

Hope Tottimeh

Public Participation in the Environmental Impact Assessment (EIA) Administration of Ghana: A Case Study of Oil and Gas Retail Sectors in Sekondi-Takoradi.

Supervisor: Professor Stig H. Jørgensen

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Department of Geography

Norwegian University of Science and Technology -NTNU

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NTNU – Trondheim
Norwegian University of
Science and Technology

DECLARATION

I hereby declare that this thesis is a product of my own research and authored by me. As much as possible, all ideas and information with exception of references used have been duly acknowledged in line with the ethics of academic honesty.

.....
Hope Tottimeh

May 2017

DEDICATION

I dedicate this thesis to my mother, Madam Alice Konu, who through her care, love, sacrifice and support I have come this far. To my lovely girlfriend Faustina Vondee and my friend Augustus Dziwornu Kokoti I dedicate this work to you.

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ABSTRACT

The siting of fuel and gas stations in Ghana embodies a diverse interest of planning problem with inadequate levels of public participation which has witnessed a number of public protest against their location by communities and interested parties. The sector posed a high risk to life and property. The aim of the study was mainly to; 1) assess the level of public participation in the Environmental Impact Assessment (EIA) of oil and gas retail sectors which specifically focused on fuel filling, fuel service, and gas stations; 2) identify the risks posed by fuel and gas stations to individuals and the environment; and 3) examine how power relations influence the permitting and location of fuel and gas stations.

The study applied knowledge mainly from theories; Arnstein ladder of participation, political ecology, political economy and complemented ideas from concepts like Nimbyism, power, participation, environmental justice which were the basis for the analyses. The study employed qualitative methods with data collected through observations and interviews with 4 key informants and 28 primary informants.

The study was conducted in Sekondi-Takoradi metropolis specifically in the neighborhoods of Sekondi, Anagyi, Kasawuradu, Takoradi, Ntankoful, and Fijai. The study reveals that there is an inadequate and ineffective level of public participation in the Environmental Impact Assessment of fuel and gas stations. Some informants indicated that the consultation done by EPA is a mere procedure and does not really represent public interests and desires. The June 3, 2015, fire and flood disaster in Accra the study reveals has increased the risk perception and awareness of many informants on the risk associated with locating fuel and gas stations close to residential and busy commercial areas. Complex issues of power relations with regard to economic and political power influence the location and the level of risk people are exposed to. The study reveals that economic and politically vulnerable groups are exposed to location risk of fuel and gas station than the rich business and political class with inadequate consideration for general public safety and concerns.

In view of these findings, the study concludes that consultation in the EIA of fuel and gas station should be more effective and comprehensive to make room for public views to be incorporated in the decision-making process devoid of any power influence and technical exigencies. The study is limited in providing a general image of the level of participation, as the EIA requirement and levels of participation are country specific and possibly city specific.

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List of acronyms

AER	Annual Environmental Report
BDCs	Bulk Oil Distribution Companies
BOPP	Benso Oil Palm Plantation
CBA	Cost-Benefit Analysis
CDB	Central Business District
ECG	Electricity Company of Ghana
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPC	Environmental Protection Council
GFZB	Ghana Free Zones Board
GNFS	Ghana National Fire Service
GNPC	Ghana National Petroleum Corporation
GODAC	Ghana Oil Drilling Academy and Consulting
GOIL	Ghana Oil Company
GPRTU	Ghana Private Road Transport Union
GREL	Ghana Rubber Estate Limited
GSS	Ghana Statistical Service
GWCL	Ghana Water Company Limited
HDR	Human Development Report
LULU	Locally Unwanted Land Users
NEPA	National Environmental Protection Act
NGOs	Non-Governmental Organizations
NIMBY	Not In My Back Yard
NPA	National Petroleum Authority
NRCS	National Road Safety Commission

OECD	Organization for Economic Co-operation and Development
OMCs	Oil Marketing Companies
PER	Preliminary Environmental Report
PROTOA	Private Road Transport Owners Association
RCC	Regional Coordinating Council
STC	State Transport Corporation
TCPD	Town & Country Planning Department
TRC	Technical Review Committee
UMAT	University of Mines and Technology
UNEP	United Nations Environment Programme
UPSA	University for Professional Studies

CHAPTER ONE

INTRODUCTION

1.1 Background

Community opposition is considered one of the major obstacles to siting facilities such as hazardous waste repositories, power plants, wind farms, prisons and other “locally unwanted land use” (LULU) (Ter Mors et al, 2012). The siting of fuel and gas stations in Ghana is exposed to the same fate. Participation is fundamentally necessary for the management of natural resources and to a larger extent safeguarding the environment and human lives. Location of development projects and issues of environmental safety mainly against the backdrop of impacts from any industry or activity, constitute an area of foremost concern. The oil and gas retail industry or sector for the purpose of the study include (fuel filling, fuel service, and gas stations). The oil and gas retail sector in Ghana is challenged with the inadequacy of information on environmental impacts and safety protocols to the public which consequently foster various forms of public agitations against the location of fuel and gas stations. This has been represented in the inadequate involvement of the public in the environmental assessment of the oil and gas retail industry. The Environmental Impact Assessment (EIA) is a planning tool used by the Environmental Protection Agency (EPA) in Ghana to facilitate sound environmental practices and compliances.

