarburi (National Hydrocarbon Authority)

Organization of the study

The research would be organized in five chapters.

Chapter one deals with the background to the study, statement of problem, the objective of the study as well as the hypotheses, and the significance of the study.

Chapter two deals with the theoretical framework and literature review.

Chapter three explains the methodology used.

Chapter four comprises of the results, discussions and presentations.

Chapter five finally, deals with the summary, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

A literature review surveys scholarly articles, books, dissertations, conference proceedings and other resources which are relevant to a particular issue, area of research, or theory and provides context for a dissertation by identifying past research.

The overall goals of this chapter were firstly to establish the significance of the general field of study, and then identify a place where a new contribution could be made. This literature review contains the theoretical review or framework which seeks to critically analyze theories that are in line with the objectives of the research work. This literature review also contain the empirical review that seek to review similar research works, books, dissertations and paper presentations done by different people with different methodologies that are in line with the objectives the research. Finally, this literature review also contain conceptual framework that gives the research a blueprint that provides an outline of how the research is conducted and also go further to position the work within a larger field of study.

Thus, this literature seeks to review work done by people that is related to the impact of oil and gas exploration on the socio-economic development of the host communities by specifically only concentrating on how the oil and gas exploration affects the environment and is impact on the livelihood of the people in the host communities.

Theoretical framework

This phenomenon where natural resource development leads to negative economic growth has been termed the "natural resource curse". The issue of oil and gas exploration and its implication on the state institutions as well as economic performance and failures of some oil and gas producing states has often been linked to the resource curse theory (Auty, 1993; Le Billon, 2005, Collier, 1998; Basedau, 2005). This theory also described as the Paradox of Plenty, refers to the paradox that countries with an abundance of natural resources tend to have less economic growth, less democracy, and worse development outcomes than countries with less resources. The Theory of Plenty best fit the study since studies according to Tadjoeddin (2007), Azaiki (2003) and Babatunde (2010) clearly show the inverse relationship between oil and gas exploration and the livelihood of the host communities. The theory also explains how the discoveries of abundance mineral resources escalate the cost of living and thus, impoverish the people of the host communities. This analysis though which has proven useful in analyzing resource development at the macro level tends to have limitations as it focuses on certain issues such as terms of trade of the resource in the long run which is also associated with the price volatility of the resource, the ability of the resource to crowd out other economic activities also linked to the Dutch Disease Syndrome, civil war and weak institutions (Frankel, 2010).

The development discourse itself however changed its focus from the use of economic indicators such as Gross Domestic Product and Gross National Product to other human development indicators such as livelihood and sustainable

livelihood after the Brundlandt Commission Report in 1987 which acknowledged the concept of basic needs of the poor and put sustainable development on the development agenda for many nations. Then in 1992 the release of the United Nations Human Development Report saw the growth of a concept which gained grounds as a practical way of assessing development which is relevant and more people centered. This was the livelihood and sustainable livelihood concepts. The use of these two concepts has been strengthened with frequent use till date and is a part of many key development plans. It is employed through various approaches and perspectives.

Aspects of resource exploration at the micro level, such as the situation of individuals and how they are affected by ramifications which may have been triggered by oil and gas production, needs to employ such a people-centered approach. This framework is why the study uses the Livelihoods concept as the framework for investigating the research objectives.

The simplest way of understanding the term 'livelihood' has been provided by key thinkers Chambers and Conway (1992) who defined it as a "means of gaining a living" (Chambers & Conway 1992:5). This concept of livelihood perceives the world from the point of view of "individuals, households, and social groups who are trying to make a living in volatile conditions and with limited assets" (Dugbazah, 2012:105). Moreover it tries to relate the impacts and significance of external shocks to the availability and access of certain assets to the poor.

There are essentially two schools of thought on resources exploration in development theory. The first sees exploration of natural resource discovery as the key to development because it causes massive changes which provides the impetus to economic growth. The second is the not entirely opposite but believes that natural resource exploration does not always result in the positive economic growth and development of the resource regions but rather results in a "curse".

These divergent views are founded on the observation that there are natural resourced economies which have progressed steadily in their economic growth such as Norway and Botswana. Others with no resources at all have also undergone dynamic economic growth all within the last half century. A third group of countries that despite their continuous exploration of natural resources have stagnant economies which did not grow at all and there are periods of time in their history where they experienced negative growth.

Empirical review

Effects of oil and gas exploration on the environment

This paper is based on the concept of Environmental pollution. Enger and Smith (2004) defined the environment as the sum total of all the conditions that surrounds man. The concept of environmental pollution has been presented in different ways by various authors. Botkin and Keller (1998) simply defined environmental pollution as involving the discharge of materials or substances into the environment which renders it useless for specific purposes. Asthana and Asthana (2006) on the other hand defined environmental pollution as the undesirable change in physical, chemical or biological characteristics of air, water

or land that will be or may be harmful to human and other life, industrial process, living conditions, and cultural assets or cause wastages of our raw materials resources. Pollutants can be from human sources or natural sources, it could be valuable, or waste, it could be toxic or non-toxic. The entry of pollutants causes disturbances in an ecosystem which manifest themselves into a chain of undesirable events. The resultant pollutants can be grouped into three based on the nature and type of environment affected by the pollution. They are; air pollution, water pollution, and soil and gas pollution. Both air and water are components of the environment which are dynamic entities. They are an effective means of transport of waste gases and other materials. Soil and grass on the other hand are stationary entities which are indirectly affected by the pollutions of water and air. Toxic wastes dumped on a soil and gas may not cause any harm to the plants growing newly if there is no means (such as water or air) of transfer of toxicant to the plants' body or roots (Asthana & Asthana, 2006). The effects of pollution on soil and grass become conspicuous only when the water or the air within the environments becomes polluted. Human interference with the environment is basically through exploration and exploitation of the resources found in it. The effects of oil and gas spills on the rivers during operations are a major reason for the contamination of water resources in the Niger Delta region.

Researchers in different environments have discovered that the exploration and exploitation of oil and gas in communities has led to the destruction of land, vegetation and pollution of streams (Kharaka et al, 2005). This concept is relevant to the topic under consideration because the economy of the rural communities

from where crude oil and gas is extracted is tied to land and water. The pollution of land and water through oil and gas production activities has depressed the income of the majority of people leading to poverty and various forms of health hazard. The same situation also lead to series of social unrest in the region as young militants had to pick up arm against the government and the multinational companies to seek redress (Worlu 2008; Olujimi, et al, 2011).

Environmental and health issues related to the extraction of natural resources have been also affecting human capital. A UNEP report published in 2009 points out that both environmental pollution and conflicts caused by the production of raw materials raise the health risks of local population (UNEP 2009). It is not only the raw material, in this case oil and gas, which can be considered as a source of danger, but in the influx of foreign workforce that affect the environment.

Effects of gas flaring on the environment

Gas flaring is the burning of natural gas that is associated with crude oil and gas when it is pumped up from the ground JINN (2010). In petroleum producing areas where insufficient investment is made on infrastructure to utilize natural gas or where the gas processor has a problem, flaring is employed to dispose of this associated gas.

Gas flaring has a lot of impact on the environment in terms of climate change. According to Intergovernmental Panel on climate Change (IPCC) the burning of fossil fuel, coal and oil and gas – greenhouse gasses-has led to the warming of up of the world and is projected to get much, much worse during the course of the

21st Century. Acid rain is also been linked to the gas flaring leading to the corrosion of the corrugated roofs. The flares associated with gas flaring also give rise to atmospheric contaminants such as oxides of nitrogen, sulphur and carbon that acidify the soil and gas making it depleted to support crop growth.

Evaporation pits, of produced formation water which is in several orders of magnitude more saline than water to be found in near surface exploitable aquifers; The disposal of liquid refinery effluent which contain grease, phenols, cyanides, sulphides, chromium and biological oxygen demanding organic matters; and Oil and gas spills during storage, transportation and marketing of the products from the oil and gas industry. Therefore, it is not out of place to conclude that the oil and gas production activities have negatively impacted on the Niger Delta Region causing environmental, social and economic hardship to the inhabitants.

The effects of oil and gas exploration on the livelihoods of people

The activities of the oil and gas industry has often resulted in a different multitude of social, environmental, and economic problems such as environmental pollution, occupational dislocation, rural-urban drift, unemployment and poor human health (Elis & Simpson, 1994; Amadi & Tamuno, 1999; Omajemite, 2008).

Oil and gas pollution causes damage to human health, agricultural land and fish ponds. It can also result into long-standing ecological malfunctioning and poor environmental wellbeing. For instance, pollutions of rivers through oil and gas spillage could result in massive extermination of fishes and thereby threaten the social and economic life of the communities whose livelihood depends on the

contaminated water. This state of affairs has been the regular experience of many riverine oil and gas producing, fishing dependent communities in the Niger Delta (Olujimi, et al, 2011).

Also arable farmlands have been lost to oil and gas pollution as a sizable farmland in the Niger-Delta Region have been rendered barren due to oil and gas spillage and leakages(Elis & Simpson, 1994). Furthermore, when oil and gas spillage occurs, it has to be cleaned up using some designated chemical. While the use of this chemical is legal, a reckless use of them destroys the environment, renders the soil and gas infertile for agricultural purpose, and damages crops and marine life (Amadi & Tamuno, 1999). Among the most conspicuous aspects of life in contemporary Ogoni land are poverty, malnutrition and disease. It is said that Ogoni villages have no clean water, little electricity, abysmal health care and no jobs for displaced farmers and fishers' persons, and to make matters worse, face the effects of unrestrained environmental molestation by the multinational companies every day (UNEP, 2009).

The socio-economic life of the Niger-Deltan's particularly the oil and gas bearing communities are essentially poor. Ugbomeh (2007) in his paper on oil and gas exploration and exploitation in Delta State pointed out that oil and gas development can degrade the environment, impair human health and precipitate social disruptions.

Effects of oil and gas exploration on women livelihood

The development economics literature prior to the late 1980s is often referred to for its claims that natural resources are good ingredients for

development. However, later research (Tadjoeddin, 2007) demonstrated that rich natural resource endowments are more likely to result in a curse – rather than a blessing in the form of negative development outcomes including poor economic performance, non-democracy and civil war. In another development, Sachs and Warner (1995) demonstrated empirically that the 'curse' of natural resource ownership was substantial. They showed that economic growth was inversely related to various measures of resource abundance. Their results showed that between 1965-1998, Gross National Product per capita growth in the Oil and gas and Petroleum Exporting Countries (OPEC) decreased on average by 1.3 percent, while in the rest of the developing world, per capita growth was on average 2.2 percent. Apart from oil and gas resources other natural resources such as land have also not contributed positively to economic development in some cases. For example, Galor, Moav and Vollrath (2009) researched into the link between land inequality and economic development. They revealed that land inequality is negatively related to the point of time in which landowners support public education conducive to growth. Galor, Moav and Vollrath (2009) in their model showed that landowners would eventually be in favor of mass education (because they own the bulk of the capital stock and there are capital-skill complementarities). Again, Falkinger and Grossmann (2005) proposed a theory in which the opposition of the landed elite to mass education is related to openness to trade, where an open trade regime is politically supported by the landed elite under a comparative advantage for primary goods production. However, this model does not explain the emergence of an entrepreneurial class with different

interests than the traditional elite. The oil and gas boom in some countries has witnessed active women participation in the economic sector even though some countries have witnessed negative consequences. The implication is that oil and gas production affects gender relations by reducing the presence of women in the labour force. There is therefore the need for alternative livelihood activities to support women who might not be engaged in the oil and gas activities. It is usually argued that in the oil and gas industry men dominate whereas women are relegated to the background. One possible reason is that, women do not usually have the know-how to work in the oil and gas industry. Thus, the pauperization of the women folk by the seemingly harsh and male dominated economic sphere coupled with the maximization of profits by the corporate world without the consideration for the basic and the welfare needs of the masses especially women (Pearson, 1997) have the potential to further reduce the ability and capacity of the women folk to equal opportunities to wealth creation and decent living standards.

