THE SOCIO-ECONOMIC IMPACT OF OIL AND GAS DISCOVERY IN THE ELLEMBELLE DISTRICT OF GHANA

BY

AUGUSTINE KAKU

(10111447)

THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MPHIL SOCIOLOGY DEGREE

JULY, 2018
DECLARATION

I declare hereby that this thesis is the result of my own research work, carried out in the Department of Sociology, University of Ghana, under the supervision of Dr. Kofi Ohene-Konadu and Prof. Dan-Bright S. Dzorgbo. All references cited in this work have been duly acknowledged.

CANDIDATE: AUGUSTINE KAKU
(10111447)

Date……………………………………

SUPERVISORS: DR. KOFI OHENE-KONADU PROF. DAN-BRIGHT S. DZORGBO

Date…………………………………… Date……………………………………
DEDICATION

This work is dedicated to my parents, Joseph Awusi Kaku and Anna Enwunlu Abe, my wife Scholastica; Consolatrix and Annabelle my children.
ACKNOWLEDGEMENT

I want to first of all thank the Almighty God for His grace and mercies upon my academic life and everything He has done for me. I also want to thank my supervisors, Dr. Kofi Ohene-Konadu and Prof. Dan-Bright S. Dzorgbo for their insightful comments, corrections, suggestions and guidance during the various stages of this thesis. Words would not be enough to express the depth of my appreciation to them. All I have to say is to ask for the blessings of the Almighty God upon their lives. I also wish to express my profound gratitude to Prof. Akosua Darkwah for providing me with reading materials and taking the pain to read through this work and offering very useful comments and corrections. I say thank you to all the lecturers in the department for their comments, suggestions and corrections especially during seminar presentations. I am grateful also to Dr. Sylvia Gyan for providing me with useful reading materials.

I would be very ungrateful if I don’t mention the names of the following people for their enormous contributions to this work: Dr. Mary Setrana, Mr. and Mrs. Herzuah, Rev. Albert Ken Dapatem, Rita Amoabea Attrams, Isaac Tagoe, Debora Naa Torshie, Bassah Dominic, Maxwell Suobobiree, Lawrence Angofi, Rev. Fr. Stanislaus Ackah, Peter Armoh, Theophilus Adjei, Emmanuel Yeboah and my course mates for sharing their expertise in academia with me. Rita; thank you very much for the beautiful comments and suggestions anytime I was locked up and did not know what to do next. You also read through the work on several occasions. Isaac Tagoe, thank you for your insightful comments especially on Methodology and Data analysis. I am very grateful. To Mr. and Mrs. Herzuah, I say thank you for your financial support, encouragement, corrections and advice. Lawrence also needs to be commended for taking time off his busy schedule to assist me on the field. Rev. Fr. Ackah, your words of encouragement was enough for me to come this way.
My gratitude and appreciations also go to my brothers and sisters; Francis, Anthony, Rose, Anastasia, Agatha, Margaret and Mary for their words of encouragement and support. Benjamin Adjasoo, Philip Osei Bonsu and Thomas Beyebenwo also need to be commended for their financial support while pursuing this course.

I say thank you to the chiefs and people of both Atuabo and Sanzule. My field research assistants, Joseph Amande and Kabenla Ekyi for their sacrifices, suggestions and time. The Assemblyman of Sanzule also needs special mention for wholeheartedly receiving me into the community. To the staff of Ghana Gas and oil and gas companies in the study area, I say “ayekoo” and thank you for making time of your busy schedule to provide me with useful information.

I also wish to thank the Ethics Committee for the Humanities for their useful comments while seeking for ethical clearance letter for the study.

If there is any name that needs to be mentioned but was not mentioned, it is not intentional. I acknowledge your contributions to this work. May the Almighty God bless you all.
ABSTRACT

Oil discovery in developing nations is usually met with celebrations and excitement but is later turned into disappointment. This study investigated the socio-economic impact of the oil and gas discovery in Ghana on both Atuabo and Sanzule in the Ellembelle District. The objectives of the study were to explore the changes in the two communities after the oil and gas discovery, to examine how oil and gas discovery has changed family lives, opportunity for work, education and finally to examine how the citizens of these communities are reorganizing their lives after the changes. The research method adopted for the study was the mixed method. Using the multistage, stratified and purposive sampling methods, 230 household questionnaires were administered to household heads or their representatives to collect data for the study. There were also Focus Group Discussions and interviews with key informants. The results showed that there have been both positive and negative changes in both Atuabo and Sanzule as a result of the oil and gas discovery. The positive changes were improvement in road networks, installation of internet services and telecommunication networks. Generally, the negatives outweighed the positives. The results showed that the discovery of oil and gas and their related activities has not led to improving the livelihoods of the rural communities of both Atuabo and Sanzule. Rather, the discovery of oil and gas has brought livelihood difficulties on the rural communities of both Atuabo and Sanzule.

Respondents revealed that they have negatively been affected by the oil and gas finds through loss of lands but poor compensation, drastic reduction in fish harvest, high breed of mosquitoes, hot weather, economic hardship and increment in the prices of goods and services.
TABLE OF CONTENT

DECLARATION ................................................................................................................................. i
DEDICATION ...................................................................................................................................... ii
ACKNOWLEDGEMENT .................................................................................................................. iii
ABSTRACT ....................................................................................................................................... v
LIST OF TABLES .............................................................................................................................. xi
LIST OF FIGURES ............................................................................................................................ xii
LIST OF ABBREVIATION ................................................................................................................... xiii
CHAPTER ONE ................................................................................................................................. 1

1.1 INTRODUCTION ....................................................................................................................... 1

1.2 STATEMENT OF THE PROBLEM ............................................................................................ 3

1.3 GENERAL OBJECTIVE .............................................................................................................. 6

1.4 Specific Objectives ...................................................................................................................... 6

1.5 Significance of the Study .......................................................................................................... 6

1.6 Definition of Concepts .............................................................................................................. 7

1.6.1 Socio-economic: ...................................................................................................................... 7

1.6.2 Occupation: ............................................................................................................................ 7

1.6.3 Impact: .................................................................................................................................... 7

1.6.4 Livelihood: .............................................................................................................................. 7

1.7 THE STUDY AREA ...................................................................................................................... 8

1.7.1 The Ellembelle District .......................................................................................................... 8

1.7.2 Educational facilities ............................................................................................................. 8

1.7.3 Health facilities ..................................................................................................................... 9

1.7.4 Economic activities ............................................................................................................... 9

1.7.5 Roads and transport .............................................................................................................. 9

1.7.6 Financial institutions ............................................................................................................. 10

1.7.7 Atuabo .................................................................................................................................. 10

1.7.8 Sanzule .................................................................................................................................. 11

1.8 HISTORICAL DEVELOPMENT OF OIL IN GHANA ................................................................. 12

1.8.1 The First Phase ..................................................................................................................... 13

1.8.2 The Second phase .................................................................................................................. 13
1.8.3 The Third phase-The inception of GNPC ................................................................. 14
1.8.4 Phase Four ............................................................................................................... 15
1.9 STRUCTURE OF THE THESIS ..................................................................................... 16
CHAPTER TWO .................................................................................................................. 17
LITERATURE REVIEW ....................................................................................................... 17
2.1 INTRODUCTION .......................................................................................................... 17
2.2 THE POSITIVE IMPACT OF OIL AND GAS DISCOVERY ......................................... 19
  2.2.1 Oil discovery and its links with socio-economic development ................................. 19
  2.2.2 Oil discovery and livelihood empowerment ............................................................ 22
  2.2.3 Oil discovery and its links with migration and the influx of people ......................... 23
  2.2.4 Oil and gas discovery and educational development ............................................... 24
2.3 THE NEGATIVE IMPACT OF OIL AND GAS DISCOVERY .......................................... 25
  2.3.1 Oil and gas production and its effects on the environment ........................................ 25
  2.3.2 Oil discovery and its association with conflict ......................................................... 27
  2.3.3 Oil and gas exploration and its relations to loss of livelihood .................................. 28
  2.3.4 Oil and gas and its association with changes in the prices of goods and services ......... 29
2.4 CONCEPTUAL FRAMEWORK ...................................................................................... 30
THEORETICAL FRAMEWORK .......................................................................................... 32
  2.4.1 The sustainable livelihood framework ...................................................................... 32
  2.4.2 Livelihood promotion ............................................................................................... 33
  2.4.3 Livelihood protection ............................................................................................... 34
  2.4.4 Livelihood provisioning .......................................................................................... 34
  2.4.5 Personal empowerment ............................................................................................ 34
  2.4.6 Social empowerment ............................................................................................... 34
  2.4.7 Service deliveries .................................................................................................... 34
2.5 LIVELIHOOD ASSETS ................................................................................................. 35
  2.5.1 Natural capital ......................................................................................................... 35
  2.5.2 Human capital ......................................................................................................... 35
  2.5.3 Social capital ......................................................................................................... 36
  2.5.4 Physical capital ...................................................................................................... 36
  2.5.5 Financial capital .................................................................................................... 37
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6 VULNERABILITY CONTEXT</td>
<td>38</td>
</tr>
<tr>
<td>2.7 LIVELIHOOD STRATEGIES</td>
<td>39</td>
</tr>
<tr>
<td>2.8 TRANSFORMING STRUCTURES AND PROCESSES</td>
<td>40</td>
</tr>
<tr>
<td>2.9 LIVELIHOOD OUTCOME</td>
<td>41</td>
</tr>
<tr>
<td>CHAPTER THREE</td>
<td>43</td>
</tr>
<tr>
<td>RESEARCH METHODS</td>
<td>43</td>
</tr>
<tr>
<td>3.1 INTRODUCTION</td>
<td>43</td>
</tr>
<tr>
<td>3.2 Approach: Mixed Methods</td>
<td>44</td>
</tr>
<tr>
<td>3.3 Research Design</td>
<td>44</td>
</tr>
<tr>
<td>3.4 Population size</td>
<td>45</td>
</tr>
<tr>
<td>3.5 Target population</td>
<td>46</td>
</tr>
<tr>
<td>3.6 Study Population</td>
<td>46</td>
</tr>
<tr>
<td>3.7 Justification for the age range of the study population</td>
<td>46</td>
</tr>
<tr>
<td>3.8 SAMPLING FOR QUALITATIVE RESPONDENTS</td>
<td>47</td>
</tr>
<tr>
<td>3.8.1 Focus Group Discussion</td>
<td>48</td>
</tr>
<tr>
<td>3.8.2 Key informant interview</td>
<td>49</td>
</tr>
<tr>
<td>3.8.3 Observations</td>
<td>50</td>
</tr>
<tr>
<td>3.8.4 Sampling for Farmers</td>
<td>50</td>
</tr>
<tr>
<td>3.9 INSTRUMENTS OF DATA COLLECTION</td>
<td>51</td>
</tr>
<tr>
<td>3.10 SAMPLING SIZE FOR QUANTITATIVE COMPONENTS OF STUDY</td>
<td>53</td>
</tr>
<tr>
<td>3.10.1 Multistage cluster sampling</td>
<td>54</td>
</tr>
<tr>
<td>3.10.2 Face to face interview</td>
<td>55</td>
</tr>
<tr>
<td>3.10.3 Qualitative data handling</td>
<td>55</td>
</tr>
<tr>
<td>3.10.4 Quantitative data handling</td>
<td>55</td>
</tr>
<tr>
<td>3.10.5 Ethical Issues</td>
<td>56</td>
</tr>
<tr>
<td>3.10.6 Informed consent</td>
<td>56</td>
</tr>
<tr>
<td>3.10.7 Handling the difficulty of recall by respondents</td>
<td>57</td>
</tr>
<tr>
<td>3.11 FIELD ENTRY</td>
<td>57</td>
</tr>
<tr>
<td>3.12 COMMUNITY ENTRY (ATUABO AND SANZULE)</td>
<td>58</td>
</tr>
<tr>
<td>3.12.1 Community life at Atuabo and Sanzule: The researcher’s experience</td>
<td>59</td>
</tr>
<tr>
<td>CHAPTER FOUR</td>
<td>62</td>
</tr>
</tbody>
</table>
DATA PRESENTATION AND ANALYSIS .............................................................................................................. 62

4.1 INTRODUCTION ........................................................................................................................................... 62

4.2 Profile of key informant interviewees ......................................................................................................... 63

4.3 Household Population of respondents ....................................................................................................... 63

4.4 Demographic characteristics of survey respondents .................................................................................. 64

4.5 PREVAILING CONDITIONS IN ATUABO AND SANZULE PRIOR TO OIL AND GAS DISCOVERY .............................................................................................................................................. 68

4.6 Occupation in Atuabo and Sanzule before oil and gas discoveries .............................................................. 69

4.7 Water and sanitation in Atuabo and Sanzule prior to the discovery of oil and gas ........................................ 72

4.8 Prevailing Health situation in Atuabo and Sanzule before oil and gas discoveries ...................................... 73

4.9 Road and Transportation in Atuabo and Sanzule before oil and gas discoveries .......................................... 74

4.10 The state of education in Atuabo and Sanzule before oil and gas discovery ............................................... 76

4.11 Telecommunication in Atuabo and Sanzule before oil and gas discovery .................................................... 77

4.12 Police station, Internet, Post office and fire post ........................................................................................ 77

4.13 Households’ weekly income prior to the discovery of oil and gas ............................................................... 79

4.14 Household weekly income, sex and occupation ......................................................................................... 80

4.15 Household assets and income generation .................................................................................................... 83

4.16 Household gadgets owned prior to the discovery of oil and gas ............................................................... 83

CHAPTER FIVE .................................................................................................................................................. 86

SOCIO-ECONOMIC CHANGES AFTER THE OIL AND GAS DISCOVERY IN ATUABO AND SANZULE .................................................................................................................................................. 86

5.1 Introduction .................................................................................................................................................. 86

5.2 Effects of oil and gas on social facilities and economic activities on Atuabo and Sanzule ......................... 87

5.3 THE POSITIVE IMPACTS OF OIL AND GAS DISCOVERY ON ATUABO AND SANZULE 88

5.3.1 Telecommunication and internet services ............................................................................................. 88

5.3.2 The contribution of oil and gas discovery to education in Atuabo and Sanzule ........................................ 90

5.3.3 Oil and Gas discovery and road construction in Atuabo and Sanzule ....................................................... 93

5.4 THE NEGATIVE IMPACTS OF OIL AND GAS DISCOVERY ON ATUABO AND SANZULE .................................................................................................................................................. 95

5.4.1 Changes in farming and fishing activities in Atuabo and Sanzule ............................................................ 96

5.4.3 The changing fishing industry in Atuabo and Sanzule ........................................................................... 104

5.4.4 Changes in household weekly income after oil and gas discovery ....................................................... 107
5.4.5 The effects of oil and gas discovery on household livelihoods .................................................. 108
5.4.6 Relationship between the effects of oil gas discovery and demographic factors ................. 110
5.4.7 The effects of oil and gas discovery on households ..................................................................... 111

5.5 MANAGING THE SHOCK AND REORGANISATION OF LIFE AFTER OIL AND GAS IN ATUABO AND SANZULE .......................................................................................... 114

5.6 STRATEGISING TO LIVE IN ATUABO AND SANZULE AFTER OIL AND GAS DISCOVERY .............................................................. 118

5.7 THE MEANING OF THE CHANGE TO THE CITIZENRY .................................................................. 120

CHAPTER SIX ......................................................................................................................................... 123

SUMMARY, CONCLUSION AND RECOMMENDATIONS .................................................................... 123

6.1 INTRODUCTION .......................................................................................................................... 123

6.2 SUMMARY OF FINDINGS .......................................................................................................... 123

6.3 CONCLUSION ........................................................................................................................... 126

6.4 RECOMMENDATIONS ................................................................................................................ 126

6.4.1 Policy makers ........................................................................................................................... 126

6.4.2 Academia ................................................................................................................................ 128

REFERENCES ......................................................................................................................................... 129

APPENDIX 1: QUESTIONNAIRE ........................................................................................................ 138

APPENDIX 2: VARIOUS IMAGES OF THE STUDY AREA ................................................................. 148

APPENDIX 3: CLEARANCE LETTER FROM THE ETHICS COMMITTEE FOR THE HUMANITIES ................................................................. 149

APPENDIX 4: CLEARANCE LETTER FROM GHANA GAS .................................................................. 150
LIST OF TABLES
Table 1: Population of the study area ................................................................. 46
Table 2: Profile of Qualitative Respondents .......................................................... 63
Table 3: Household Population ........................................................................... 64
Table 4: Profile of quantitative respondents ........................................................... 67
Table 5: Prevailing activities and facilities before oil and gas discovery ............... 78
Table 6: Weekly Income of respondents before oil and gas ................................... 80
Table 7: Cross tabulation of household weekly income, occupation and sex .......... 81
Table 8: Assets owned by Households prior to the discovery of oil and gas .......... 83
Table 9: Households gadgets owned before oil and gas ....................................... 84
Table 10: Frequency percentage of the extent of agreement of the effect of oil and gas on social facilities and economic activities ................................................................. 87
Table 11: Changes in Households living condition and income ............................. 108
Table 12: Frequency percentage of the extent of agreement of the effect of oil and gas .......... 109
Table 13: Independent t-test of the effect of oil and gas ....................................... 110
Table 14: Frequency percentage of items respondents have lost or suffered ........ 112
Table 15: Managing the shock after oil and gas activities ..................................... 117
LIST OF FIGURES

Figure 1: A map showing the study area ...................................................................................... 12
Figure 2: Theoretical Frame Work ............................................................................................... 35
Figure 3: Concurrent triangulation................................................................................................ 45
Figure 4: Formula for Quantitative sampling ............................................................................... 53
Figure 5: An uncompleted school canteen started by an Oil and Gas company at Sanzule ........ 92
Figure 6: The impact of oil and gas discovery on road network .................................................. 95
Figure 7: Focus Group Discussion with Fishermen.................................................................... 106
Figure 8: The impact of oil and gas activities on occupation in the study area .......................... 113
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACEP</td>
<td>Africa Centre for Energy Policy</td>
</tr>
<tr>
<td>AGPP</td>
<td>Atuabo Gas Processing Plant</td>
</tr>
<tr>
<td>AOGGR</td>
<td>African Oil Governance Report</td>
</tr>
<tr>
<td>APF</td>
<td>African Petroleum Forums</td>
</tr>
<tr>
<td>APR</td>
<td>African Progress Report</td>
</tr>
<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>DFID</td>
<td>Department for International Development</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental protection Agency</td>
</tr>
<tr>
<td>EI</td>
<td>Executive Instrument</td>
</tr>
<tr>
<td>EITI</td>
<td>Extractive Industries Transparency Initiative</td>
</tr>
<tr>
<td>ICFG</td>
<td>Integrated Coastal and Fisheries Governance</td>
</tr>
<tr>
<td>GDP</td>
<td>Goss Domestic Product</td>
</tr>
<tr>
<td>GNPC</td>
<td>National Petroleum Corporation</td>
</tr>
<tr>
<td>GPP</td>
<td>Gas Processing Plant</td>
</tr>
<tr>
<td>GSS</td>
<td>Ghana Statistical Service</td>
</tr>
<tr>
<td>IUCN</td>
<td>International Union for the Conservation of Nature and Growing Forest Partnership</td>
</tr>
<tr>
<td>LMICs</td>
<td>Low Middle Income Countries</td>
</tr>
<tr>
<td>LVD</td>
<td>Land Valuation Division</td>
</tr>
<tr>
<td>MNCs</td>
<td>Multinational Corporations</td>
</tr>
<tr>
<td>OG</td>
<td>Oil and Gas</td>
</tr>
<tr>
<td>PHC</td>
<td>Population and Housing Census</td>
</tr>
<tr>
<td>PHF</td>
<td>Petroleum Holding Fund</td>
</tr>
<tr>
<td>PCIAC</td>
<td>Petro Canada International Association</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>PNDC</td>
<td>Provisional National Defense Council</td>
</tr>
<tr>
<td>PRMA</td>
<td>Petroleum Revenue Management Act</td>
</tr>
<tr>
<td>SEG</td>
<td>Society of Exploration Geophysicists</td>
</tr>
<tr>
<td>SL</td>
<td>Sustainable Livelihood</td>
</tr>
<tr>
<td>SLA</td>
<td>Sustainable Livelihood Alternative</td>
</tr>
<tr>
<td>STMA</td>
<td>Sekondi-Takoradi Metropolitan Assembly</td>
</tr>
<tr>
<td>WAOFCO</td>
<td>West Africa Oil and Fuel Company</td>
</tr>
</tbody>
</table>
CHAPTER ONE

BACKGROUND TO THE STUDY

1.1 INTRODUCTION

The discovery of oil, nick-named “black gold” in many developing countries is always greeted with great optimism and joy. This is because of the financial and economic resources that accompany the discovery of the resource (Heinberg, 2006; Darkwah, 2010; Osei-Tutu, 2012; Panford, 2017). There is also the perception from the citizens of the oil endowed nation on the part of government to convert the oil into energy in order to relieve the country of its continuous reliance on hydroelectric power (Boohene, 2011).

This great optimism according to Heinberg (2006) is due to society’s dependence on oil. According to him, society has developed technology that depends on oil to function and the fact that petroleum provides a concentrated source of energy for transportation and its nature to be transformed into a wide range of products from plastic to clothing to industrial chemicals, its discovery will lead to jubilation from citizens of the endowed nation.

The joyous jubilation is also as a result of the citizens’ information about the success stories of countries like Norway, Botswana, Malaysia and other nations that have turned their oil, diamond or natural resource discoveries into a blessing for citizens of their respective nations and expect the same to be extended to them (Darkwah, 2010).

The story is not different for Ghana which discovered oil in 2007. The news of the oil discovery in commercial quantities in Ghana was met with great jubilations and celebrations by the
citizenry. The then president at the time of Ghana’s oil discovery, John Agyekum Kufour was not left out in the celebration. Gary (2009:5) reports that the president in one of his jubilant moods said, *We are already doing well as a nation. However, with the oil discovery, we are going to do better, build the schools, hospitals, roads, water and even fly.*

Ghanaians also have high expectations coupled with excitement with the anticipation that the oil and gas find will warrant them higher incomes, more jobs and better quality of life. For many Ghanaians, the country has hit a jackpot (Panford, 2017).

Aware of the expectations from the Ghanaian populace and the need to avoid the gas to intentionally go waste due to the lack of a gas processing plant, the government in consultation with Ghana Gas, the Ghana National Petroleum Corporation (GNPC) and stakeholders built a gas processing plant at Atuabo in the Ellembelle district. Another Gas processing plant is also currently under construction at Sanzule also in the Ellembelle district. These communities have attracted several oil and gas related businesses activities. Consequently, socio-economic activities in the communities may have been affected resulting in a possible change including changes in household income, prices of goods and services, infrastructure, influx of people, land loss/market and reduction in fish harvest due to the offshore extraction of oil. Ongoing literature suggests that offshore oil exploration also has effect on fishing activities for nearby communities (Ozumba, 1997; Panford, 2017). How different is this from the cases of both Atuabo and Sanzule? This study was intended to reveal it.
1.2. STATEMENT OF THE PROBLEM

Oil discovery in developing nations is characterised with euphoria, joy and celebrations as a result of both the financial and other developmental benefits that are expected to be derived from its discovery (Heinberg, 2006; Darkwah, 2010; Panford, 2017). Society’s continuous dependance on oil for a wide range of activities will make its discovery in any location to be celebrated by the citizenry (Heinberg, 2006). Citizens of newly discovered oil nations also know about the numerous blessings that can be accrued from its discovery casting their minds back on the success stories of some oil endowed nations (Boohene, 2011).

This celebration, expectation and great joy is, however usually met with disappointment as the oil and gas discovery in many instances end up being more of a curse than a blessing (Auty, 1993; Sachs, 2001, 2003; Humphrey, 2007; Pessoa, 2008; Osie-Tutu, 2012). In her study of the socio-economic effects of oil exploration in Nigeria’s Delta region, Iwejingi (2013) identified occupational dislocation, abject poverty, ill health, social conflict and deprivation as some of the social, economic and environmental problems resulting from oil extraction activities from the region. In Sudan for instance, people were forced to evacuate their premises for the construction of sulphur crude oil venture leading to loss of ancestral homes, life and property (Darkwah, 2010).

In Ghana, Panford (2017) reports that although Ghana’s oil production is in its early stage, some likely conflicts are facing the six oil producing districts right in the face that need to be resolved to save the country from the experience of other oil producing nations in Africa. According to him, as a result of Ghana’s oil discovery, a five kilometer square of the sea has been declared “a no go area” for fishing which has affected the livelihoods of local fishermen and brought hardship on them. The oil rigs also attract fishes to itself due to the light it uses thereby reducing
fish harvest (Fabi, Grati and Puletti, 2004). Ghana currently has six oil affected districts (Boateng, 2008; Odoom, 2014; Panford, 2017) the Ellembelle district is one of them. Studies have been done on the perceptions, expectations, how to avoid the resource curse and effects of oil on oil exploration nations and communities, gender roles in oil exploration, oil and land acquisition among other studies. This study is interested in the lived experience of the households in the oil exploration activities before and after the oil discovery. It also aimed at looking at the impact of the gas processing plants which are offshoots of the oil exploration and how it has affected the people in the study area. It also looked at how offshore oil exploration has affected fishing activities.

Aggrey (2014) did a study on commercialization of lands and the peasant economy of Ewusiejoe in the Ahanta West district of the Western Region and discovered that the oil discovery has attracted real estate developers thereby leading to commercialisation of land and loss of lands. This according to him has brought economic hardship on the citizenery. Missodey (2012) on the gendered transformation of the catering industry in Ghana’s oil region in Takoradi discovered that men are venturing into the “female perceived job” of catering to secure employment for themselves. (Obeng-Odoom, 2010) also discovered that the Sekondi/Takoradi Metropolis has undergone a massive transformation including infrastructure and influx of people. Likewise, Darkwah (2013) revealed that more Ghanaian youth are equipping themselves for the oil industry. Again, Gyan and Asante (2017) in their study on mapping out the role of labour migrants in Ghana’s oil and gas economy reported that more people have migrated into the Sekondi-Takoradi Metropolis with the hope of gaining employment in the oil sector.

The major difference between this study and the previous ones done in other districts elsewhere in Ghana is that none of those studies has gas processing plants located in the study area.
However, both Atuabo and Sanzule where this study was carried had processing plants located in them. Atuabo has the Ghana Gas Processing Plant located in it while Sanzule has the ENI Gas Processing Plant also located in it. The experiences of households in this study area as a result of the gas emission plants located in their communities are therefore different from earlier studies.

The study focused on the socio-economic impact of oil discovery on both Atuabo and Sanzule with particular attention on changes in household income, prices of goods and services, infrastructure, influx of people and economic transformation.

(Kasanga and Kotey, 2012) reported that in Ghana, the discovery of natural resources has in many cases led to nearby communities losing lands to the government, corporations and extracting companies. Ghana Gas (2012) report has it that over 1400 famers lost their farm lands to make room for the construction of the Integrated Petrochemical Projects. However, Kotey and Kasanga (2012) reiterated that usually, people who lose lands for state projects are not well compensated for and the case of the Western region is not different.

The Lonrho Company acquired more than 500 hectares of land for the Atuabo Community Equity Ghana Gas Project which affected several coastal communities in the Western Region of Ghana (Ghanaian Times, 2013).