The United States of America in the late 1960s, first introduced the EIA and many countries in the world followed suit by incorporating the environmental assessment in their legislation (Appiah-Opoku, 2001). In Africa for example, environmental impact assessment (EIA) was implemented mostly as a result of donor requirements for development projects, and financial assistance to ensure good environmental practices (Marara et al., 2011). Essentially, Ghana in 1989 has adopted the EIA into the environmental assessment regulation which was a progressive policy path taken to improve environmental practices in the country and beyond. As part of a constitutional obligation, EPA directs oil and gas retail sectors to conduct an Environmental Impact Assessment. The Environmental Protection Agency is obliged to also engage the public view most importantly, in local communities and towns proposed for the establishment of the oil and gas retail sectors (fuel filling, service and gas stations). This according to Bawole (2013), aids in redressing the concerns and fears of the communities on the potential impacts of the project, to eliminate future agitations and confrontations. Profoundly, some communities disapprove the establishment or continuation and operation of fuel and gas filling stations because of the ineffective and perhaps

partial implementation of their concerns in the Environmental Impact Assessment. The explicit public concern is that aftermath the issuance of environment permit by the Environmental Protection Agency to the oil and gas retail companies, any supplementary monitoring, evaluations, and complaints do not often materialize (Appiah-Opoku, 2001 cited in Bawole, 2013, p. 386). According to Agrawal, (2005 cited in Bawole, 2013), governments are always on the look for revenue so they find it difficult to involve and protect the local communities who are affected by these activities. The problem here is that the ability of local communities or the public to participate and to hold government agencies accountable has not been forthcoming (Appah-Sampong, 2003). Public participation will aid better understanding and appreciation of traditional values of the local communities and the public in general and this will contribute significantly to the decision making process of the Environmental Protection Agency.

1.2 Statement of problem

In the period of two years, a major explosion and fire outbreaks of fuel and gas filling stations occurred in Ghana with unprecedented casualties recorded. The June 3 flood and fire disaster at Kwame Nkrumah Circle, a suburb of Accra in Ghana though outside of the research area, occurred as a result of the leakage of an oil filling station tank which subsequently exploded killing over 150 Ghanaians. A year later, on December 23, 2016, another gas filling station exploded at Trade Fair Centre in Accra and 10 people were killed with several others sustaining various degrees of injuries (see photos in chapter six, section 6.1.3). These explosions and fires received tremendous media coverage locally and internationally. The public largely attributed this to the low or inadequate public participation procedures in the Environmental Impact Assessment (EIA) of fuel filling and gas station by regulatory institutions and have expressed concerns about the safety of fuel and gas station with respect to location within residential or Central Business District (CDB) which are busy commercial areas crowded with people. This indicates that the public has extremely not been represented in the EIA process effectively and even if they have been involved, their views are not considered eventually at the decision-making stage. This is a very problematic development which when not taken seriously can result into agitations and conflicts in the communities where these sectors are located. Hypothetically, the Environmental Protection Agency has not implemented the public participation aspect of the EIA plan to its fullest capacity in the oil and gas retail sector.

Indisputably, the EIA administration in the oil and gas industry over the years has witnessed some level of stakeholder involvement, quintessentially the public, individuals, and organizations are involved marginally. This assertion manifests in a number of neighborhood consultations and public hearings organized by both proponents of various projects including fuel and gas stations and the Environmental Protection Agency (EPA) to assess the views and concerns of the public on the potential impact of oil and gas activity on their existence and operations. It is, however, observed that public participation in the EIA has not been fully harnessed. A number of scholarly works attempt to ascertain the dimension to this development from different perspectives especially with the siting of projects. The problem identified is that, though the public has been engaged to some extent in the EIA process, many stakeholders are not involved in the EIA process in the oil and gas retail sectors and even if they are involved, to what extent are their views and concerns incorporated at the decision-making stage.? The public has been marginally involved and represented in the EIA process and the research seeks to unfold the level of participation and the way forward.