In a recent study, titled Oil and gas, Islam and Women, Ross (2008) made some interesting claims regarding the relationship between an oil and gas-based economy and gender equality. Simply put, an export directed oil and gas-based economy shuts women out of the workforce consequently lowering their capacity for political influence and rendering them economically incapacitated. Ross's (2008) argument goes against several commonly upheld theories regarding economic development and gender equality. Inglehart and Norris (2003) suggested that, economic development automatically leads to an improvement in gender equity. Other studies have suggested that this principle does not hold true

for oil and gas-rich Gulf States because of the patriarchal structures of Muslim countries where women are suppressed. Ross argues that when a developing country suddenly experiences an oil and gas boom, the demand for locally produced goods diminishes and is diverted toward non-tradable goods such as construction and heavy industry. Given the occupational segregation of labour present in most developing societies, women are consequently shut out of jobs for two reasons. One, the rising male income makes women's' jobs superfluous in terms of economic contribution; and two, because the light industry jobs attracting women to the labour force are eliminated. In South Korea, as indicated by Ross (2008), the new demand for manufacturing garments, electronics and plastic goods for export was high as a result of industrialization which changed the position of women in the 1960s. The purveyors of these industries sought out young unmarried women for jobs because they proved to be good workers, and also because the physical demands of these jobs did not require men. In a similar vein, can the oil and gas exploration change the status of women in Ghana? The answer is that even if women are not employed in the oil and gas industry there are still some opportunities for them to undertake economic activities abandoned by men to make livelihoods. With the incorporation of women into the alternative workforce, similarly, women were provided a platform where they could interact and organize, with the consequent emergence of women's groups that worked for more rights, better education and more legal equality for women. The South Korean case illustrates how industrialization and the entry of women into non-agricultural jobs can pave the way for gender equality, economic empowerment

and livelihood sustainability in the wake of oil and gas production. Another argument proffered by Ross (2008) is that, as a result of oil and gas boom women have fewer incentives to enter the alternative workforce; immigrant labour can pay women to offer them services which they (the immigrant labour) cannot have time to carry out as a result of their heavy involvement in the oil and gas fields. The result, proven by Ross's (2008) statistical correlation of oil and gas rents and lack of gender representation, is that the most oil and gas-rich countries- specifically Oman, Saudi Arabia, Qatar and the United Arab Emirates - have the fewest women in their workforce, are the most reluctant to grant women the vote, are least likely to give them representation in parliament and score the lowest on the gender development index (GDI). In such situations, if women are not provided with livelihood activities, then, the oil and gas boom has served to drive women out of the workforce. This may lead to an increase in fertility and illiteracy rates, a stagnation of the level of political participation as well as economic incapacitation. According to Omorodion (2004) oil and gas workers and local men use the income generated from oil and gas to purchase female sexuality in terms of sexual partners. In Nigeria's Niger Delta fieldwork showed that men married more wives, kept more concubines and maintains the loyalty of females from or outside the indigenous population. Furthermore, the high income received by men and the payments given to men for no work done, encouraged 'co-modification' of women that resulted to modern slavery, as women were seen in terms of their sex and the sexual services they rendered to the men. Women were objectified, thus bought as commodities and used at the discretion of men,

who can afford to purchase their sexual services. Oil and gas find however, do not only come with problems but also lots of opportunities. Oil and gas production come with other supporting economic activities such as hotel and restaurant services, banking, transport activities, health care services, road construction, telecommunication, and many more allied services that are able to benefit the people. It must be emphasized that these services are realized only when the oil and gas resources are well managed. What advantage can the poor, especially women, take advantage of and with what resources? The livelihood framework demands that people are equipped with livelihood assets. The use of these assets is influenced by policies, institutions and processes in order to produce outcomes. In addition, oil and gas drilling at the gulf brings along it exciting tourist attractions. For example at the Gulf of Mexico more than 120 decommissioned oil and gas rigs in the gulf have been converted into submerged artificial reefs in the industry's "rigs-to-reefs" program. These reefs have been providing living and feeding habitats for thousands of underwater species, enhancing the ecosystem of the entire Gulf and promoting tourism for the fishing diving industries.

In some cases, gourmet mussels and other succulent shellfish which are harvested from the legs of these offshore platforms are served in many of the finest seafood restaurants. Moreover, butterflies and birds use the oil and gas gulf platforms as resting places during their annual migration which serve as tourist attraction. In the case of Ghana such opportunities when materialized can offer employment to displaced fishermen and unemployed women in the catchment area, Western Region and the country as a whole. Majority of women in Ghana

engage in farming activities basically the cultivation of staple crops such as cassava, plantain, maize, yam and vegetables. It has been established that oil and gas exploration activities especially in-shore drilling negatively affect the production of such crops (Odeman, n.d.). For example, in the Niger Delta communities in Nigeria, one of the most important crops grown by women is cassava. Gas flaring, which is a continuous exercise in the Niger Delta communities, has been implicated in suppression of plant growth near the flaring points. Imevbore and Adeyemi (1981) said there is a decrease in length, weight, starch, protein and ascorbic acid (Vitamin C) content of cassava around the flaring points. Also, acid rain in the region, which could be partly attributed to gas flaring, leads to acidity of the soil and gas (loss of soil and gas fertility) and damaged crops (Gabriel, 2004). This has contributed to a fall in cassava production in the region thus affecting the income levels of these women engaged farming activities. These in the short and long-term make women economically disadvantaged and hence deepen the poverty status of affected women.

Effects of oil and gas exploration and production on the fishery industry in Ghana

In Ghana, the negative impacts of oil and gas exploration are beginning to be felt on livelihoods of fishing communities around the oil and gas enclave. Ever since oil and gas exploration started in Ghana in the Jubilee Fields at Cape Three Points of the Western Region, fishermen have been banned from fishing within 500 km radius around the oil and gas rigs by Tullow-Ghana. As a result, fishermen have to travel far away from the shores into the deep sea for their catch.

This situation has increased their expenditure on premix fuel used for powering their fishing boats, leading to reduced income. According to the deputy director of Ghana's Fisheries Commission, Emmanuel Marfa, "since the commencement of oil and gas exploration, the number of supply vessels on Ghana's territorial waters have increased leading to the destruction of some Ghanaian boats and canoes without any compensation. Some fishermen in the six coastal districts of Shama, Sekondi, Takoradi, Ahanta West, Ellembelle and Jomoro of the Western Region of Ghana, in a documentary by the Institute of Financial and Economic Journalist (IFEJ) said "ever since oil and gas exploration started, they have experienced poor catches even during bumper fishing season in August because the activities of oil and gas companies on the oil and gas fields were scaring fish stocks away from Ghana's territorial waters to neighboring countries, resulting in dwindling fish stock in Ghanaian waters. Some ocean mammals such as whales also continue to die mysteriously, raising concerns about the safety of marine life. Consequently, civil society groups have called for a fisheries' impact assessment on the oil and gas fields by the oil and gas companies. A SEND-Ghana report on the extractive industry revealed that fishmongers in the Enosie Community in Half Assini, the capital of the Jomoro District have resorted to petty trading such as sale of iced water, groceries and farming as alternative livelihoods

Sustainable livelihood analysis (SLA)

The concept of SLA has been implemented and adopted as guiding principle and major analytical tool for donor organizations. As a tool in development projects it has facilitated an appropriate way to map the needs of the

poor, to understand how to tackle challenges the facing the poor and to enhance the distribution of goal-directed aid of international donor organizations. It is also important to state that from the very beginning of livelihood research in the early 1990ies different variants of the Sustainable Livelihoods Approach have been introduced. Particular international organizations highlighted distinct aspects of the approach and changed the focus and design according to their priorities. The DFID model, which is used in this study, is a clear people-centered approach and focuses on the access to assets. More than any other model, this approach to analyzing livelihoods includes institutional and political issues. Other prominent ways of tackling livelihood challenges have been employed by CARE, OXFAM and UNDP. These models however tend to neglect the aspects that should be considered in this study which seeks to analyze the effects of oil and gas production on local livelihoods (Carney et al. 1999). The DFID model has also gained experience in its use and applications over the years in different countries and environments and as such is considered the ideal tool for this study.

The DFID model puts access to assets of any group of people (such as a house household) in the middle of the analysis. These assets are subdivided into five core capitals (1) human capital, (2) natural capital, (3) financial capital, (4) social capital and (5) physical capital (Serrat, 2008). The assets then combine with the capabilities of the group. Capabilities are defined more as abilities such as knowledge and education which the individual or household owns and which will in turn help to possess other assets.

The achievement or failure of having the right capabilities and owning the assets is dependent on and often times influenced by the prevailing transforming structures and institutions summarized as the vulnerability context. These transforming structures and processes are the institutions, organizations, policies and legislation which determine access to the five different types of capital, terms of exchange between the different types of capital and the economic and other returns from the livelihood strategies." (FAO, 2013b). "To be a member of a community or society is to live within a set of social institutions" (Knight, 1992). Institutions will always exist and they take various forms and vary from one society to the other. Institutions present uncertainties which impinge on the livelihoods of people living in rural and in effect livelihood change occurring in communities, endowed with natural resource discovery such as oil and gas could be a product of the existing institutions. The gain of a secure livelihood is under constant threat given the levels of vulnerability comprising what is referred to as "trends, shocks and seasonality". Coping mechanisms evolve over time to deal with the shocks trends and seasonality. A livelihood strategy which can adapts these mechanisms is described as sustainable.

To suit the context of the present study, the SLA framework was further simplified and modified. Assets and variables were cut to the lowest common denominator. The questions asked in the questionnaire needed to be comparable. Natural capital for instance was seen to vary in all parts of Ghana. There are regions which are well endowed with natural resources such as the Western Region whereas there are others such as the Upper East Region having none of

this natural resource base. On the other hand, the other forms of capital would be available everywhere. Thus, our adjusted SLA consists of four asset components (1) human capital; (2) financial capital; (3) social capital and (4) physical capital which were seen as more uniform amongst our total study population.

Livelihood Assets, Vulnerability Context and PIP

Our livelihood assets are represented by the various forms of capitals shown in Figure 2. The vulnerability context is presented by the discovery and subsequent production of oil and gas. Thus oil and gas is seen to have a deterministic effect on each type of asset and has the ability to shape the resultant livelihood approach the individual or household will adapt.

The first asset type Human Capital comprises the Labor market available, the level of education and the health status or environment available (Serrat, 2008). The quality and quantity of human capital in a household directly affects the economic situation of the human group. “Lack of human capital in the form of skills and education for instance is seen to affect the ability to secure a livelihood more directly in urban labor markets than in rural areas” (Rakodi, 2002a:10).

As stated by Basedau (2005) the oil and gas industry employs mainly high-skilled workers to operate activities such as the running of the off-shore oil and gas platforms and on-shore infrastructure, such as pipelines and refineries. The local population however has nurtured exaggerated expectations of employment opportunities. These hopes are likely to be dashed which, in turn, could lead to tensions between communities and oil and gas companies. There could be an exception during the construction phase of the oil and gas

infrastructure when short-term employment of the local workforce is undertaken (cf. Waskow & Welch, 2005:122). The reality to be faced then is in comparison to other industries, the oil and gas industry is predominantly capital intensive and employs very little labor.

Livelihood Assets

The ability to generate Financial Capital also dependent on wages or proceeds of work and living costs in a household's success in developing a livelihood strategy. In contrast to rural areas where losses in earnings and income are often cushioned by subsistence form of life, monetary income is essential to survival in urban economies. As such increasing costs of living which is not matched by increasing incomes becomes a burden for most households whose income generating opportunities are limited.

Oil and gas production is often accompanied by the influx of high-skilled foreign workers who easily cause increases the demand for certain goods and services. Unmet demand eventually also causes prices to rise. Irrespective of the these increments, income sources often remain unchanged limiting the ability of local populations with no links to the oil and gas sector to pay for goods that were previously affordable (ibid:122). This implies lower savings and less financial capital accumulation.

Physical capital discussed in this study consists of two basic needs of a household shelter and sufficient infrastructure. The costs of housing in oil and gas producing countries often develop analogous to the price increase of goods and other services. Infrastructural provisions are also overstretched and become more

expensive as the demand for it continuously goes up. This pressure is transmitted to local land and house owners who begin to demand more than they usually would charge irrespective of the consumer's origin or income (Rud & Aragon, 2013).