This study therefore investigated whether the socio-economic impact of Ghana’s oil and gas discovery on Atuabo and Sanzule are different or the same from the experience of other communities elsewhere.
1.3. GENERAL OBJECTIVE

The overall objective of this research was to study the socio-economic impact of oil and gas discovery in Atuabo and Sanzule in the Ellembelle district of Ghana. The research focused on changes in household income, prices of goods and services, infrastructure, influx of people and economic transformation in the two communities.

1.4 Specific Objectives

1. To explore the socio-economic changes in the two communities after the oil discovery.
2. To examine how oil and gas discovery has changed family life, opportunity for work and education.
3. To examine how the citizens of these communities are reorganising their lives after the changes.

1.5 Significance of the Study

By studying the socio-economic impact of oil and gas discovery on both Atuabo and Sanzule, it will inform policies makers and stakeholders on the actual socio-economic impact of the oil and gas discovery on the people of both Atuabo and Sanzule. This can also help to avoid the conflicts that usually occur between local communities and oil companies in some instances. Although it is true that the oil discovery will bring some blessings to the entire Ghanaian economy; however, its effects on surrounding communities must not be taken for granted. The findings will also add up to existing literature and serve as reference to similar studies. Some recommendations would be made to policy makers and academia.
1.6 Definition of Concepts

There are generally accepted definitions and understandings of certain concepts the world over. However, in studies such as the socio-economic impact of oil and gas discoveries, researchers usually have operational definitions of these concepts as defined below:

**Socio-economic** indicates one’s access to collectively desired resources, be they material goods, money, power, friendship networks, healthcare, leisure time, or educational opportunities. And it is access to such resources that enable individuals and or groups to prosper in the social world (Smith, E.A., M.B. Mulder, S. Bowles, and K. Hill 2011); (Oakes and Rossi 2003).

1.6.1 Socio-economic: Socio-economic in this study refers to a measure of household’s occupation as a source of livelihood and how oil and gas has affected their occupation, social infrastructure, education and livelihoods. The social and economic issues considered in this study are education, occupation, influx of people and infrastructure.

1.6.2 Occupation: Occupation in this research refers to the activities of farming, fishing, artisanal work and all other works through which households earn a living.

1.6.3 Impact: Impact in this research refers to the effect of the oil and gas activities on occupation, income and expenditure, influx of people and infrastructure.

1.6.4 Livelihood: Livelihood simply refers to means to living (Chamber and Conway, 1992). However, livelihood in this study refers to access to land, farming, fishing, artisan works and all activities through which households make a living.
1.7 THE STUDY AREA

1.7.1 The Ellembelle District

The study is situated in the Ellembelle District of the Western Region of Ghana which is one of the eighteen (18) districts in the region. The district was created by the then John Agyekum Kufuour administration on 29th February 2008 and has Nkroful as its capital. For its boundaries, the district has Jomoro to the west, Nzema East to the Southeast, Wasa Amenfi to the North, Tarkwa Nsuaem Municipal to the East and the Gulf of Guinea to the south (GSS, 2014). The district stretches over a total area of 995.8 Km$^2$. The district which covers about 9.8% of the landmass of the Western Region has one constituency, the Ellembelle Constituency.

According to the 2010 Population and Housing Census, the Ellembelle district has a population of 87,501. This number forms 3.7 % of the total population in the Western Region of 2,376, 021. Out of this number, 42,317 (48.4 %) are males with the remaining 45,184 (51.6 %) being females. The district has about 79.4% of its population in the rural areas with the remaining 20.6% residing in the urban areas of the district. The district has a household population of 85,338 with a total number of 18,682 households. The average household size in the district is about 4.6 people.

Nzema is the major language spoken in the district with other dialects like Evalue and Gwira, Fanti and Twi also widely spoken. The Christian religion constitutes 79 percent in terms of religious affiliation; this is followed by 8 percent Moslems, 3 percent Traditional and with the remaining 10 percent belonging to other religions (GSS, 2014).

1.7.2 Educational facilities

According to the 2012 Education Management Information System (EMIS) of the Education Directorate of the district, the district is made up of 74 Pre-schools/Kindergartens, 78 Primary
Schools, 50 Junior High Schools, 4 Senior High Schools, one Technical School, 1 Vocational School and 1 Special School (that is, the Trades School for the physically challenged) in the district. A lot of these educational facilities particularly, the secondary ones are situated in the southern part of the district.

1.7.3 Health facilities

The Ellembelle district has two health training institutions; the Community Health Training School (CHTS) at Esiama and the Seventh-Day Adventist Health Assistant Training School at Asanta. The Saint Martin de Porres Catholic Hospital at Eikwe is the only hospital in the district. The district also has eight Health Centers, a clinic and four Community-bases Health Planning and Services (CHPS) Compounds according to the 2010 Housing and Population Census (PHC).

1.7.4 Economic activities

Data from the 2010 PHC shows that agriculture (including fishing and forestry) remains the major occupation in the district engaging 35.2 percent of the population.

Skilled agricultural, forestry and fisheries constitute the occupation with the highest percentage of the employed population (35.2%) with the proportion of the male workers significantly higher (39.1%) than female workers (31.7%). This is followed (43%) by service and sales workers (22.5%) and craft and related trades (18.0%). Clerical support work and other occupations accounts for the least percentage of occupations for which people are employed in the district.

1.7.5 Roads and transport

The district according to the 2010 Population and Housing Census has 154 km of trunk roads. Out of this, 63.9 km representing 41.5 percent is tarred. The rest of the trunk roads are either graveled or earth surfaced. The district also has 253 km of feeder roads. Out of this, only about
150 km is motorable all year round. It is well noting that about 70 percent of these feeder roads are located in the southern part of the district.

### 1.7.6 Financial institutions

Rural banks and micro-financial agencies like the Nzema Manle Rural Bank, the Lower Pra Rural Bank and the Ankobra West Rural Bank are the financial institutions in the district. Specifically, Atuabo and Sanzule are the two communities in the Ellembelle under study. These communities were selected for the study because they are the host to oil and gas companies in the district which have attracted several oil and gas related business activities. Oil and Gas discovery also have effect on aquatic life (Panford, 2017; Ozumba, 1997). The Ellembelle district is one of the six oil affected districts in Ghana. Some studies have been done in other oil affected districts in the country but not in the Ellembelle district. (See Missodey, 2012; Darkwah, 2013; Aggrey, 2014 and Gyan and Asante, 2017 for instance).

The difference between this study and the previous ones done in other districts elsewhere in Ghana is that none of those studies has processing plants located in the study area. However, both Atuabo and Sanzule where this study was carried had processing plants located in them. Atuabo has the Ghana Gas Processing Plant located in it while Sanzule has the ENI Gas Processing Plant also located in it which gives them experiences different from previous studies. This researcher therefore purposively selected these communities to fill in the gap left by the earlier works.

### 1.7.7 Atuabo

In the Nzema language, Adoabo means “under the Adoa tree”. The name has however been corrupted to Atuabo to mean “under the Tua tree”. History has it that the community was full of the Adoane trees when the first settlers came to live there. The European and many West African
traders used the town as the trading center for the sale and buying of their products. Coming from the Jomoro district to the Ellembelle district, Atuabo is the first community one will come across before any other community. For its boundaries, it has Menzezor to the North, Ekabaku and Anochie to the west and east respectively. To the south is the Gulf of Guinea. According to the GSS (2014), Atuabo has a population of 1,584 with 729(46.02%) being Males and 855(53.98%) being females. Fishing, livestock production and farming are the major economic activities in the community with women engaging mainly in petty trading, household consumables and food stuffs in either kiosks or on table tops. Coconut plantation and palm nuts are mainly produced for external sale outside the community. The lack of major peaks in the community makes it to have a flat landscape. The community has two major islands, the Kpondeni, Borazo and Asemadasuazo Islands. These islands are surrounded by the Amanzule River to the north of the community. The community is also boarded by a large swampy area to the north. The coastline is full of sand and is characterised by stretches of coconut trees. The Amanzule River has mangroves grown on both sides. The sandy nature of the community makes it difficult for first time visitors to easily walk in the community. Nzemas form the majority (98%) with Fantes and other ethnic groups making up the remaining 2 % (GSS, 2010).

1.7.8 Sanzule

Sanzule literally translated as “Unless water” in the Nzema language is bordered to the east by Bakanta, west by Krisan and north by Ala-Bokazo. The community has a flat landscape with almost no peaks. Two lagoons surround the community; the Ser lagoon and the Amanzule lagoon. Farms lands used for the cultivation of cassava, coconuts and vegetables like pepper and garden eggs are located near the lagoon. Many coastal communities in Ghana have sand as a common feature; the Sanzule community is not an exception. This feature poses walking
difficulty for first time visitors. The community is mainly made up of Nzema with few Fantes who are predominantly fishermen. The ENI Oil and Gas Company is located in this community.

**Figure 1: A map showing the study area**

![Map of Ellemelube District showing study communities](image)

### 1.8 HISTORICAL DEVELOPMENT OF OIL IN GHANA

The history of oil exploration in Ghana dates back to 1896 (Boateng, 2008). Ghana, geographically has four sedimentary basins namely the Western basin (Tano-Cape Three Points Basin), Central Basin (Salt pond Basin), Eastern Basin (Accra- Keta Basin) and in land Voltaian Basin (Boateng, 2008). This exploration is classified into four phases. The first phase (On shore exploration) begun between 1896 and 1969, the second phase (1970 and 1984). The third phase (1985-2000) which led to the inception the Ghana National Petroleum Corporation (GNPC) and finally the fourth phase (2001-2008). The histories are in four phases discussed as follows.
1.8.1 The First Phase

The first phase started on shore in the Tano basin in the Western Region as a result of traces of oil seepages in the area. Later on, a French company Societe Francaise de Petrole’ now Elf / Total also joined in the search for oil offshore the coast of Ghana by drilling six wells between 1909 and 1913. Between 1923 and 1925, two additional wells were drilled in onshore Tano by the African and Eastern Trade Corporation.

Additionally, Boateng (2008) reported that four oil wells were drilled onshore in the Tano basin by the Gulf Oil Company from 1956 to 1957. These were Kobnaswaso-1 and Epunsa-1 both in 1956. Two additional wells; Bonyere-1 and Kobnaswaso-2 were also drilled in 1957. Up to 1969, no major oil and gas discoveries were made although a significant progress towards oil discovery had been made (Boateng, 2008).

The cordial friendship relations between Ghana and the Soviet Union led to a Soviet team who were drilling for water in the onshore voltaian basin to discover traces of oil and gas in the basin and some boreholes in the Northern region during the period 1957 to 1967. Two additional wells (Atiavi-1 and Anloga-2) were later drilled by the team (Boateng, 2008).

Five big wells were drilled by the West Africa Oil and Fuel Company (WAOFCO) within a five-year period with the second sinking of oil resulting in a discovery which produced five (5) barrels per day at a depth of thirty-five (35) meters (Boateng 2008: 2).

1.8.2 The Second phase

No major discovery was made by 1969. However, some success was chalked in 1970. This year saw the first ever offshore oil well being drilled in the country. This drilling was in the Salt pond basin. Attention was then turned on other basins namely the Tano/Cape Three points and the Accra/Keta basins for possible offshore oil well drilling and within a period of two years, 14
wells were drilled. Amoco Petroleum, Volta Petroleum Company, Philips Petroleum and Mobil Oil also drilled additional wells. As a result of these activities, 17 wells were drilled from 1970 to 1979. Seven additional wells were also drilled from 1979 to 1984 by Petro Canada International Association Corporation (PCIAC) and its allies.

Following these discoveries, the government of Ghana under the Provisional National Defense Council (PNDC) became more interested in the country’s oil exploration activities.

Subsequently, two Laws were made; the PNDC Law 64 and PNDC Law 84. PNDC law 64 established the National Petroleum Corporation (GNPC) as a statutory body from the then Petroleum Department under the Ministry of Mines and Energy. PNDC Law 84 on the other hand established the legal and fiscal framework for the conduct of petroleum exploration and production activities in Ghana. In addition to these laws, the Petroleum Tax Law, PNDCL Law 188 was enacted as petroleum exploration and production activities tax laws (Boateng, 2008).

1.8.3 The Third phase-The inception of GNPC (1985-2000).

By this time, it was obvious that the government of Ghana had become fully interested in Petroleum exploration and production activities in the country. The PNDC Law 64 and PNDC Law 84 were therefore made. Whilst PNDC law 64 established the National Petroleum Corporation (GNPC) as a statutory body, the PNDC Law 84 on the other hand also established its legal and fiscal framework. In addition to these laws, the Petroleum Tax Law, PNDCL Law 188 was enacted as petroleum exploration and production activities tax laws (Boateng, 2008).

The GNPC became fully operational in 1985 and as the statutory body mandated to regulate oil exploration and production activities, it sought for funding from the Canadian government through PCIAC for its operations. Some personnel were trained and equipped in oil and gas laboratory work to enhance their delivery and efficiency. With this funding, 11 additional
shallow wells were drilled in 1989 in the onshore Tano basin. The GNPC also funded the acquisition, production and interpretation of the first ever 3D seismic works over the south Tano basin and it was convinced that the basin was a potential Oil and Gas (OG) exploration site (Boateng, 2008).

The interpretation of the 3D seismic data convinced the GNPC that the field was viable for national development. As a result of this conviction, three additional wells were drilled in the Tano basin. These are the Exploration well ST-8, Appraisal well, ST-7H and ST-9H. From 1989 to 1991, the GNPC also funded other seismic works namely shallow marine 2D seismic survey in the Tano, Saltpond and Accra/Keta basins, 2D land seismic in onshore Tano and Accra/Keta basins, 2D seismic data over the Saltpond field and 2D seismic (GNCT-88 vintage) in the Tano/Cape Three Points basins.

Other companies such as the Atlantic Richfield Company Limited and Hunt Oil Company also funded OG exploration activities. For instance, in 1999, Hunt Oil Company discovered oil in deep waters but declared it noncommercial and therefore pulled out in 2002. This discovery boosted the hopes and aspirations of other oil companies in the search of a possible Oil and Gas in commercial quantity. In all, 27 wells were drilled by different operators from 1985 to 2000 in the Tano, Keta, Saltpond, Accra and Cape Three Points basins (Boateng 2008:10-11).

**1.8.4 Phase Four**

Phase four covers the period 2001 to 2008. At this stage, the search for Oil and Gas in commercial quantity had intensified. The GNPC was restructured, refocused, retooled and downsized with staff of the Corporation given further training. The GNPC was also upgraded to a company status to make it semiautonomous. There were several promotions at the American Association of Petroleum and Geologists (AAPG), African Petroleum Forums (APF) and Society
of Exploration Geophysicists (SEG) meetings and conferences among other places to attract International Oil Gas companies. The discovery by Hunt Oil increased the hope of a possible Oil and Gas discovery in commercial quantity (Boateng, 2008).

Oil companies such as Tullow Oil, Hess Corporation, Kosmos Energy, Dana Petroleum and Norsk Oil and Gas became interested in Ghana as a potential Oil and Gas investment destination. Evidence from previous works proved that it was no longer useful to continue onshore exploration. Attention was therefore shifted from onshore exploration to deep water explorations. As a result, Tullow Oil, Kosmos Energy, Anadarko and E.O. Group jointly made history in the year 2007 when they announced the discovery of Oil and Gas in commercial quantity. These discoveries were made in the Mahogany-1 and Hyedua-1 wells at the Cape Three Points basins. The discovery was named the Jubilee Field to commemorate Ghana’s jubilee independent year anniversary (Boateng, 2008).

1.9 STRUCTURE OF THE THESIS

This study is divided into six chapters. Chapter one comprised the introduction, statement of the problem, general and specific objectives, significance of the study, study area, historical development of oil in Ghana and the structure of the thesis. Chapter two was made up of Literature review and conceptual framework. Chapter three discussed the data collection methods. Chapter four; Prevailing conditions before oil and gas discoveries, Chapter five; Socio-economic changes and impact in the study area and finally Chapter six is made up of Summary, conclusion and recommendations.
CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

In this section, the researcher looked at various works in connection to the topic researched into, “The Socio-economic impact of oil and gas discovery in the Ellembee District of Ghana”. It also took a critical look at the issues that have been empirically investigated or studied and the existing literature on the socio-economic impact of oil exploration activities on the well-being of communities in both developing and developed nations the world over. The section was divided into two main parts; one part detailing the positive aspects of oil and gas discoveries with the second part detailing the negative aspects. The sustainable livelihood framework by Scoones, (1998) and Carney, (1999); the theoretical framework adopted for this study was also discussed.

Oil discovery particularly in developing countries is greeted with great optimism and high expectation from the citizenry (Heinberg, 2006; Darkwah, 2010). This joyous celebration and expectation from the citizenry is as a result of the financial and economic resources that the citizenry expect from the discovery of “the black gold” casting their minds back on the benefits that some oil endowed nations have received (Darkwah, 2010). Boohene (2011) reports that citizens of oil endowed nations know about the many uses of oil and therefore expect their respective governments to turn these benefits into good use including the production of electricity for the nation. This great optimism according to Heinberg (2006) is also due to society’s dependence on oil. According to him, society has developed technology that depends so much on oil to function and the fact that petroleum provides a concentrated source of energy for transportation and its nature to be transformed into a wide range of products from plastic to
clothing to industrial chemicals, its discovery will lead to jubilation from citizens of the endowed nation. Frankel (1993:1) notes that:

Oil holds a unique place in the popular imagination; it is always news. Oil is revered and oil is feared. Its power for good is eulogised with almost fanatic enthusiasm; People consider that anything may happen and it properly will. Even some, who know nothing of the theory of the underground formation of crude oil from ancient marine fauna, regard anything and everybody connected with oil as somehow fishy.

Natural resource extraction has attracted several theories and school of thoughts. While some of these theorists consider natural resource as a key to social and economic development, there are other theorists who do not oppose but are of the opinion that natural resource rather retards socio-economic development and leads to a “curse” popularly referred to in literature as the “resource curse”. Those who argue that natural resources are keys to economic development opine that natural resource discovery and extraction cause massive changes to both the social and economic development of resource endowed nations. Mention can be made of Botswana and Norway that have respectively turned the discovery of diamond and oil in their respective nations into good use for the welfare of the citizenry (Rosser, 2006; Darkwah 2010). Proponents of natural resource as a key to socio-economic development such as Rowstow (1960) and Webster (1984), argue that nations rich in natural resources can use their resources for development. For them, all that such nations need is to follow the footsteps of advanced nations that have turned their natural resources into blessings for the citizenry. Proceeds from these resources if properly utilised can be used in the construction of roads, schools, health facilities, provision of water, creation of employment opportunities, revenue generation and build industries as nations like the United States and Britain have done (Acquah, 2014).

The argument of the other school is that natural resource discovery and exploration in many cases does not always lead to national development of the endowed nation. It instead ends up in a
curse, a phenomenon described by Gelb (1988); Auty (1990); Sachs and Warner (1995) and Weszkalnys (2008) as the “natural resource curse” and the related “Dutch disease” with Nigeria, Democratic Republic of Congo and Sudan as a typical examples. There are however some countries that cannot boast of any natural resource discovery but have made life easy for the citizenry. There is yet another school that argues that there are some resource endowed nations in spite of their continuous exploitation of natural resources have experienced stagnant economic growth as compared to resource poor nations (Karl, 2007).

2.2 THE POSITIVE IMPACT OF OIL AND GAS DISCOVERY

2.2.1 Oil discovery and its links with socio-economic development

Natural resources (including oil and gas) have numerous blessings for resource endowed nations. Proceeds from these resources if properly utilised can be used in the construction of schools, provision of water, health facilities, creation of employment opportunities, revenue generation, to mention but a few as nations like the United States and Britain have done (Acquah, 2014).

A consortium meeting held in 2011 revealed that since the production of oil in commercial quantity in Ghana, the Sekondi-Takoradi metropolis has seen a facelift in infrastructure; new roads have been constructed and named with several modern buildings being erected giving the twin city a global status. This has also led to the influx of migrants many of which are positively contributing to both the social and economic development of the city (Obeng-Odoom, 2012).

In support of this, Odoom & Amedzro, (2011) cited in Odoom (2012: 7) reported as follows.

The discovery of oil brought renewed energy to the Sekondi-Takoradi metropolis in 2007. Today, the “oil city” remains a site charaterised by a mixture of “old” and “new” urban forms. Old houses coexist with modern residential facilities, as is the case elsewhere in Ghana and formal markets exist side-by-side with informal ones.
In Uganda, Kyomugasho (2016) reported that although the people of Kabaale Village, Hoima, and Bunyoro Region were resettled to make way for the construction of oil refinery, some of the resettled families well invested their money to build new houses, engaged in various business activities to improve their standard of living. Additionally, the area also saw improvement in the road sector.

On a positive note, there is improved and modern infrastructure being constructed in the area like roads, power dams, hotels along the Kaiso-Tonya road, a renovated local hospital of Buseruka which was renovated by CNOOC Oil Company. These have led to the development of the areas like Hoima, Buseruka, and generally, the whole of Albertine Graben region, which will eventually bring basic services closer to the people, as well as jobs and market of the local resources, improving people of Bunyoro’s income and standard of living. There are new roads like Hoima Kaiso Tonya road and several other upgraded village marram roads, banks, hotels, electricity in rural areas, refurbished local hospitals, more business and the value of land and food in the area has gone up. This is good news to agricultural producers and local farmers (Kyomugasho 2016:106).

According to the 2014 Tullow Country profile report, Tullow Oil provided childcare facilities to enable women to generate income for the upkeep of their families. This was done in consultation with the local communities and their authorities. This provided livelihood empowerment for the beneficiaries.

The case of Botswana is one of such examples that can be cited to argue that natural resource discovery can lead to socio-economic development. At the time of gaining political independence from British colonial rule in 1966, Botswana had only twelve (12) kilometers of tarred road, three (3) secondary schools, twenty-two (22) university graduates and one hundred secondary (100) school graduates (Acemoglu, Johnson and Robinson 2001; Sarraf and Jiwanji, 2001). In addition to this, the country also fell within the bracket of middle income nations in
1989 but is currently among the upper middle income economies in the world (Acemoglu et al 2001:1).

Botswana has been able to avoid the resource curse and corruption that are usually associated with resource endowed nations. For instance, Transparency International Corruption Perception Index Report in 2014 positioned Botswana as the best country in Africa that is least involved in corruption. Besides, the country also has majority of its population with quality education and access to portable drinking water (Clover, 2003). The success story of Botswana is as a result of measures such as the rule of law, strong institutions, good governance and respect for the voice of the citizenry.

Additionally, for proponents of natural resource as a bait for socio-economic development (Rosser, 2006), oil and gas discovery has led to industrial development of some oil rich countries leading to job creation for the citizenry. Norway and Qatar are typical examples of such countries whose industrial creation as a result of oil and gas discoveries has provided sufficient funds for economic development.

Prior to the discovery of oil in 1969 and its subsequent extraction in 1971, Norway’s Gross Domestic Product (GDP) used to trail behind its neighbours Denmark and Sweden making it the poorest among them. Now with its discovery and extraction of oil, Norway now enjoys the highest Goss Domestic Product (GDP) among these nations (Larsen, 2004).

Larsen (2004) observes that, this success chalked by Norway is as a result of its proper management of the oil discovery. Norway escaped the curse for at least the first two decades and has avoided the resource curse completely today because it managed to contain the factor movement effect, the spending effect and the spillover effects of the disease.
The factor movement is the movements of labor, capital, and other factors of production between countries. This can occur in three ways namely immigration or emigration, capital transfers through international borrowing and lending and foreign direct investment (Rauscher, 1997). Norway avoided this by restricting immigration, capital flows, and foreign direct investment (Larsen, 2004). Larsen (2004) reiterated that the Factor Movement Policy was used by Norway to centralise wage formation system to limit general wage increases as the magnitude of productivity increases in the manufacturing sector which attracted favourable results in resource extraction.

The spending effect or the “Dutch disease,” is the situation where resource-related capital inflows inflate currency values and crowd out unrelated industries like manufacturing and agriculture; the volatility of commodity prices; and the negative effects of resource abundance on fragile political institutions (Sachs, 2007).

The Spillover effect is the impact that unrelated events in one nation can have on the economies of other nations. This effect can be both positive and negative but the emphasis is most often on the negative rather than the positive. For instance, a decline in the consumer spending of a particular nation has a spillover effect on other countries that depend on it (Rauscher, 1997).

2.2.2. Oil discovery and livelihood empowerment

Oil and gas discovery can lead to improvement in the livelihoods of affected communities to have alternative sources of livelihoods. As reported by Odoom (2014), Oil companies in the Western Region of Ghana have selected 26 communities from the six oil producing districts in the region to help improve their livelihoods. The breakdown of the 26 communities are as follows: 4 from the Shama district, 3 from the Sekondi-Takoradi Metropolitan Assembly
(STMA), Jomoro 5, Ahanta West 6 and 4 each from both the Nzema East and the Ellembelle district assemblies. Overall, 740 people benefited from the project. The people in these communities are trained on the proper management of their financial resources (that is, financial literacy), how to create new technology (new ovens and fish rearing) and training on how to diversify from their current source of income such as soap making. For the companies to keep in touch with the communities, community liaison officers are employed to link up with the trainers who also work for the oil companies (ibid:98).

2.2.3 Oil discovery and its links with migration and the influx of people

Oil discovery and exploration has link with the movement of people from various locations to communities closer to the drilling sites. According to Gyan and Asante (2017), following Ghana’s oil discovery in the Western region of Ghana, the Sekondi-Takoradi metropolis has seen the movement of people with different skills and backgrounds into various sectors such as education, construction and catering among other services from various locations to the metropolis since 2010, the year Ghana started commercial exploration of oil and gas (OG). According to them, although the metropolis is also christened “The harbor city”, the discovery of oil offshore the city has further added value to it by transforming it into a vibrant commercial hub in both Ghana and West Africa. Many of these migrants who would have been unemployed but thanks to the oil discovery, they now have a source of livelihood. The hope and aim of these migrants into the metropolis ranges from either getting direct employment in the oil and gas industry or with the intention of benefitting from the emerging OG economy. The end result of the oil and gas discovery can thus be said to have contributed to rapid population growth in the region (Gyan and Asante, 2017).
Unlike the resource curse phenomenon that has become a common symptom for most oil and natural resources endowed nations, (Obeng-Odoom, 2012) opines that although the influx of people in the city is likely to cause social vices, anomie, the resource curse and rentier state, on the whole, the Sekondi-Takoradi twin cities have benefited tremendously from the oil production activities as evidenced in the erection of modern edifices in the metropolis and the expansion of King City, a community of 2,400 stretches of land is being developed to accommodate about 160,000 people within the next ten years (Obeng-Odoom, 2012).

2.2.4 Oil and gas discovery and educational development

Education plays a critical role in the development of every nation. It is therefore no surprising that governments the world over have put much importance on the educational sector. No nation can develop properly without its people having access to quality education. The Government of Ghana’s implementation of the Free Senior High School education (Free SHS) and the Free Compulsory Universal Basic Education (FCUBE) are indications of its commitment and recognition for education.

Oil and gas extracting activities has educational implications on resource endowed nations and the people in surrounding communities though not the case in all situations. As noted by Zachary and Ratledge (2017) in a study on six oil producing states of the United States (Colorado, Pennsylvania, West Virginia, Ohio, North Dakota, and Montana), concluded that the impact of oil and gas on communities depends on certain factors. The factors according to them are first, student population may change during a boom if an influx of workers with school-age children moves to a community which may put greater strain on school resources, the extent to which taxes from oil and gas companies paid to governments are used on local schools and thirdly, a boom in oil and gas development results in higher wage competition and greater labour demand.
in the industry may pull teachers and students out of schools. However, many people as a result of the oil activities upgraded themselves educationally in order to secure employment with the oil companies.