1.3 Research objective

As part of the general objective of this research to explore the level of public participation in Environmental Impact Assessment (EIA) administration in the oil and gas retail sector, sub-objectives have also been identified to help the researcher understand deeper the main objective. These objectives specifically include;

- To identify the challenges faced by institutions (EPA) in involving the public in the EIA
- To identify the risk posed by fuel and gas stations to individuals and the environment
- To ascertain how power relations influence the participation process in the EIA of fuel and gas stations.

1.3.1 Research questions

In line with the objective of the research, some research questions have been constructed to help in understanding the main objective. These question will help understand the current phase of participation and the reasons for the marginal involvement of the public in the Environmental Impact Assessment of the oil and gas retail sectors and the risk posed by the sector. These questions include:

- How are the public currently engaged (participate) in the EIA process of fuel and gas stations?
- Why is the public not adequately or effectively involved in the EIA of fuel and gas stations?
- What are the risks posed by fuel and gas filling stations?
- How power relations influence the location of fuel and gas stations?

1.4 Relevance of the topic

The study will look at the level of public participation in EIA administration of the oil and gas retail sector using Sekondi-Takoradi as a case study. According to Gerring (2004, p. 342 cited in Hay, 2010, p. 81), a case study is “an intensive study of a single unit for the purpose of understanding a larger class of similar units”. A case study also “involves the study of a single instance or a small number of instances of a phenomenon in order to explore in depth nuances of the phenomenon and the contextual influences on and explanation of that phenomenon”(Baxter, 2010 cited in Hay 2010, p. 81). The researcher considers Sekondi-Takoradi because, following the discovery and drilling of oil and gas in commercial quantity in the region, numerous oil and gas retail and service related companies are increasingly being established in the Sekondi-Takoradi. Oil and gas retail sectors have environmental impacts that the public must be aware of hence, the need for an effective public participation.

The topic is also inspired by the two big and several fire outbreaks and gas explosions in many parts of the country which the researcher attributes to the inadequate and ineffective involvement of the public in the management of these sectors which resulted in unprecedented fatalities. The public blamed such on the Environmental Protection Agency’s refusal to heed to public complaints and concerns about the location of these fuel filling and gas stations across the country. Therefore, considering the fact that these sectors are increasingly being established in Sekondi-Takoradi, such fate may also be suffered by the communities in particular and the public in general. This has some developmental paradigm shift on the communities in the Sekondi-Takoradi and participation is a pivotal part of any development. This topic on public participation is considerably essential to stir the consciousness of the public on their role to be involved in the co-management of the environment considering the dangers associated with the sector to human lives and the subsequent influx of this industry in Sekondi-Takoradi.

1.5 Organization of thesis

The thesis is organized into eight chapters. Chapter one focuses on the introduction to the thesis, with sub-sections on the background of the study, statement of the research problem, research objective and research questions of the study. Chapter two concentrates on the theoretical, conceptual and analytical frame of the study. Chapter three focuses on the methodological framework of the study. Chapter four presents a brief history of Ghana with emphasis on Sekondi-Takoradi in relation to oil and gas activities in the region. Chapter five, six and seven focus on the empirical data and analysis exploring various findings in line with the objectives of the research. Chapter five focuses on participation and EIA of fuel and gas stations in Ghana, the importance of participation and the challenges or limitations to effective participation, included a summary of the chapter because the chapter focuses on the main objective of the study. Chapter six focuses on risk and fears of fuel and gas stations, fire disasters and awareness creation and risk reduction strategies of fuel and gas stations. Chapter seven presents the influence of political ecology and the political economy in the location and permitting of fuel and gas stations. Chapter eight provides a summary of the research finding, limitations of the study, conclusion, and recommendation for and effective participation in the EIA and for future study.

CHAPTER TWO

THEORETICAL, CONCEPTUAL AND ANALYTICAL FRAMEWORK

2.1 Introduction

A theory is very important for every scientific discipline and research (Owusu, 2015). A theory is a framework or system of concepts and propositions that provide causal explanations of phenomena within a particular domain (Scheiner & Willig, 2008). Theory is a set of ideas about how the world works (Hubbard et al, 2002) and the means by which Geographers try to describe, explain and predict certain aspects of the world (Harvey, 1969 cited in Hubbard et al, 2002) The aim of using these theories is to link my empirical work based on data collected to the relevant concepts and theories. Research work involves the use of various theoretical and methodological approaches in structuring concepts and elements of theory. One could be more objective by employing positivist approach where laws are determined to explain human behavior in terms of cause and effects (Kitchin & Tate, 2013) and some researchers employ humanistic or social constructivist approaches which allows a deep insight into the meanings, emotions and life world of people. Some researchers employ a structuralist approach to ascertain how certain institutional and administrative structures influence particular issues under study. This study employs humanistic, materialist and structuralist theories and concepts like political economy and political ecology to explain how people react to issues and the influence of the political economy on participation in the impact assessment of the oil and gas retail sector. The demanding and broad nature of the topic and the related development have made the researcher to employ a selected number of theories to enlighten the scope of the study.