The term Social Capital embraces all social and community networks as well as the migration of people from one area to the other. It underscores the importance of social interactions and structures amongst individuals and households. The impact of oil and gas production on the local social fabric can be incisive. It is believed that the influx of foreign workers and has consequences on oil and gas producing regions. Sometimes the social fabric within communities could be shaken through "resentment among those who do not have jobs and the few that do" (ibid: 122). Further it is argued that "the men who get jobs on a drilling site often abandon the traditional work and ways of life" (ibid:102) and this may become a motive for tension within the local community. Apart from those security threats, the increase of housing and living costs can trigger movements out of the community which destroys existing social networks.

Vulnerability context

The efforts of households to secure their livelihoods and assets are strongly influenced by the context within which they desire them. More than any other part of the society, the poor are at the mercy of external shocks, stresses and crises. Once hit by an external event, they are often lack the means to recover. These shocks and unforeseen events of which they have no control are summarized as the vulnerability context. Chamber and Conway (1992) describe

vulnerability in two ways: “the external” that is the stresses and shocks to which a livelihood is subject; and “the internal” which is the ability or capacity to cope (Chambers & Conway 1992:10). A variety of coping strategies or events often employed to deal with the shocks are summarized as follows: (1) stint; (2) hoard; (3) protect; (4) deplete; (5) diversify; (6) claim; (7) move (ibid:11).

Pertinent examples of external stresses and shocks are changes in demographics, resource discovery and supply; recurring seasonal changes and bad weather conditions like dry periods and famine or drastic price increases in basic goods such as fuel which have an effect on all other goods and services and conflicts or natural disasters (cf. Rakodi, 2002a:14).

Policies, Institutions and Processes

Access to assets in every organized society is determined by the shape of structures and systems that have been put in place. These structures are captured under one umbrella as Policies, Institutions and Processes (PIP). They “influence how, where, when and by whom assets are accessed, used, controlled and decided upon” (FAO, 2008:13). Interactions of organizations, institutions and individuals are decisively influenced by political processes and this determines the context within which individuals and households construct and adapt livelihood strategies” (DFID, 1999:1). PIP to a large extent borders on participation, power, authority, governance, laws, policies, public service delivery and social relations which are in turn also controlled by other characteristics such as gender, caste, ethnicity, age and so on” (ibid:1). Many people employ ways and strategies to develop their assets into livelihood outcomes depending on the existing PIP.

DFID has outlined some aspects these strategies: "(1) poor people's access to various assets (such as land or labour); (2) the benefits poor people are able to derive from different types of capital (through markets); (3) the environment for private sector investment; (4) the extent to which poor people are able to engage in decision-making processes; and individual and civil society rights" (ibid: 1).

Policies

At the macro level, policies on issues such as resource distribution, labour, education and health constitute some of the factors which act as a control on the assets possessed and the ability of the poor to gain access to these assets. The links through participation in local institutions and authorities is vital to ensure that the needs of the poor are heard at the national level. Information travels from the bottom to the top through these channels. The very existence of state institutions and public services on the ground is meaningless unless they have sufficient capacities to perform the way they should.

Institutions

A simple definition provided by Schilderman and Lowe (2002) suggests that institutions can be described as "the hardware which forms legitimate governance structures" (Schilderman & Lowe, 2002:8). The term 'institutions' comprises among others "political, legislative & representative bodies; executive agencies and judicial bodies; traditional institutions; NGOs civil society, membership organizations and community governance systems" (FAO, 2008:12). Those institutions are responsible for legislation and its enforcement, information

about government policies and to interact with individuals and inform them on their rights and entitlements.

Processes

The processes defined in the study show the implementation procedures undertaken in the enforcement of decisions made by state authorities who determine the shape of institutions. Local livelihoods can be influenced when the formulation and implementation of public policy is either more or less supportive of poor people's livelihoods [or] changes in institutions alter the incentive arrangements provided by organizations in their relationship with poor people. Examples of such situations are the removal of subsidies within a particular sector which employs majority of poor people in a region (DFID, 1999:3).

When measuring the impacts of certain policies on livelihoods the following dimensions have to be taken into account the "content, process of policy formulation and methods of implementation" This in effect presents the comprehensive picture needed for the analysis of the livelihood concept (Schilderman & Lowe, 2002:11).

Effects of oil and gas exploration on standard of living

Bennett (1937) defines problems associated with measuring a standard of living: "Standard of living is a complex and elusive concept. It is perhaps most vague, and certainly most difficult for the statistician to deal with, when regarded as the per capita quantum of human satisfactions or enjoyments." Bennett suggests that absolute measures of standard of living are inadequate and one

therefore must measure in relative terms. For example, Bennett's study compared differences in standard of living between six different countries.

Davis (1945) argues that one of the public sector's most important objectives is to raise the standard living. However, Bernard (1928) warns that administrative decision making not be made solely on the basis of such standard of living measures as the measure of standard of living is more an art than a science. Despite the difficulties in measuring standard of living, including the lack of a universally accepted model, standard of living has been a popular topic for economic research. Much of the literature on the topic measures standard of living in terms of consumption. Williams and Zimmerman (1938) define standard of living as, "an ideal or norm of consumption which may be described in terms of goods and services of a specific quantity and quality." Konus (1939) gives a similar but more specific definition of standard of living: "the monetary value of those consumers' goods which are in fact consumed in a course of certain period of time by an average family belonging to a given stratum of a population."

Cottam and Mangus (1942) state the importance of freedom in defining the standard of living. "In American culture all persons are expected to live in houses and to wear clothes, but the individual has wide latitude in choosing the kind of house he will occupy and the kind of clothes he will wear." While consumption based measures of standard of living have dominated past literature, more recent literature documents designed an alternative methods of measuring standard of living. For example, Sen (1984) states that the most explored views of standard of living are based on utility from consumption and from opulence.

However, he argues that a better measure for standard of living is one of freedom. Economic freedom is the choice available to allocate income as one sees fit.

Blackorby and Russell (1978) describe a relationship between standard of living and cost of living. They argue that the cost of living has a direct relationship to the standard of living. They define the cost of living index as "the ratio of costs of realizing a particular indifference surface or level of real income at different prices" Pope (1993) describes the relationship between per capita income and standard of living. Pope argues, "the standard of living of all classes could be assumed to have moved upward with the rise in average per capita income" The model used in the following study combines both the idea of per capita income as a measure of freedom and the cost of living as a constraint to this freedom.

Ogburn (1951) describes four factors that affect differences of standard of livings of peoples. These factors are population, natural resources, organization, and technology. He concludes that population has a negative relationship to standard of living. However, this negative relationship could be due to the fact that China and India, two overpopulated nations, make up two fifths of his study. Ogburn also argues that the standard of living is most closely correlated with technology, as countries with advanced technology also have high standards of living. High technology is associated with low production costs and therefore places of low technology have higher costs, hindering economic growth.

Effects of Oil and gas Activities on Socio- Economic Conditions

Oil and gas production all over the world is associated with oil and gas spills or pollution which may have health implications for human lives from consuming contaminated marine fishes while carcinogenic compounds leaked into the ocean can lead to public health issues. Empirical research also links oil and gas activities to fever due to heat generated by gas flaring activities. Various gastrointestinal disorders are contracted through the consumption of fish from polluted water bodies in oil and gas producing communities as well as respiratory ailments such as bronchitis, asthma, and cough asphyxiation, among others. Oil and gas exploration activities lead to income losses, migration and negative social vices such as prostitution, sexually transmitted diseases, high rate of school drop outs, wars, corruption and kidnapping.

In many oil and gas producing nations such as Nigeria, the oil and gas exploration activities have caused destruction of delicate marine ecology, which is the main source of livelihood in the oil and gas-bearing communities, leading to loss of fish catches, exacerbation of poverty, social conflicts, population displacement, and loss of livelihoods. Fishermen are told to move their boats and other fishing gears to allow for drilling activities that disrupt fishing activities and force most of these fishes to run several kilometers away, thereby reducing the number of catches. The question is, how has oil and gas exploration and production impacted on the fishing industry, and what measures have been put in place to mitigate the adverse impact of oil and gas production on fishing and fisher folks who are among the poor around the oil and gas enclave? The answers

to these questions are critical for securing livelihoods and peaceful co-existence between the petroleum and the fisheries sectors?

Effects of oil and gas exploration on rural development

The impact of oil and gas exploration on the rural development in Bayelsa State is at an alarming rate. The operations of the petroleum industry which includes, exploration, production, refining, transportation and marketing of oil and gas products which is based mostly in the Niger delta region Bayelsa State inclusive, has been the giant spider spinning the web of environment degradation in the region. The exploration and exploitation activities in Bayelsa State have not only altered the people's livelihoods, but continue to disrupt the natural balance of the regions earth crust (George, 2000). During seismic surveys and exploration drilling, harmful materials like dynamites and explorative are used. The method involves into the earth's crust to measure the depth of the earth's make up. The implication of this is that the more oil and gas is explored in the region using this method, the more the regions natural environment witness shocks and rifts in its crust. Gas flaring and venting, which represents a significant source of global warming is one of the biggest environment problems associated with oil and gas exploration and exploitation in Bayelsa State (South-South region). The World Bank Global Gas Flaring Production (GGFP) partnership estimated that globally, 150 billion cubic meters of associated natural gas are being flared annually. This, global gas flaring releases about 400 million tons of CO2 per year into atmosphere (Amanze–Nwachukwu, 2007). According to DPR 2007 report, more than 70 percent of gas produced in Niger Delta region are flared [that is, 177 out

of 139 of the oil and gas field in the Niger Delta are still flaring their gas]. From the foregoing, it has now become worrisome that most host communities' to oil and gas producing facilities in Bayelsa State, lives with gas stacks that flare gas twenty-four hours' daily. This scenario exposes the people of the area to a lot of environmental and health risks or hazard. This causes major devastating environmental effects that are associated with oil and gas exploration and exploitation activity such as oil and gas spillage. This takes place in different ways as such; it can be classified into various types. This includes: minor, medium, major and disaster. Oil and gas spill occur both onshore and offshore. It happens as a result of any uncontrolled well blowout, pipeline rupture or storage tank failure. Such occurrence possesses an imminent threat to the public health or welfare (Ibaba, 2005; Okonta et al, 2001). One percent of oil and gas spills is due to engineering drills, inability to effectively control oil and gas wells, failure of machines and inadequate care in loading and unloading oil and gas vessels (Nwilo & Badejo, 2001; Naanen, 1995). One of the most visible impacts of the numerous oil and gas spills has been loss of mangrove trees. The mangrove was once a source of both fuel woods for the indigenous people and a habitat for the area's biodiversity. Now the area is unable to survive the oil and gas toxicity of its habitat. Oil and gas spills also poses serious health risks to people when they consume sea foods contaminated by oil and gas spillage (Onuoha, 2007). More so, oil and gas exploration and exploitation activity in the Niger Delta regions has adversely destroys its original forest. Indeed, the oil and gas industry is an important factor of mangrove forest destruction in the Niger Delta region. In