To further train work force for the oil and gas industry, some short courses ranging from six to nine months in electrical, mechanic, health and safety were organised by the Takoradi Polytechnic (now Takoradi Technical University) with sponsorship from oil companies and the government of Ghana in the year 2013. The training however is technical and vocational rather than managerial meaning that the beneficiaries cannot work in managerial positions of the oil and gas industry but rather at the lower rungs of the industry (Obeng-Odoom, 2014). Some staff of the Polytechnique were also sponsored to do courses in the United Kingdom. In addition to this, Tullow Oil has given scholarship packages to several Ghanaian post graduate students to further their education in fields such as oil and gas, media, law, food and nutrition and public health abroad.

2.3 THE NEGATIVE IMPACT OF OIL AND GAS DISCOVERY

2.3.1 Oil and gas production and its effects on the environment

Oil production poses environmental challenge to the people who live closer to the drilling sites. The people in the Nigeria’s Niger Delta region have had their fair share of this challenge. According to (Bisina, 2004), oil production and dredging in the Nigeria’s Niger Delta region has caused acid rain, fouled the air and the water, serious erosion to the environment resulting in the washing away of the land. In addition, oil spills and other ongoing problems as a result of the oil production are not given the needed attention. The area is therefore left in much worse shape than before the oil discovery.
Coupled with this, the Federal laws allow any land where oil is found to be automatically transferred to the government without any proper compensation to the landowners. Landowners are not factored into any agreement the federal government enters into with multinational companies (Bisina, 2004).

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 instance, drilling cutting, drilling mud and fluids are used to stimulating production during exploration. All these activities cause environmental problems (Iwejingi, 2013).

Damage to oil pipelines, accidents by oil truck tankers, oil spill and hydrocarbon emission also generate environmental problems. Thus, the entire process of oil extraction negatively affects the environment sometimes causing pollution and health problems (ibid). In the year 2010, KOSMOS Energy was fined US$35 million by the government of Ghana for spilling 706 barrels of toxic substance into the sea causing environmental damage (Obeng-Odoom, 2014:123). This spillage could result in the loss of aquatic lives as opined by Ozumba (1997) and its subsequent hardship on people whose livelihoods are dependent on such aquatic lives.

The environmental effects of oil exploration can be detrimental to the health of surrounding community members (O’Callaghan-Gordo, Orta-Martínez and Manolis Kogevinas, 2016). This effect is even worst in low middle income countries (LMICs) where it is estimated that about 638 million people mostly in rural communities suffer from oil exploration health related issues (O’Callaghan-Gordo, et al 2016). They suffer health related problems due to reasons such as a long period of stay at drilling sites, use of contaminated water and food. The effect is so diverse that people who are not related to oil activities like pregnant women, children, infants and elderly people are also exposed. Cleanup workers after oil spillage suffer from headache, fatigue,
dizziness, respiratory problems, eye and skin symptoms, lower respiratory tract symptoms and reduction of lung function (ibid:1). Controlling environmental legislation in LMICs is restrictive. Besides, controlling bodies may also be lacking. This makes communities closer to exploration sites more vulnerable to oil related environmental problems. In the Peruvian Amazon, the lack of technical legislation on the practices for the management of water production, drillings muds and gas flaring led to the contamination of air, water and soils in residential areas close to oil fields O’Callaghan-Gordo, et al (2016).

Communities in the Nigeria delta region looked on helplessly to see their lands washed away due to activities like soil dredging by oil companies. In addition to this, Fishing and farming, the traditional occupations of the people is no longer attractive and viable causing poverty, hunger and desperation among these peoples, who on daily basis struggle to make a living (Concannon, 2004).

2.3.2 Oil discovery and its association with conflict

Many nations have been plunged into conflict as a result of the discovery of oil and gas in those countries. For instance, the conflict in Nigeria’s Delta region is attributed to the oil discovery in the region. This is because, the local community members feel that they have been cheated, exploited, their environment depleted and their source of livelihood taken from them leading to tension between them and oil producing companies (Ozumba, 1997; Psessoa, 2008; Boonstra et al 2008). As reported by Darkwah (2010), the conflict in nations such as Angola, the Democratic Republic of Congo, Cambodia, Darfur in Sudan and the Middle East are strongly linked to the oil discovery in those countries. Making a case from the 2009 report of the United Nations Environmental Program, Darkwah (2010) argued that between 1990 and 2010, there were not less than 18 violent conflicts in these countries. These conflicts have links with the oil
discovery and exploration in these countries. A common characteristic of these conflicts is the abuse of human rights and armed gang which threatens social peace and retards socioeconomic development. Angola’s war was also borne out from oil discovery as a group that feels that the oil proceeds has been unfairly distributed by government (Le Billon, 2001).

As Girod (2009) observed, the presence of oil in poor countries has in many cases undermined democracy particularly in sub-Sahara Africa as a result of lack of transparency and accountability regarding the extraction from the oil proceeds. There is also the likelihood of war and conflict within poor or middle income states but not in high-income states.

2.3.3 Oil and gas exploration and its relations to loss of livelihood

Oil and gas activities have implications on the livelihood patterns of the people in an economy particularly those who live closer to the drilling and extracting sites. This ranges from cultural, social, economic, agriculture and livestock among others. In most instances oil and gas activities result in loss of employment, loss of land which brings economic hardships on the people and in some instances result in conflicts thereby destabilizing the peace of resource endowed nation (Esuruku, 2013). The UNDP (2006, 2007 and 2010) reports over the years have also supported this argument that oil and gas activities lead to mistrust in government and the extracting industries on the part of the citizenry.

Oil and gas discovery and exploration also have effect on the cultural practices of the people who live closer to the reserve sites as a result of the influx of foreigners which destroys the otherwise benevolent cultural practices (Darkwah, 2010). Women according to her usually fall victims as some of them easily give in to commercial sex work in order to generate income from the influx of foreigners with high salaries. Agricultural activities namely fishing and farming which forms the original occupation of the people is equally affected making the sector no longer attractive.
As it is the case in Ghana, usually people who lose land for states projects are poorly compensated Kortey et al (2012). The end result of this phenomenon is hunger, poverty and loss of employment Bisina (2004). In Ghana, (Panford, 2017) reports that as a result of Ghana’s oil discovery, a five kilometer square of the sea has been declared “a no go area” for fishing which has affected the livelihoods of local fishermen and brought hardship on them. The oil rigs also attract fishes to itself due to the light it uses thereby reducing fish harvest because it serves as a hub for fishes to lay their eggs and it also protects them from predatory attacks (Fabi, Grati, and Puletti, 2004). The effects of oil spillage on aquatic organisms are so diverse and complex on water surface. Hydrocarbon components in crude oil will limit the oxygen supplies, affecting aquatic organisms such as fish leading to low fish harvest (Ozumba, 1997).

2.3.4 Oil and gas and its association with changes in the prices of goods and services

One feature associated with the discovery of oil and gas is changes in the prices of goods and services which increase rather than decreasing (Pessoa, 2008). This is as a result of high inflation and currency appreciation, rise in input costs, wages, the expansion of the non-traded goods and services. Another reason for the rise in the prices of goods and services is the reallocation of resources (financial and human), from less attractive sectors such as agriculture and manufacturing to the booming oil or mineral sector. The end result of this is contraction and loss of competitiveness in non-oil sectors. Furthermore, oil and gas discovery attracts migrants into nearby communities who come with the aim of securing employment (Gyan & Asante 2017; Obeng-Odoom, 2014). This movement of people from diverse locations to communities closer to the drilling sites puts pressure on goods and services resulting in increase in the prices of goods and services (Osei-Tutu, 2012).
Some people in the Sekondi-Takoradi metropolis have also been compelled to relocate to surrounding communities as a result of high increase in cost of accommodation. As observed by Osei-Tutu (2012), the Sekondi-Takoradi metropolis is faced with high cost of living as a result of the oil discovery. The author notes:

Renting an average three-bedroom house has risen from GH₵ 80–100 ($41–51) in 2006 to GH₵ 200–300 ($102–152). This has forced the native ‘Takoradians’, who cannot afford the same living costs as the expatriates and oil industry employees, to relocate from Takoradi to its environs. In addition to the high cost of living, the town’s existing transport infrastructure is becoming increasingly burdened with the escalating volume of traffic (Osei-Tutu, 2012:3).

Many works have been on oil and gas in Ghana and other parts of the world but these works were not done in the Ellembelle district, with an influx of oil and gas related activities. The major difference between this study and the previous ones done in other districts elsewhere in Ghana is that none of those studies has processing plants located in the study area. However, both Atuabo and Sanzule where this study was carried have gas processing plants located in them. Atuabo has the Ghana Gas Processing Plant located in it while Sanzule has the ENI Gas Processing Plant also located in it. The experiences of households such as warm weather as a result of the gas emission plants in this study are therefore different from earlier studies.

2.4 CONCEPTUAL FRAMEWORK

Until the 1980’s, the general perception was that nations with abundant natural resources have better chance of developing than those without such resources particularly in developing nations. As a result, many governments invested huge capital into natural resource extraction and exploration (Rostow, 1960; Psessoa 2008; Auty 1993). However, Sachs and Warner, (2001) argued that this perception cannot be maintained as natural resources have different implications for various resource endowed nations. According to them, the negative outcomes of natural
resources abundant economies are case-specific. In Sub-Saharan Africa for instance, while Botswana has turned its diamond discovery into a blessing, Zambia on the other hand, has turned its own natural resource into a curse. Botswana in spite of enjoying minimal investment during colonial period has turned its diamond discovery into a blessing for the citizenry.

Natural resource development has attracted two schools of thought on resources exploitation in development theory. The first sees exploitation of natural resource discovery as the key to development because it causes massive changes which provides the drive for economic growth. The second is not completely opposite but is of the opinion that natural resource exploitation in itself does not necessarily lead to positive economic growth and development of resource endowed nations but rather results in a “curse”.

When a natural resource (oil) is discovered, structures are put in place to regulate it for the benefit of the nation and local community. These structures are made up of laws, terms of trade and state institutions. If these institutions are strong enough to check both the oil companies and government officials to follow the established laws by checking to avoid the politics of a rent seeking, where Multinational Corporations (MNCs) use politicians and some “powerful” people in society, to make stringent measures to restrict competitors into the industry in order to continue to exploit both the nation and the local community, windfall; where oil companies make huge profits but fail to pay taxes or the tax they pay do not correspond to the accrued revenue. The structures must also be strong enough to check corruption, taking into consideration the wellbeing of the citizenry and communities located nearer to the drilling and extracting sites.
Within the local communities are various households and types of capital. Households are people who eat from the same pot, while capital are made up of natural, human, social, physical and financial (Ellis, 2008). The effectiveness or otherwise of the structures to check the politics of rent seeking, windfall and corruption has a final outcome implication on the local community to be either positive (blessing) or negative (curse).

THEORETICAL FRAMEWORK

2.4.1 The sustainable livelihood framework

The sustainable livelihoods framework is a tool for improving the general understanding of livelihoods of the poor and the vulnerable in society. The idea of sustainable livelihoods was first introduced by the Brundtland Commission on Environment and Development to link both socio-economic and ecological factors together for policy implementation. The United Nations Conference on Environment (UNCEP) in 1992 adopted and expanded the concept and advocated for the achievement of sustainable livelihoods as a broad goal for poverty eradication (Krantz, 2001).

It was later developed by the Sustainable Rural Livelihoods Advisory Committee of the United Kingdom after several months of deliberations. The committee relied on an earlier work of the Institute of Development Studies (Carney, 1999). In a Natural Resource Advisors conference organised by the UK’s Department for International Development (DFID) in 1999 which discussed early experience with implementing sustainable livelihoods approaches to poverty elimination, four agencies; DFID, Oxfam, CARE and UNDP discussed early experience with implementing sustainable livelihoods approaches to poverty elimination.
According to Diana Carney (1999), one of the theorists that developed the framework, researchers and policy makers can adopt the framework to suit a particular study or circumstance. With this permission, the researcher adopted the conceptual sustainable livelihood from Scoones (1998) and Carney (1999) approaches to examine and explain the impact of the oil and gas exploration activities on Atuabo and Sanzule.

The framework shows the key factors that affect people’s livelihood and the typical relationships that exist between them. It can be used in both planning new development activities and assessing the contribution to livelihood sustainability made by existing activities Carney (ibid).

At the conference, the livelihood definition by Chambers & Conway (1992) was adopted as “Livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the long and short term.” (Chambers and Conway (1992:7).

Carney et al (1999) identified different types of livelihood activities namely; Livelihood promotion, Livelihood protection and Livelihood provisioning.

2.4.2 Livelihood promotion

This refers to the strategies for improving the resilience of households, for example through programs which focus on savings and credit, crop diversification and marketing, reproductive health, institutional development, personal empowerment or community involvement in service delivery activities. Most livelihood promotion activities are long term development projects that increasingly involve participatory methodologies and an empowerment philosophy.
2.4.3 Livelihood protection

This aims at helping to prevent a decline in household livelihood security, for example programs which focus on early warning systems, cash or food for work, seeds and tools, health education and flood prevention. Members in a community may be informed in advanced by specialists about the outbreak of diseases such as the Saint Paul Wilt disease which affects coconut plantation, the army worm that attacks farm products and completely destroys them. Other examples that fall within this category are the announcement given to community members about the outbreak of diseases like cholera, project construction, chicken pox and measles.

2.4.4 Livelihood provisioning

By livelihood provisioning, they mean direct provision of food, water, shelter and other essential needs, most often in emergency situations. CARE however has identified three focus areas of activities namely, Personal empowerment, social empowerment and service delivery.

2.4.5 Personal empowerment

Are interventions that focus on expanding human capacity, and hence the overall resource (asset) and income base of the poor.

2.4.6 Social empowerment

This includes interventions such as education, community mobilization and political advocacy.

2.4.7 Service deliveries

Service deliveries are means of expanding access to basic services for the poor such as the provision of telecommunication network, water and educational facilities.
2.5 LIVELIHOOD ASSETS

The Sustainable Livelihood (SL) is centered on five major categories of livelihood assets represented by a pentagon to show interconnection and to mean also that livelihoods depend on a combination of assets of different kinds. It is important for analysts to find out how people get access to these assets; physical, human, financial, natural and social capitals (Carney, 1999).

2.5.1 Natural capital

This is made up of the natural resource stocks from which resource flows which are useful for livelihoods or survival such as land, water, wildlife, biodiversity and environmental resources are derived. The land for farming, the sea, rivers and inheritance of coconut trees are some of the most important natural resources at Atuabo and Sanzule.

2.5.2 Human capital

Human capital refers to the skills, educational qualification and knowledge, ability to work and good health of an individual or a group deemed necessary for use to pursue different livelihood strategies. Households with high quality human capital can use it to improve the economic
situation of the household. Ironically, the lack of such human capital such as educational qualification and technical knowhow also affects the ability to secure sustainable livelihood for members (Rakodi 2002a; (Ellis, 1999).

2.5.3 Social capital

This refers to the social networks or resources such as membership to a group, relationships of trust and access to broader institutions, interactions among individuals and households from which people derive their livelihood.

As a result of the influx of people to oil drilling communities in search of employment (Gyan and Asante, 2017), and the pressure on infrastructure (Odoom, 2012), landlords increase the cost of renting forcing those local residents who cannot afford such high cost to relocate to surrounding villages (Osei-Tutu, 2012).

This also includes the migration of people from one community or area to the other (Gyan and Asante 2017). The influx of foreigners and works from different backgrounds can have health consequences on oil producing countries (Bisina 2004; Darkwah, 2010) and it’s also disrupts the social network of community members thereby affecting the socio-cultural patterns of the community. Poverty and economic hardship lures some ladies into prostitution which can result in being infected with the HIV/AIDS virus (Darkwah, 2010; Rud & Aragon 2013).

2.5.4 Physical capital

Physical capital is the basic infrastructure such as transport, shelter, water, energy and communications and the assets like, farming equipment and sowing machine (Ellis, 1999), tools and machines for the cultivation of the land for human survival. The influx of people in oil extracting communities also puts pressure on communities. This makes life unbearable for community members who cannot afford. Some are even forcefully evacuated to new locations
when a natural resource is discovered in an area as reported by the Sudan Tribune 2009 (cited in Darkwah 2010:8).

2.5.5 Financial capital

Financial capital refers to the financial resources which are available to people access to credit facilities, good pension or even regular remittances which give access to different livelihoods options. Access to credit facilities, livestock rearing and saving also forms part of the financial capital (Ellis, 2000).

The ability to generate Financial Capital is also dependent on wages or proceeds of work and living costs in a household’s ability in developing a livelihood strategy. As rural communities, income is usually earned by subsistence way of life. Rural communities also need financial resources for development.

For the people Atuabo abd Sanzule; the two communities under study in the Ellembelle district to be empowered, all these different types of capital must be available to them. Being rural communities, their denial to natural capital deprives them of their livelihood. Both human and financial capital if made available to them could enhance their livelihoods, enhance their standards of living which can expand their lives and give them public confidence (Fosu and Mwabu, 2010).

As to whether the oil discovery will be a blessing or a curse to the local communities depends on the kind of interactions that exist between the government, the oil companies and the measures put in place to help them make a living. The outcome of this interaction can either be positive or negative. The positive outcome of the interaction is indicated with a deepened green arrows meaning life or blessing to the people with the deepened black arrow representing negative or
curse. The tin black arrows represent the normal way of life of the people. This interpretation is shown in Figure 2.

2.6 VULNERABILITY CONTEXT

The Vulnerability Context frames the external environment in which people exist. People’s livelihoods and the wider availability of assets are fundamentally affected by critical trends as well as by shocks and seasonality over which they have limited or no control (Carney 1999:2). Assets can both be destroyed and be created as a result of the trends, shocks and seasonality of the Vulnerability Context. The shocks include human health shock, economic shock and crop/livestock shock among others. It can force people to abandon their homes especially during conflict situations and loss of jobs (ibid).

A distinction was made between two types of sustainability; environmental and social sustainability by Krantz (2001). Environmental sustainability according to him refers to the external of a livelihood on other livelihoods, that is its effects both local and global resources. Social sustainability on the other hand refers to the ability of a livelihood to withstand outside pressure and its ability to cope with stress and shocks and retain it with time (Ibid:7).

He classified things such as rising populations or declining resources, seasonal shortages which keep on happening increasing or decreasing but to some extent can be predicted as stress. Shocks on the other hand are impacts which are sudden, unpredictable and traumatic such as during fires, floods, epidemics and loss of livelihoods.

Stresses are defined as pressures which are typically continuous and cumulative and therefore to some extent predictable, such as seasonal shortages, rising populations or declining resources, whilst shocks are impacts which are typically sudden, unpredictable and traumatic, such as fires,
floods and epidemics. Any definition of livelihood sustainability has to include the ability to avoid, or more usually to withstand and recover from, such stresses and shocks.

The ability of the households to secure their livelihoods and assets are strongly influenced by the context within which they desire them. In many instances, the poor in society are at the mercy of external shocks, weather and stress. They usually lack the means to recover when hit by unforeseen circumstances which can be both internal (the ability or capacity to cope) and external (the external” that is the stresses and shocks) and this makes them vulnerable (Chambers and Conway 1992:10). Vulnerability context in this study also refers to the risks and insecurities that communities and households in the two communities may experience as a result of the discovery of the oil and gas and their related activities. These include the influx of people, land loss and acquisition, changes in households’ income and prices of goods and services and related problems like diseases, prostitution and disputes. At the beginning of oil extraction, the prospect may look good and attractive with the promise of providing employment both at the national and local levels. This good looking prospect can turn bleak if revenue from the oil and its related activities are not well managed resulting in the resource curse for the nation.

2.7 LIVELIHOOD STRATEGIES

The Livelihood strategies (Adaptive strategies) refer to ways and means through which households make a living. It also seeks to promote choice, opportunity and diversity. That is how they measure their livelihood outcome (Carney, 1999). It is a dynamic process in which they combine activities to meet their various needs at different times. As rural communities, some of the livelihood strategies adopted by households include farming, fishing, rearing of livestock (pigs) and some trading activities. Ellis (2000) grouped these strategies into natural resource based and non-natural resource based. Activities such as farming (planting of crops, gathering of
firewood and fishing) constitute natural resource base while trading and remittances constitute non- natural resource base.

The rational for developing the approach was to include the poor and vulnerable in development programs, initiatives and policy making. Such people like women, the poor, rural dwellers are to be considered in development programs and implementation (Chambers, 1987).

Adapting this framework in this study is not out of place. The People in both Atuabo and Sanzule are made up of farmers, fishermen, livestock rearers, petty traders and fishmongers who are vulnerable and poor and therefore fall within the rationale for the development of the approach.

2.8 TRANSFORMING STRUCTURES AND PROCESSES

Structures and institutions play key roles in oil and gas exploration activities. But as to whether the exploration activities will be positive (blessing) or negative (the resource curse) depends on how strong or weak these institutions are.

Institution is defined by Agrawal and Perrin (2009) as humanly created formal and informal mechanisms that shape social and individual expectations, interactions and behaviour”. That is, channels through which rules and regulations of the activities in the oil sector are established. Livelihood activities in oil and gas exploration communities are greatly affected by the existing structures and processes. These structures operate hand in hand with institutions and organisations. These institutions and structures are mostly the formal rules, conventions, and informal codes of behaviour that comprise of constraints on human interaction (North,1990).

Institutions can be formal or informal. Institutions are formal when they are established and means of communication is through official channels; informal institutions on the other hand are socially shared rules, usually unwritten, created, communicated enforced without officially sanctioned channels (North 1990). In practice however, this distinction may not exist. In some
settings or communities, what looks like informal institution may be very effective than a formal institution in setting or community (Hodgson, 2006).

The common argument is that factors such as politics, property arrangements and the quality of bureaucracy are key factors to determine whether or not the outcome of natural resource discovery will be positive or negative for the citizenry. Historical antecedents also have effects on the quality of these institutions. In many developing nations particularly in Africa, institutions established by the colonial masters were twisted towards the exploitation of natural resources in favour of private entities. These institutions have not been modified even after independence, hence their negative effects on poor natural resources performance on developing nations; that is the resource curse (Basedau 2005:12).

2.9 LIVELIHOOD OUTCOME

For the people of Atuabo and Sanzule to be empowered, all these different types of capital must be available to them. Being rural communities their denial to natural capital deprives them of their livelihood. Both human and financial capital if made available to them could enhance their livelihoods, enhance their standards of living which can expand their lives and give them public confidence (Fosu and Mwabu, 2010).

As to whether the oil and gas discovery and its related activities will be a blessing or a curse to the local communities depends on whether or not they are incorporated into the sustainable livelihood framework or the programs introduced address their basic needs which are the five natural capitals already stated above.

Another factor is the kind of interactions that exist between the government and the oil and gas companies, the citizenry of both Atuabo and Sanzule and the measures put in place to relieve
them of hardships. The outcome of these interactions can either be positive or negative. The blessings or positive outcome will lead to poverty reduction, wealth creation, more income, reduced vulnerability, more sustained natural resource base, general wellbeing and capabilities building, Improved health/education and infrastructure development. The reverse which is the curse or negative outcome will result in high poverty, wealth reduction, depletion in natural resource base, poor health and education, infrastructure and poor human development indicators.
CHAPTER THREE

RESEARCH METHODS

3.1 INTRODUCTION

Research is an investigation into a particular topic, social or business phenomena. According to Silverman (2006), research method refers to the “general approach to a research topic”. This means that in every research, some steps are to be followed taking into consideration the appropriate technique for it. Some of these techniques can be administration of questionnaires, observations, interviews and Focus Group Discussions. This chapter presented the research methods used to collect data for the study. These are the approach, the design, population size, sample size, target and study population, data collection instruments, data handling, analysis and interpretation. The researcher aimed at studying the socio-economic impact of oil and gas discovery activities on Atuabo and Sanzule; as such, the “evaluation”, “before” and “after” approaches were used (Engel and Schutt, 2009). This method is used particularly in studies on impact assessment and evaluation of a phenomenon. Again, Babbie (2007) described evaluation research “as a process or purpose of determining the impact of some social intervention or project and whether or not it has produced the intended result.

The mixed method approach and multistage sampling technique supplemented by household questionnaires, indepth interviews and Focus Group Discussions were also used to collect the data for the study. Research design, Population size, target and study population, sampling for both quantitative and qualitative respondents, instruments of data collection, community entry and data handling were discussed in this chapter.
3.2 Approach: Mixed Methods

With the phenomenon under study, the mixed methods approach of combining both qualitative and quantitative methods in a particular study was used as the main research method. The qualitative and quantitative methods were embedded in collecting and analysing the data. Johnson, Onwuegbuzie, and Turner (2007) defined Mixed methods research as the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches for the broad purposes of breadth and depth of understanding and corroboration.

3.3 Research Design

Research design involved specifying a master plan outlining the methods and procedures that are to be used in collecting and analysing the required data (Burns and Bush, 2002). The study used the concurrent triangulation design, one of the options in mixed method study. This method generally uses separate qualitative and quantitative methods as a means to offset the weakness within one method with the strength of the other (or conversely, the strength of one adds to the strength of the other (Creswell, 2009:213). According to Creswell (2009), equal weight is given to the two methods but in practice, priority may be given to one or the other. One of the advantages of triangulation is that it guarantees the strengths, validity and reliability of findings and permits innovations on research design. The purpose for using triangulation was to collect both qualitative and quantitative data simultaneously and emerge the two approaches by comparing the results of the qualitative and the quantitative data and then analyse to determine if they converge or diverge. The data collected were mixed by embedding them together as shown in Figure 3.
The Concurrent Triangulation Design  
Source: Creswell (2009)

The reason for using mixed method is because, it focuses on collecting, analyzing, and mixing both qualitative and quantitative data in a single study or series of studies. Also, the use of qualitative and quantitative approaches in combination provides a better understanding of research problems than either approach alone (Creswell, 2009). In any research such as this, it is advisable to combine both qualitative and quantitative methods because; each provides a different kind of information about the topic.

Qualitative investigation cannot tell us how prevalent a behaviour is, or how generalizable a pattern of behavior is but quantitative enquiry, which usually relies on short answers and questionnaire administered to large sample of respondents does. Therefore, combining the two methods provides better results and understanding of the phenomenon than just relying on one method.

3.4 Population size

Population size according to the PHC (2010) refers to the number of individuals living in a particular location within a stated period of time. Population is also defined by (Welman, Kruger
and Mitchell 2006) as the study of objects, which may be individuals, groups, organisations, human products and events or the conditions to which they are exposed.

The population size of this study refers to the number of people in both Atuabo and Sanzule. According to GSS (2010), the population size for both Atuabo and Sanzule is 2,910 as shown in Table 1. Out of this number, males constitute 1,361 (46.77%) with females constituting 1,549 (53.23%). There are 559 households in the two communities under study.

<table>
<thead>
<tr>
<th>Community</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Households</th>
<th>Houses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atuabo</td>
<td>1,584</td>
<td>729(46.02%)</td>
<td>855(53.98%)</td>
<td>325</td>
<td>243</td>
</tr>
<tr>
<td>Sanzule</td>
<td>1,326</td>
<td>632(47.66%)</td>
<td>694(52.34%)</td>
<td>234</td>
<td>192</td>
</tr>
<tr>
<td>Total</td>
<td>2,910</td>
<td>1,361</td>
<td>1,549</td>
<td>559</td>
<td>435</td>
</tr>
</tbody>
</table>

Source: (GSS, 2010)

3.5 Target population

The target population for this study is the people in Atuabo and Sanzule in the Ellembelle district of the Western Region of Ghana.