This chapter starts with the definition of concepts related to the topic and research objectives like power, participation, Nimbyism, environmental justice, risk, winning and losing in environmental decisions, hegemony and everyday resistance and Marxist political economy. It is followed by some theoretical elements and a more specific analytical framework; Arnstein ladder of participation, political ecology, Habermas Theory of Communicative Action. The concepts relate to issues of participation, the reaction of people as far as the location of unwanted activity is concerned. The chapter looks also at how political theories or power relations influence environmental related decisions and aims to examine the level of which participation in the environmental impact assessment is compromised.

2.1.1 Power

The physical and the built environment of many countries are continuously changing because of the interest and values of private individuals and the government. This dynamic is influenced tremendously by *power* relations that exist in society and how power is executed. The modification of cities includes the relocation of people or the establishment of other infrastructure in residential areas largely as a result of the forces of demand and supply. This development according to Pacione (2001) is influenced, enhanced or constrained by various national and local planning policies of different countries. Power relations influence the level of participation in environmental decision making. Power is the ability to affect the behavior of others and to persuade people to do something that they are not committed to doing (Truitt, 2010). Locke (1979 cited in McAreavey, 2009), considered power as the capacity to make or receive change. To Luke (2005 cited in McAreavey, 2009) power is the ability to resist change. Power is the way in which certain actions modify others but not really the relationship between partners, individuals or collective groups (Foucault, 1982). Power becomes activated only when it is exercised.

According to Flyvbjerg (1998), power influences rationality and blurs the distinction that exists between rationality and rationalization. To Flyvbjerg, power is exercised when rationalization is presented as rationality. Kant (cited in Flyvbjerg, 1998, p. 2) remarks that “the possession of power undermines the free use of reason”. The broad nature of power makes it easy to explain and describe the problems of current development in relation to power manipulation. Francis Bacon’s popular maxim ‘knowledge is power’ becomes the opposite in today’s societies where power determines what should exist and what should not. Power in the world today becomes knowledge. Power determines what is good and what is bad and not based on laid down standards. Arguments on power stem from the debate about which class of people have more influence than the other in decision making.

Fundamentally, participation and consent are necessary for power to be legitimate. McAreavey (2009), indicated that the absence of real or implied approval leads to illegitimate power which becomes a hindrance to the realization of ideal community and individual autonomy. Participation is a relevant form of consent in environmental decision making. The organization and contestation of many energy systems are influenced by power both by energy actors and the human society (Zimmerer, 2013). Actors in controlling sources of energy and environmental issues globally are powerful. The section on participation and communicative action is influenced by power relation.

The motivation for the study and the objective to ascertain the level of public participation in the impact assessment of oil and gas retail sector requires the establishment of the link between power and participation.

2.1.2 Participation

Public participation is an ill-defined and contested concept as it means different things to different people. The contentions lead to mostly confusion, frustration and consequently loss of confidence in institutions and the government. To better understand participation in the Environmental Impact Assessment (EIA) of the oil and gas retail sector, participation needs to be explained. Participation is the process by which the public participates in, influence and share control over decision making, be it priority setting, resource allocation or access to goods and services (World Bank, 1996 cited in Gray, 2006). Participation can be at all levels or stages of any process of decision making which according to Gray (2006, p. 29) “varies from relatively weak but large scale participants through mainstream information, provision and general election to a very strong and interactive participation where stakeholders share decision making with government as in the case of the co-management systems”.

Participation is a key issue in making environmental decisions that affect people and their source of sustenance in the short or long run. Participation in environmental decision making come in the forms of dialogue, joining committees, public hearing, and symposia with the public. Participation has various tenets of being opened, transparent, free flow of information and deliberative of a democratic system. Many impacts assessment of different countries consults or engage with the public with regard to the construction and operation of activities or projects that impact on lives and property. The consultation process identifies the potential impacts expressed by the public and proposed mitigation measures to reduce or eliminate the impacts by the proponents. Institutions mandated by law organize public hearing when there is public reaction to the commencement of a proposed undertaking and also for large projects that require the dislocation, relocation, and resettlement of communities like the construction of a dam, airport, and harbor. This development is very often country specific as it varies from one sector to the other. The public hearing process for many countries is sector specific. The public in the face of consultation still complains about the final environmental decision. This could point to the fact that, the level of participation does not represent the public interest at the end of the decision-making process and that environmental decisions are predetermined by the authorities before any engagement with the public. The

consultation process is more or less mere formality to satisfy the provision in the environmental regulation of many countries.