1999, it was estimated that Nigeria has lost between 70 to 80 percent of its original forest (Ibaba, 2005; Azaiki, 2003; Okonta et al, 2001). The extraction of oil and gas as well as increased investment in the gas sector has accentuated the rate of deforestation and the constructions of pipelines for the transportation of oil and gas products within and beyond the Niger Delta region has led to the clearing of forests to construct pipelines and other oil and gas facilities. This further devastates the already delicate ecosystem of the area. The destruction of forest and coral relief in the regions contributed to the vulnerability of the region to natural disaster and global climates change. As these forest ecosystems are being depleted, the rate at which CO2 is withdrawn is further reduced. Every human society depends to a large extend on their immediate environment for survival. Indeed, the oil and gas exploration and exploitation activities in the Niger Delta region has on one hand led to the degradation of the immediate natural environment of the region, and on the other hand, contributed significantly to the release of many Green House Gas which are the major causes of climate change. Thus, the consumption and development patterns have reached unsustainable levels manifested by widespread land degradation, erosion, deforestation, and air, water and soil and gas pollution. However, before the advent of the oil and gas industry, the Niger Delta people are hardworking people contrary to what non-indigenes say about the people. One would be disillusioned at the rate of activities embarked upon by both male and female inhabitants of the region. Given the fact that most of the settlement is rural, agricultural activities such as fishing and farming dominates all other economic activity in the area. Almost, all the natives

in the region have embarked on one form of fishing and farming, etc. It is however, worthy to note that the Niger Delta region alone, contributes to the national economy not only in petroleum and gas exploration but also in agricultural production (Ndiyo, 2008). The major food crops commonly found in the region are: water yam, cocoa yam, maize, rice, melon, groundnuts, potato, plantain, banana, pepper, etc. Also, economic trees like oil and gas palm, raffia palm, coconut, rubber and cocoa as well as livestock such as goat, pigs, fish ponds farming, etc are abound (Ndiyo, 2008). The mangrove forest of the Niger Delta provides a lot of economic trees such as raffia palm used in the production of gin commonly called Ogogoro, harvesting of timber (lumbering) is another serious economic activity of the people of the region. Other rewarding business is region includes the gathering or picking of wild mango fruits popularly known as ogbono. It is a very lucrative business such that during its season, it offset over 85% of hunger and poverty of people of the region. In fact, many rural development projects like building projects and sponsoring children to school are attributed to this factor by the inhabitants of the natives of the region. In the water, people go to pick periwinkles and water snails for both subsistence and commercial purposes. Scouting for snails is a very viable lucrative economic activity especially among people between the age bracket of 18 and 55 years. It is a lucrative business for those who were gifted in the art of scouting. Pottery, mat and rope makings are also economic activities of the people of the region. It is worthy to note that these and many other activities are source of rural development as well as viable source income for survival to the people of the

region especially in the people of Bayelsa State. These notwithstanding, it is regrettably to note that oil and gas exploration and exploitation activities in the region have displaced their local source of income and their only source of survival. Flora and fauna have been destroyed. The citizenry have been transformed from great fishermen to great consumers of frozen sea fish (Ogbodo, 2009). That before the advent of oil and gas exploration and exploration, there were three predominant sources of water supply for the people. These are: rain water, river and open well water. Researchers has shown that pollution caused by acid rain from gas flaring does not end with sanitizing the water bodies but it is now known that health risk is not averted by abstinence from meat and fishes killed by this pollutants. Fishes and animals that escape instant death from pollution are known to have taken in some of these toxic substances, which in turn get into human beings that eat them (Olobaniyi et al, 2007; Alakpodia, 2000; Oden, 1976). This in turn causes infections such as bronchitis and gives married coupled other side effects in form of genetic mutations (Olusi, 1981). Similarly, oil and gas exploration and exploitation in the region have impacted negatively on the people of the region with a trail of devastation such as poisoned air, acid rains, destroyed roofing sheets, odious gases and smells, poisoned water, destroyed fishing colonies, declining wild fisheries and wildlife, failing crops, infertile soil and grass and dying forest. Worst hit, among other negative impact is the intervention of the multinational oil and gas companies operation in the area into community policies. Before the advents of the oil and gas industry, the Niger Delta region has been a peaceful one. But today, the Niger Delta region especially

Bayelsa State has been described as being at war against itself. Oil and gas exploration and exploitation have and is producing numerous conflicts. The conflicts are pervasive, replete and recurring in the host communities. It is so pervasive that it is quite difficult to get any host community in the State that have been permanently peaceful and conflict free. Even if such communities are found, there still exist a low intensity conflict which did not rise to the level of violence and production disruption (Azaiki, 2003; Okonta et al, 2001). Host communities have further witnessed a high level of inter communal and ethnic conflicts. The multinational oil and gas companies', operating in the region uses different strategies to set confusion; some of which are silence, denial, defiance, co-optation and payment of money to selected community leaders. Involvement in community projects the concept of divide and rule, blaming the victim, promotion of false consciousness and violence, (Iyayi, 2000). In essence, the local people, their development interest, livelihoods, environments and needs are immaterial. Besides, oil and gas exploration and exploitation in the region has created a lazy and indolent class of youths who want to obtain and accumulate wealth without hard-work. It has further reduced the motivation for education and urban migration. It has also created false expectation of easy wealth which has increase a culture of greed and dependency among the people of the region (Ndiyo, 2008). Furthermore, the multinational oil and gas companies during the periods of conflicts, infiltrate community leadership particularly influential Chiefs, Elders, Opinion leaders and youth leaders. They care less about the legitimacy of traditional governance structures. Whether the emergent power is properly

constituted according to traditions are immaterial to them. These in turn has given birth to illegal Chiefs and fierce struggles for dominance among community groups and members. Oil and gas exploration and exploitation in the region has brought about high level of poverty, lack of food, asset, and access to basic development economic stagnation, agricultural underdevelopment, soil and gas infertility, unemployment, poor quality of life, isolation, unhealthy environment as well as spreading diseases and malnutrition (Azaiki, 2007; Ibaba, 2005; Oni, 1995). Other matters arising includes: poor environmental quality and high level of pollution, conflict, and of security, threats to health and well-being including HIV/AIDS and unsustainable livelihoods (Natziger, 2006a, 2006b). The reviewed literature suggests that oil and gas exploration and exploitation activities in the Niger Delta region have impacted negatively on the people of the area. The oil and gas companies operation in the region have become a threat to the livelihoods of the people because of the huge adverse effects (Okonta et al, 2001). It has left a trial of devastation indication by poisoned waters, destroyed fishing colonies, checking wild fisheries and wide life, failing crops, destroyed roofing sheets, odious gases and dying forests. These devastations have further resulted to destroyed livelihood source and traditional occupations, disrupted and unstable communal governance systems, poverty, unemployment and underemployment, malnutrition, food storages, declining productions, distorted social values, heightened crime, youth restiveness, state repression and violence, disarticulated and divided communities, deaths, prostitution, heightened hazards and illness and destroyed communal, tradition and social fabric and cohesiveness. On the whole,

oil and gas exploration and exploitation in the Niger Delta have been destructive, destabilizing and repressive forces. The multinational oil and gas companies have been merely contented with business and profits.

Conceptual Framework

"A livelihood comprises the capabilities, assets, (including both material and social resources) and activities required as a means of living. A livelihood is sustainable when it can cope with, and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base" (Scoones, 1988 as quoted in Dugbazah, 2012:105)

Studies conducted using the livelihood concept often defines a scope within which the phenomena can be examined. This also limits or provides boundaries for assessment. In most studies the household is provided as the scope. The household's activities therefore constitute the total activities defining the ability of the household to secure a particular livelihood. A household combines all people that share "the same hearth for cooking" (Chambers and Conway 1992:6). This human group seeks to "mobilize resources and opportunities" and to combine these into a livelihood strategy which is a mix of productive and reproductive activities; income, labor and asset pooling" (Grown and Sebstad, 1989 as quoted in Rakodi, 2002a:7).

Chambers and Conway again presented the "sustainable livelihoods" as a linking of the three most important concepts defining the livelihood of an individual. These concepts are capability, equity and sustainability" (Solesbury, 2003:5).

The Livelihood Framework in 1998 Carney introduced a framework of livelihood analysis – the Sustainable Livelihood Approach (Figure 1) – which was applied in this study.

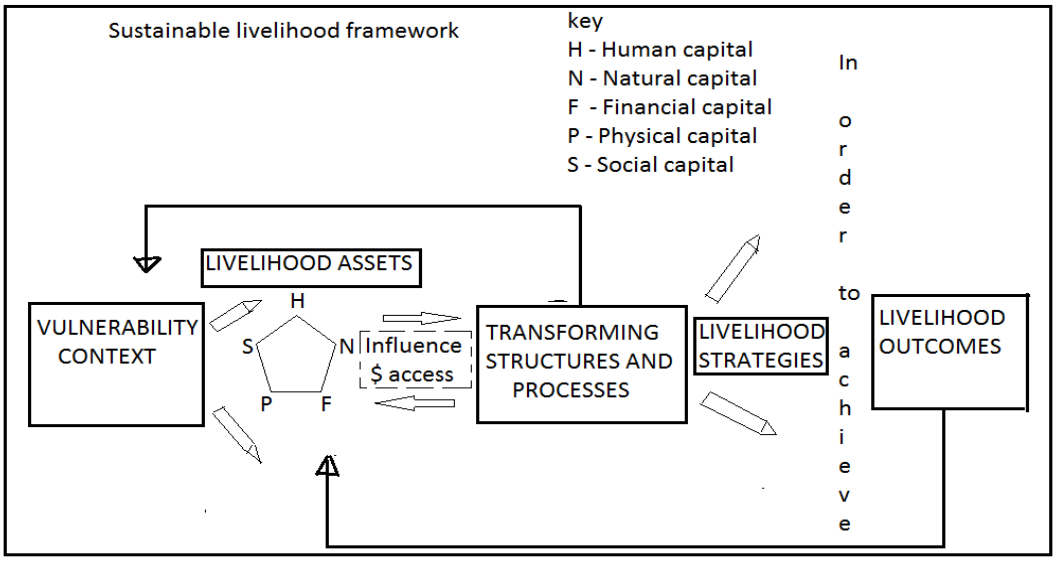


Figure 1: Framework of livelihood analysis (Carney, 1998)

The Modeling Approach

To analyze the potential impacts of oil and gas production in Ghana, we perform a counterfactual simulation using a Computable general equilibrium (CGE) model of the Ghanaian economy. General equilibrium models are noted for their ability to measure the impacts of one or more policy variables on several sectors simultaneously. Oil and gas production will have backward linkages (i.e., supply of inputs) as well as forward linkages (which result from the processing and marketing of the product).

These linkages will have ripple effects in the economy (often referred to as secondary effects). The CGE model uses as its main data source an input-output (I-O) table of the economy which registers flows between the different sectors of

the economy. The CGE model used here is the Global Trade Analysis Project (GTAP) model (version 6.2a), a multiregional and multi-sector CGE model which captures world economic activity in 57 different industries of 87 regions of the world (Hertel & Tsigas, 1997).

The GTAP model is referred to as a comparative-static model because it provides projections at only one point in time, the solution. The comparative static approach may be illustrated with the aid of Figure 2. Without oil and gas production, the Ghanaian economy could be on a growth trajectory **A** at a given point in time, say, a 7 percent per annum growth rate. With the start of oil and gas production, there is a jump in the economy's growth rate, reaching a higher trajectory of **B**, say, 15 percent after oil and gas production has stabilized by time **T***.

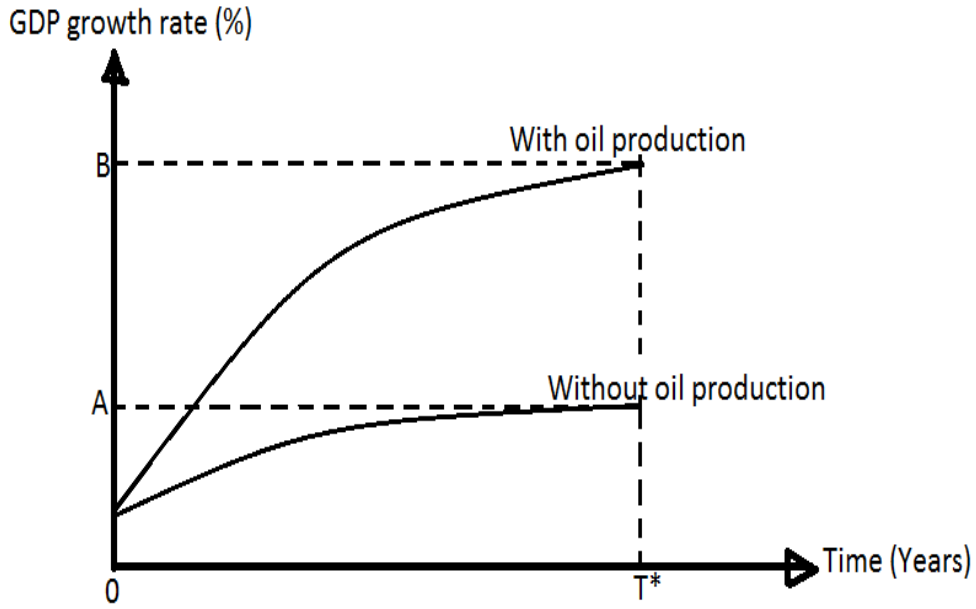


Figure 2: Illustration of the comparative-static approach

Comparative statics is only concerned with the gap **AB** and it does not say anything about how the economy got to point **B**. The gap **AB** is 8 percent at **T***, which is the increase in the economy's growth rate due to oil and gas production. In general, comparative models are solved for a short run (t = 2 years) and a long-run (t = 5-10 years). They are not very specific about the timing of effects and represent the time taken for an economy to adjust following a policy shock.