3.6 Study Population

The study population also known as accessible population is a narrower form of the target population and refers to the population from which the researcher can apply his conclusions.

3.7 Justification for the age range of the study population

According to this research, the study populations were Ghanaians from the age of 30 to 70 who have stayed in the two study communities (Atuabo and Sanzule) for at least ten years (that is before 2007, the year Ghana’s oil was discovered to the present). That is, people who have stayed in the area from the year 2006 and beyond met the requirements of this study. The basis
for this age range was chosen in cognizance of the researcher’s aim of studying the prevailing conditions before and after the oil and gas exploration activities. A thirty (30) year old person was at least 18 years then, an age recognised in Ghana for someone to vote or to make a decision (Article 42). Again, a 70-year-old person today was also still less than 60 years of which he or she was still in active service (even if that person was working in the formal sector) in his or her occupation and could therefore tell the prevailing condition before and after the oil and gas activities. The researcher was interested in this study population because, it takes someone who has stayed in the study area before the oil and gas activities begun to be able to tell the “Before” and “After” conditions in the area. It was this population therefore that met the requirements of the researcher from whom information were sought from to draw his conclusions.

3.8 SAMPLING FOR QUALITATIVE RESPONDENTS

There are four major types of qualitative sampling which are snowballing, convenience sampling, purposeful sampling and quota sampling (Scheyvens and Storey, 2003) of which a researcher can use to sample his or her respondents depending on what he or she intends to study. Many researchers however opt for purposive sampling to select respondents for their studies because they are of the conviction that such respondents are of relevance to the study and can also provide them with the information needed. This study adopted purposive and snowballing sampling to sample respondents for the qualitative data because the researcher was of the conviction that these respondents were of relevance to the study and could provide him with the information needed (Kitchin and Tate, 2000). These respondents were selected during questionnaire administration. The researcher was directed to other respondents who were of relevance to the study; that is, the snowball sampling where a researcher is led by a respondent to another respondent of relevance to the study.
Qualitative data were collected using Focus Group Discussion, Key informant interview and observations as discussed in the following sections.

3.8.1 Focus Group Discussion

Separate Focus Group Discussions (FGD) for fishermen, fishmongers and farmers from each community were conducted. Focus Group Discussion (a minimum of 4 and a maximum of 6) was organised for these groups because they are the people whose economic activities have been mostly affected by the oil and gas activities. Besides, they are the easily accessible groups in the communities.

In Atuabo, two Focus Group Discussions were organised for fishermen with membership of 6 in each group. Thus, 12 participants were involved in the two Focus Group Discussions for fishermen in Atuabo. Another two Focus Group Discussions were also organised for fishermen in Sanzule. However, unlike Atuabo where each group was made up of 6, in Sanzule; membership was made up of 6 and 5 in the first and second group respectively. The reason for the difference in the composition of membership was because, just few seconds into the discussion, one participant in the second group had an emergency call and was compelled to leave the discussion. Eleven (11) participants were thus, involved in the two Focus Group Discussions for fishermen in Sanzule.

Fishmongers were not left out in the composition of Focus Group Discussions because their economic activities have also equally been affected by the oil and gas discovery and their related activities. Four Focus Group Discussions were organised in the two communities under study with two from each community. Membership was made up of four in each group. Thus, 16 fishmongers were involved in the two Focus Group Discussions in both Atuabo and Sanzule with 8 each from each community.
The final group that was involved in the Focus Group Discussion was farmers in both Atuabo and Sanzule. In all, 6 Focus Group Discussions were organised in the two communities with 3 from each community. Membership was made up of 5 in a group. In all, a total of 30 people were involved in the Focus Group Discussions for farmers in both Atuabo and Sanzule. More Focus Group Discussions were organised for farmers in both communities because farmers constitute the majority of people whose activities have been affected most as a result of the oil and gas discoveries and their related activities.

The reason for using Focus Group Discussion (FGD) was to enable the researcher to organise the discussion with selected group of individuals in order to obtain information about their views on the topic under study. It was also to gather diverse views from respondents about the topic being studied. Also attitudes, feelings, beliefs and experiences of some individual are properly exhibited in a group than on individual basis. With this method, a large amount of information can be gathered within a very short period. Each was conducted separately for males and females to avoid the traditional male dominance over females in matters that affect them. Mixing males and females together in studies like this could prevent females to freely express their opinions on the issues being discussed.

3.8.2 Key informant interview

Key informant interviews also gave the researcher in-depth information about issues of relevance to the study which could not be provided by other respondents. This method was used for community leaders and opinion leaders such as assemblymen, unit committee members, women leaders and traditional rulers who really know the happenings in the study area.
3.8.3 Observations

This researcher used observations as one of the methods to collect the qualitative data. The purpose was to enable the researcher to observe what people actually do or say rather than what they say they do. People are sometimes not willing to write or say what they really think about a phenomenon or present their true opinions to a stranger on a questionnaire. As such, this researcher used observations to access the context and meaning surrounding what people do or say. A non participant observation was specifically used by the researcher as he watched respondents but did not take active part in the community activities. It was observed for instance that one fish monger has been negatively affected by the oil and gas activities but was not willing to let her opinion known because the community regards her as a drunkard. It was also observed that the citizenry did not also stay out long at night due to the high breeds of mosquitoes. This has adversely affected the social capital or network and social interactions of households at night.

3.8.4 Sampling for Farmers

From the field work of the researcher, the number of farmers affected by land loss in Atuabo was about 80. This number is in confirmation with what a senior community liaison officer at Ghana Gas told this researcher in an interview. A total of about 105 hectares of land was affected. According to the affected farmers, all of them have been compensated ranging from an amount of Gh₵30-Gh₵1000. The farmers in this community were grouped according to the compensated amount of Gh₵30-Gh₵130, Gh₵131-Gh₵230, Gh₵231-Gh₵330, Gh₵331-Gh₵430…. Gh₵1000 resulting in 10 groups.

The difference however was in terms of the numbers. While 80 farmers were affected in Atuabo, in Sanzule the number was 65 according to the researcher’s field work and interviews with some
officials of the Gas constructing companies. The compensated amount for the affected farmers and land owners ranged from Gh₵400- Gh₵1500. Farmers in this community were also grouped according to the compensated amount of Gh₵400-Gh₵500, Gh₵501-Gh₵600, Gh₵601-Gh₵700…. Gh₵1401- Gh₵1500 making a total of 16 groups. The groupings of farmers according to the compensated amount were used to organise focus group discussions for farmers in the two communities. Majority of the affected farmers in both Atuabo and Sanzule received a compensated amount between Gh₵30- Gh₵1500. Only few people (about 5) of coconut plantation farmers said they received an amount up to Gh₵10,000.

3.9 INSTRUMENTS OF DATA COLLECTION

Instruments of data collection are fact finding strategies and tools used by researchers to collect data for their study. Some of them are interviews, questionnaire and observation (Annum, 2017). In every research, the researcher adopts a certain approach for the study (Silverman, 2012).

Questionnaire was used to collect the quantitative data. Questionnaires are used to collect key information about the population; besides, it is also used to cover a wide population in a short time (Mugenda and Mugenda, 2005). A survey instruments with both close ended and open ended questionnaire were used in collecting the data. Questionnaires also serve as efficient data collection tool especially when the researcher knows exactly what he or she wants and knows what variables to use (Sekaran, 2003). With this in mind, the researcher carefully prepared questionnaires that answered the research objectives.

Again, multiple response and likert scale questions were also used to collect data for the study. Specifically, the multiple response and likert scale type of questions used for the study were stated as follows:
Using a scale of 1 as the lowest and 5 as the highest, evaluate the following statements by ticking the corresponding choice.

(a) There has been improvement in Educational/School facilities
(b) There has been improvement in water facilities
(c) There has been improvement in Health facilities
(d) There has been improvement in recreational facilities
(e) There has been improvement in Road facilities
(f) There has been improvement in Telephone and internet facilities
(g) There has been installation of fire post facilities
(h) There has been improvement in farming activities
(i) There has been improvement in fishing activities

These questions were used to measure the extent of agreement of the effects of oil and gas on social and economic facilities.

To examine the effect of oil and gas on Atuabo and Sanzule and the livelihoods of its inhabitants, an 8-item Likert scale was used to measure the extent to which the respondents agreed to the following statements:

(a) There has been an improvement in educational infrastructure.
(b) There has been an improvement in waste disposal.
(c) There has been an improvement in road infrastructure.
(d) Many people have been employed by the oil and gas companies.
(e) There has been an improvement in the source of water supply.
(f) Many people have moved into this community.
(g) Fishing activities have improved.
(h) Family life has improved.
The questions were also designed to measure the extent of agreement of the effect of oil and gas on both Atuabo and Sanzule.

3.10 SAMPLING SIZE FOR QUANTITATIVE COMPONENTS OF STUDY

Researchers may have the desire to collect information from as many people as they can but are constrained in many instances by time and resources. As a result, they devise means to select a small group of the population which is representative and is of relevance to the study (Bryman and Cramer, 1995).

Sample size refers to the number of items or respondents to be selected from the population to be studied (Kothari, 2004). These respondents are made up of both males and females but of different socio-economic backgrounds.

The total household of Atuabo and Sanzule according to the GSS, 2010 is 559. This is made up of 325 from Atuabo and 234 from Sanzule as shown in Table 1. In percentage terms, Atuabo constitutes 58.14% of this number (559) with the remaining 41.86% for Sanzule. Household in this study is made up of the head, spouse, children, in-laws, siblings, other relatives and non-relatives.

Using a sampling size formula for a known population by Miller and Brewer, 2003: \( n = \frac{N}{1 + (a^2)} \) N, where \( n \)=sample size, \( N \)=total population and margin of error (0.05).

**Figure 4: Formula for Quantitative sampling**

\[
n = \frac{N}{1 + (a^2)} \] N

\[
n = \frac{559}{1 + (0.05)^2} 559
\]

\[
n = 559/ [1+1.3975]
\]

\[
n = 559/ 2.3975
\]

\[
n = 233.16 \approx 233
\]
Therefore, the total households sampled in both Atuabo and Sanzule is 233. Using Atuabo’s 54.14% of the total sampled Household size (233) is 135.47. That of Sanzule is 41.86% of 233 which is 98. Thus, 135 households were sampled from Atuabo and 98 from Sanzule. That is, proportionate to size formula was used to arrive at the sample size for the two communities.

Three respondents (all from Atuabo) however did not return their questionnaires. It was later discovered that they have moved out of the community. All attempts to reach them proved futile. The researcher therefore had no option than to rely on the 230 respondents.

3.10.1 Multistage cluster sampling

The study adopted the multistage approach by dividing each community into four clusters using demarcated streets. Multistage sampling is a type of research which requires the selection of samples from populations that is not easily to be listed for sampling purposes such as the population of a city, state or nation. In this regard, social scientists resort to special designs taking into consideration the homogeneity of the elements being sampled in order to reduce sampling error (Babbie, 2007).

Stratified sampling was then used to select four streets in each community making a total of eight streets in the two communities under study. The multistage stratified sampling technique was used to enable the researcher to collect data from respondents.

The demarcated boundaries of the four streets in Atuabo had an average household of 83 in each demarcated area making a total of 332 households. That of Sanzule had an average of 60 households resulting in 240 households. Thus, the total households that fell within the eight demarcated streets in both Atuabo and sanzule were 572. The 233 households as already determined above were randomly selected from these 572 households. A respondent each was
purposively selected from each household. This respondent was either the household head or any member of the household who is from 30 to 70 years and is willing to participate in the study.

A household questionnaire survey complemented by face to face interview was used to collect the quantitative data. Households background information such as educational background, age, occupation and religion were asked to obtain information to enable the researcher determine how these are influenced by the oil and gas activities.

3.10.2 Face to face interview

In the course of administering the questionnaire, the researcher used face to face interviews for respondents who could not read nor write and asked the researcher to guide them fill the questionnaire. This ensured the quality of the data obtained through the information acquired during the conversation. Interviews were constructed in the English language and then translated into the Nzema language by the researcher himself for better understanding of the questions by respondents.

3.10.3 Qualitative data handling

Data from qualitative sources were handled through editing, coding and transcribing of information. The data collected were edited and grouped into themes, analysed, interpreted and discussed.

3.10.4 Quantitative data handling

The data collected from quantitative data were edited, coded and entered into the Statistical Package for the Social Sciences (SPSS) with the help of a computer.

With this, statistical tables and cross tabulation were used to analyse the data for interpretation. Again, methods such chi Square and t-test were also employed to draw relationships among
variables to determine whether the means of two groups are statistically different from each other. In other words, it was conducted to show whether or not the difference between two groups reflects the actual (real) difference in the population from which the groups were sampled.

**3.10.5 Ethical Issues**

Social scientists are required to be guided by certain principles in conducting research. Some of these principles are logical reasoning, objectivity and control for bias and error (Singleton, Jr. and Straits, 2010). This consists of standards of rights and wrong and tells how to act in moral and responsible ways.

Ethical clearance was sought from the Ethics Committee of the College of Humanities as shown in appendix 2. This committee is tasked with the responsibility of ensuring that graduate students from the Humanities follow ethical issues to ensure the safety and confidentiality of respondents. The committee also looks at data collection methods and any other issues related to the study. Clearance is given to the researcher (student) upon meeting the requirements and satisfaction of the committee with the issuing of a letter of clearance.

**3.10.6 Informed consent**

One cannot conduct research among any group of people without their consent. This is part of the ethical considerations in social research. In this regard, the researcher sought the consent and permission of respondents before obtaining information from them.

This was done through self-introduction by the researcher, the purpose of the study, what it will be used for and how beneficial it is expected to be to the communities under study. They were
also assured that the information being sought from them will be strictly kept in confidentiality and that their identities were not going to be disclosed anywhere.

### 3.10.7 Handling the difficulty of recall by respondents

To avoid the difficulty of recall by respondents, questions that bordered on income and expenditure prior to the oil and gas discoveries were asked using a range to make it easier for respondents to identify the appropriate range they belonged to. In all these, the researcher availed himself to the time, language and venues that were conducive for the respondents taking into consideration the safety of both the researcher and respondents.

### 3.11 FIELD ENTRY

Data Collected for this study were obtained from two communities, Atuabo and Sanzule. Data was also collected from some oil and gas companies; the Ghana Gas Processing Plants at Atuabo and Orsam Construction Company at Sanzule. Getting entry into these places required that the researcher obtained permission from authorities of these communities and companies.

Before this stage, the researcher first went to the premises of the Atuabo Gas Processing Plant with the intention of informing them about the study and to also seek data collection permission but was redirected to write an official letter to the Head Office in Accra; that is Ghana National Gas Company. This was done and permission was given for data collection at the premises of the Ghana Gas Company at Atuabo with the scanning of the researcher’s student ID card and the signing of a letter of confidentiality prepared by the company as shown in appendix 4.

Another Company that was involved in the study was the ENI Gas Company, the company responsible for the construction of Gas Processing Plant at Sanzule. At ENI, although no official letter was sought from the researcher, he was denied entry on the ground that the company was
still under construction. However, arrangement was made to interview an official of Orsam, a construction company at a location outside the premises of the company.

3.12 COMMUNITY ENTRY (ATUABO AND SANZULE)

In spite of the researcher being an Nzema (the ethnic group of the study area) and can also speak, read and write the Nzema language, I did not know any of the two communities until I embarked on this study. On my first day of going to Atuabo and Sanzule from Accra, a prior arrangement was made with Lawrence Angofi, (a nurse) at Eikwe hospital, the district hospital. Lawrence was my former class mate at the basic educational level. On reaching Eikwe, Lawrence suggested that we both walk to Sanzule (about 5 kilometers) to better expose me to make some observations. I obliged and we walked to Sanzule. On reaching Sanzule, we were met by a young man who introduced himself as Amande. He directed us to the house of the Assemblyman but on reaching his house, we were told he had travelled to another community. His contact was given to us after introducing ourselves and mission to members of his household. The next place of visit from the Assemblyman’s house was the premises of the ENI Gas construction company where contacts of some officials displayed on the entry gate of the company were given to us.

From Sanzule, we went to Atuabo on a motor bike. The motor rider took us directly to the house of the “Safohene” ("Chief warrior"), a title given to a person who led his community during wars in traditional Ghanaian societies. On hearing our mission, he told us tradition demands that we offer two bottles of schnapps and GH₵50 (about US$12.5) in order to have access to the community. After presenting the items, he took us to the chief linguist who gave us the community entry permission on behalf of the paramount chief. A young man by name Kabenla was introduced to me in case I needed a research assistant. For my three weeks stay in the community, I worked with this young hard working man.
I went back to Sanzule days later to meet the Assemblyman who showed interest in the study. Unlike Atuabo where two bottles of schnapps and Gh₵50 (about US$12.5) were required from the researcher, nothing of the sort was done at Sanzule. Permission was given to me by the Assemblyman to collect my data. He was also helpful in conducting interviews with key informants and organising Focus Group Discussions. My stay in the community was made easier by him since he within a short period introduced me to almost all community members. I spent another three weeks in this community and collected data with my field assistant, Amande; the young man who directed me to the Assemblyman’s house on my first visit. In all places, the ethical clearance letter from the Ethics Committee of the University of Ghana was presented to the authorities.

3.12.1 Community life at Atuabo and Sanzule: The researcher’s experience

Staying in a community knowing almost no one there and trying to adjust to the norms, traditions and conditions can be challenging sometimes. While some regarded me as a stranger for not being a native of the community, others regarded me as one of them for my ethnic background of being an Nzema. Georg Simmel’s stranger theory (Wolff, 1950) comes into play here. For Simmel, the stranger is not the one who comes today and goes tomorrow but the one who comes today and stays tomorrow. He opines that the stranger is made up of some components. First, he is a member of the system but not strongly attached to the system, the stranger does not conform completely to the norms of that system and finally, the stranger is an individual who can be a member of that special system but not so much in a social system. Technically, the stranger is a product of the system but does not have the close ties and connections in the social sense. By this theory, an outsider can stay in a community for a period of time and still be regarded as a stranger. At the same time, a community member who has migrated to another community is
regarded by his kinship as being closer to them than an outsider who stays with them. This was my position in Atuabo and Sanzule; although the stranger experience was not so much felt in Sanzule as it was in Atuabo.

I vividly remember at one funeral rite for an elder of the community in Atuabo, looking at the seating arrangements there, I sat in the socially constructed place but not long after sitting down, I was prompted by someone that I was in the wrong seat. “Dwazo kodenla manlema anu, eleka mɔ e de la le mmusua ma eleka” (Go and sit among the non-lineage members, it is only the lineage members who are to sit at where you are sitting). Nzema is a matrilineal ethnic group with seven different clans and so as an ascribed status, every Nzema just like any other Akan by birth belongs to one of them (Nukunya, 2016). Traditionally, I belong to the clan of the deceased whose funeral rite was being performed. While some were of the opinion that since I belong to that clan, I could sit there, others were of different opinion. So I quickly relocated to join “manlema anu” (where the non-lineage members are to sit). Apart from these few misunderstandings, my stay in the community was very cordial and peaceful. I together with some youth members mostly sat under “kpada bo” (under the hut; a community center) to interact in the evenings.

At Sanzule, the Assembly man made my strangeness to disappear within few days of my stay in the community. One woman who regarded me as her father also made me to be easily recognised by the community. “Meze” (My father) as she affectionately called me was an indication of her complete recognition of me as one of them. The reason for calling me ‘Meze’ was because I belong to the “Ezohile” clan, her father’s lineage. By extension, all males regardless of their ages who belong to this clan are traditionally her fathers. In the Nzema tradition, a seventy (70)
year old person can call a one-year-old boy his or her father provided the boy belongs to the 70-year-old person’s father’s lineage.
CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 INTRODUCTION

In chapter three, the various methods used to collect data for the study were discussed. The mixed method approach and multistage sampling technique supplemented by household questionnaires, indepth interviews and Focus Group Discussions were also used to collect the data for the study. Research design, Population size, target and study population, sampling for both quantitative and qualitative respondents, instruments of data collection, community entry and data handling were discussed.

This chapter [Chapter Four] dealt with the analysis of the data collected and presentation. It began with the profile of both qualitative and quantitative respondents.

The chapter specifically discussed the prevailing conditions in both Atuabo and Sanzule prior to the discovery of the oil and gas exploration activities. The conditions discussed were the socio-economic conditions that existed in the two communities prior to the oil and gas discovery as revealed by respondents. This was in line with the researcher’s aim of studying the socio-economic impact of oil and gas discovery in Atuabo and Sanzule. A better way of doing this was to use the “Before” and “After” approaches to data collection by comparing the conditions before Oil and Gas (OG) discoveries in these communities with their current conditions. In processing the data, recorded interviews were transcribed verbatim with detailed thematic analysis, taking into consideration various narrative categories.
4.2 Profile of key informant interviewees

This section takes a look at the profile of qualitative respondents as sampled by the researcher and interviewed for the qualitative data. These respondents were selected due to their relevance to the study. As pointed out by (Kitchin and Tate, 2000), researchers select respondents who they believe can give them the required information.

From Table 2, males constitute 6 (60%) of the qualitative respondents with females constituting the remaining 40%. On educational attainment, 3 (30%) of respondents respectively have tertiary and primary educational backgrounds, 1 (10%) respectively Secondary and No formal education with 2 (20%) having junior secondary educational backgrounds. Respondents have an average age of 44.1; farming, fishing, nursing, teaching and trading were the occupation of respondents.

Names used for the qualitative respondents are pseudonyms. They are not the real names of respondents. This forms part of ethical considerations in research to keep respondent’s identity in secret (confidentiality).

Table 2: Profile of Qualitative Respondents

<table>
<thead>
<tr>
<th>Name</th>
<th>C’ty</th>
<th>Sex</th>
<th>Age</th>
<th>Education</th>
<th>Occupation/Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egya Ackah</td>
<td>Atuabo</td>
<td>Male</td>
<td>51</td>
<td>Primary</td>
<td>Fishing/traditional leader</td>
</tr>
<tr>
<td>Anyima</td>
<td>Sanzule</td>
<td>Male</td>
<td>53</td>
<td>No education</td>
<td>Unit committee member</td>
</tr>
<tr>
<td>Kabenla</td>
<td>Atuabo</td>
<td>Male</td>
<td>50</td>
<td>JSS/JHS/MSLC</td>
<td>Farming/community leader</td>
</tr>
<tr>
<td>Nyameke</td>
<td>Sanzule</td>
<td>Male</td>
<td>42</td>
<td>Tertiary</td>
<td>Teaching/opinion leader</td>
</tr>
<tr>
<td>Erzoah</td>
<td>Atuabo</td>
<td>Male</td>
<td>40</td>
<td>Secondary</td>
<td>Opinion leader</td>
</tr>
<tr>
<td>Nyanzu</td>
<td>Sanzule</td>
<td>Male</td>
<td>37</td>
<td>Tertiary</td>
<td>Nursing/community leader</td>
</tr>
<tr>
<td>Akuba</td>
<td>Atuabo</td>
<td>Female</td>
<td>35</td>
<td>Tertiary</td>
<td>Teaching/opinion leader</td>
</tr>
<tr>
<td>Yaba</td>
<td>Sanzule</td>
<td>Female</td>
<td>46</td>
<td>Primary</td>
<td>Fish monger/women leader</td>
</tr>
<tr>
<td>Awube</td>
<td>Atuabo</td>
<td>Female</td>
<td>39</td>
<td>JHS/JHS/MSLC</td>
<td>Trading/youth leader</td>
</tr>
<tr>
<td>Abenlema</td>
<td>Sanzule</td>
<td>Female</td>
<td>48</td>
<td>Primary</td>
<td>Farming/women leader</td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018

4.3 Household Population of respondents

Data gathered from field work indicated that there were 4.94 individuals in a household resulting in 1,136 individuals in the 230 households sampled. The minimum people in a household were 3
and the maximum was 7 with a standard deviation of 0.862 as shown in Table 3. This (4.96) is an increase of the (GSS, 2010) figure of 4.6 persons per household. This increase may be attributed to the influx of people as a result of the oil and gas activities. The long time space between the last population census and now may also be another reason for the increase. There were however some slide differences in the average household’s population in the two communities. In Atuabo, the average household population was 5.02 individuals while it was 4.85 in Sanzule. The reason for the difference may be due to the fact that besides Atuabo being the host to the Nzema East traditional council, gas extraction activities has already commenced and this might have attracted people into the community than Sanzule where the project is still under construction. It is also in support of (GSS, 2010) report that there are more households in Atuabo than in Sanzule as shown in Table 1. Household heads form 136 (59.0%) of respondents with other relations constituting the remaining 94 (41.0%). The breakdowns of the remaining relations 94 (41.0%) are as follows: spouse of household heads (51.6%), child (11.5%), uncle/aunt (6.9%), siblings (10.4%), grandparents (2.7%), in laws (1.3%) and parents (15.6%).

Table 3: Household Population

<table>
<thead>
<tr>
<th>Number of people per Household</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>230</td>
<td>3</td>
<td>7</td>
<td>4.94</td>
<td>.862</td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018

4.4 Demographic characteristics of survey respondents

Data gathered from the field also showed that more males (56.5%) participated in the study than females (43.5%) as shown in Table 4. This shows an opposite representation of the (GSS, 2010) sex figure of 47% and 53% respectively for male and female. This is so because as
characteristics of rural communities in Ghana, males are given more chance to express their opinions on matters that affect them than females (Nukunya, 2016). Another reason for the more males participation than females is because there are more male household heads than females (GSS, 2010). More females were unwilling to participate in the study because they were of the opinion that they are depended on men so whatever affected men equally affected them also. Response like ask the men (our husbands), they can talk better on the issue than us was common among many of the sampled females. These among other reasons accounted for the low female participation in the study than males contrally to the (GSS, 2010) report of more females in the study area than males.

Age was fairly distributed among respondents; 34.4% of respondents fell within the age bracket of 30 to 37, 33.9% within the bracket of 38 to 48 and 31.7% were from 49 to 70 years. The reason for selecting the age range of 30 to 70 years is already explained in chapter three. On formal education, the study showed that majority 151 (65.7%) of the respondents had basic education comprising of primary and junior secondary education while 49 (21.3%) had no formal education. The remaining 30 (13%) had 21 (9.1%) and 9 (3.9%) respectively for secondary and tertiary education.

The study was conducted in predominantly farming and fishing communities and this has reflected in the occupational characteristics of respondents. As shown in the Table 4, majority 168 (73.0%) of respondents are into farming and fishing activities, few others are engaged in other economic activities distributed as follows: Trading 23 (10.0%), Teaching 5 (2.2%), Nursing 4 (1.8%), Artisan 5 (2.2%), Driving 9 (3.9%), Students 6 (2.6%). 10 (4.3%) of the respondents said they were unemployed. Religiously, majority 216 (93.9) percent of the
respondents profess the Christian faith; 8 (3.5%) are traditionalists and 6 (2.6%) profess the Islamic faith as shown in Table 4.