Participation can be direct or indirect. Direct participation in the form of mass meeting, and voting. Indirect participation is done through representative groups and stakeholder units. Public participation enhances public engagement, conflict resolution, and decision quality. Participation enhances the quality of an environmental decision by taking inputs from different interests in a comprehensive way and also ensures that those on the disadvantaged side of society are not marginalized (Reed, 2008). Stakeholder participation increases public confidence in decisions and civil society especially when participatory processes are perceived to be transparent and consider conflicting claims and views which increase the likelihood that environmental decisions are observed to be holistic and fair, accounting for a multiplicity of values and interests bearing in mind the complexity of human-environmental interactions (Richards et al, 2004 cited in Reed, 2008).

Participation is mostly strengthened by a philosophy that stresses *empowerment*. That is ensuring that participants have the power to really influence the decision and ensuring that participants have the technical capability (education on the impact assessment process and health and safety standards of a project) to engage effectively with the decision (Richards et al, 2004 cited in Reed, 2008). Participation is very necessary to make acceptable any environmental decision and to contest the validity of some decisions. Conceptualization of participation as co-produced, relational and emergent indicates a shift from positivist approaches to a more humanistic approach which emphasizes the individual preferences, attitude, and desires (Proctor, 1998 cited in Chilvers & Kearnes, 2015).

Participation is considered also as co-management of environmental resources with actors from the state institutions and the local community working together in making environmental decisions. Co-management fosters the constructive involvement of the relevant stakeholders in the environmental decision making which reduces the chances of conflict and agitations. Participation allows indigenous knowledge to be applied in decision making. In many cases of land planning for major development projects, local knowledge is under-utilized especially if the project is a high economic project. According to Maganga (1998 cited in Dungumaro & Madulu, 2003), in developing land use plans in local communities, local knowledge are ignored by planners.

Participation fosters support, acceptability and peaceful execution of activities devoid of any agitation or upheaval. In environmental decision, community plays an important role and should be recognized as partners in the development process who can contribute to the implementation, evaluation of environmental activities and other development projects.

2.1.3 Hegemony and Everyday resistance

Environmental decisions are taken because of the influence and the power of some group of people within a society which affects many vulnerable people. Political and economic strength determines how space is acquired and exploited and may benefit a group of people at the peril of many powerless and disadvantaged masses. Rural and disadvantaged urban people challenged with increasingly exploitative relationships with local elites, resistance is mostly not possible and considered risky for many to do (Bowen, 1986 cited in Robbins, 2012). This is entrenched in the concept of *hegemony* expounded by Antonio Gramsci (1891-1937) an Italian philosopher. Hegemony is a condition of unopposed authority influenced by power and authority. Gramsci defined hegemony as the “power of a dominant group to persuade the subordinate group to accept its moral, political and cultural values and the natural order” (Hubbard et al., 2002, p. 70). The core of his concept was the coercive power of the state in its service to economic elites and the ability of the elites to achieve the spontaneous consent of the non-elite through the control of culture, opinion, and ideology (Robbins, 2012).

The control of opinion and culture and ideology of the disadvantaged in society by the political and economic elites brings about influence and resistance. *Resistance* is “people fighting back in defense of freedom, democracy, and humanity” (Keith & Pile, 2013, p. 1). Resistance for instance in the establishment of high-risk activities like nuclear plants and refuse dumps across the world come in the forms of demonstration, agitations, petitioning the relevant authority and complaints on local media and radio stations by the affected people. This resistance model is a demonstration of public non-approval of the establishment and operation of a facility. Domination happens when the views and agitations of the public are mostly overruled by the economic elites who have the financial and political muscles to carry their activities across without any limitations or objection from the public. Poor community members are not armed economically and politically to push for their grievances to be accepted and are not given the active chance of taking part in environmental decisions that affect them. Communities are bereft of counter-expertise to reverse environmental decisions.

This resistance is affected by the gender of the people. Many females are downgraded in terms of environmental decision making largely because some political and economic systems don't create a conducive environment for women to make their inputs. Generally, females perceive higher risk than males and should be given the opportunity to actively express their concerns in the establishment of high-risk projects. Male and female power in participation is relatively based on culture, tradition and some societal beliefs which lead to domination and resistance by the economic and political elites. Domination tends to oppress many in society who have excellent ideas about how things should be done and renders the views of the oppressed useless which conversely could contribute to an effective environmental decision making.