In this application, we utilize the GTAP Africa Data Base which includes data for 39 regions (30 African regions and 9 other aggregated regions) including Ghana. The data for Ghana is based on the 2005 social accounting matrix (SAM) jointly constructed by the International Food Policy Research Institute and the Ghana Statistical Service (GSS) using national accounts, trade and tax data, and household income and expenditure survey data. The model uses an algebraic framework resulting from imposing the conditions of producer and consumer maximization on the accounting framework of the SAMs. The algebraic framework is used to analyze the behaviour of numerous economic agents including producers, households, and governments. The standard GTAP assumption is perfect competition and constant returns to scale where bilateral trade is handled via the Armington framework (products are differentiated by country of origin). The model assumes that there is a regional household that collects all income and allocates across private consumption, government, and saving. Household demand for commodities and services are in constant difference elasticity form, which assumes non-homothetic preferences and is more

flexible than the constant elasticity of substitution form. Producers are assumed to have a constant elasticity of substitution production function (Hertel and Tsigas, 1997).

We adopted the standard GTAP model closure with taxes, tariffs and technical change parameters set exogenously. Since population is determined by demographic factors, it is also set exogenously. Our closure rules also reflect the situation in developing countries where there is no full employment of unskilled workers. In most of these countries there is commonly an excess supply of unskilled labour that can be used by industries in case there is an increase in production. To account for this fact, wage rates are assumed to be exogenous and labour supply is assumed to be endogenous. Lastly, we account for fixed prices in the market for commodity exports. In this application, we have aggregated the 57-sector GTAP database to 14 sectors to facilitate the solution.

Without oil and gas production, the Ghanaian economy could be on a growth trajectory **A** at a given point in time, say, a 7 percent per annum growth rate. With the start of oil and gas production, there is a jump in the economy's growth rate, reaching a higher trajectory of **B**, say, 15 percent after oil and gas production has stabilized by time **T***.

In general, comparative models are solved for a short run (t = 2 years) and a long-run (t = 5-10 years). They are not very specific about the timing of effects and represent the time taken for an economy to adjust following a policy shock.

CHAPTER THREE

RESEARCH METHODS

Introduction

Research method is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically, it compasses concepts such as paradigm, theoretical model, phrases and quantitative or qualitative techniques.

The research seeks to investigate the effects of oil and gas exploration on the socio-economic development of oil and gas immediate communities.

This chapter focuses on the research design, the study area, the study population, the sampling procedures, the data collection instruments, the data collection procedures, the data processing and analyses as well as the summary of the chapter.

Research design

Every research requires a study that is carefully tailored to the exact needs of the researcher as well as the problem (Bless and Higson-Smith, 1995). Study design can thus be seen as a plan or guidelines on how the researcher is to conduct a research study.

There are two main methodological approaches to conducting research namely quantitative and qualitative approach (Zikmund, 2000; Yates, 2004). Qualitative and quantitative study may differ in that in the former, the researcher's choices and actions will determine the design while in the later, the

design determines the researcher's choices and action (De vos et al, 1998).The quantitative approach would be mostly used for the research because most of the analysis of the study is quantitative and mostly testing of hypotheses.

Also, the descriptive research design would be chosen mainly because it comprises a cross-sectional design in relation of which data are collected predominantly by questions or by structured interview (Bryman & Bell, 2007, p. 56). It also provides evidence concerning an existing situation or current conditions; hence surveys provide a more accurate picture of events and seek to explain people's perception and behaviour on the basis of data gathered at a point in time.

Furthermore, the study adopts a positivist approach rather than interpretivist approach because the positivist approach lends itself to objective analysis and supports the use of quantitative technique. Besides, unlike the interpretivist epistemology, the positivist view is deemed scientific in its approach to studying a phenomenon.

The inferential study design is employed because it consists of correlation and regression which helps in ascertaining relationship and the strength of relationship between variables.

The study area or organization

This section describes the study area in terms of location, physical characteristics, population and economic activities. Even though the oil and gas was found at the Cape Three point, it effects on the nearby coastal communities at Jomoro and Ellembelle districts cannot be underestimated. The study therefore,

centered on the coastal communities of Jomoro District that greatly affected by the activities of oil and gas exploration. The area lies within the wet semi-equatorial zone of West Africa Sub-region and experienced a mean annual rainfall ranges from 26.8mm to 42.6mm which is most all year round. The vegetation of the area is semi-deciduous rain forest which makes it conducive for the plantation of the perennial crops like rubber, cocoa, coconut etc. Based on these, the people of the area are predominantly farmers and fishermen. About 67-70% of the populations are engage in agricultural activities with over 7000 people exclusively engage in fishing activities (Ghana Statistical Service, 2010).

The study population

Population has been defined as the entire set of objects and events or group of people who are the object of research and about whom the researcher wants to determine some characteristics (Sarantakos, 1998). According to De Vos et al (1998), population is defined as the totality of persons, events, case records or other sampling units with which the research problem is concerned. The study population was therefore made up of people in the communities whose economic activities are directly affected by the oil and gas operations. The total number of communities affected by the activities of oil and gas activities stood at about 79 as at January, 2014 (ENI, 2014).

The target population for the study also included representatives of groups and sections of the community members (youth, women, men and the elderly) including chiefs and Assembly members at the Jomoro District.

Sampling procedure

Stratified sampling was used to partition the communities into eight (8) strata based on their proximities and similarities. The purposive sampling method was used to select three (3) communities from each of eight strata for the survey based on information obtained from literature and provided by the Jomoro and Ellembelle Districts Assemblies about the impacts of oil and gas activities in the districts. Six (6) respondents including a chief were selected randomly from each community, but ensuring that they are all engaged in fishing activities. It was also ensured that respondents are relatively well represented (youth, women who are mostly traders, farmers, married to fishermen and fishmongers involved in fish related activities, men who are mostly fishermen and/or farmers, and the elderly). Also, the two Districts Chiefs Executives, two District Directors of Agriculture and two officials of Environmental Protection Agency from the two districts were also interviewed to solicit information concerning the affected areas. The rest were the two paramount chief of the two districts, two senior officials from Ghana Gas Company Limited and two assemblymen from both Atuabo and Half Assini. Semi - Structured Questionnaire were then administered. Interviews and observation were also used to solicit for information from the principal respondent respondents.

In all, 6 respondents each from 24 communities representing 144 were used for the filed survey to find out their perception about the oil and gas discovery and the impact the oil and gas activities would have on their individual livelihoods

whilst the secondary data was obtained from 12 agencies and institutions (Principal respondents).

Justification Sampling Procedure

The indigenous population in the Ghana's oil and gas communities especially at the Jomoro are mostly fishermen and therefore, the sampling technique been adopted is gearing towards including communities where their socio – economic activities are mostly being affected by oil and gas explorations. The total number of communities affected by oil and gas activities at Jomoro District stood at about 79 in number as at 2014 (Environmental Protection Agency, 2015).

Stratified sampling technique was used to partition the study population (79 communities) into Eight (8) non over-lapping units called strata and purposive sampling technique was used to select three communities out of each stratum to be interviewed. The essence of using the stratified sampling is to reduce error in the sampling since communities with similar characteristics will be placed in one stratum. Besides, it helped reduced cost of travelling to all communities with similar characteristics and hence avoids duplication of responses.

Purposive sampling technique which is also known as judgmental sampling technique helped the researcher to focus on particular characteristics of the population that are of interest and will enable the researcher answer his questions. Also, the use of simple random sampling is to eliminate bias by giving all the stratified communities an equal chance to be selected.

Data set

This research is based on primary and secondary data. The primary data was obtained from structured interviews with key informants and administered questionnaires to local residents of the affected communities. Secondary data was obtained from documents from the oil and gas companies, the related ministries, departments and agencies and the District Assembly. Other secondary sources of data used include published journals and documents from the internet.

Data collection methods and analytical techniques

Mouton (1996) refers to the data collection method as the application of measuring instrument to the sample or cases selected for the investigation. Different sets of questionnaire were used to collect data from specific groups and individuals.

Both primary and secondary data were used for the research work. The primary data were sought from the respondents in engage in socio-economic activities in the area using questionnaires. The secondary data were also obtained key informants such as District Assemblies, Ghana Employers Association (GEA) on job creation before and during oil and gas exploration and Environmental Protection Agency (EPA) on the state of damage to environment during oil and gas exploration.

In order to carry out the above mentioned task, structured questionnaires designed were used to solicit information from the respondents in the study area. Six (6) students from the University of Education, Winneba and University of Cape Coast who happened to be my students were trained to assist with the

administration of the questionnaires in the local dialects since most respondents could not read and understand the questions themselves. For purposes of data validation, twenty five questionnaires were pilot-tested in the study area to assess the relevance, validity and the understanding of respondents as well as the general availability of the different categories of information needed. The outcome of the pilot-test enabled the researcher to review and re-structure the final questionnaires (see appendix 1). The questionnaires were administered face-to-face to respondents in November and January 2018, which was eight (8) years after the first export of oil and gas from that region.

Key informants and stakeholders were also interviewed (see appendix 2 and 3) either face-to- face, by electronic mail and on phone to obtain information regarding their perception about the impact of oil and gas activities on fisheries, the mitigation measures put in place by government to safeguard the fisheries and the livelihood of the communities, the ability and capacity of the institutions to implement these mitigation measures, the level of participation and input from the public, local communities and stakeholder groups on these mitigation measures, and what could be done in order to ensure harmonious co-existence between oil and gas and fisheries sector in Ghana. The researcher also used observation technique to assess the kind of social amenities and infrastructure such as roads, schools, hospital, and drinking water in the community. The smart Partial Least Square (PLS) software and SPSS were used for processing the data.

The PLS is preferred over the Ordinary Least Square (OLS) because it combines both factor analysis and multiple regression analysis. It also examines

the structure of interrelationship expressed as a series of equations. The results would be displayed in tables.

Data processing and analysis

The data collected was analyzed with a computer software called Statistical Package for the Social Sciences (SPSS). The SPSS software was created for the management and statistical analysis of social science data. Hence, it is therefore, relevant to use this software to analyze my data which is mostly dealing with charts and tables. The SPSS's Statistical program provides a plethora of basic statistical functions namely frequencies, percentages and cross tabulations. Since some of the questionnaire were open ended, the SPSS's Statistical software helps to uncover powerful insights from responses to open ended survey questions most especially, complex statistical data which are difficult to be analyzed manually. Using the SPSS's Statistical program to process and analyze data result into a clear deduction of the analyzed data thus, making the drawing of the inferences and the conclusions very easy.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The contribution of oil and gas to the world economic growth cannot be underestimated as a result of the fact that oil and gas discovery leads to the influx of multinational companies thereby increasing the foreign direct investment. However, the exploration of these resources comes with challenges such as environmental pollution, impoverishment and rising cost of living in the affected areas.

Therefore, the overarching aim of the study was to investigate the effects of oil and gas exploration on socio-economic development of the host communities in Ghana.

Stratified sampling was used to partition the communities into eight (8) strata based on their proximities and similarities. The purposive sampling method was then used to select three (3) communities from each of eight strata for the survey based on information obtained from literature and provided by the Jomoro and Ellembelle Districts Assemblies about the effects of oil and gas activities in the districts. Six (6) respondents including a chief were selected randomly from each community, but ensuring that they are all engaged in fishing activities. Semi - Structured Questionnaire were then administered.

In all, 6 respondents each from 24 communities representing 144 were used for the filed survey to find out their perception about the oil and gas discovery and the impact the oil and gas activities would have on their individual

livelihoods whilst the secondary data was obtained from 12 agencies and institutions (Principal respondents).