On marital status, [Table 4] 166 (72.8%) of respondents are married couples, followed by 21 (9.2%) being single, 19 (8.3%) divorced, 13 (5.8%) widowed and 9 (3.9%) in cohabitation.
Table 4: Profile of quantitative respondents

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>FREQUENCY (F)</th>
<th>PERCENTAGE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SEX</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>130</td>
<td>56.5</td>
</tr>
<tr>
<td>Female</td>
<td>100</td>
<td>43.5</td>
</tr>
<tr>
<td>Total</td>
<td>230</td>
<td>100</td>
</tr>
<tr>
<td><strong>AGE RANGE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-37</td>
<td>79</td>
<td>34.4</td>
</tr>
<tr>
<td>38-48</td>
<td>78</td>
<td>33.9</td>
</tr>
<tr>
<td>Above 47</td>
<td>73</td>
<td>31.7</td>
</tr>
<tr>
<td>Total</td>
<td>230</td>
<td>100</td>
</tr>
<tr>
<td><strong>EDUCATIONAL LEVEL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Formal Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>49</td>
<td>21.3</td>
</tr>
<tr>
<td>JSS/JHS/MSLC</td>
<td>82</td>
<td>35.7</td>
</tr>
<tr>
<td>SSS/SHS/O/A Level</td>
<td>69</td>
<td>30.0</td>
</tr>
<tr>
<td>Tertiary</td>
<td>21</td>
<td>9.1</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>3.9</td>
</tr>
<tr>
<td>Total</td>
<td>230</td>
<td>100</td>
</tr>
<tr>
<td><strong>OCCUPATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farming</td>
<td>88</td>
<td>40.7</td>
</tr>
<tr>
<td>Fishing</td>
<td>61</td>
<td>28.2</td>
</tr>
<tr>
<td>Fish mongering</td>
<td>19</td>
<td>8.8</td>
</tr>
<tr>
<td>Others</td>
<td>48</td>
<td>22.3</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>100</td>
</tr>
<tr>
<td><strong>MARITAL STATUS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>166</td>
<td>72.8</td>
</tr>
<tr>
<td>Single</td>
<td>21</td>
<td>9.2</td>
</tr>
<tr>
<td>Divorced</td>
<td>19</td>
<td>8.3</td>
</tr>
<tr>
<td>Widowed</td>
<td>13</td>
<td>5.7</td>
</tr>
<tr>
<td>Cohabitation</td>
<td>9</td>
<td>3.9</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td>100</td>
</tr>
<tr>
<td><strong>RELIGIOUS AFFILIATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christianity</td>
<td>216</td>
<td>93.9</td>
</tr>
<tr>
<td>Islam</td>
<td>6</td>
<td>2.6</td>
</tr>
<tr>
<td>Traditional</td>
<td>8</td>
<td>3.5</td>
</tr>
<tr>
<td>Total</td>
<td>230</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018
4.5 PREVAILING CONDITIONS IN ATUABO AND SANZULE PRIOR TO OIL AND GAS DISCOVERY

One of the objectives of this study was to examine the changes that have taken place in both Atuabo and Sanzule after Oil and Gas discovery. This objective can be achieved by first knowing the prevailing conditions in the two communities before the oil and gas finds. Field work revealed that economic activities like farming and fishing were the major activities in the study area while facilities such as schools, pipe borne water, health facilities, roads, and a police station were already in existence prior to the discoveries of oil and gas. Almost a fifth of respondents (18%) however had a different opinion on the existence of facilities like road network, telephone and health center. To know the extent to which these facilities existed or to which respondents agreed or disagreed to their existence, multiple response questions were used to measure this extent. Respondents were allowed to choose as many options as possible to indicate their agreement or disagreement to the existence of these facilities before Oil and Gas discoveries. In all, there were 1548 multiple responses from respondents.

Out of these responses, majority (73.2%) of the respondents agreed with the existence of economic activities like farming and fishing and social facilities such as schools, electricity, and pipe borne water (water and sanitation). However, all respondents who selected police station were from Atuabo other than Sanzule. Social facility is defined by (Deepika, 2002) to include assets that accommodate social services. He identified educational and medical facilities, road and transport systems, housing, water and sanitation, communication facilities and economic activities as some examples of social infrastructure.

These services according to Klinenberg (2012) encourage people to form connections in their neighborhoods and communities. Friendly small businesses, gathering places, community events,
both organised and informal activities are components of social infrastructure. (Obeng-Odoom, 2012), reports that the Sekondi-Takoradi metropolis has seen massive social infrastructure as a result of the oil discovery in that region with both old and new buildings coexisting together. The infrastructure as identified by Obeng-Odoom includes construction of roads and the rising of modern high buildings which has given the twin city a facelift. The erstwhile Sekondi-Takoradi metropolis can now be described as a modern city, credit to the oil discovery in Ghana Obeng-Odoom (2012, 2014).

4. 6 Occupation in Atuabo and Sanzule before oil and gas discoveries

As already discussed in the previous chapter, Atuabo and Sanzule are rural communities with predominantly farming and fishing as their major economic activities (77.7%) with few other people (22.3%) engaging in petty trading and other economic activities such as artisan, teaching, driving and nursing. Land is an important asset in these communities through which the livelihoods of many households are earned. In the Nzema tradition, all lands first belong to the chiefs who are the custodians of lands in their respective traditional areas. In the case of Atuabo and Sanzule, the land respectively belongs to the paramount chief (Omanhene) and the chief of Sanzule even though some families also own their own lands which are used mostly for farming activities.

Most of the farming activities were done on subsistence level with crops such as coconut and palm oil plantation, garden eggs, pepper, cocoyam, maize and cassava planted on a small scale level. The cultivation of these crops was not by choice but by the land tenure system. As a matrilineal community, inheritance to land, farm or any other asset was by an individual’s mother’s lineage. Crops such as coconut and palm nut which have long life span were allowed to be planted by only members who belonged to the lineage. Men were discouraged from giving
their farm lands to their wives to grow any of such crops which have a long life span because doing so means transferring such lands to non-lineage members. This is more so because as Nzemas or any other Akan ethnic group, marriage among people from the same matrilineal lineage is prohibited by tradition (Nukunya, 2016). Short life span crops like cassava, pepper, cocoyam, pineapple and maize could however be grown by non-lineage members with the consent of a lineage member/members or the head of the clan. Another form of farming was the extraction of oil from copra but this has declined recently due to the outbreak of Cape Saint Paul Wilt disease coupled with the taking over the coconut business by Nigerians who buy the copra and transport them to Nigeria. Some few others used to engage in livestock farming such as pig rearing. Other people especially women also engaged in petty trading like selling on table tops and in kiosks. The activities of household constitute the total activities defining the ability of the household to secure a particular livelihood. A household is made up of 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 mixture of productive and reproductive activities; income, labour and asset pooling (Rakodi, 2002).

Fishing was also a major occupation and was done mostly with unmotorised canoes. There were however few outboard motors from other communities during the peak season from August to November. Fishing was also done in surrounding lakes and water bodies as well but on small scale level. The fishing business was said to be very high and lucrative with an average catch of about 50-90 head pans per each fishing trip which fetched them a substantial amount of money. Some species of fishes respondents mentioned they used to harvest were *Nrele, Atianu awole, Akakpunli, Manye, Abonyi and Ngelafona*. Using qualitative data to support the quantitative data
that there was high fish harvest prior to the Oil and Gas discovery in the two communities, this was how Egya Ackah described the situation in Atuabo.

The fishing business was very lucrative and attractive. It was what we depended on for our livelihoods; we paid our children school fees with it, built our houses, paid our hospital bills, organised funerals and even still make some savings. We had high fish harvest to the extent that people from other communities came to buy from us. Our wives also had money from fish sales thereby shouldering some of our financial responsibilities. One was proud going fishing because he was sure of a good harvest.

At Sanzule, Nyameke’s description again supported the quantitative data that there was high fish harvest prior to the oil and gas discoveries:

Our forefathers did fishing because it was good. They used it to do everything they needed to do in their lives. They are gone and we have also inherited it. Even when we inherited the fishing business, it was good until Ghana discovered oil and we are now faced with low fish harvest. In addition to this, we are told not to do fishing in certain parts of the sea.

A confirmation of this is Panford (2017) assertion that there has been a heavy reduction in fish harvest in some fishing communities in the Sekondi-Takoradi Metropolis of the Western region of Ghana since the nation’s discovery of oil in commercial quantity in 2010. Again, (Bloomfield, 2008) on the curse of the black gold in Nigeria’s delta region, argued that oil spill in the region led to land and river pollution thereby making farming and fishing activities impossible and unattractive and making live unbearable for communities closer to the drilling sites.

Ghana’s oil discovery can therefore be said to have negatively affected the financial capital of the people of both Atuabo and Sanzule. Their financial resources which are mainly obtained from fishing and farming activities and thus give access to different livelihoods opportunities is no longer available to them. The ability to generate Financial Capital is also dependent on wages or proceeds of work and a household’s ability to develop a livelihood strategy. As rural
communities, income is usually earned by subsistence way of life. Anything that affects their financial capital poses socio-economic challenge for them.

4.7 Water and sanitation in Atuabo and Sanzule prior to the discovery of oil and gas

As shown in the Table 5; 228 (14.7%) of respondents who participated in the study agreed to the existence of pipe bore water in the study area. The details of the existence of this facility is explained as follows: There used to be three wells in Sanzule and one hand pumped borehole facility in Atuabo which served as the sources of water for the two communities. Atuabo had one KVIP toilet facility provided by contributions from community members. Respondents revealed that although the water was salty, they had no other option than to use it. Besides, they easily get dry up during the dry season from November to March. Sanzule did not have any proper toilet facility prior to the oil discovery. Many people resorted to open defecation at the sea shore; others dug holes in the sand to attend to nature’s call. An opinion leader in Sanzule told this researcher “some people go to the beach to do it there”. Only a handful of homes had their own private toilet facilities. According to respondents, the reason for their inability to have a community toilet facility is because dug holes are easily flooded with water. This makes it difficult to dig further deep. “Shallow holes have the potential of splashing water from the toilet on people anytime they drop it in” one respondent told this researcher. The situation was not different from Atuabo even though it had a toilet facility. Nyameke, a teacher and an opinion leader told this researcher in an interview that the source of water for household chores was mostly from pipe bore water. The communities also had their own system of waste management. …We depended on water from bore holes, wells and hand pump pipes for our daily chores. Rubbish gathered from homes was thrown away at a convenient place demarcated by the community.
The communities also had no proper refuse dump prior to the oil and gas discoveries. Refuse collected from households or the communities were dumped at a demarcated area outskirt of the communities. This is periodically burnt to reduce the volume of waste and to also control the outbreak of diseases. There were no proper drainage systems in the two communities according to data gathered from the field. As reported by the (GSS, 2010), many rural communities in Ghana lack proper toilet and sanitary facilities. This report supports data this researcher gathered from the field that both Atuabo and Sanzule lacked proper sanitary facilities. Physical capital (Chambers and Conway 1992) under which issues about rural sanitation are discussed is of relevance to this part of the analysis. As rural communities, that lack proper health facilities and issues of sanitation are of importance to their well being and social lives. The two communities lacked most physical capital prior to the discovery and they continue to still lack them even after the discovery of oil and gas. Road network is the only physical capital that has improved following the discovery of oil and gas.

4.8 Prevailing Health situation in Atuabo and Sanzule before oil and gas discoveries

Both communities had no health facilities prior to the discoveries of oil and gas. Some residence of Atuabo resorted to health facilities at Ekabaku in the Jomoro district, about two kilometers away from Atuabo for their health needs. Residence in Atuabo and Sanzule communities had to travel about 5 and 6 kilometers respectively to the Saint Martin the Porres Catholic hospital at Eikwe which also doubles as the district hospital for their health needs. Anyima told this researcher that some people resorted to other forms of healing such as the use of local herbs or spiritualists to handle their health needs. There were only few cases of malaria according to respondents. Linking the quantitative data in Table 5 to the qualitative data, Anyima narrated the prevailing health facility prior to the oil find in the following way:
We didn’t have any health facility here. People mostly sought health care from Ekabaku, Eikwe hospital or any other place they believed they can get their healing from. The situation was worst for pregnant women who were in labour.

The reason for the low recognition of health facility was because there is no health facility in Atuabo and even in Sanzule where there was a CHPS Compound; it has not been operationalised. This necessitated the disagreement to the existence of such a facility. Uncompleted projects are better not started because, it is recognised as non-existent no matter the amount of capital invested into it or the efforts made to get to whichever stage it has gotten to. This was how Yaba described the nonexistence of a health facility prior to the oil and gas finds.

What is the use of a facility when it is not functioning? They shouldn’t have wasted money to put it up here…we were expecting this facility to be in operation to at least save us from going to the Eikwe hospital even on little, little sicknesses. I get annoyed anytime I see it. It is like you are hungry and your mother has showed you food but denies you the food.

Project abandonment is usually caused by factors such as corruption, mismanagement of funds, create, loot and share, impatience on the part of sponsors on how to raise the needed funds for the project, change of government and lack of political will in existing projects started by previous governments among other factors. The case of Sanzule is not different from other parts of the world. Many projects have been abandoned causing financial loss to states. As noted by (Ubani and Ononuju, 2013) in Nigeria, induced corruption, undefined and non-compliance to the agreed mode of financing and payment of completed work are the causes of projects abandonment and failure.

4.9 Road and Transportation in Atuabo and Sanzule before oil and gas discoveries

Referring to Table 5, although respondents 170 (10.9%) agreed generally to the existence of road network prior to the discovery of oil and gas, some others were however of different opinions.
For those who disagreed to the existence of road prior to the oil find, the reason for the disagreement stems from the fact the road was almost unmotorable as a result of large potholes and gullies on it. Vehicles for transportation were also very scarce. This according to respondents was due to the poor road network which discouraged drivers from commuting the communities. People who were in need of vehicles had to call taxi drivers on special arrangements. Few others resorted to the use of motor bikes. Many others walked to and fro to other communities to transact or perform various business activities or social roles. The people of the Hoima municipality of Uganda (Musiga, 2016) just like those of Atuabo and Sanzule did not also have a proper means of transportation prior to the discovery of oil in the municipality. However, unlike this study where there were some levels of disagreement regarding the existence of road infrastructure among respondents due to its poor nature, those in Hoima generally agreed to the existence of road prior to oil exploration although it was also in a deplorable state.

Respondents in this study explained that the situation was even worst during the raining season as cars easily got stucked in the mud and sometimes passengers had to alight from the car to look for pieces of objects from the surroundings to fill potholes and muddy areas then push the car to continue with the journey. For such respondents, it was better to say there was no road network because its existence meant nothing to them. This was how Egya Ackah recounted his nightmare one raining season.

It was one evening and had to attend an important social function in another community. After waiting for hours for a taxi, one finally arrived though it was full, I managed to get on board because we were used to squeezing ourselves in taxis. We sometimes packed ourselves in the booths of cars because it was difficult to get one. Not long after starting the journey, our car got stucked in a mud in the middle of the journey. We had to look around for anything from coconut pots to sand to fill the pot holes and the mud. Can you imagine the danger associated with looking for these objects in the night in a bush? We spent close to
two hours before we could move the car from the mud to continue with the journey. Everybody was soaked with mud. It was a terrible experience.

The (GSS, 2010) report revealed that the Ellembelle district, where this study was carried out is faced with several infrastructural challenges with road networks being no exception.

Physical capital which is the basic infrastructure such as transport, shelter, water, energy and communications and the assets like, farming equipment was mostly lacking in these communities.

4.10 The state of education in Atuabo and Sanzule before oil and gas discovery

Atuabo had one basic school; the Atuabo Methodist Primary and Junior High School. Sanzule however had one kindergarten, primary and Junior High School prior to the oil and gas activities. The schools were built with either cement blocks or raffia sticks and roofed with iron sheets. Students who qualified to the Senior High School had to travel outside the communities, the Ellembelle district or even the Western Region to other regions for their secondary education. The schools also lacked teachers and learning materials like books and libraries. Students were also said to have not taken their studies seriously and this affected their performance in the Basic Education Certificate Examination (BECE). Illiteracy level was also very high in the two communities prior to the oil and gas activities. Inferring from the survey data in Table 4; 151 (65.7%) out of the 230 respondents had a primary and basic education with 49 (21.3%) having no form of formal education. As one teacher, Akuba narrated

Educational level in communities around has been generally low since time immemorial. We also lacked almost every learning material in these communities even before the emergence of the oil and gas and the situation has still not changed. When the roof of the school building got deteriorated, we requested the Oil and Gas companies to come to our aid but they didn’t. The District Assembly too didn’t come to our aid but instead threatened to take the school out of this community [Atuabo] because our students perform poorly in their final examination coupled with low attendance. To save the situation, the chief asked
the community to contribute, so it was our own contributions that renovated this school building.

Human capital which refers to the skills, educational qualification and knowledge, ability to work and good health of an individual or a group is deemed necessary to be used to pursue different livelihood strategies. Households with high quality human capital can use it to improve the economic situation of the household. Ironically, the lack of such human capital such as educational qualification and technical knowhow for the people of both Atuabo and Sanzule also affects their inability to secure sustainable livelihood for members particularly with oil and gas companies (Ellis, 1999).

4.11 Telecommunication in Atuabo and Sanzule before oil and gas discovery

A handful of respondents 16 (1.0%) from Table 5 said they could receive telephone network on their mobile phones prior to the Oil and Gas finds. There was no any fixed land line from Ghana Telecom prior to the discovery of oil and gas. These respondents said they could once in a while receive telephone networks on their mobile phones either from neighbouring Cote d’Ivoire or from some Ghanaian telecommunication networks. Post office and fire service were not also in existence in the two communities prior to the discovery of oil and gas in the study area. This is in confirmation of the Ghana Population and Housing Census (2010) report that communication network in the Ellembelle district is generally low. Only few communities have access to proper communication network.

4.12 Police station, Internet, Post office and fire post

Atuabo had a police station prior to the discovery of oil and gas but such a facility did not exist in Sanzule. Respondents (8.8%) who selected police station as an existing facility prior to the oil and gas finds were from Atuabo other than Sanzule. Respondents from both communities generally agreed to the nonexistence of an internet service, post office or fire post prior to the
discovery of oil and gas activities as can be seen from Table 6. Social capital (Scoones, 1998) is applicable to these facilities. For instance, police station rendered social services for the citizenry to settle their social conflicts and enabled them to live secured lives. Although the existence of such facilities could be easily known by using interviews, this researcher used questionnaire in order to draw relationship between their existence and demographic characteristics and what these facilities meant to them.

Table 5: Prevailing activities and facilities before oil and gas discovery

<table>
<thead>
<tr>
<th>Activity/Facility</th>
<th>No. of Respondents</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farming</td>
<td>230</td>
<td>14.9</td>
</tr>
<tr>
<td>Fishing</td>
<td>230</td>
<td>14.9</td>
</tr>
<tr>
<td>Water and Sanitation</td>
<td>228</td>
<td>14.7</td>
</tr>
<tr>
<td>Health</td>
<td>95</td>
<td>6.1</td>
</tr>
<tr>
<td>Road/Transportation</td>
<td>170</td>
<td>10.9</td>
</tr>
<tr>
<td>School/education</td>
<td>230</td>
<td>14.9</td>
</tr>
<tr>
<td>Electricity</td>
<td>213</td>
<td>13.8</td>
</tr>
<tr>
<td>Telephone</td>
<td>16</td>
<td>1.0</td>
</tr>
<tr>
<td>Internet</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Police Station</td>
<td>136</td>
<td>8.8</td>
</tr>
<tr>
<td>Post Office</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Fire post</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1548</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018

Service deliveries which form part of social capital (Scoones, 1988) are useful for social interaction especially for the rural poor. Households in both Atuabo and Sanzule lacked these services prior to the discovery of oil and gas and their related activities a situation which posed a challenge in emergency situations such as calling a Taxi driver to commune a patient to the hospital. The provision of food, water, shelter and other essential needs, most often in emergency situations are necessary for the rural poor as identified by (Carney, 1999). Physical capital, one of the types of capital in the sustainable livelihood framework adopted for this study is of
relevance to analysing and discussing the field work on social facilities for this study. The physical capital being considered here are infrastructure made up of roads, vehicles, transport, shelter and buildings, water and sanitation, energy, communication and technology. Some of these facilities as listed by respondents were already in existence prior to the discovery of oil and gas in both Atuabo and Sanzule out of which households made a living or depended on them for their social lives (Carney, 1999).

4.13 Households’ weekly income prior to the discovery of oil and gas

Income of households is one of the indicators used by the World Bank and the GSS to measure the wealth and wellbeing of households (World Bank Report 2016; GSS, 2010). To study the impact of the oil and gas discovery on the people of Atuabo and Sanzule, it was necessary to first analyse the income of households prior to the Oil and Gas finds. Again, a study conducted by (Ipingbemi, 2009) in Nigeria showed that income level of some communities was better until their relocation following oil spillage which brought socio-economic hardship on the people.

Table 6 shows that on weekly basis, a higher number (57.3%) of the households earned between Gh₵100-Gh₵500 prior to the discovery of oil and gas. Another (25.8%) said they earned less than Gh₵100 a week prior to the oil and gas finds. (8.1%) fell between weekly income of Gh₵501-900 with the (4.0%) and (4.8%) respectively receiving above Gh₵1300 per week. Those in the higher weekly income were mostly fishermen during the days when fishing fetched them higher income. Their access to financial capital was mostly through fishing and farming activities which sustained their livelihoods and enabled them to perform various financial transactions. They no longer have access to these financial capitals as a result of the discovery of oil and gas in Ghana making lives unberarable for them.
As Tsiboe-Darko (2014) pointed out, the fishing industry fetched more income for people in some communities in the Ahanta West district of the Western region of Ghana prior to the oil discovery but has declined drastically now. Households in both Atuabo and Sanzule also had better financial capital prior to the discovery of oil and gas.

Table 6: Weekly Income of respondents before oil and gas

<table>
<thead>
<tr>
<th>Income (Gh₵)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 100</td>
<td>32</td>
<td>25.8</td>
</tr>
<tr>
<td>101-500</td>
<td>71</td>
<td>57.3</td>
</tr>
<tr>
<td>501-900</td>
<td>10</td>
<td>8.1</td>
</tr>
<tr>
<td>901-1300</td>
<td>5</td>
<td>4.0</td>
</tr>
<tr>
<td>Above 1300</td>
<td>6</td>
<td>4.8</td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Researcher’s field work, 2018

**4.14 Household weekly income, sex and occupation**

Income levels of respondents varied among the occupation and sex of respondents. Majority (77.3%) of the 119 respondents said they earned their income from farming and fishing activities.

The results also showed that more males (67.2%) earned higher income than females (32.8%). This is because as rural communities, access to assets distribution is by male preference (Brown, 1986). Again, the fishing industry which fetched more income was also dominated by men thereby making males to generate more income than females.

More income came from these (fishing and farming) sectors than the other sectors. This result is in confirmation of a study conducted by Tsiboe-Darko (2014) that in the Sekondi-Takoradi and the Ahanta west metropolitan assemblies, households in the fishing industry were found to be among the highest income earners in coastal communities. As shown in the survey data in Table
6, this researcher used Egya Ackah’s words in an interview to back the quantitative results that fishing activities attracted a high income before the discovery of oil and gas.

**Egya Ackah:** *Doing fishing then was a good business and we enjoyed doing it. There was high fish harvest which fetched us high income.*

Occupationally, those in the highest income were found to be in the fishing industry. As fishing and farming communities, majority of respondents earned their livelihoods from fishing and farming as shown in Table 7. As noted by Agbogidi, Okonta and Dotor (2008) farming and fishing used to be the traditional occupation for the people of Edjaba and Kokori in Nigeria out of which the majority earned their livelihoods.

**Table 7: Cross tabulation of household weekly income, occupation and sex**

<table>
<thead>
<tr>
<th>Income GHC</th>
<th>Farming F (%)</th>
<th>Fishing Activities F (%)</th>
<th>Govt. Workers F (%)</th>
<th>Self Employed F (%)</th>
<th>Male F (%)</th>
<th>Female F (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 100</td>
<td>13(30.9)</td>
<td>14(28.0)</td>
<td>0(0)</td>
<td>2(10.5)</td>
<td>23(79.3)</td>
<td>6(20.7)</td>
</tr>
<tr>
<td>100-500</td>
<td>21(50.0)</td>
<td>26(52.0)</td>
<td>6(75.0)</td>
<td>14(73.7)</td>
<td>43(64.2)</td>
<td>24(35.8)</td>
</tr>
<tr>
<td>501-900</td>
<td>5(11.9)</td>
<td>4(8.0)</td>
<td>2(25)</td>
<td>1(5.3)</td>
<td>6(50.0)</td>
<td>6(50.0)</td>
</tr>
<tr>
<td>901-1300</td>
<td>2(4.8)</td>
<td>1(2.0)</td>
<td>0(0)</td>
<td>2(10.5)</td>
<td>3(60.0)</td>
<td>2(40.0)</td>
</tr>
<tr>
<td>Above 1300</td>
<td>1(2.4)</td>
<td>5(5.0)</td>
<td>0(0)</td>
<td>0(0.00)</td>
<td>5(83.3)</td>
<td>1(16.7)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>42 (100)</strong></td>
<td><strong>50 (100)</strong></td>
<td><strong>8(100)</strong></td>
<td><strong>19(100)</strong></td>
<td><strong>80(100)</strong></td>
<td><strong>39(100)</strong></td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018

**Anyima:** We are farmers and fishermen, our money came from these activities; we depended on them for everything and everyone knows about this. Doing the fishing business was good some years back but now hmmm, we don’t know whether what we are doing is fishing or not.

In an interview with Egya Ackah, who said he has been in the fishing industry for over three decades described the state of the fishing industry prior to the oil and gas activities in the following way:
Long time ago when I started doing the fishing business with my father and brothers, we had so much catch to the extent that small- small fishes like “manye” and “nzaama” were left on the shore for whoever wanted them. Children came for them to learn how to prepare soup. Our women sent some of them to other communities like Elubo, Half Assini and Aiyinase to sell them. The remaining was mostly left there because they were sure of another good catch the next day. We raised a lot of money from fishing but now hmmm, we get nothing to catch.

The expression of Egya Ackah again supports the survey data in Table 7 that Atuabo and Sanzule just like any other coastal community have fishing as one of their major sources of employment through which households earn a living. A confirmation of this is reported by (Panford, 2017 and Obeng-Odoom, 2014) that fishing remains an occupation through which most coastal communities in the Western Region earn their income and livelihoods. As rural communities that depend on natural resources for their livelihoods, destruction of their fishing and farming activities is a destruction of both their natural and financial capital. The land is used for farming and the sea for fishing. It is through these resources that households in Atuabo and Sanzule make a living.

Assets of households are also used by both governments and institutions the world over to determine the wealth of households. Some of these assets as indicated by Po, Finley, Brewster and Canning (2012) include television, refrigerator, automobile, phone and watch, land and fishing related activities or other economic activities through which households earn a living. For Filmer & Pritchett (2001), household’s income, expenditure and assets are interconnected. As noted by Booysen, Vander Berg, Burger et al (2008) plot of land, farms and animals like sheep and goats all constitute household’s assets. Assets like land, farms and animals constitute their natural capital through which livelihoods are earned by many households to earn a living.
4.15 Household assets and income generation

To determine assets owned by households before the oil and gas find, respondents were given a multiple response questionnaire from which they were allowed to choose the options that applied to them. In all, 423 options were selected by respondents. As indicated in Table 8, majority (70%) of respondents said they owned farm lands prior to the oil and gas finds. Fishing equipment followed next with 13%. Atuabo and Sanzule are farming and fishing communities as indicated earlier from which majority of households earn their livelihoods. Land is common to most households but not many households have fishing equipment. This is so because although the fishing industry also employed many people, only few respondents responded as owning fishing equipment like canoe, nets, paddles, hook and line. This equipment is mostly owned by an owner of a fishing group (company) or the entire company. Store or Petty trading (8.3%) was the least assets selected by respondents.