2.1.4 Environmental Justice

Environmental justice is one of the aspects of political ecology as presented in section 2.4 of this chapter. It is based on the fact that, people in disadvantaged areas with poor economic conditions are exposed to environmental hazards. This includes living in hazardous environmental conditions and being exposed to potentially deadly activities (Robbins, 2012). "Empirical research demonstrated that minorities, low-income and otherwise disadvantaged and susceptible neighborhoods are disproportionately exposed to environmental hazards"(Bowen, 2002, p. 3) Environmental activities may impose greater health risks in many societies and the risk they pose are unfair and unjust.

To Doyle et al, (2015), environmental justice has been the concern of developing countries where citizens' livelihoods are sourced from the immediate environment and natural surroundings. Environmental law and regulations, in general, have been considered as not fairly implemented in many developing countries particularly in cases where the allocation of environmental risks and benefits come to play. This creates several problems for society as some benefit at the expense of others.

Environmental justice at the broader level is equivalent to social justice. Social Justice is about how society's problems and benefits should be equitably allocated in terms of production and distribution (Harvey, 2010). Environmental justice includes the call for equity in the sharing of environment goods, bad and risks, recognition of the diversity of the participants and experiences in affected communities, protection of community capabilities and functioning; participation in the political processes which produces and controls environmental policy (Schlosberg, 2004).

The vulnerable people are affected mostly because of their spatial location and economic status. Exposure to hazardous chemicals from high-risk projects like the risk of fire, explosion, and air pollution pose serious threats to the health and safety of people. This development is increasingly being undermined by businessmen and the most affluent in society. Environmental justice manifest in circumstances where people who are supposed to benefits from the environmental decision are rather marginalized and denied the opportunity. The injustice and unfairness could imply ill health of many in society because of their exposure to hazards and pollutants. Communities and households close to these high-risk projects and activities agitate against their location and pushing for an overhaul of the environmental regulation of many countries because of the injustice the environmental regulations produce.

Environmental decisions are influenced by science and technology (use of sophisticated machines), economics (the economic investment of countries), politics (environmental policy direction and programs of government), special interest and ethics (Bullard & Lewis, 1996). In most cases, there is no or little compensation for the affected households that are exposed to these risks. The environmental regulations of many countries in Sub- Saharan Africa particularly and the world, in general, is seen to be flawed and designed to benefit the political business class to the detriment of the poor in society.

Environmental policies are designed and implemented to manage, distribute and regulate the risk posed by environmental activities,... the opposite is true for today's environmental policies of many countries which institutionalize unequal enforcement, sacrifice health of the population for profit, accepts exposure to harmful toxins or chemicals and exploit the vulnerable in society (Bullard & Lewis, 1996). Governments may be considered the major part of the environmental problems and the risks people are exposed to because of their actions and inaction. Environmental justice activism is seen in the forms of agitation, petitioning of the concerned authorities, strike actions etc. This development has been witnessed across many parts of the world because people want their views to be incorporated in decision-making and also to overturn governments or regulatory institution's decision in the approval of these activities located in areas deemed unsafe for the people. Environmental justice is a pivotal part of any environmental decision especially with activities that pose a high danger to lives and property. Environmental regulation and

strategies should be more representational and democratic to allow for divergent views and interests.

During the First National People of Color Environmental Leadership Summit held on the 24-27 October 1991, delegates drafted and adopted seventeen principles of environmental justice in Washington DC. Four of such principles stipulates that;

- Environmental justice demands that public policy should be premised on mutual respect and justice for all people devoid of any discrimination.
- Environmental justice calls for universal protection from nuclear testing, extractions, production of disposal of toxins or hazardous waste and poison
- Environmental justice should involve the right to equal access to participate in every level of decision-making including needs assessment, planning, implementation, enforcement, and evaluation.
- Environmental justice involves right of victims of environmental injustice to receive full compensation and reparation for damage and quality health care (Barry, 2007, p. 163)

According to (Bullard & Lewis, 1996) the subject of environmental justice, is not secured in a scientific debate but rests on the ethical analysis of environmental decision-making. Many governments become reluctant and inept to promote environmental justice and they become proactive after disaster strikes. In situations like that, the people are mostly denied justice in what affects their interest and many communities begin to lose the confidence they repose in regulatory bodies. This is a demonstration of action after a disaster syndrome which is evident in many parts of the world.

2.1.5 Nimbyism

Nimby which stands for ‘not in my backyard’ is the reaction to perceived negative externalities mostly environmental and aesthetic pollution (Hubbard et al., 2002). This basically means that people oppose a facility to be located close to them but will prefer it to be located in others backyard, which implies a negative external effect. The reactions come as a result of the development of projects or undertakings and the negative impacts that will have on adjacent land users and households. Nimbyism mostly is the desire to reject or oppose developments due to fear and potential risks. NIMBYism is “the protectionist attitudes and exclusionary/opposition tactics adopted by community groups facing an unwelcome development in their neighborhood” (Dear,

1992 cited in Abraham & Maney, 2012, p. 179) Constructions and the operations of these facilities are opposed by many adjacent land users partly because of the risk of living close to these facilities like exposure to hazardous chemicals, poor air quality, and contamination of water bodies, explosion, fire, and accidents. To Abraham and Maney (2012), community groups are motivated by values like environmental sustainability, democratic accountability, social equality, prejudice and stereotypes of less powerful social groups to exercise NIMBY.