Demographic Characteristics of Respondents

Sex Distribution of Respondents

Table 1: The sex distribution of the respondents

Sex	Number of Respondents	Percentage (%)
Male	95	65.7
Female	61	34.3
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 1 shows the sex distribution of the respondents. From the table, the results revealed that, 65.7% of the respondents were males whilst 34.3% of them were females. The implication is that, more males are involved in agricultural related activities such as fishing and farming than females in the study area. This supports the notion that females are rarely involved in agricultural activities in the Africa since the agricultural equipment are mostly family properties vested in the hands of the family heads who are mostly males. This finding agrees with reports by Mahama (2003) who indicated that the livestock were family properties, which took many years to be established.

Age Distribution of Respondents

Table 2: The age distribution of the respondents

Age	Number of Respondents	Percentage (%)
18 - 25	32	22.2
26 – 35	64	44.4
35 – 60	40	27.8
Above 60	8	5.6
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 2 shows the age distribution of the respondents. From the table, the results revealed that, 22.2% of the respondents are between the ages of 18 – 25, 44.4% of the respondents are between the ages 26 – 35, 27.8% of the respondents are between the ages of 36 – 60, 5.6% of the respondents are above 60 years. Majority (72.2%) are between the ages of 26 – 60 who are now in active working years. The implication is that these people are now heads of families who need daily income to solve their family problems. Also, the fact that these people are in their active working years but find nothing to do fulfills the saying that 'the devil finds work from idle hands'. This agrees with the findings revealed by Elis and Simpson (1994) who indicated that ever since the oil and gas production has started there has been intermittent disruption in production by Niger Delta inhabitant who feel they are being exploited. This eventually led to the militarization of nearly the entire region by ethnic militia group as well as Nigeria military and police forces.

Marital Status of the Respondents

Table 3: The marital status of the respondents

Marital status	Number of Respondents	Percentage (%)
Married	96	66.7
Single	32	22.1
Divorced	8	5.6
Widowed	8	5.6
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 3 shows the marital status of the respondents. From the table, the results revealed that, 66.7% of the respondents are married, 22.1% of the respondents are single with (11.2%) of the respondents divorced or widowed. The implication is that majority (66.7%) of the respondents who are married shoulder family responsibilities and therefore need sustainable capital to live on. Also, in most cases they keep the family properties in trust on behalf of them and need to provide for family members when the need arises. Besides, majority of the respondents cater for between 6 -10 people in a household and therefore need regular capital to meet their family obligations.

Educational Level of Respondents

Table 4: The educational level of the respondents

Educational level	Number of Respondents	Percentage (%)
Illiterate	40	27.8
Basic	48	33.3
Secondary	40	27.8
Tertiary	16	11.1
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 4 shows the educational level of the respondents. From the table, the results revealed that, 27.8% of the respondents are illiterates, 33.3% of the respondents had basic education, 27.8% had up secondary level education and only 11.1% of the respondents had tertiary education. The implication is that, majority (61.1%) of the respondents could only boast of basic education which makes it very difficult to understand some basic policies of government and the companies pertaining to the oil and gas activities. Also, their low level of education may not permit them to adopt new or modern ways of keeping fish such small scale fish ponds which will help supplement their income. Besides, their low level of education and training will deprive them from getting employment in the oil and gas companies and other prospective businesses springing up as a result of the oil and gas activities.

Occupational distribution of Respondents

Table 5: The occupational distribution of the respondents

Occupation	Number of Respondents	Percentage (%)
Fishermen	48	33.3
Fishmongers	32	22.2
Petty traders	32	22.2
Artisanal workers	24	16.7
Others	8	5.6
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 5 shows the occupational distribution of the respondents. From the table, the results revealed that, 33.3% of the respondents are fishermen, 22,2% are fishmongers, 22.2% of the respondents are petty traders, 16.7% of the respondents are artisanal workers, and only 5.6% of the respondents are either idle or work as drivers or driver mates etc.

The implication is that majority (55.5%) of the respondents are solely into fishing activities hence, anything that hinders this sector will render these people unemployed. Also, the fishing industry in the study areas is long chain of businesses where the men fish and the women trade with them either in the communities or in other markets who also depend on them for their livelihoods, so any attempt to restrict from them this fishing activity will plunge the whole chain into abject poverty which most of the communities are experiencing now.

The numbers of artisanal and petty traders are increasing in the study area as a result of the fact that more people especially women are losing their livelihoods as fishmongers and therefore, forcefully venture into petty trading to make ends meet. If care is not taken most of the men who continuously lose their livelihoods will join them to compete with them on non-existent market thereby rendering them impoverish. This finding agrees with the research conducted by SEND-Ghana at the extractive industry which revealed that fishmongers in the Enosie Community in Half Assini, the capital of the Jomoro District have resorted to petty trading such as sale of iced water, groceries and farming as alternative livelihoods.

Effects of oil and gas activities on the water bodies

Table 6: The effects of oil and gas activities on the water bodies

Pollution of water bodies	**Number of Respondents**	**Percentage (%)**
Yes	136	94.4
No	8	5.6
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 6 shows the impacts of oil and gas activities on the water bodies. From the table, the results revealed that, 94.4% of the respondent accepted that the water bodies have been polluted whilst 5.6% of the respondents did not agree with the change.

Majority (94.4%) of the respondents enumerated some of the changes as the emergence of sea weeds and pollution of sea bodies. The implication is that the

emergence of these sea weeds as a result of oil and gas exploration has made it very difficult for them to pull their nets. The sea weeds also destroy their nets and boats in the course of fishing. They restrict their areas of fishing resulting in low catch. This agrees with a research conducted in Niger Delta by Odunwole (2011) which found that in many oil and gas producing nations such as Nigeria, the oil and gas exploration activities have caused destruction of delicate marine ecology, which is the main source of livelihood in the oil and gas-bearing communities, leading to loss of fish catches, exacerbation of poverty, social conflicts, population displacement, and loss of livelihoods. Fishermen are told to move their boats and other fishing gears to allow for drilling activities that disrupt fishing activities and force most of these fishes to run several kilometers away, thereby reducing the quantity of catch.

Also, another change that was observed was sea pollution and unusual deaths of fishes such of whales which the respondents attributed to the type of chemicals that they companies use in their activities and also the frequent minor spills of the oil and gas. This finding also agrees with the study conducted by Olujimi, et al (2011) at Niger Delta which revealed that oil and gas pollution causes damage to human health, agricultural land and fish ponds. It can also result into long-standing ecological malfunctioning and poor environmental well-being. For instance, pollutions of rivers through oil and gas spillage could result in massive extermination of fishes and thereby threaten the social and economic life of the communities whose livelihood depends on the contaminated water.

Effects of oil and gas activities on the vegetation cover

Table 7: The effects of oil and gas activities on the vegetation

Destruction of vegetation cover	Number of Respondents	Percentage (%)
Yes	128	88.9
No	16	11.1
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 7 shows the impacts of oil and gas activities on the vegetation. From the table, the results revealed that, 88.9% of respondents experienced changes on the vegetation cover whilst only 11.1% of the respondents did not find any change on the vegetation cover. These areas are forest zones with thick vegetation cover that supports the growth of the economic trees like coconut, rubber and cocoa. Any effect on these vegetation will render the people involved in these agricultural activities unemployed. This finding agrees with the results obtained by Kharaka et al (2005) that discovered that the exploration and exploitation of oil and gas in communities has led to the destruction of land, vegetation and pollution of streams. The pollution of land and water through oil and gas production activities has depressed the income of the majority of people leading to poverty and various forms of health hazard.

This also agrees with the research conducted by Elis & Simpson (1994) who found that arable farmlands have been lost to oil and gas pollution as a sizable farmland in the Niger-Delta Region have been rendered barren due to oil and gas spillage and leakages.

Furthermore, when oil and gas spillage occurs, it has to be cleaned up using some designated chemical. This situation has resulted in an unusual rainfall pattern in the study areas and hence generated an excessive heat even in the raining season. This finding agrees with George (2000) who discovered that the impact of oil and gas exploration on the rural development in Bayelsa State is at an alarming rate. The operations of the petroleum industry which includes, exploration, production, refining, transportation and marketing of oil and gas products which is based mostly in the Niger delta region Bayelsa State inclusive, has been the giant spider spinning the web of environment degradation in the region. The exploration and exploitation activities in Bayelsa State have not only altered the people's livelihoods, but continue to disrupt the natural balance of the regions earth crust. During seismic surveys and exploration drilling, harmful materials like dynamites and explorative are used. The method involves into the earth's crust to measure the depth of the earth's make up. The implication of this is that the more oil and gas is explored in the region using this method, the more the regions natural environment witness shocks and rifts in its crust. Gas flaring and venting, which represents a significant source of global warming is one of the biggest environment problems associated with oil and gas exploration and exploitation in Bayelsa State. Also, Amanze–Nwachukwu (2007) intimated that the World Bank Global Gas Flaring Production (GGFP) partnership estimated that globally, 150 billion cubic meters of associated natural gas are being flared annually. This, global gas flaring releases about 400 million tons of CO2 per year into atmosphere.

Indeed, the oil and gas industry is an important factor of mangrove forest destruction in the Western Region of Ghana. The forestry cover of the study area has seen significantly a lot of destruction as a result oil and gas activities. These destructions were attributed to the construction of the refineries (Ghana Gas Company Ltd and Sankofa Gas processing plant). Other destructions are cause by multinational company who are providing services for the oil and gas companies. This finding agrees with Ibaba (2005), Azaiki (2003) and Okonta et al (2001) who discovered that the extraction of oil and gas as well as increased investment in the gas sector has accentuated the rate of deforestation and the constructions of pipelines for the transportation of oil and gas products within and beyond the Niger Delta region has led to the clearing of forests to construct pipelines and other oil and gas facilities. This further devastates the already delicate ecosystem of the area. The destruction of forest and coral relief in the regions contributed to the vulnerability of the region to natural disaster and global climates change. As these forest ecosystems are being depleted, the rate at which CO2 is withdrawn is further reduced. Every human society depends to a large extend on their immediate environment for survival. Indeed, the oil and gas exploration and exploitation activities in the Niger Delta region has on one hand led to the degradation of the immediate natural environment of the region, and on the other hand, contributed significantly to the release of many Green House Gas which are the major causes of climate change. Thus, the consumption and development patterns have reached unsustainable levels manifested by widespread land degradation, erosion, deforestation, and air, water and soil and gas pollution.

However, before the advent of the oil and gas industry, the Niger Delta people are hardworking people contrary to what non-indigenes say about the people. One would be disillusioned at the rate of activities embarked upon by both male and female inhabitants of the region. Given the fact that most of the settlement is rural, agricultural activities such as fishing and farming dominates all other economic activity in the area. Almost, all the natives in the region have embarked on one form of fishing and farming, etc.

Effects of oil and gas exploration on the livelihoods of the respondents

Table 8: The effects of oil and gas exploration on the livelihood of the respondents

Items destroyed	**Number of Respondents**	**Percentage (%)**
Fishing equipment	96	66.7
Farm lands	32	22.1
Houses	8	5.6
Other	8	5.6
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 8 shows the effects of oil and gas exploration on the livelihood of the respondents. From the table, the results revealed that, 66.7% of the respondents lost their fishing equipment, 22.1% of the respondents loss their farm lands whilst 11.2% of the respondent loss their houses and other properties.