Table 8: Assets owned by Households prior to the discovery of oil and gas

<table>
<thead>
<tr>
<th>Assets</th>
<th>No. of response</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm land</td>
<td>296</td>
<td>70</td>
</tr>
<tr>
<td>Fishing Equipment</td>
<td>55</td>
<td>13</td>
</tr>
<tr>
<td>Store/Petty trading</td>
<td>35</td>
<td>8.3</td>
</tr>
<tr>
<td>Taxi/motorbike</td>
<td>37</td>
<td>8.7</td>
</tr>
<tr>
<td>Total</td>
<td>423</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Researcher’s fieldwork, 2018

4.16 Household gadgets owned prior to the discovery of oil and gas

On household gadgets as can be seen from Table 9; 230 (57.1%) of households from both Atuabo and Sanzule said they had electrical bulb prior to the oil and gas discovery. Sound deck was the least with 6(1.5%) of respondents selecting as having it prior to the discovery of oil and gas.
gas. As indicated by (Po, Finley, Brewster, & Canning, 2012), the wealth of households can also be measured by using electrical gadgets including those stated in Table 9.

More households selected television from the multiple response questions than other gadgets because, according to them, although there was electricity supply in the study area, they could not access radio or television networks. Many households therefore resorted to the use of television sets to watch video. Television signals were received by erecting long poles connected to the television set in their rooms.

**Table 9: Households gadgets owned before oil and gas**

<table>
<thead>
<tr>
<th>Gadgets</th>
<th>No. of households</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television</td>
<td>92</td>
<td>22.8</td>
</tr>
<tr>
<td>Radio</td>
<td>25</td>
<td>6.2</td>
</tr>
<tr>
<td>Electronic iron</td>
<td>34</td>
<td>8.4</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>16</td>
<td>4.0</td>
</tr>
<tr>
<td>Sound deck</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Electric bulb</td>
<td>230</td>
<td>57.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>403</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018

For the households of Atuabo and Sanzule communities to be empowered and improve their livelihoods, all these forms of capital namely natural, human, social, physical and financial capitals should be accessible to them. Of more importance to this study are human, natural and financial capitals.

Human capital may be used to determine human development which is usually calculated at the national level. However, the input basis is derived from individuals. Fosu and Mwabu (2010:1) define human development as “a sustainable process that expands and strengthens people’s
capabilities, such as abilities to read, and write, avoid premature death, to appear in public without shame, and to enjoy a decent standard of living”. Human development would ultimately create conditions that would limit over dependence on one source of livelihood in addition to empowerment for adaptation. Their financial capital can be enhanced through the provision of soft loans and credit facilities. Their natural capital made up of the land and sea if made available to them without any hindrance or regulations that prevent them from freely using them can enhance their livelihoods.

**Conclusion**

The response from respondents in this chapter showed generally that both Atuabo and Sanzule like many rural communities in Ghana lacked social infrastructure prior to the Oil and Gas discoveries in Ghana and the subsequent citing of oil and gas companies in them. Economically, farming and fishing remained the most viable activities through which households earned their livelihoods. The road network was in a deplorable state. The communities also lacked proper sanitary facilities prior to the oil and gas discovery.
CHAPTER FIVE

SOCIO-ECONOMIC CHANGES AFTER THE OIL AND GAS DISCOVERY IN ATUABO AND SANZULE

5.1 Introduction

The previous chapter discussed the prevailing conditions made up of economic activities and social facilities in both Atuabo and Sanzule prior to the discovery of oil and gas. The discussion cut across occupation, water and sanitation, road infrastructure, health, education, social and economic life. This chapter [Chapter Five] discussed the changes and impact as a result of the oil and gas activities and what these changes mean to the citizenry. Results from field work indicated that there have been both positive and negative changes as a result of the oil and gas activities in both Atuabo and Sanzule.

As has already been said in chapter Three, to examine the effect of oil and gas discovery on economic activities and social facilities on Atuabo and Sanzule, a 9 item Likert scale was used to measure the extent to which the respondents agreed to the changes.

Observing generally from Table 10, most of the respondents disagreed that the stationing of oil and gas companies in both Atuabo and Sanzule communities has impacted them positively. With the exception of road infrastructure, telephone and internet services which the respondents agreed to have improved in their communities, most of the facilities have received very little face lift in any of the two communities. Fishing and farming activities have also been affected negatively through drastic reduction in fish harvest and loss of farm lands.
Table 10: Frequency percentage of the extent of agreement of the effect of oil and gas on social facilities and economic activities

<table>
<thead>
<tr>
<th>(a)</th>
<th>(b)</th>
<th>(c)</th>
<th>(d)</th>
<th>(e)</th>
<th>(f)</th>
<th>(g)</th>
<th>(h)</th>
<th>(i)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>86.3</td>
<td>83.9</td>
<td>81.2</td>
<td>79.4</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>88.4</td>
</tr>
<tr>
<td>Disagree</td>
<td>12.4</td>
<td>11.7</td>
<td>15.3</td>
<td>18.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>10.3</td>
</tr>
<tr>
<td>Neutral</td>
<td>1.3</td>
<td>4.4</td>
<td>3.5</td>
<td>1.8</td>
<td>5.8</td>
<td>5.3</td>
<td>2.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Agree</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>14.7</td>
<td>25.1</td>
<td>12.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>79.5</td>
<td>69.6</td>
<td>85.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Researcher’s Field Work, 2018

5.2 Effects of oil and gas on social facilities and economic activities on Atuabo and Sanzule

The results from fieldwork as can be observed from Table 10 showed that there have been some socio-economic changes as a result of the discovery of oil and gas in both Atuabo and Sanzule. The changes are in the areas of farming, fishing, telecommunication, internet services, road and installation of fire post.

In percentage terms, respondents generally disagreed to the following statements: There has been improvement in Education/School facilities (98.7%), There has been improvement in Pipe borne water facilities (95.6%), There has been improvement in Health facilities (96.5%), There has been improvement in recreational facilities (98.2%), There has been improvement in Farming activities (98.3%), There has been improvement in Fishing activities (99.2%).
5.3 THE POSITIVE IMPACTS OF OIL AND GAS DISCOVERY ON ATUABO AND SANZULE

5.3.1 Telecommunication and internet services

Respondents generally agreed that stationing of the oil and gas companies in both Atuabo and Sanzule has led to the installation and improvement of telephone and internet services (94.7%) as can be seen from Table 10. Few respondents agreed that previously, they could once in a while receive telephone networks either from neighbouring Cote d’Ivoire or from telecommunication networks in Ghana prior to the oil and gas finds. Unlike previously, where network was not stable according to respondents, this time around, all respondents did not only agree to its existence but its quality service as well. Supporting this is a study by Melachova (2012) that prior to the discovery of oil in the Middle East, the region was characterised by poor socio-economic development such as telecommunication, roads and internet services but the area has seen massive socio-economic development after the discovery of oil. Not only did the Middle East experience socio-economic development but also improvement in political life as well. The description of Awube in an interview I had with her supports both the survey data and the Middle East study that oil and gas discoveries have a link with telecommunication development.

Telephone network in these areas are now better than in the past. Now you can receive telephone network or make phone calls wherever you are...in your room, kitchen or even on the farm. In time past, we used to be roaming around searching for network to make mobile phone calls. I think it is because of the oil and gas companies here that is why these telephone poles were mounted in this area.

Thus, social capital which refers to the social networks or resources such as membership to a group, relationships of trust and access to broader institutions, interactions among individuals and households from which people derive their livelihood has improved as a result of the discovery of oil and gas in Atuabo and Sanzule.

88
Again, in confirmation to a study done by Odularu (2008), oil and gas discovery in the Delta region of Nigeria led to improvement in road infrastructure and recreational services for surrounding communities. Additionally, as reported by Acemoglo et al (2001), Botswana prior to its independence had only twelve kilometers of tarred road, three secondary schools, twenty-two university graduates and one hundred secondary school graduates. The country was poorly developed but now with the discovery of diamond, Botswana’s social infrastructure has developed and has a higher GDP than many countries around the world Acemoglo et al (2001).

On the availability of internet services, respondents said they can now receive internet services on their mobile phones. Previously, internet services were nonexistent in both communities prior to the discovery of oil and gas. Currently, respondents agreed to the improvement in internet services as a new development in the area as a result of the Oil and Gas activities. Nyameke described his happiness over the availability of internet services as follows which supports the quantitative data.

…..When I completed my training and was posted here to teach, I nearly declined the appointment because there was no internet service here. Social media was not known to many people here. I could not access anything online so I relied on friends elsewhere for most information which sometimes came in late. Now, I can do “facebooking”, “whatsapping” and access online information on my phone”. This is good news for some of us.

Atuabo and Sanzule communities can now boast of quality telephone calls. Mobile phone networking has also improved. The citizenry do not have to roam searching for mobile networks. Taxi drivers can be called anytime anywhere whenever their services are needed.

On fire post, Atuabo already has one located at the premises of the Ghana Gas Company. At the time of collecting data for this study, that of Sanzule was still under construction.
5.3.2 The contribution of oil and gas discovery to education in Atuabo and Sanzule

Tullow Oil in its 2014 country profile report indicated that it has given scholarship packages to over 120 post graduate students to pursue courses in various fields such as Public Health, Nutrition, Technology, Petroleum Engineering, Management and Environmental Health. Additionally, (Obeng-Odoom, 2014) reported that Oil companies in the Western Region selected 26 communities from the six oil producing districts in the region and supported their education to help improve their livelihoods. The breakdown of the 26 communities are as follows: 4 from the Shama district, 3 from the Sekondi/Takoradi Metropolitan Assembly (STMA), Jomoro 5, Ahanta West 6 and 4 each from both the Nzema East and the Ellembelle district assemblies. Overall, 740 people benefited from the project.

In contradiction, oil and gas discovery in Atuabo and Sanzule has not contributed to improving education neither has it contributed to family lives of households. In the case of Sanzule, some members of the youth were given training at the National Vocational Training Institute (NVTI) to equip them to be possibly employed by some of the companies operating in the community. There is also periodic training and seminars on oil and gas for members of the community. Some people have also been trained as electricians, mechanics and cooks. According to respondents, inspite of been trained in these areas, many of them have not been given employment opportunities in the companies operating in the community.

People who have been given employment opportunities in the companies are the expatriates who possess better educational certificates. People in Sanzule working with the companies are at the lower rung of the company. Their positions are security officers, drivers, traffic controllers, carpenters and maisons. The phenomenon is not too different from those in Atuabo, the difference however is internms of numbers. Many people in Sanzule have been given employment
opportunities than those in Atuabo. This opportunity is however given to those with appreciable level of education. To work in an oil and gas company requires special skills and training which people in both Atuabo and Sanzule lack. This hindrance according to officials of the oil and gas companies is the main reason they are unable to employ people from these communities. The second objective of this study aimed to examine how oil and gas discovery has changed family life, opportunity for work and education. According to respondents, there have not been any improvements in the educational sector or family lives in both Atuabo and Sanzule. The difference between Atuabo and Sanzule is that while those in Atuabo said Oil and Gas discovery has not contributed to education, respondents in Sanzule said some people have been sponsored to take courses at the National Vocational Training Institute (NVTI) to give them some skills to possibly gain employment with Oil and Gas companies. This is in confirmation of a study by (Missodey, 2012) that certificates from NVTI were required for someone to get employment with an oil company in the Western Region of Ghana.

In so doing, they hope to develop their human capital which refers to the skills, educational qualification and knowledge, ability to work and good health of an individual or a group deemed necessary for use to pursue different livelihood strategies. Households with high quality human capital can use it to improve the economic situation of the household. Ironically, the lack of such human capital such as educational qualification and technical knowhow has affected households in Atuabo and Sanzule to secure employment with the oil and gas companies operating in their communities.

Generally speaking, the discovery of oil and gas in both Atuabo and Sanzule has not contributed to improvement in education. No proper sponsorship whatsoever has been given to the citizenry to equip themselves to meet the requirement of the companies.
The above image shows the background of Sanzule basic school with a billboard displaying an intended school canteen started by an oil and gas company which has since been abandoned.

The discovery of oil and gas has not contributed anything to education in communities here. Only one company (name withheld) did well by providing canteen for the basic school in Sanzule. The contract ended and the company left and so could not complete the project. The project has since been abandoned to the stage where the company left it. None of the existing companies has shown any interest in it. The community too does not have the money to complete it.

This was disclosed in an interview with Nyanzu, an opinion leader at Sanzule to support the quantitative data that oil and gas discovery has not contributed to improving education in Atuabo and Sanzule.

Human capital which refers to the skills, educational qualification and knowledge, ability to work and good health of an individual or a group deemed necessary for use to pursue different livelihood strategies. Households with high quality human capital can use it to improve the economic situation of the household. However, the lack of such human capital such as educational qualification and technical knowhow also affects the ability to secure sustainable livelihood for members (Rakodi 2002a; Ellis, 1999). Households in both Atuabo and Sanzule
generally have low educational backgrounds according field work of this study. This situation has rendered them unqualified to gaining employment with oil and gas companies. Their natural capital made of of the farm land has also either been taken away from them entirely or portion of it has been taken away from them. They have also been barned to do fishing in certain parts of the sea thereby bringing them economic hardships.

5.3.3 Oil and Gas discovery and road construction in Atuabo and Sanzule

Respondents overwhelmingly agreed that the road network in the study area has seen a massive transformation making transportation easy for the citizenry. The road networks in Atuabo and Sanzule was in a very deplorable state prior to the oil and gas discoveries, a situation which posed a serious transportation challenge for people in the area. Roads that used to be associated with potholes and mud during raining season have now been asphalted or coal tarred. This supports a study by (Mugisa, 2016) on the Socio-economic effects of oil exploration among Hoima Municipality communities, Uganda that the municipality whch was once characterised by poor road network saw massive transformation in the road sector making it easy to commune. Nyanzu, a nurse and Awube, a trader recounted the state of the road network prior to the oil and gas finds and how it has been transformed currently as a result of the oil and gas discoveries.

_Nyanzu_ … although we in this area have not benefitted much from the oil and gas activities, I can say that the construction of roads has been very useful and everyone here can attest to it. I am a car owner and I can tell you that driving was very difficult then but now my driver does it with ease. My car that used to easily break down doesn’t break down again. The construction of roads has been very useful.

_Awube:_ I am a trader and by the nature of my work, I travel a lot sometimes to Takoradi, Aiyinasi, Elubo, Tarkwa, Kumasi or even to Accra to buy or sell various kinds of items. Doing this was very difficult in years past because the road was very bad. I almost fell [sick] anytime I had to travel because of the difficulty in getting a car or because of the poor road network which sometimes made me lose some of the eggs I used to sell in those days. Some of them got
broken by the time I got home. Today, I am a free person to travel with ease without much difficulty. We now have more cars in this area. I don’t spend much time travelling too; this benefit does not apply to me only but to everyone here.

Road construction is key to the socio-economic development of every nation. For this reason, there are efforts by governments the world over to ensure that road networks in their respective nations are good for both the safety of the citizenry and the conveying of goods from one destination to the other. As indicated by Fox and Pimhidzai (2013), every nation’s desire is to have a strong, growing, sustainable economy of which road construction is one. This enhances the standard of the nation as people can easily go about their daily businesses without the anxiety of thinking about transportation. The city of Texas saw a great transformation in infrastructure following its discovery of oil. The physical capital in Atuabo has improved as revealed by respondents that road network in the area has seen massive improvement following the discovery of oil and gas.

As Mugisa (2016) reports, oil discovery in the Hoima municipality in Uganda led to the construction and improvement in the road network of the municipality. The road construction in turn led to improvement in the incomes of communities thereby improving the wellbeing of the people. In a related development, (Fox and Pimhidzai 2013) revealed that a strong, growing, sustainable economy is the goal of every nation the world over. The state of Texas lacked road infrastructure until it discovered oil in the 20th century but road network is no longer an issue for the state.

It is like a dream come true for the people of both Atuabo and Sanzule in the Western Region of Ghana. These communities have seen a facelift in their road infrastructure. Travelling during the raining season which used to be a matter of concern to people in the area due to the poor
roadnetwork is of no concern to them again. Cars not get stuck in mud again. To sum it up, travelling has been made easier and comfortable.

**Figure 6: The impact of oil and gas discovery on road network**

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Before Image" /></td>
<td><img src="image2.jpg" alt="After Image" /></td>
</tr>
</tbody>
</table>

Source: Researcher’s fieldwork, 2018

**5.4 THE NEGATIVE IMPACTS OF OIL AND GAS DISCOVERY ON ATUABO AND SANZULE**

As already stated, the results from field work are in two parts; the positives and the negatives. Having discussed positive side, it is now the turn to discuss the negative side as well.

Results from both the qualitative and the quantitative data indicated that the discovery of oil and gas has negatively affected farming and fishing activities; it has also led to loss of lands, high breeds of mosquitoes and hot weather among others. Other areas that have also been affected negatively are high cost of living, increase in the prices of goods and services and loss of employment. The details of these are discussed in the following sections.
5.4.1 Changes in farming and fishing activities in Atuabo and Sanzule

Farming and fishing are the major economic activities for the people of Atuabo and Sanzule. They form the life spine of people in this part of Ghana. Life is meaningless without farming and fishing in this part of Ghana.

Tradition regarding farming and fishing as discussed in chapter four has not changed. For instance, inheritance to land is still through the matrilineal lineage neither has crops that used to be cultivated prior to oil and gas discoveries changed though it is now cultivated in smaller quantity than before as a result of land loss. Fishing is still done with umotorised canoes. There has, however, been reduction in fish harvest.

Farming is a major economic activity in both Atuabo and Sanzule. The livelihoods of most households are dependent on this economic activity. However, the discovery of oil and gas and their related activities in these communities has impacted negatively on this economic activity on the citizenry. The change or the effect with land is associated with loss of land which respondents said has negatively affected their livelihoods as a result of poor compensation. The loss of land according to respondents has also affected crop production as a result of the reduction in the size of farm lands. Accordingly, the loss of farm lands and the drastic reduction in fish harvest came as a shock that can be likened to the description given by Scoones (1998) that the shocks include human health shock, economic shock and crop or livestock shock among others. It can force people to abandon their homes especially during conflict situations. The externality of the influence which the farmers had no power to prevent comes from the power of the state to acquire land in any part of the country for projects deemed to be in the national interest.
Article 257; sub clause 4 and 6 of Ghana’s constitution states that (4) all lands in Ghana are vested in the Government of Ghana on behalf of, and in trust of the people of Ghana.

In clause (6)” Every mineral in its natural state in, under or upon any land in Ghana, rivers, streams, water courses throughout Ghana, the exclusive economic zone and any area covered by the territorial sea or continental shelf is the property of the Republic of Ghana and shall be vested in the President on behalf of, and in trust for the people of Ghana”.

By these articles, the government of Ghana has the power to evacuate or relocate a whole community if a natural resource is discovered under or on any land. He is also by executive instrument to take any land from any group of people in as much as taking such land is useful for the general good of the people of Ghana. The challenge therefore is with compensation. As Kortey and Kasanga (2012) note, usually in Ghana people who lose lands to the state are poorly compensated for. The situation as observed by Kortey et al (2012) is not different from the experiences of both Atuabo and Sanzule. As has been discussed earlier, people who lost lands for the construction of Gas processing plants in both Atuabo and Sanzule were poorly compensated.

As narrated by Kabenla, one of the affected farmers.

> When the announcement came that our compensation money for the lost lands was ready, I was very excited because I was expecting something good; but when I was told my money was Gh₵50, I said “nooo”, may be it was a mistake and that they should recheck but they insisted that was my compensation amount. I nearly declined it but my other colleagues urged me to take it like that. They took us for granted by not properly engaging us in both the allocation and compensation processes. All we heard was that our lands have been acquired by government for the gas processing plants. They also made us to believe that the project will be very beneficial to us by providing employment. We agreed to their proposals because of the promised benefits but after so many years down the line, the promises are yet to come, in fact, I don’t think it will come at all.

The vulnerability context (Carney, 1992) which frames the external environment in which people exist comes into play here. The shock includes compulsory acquisition of land from households without properly consulting and involving them in the compensation processes. People’s livelihoods and the wider availability of assets are fundamentally affected by critical trends as
well as by shocks and seasonality over which they have limited or no control. This by extension has also affected their financial capital thereby bringing economic hardship on the households.

Oil discovery disturbed farming, the traditional occupation of the people of Edjaba and Kokori in Nigeria (Agbogidi et al, 2008). They reiterated that farmers were at a disadvantaged position in spite of the compensation from oil companies, life was unbearable for them.

As rural and farming communities that depend on farming activities for their livelihoods, land is an important asset as it is the case with many rural communities in Ghana and other parts of the world (Brown, 1986; Kortey, 2012). The findings as revealed in this study is in support of what Apeakoran (2014) reported that the relocation of the people in New Teberebie and New Atuabo communities in the Wassa West district of the Western of Ghana to make way for the extraction of gold in 1991 led to loss of lands, joblessness and loss of livelihoods which brought economic hardship on the people.

According to Carney (1998) the vulnerability context in the sustainable livelihood framework has three main features; shocks, trend and seasonality impact on the resources of the livelihoods of rural communities. The powerlessness of affected farmers in Atuabo and Sanzule as revealed in this study is a confirmation of the framework’s assertion that, rural people have limited, or no control at all because most of the factors operating within the vulnerability context are external to them.

Land in both Atuabo and Sanzule are now a scarce resource. Although the land was not in abundance then, the taken over of lands from the citizenry has further worsened the situation. Land sale was almost nonexistent in these communities. All one needed to do was to present some bottle of gin and token sum of money to either the chief or head of a clan for a portion of
land to be given to him or her. The situation has changed as land is no longer for free as it was in time past. Kabenla, who said he was disappointed over the citing of the Oil and Gas companies in the area narrated how land used to be managed and distributed among lineage members before oil and gas discoveries and the reason why land was protected for generations.

Land for farming was not for sale here. Members in a lineage have right to lands in their lineages. All they needed to do was to ask for a portion of it from the lineage head or a member of the lineage who has been entrusted with such lands. We planted our crops on them to feed ourselves, families and raised some money out of that. Now, land is a scarce commodity here and has brought economic hardship on us. The land doesn’t belong to me alone but to my ancestors and the unborn lineage members. My ancestors left this land for me and are gone. It is my turn to also use it and pass it on to the next generation but now that it has been taken away from me, how do I pass it on to the next generation. What account am I going to give to my ancestors when I later join them?

This is further supported in Nukunya, (2016) and Obeng-Odoom (2014) that land in Ghana traditionally, is not to be sold but time has changed and is now for sale. However, since land is communally owned, transactions regarding its sale must involve the accredited representatives of the groups owing it. Wanton alienation is regarded as irresponsible and despicable behaviour capable of attracting ancestral sanctions. Additionally, Aggrey (2014) reported that the emergence of real estates in Ewusiejoe in the Ahanta West District of the Western region of Ghana has led to the commercialisation of lands, a phenomenon that has made land a scare commodity in the community and has brought hardship on the citizenry.

Land, one of the five types of capital, is an important asset for rural dwellers. Rural dwellers cannot do without this type of capital. It remains the source of their livelihoods and so they depend on it for almost everything (Scoones, 1998). Access to land therefore determines how an individual, a clan or households is rich or poor. Ghana has about 56-60% of its population who
depend on forest and land resources for their livelihoods. They depend on the land for food, employment, shelter, income, health and wellbeing (Djokoto and Opoku, 2010).

**Kabenla:** The companies never properly informed anyone in Atuabo that our lands will be taken away from us. We were here one Sunday morning when all of a sudden, two caterpillars emerged to clear our lands including those with crops on them. Later, an announcement was made that those whose crops were destroyed should go to their farms for their photographs to be taken. We were not properly compensated. No one in this community received up to Gh₵1,000. The compensation amount ranged from Gh₵35-Gh₵600. That is all they did for us. How can you take my plot of land with cassava plantation and vegetables on it and give me Gh₵35? I don’t think this can happen anywhere but only in Atuabo. The amount paid to us is woefully inadequate. We were not properly involved in the compensation process too. Our livelihoods depended on those lands and crops, now that they are no more, how can we survive?

At Sanzule, this was how **Abenlema** put it after expressing her anger over the loss of lands to the oil and gas companies and the refusal of the companies to employ the youth in the communities.

We have lost our lands to the companies but our children are not employed. This has brought hardship upon us. They are not employing our people too. They rather employ outsiders. When we complain, the executives of the companies always tell us to discuss our concerns at the committee level, where community members meet to discuss issues of interest. We have done that but all to no avail. When we ask leaders of the committee, they tell us the companies are not taking their suggestions seriously.

The compensated amount ranges mostly from Gh₵30-Gh₵1,530 for the two communities according the respondents sampled. The compensated amount however depended on the type of crop cultivated on the affected land. Only about five people from the two communities said they received compensation amount up to Gh₵100,000. These were coconut plantation farmers.

The affected farmers did not have the same level of shocks and effects, confirming (Scoones, 1998) assertion that the extent to which people deal with shocks depends on their combined asset portfolios (the combination of all their assets). Scoones (1998) opined again the dynamic nature of capitals by which one form of capital can transform into another. One expects that, crops on
the farms will transform to the financial asset in the form of compensation received. However, the study discovered that, payment of compensations for the crops on the lands acquired came almost a year after the destruction of crops. In some cases, farmers were not adequately noticed to harvest their last crops.

In an interview by a community liaison officer at Ghana Gas, this was how he responded to how the gas processing plant at Atuabo was constructed and why the affected farmers have not been fully compensated for.

Ghana’s Oil discovery came with both oil and gas but because there was no Gas Processing Plant then, the gas was therefore flared away which was both economically unadvisable and environmentally dangerous. To save the situation, there were plans to build a Gas Processing Plant. Because of the urgency in saving the gas from going waste through flaring and the need to save the environment, the Atuabo Gas Processing Plant (AGPP) was built in a hurry but with precaution. The land for the project was acquired through stakeholder consultations and an Executive Instrument (EI). The consent of land owners was sought before acquiring the land. They were also educated on the need and importance of the project. Community members were also met to inform them about the project. They were also involved in the land acquisition and compensation process. Farmers were also compensated but this compensation depended on the type of crop. Cassava farmers for instance received lower compensation than coconut farmers. I think we did not cheat them…. The Land Valuation Division (LVD) of the Lands Commission was involved in the land acquisition process. Standard Form F from the Land Commission was acquired with the consent of Representatives from Ghana Gas, Crop Owners and Assembly members. All of them signed before the land was acquired.

The position of this officer at Ghana Gas contradicts data collected from field in the communities. To clarify the two opposing positions, this researcher asked further whether the affected farmers should expect additional compensation.

You see, this is a company and we deal with documents. The problem with this part of the country is that many land owners do not have papers on their lands and assets. You cannot process to pay for any land without documents covering it. The farmers and land owners don’t have papers on their lands. We have asked them to bring their papers and this has taken so long but no one has owned up.
The amount paid to them was just for the crops not the land. We will pay them properly when they bring their land documents. We love them and want to help them.

The inability by the citizenry in Atuabo and Sanzule to register their lands is as a result of many factors such as communal or lineage ownership of land, bureaucratic processes in land title registration and lack of funds on the part of land owners. Many lands in this part of Ghana are not individually owned but the asset of the entire lineage members. Even the generation yet unborn have a share in it. This situation poses a challenge when it comes to land title registration. There is also the challenge of whose name should the land be registered and how is the compensation amount going to be shared among lineage members. Land in these two communities first and foremost belongs to the chiefs and so have to be in the known before any land is registered.

Many people do not also have the funds to register their lands, even those who can afford to pay for the registration of their lands get discouraged along the way due to the long processes they have to undergo and the long period to get their lands registered.