A number of factors influence community attitudes towards a project and the alternatives available to them (Dear, 1992) which in most cases is the result of risk, stereotypes and limited information. NIMBY in most cases esteem themselves as the aborigines of a particular place. The term NIMBY comes to mind when one analyzes the reactions and concerns of people as against the location of unwanted activities. NIMBY syndrome is demonstrated by many local community members who expressed frustration about the locations of activities like a nuclear plant, refuse dumps, telecommunication mast, and gas plants holding at a high level the risk of fire, explosion, poor air quality, noise, accidents, and vehicular traffic associated with the various activities. The benefits these activities could provide can be employment to community members and benefits from the corporate social responsibility of these companies. NIMBY is similar to what Popper 1985 (cited in Wolsink, 1994) calls 'LULUs' which stands for "Locally Unwanted Land Users".

The benefits that come with the location of a facility are mostly overlooked by many local residents because of the high risk of the facilities to lives and property. The risk sparks agitations and fears of the local people and adjacent land users. The households close to these facilities are usually not compensated and are left to suffer the possible environmental hazards that the activities and operations pose to their lives and properties. The fundamental problem is that people who are exposed to environmental location problems very often get information too late in the decision process. As a result of no compensation relative to the high risk, nimby syndrome tends to dominate public reactions to the establishment of many activities and projects in the world. The various NIMBY campaigns depending on the level of public objection can have negative repercussions by increasing the cost of the project, cause delays in construction and provision of services to people who need them (Abraham & Maney, 2012). NIMBY also fosters tension and hostility in many communities where the situation is not properly regulated and managed.

2.1.6 Winners and Losers

Environmental decision creates losers and winners. Losers are the people affected negatively and are marginalized while winners are people who benefit directly or indirectly from an environmental decision or action. These problems from environmental decisions according to (Robbins, 2012) are pushed into communities, people or places with inadequate political or financial resources to resist. These problems come in the forms of water pollution, noise, environmental hazards, and air pollution, the risk of fire and explosion, and contamination of soil. On the other hand, the environmental decision may produce winners who benefit from the activity. For example creation of employment for local people. This concept, however, influences the oil and gas sector where some benefit at the expense of others. The values of people as far as winning and losing is concerned is very relative. The winners largely involve the owners of these projects who make profits and the losers are people who bear the risk of exposure to hazardous chemical, fire, accidents, explosion, poor air quality and contamination of water bodies.

The concern of equity in environmental decision as far as the distribution of environmental good and bad is concerned are relative to the individual values and desires. A development project or an investment may appear equitable to the investor but the affected individual may see it from a different perspective. Related to the winners and losers is the concept of pareto optimality principle where resources allocations will make some individuals better off without making someone else worse off (Brownstein, 1980) Resource allocation or distribution is only pareto optimal if the process does not worsen the situation of others. In instances where there is the absence of externalities to a project or resource, Pareto optimality will exist. This is rare in environmental activities that produce negative externalities. In such developments, losers and winners will be created where some will be made better off by making others worse off. Winners and losers situation is created mostly by the influence of political and economic power where the losers are powerless in determining environmental decisions. Making inferences from the risk characteristic map of Slovic (2000), oil and gas related activities could be considered dreaded, involuntary and catastrophic risk.

2.2 Arnstein Ladder of Participation.

Linked to the concept of participation in section 2.1.2 of the study is the ladder of participation. Sherry Arnstein propounded a ladder of participation in 1968 based on the degree of citizen power and the level of their involvement in decision making. According to Arnstein (1969), the

participation of the governed is a cornerstone of democracy. Arnstein identified two broad group of people that influence the participation process. The *'have-nots'* and the *'powerholders'*. The have nots to Arnstein in today's world are people who are powerless to deal with the inequalities and injustices pervading their daily lives. The powerholders are people who have all the powers to determine and influence any decision.