Majority (88.8%) of the respondents lost their fishing equipment and farm lands as a result of the oil and gas activities. This indicates that their sources of

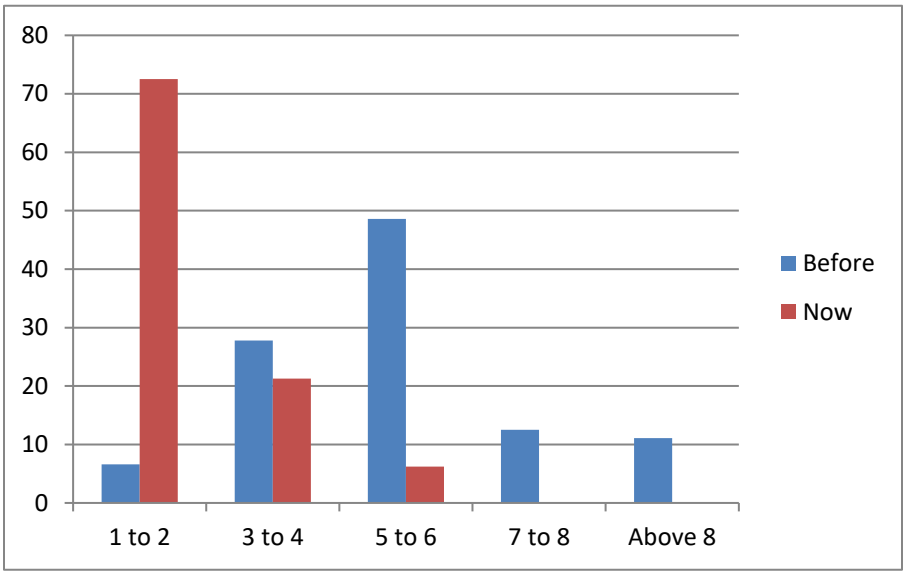
livelihood were taken away from them making some becoming either petty traders or venturing into other businesses they have no idea of. This finding agrees with Olujimi et al (2011) which postulates that oil and gas pollution causes damage to human health, agricultural land and fish ponds. It can also result into long-standing ecological malfunctioning and poor environmental well-being. For instance, pollutions of rivers through oil and gas spillage could result in massive extermination of fishes and thereby threaten the social and economic life of the communities whose livelihood depends on the contaminated water. This state of affairs has been the regular experience of many riverine oil and gas producing, fishing dependent communities in the Niger Delta. It also agrees with Elis & Simpson (1994) which states that arable farmlands have been lost to oil and gas pollution as a sizable farmland in the Niger-Delta Region have been rendered barren due to oil and gas spillage and leakages. Besides, the study agrees with the assertion by the deputy director of Ghana's Fisheries Commission, Emmanuel Marfa, who states that "since the commencement of oil and gas exploration, the number of supply vessels on Ghana's territorial waters have increased leading to the destruction of some Ghanaian boats and canoes without any compensation".

Given the fact that most of the settlement is rural, agricultural activities such as fishing and farming dominates all other economic activity in the area. Almost, all the natives in the region have embarked on one form of fishing and farming, etc. It is however, worthy to note that the Western region alone, contributes to the national economy not only in petroleum and gas exploration but also in agricultural production such as cocoa, Rubber, coconut which agrees with Ndiyo

(2008) who enumerated the benefits the Nigeria derived from Niger Delta Region in farming activities such as water yam, cocoa yam, maize, rice, melon, groundnuts, potato, plantain, banana, pepper, etc. Also, economic trees like oil and gas palm, raffia palm, coconut, rubber and cocoa as well as livestock such as goat, pigs, fish ponds farming.

Effects of oil and gas activities on the fishing industry

Figure 1: The effects of oil and gas exploration on fishing activities of the respondents



Source: Field survey, Zezebi (2018)

Figure 3 shows the effects of oil and gas exploration on fishing activities of the respondents. From the figure, the results revealed that, 6.9% of the fishermen averagely had a catch of 1 – 2 basins, 27.8% of the respondents realized a catch averaging 3 – 4 basins, 48.6% of the respondents had a catch between 5 – 6 basins, 12.1% of the respondents used to catch between 7 – 8 and 11.1% of the respondents used to catch above 8 basins. The implication is that most people

(72.2%) of the fishermen could get a catch ranging from five basins in one fishing expedition which was almost enough to solve their household needs.

Now the results revealed that 72.5% of the respondents catch between 1-2 basins, 21.3% realized a catch between 3-4 basins whilst only 6.5% of the respondents now realize a catch between 5 -6 basins with no one get beyond 6 basins. The implication is that the percentage of the respondents that used to realize only 1 – 2 basins catch have now increased to 72.5% indicating a sharp reduction of quantity of fish catch in the catchment areas. Also, those who used to realize between 7 and above basins per trip have now decreased from 23.6% to zero indicating another sharp reduction in the fish catch in the study areas. This finding agrees with the Deputy Director of Fisheries Commission, Mr. Emmanuel Marfa, who states that "since the commencement of oil and gas exploration, the number of supply vessels on Ghana's territorial waters have increased leading to the destruction of some Ghanaian boats and canoes without any compensation. Also, the finding agrees with a documentary by the Institute of Financial and Economic Journalist (IFEJ) in some fishermen in the six coastal districts of Western Region namely; Shama, Sekondi, Takoradi, Ahanta West, Ellembelle and Jomoro which states "ever since oil and gas exploration started, they have experienced poor catches even during bumper fishing season in August because the activities of oil and gas companies on the oil and gas fields were scaring fish stocks away from Ghana's territorial waters to neighboring countries, resulting in dwindling fish stock in Ghanaian waters. Some ocean mammals such as whales also continue to die mysteriously, raising concerns about the safety of marine life

leading to calls by civil society groups by government to conduct fisheries' impact assessment on the oil and gas fields by the oil and gas companies".

Effects of oil and gas activities on the standard of Living of the respondents

Table 9: The effects of oil and gas activities on the living of standards of the respondents

Standard of living	Number of Respondents	Percentage (%)
Improve	48	33.3
Remain the same	56	38.9
Worst of	40	27.8
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 9 shows the effects of oil and gas activities on the living of standards of the respondents. From the table, the results revealed that, 33.3% of the respondents have their lives improved upon the coming of oil and gas exploration, 38.9% of the respondents said their lives remain the same and 27.8% of the respondents said their live are worst of. 33.3% of the respondents had their lives improved with the coming oil and gas activities after taking advantage of the influx of business in the oil and gas communities to provide services for them whilst some of them also got employed in the oil and gas sector and its related businesses. This then agrees with assertion by former Ghana Gas Company Chief Executive Officer, Dr. Sipa Yankey who said 'some of the contracts in Ghana gas are executed by local communities and their capacities are being built to enable them provide high standard services in the coming years in line with the Local Content

Law'. Also, the fact that majority (72.2%) of the people either have their lives improve or remain the same indicates that the oil and gas find is not a curse but rather in a way a blessing. This contradict the theory of paradox of plenty and also a research conducted by Tadjoeddin (2007) which demonstrated that rich natural resource endowments are more likely to result in a curse – rather than a blessing in the form of negative development outcomes including poor economic performance, non-democracy and civil war. In another development, Sachs and Warner (1995) demonstrated empirically that the 'curse' of natural resource ownership was substantial. They showed that economic growth was inversely related to various measures of resource abundance.

However, the above argument may not fully hold when a whopping 27.8%of the respondents had their lives worst of. The implication is that, these people find it very difficult to afford the high accommodation cost and the high cost of basic food items in their communities. This finding agrees with Elis & Simpson (1994), Amadi and Tamuno (1999) and Omajemite (2008) who states that the activities of the oil and gas industry has often resulted in a different multitude of social, environmental, and economic problems such as environmental pollution, occupational dislocation, rural-urban drift, unemployment and poor human health. It also agrees with the finding by UNEP (2011) who indicated that at Ogoni land, most conspicuous aspects of life in contemporary there are poverty, malnutrition and disease. It is said that Ogoni villages have no clean water, little electricity, abysmal health care and no jobs for displaced farmers and fishers' persons, and to make matters worse, they face the effects of unrestrained environmental

molestation by the multinational companies every day. Besides, it also agree with the theory of paradox of plenty which states that countries with an abundance of natural resources tend to have less economic growth, less democracy, and worse development outcomes than countries with less resources

Legal framework

Table 10: The knowledge of the legal framework put in place in the oil and gas industry.

Legal framework	**Number of Respondents**	**Percentage (%)**
Aware	62	43
Unaware	82	57
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

The table shows the knowledge of the legal framework put in place in the oil and gas industry. From the table, the results revealed that, 57% of the respondents said they are not aware of any law put in place to take care of the indigenous communities whilst 43% of the respondents said they know about the law but do not know what the law contains.

Majority (57%) of the respondents did not know of any law put in place to safeguard the indigenous communities and this is largely due to their level of education since majority of them have at most basic education. The implication is that majority of the indigenous population are not aware of Section (19) sub-section (1) of the Local Content Law which states that "a contractor, subcontractor, licensee, or other allied entity engaged in petroleum activities shall

employ only Ghanaians in junior level or middle level positions. These positions as explained in sub-section (2) include foreman, supervisor or any corresponding position designated as such.

Also, many of the indigenes do not know where to seek for redress when they feel they are not adequately compensated by the multinationals companies when their properties are being encroached upon.

The implication is that the indigenes one day will take the law into their hands and cause mayhem to the multinational companies. This agrees with research conducted by Elis & Simpson (1994) who revealed that prior to advent of oil and gas in Nigeria, the Niger Delta remain a peaceful region. However, with the discovery of oil and gas by the British in Niger Delta in the 1950s, the environment has been marred by the complicity of the multinational corporations. Since then there has been intermittent disruption in production by Niger Delta inhabitant who feel they are being exploited. This eventually led to the militarization of nearly the entire region by ethnic militia group as well as Nigeria military and police forces.

Co-operate Social Responsibility (CSR)

Table 11: The respondents' knowledge of CSR in the communities

CSR	Number of Respondents	Percentage (%)
Yes	96	66.7
No	48	33.3
Total	**144**	**100**

Source: Field survey, Zezebi (2018)

Table 11 shows the respondents' knowledge of CSR in the communities. From the table, the results revealed that, 66.7% of the respondents said that they enjoy some social amenities and some services from the multinational companies whilst 33.3% of the respondents did not notice any social amenities or services provided by the multinational companies.

Majority (66.7%) of the respondents did acknowledge the contribution of the multinational companies in providing them with social amenities and other services. The implication is that if the local communities take advantage of these amenities it will help improve their lives. The provision of these amenities will also create a cordial relationship between the company and the local people. This agrees with one school of thought that states that co-operate social responsibilities bring about the following;

- Long term survival businesses
- Satisfactory public expectation and perception
- Goodwill
- Government Laws and Regulations are seen to be obeyed
- Better environment to operate
- Keeping the balance between the businesses and the communities

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The overarching aim of the study was to investigate the effects of oil and gas exploration on socio-economic development of the host communities in Ghana. In line with this, the study sought to specifically look at how oil and gas exploration affects the environment, the livelihood of the people as well as its effects on the standard of living of the people of the immediate communities.

Summary

The study was conducted to investigate the impact of oil and gas exploration on socio-economic development of the host communities in Jomoro District of Western Region of Ghana. Twenty four (24) communities were purposively selected and simple random sampling technique was then adopted to select six respondents from each community to interview using semi – structured questionnaire. The results revealed that majority (61.1%) of the respondents had only up to basic education whilst only 27.8% and 11.1% of the respondents had secondary and tertiary education respectively. Also, most (55.5%) of the respondents are into fishing related activities, 22.2% of the respondents are petty traders and 22.3% are into artisanal and other jobs. Before the oil and gas exploration commerce most (76.4%) fishermen could boast of 3 – 6 six basins per trip, 23.6% could get at least 7 basins per one fishing expedition whilst only 6.9% of the respondents were getting between 1 -2 basins. Now, majority(72.5%) of the respondents could only boast of the a catch between 1 – 2 basins, 27.5% of the

respondents get a catch of 3 – 6 basins and no one get up to 7 basins per trip. On standard of living, most (66.7%) had their lives either remain the same or worst of whilst only 33.3% said their lives have been improve. Also, majority (66.7%) of respondents lost their fishing equipment, 22.1% lost their farm lands and 11.2% lost their houses and other valuable properties. On the environment, most (91.7%) of the respondents observed the water bodies have been polluted and the vegetation cover on the land whilst only 8.3% did not realized this changes on their immediate environment. On the issue of legal framework put in place to safeguard the activities of the companies, most (57%) of the respondents claimed they are unaware of it whilst 43% of the respondents claimed they know about it but do not know the content. Finally, majority (66.7%) of the respondents acknowledged that the multinational companies occasionally provide social amenities for them as part of their corporate social responsibilities whilst 33.3% did not.