On the issue of the unavailability of employment opportunities for the citizenry in the study area according to respondents, an official of a gas construction company at Sanzule told this researcher the employment procedures, requirements and how the surrounding communities have benefitted from the oil and gas activities.

We have an agreement with a client [name withheld] for recruitment into the companies. To recruit people from around the catchment communities, a committee made up of the chiefs, assemblymen and some community members is formed. We then inform the client about the vacancy. The client in turn also informs the committee. The committee shortlists people for onwards recruitment by us. To occupy a higher position, an individual is examined but for those at the lower rank, all that is needed is physical strength. Only few like drivers are tested.
You should also know that this work requires special skills which the people here don’t have. It is not everybody that can work here.

He also made mention of some benefits to the surrounding communities as a result of the activities of the oil and gas companies in the study area.

Since our establishment here, we have provided a lot of help and assistance to the surrounding communities. These include provision of employment, livelihood benefits, food supply, provision of portable water and sanitary services. Others are transport services, renovation of chief palaces and preparation of food by some caterers.

Abenlema was one of the affected farmers and described how land taken away from men has affected women as well.

In our Nzema tradition, only few women own lands. We mostly depend on our husbands, relatives or friends for farming. They either farm or give us portions to plant foodstuffs on them or we ask them to give us portions to plant foodstuffs. This is how many women in this community have been living their lives. We now face economic hardships as a result of the lands that have been taken away from our husbands and relatives. We have difficulties sponsoring our children education.

As Agbogidi, Okonta and Dotor, (2005) report, oil discovery disturbed the traditional role of farming of the people of Edjeba and Kokori communities in Nigeria. According to them, farmers were reported to have been at a disadvantaged position in spite of compensation from oil companies for land and crop loss.

The difference between the affected farmers in Atuabo and Sanzule in terms of compensation is that while those in Atuabo are given nothing apart from the compensated amount they have already received, those in Sanzule on the other hand are given additional livelihoods such as bags of rice, sugar, millets, gari, wheat and tom brown each month. These services were initially given
to all communities members but it has now been restricted to only those whose lands were affected.

5.4.3 The changing fishing industry in Atuabo and Sanzule

Fishing is another major economic activity that has suffered severe setback as a result of the oil and gas discoveries in the study area according to field work and data gathered by this researcher. In a similar manner as respondents generally (98.2%) disagreed that there has been an improvement in fishing activities. As Ozumba (1997) pointed out, oil extraction has effect on aquatic life. This according to him is as a result of hydrocarbon components in crude oil which limits oxygen supply and kills or reduces the rate of reproduction for aquatic organisms like fish and turtle leading to loss of fish which affects the socioeconomic fabric of communities where crude oil is extracted. Additionally, Babatunde (2010) also opines that there was high fish harvest for the people of Ilaje-Ugbo People of Ondo State in Nigeria prior to the discovery of oil in the area. According to her, the area was blessed with a long coastline, extensive brackish, and mangrove swamps such as Threadfins, Moon fish, Tilapia, Bony Tongue fish, Catfish, Sea Catfish, Snappers, West African Croakers, Cray fish, Sea Turtle, Lobsters, Tiger fish, Sardines, Razor fish, Mackerels, Mullets among other species. These species of fishes are hard to find now after oil discovery. The positions of Babatunde and Ozumba are not different from what the people of Atuabo and Sanzule have experienced as a result of the discovery of oil and gas. This is in confirmation with what Egya Ackah expressed.

When I heard that Ghana has discovered oil, my expectation was that Ghana was going to be a developed nation within a short period of time. That, it was going to create more jobs for the people. It has rather brought us pain and taken our livelihoods from us. The oil discovery has drastically reduced fish harvest. I and my company used to harvest between 8-10 sacks of fish per trip fetching us good money to live on. Today, it is very difficult harvesting a sack. We sometimes get only between 2-3 head pans which is woefully inadequate
One of the key issues in the livelihoods approach is sustainability. The resilience of people to recover from shocks, enhance livelihood assets and capabilities and maintain livelihood activities for a considerable length of time (Chambers and Conway, 1992; Scoones, 1998). Farming and its related businesses (vegetable oil extraction from oil palm and coconut, coconut trading) at Atuabo and Sanzule were livelihoods handed down from generation to generation and, therefore one could say that they were sustainable. Chambers and Conway (1992) discussed social sustainability in their conceptualisation of sustainable livelihoods and assert that livelihoods are socially sustainable when the livelihood activities (including assets, skills, institutions) are transferred from one generation to another. However, the construction of the gas plants and the subsequent loss of land have threatened the socially sustainable livelihoods.

The fishing business is no longer attractive and lucrative for the people of Atuabo and Sanzule. It no longer fetches them income as it used to be in time past before the discovery of oil and gas. The youth who are mostly fishermen are now jobless. They stay idle home with no better livelihood alternatives. There is the likelihood of high school drop outs among the children/wards of these people if alternative livelihoods are not provided them. This situation does not have negative effects on these two communities only but the entire nation as well.
Anyima also expressed it the following way that the fishing industry is no longer attractive as it used to be in the past.

My son, I saw you at the beach this morning interacting with some of the fishermen in groups. All they told you is very true. We have been banned to fish at certain parts of the sea. They say they are doing it for our own safety but I don’t understand what they mean by that. How can they say they are protecting us when the ban has resulted in low fish harvest and brought us economic hardship? They have used “Boya” to demarcate the boundary. Woe betides you if you go near it. The difficulty is that because we use canoes and not outboard motors for fishing, we are sometimes blown by the wind to the no go area but we are law abiding people.

Some respondents also expressed some level of shock as a result of the decline in their economic activities and their inability to work in the oil and gas companies. The shock as expressed by respondents is in support of (Carney, 1992) Vulnerability Context that people’s livelihoods and the availability of assets are affected by critical trends as well as by shocks and seasonality over which they have limited or no control (Carney 1999:2). Assets can both be destroyed and be created as a result of the trends, shocks and seasonality of the Vulnerability Context. The shocks include human health shock, economic shock and crop/livestock shock among others. It can sometimes force people to abandon their homes especially during conflict situations.
Yaba: I never dreamt this misfortune will happen to us one day that a day will come where fish harvest will go so low. It is shocking to me. I am sure if someone from the living goes to tell our ancestors that we no longer get fish as it used to be, they will believe him or her.

There are several arguments that support the fact that oil extraction leads to low fish harvest. One of such arguments is by Fabi, Grati and Puletti (2004) that the oil rigs attract fishes to themselves an area mostly declared as a no go area for fishing. For instance, it was discovered in the Northern Adriatic Sea that oil platforms and rigs attracted large fishes as a hiding place to lay their eggs to protect both themselves and their eggs from predatory attacks.

In an attempt to prove to this researcher that oil discovery has drastically reduced fish harvest in the study area and has brought them hardship, Yaba publically exposed her flat tommy as a sign of economic hardship and started slapping it with her palm.

Look at how flat my tommy has become; no proper food to eat all because when the men go to sea, they come home empty handed which has also affected fishmongers like me. People have been coming from various places to take our concerns but we don’t hear from them again when they go back. Some even recorded items in our bed rooms but there hasn’t been any good news from them.

5.4.4 Changes in household weekly income after oil and gas discovery

There has been some level of income variation among households in both Atuabo and Sanzule. While some households experienced increment in household income, it declined for some households. As evidenced in Table 11, respondents who received less than Gh₵100 weekly increased from 22.2% to 54.4%, while those who received between Gh₵101- Gh₵500 also decreased by 28.8% (that is, 63.2-34.4%). Additionally, none of the 4.2% of respondents who earned a weekly income above Gh₵1300 mostly from fishing activities in the period before the oil and gas discoveries responded as receiving the same amount currently.
On the contrary, 3.5% of respondents who earned between Gh₵501-Gh₵900 prior to the oil and gas increased by 2.7% from 6.9% to 9.6%. This increase may be to reasons such as employment provided by the oil and gas companies in the communities and profit made from trading as a result of the influx of people and increment in workers’ salaries. Thus, while some households have suffered a reduction in income, that of others has increased. On the whole, the numbers of respondents who have suffered income setback far outnumber those whose income has increased as shown in Table 11.

**Table 11: Changes in Households living condition and income**

<table>
<thead>
<tr>
<th>NCONE (GH₵)</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
<th>FREQUENCY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 100</td>
<td>32</td>
<td>22.2</td>
<td>68</td>
<td>54.4</td>
</tr>
<tr>
<td>101- 500</td>
<td>91</td>
<td>63.2</td>
<td>43</td>
<td>34.4</td>
</tr>
<tr>
<td>501-900</td>
<td>10</td>
<td>6.9</td>
<td>12</td>
<td>9.6</td>
</tr>
<tr>
<td>901-1300</td>
<td>5</td>
<td>3.5</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Above 1300</td>
<td>6</td>
<td>4.2</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>144</strong></td>
<td><strong>100</strong></td>
<td><strong>125</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018

### 5.4.5 The effects of oil and gas discovery on household livelihoods

In chapter Three, this researcher stated that one of the ways to measure the effects of oil and gas discovery on both Atuabo and Sanzule was the use of a Likert type scale. To examine the effect of oil and gas on Atuabo and Sanzule and the livelihoods of its inhabitants, an 8- item Likert scale was used to measure the extent to which the respondents agreed to the change and how it has affected them as shown in Table 12.
Observing generally from Table 12, most of the respondents disagreed that the stationing of oil and gas companies in these communities has impacted them positively. With the exception of road infrastructure which the respondents agreed to have improved in their communities, most of the facilities have received very little face lift. In addition, the respondents agreed that many people have moved into their communities.

Specifically, almost all the respondents, who participated in the survey, disagreed to the following statements as a result of the establishment of the oil and gas companies in their communities: There has been an improvement in educational infrastructure (99.1%), There has been an improvement in waste disposal (98.6%), Many people have been employed by the oil and gas companies (94.2%), There has been an improvement in the source of water supply (99.1%), Family life has improved (92.3%). However, all the respondents accepted the fact that the coming of these companies has adversely affected their fishing and farming activities.

Anyima…The oil and gas activities in these communities have not done any good to us at all. The officials in these companies don’t listen to our opinions, they
don’t employ people from here, when we ask them to employ our people, they say we don’t have the skills to work with them. I disagree with them. What about driving, cooking, cleaning or labourer work, can’t our people do them? They have just decided not to help us. The government too has not been helpful at all.

Unlike the extraction of natural resources such as gold that requires many hands (both skilled and unskilled) to work, the extraction of oil and gas does not do so. Special skills and educational qualifications are required for someone to be employed in oil and gas sectors. This situation leads to disappointment on the part of the citizenry and lack of confidence in the government and oil companies (Obeng-Odoom, 2014; Panford, 2017). This phenomenon has been the cause of many conflicts between local communities and oil extracting companies in many developing nations (Psessoa, 2008).

5.4.6 Relationship between the effects of oil gas discovery and demographic factors

To establish whether or not the extent to which respondents agree to the effect of oil and gas companies vary by respondents’ demographic characteristics, the researcher conducted an independent t-test and the results of the tests is displayed in Table 13.

Table 13: Independent t-test of the effect of oil and gas

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t (df)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>86</td>
<td>18.15</td>
<td>1.62</td>
<td>.738 (162)</td>
</tr>
<tr>
<td>Female</td>
<td>78</td>
<td>17.96</td>
<td>1.67</td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young</td>
<td>89</td>
<td>17.92</td>
<td>1.58</td>
<td>- 1.19(162)</td>
</tr>
<tr>
<td>Old</td>
<td>75</td>
<td>18.23</td>
<td>1.71</td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>39</td>
<td>18.36</td>
<td>1.52</td>
<td>- 1.33 (160)</td>
</tr>
<tr>
<td>Married</td>
<td>123</td>
<td>17.96</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>37</td>
<td>18.24</td>
<td>1.88</td>
<td>.77 (162)</td>
</tr>
<tr>
<td>Formal education</td>
<td>127</td>
<td>18.01</td>
<td>1.57</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018
* p< 0.05
A critical look at Table 13 shows that none of the tests result was statistically significant; however, males agreed more (mean = 18.15, SD=1.62) to the statements than females (mean = 17.96, SD=1.67). Older respondents (mean= 18.23, SD = 1.17) also agreed more to the statements than their younger counterparts (mean=17.92, SD= 1.58). Furthermore, respondents with no formal education (mean= 18.24, SD = 1.88) and those that were unmarried (mean = 18.36, SD = 1.52) agree more to the statements than those with formal education (mean = 18.01, SD= 1.57) and married (mean=17.96, SD=2.00) respectively.

5.4.7 The effects of oil and gas discovery on households

Apart from loss of land and reduction in fish harvest as discussed previously, high breeds of mosquitoes and hot weather (32.8%) were another major consequence respondents said they have suffered from as a result of the oil and gas finds. According to respondents, the presence of mosquitoes in the study area was almost unknown. However, the citing of Oil and Gas companies in the area has resulted in high breeds of mosquitoes. In (Ikporukpo, 1985), oil discovery led to outbreak of epidemic diseases such as dysentery, cholera, ringworm, eye and throat infection among some oil drilling communities in the Nigeria Delta region.

As can be seen from Table 14, in both Atuabo and Sanzule, there has been an increased heat in the weather (16.4%) and another (16.4%) for high mosquito breeds as a result of the stationing of the fire blazing Gas emission plant at Asemnda Suazo, a small community near Atuabo.
At the time of collecting this data, that of Sanzule was still under construction. Although high breeds of mosquitoes and hot weather appear to be health and environmental issues, field work gathered by this researcher indicated that they have become social and economic issues for the citizenry. It is an issue that is on the lips of the citizenry who believe has affected their social and economic activities. For instance, community gathering at night has almost become impossible as a result of the high breeds of mosquitoes. Again, some respondents were of the opinion that both high breeds of mosquitoes and hot weather have affected their economic activities due to ill health and the difficulty of staying to work for long hours on the farm.

Anyima: The citing of the Gas Processing Plant has contributed to high breeds of mosquitoes in Atuabo, Sanzule and many communities here. We didn’t know mosquitoes here. We used to sleep outside or along the seashore during the dry season when the weather is hot. But now, we can no longer do that. The lake in these communities which used to flow into the Amanzule River has been blocked as a result of the construction of the Gas Processing Plant making it stagnant thereby breeding mosquitoes for the community. A lot of stagnant water has been created by the companies. I don’t know what they want to use those green-green water for. We all know mosquitoes are the cause of malaria. Yet the Gas companies are doing nothing about it or even help us to fight the mosquitoes.

This was how Yaba after showing me signs of mosquito bite on her hands expressed her dissatisfaction in the following way.

<table>
<thead>
<tr>
<th>Lost/suffered items</th>
<th>No. of response (N)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of land</td>
<td>29</td>
<td>12.9</td>
</tr>
<tr>
<td>Low fish harvest</td>
<td>41</td>
<td>18.2</td>
</tr>
<tr>
<td>Frequent attack of malaria</td>
<td>21</td>
<td>9.3</td>
</tr>
<tr>
<td>Difficulty in feeding household</td>
<td>19</td>
<td>8.4</td>
</tr>
<tr>
<td>Loss of spouse/fiancé</td>
<td>7</td>
<td>3.1</td>
</tr>
<tr>
<td>Hot weather</td>
<td>37</td>
<td>16.4</td>
</tr>
<tr>
<td>General sickness</td>
<td>8</td>
<td>3.6</td>
</tr>
<tr>
<td>Pocket of road accidents sometimes</td>
<td>7</td>
<td>3.0</td>
</tr>
<tr>
<td>High breeds of mosquitoes</td>
<td>37</td>
<td>16.4</td>
</tr>
<tr>
<td>Economic hardship</td>
<td>15</td>
<td>6.7</td>
</tr>
<tr>
<td>Have not suffered or lost anything</td>
<td>4</td>
<td>1.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>225</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018
One thing I have observed is that since the companies started coming here, there have been so many mosquitoes here that we find it difficult to sleep at night. The Ser River has been blocked from flowing into the Amanzule River and this I think is the cause of the high breeds of mosquitoes here. Some people too have been suffering from malaria of late; others too come home early from the farm because the weather has become too hot.

Respondents also listed hot weather as one of the consequences they have suffered from the oil and gas activities. According to them, the weather was not that hot prior to the discovery of oil and gas and the subsequent citing of companies in the communities, a situation which makes it difficult for farmers to stay long to work in their farms.

**Erzoah:** The citing of that “pole” with the blazing fire on it has resulted in a very hot weather for us in these areas. The fire never quenches and it’s always on. Because of that many trees and coconuts plants located closer to it are dying. All these vegetation used to be very green but now many have turned brown because of the heat. Sweating at night has become the order of day here…. our rooms are too hot including the environment itself. We used to gather at night to share ideas but we find it difficult to do it now because of the too many mosquitoes here.

**Figure 8: The impact of oil and gas activities on occupation in the study area**

![Before](image1.jpg) ![After](image2.jpg)

**Source:** Researcher’s Field Work, 2018

The gas emission plant located at Asemnda Suazo, a community closer to the Atuabo township has caused vegetation closer to it to be withered away due to the heat it emits into the environment. This could have adverse effect on agricultural activities the end result of which is...
shortage of crop and food production. As indicated by Agbogidi et al (2005), oil spillage affected agricultural activities in both Edjeba and Kokori communities in Nigeria which led to shortage of food and farm products. Additionally, Kadafa (2012) discovered that as a result of oil spillage in the Nigeria Delta region, vegetation covered up by the spillage dried up after the area has been cleared and cleaned.

5.5 MANAGING THE SHOCK AND REORGANISATION OF LIFE AFTER OIL AND GAS IN ATUABO AND SANZULE

One of the objectives of this study was to examine how the citizens of these communities are reorganising their lives after the changes. Rural livelihoods depend largely on natural resources such as land and the sea (Scoones, 1998). Field work revealed that farmers and fishermen in both Atuabo and Sanzule are in a state of shock as a result of the sudden take over of their lands and drastic reduction in fish harvest. These activities were their major sources of livelihoods. As expressed by Anyima, I never expected this to happen in our communities here that a day will come that our lands will be taken away from us. I also never dreamt that fish harvest will go so low in communities around here. It is shocking to me.

The Livelihood strategies (Adaptive strategies) refer to ways and means through which households make a living. It also seeks to promote choice, opportunity and diversity (Carney, 1999).

Oil and Gas discovery in most developing countries is usually met with great joy and celebrations. It is also associated with high expectations from the citizenry to bring them better jobs, improvement in living conditions, reduction in fuel prices and infrastructural development (Darkwah, 2010; Panford, 2017).
The scenario was not different for the people of Atuabo and Sanzule following Ghana’s oil discovery and the subsequent building of oil and gas processing plants in these communities. The news of the processing plants in these communities was met with great joy and celebrations by the chiefs and people of the two communities. They expected higher income and creation of employment opportunities which in turn was expected to improve their living conditions. However, after years of oil and gas exploration, the expectations have turned into disappointment. The hope of getting employment has been dashed and has rather led to loss of jobs through loss of lands, crops and fish harvest.

The shock as stated by Scoones (1998) includes large, infrequent and unpredictable disturbances with immediate effects. What might have contributed to the shock most was the sudden change of government decision to relocate the Gas project from Efasu and Bonyere in the Jomoro District to Atuabo in the Ellembelle District. Some farmers still had unharvested crops on their farms at the time the project commenced. According to the affected farmers, if they had known earlier that their lands were going to be taken over by government, they would not have cultivated those crops on them. The taken over of their lands for the project therefore took them by surprise. The situation was not different for those in Sanzule as there were still unharvested crops on some farm lands at the time the land was taken over from them. This makes them vulnerable to external factors such as governmental and institutional influence which they have no control over. As found by this study, fishermen in the two communities are also in a state of shock as they never expected that the oil discovery will lead to such drastic reduction in fish harvest or that they will be banned to do fishing at certain parts of the sea to affect their financial capital in the situation they find themselves in.
The third objective of this study was to examine how the citizens of Atuabo and Sanzule are reorganising their lives after the changes as a result of the oil and gas discovery. This objective helped the researcher to discover that the citizenry have no better alternative to reorganise their lives after the changes than to continue to be in the same situation they find themselves in. They look vulnerable to the external shocks, which form part of the framework used for this study. The Vulnerability Context frames the external environment in which people exist. People’s livelihoods and the wider availability of assets are fundamentally affected by critical trends as well as by shocks and seasonality over which they have limited or no control (Carney 1999:2).

Households that have suffered from the activities of the oil and gas discoveries have no better alternative livelihoods. To be able to provide a sustainable livelihood for them, the livelihood promotion by” (Chambers and Conway (1992) comes into play here. This refers to the strategies for improving the resilience of households, for example through programs which focus on savings and credit, crop diversification and marketing, reproductive health, institutional development, personal empowerment or community involvement in service delivery activities.

Most livelihood promotion activities are long term development projects that increasingly involve participatory methodologies and an empowerment philosophy.

From Table 15, respondents have no better livelihood alternative from which to make a living than to rely on the same source of occupation which has already become non lucrative and unattractive. Others said they rely on remittances and borrowing to make a living. That is a way of living where one does not know where the next source of meal will come from has become a characteristic of the people of both Atuabo and Sanzule. They have therefore become vulnerable to the external environment in which they find themselves. The Vulnerability Context frames the external environment in which people exist. People’s livelihoods and the wider availability of
assets are fundamentally affected by critical trends as well as by shocks and seasonality over which they have limited or no control (Carney 1999).

They continue to find themselves in the same shocking state because their human capital which includes quality formal education is lacking. If this capital was well developed, they could have used it to secure alternative source of employment/livelihood either with the oil and gas companies operating in the area or with another institution somewhere. This situation has confined them to continue to wallow in poverty and hardship.

**Table 15: Managing the shock after oil and gas activities**

<table>
<thead>
<tr>
<th>Livelihood strategy</th>
<th>No. of response</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resorted to other non-farming activities</td>
<td>15</td>
<td>6.7</td>
</tr>
<tr>
<td>Resorted to other non-fishing activities</td>
<td>5</td>
<td>2.3</td>
</tr>
<tr>
<td>Relied on remittances</td>
<td>7</td>
<td>3.1</td>
</tr>
<tr>
<td>Resorted to borrowing</td>
<td>13</td>
<td>5.9</td>
</tr>
<tr>
<td>Living without knowing what to eat the next day</td>
<td>21</td>
<td>9.4</td>
</tr>
<tr>
<td>Managing with the same source of livelihood</td>
<td>44</td>
<td>19.7</td>
</tr>
<tr>
<td>Managing the economic hardship</td>
<td>34</td>
<td>15.3</td>
</tr>
<tr>
<td>Just managing with the situation</td>
<td>71</td>
<td>31.8</td>
</tr>
<tr>
<td>Managing with the high mosquito breeds</td>
<td>4</td>
<td>1.8</td>
</tr>
<tr>
<td>Managing with the hot weather</td>
<td>9</td>
<td>4.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>223</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Researcher’s Fieldwork, 2018

In an interview with Nyameke on how he manages to make a living or how he is coping with life after the discovery of oil and gas, this was how he responded.

**Nyameke:** When I heard that Oil has been discovered in Ghana, I was very happy but became happier when I heard Gas processing plants will be built here. I thought many people here will be employed by the oil and gas companies to improve their living conditions. None of these expectations has been met. They have rather employed outsiders to work for them leaving our people. Many people have rather lost their jobs and are in economic hardships. We have no better way of living. We are suffering here.
Management of shock as the sustainable livelihood framework (Scoones, 1998) is used to help rural people to reorganise their lives after experiencing shock such as shock from loss of livelihood, land, disappointment or even conflicts. Applying this framework to this study is not out of place. As rural people whose livelihoods are depended on farming and fishing, but have lost them and are now facing setbacks in these sectors, they certainly need to reorganise their lives to make a living. This life reorganisation has become difficult for households in both Atuabo and Sanzule.

5.6 STRATEGISING TO LIVE IN ATUABO AND SANZULE AFTER OIL AND GAS DISCOVERY

The livelihood strategy (Scoones, 1998) is used to explain the various ways through which the various kinds of assets of households, individuals and groups are pooled together to make a living. These assets are natural, social, human, financial and physical capital.

Natural resource stocks from which resource flows which are useful for livelihoods or survival such as land, water, wildlife, biodiversity and environmental resources are derived. The land for farming, the sea, rivers and inheritance of coconut trees are some of the most important natural resources at Atuabo and Sanzule. Many households in both Atuabo and Sanzule have lost their natural capital.

Their social capital which is the network through which they socialise has been distracted because social gathering at night is almost impossible as a result of the high mosquito breeds. Financially, they are handicapped as they have lost their livelihoods through land loss and drastic reduction in fish harvest.

They are further grouped into three as agricultural intensification and extensification, livelihood diversification and immigration and emigration. To increase output, farmers make investment or
increase the size of the farm to grow various kinds of crops (Carney, 1999). Rural people adopt the livelihood strategy by engaging in their major occupations like farming and fishing to earn their livelihoods. Better still; some people migrate to other locations or destinations to find new jobs or livelihood strategy.

In likewise manner, the discovery of oil and gas in Atuabo and Sanzule has resulted in low fish harvest with some people losing their lands. As such, the citizenry have to adapt some livelihood strategies. Some of these strategies as can be observed from Table 15, some households have resorted to non-farming and fishing activities (8.9%), 31.8% of households said they have no other alternative than to manage with the situation they find themselves in it; a confirmation of the vulnerability concept where people’s livelihoods are framed by the external environment and shocks which they have no control over (Scoones, 1998). This framework was adopted for this study to support findings from the field (Table 15) that the people in Atuabo and Sanzule are in a state of shock, annoyance but with no better alternatives to reorganise their lives. Few others 3.1% said they rely on remittances which are financial capital, one of the five types of capital; a concept adapted for this study. In an attempt to prevent hunger and economic hardships, rural farmers adapt to unpredictable agricultural environments with traditional farming techniques such as multiple cropping. Others too resort to the use farming techniques such as the use of fertilizers (Dalton, 1971).

Oil production leads to influx of people in communities located closer to it (Gyan and Asante, 2017). This situation according to (Osei-Tutu, 2012) results high cost of living such as rise in the cost of renting and increase in the prices of goods and services.

For households to be able to cope with the high cost of living, their ability to generate financial capital depend on proceeds from the wages of their economic activities such as fishing and
farming as it is the case for the people of both Atuabo and Sanzule. Financial capital therefore is key to the improvement in the livelihoods of their households (Scoones, 1998). There are no better alternative strategies for the people of both Atuabo and Sanzule to restrategise themselves after losing their lands to make way for the construction of gas processing plants coupled with the drastic reduction in fish harvest.

5.7 THE MEANING OF THE CHANGE TO THE CITIZENRY

Data gathered from the field showed that changes in both Atuabo and Sanzule as a result of the oil and gas discovery are of no use to the citizenry. It means hardship through loss of land, reduction in fish harvest, high breeds of mosquitoes, hot weather, unemployment and high cost of living. Respondents are of the opinion that with the exception of improvement in road network, provision of telephone and internet services, generally; the activities of the oil and gas companies and the offshore oil discovery has impacted negatively on them.