Conclusions

Most of the respondents in the communities are fishermen or fishmongers whilst the rest are into petty trading.

Fishing and its related activities were booming in the study area before the commencement of oil and gas activities and started dwindling ever since the oil and gas activities take off. This is largely due to the destruction of fishing equipment, harassment of fishermen by the navy officials and perception build on the minds of the indigenes that they will get employ in the oil and gas sector.

Petty trading in the communities is taken a center stage day by day especially by women as a result of the fact that most them lost their livelihood as fishmongers and now resort to selling imported cold fishes.

Cost of living in the study area is sky rocketing due to increasing cost of accommodation, basic food items and other services.

Environment degradation and water population are the order of the day as a result of the frequent minor oil and gas spills by the oil and gas companies leading to the unusual deaths of some whales.

Emergence of strange weeds on the surface of the water bodies therefore makes the pulling of the fishing nets more difficult than before.

Inadequate compensation or some time no compensation by the companies for the local people if their sources of livelihoods are taken away from them.

Destruction of the vegetation cover in the study areas as a result of the presence of companies like Ghana Gas Company Ltd that sometime flare gas. This leads to the communities experiencing excessive heat and low rainfall.

Lack of involvement of community members in decision making process pertaining to their livelihoods.

Recommendations

There must be a community local content law to help address the needs of the oil and gas communities.

There must be pragmatic step by government to revive the dwindling fishing industry by demarking areas for the fishermen to fish instead of frequent harassment by the Navy Officials.

Companies, as part of their corporate social responsibility, must institute scholarship packages for students in the study areas to help lessen the burden of the parents who are already distressed.

Community participation in decision making process must be encouraged to avoid disagreements between the stakeholders.

Frequent gas flaring by Ghana Gas Company Ltd should be minimized to avoid generating excessive heat to the communities.

Replanting of economic trees that were lost due to the activities of oil and gas should be encouraged to help augment their income.

Environmental Protection Agency should ensure that the companies comply with the full ambit of the laws guiding the environment.

Adequate compensation should be paid to deserving people in the communities on time.

Government with support from the oil and gas companies should pay stimulus packages to people who lost their properties but cannot restore their livelihood back.

More training and sensitization on other alternative livelihoods should be organized for the people especially women in the communities.

The same research should be carried out in the rest of the affected communities and other parts of country where oil and gas activities take place.

Research findings should be fed back to the people in the communities so that whenever subsequent researches are to carried out the communities will cooperate fully with the researcher.

Suggestions for further research

More study should be dealt into the following topics:

(i) Impact of oil and gas exploration and job creation of the host communities.

(ii) Impact of oil and gas exploration on the social change of the host communities

(iii) Effects of oil and gas exploration and the disturbance of peace of the host communities

(iv) The relationship between oil and gas exploration and social vices in the host communities.

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APPENDIX

University of Cape Coast

Institute of Oil and gas

Questionnaire on the Impact of Oil and gas Exploration on the Socio-Economic Development of the Jomoro District of the Western Region of Ghana.

Background Information

Ghana's oil and gas find in commercial quantities marks the beginning of a billion-dollar industry. The exploration and production of it is a major industrial development but its negative impacts on the oil and gas communities can never be underestimated. As experienced by most oil and gas producing countries, the oil and gas exploration activities have caused destruction of delicate marine ecology, which is the main source of livelihood in the oil and gas-bearing communities causing loss of fish catches, the exacerbation of poverty, social conflicts, population displacement, occupational disorientation, and the violation of human rights.

If Ghana can mitigate what is called the "resource curse" that has caused the vicious cycle of poverty and endemic social conflict, which has pervaded most oil and gas producing fishing communities of oil and gas rich countries such as Nigeria, Congo, Tanzania, just to mention a few, then research must be carried out to find the impacts of oil and gas activities on the socio-economic development of the Western Region of Ghana. The research is being undertaken in partial fulfillment of the requirements of the Master of Business Administration

in Oil and gas Management at the University of Cape Coast. All information provided will be treated with the utmost discretion and used only for academic purposes. Your names will not be used against you, but to crosscheck in case of missing data.

You are kindly requested to answer the questions below by checking the boxes where applicable. Your responses are very important and please honestly respond to them. The completion of the questionnaire will take you only a few minutes of your time.

The attached questionnaire can be easily filled. The only thing you need to do is to check/tick the box close to the right answer. Please do so with all level of honesty.

- Please answer all questions
- Please cross clearly with a blue or black ink. [ ]
- Preferably use pencil please
- Write in CAPITAL LETTERS where appropriate.

APPENDIX 1: Sample of Questionnaire Administered to locals within the Study Area

Section A: General characteristics of respondent

1. Name of Community……

2. Name of respondent (Optional)……

3. Organization. ……

4. Questionnaire No: ……..……

5. Sex a) Male [ ] b) Female [ ]

6. Age a) 18 – 25 [ ] b) 26 – 35 [ ] c) 36- 60 [ ] d) 60 and above [ ]

7. Marital Status a) Married [ ] b) Single [ ] c) Divorced [ ] d) Widowed [ ]

8. Educational level a) No education [ ] b) Primary education [ ] c) Secondary education [ ] d) Tertiary [ ]

9. What is your occupation? a) Fisherman/fishmonger [ ] b) Farmer [ ] c) Petty trader [ ] d) Artisanal worker [ ] e) Fish monger [ ] f) Galamsey (mining) [ ] g) Not working [ ] h) Others [ ] Please specify……

10. How long have you lived in this community? a) Less than one year [ ] b) 1 year – 5 years [ ] c) 6 years – 10 years [ ] d) More than 10 years [ ]

11. How many members are in your household? a) More than 10 [ ] b) Between 10 – 6 [ ] c) Between 6 – 3 [ ] d) Less than 3 [ ]

12. How many sources of income do you have? a) None [ ] b) 1 source [ ] c) 1- 2 sources [ ] d) More than 2 sources [ ] Please specify ……

13. What is your monthly inome? (In Ghana cedis)

a) 0 – 200 [ ] b) 200 – 400 [ ] c) 600 – 800 [ ] d) More than 800 [ ]

Section B: Effects of oil and gas activities on the fishermen in the communities

14. What do you perceive the oil and gas discovery to be on your livelihoods and your communities?

a) Positive impacts [ ] b) Negative impacts [ ] c) Does not know [ ]

15. What are the likely or actual positive impacts of oil and gas activities on your livelihoods and your communities?

a) Increase in job prospects within the community [ ]

b) Improvement in social life with influx of people [ ]

c) Development of social amenities (schools, roads, lights, etc) [ ]

d) Others [ ] Specify.....

16. What are the likely or actual negative impacts of oil and gas activities on your livelihoods and your communities? a) Low fish catch [ ] b) Loss of job [ ]

c) Low level of income [ ] d) Legal issues against offenders [ ] e) Increase in accommodation cost [ ]

f) Unable to fish at all [ ] g) Bad state of road and heavy vehicles [ ]

h) Environmental degradation /pollution[ ] i) Harassment by naval officials [ ]

j) Cultural change [ ]

Section B: Effects of oil and gas activities on the livelihood of the people in the communities

17. Have lost any of the following property (ies) in the course of oil and gas exploration?

a. farm land [ ] b. fishing equipment [ ] c. House [ ]

d. specify……..

18. If yes, have you been adequately compensated? a. Yes [ ] b. No [ ] c) Do not know [ ]

19. How will you described your standard of living before and during the oil and gas exploration?

a. improve [ ] b. remain the same [ ] c. worst of [ ]

d. other [ ]

Section B: Effects of oil and gas activities on the environment in the communities

20. Have you experienced changes in the vegetation cover?

a. Yes [ ] b. No [ ] c) Do not know [ ]

21. If yes, what changes? a. improve [ ] b. destroy [ ] c. remain the same[ ]

22. Have you experienced changes on the water bodies?

a. Yes [ ] b. No [ ] c) Do not know [ ]

23. If yes, what change(s)? a. colour of water change [ ] b. Taste of water [ ]

c. specify……

24. Have you experienced an unusual death of fishes in the shore?

a. Yes [ ] b. No [ ] c) Do not know [ ]

25. Have you experienced unusual rainfall pattern off late?

a. Yes [ ] b. No [ ] c) Do not know [ ]

26. What are the likely or actual negative impacts of oil and gas activities on the environment and your communities? Select from the following I) Low rainfall [

] II) Environmental degradation /pollution [ ] III) Destruction of vegetation cover [ ] IV) destruction of farm lands [ ] V) Destruction of perennial crops [ ] VI) Other specify……

APPENDIX 2: INTERVIEW GUIDELINES FOR KEY INFORMANTS

Section A: Organisation background

1. Name of informant (optional).....

2. What is your position in the institution?.....

3. What is the name of your institution?.....

Section B: Likely impact of oil and gas activities on fisheries and the mitigation measures

4. What are the likely impacts the expanding oil and gas activities will have on fisheries?

(i)……

(ii)……..

(iii)…….

(iv)……

(v)……...

(vi)…….

(vii)……

5. What kind of measure do you think have been introduced to safeguard the fisheries (including livelihoods of the local fishers and fishing communities)?

(i)……

(ii)……..

(iii)……

(iv)……

(v)……

(vi)……

(vii)……

6. Are the policies and legal framework put in place by government to safeguard the fisheries adequate? a) YES [ ] b) NO [ ] c) Do not know[ ] d) Others[ ] Please explain.....

……

……

……

……

……

7. Do you think the institutions in place by government to safeguard the fisheries sector have adequate human resources and capacity to implement the policies?

a) YES [ ] b) NO [ ] c) Do not know [ ]

8. If your answer to question 7 is NO, what should be done to enhance the human resource and capacity of these institutions?

(i)……

(ii)……

(iii)……

(iv)……

(v)……

(vi)……

(vii)……

9. To what extent do you think the local communities and stakeholders are involved in formulation of these policies and legal frameworks? a) Very involved [ ] b) Involved [ ] c) Fairly involved [ ] b) Not involved [ ]

10. What can be done to mitigate and secure a peaceful co-existence between the petroleum and the fisheries sectors?

(i)……

(ii)……

(iii)……

(iv)……

(v)……

(vi)……

(vii)……

11. What percentage of Ghana's oil and gas revenue do you think should be allocated to developmental projects in oil and gas communities? a) 1 – 2 % [ ] b) 3 – 5 % [ ] c) 6 – 7 % [ ] d) 8 – 10 % [ ] e) 11 – 14 % [ ] f) Above 15% [ ]

Section C: Likely impact of oil and gas activities on the environment and the mitigation measures

12. What are the likely impacts the expanding oil and gas activities will have on environment?

(i)……

(ii)……...

(iii)……..

.(iv)……

..(v)……

(vi)……

(vii)……

13. What kind of measure do you think have been introduced to safeguard the environment (including livelihoods of the local fishers and fishing communities)?

(i)……

(ii)……

(iii)……

(iv)……

(v)……

(vi)……

(vii)……

14. Are the policies and legal framework put in place by government to safeguard the environment adequate? a) YES [ ] b) NO [ ] c) Do not know [ ]

Explain……

……

……

……

……

15. Do you think the institutions in place by government to safeguard the environment have adequate human resources and capacity to implement the policies?

a) YES [ ] b) NO [ ] c) Do not know [ ]

16. If your answer to question 7 is NO, what should be done to enhance the human resource and capacity of these institutions?

(i)……

(ii)……

(iii)……

(iv)……

(v)……

(vi)……

(vii)……

17. To what extent do you think the local communities and stakeholders are involved in formulation of these policies and legal frameworks?

a) Very involved [ ] b) Involved [ ] c) Fairly involved [ ] d) Not involved [ ]

18. What can be done to mitigate and secure a peaceful co-existence between the mineral (oil and gas) sector and the local environment? ……

.....

.....

19. What percentage of Ghana's oil and gas revenue do you think should be allocated to developmental projects in oil and gas immediate communities? a) 1 – 2 % [ ] b) 3 – 5 % [ ] c) 6 – 7 % [ ] d) 8 – 10 % [ ] e) 11 – 14 % [ ] f) Above 15% [ ]