**Egya Ackah:** We haven’t benefitted from the oil and gas discovery at all. Everything they have done is for their own good. They constructed the roads so that their cars can use them. They know their cars will not be able to work if the road was bad that was why they constructed it. They also have to make phone calls and use the internet that is why they provided them. It was for their own good but not for us. If they did those things for us or they mean good for us, why are they not employing our people, listen to our opinions or pay us well for the land lost? They did everything for their own good but not for us. As for us, the changes mean nothing to us. It rather means hardship, unemployment and hunger…

The statement from Egya Ackah also means that although infrastructural development is good for national development, it is not sufficient. It is rather livelihood sustenance and improvement that is most needed by the people. The hardship brought on them as a result of the oil and gas activities as well as the offshore oil exploration mean more to them than the provision of social facilities.
Nyameke...I see the change as very negative. A change that has worsened our situations and brought hardship on us. A change that has made Atuabo and Sanzule popular to the world but we the citizens here are suffering. The whole world knows we the people here are living well. I think when you came here; you have seen everything for yourself whether we are living well or not. I think a better way to describe the change is “outside gentility; homecry”.

As noted by (Chindo, 2011) community involvement in social facilities is vital to both the relevance and maintenance of such projects by the local people. This is in supports of a study he conducted in Nigeria that communities relate to social facilities based on the relevance and their perception on such projects to the people for which the project was intended for.

CONCLUSION
This chapter discussed the socio-economic changes in both Atuabo and Sanzule as a result of the Oil and Gas finds and the subsequent installation of Gas processing plants in these communities. The changes and effects were mostly in the areas of farming, fishing, telecommunication, internet services, road and installation of fire post. These were sub divided into both positive and negative. On the positive side, Oil and gas finds has led to improvement in road infrastructure which has made transportation easy for the citizenry. Services like telephone network and internet that hitherto were not available are now available as a result of the oil and gas finds.

This is in line with the first objective of the researcher to explore the socio-economic changes in the two communities after the oil discovery.

Field work revealed that the Oil and Gas find has not generally impacted positively on the citizenry. Households have suffered from loss of farm lands, reduction in fish harvest, high breeds of mosquitoes, hot weather and high cost of living including increment in the prices of goods and services.
In spite of some positive benefits from the oil and gas finds, respondents generally agreed that Oil and Gas discoveries have impacted negatively on them than the positive, a confirmation of the resource curse theory by Sachs, (1993) that natural resources discoveries in developing nations has been negative rather than positive.

The study showed that the livelihoods of the citizenry of both Atuabo and Sanzule has not improved but has rather worsened.

The idea of sustainable livelihoods was to link both socio-economic and ecological factors together for policy implementation. The United Nations Conference on Environment (UNCEP) in 1992 adopted and expanded the concept and advocated for the achievement of sustainable livelihoods as a broad goal for poverty eradication (Krantz, 2001).

It was the expectations of the citizenry of both Atuabo and Sanzule that the activities of oil and gas companies in their communities were going to improve their well being and livelihoods. However, after 10 years of the existence of the oil and gas companies (particularly for those in Atuabo), the expected benefits are yet to come. It has rather resulted in land loss and drastic reduction in fish harvest and shock which they have no control over, a confirmation of the vulnerability context used as a framework for this study (Scoones, 1998).
CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This study was aimed at studying the socio-economic impact of Oil and Gas discovery on Atuabo and Sanzule, in the Ellembelle District of the Western Region of Ghana. Its specific objectives were to explore the changes in the two communities as a result of the oil and gas finds. The second objective was to examine how oil and gas discovery has changed family lives, created opportunity for employment and education and finally, to examine how citizens of these communities are reorganizing their lives after the changes. The first objective was achieved by first exploring the prevailing conditions before by comparing them with the changes after oil and gas finds. In addition to this, how oil and gas activities have affected family lives and created employment and educational opportunities for the citizenry and finally how households are reorganising their lives after the changes were discussed.

6.2 SUMMARY OF FINDINGS

The results of the study showed that there have been both positive and negative changes in both Atuabo and Sanzule as a result of the oil and gas finds. The positive changes were improvement in road networks, installation of telecommunication networks and internet services. Negatively, oil and gas discovery has led to loss of land, loss of jobs, drastic reduction in fish harvest, high breeds of mosquitoes, hot weather and high cost of living as a result of increment in the prices of goods and services and influx of people which has brought economic hardship on the people. The result also revealed that farmers who lost farm lands were poorly compensated for.
The study discovered again that oil and gas discovery has not contributed to the education of the two communities neither has it created opportunity for employment for the citizenry. The citizenry also looked vulnerable as they have no better alternative to reorganise their lives than to continue to rely on the same situation they find themselves in. Almost all respondents (98.2%) [Table 14] said they have lost or suffered some kind of hardship as a result of the oil and gas discovery. These sufferings and loss are in the area of land loss, low fish harvest, high breeds of mosquitoes, hot weather, difficulty in feeding households and frequent attacks of malaria. Only 1.8% of respondents said they have not suffered anything as a result of the oil and gas discovery. These respondents were those who have gained employment with the oil and gas companies or those who have made some gains from trade as a result of influx of people. The study again showed that although the incomes of some households have increased, generally, majority of respondents said they have suffered drastic reduction in their household income a situation that has made life unbearable for them.

THE MAJOR FINDINGS

The field results indicated that the impact of the discovery of oil and gas has been both positive and negative on Atuabo and Sanzule.

The positive impacts

1. The activities of oil and gas companies have led to improvement in road network and transportation. According to respondents, the area was characterised by poor road network prior to the discovery of oil and gas but has seen massive improvement presently.
2. It has also led to improvement in telecommunication network and internet services. These services according to respondents were nonexistent in their communities. It was only few respondents who said they could sometimes receive telephone networks on their mobile phones.

The negative impacts

1. Farmers who lost their farmlands for the construction of gas processing plants were poorly compensated for. The compensated amount ranged from Gh₵30 to Gh₵1000 for those in Atuabo and Gh₵400 to Gh₵1500 for those in Sanzule. Only few people (about 5) of coconut plantation farmers said they received an amount up to Gh₵10,000.

2. The discovery of oil has resulted in drastic reduction of fish harvest in both Atuabo and Sanzule. According to the fishermen, prior the the discovery of oil, they could harvest between 50-90 sacks per fishing trip but it is now difficult to harvest even 4 head pans per trip.

3. The activities of oil and gas companies has led to high breeds of mosquitoes for the people of both Atuabo and Sanzule and surrounding communities. This according to respondents is as a result of stagnant waters created by the activities of the oil and gas companies. This has distracted social gathering at night.

4. As a result of the gas emission plants located closer to the communities, there has been a very hot weather in Atuabo, Sanzule and surrounding communities.

A mixed method approached was used for the study. Household questionnaire supplemented with in depth interviews and focus group discussions were the major instruments used to collect data for the study. The study also adopted the multistage approach by dividing each community into four clusters using demarcated streets.
6.3 CONCLUSION

This study was conducted in Atuabo and Sanzule, two communities in the Ellembelle District of the Western Region of Ghana. Both communities have farming and fishing as their major economic activities. Following the discovery of oil in the Western region of Ghana, oil and gas companies have been constructed in these communities which have attracted various oil and gas related activities. The difference however is that while that of Atuabo has started operation, that of Sanzule is yet to. The growing literature suggests that oil discovery impacts negatively on surrounding communities and also results in low fish harvest. This study therefore was carried to find how oil and gas discovery has affected the social and economic lives of the people in the study area.

The results from fieldwork indicated that the effect of oil and gas discovery in the Ellembelle district has been both positive and negative. The positives were in the area of improvement in the road network and installation of telecommunication networks. Negatively, there has been loss of farm lands, drastic reduction in fish harvest, high breeds of mosquitoes, hot weather and high cost of living as a result of the influx of people and increment in the prices of goods and services.

Generally, the study concluded that the socio-economic impact of oil and gas discovery in the Ellembelle district has been negative on both Atuabo and Sanzule communities, a confirmation of the resource curse syndrome in developing nations.

6.4 RECOMMENDATIONS

6.4.1 Policy makers

Oil and gas discoveries in Atuabo and Sanzule have not been of benefit to the citizenry. As Table 14 shows, (98.2%) of respondents said they have lost or suffered some form of consequence as a
result of the oil and gas finds. There has been land loss, reduction in fish harvest, high breeds of mosquitoes, hot weather, job loss and increment in the prices of goods and services resulting in economic hardship. Ghana’s oil and gas discovery has not been able to avoid the resource curse in Atuabo and Sanzule.

It is recommended that the government of Ghana, Ghana Gas and all oil and gas companies operating in the study area should ensure that farmers who lost their lands are properly compensated taken into consideration time value of money.

There have been high breeds of mosquitoes following the oil and gas finds. It is recommended that the government through the Ministry of Health provide the study area and surrounding communities with treated mosquito nets at no fee.

In addition to this, there should be periodic spraying of the environment by Ghana Gas and companies operating in the area to ward off the high breeds of mosquitoes in order to avoid the frequent attack of malaria.

There should also be periodic medical screening by Oil and Gas Companies operating in the study area to check the health statuses of the citizenry as a result of the high breeds of mosquitoes and the heat in the environment.

Alternative livelihoods must also be provided for fishermen for the drastic reduction in fish harvest and farmers for the loss of farm lands. This can be done through soft loans from Microfinance and Small Loans Center (MASLOC) to the people. There should be a livelihood provisioning, through direct provision of food, water, shelter and other essential needs as it is often done in emergency situations.
As a result of loss of jobs and economic hardships on households, many of them are having difficulties taking care of their children/wards education, a situation which can lead to high school drop outs. In this regard, government should provide scholarship packages for brilliant but needy students if not the entire school going community. Other forms of assistance like supply of books and other learning materials should also be given to the communities.

6.4.2 Academia

News about the discovery of oil and gas has always been met with celebrations, jubilations and high expectations from the citizenry. This celebration however, is met with disappointment in many instances. The outcome of oil and gas discoveries in developing nations has been negative on the citizenry in the ongoing scholarly works. This study was therefore carried out in Atuabo and Sanzule to ascertain the socio-economic impact of oil and gas discoveries on these two communities. Findings from the study revealed that the resource curse phenomenon that has been a characteristic of many natural resource endowed nations has also resurfaced in Atuabo and Sanzule. Respondents revealed that they have negatively been affected by the oil and gas finds.

As a common characteristic of any academic work that cannot fill every gap, this study was not different, the researcher could not cover everything in association with the oil and gas finds. The promised compensation for loss lands has still not been paid. Future study can look at it after payment about how this long delayed payment meant to the citizenry or how the compensated amount would be used for. There have also been high breeds of mosquitoes and hot weather. What are the possible environmental and health implications for the citizenry? Future studies can possibly look at that.
REFERENCES


Carney, D. (1999): Approaches to Sustainable Livelihoods for the Rural Poor. ODI, Poverty and Briefing


Djokoto, G. & Opoku, K. (2010). Land Tenure in Ghana: Making A Case for incorporation of Customary Law in Land Administration and areas of intervention by the growing forest partnership. *IUCN*


Gary, Iva (2009). ‘Ghana’s Big Test: Oil’s Challenge to Democratic Development’ *Oxfam America and Integrated Social Development Centre*


Ghana Police report for 2015


Ipingbemi Olusiyi (2009) Socio-economic implications and environmental effects of oil spillage in some communities in the Niger delta, *Journal of Integrative Environmental Sciences*, 6:1, 7-23


Klineberg E. (20120. Going solo, if we can afford to live, we can do. *Society books*


Kyomugasho M (2016). Oil Industry in Uganda: The Socio-economic Effects on the People of Kabaale Village, Hoima, and Bunyoro Region in Uganda (*Un published work, School of Business and Management, Uganda*).


Missodey, Maxima (2012). The gendered transformation of the catering industry in Ghana’s oil region (*Unpublished Mphil thesis) University of Ghana*)


The 1992 constitution of the Republic of Ghana

The World Bank on development indicators report (2016)


Van Victor S., A. (2010). Introduction to the Global Oil and Gas Business. *Penn well Corporation, Oklahoma USA*


APPENDIX 1: QUESTIONNAIRE

A. Introduction
I am Augustine Kaku, an MPhil student at the Sociology Department of the University of Ghana, Legon. I am conducting a research on the “The Socio-economic impact of oil and gas discovery in the Ellembelle District of Ghana”. I would be grateful if you could contribute to this research by responding to some questionnaire. Be assured that whatever information you give will be strictly kept confidential.

B. Demography
1. Sex: Male [ ] Female [ ]
2. Age…………………………

Please state your home region……………………...................................

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>Farming</td>
<td>Married</td>
<td>Christianity</td>
</tr>
<tr>
<td>Primary</td>
<td>Fishing</td>
<td>Single</td>
<td>Islam</td>
</tr>
<tr>
<td>JSS/JHS/MSLC</td>
<td>Fish mongering</td>
<td>Divorced</td>
<td>Traditional Religion</td>
</tr>
<tr>
<td>Secondary/O/A Level</td>
<td>Trading</td>
<td>Widowed</td>
<td>Other Specify……..</td>
</tr>
<tr>
<td>Tertiary</td>
<td>Pig rearing</td>
<td>Separated</td>
<td></td>
</tr>
<tr>
<td>Post Graduate</td>
<td>Teaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other, specify……………….</td>
<td>Other, specify……………….</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PREVAILING CONDITIONS BEFORE THE OIL DISCOVERY
7. Do you come from this community? Yes [ ] No [ ]

[If Yes, to Question 7; skip Questions 8 and 9]

8. If no, where do you come from?

................................................................................................................................................
9. What brought you to this community?

...........................................................................................................................................
...........................................................................................................................................

10. What economic activity or social facility existed in this community before oil and gas discovery?

...........................................................................................................................................
...........................................................................................................................................

11. Which electrical gadget did the household owned before oil and gas discovery?

...........................................................................................................................................
...........................................................................................................................................

12. How did you feel when you hear oil and gas activities will be located here?

...........................................................................................................................................
...........................................................................................................................................

13. Has your expectation been met? Yes ☐ No ☐

13a. Give reason(s) for your answer

...........................................................................................................................................
...........................................................................................................................................

14. Are you the head of your household? Yes ☐ No ☐

[If Yes, to Question 14; skip Questions 15]

15. If No, what is your relationship with him/her? (Tick as appropriate)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. What was your occupation before the Oil and Gas activities in this community?

<table>
<thead>
<tr>
<th>Occupation before oil and Gas activities</th>
<th>Tick as appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Farming</td>
<td></td>
</tr>
<tr>
<td>2. Fishing</td>
<td></td>
</tr>
<tr>
<td>3. Fish mongering</td>
<td></td>
</tr>
<tr>
<td>4. Trading</td>
<td></td>
</tr>
<tr>
<td>5. Artisan</td>
<td></td>
</tr>
<tr>
<td>6. Teaching</td>
<td></td>
</tr>
<tr>
<td>7. Nursing</td>
<td></td>
</tr>
<tr>
<td>8. Other (specify)</td>
<td></td>
</tr>
</tbody>
</table>
17. How much were you earning in a weekly basis before the Oil and Gas activities begun?
Gh₵..............................................................................

18. Apart from this occupation, did you have any other source of livelihood/income before the
oil and gas activities? Yes ☐ No ☐

18a. If yes, what is occupation?............................................................

18b. How much income did it fetch then? (Gh₵................................

19. Which of the following assets did the household have before the oil and gas activities? (Tick
many options as possible)

<table>
<thead>
<tr>
<th>Asset</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm land</td>
<td></td>
</tr>
<tr>
<td>Fishing Equipment</td>
<td></td>
</tr>
<tr>
<td>Store/Petty trading</td>
<td></td>
</tr>
<tr>
<td>Taxi/Motorbike</td>
<td></td>
</tr>
<tr>
<td>Other (Specify)</td>
<td></td>
</tr>
</tbody>
</table>

20. How much income was the household earning on weekly basis? (Tick as appropriate)

<table>
<thead>
<tr>
<th>Asset</th>
<th>&lt;Gh₵100</th>
<th>Gh₵100- Gh₵500</th>
<th>Gh₵501- Gh₵900</th>
<th>Gh₵ 901- Gh₵1300</th>
<th>Above Gh₵1300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm land</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fishing Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Store/Petty trading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxi/Motorbike</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21. How many people used to be in this household before the oil and gas activities?

........................................................................................................

PREVAILING CONDITIONS AFTER OIL DISCOVERY

22. Have you seen any improvement in the performance of your work after the oil and gas
activities? Yes ☐ No ☐ Not much ☐ the same performance ☐ Can’t tell ☐
23. Briefly describe how oil and gas activities has affected this community

........................................................................................................................................
........................................................................................................................................

24. In your opinion, would you say the citing of the gas processing plants in this community is useful? Yes □ No □

24a. What is the reason for your answer?

........................................................................................................................................
........................................................................................................................................

25. Which of the following assets is the household having currently and how much income does the household earn on weekly basis? (Tick as many options as possible)

<table>
<thead>
<tr>
<th>Asset</th>
<th>&lt;Gh₵100</th>
<th>Gh₵100-Gh₵500</th>
<th>Gh₵501-Gh₵900</th>
<th>Gh₵901-Gh₵1300</th>
<th>Above Gh₵1300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Land</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fishing equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Store/Petty trading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxi/motorbike</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other(specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

26. How has the oil and gas projects activities affected you as a person?

........................................................................................................................................

27. Which household gadget is the household currently having?

........................................................................................................................................

28. How would you access the impact of the oil and gas activities on your household?

Very negative □ Negative □ Positive □ Very positive □ Can’t tell

29. Have you lost or suffered anything as a result of the oil and gas exploration activities?

Yes □ No □

29a. If yes, what have you lost or suffered from?

........................................................................................................................................
(If No, to Question 29; skip Questions 29a)

........................................................................................................................................
........................................................................................................................................

30 Were you compensated? Yes ☐ No ☐

31. If yes, are you satisfied?

Poorly satisfied ☐ Satisfied ☐ well satisfied ☐

32. Which economic activity or facility exists in this community currently?

........................................................................................................................................

33. How is your household coping after losing or suffering after losing your livelihood?

<table>
<thead>
<tr>
<th>Coping strategy</th>
<th>Ticket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resorted to other non-farming activities</td>
<td></td>
</tr>
<tr>
<td>Resorted to other non-fishing activities</td>
<td></td>
</tr>
<tr>
<td>Relied on remittances</td>
<td></td>
</tr>
<tr>
<td>Resorted to borrowing</td>
<td></td>
</tr>
<tr>
<td>Managing with the same source of livelihood</td>
<td></td>
</tr>
<tr>
<td>Reduced household expenditure</td>
<td></td>
</tr>
<tr>
<td>Managing the economic hardship</td>
<td></td>
</tr>
<tr>
<td>Other (specify)</td>
<td></td>
</tr>
</tbody>
</table>

34. Using a scale of 1 as the lowest and 5 as the highest, evaluate the following statements by ticking the corresponding choice

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Agree relatively</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Cost of food has increased since the discovery of oil and gas</td>
</tr>
<tr>
<td>2  Cost of renting has increased since the discovery of oil and gas0</td>
</tr>
<tr>
<td>3  The road construction has been useful</td>
</tr>
<tr>
<td>4  Cost of living has gone up</td>
</tr>
<tr>
<td>5  The community has benefitted from the oil and gas activities</td>
</tr>
<tr>
<td>6  Fish harvest has reduced</td>
</tr>
<tr>
<td>7  Cost of rent has increased</td>
</tr>
<tr>
<td>8  There has been an influx of people</td>
</tr>
<tr>
<td>9  Many people have moved out of this community</td>
</tr>
</tbody>
</table>
35. Using a scale of 1 as the lowest and 5 as the highest, evaluate the following statements by ticking the corresponding choice

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Agree relatively</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. There has been improvement in Education/School facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. There has been improvement in Pipe borne water facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. There has been improvement in Health facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. There has been improvement in recreational facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. There has been improvement in Road facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. There has been improvement in Telephone and internet facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. There has been installation of fire post facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. There has been improvement in Farming activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. There has been improvement in Fishing activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

36. How many are you in your household currently?

………………………………………………………………..

37. How many of the people in this household are in school now and at what level?

<table>
<thead>
<tr>
<th>EDUCATIONAL LEVEL</th>
<th>MALE (No. in school)</th>
<th>FEMALE (No. in school)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JSS/JHS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSS/SHS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post graduate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

38. Were you provided with any alternative livelihood after losing your original source of livelihood? Yes ☐ No ☐

39. If yes, indicate your level of satisfaction using the scale below

Not satisfied ☐ Poorly satisfied ☐ Satisfied ☐ Very satisfied ☐
40. Using a scale of 1 as the lowest and 5 as the highest, evaluate the following statements by ticking the corresponding choice

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Agree relatively</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  There has been an improvement in Educational infrastructure</td>
</tr>
<tr>
<td>2  There has been an improvement in waste disposal</td>
</tr>
<tr>
<td>3  There has been an improvement in road infrastructure</td>
</tr>
<tr>
<td>4  Many people have been employed by OG companies</td>
</tr>
<tr>
<td>5  There has been an improvement in the source of water supply</td>
</tr>
<tr>
<td>6  Many people have moved into this community.</td>
</tr>
<tr>
<td>7  There has been additional sources of water</td>
</tr>
<tr>
<td>8  Family lives have improved</td>
</tr>
</tbody>
</table>

Thank you for participating in this study. I am very grateful.
I am Augustine Kaku, an MPhil student at the Sociology Department of the University of Ghana, Legon. I am conducting a research on the “The Socio-economic impact of oil and gas discovery in the Ellembele District of Ghana”. I would be grateful if you could contribute to this research by responding to some questions. Be assured that whatever information you give will be strictly kept confidential.

1. Sex
2. Educational level
3. Marital status
4. Religion
5. Where do you come from?
6. How was fishing activities carried on in this community before the oil discovery?
7. How is fishing activities carried out in this community now?
8. How long have you been doing this work?
9. How many fishing materials did you own before the oil discovery? Kindly name them.
10. How many of these fishing materials do you own now? Kindly name them.
11. In your view, what do you think has contributed to the change?
12. What was your average catch of fish per each expedition before the oil?
13. What is your current catch?
14. What was your average income per each expedition before the oil discovery?
15. What is your current income from fishing?
16. What is your current average weekly income?
17. Are you aware of the ban on the use of certain parts of the sea for fishing?
18. Has the ban affected you?
19. If yes, how has it affected you?
20. Describe how oil and gas activities have affected you and your household?
21. Any other comment(s)

Thank you for participating. I am very grateful.

INTERVIEW GUIDE FOR THE AFFECTED FARMERS

1 Sex
2 Educational level
3 How many hectres of your farm land was affected?
4 What type of crop did you cultivate on it?
5 Were you compensated?
6 Are you satisfied with the compensation?
7 Were you involved in the compensation process?
8 How are you managing your life after losing your farm land?
9 Any other comment?
INTERVIEW GUIDE FOR REPRESENTATIVES OF OIL AND GAS COMPANIES

I am Augustine Kaku, an MPhil student at the Sociology Department of the University of Ghana, Legon. I am conducting a research on the “The Socio-economic impact of oil and gas discovery in the Ellembele District of Ghana”. I would be grateful if you could contribute to this research by responding to some questions. Be assured that whatever information you give will be strictly kept confidential.

1. Name of company
2. Position in company.
3. Sex
4. How many communities and people are affected by the oil and gas activities?
5. In what way were they affected?
6. Were they compensated?
6a. How were they compensated?
7. Were they involved in the compensation process?
8. Should the affected farmers expect additional compensations?
9. Has anyone from these affected communities been employed by your company?
10. If yes, indicate the following
11. Position and responsibility
12. What is the relationship between company executives and community leaders?
13. In what ways have Atuabo, Sanzule or the Ellembele District benefited from the oil and gas activities?
14. Any other comment

Thank you for participating. I am very grateful.

FOCUS GROUP DISCUSSIONS

Some of the issues for discussion were:
1. A history of the activity in the community
2. How the activity was carried out before the discovery of oil and gas
3. How the same activity is carried out currently
4. The general factors which have helped the activity to thrive
5. Main changes in the activity before the discovery of oil and the present
6. Reasons for these changes
7. The factors that hinder the progress of the activity
8. Ways of improving the activity
9. Alternate economic activities in the community
10. How the discovery of oil and gas has affected the household
11. Any other issues that was necessary for discussion
12. How do residents perceive the activities of the oil sector?

Thank you all for participating in this study. I am very grateful.
INTERVIEW GUIDE FOR OPINION LEADERS

1. Sex
2. Position in community
3. A brief historical background of the community
4. Can you name the facilities in the community before the discovery of oil and gas?
5. Name any new facilities in this community as a result of the discovery of oil and gas in this community.
6. What was the major economic activity in this community before the discovery of oil and gas?
7. In your view, do you think this economic activity has improved or declined as a result of the oil and gas activities in this community?
8. What is your reason for saying that?
9. How has oil and gas discovery affected education in this community?
10. How has oil and gas affected family lives
11. Would you say the discovery of oil and gas has been positive or negative to this community?
12. Why do you say so?
13. How are the people in this community reorganizing their lives?
14. Kindly describe the effects of oil and gas discovery on this community.
15. Any other comment?

Thank you for participating in this study. I am very grateful.
APPENDIX 2: VARIOUS IMAGES OF THE STUDY AREA

Stagnant water created by OG activities which respondents believe are the causes of the high mosquito breeds

School compounds of Atuabo and Sanzule

Sources of water supply at Atuabo and Sanzule

Atuabo and Sanzule townships
APPENDIX 3: CLEARANCE LETTER FROM THE ETHICS COMMITTEE FOR THE HUMANITIES

UNIVERSITY OF GHANA
ETHICS COMMITTEE FOR THE HUMANITIES (ECH)
P. O. Box LG 74, Legon, Accra, Ghana

21st February, 2018

My Ref. No. .................

Mr. Augustine Kaku
Department of Sociology
University of Ghana
Legon

Dear Mr. Kaku,

ECH 102/17-18: THE SOCIO-ECONOMIC IMPACT OF OIL AND GAS DISCOVERY IN THE ELLEMBELLE DISTRICT OF GHANA

This is to advise you that the above reference study has been presented to the Ethics Committee for the Humanities for a full board review and the following actions taken subject to the conditions and explanation provided below:

Expiry Date: 20/08/18
On Agenda for: Initial Submission
Date of Submission: 15/01/18
ECH Action: Approved
Reporting: Quarterly

Please accept my congratulations.

Yours Sincerely,

Rev. Prof. J. O. Y. Mante
ECH Chair

CC: Rev. Prof. M. P. K. Okyerefo, Department of Sociology, University of Ghana.
APPENDIX 4: CLEARANCE LETTER FROM GHANA GAS

CONFIDENTIALITY AGREEMENT

Name of Researcher: Augustine Kaku
Name of Institution: University of Ghana, Legon
Title of Research Project: The Socio-Economic Impact of Oil and Gas Discovery in The Ellembelle District of Ghana

As a researcher, I understand that I may have access to confidential information about Ghana National Gas Company. By signing this statement, I am indicating my understanding of my responsibilities to maintain confidentiality and agree to the following:

- I understand that names and any other identifying information about the Company are completely confidential.

- I agree not to divulge, publish, or otherwise make known to unauthorized persons or to the public any information obtained in the course of this research project that could identify the persons who participated in the study.

- I understand that all information obtained or accessed by me in the course of my work is confidential. I agree not to divulge or otherwise make known to unauthorized persons any of this information, unless specifically authorized to do so by approved protocol.

- I agree to notify Ghana National Gas Company immediately should I become aware of an actual breach of confidentiality or a situation which could potentially result in a breach, whether this be on my part or on the part of another person.

Signature: [Signature]
Date: 26/1/2018
Name: Augustine Kaku

Signature of Ghana/Gas Rep: [Signature]
Date: 26/02/18
Name: [Name]