The concept of participation is highly contested and as a result, what constitute citizen participation has been purposely buried in innocuous euphemism like 'self-help' or 'citizen involvement' (Arnstein, 1969). Citizen power is demonstrated in the level of their participation. Participation is a strategy which gives the opportunity to the 'have nots' (poor and vulnerable) to take an active position in the sharing of information, setting of policies and goals on how to distribute the benefits and risk that emanate from an activity. Participation devoid of the sharing of power undermines the views of the public and consequently breeds frustration, agitation, and conflict. The ladder is composed of eight rungs which she divided into three general categories which include "non-participation, the degree of tokenism and the degree of citizen power" (Arnstein, 1969, p. 217).

The figure below illustrates the various levels of participation as identified by Arnstein and what constitute each level of participation.

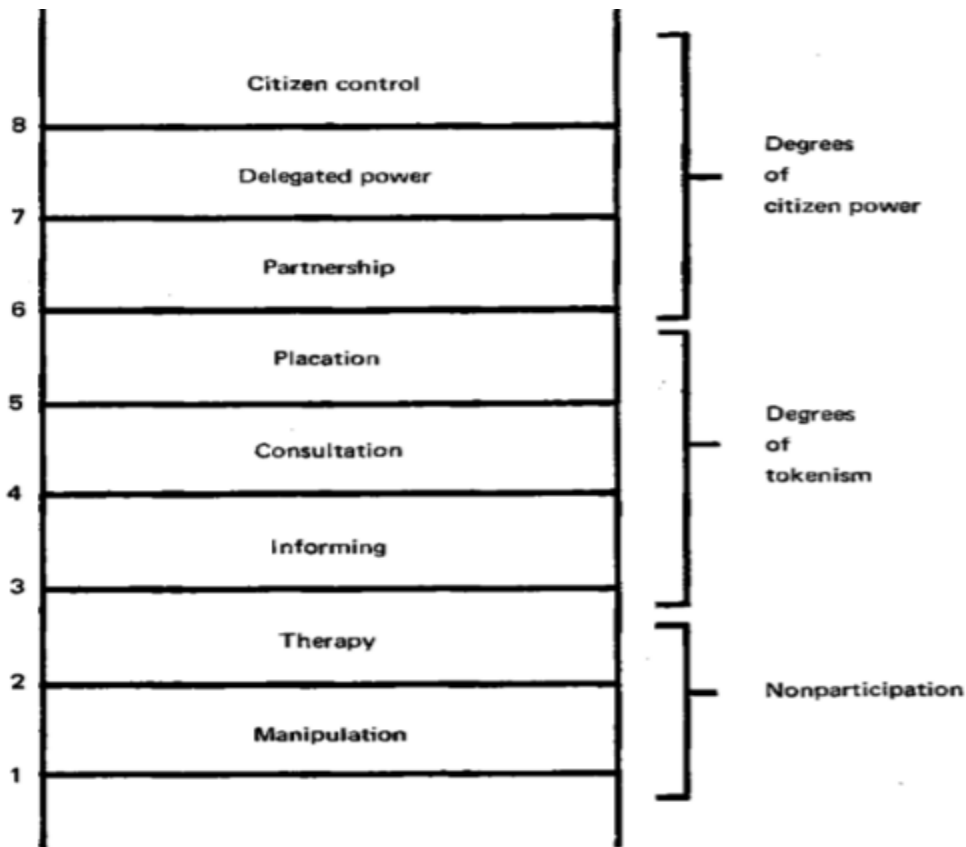


Figure 2. 1 Arnstein Ladder of participation (adapted from Arnstein, 1969.p.217)

Non-Participation

Under this category of the ladder, Arnstein identified *Manipulation* and *Therapy* as the non-participatory and considered it as the public relations process. Manipulation is the attempt to appoint people to boards or committees that render them useless. People are coopted to rubberstamp advisory committees for the purpose of educating them. It is mostly aimed to “educate” or “cure” the participants by powerholders (Arnstein, 1969, p. 217). Under therapy, powerless was likened to mental illness. Therefore, they subject citizens with no power to participate as clinical group therapy.

The focus of therapy was to cure citizens of their ‘pathologies’ (concerns, oppositions, interests, exposure to risk, poor air quality, the risk of fire, accidents) rather than changing the racism, injustices, and victimization that creates the ‘pathologies’ or problems. These rungs don’t intend to involve the public. Under the non-participation category, the flow of information is one-way

from the powerholders to the have nots. Here the public is educated on a particular activity or development but they are not allowed to speak or voice out their concerns. This stage is “the distortion of participation into a public relations vehicle by powerholders” (Arnstein, 1969, p. 218)

Degree of Tokenism

The second category of the ladder is the degree of tokenism with *informing*, *consultation* and *placation* as the main rungs. The stage is considered the degree of tokenism because the diminutive element of participation is observed at this stage. Tokenism fundamentally is a symbolic and perfunctory effort to include affected people. Here the people are involved but to a very minimal extent. The *informing* process is a one-way flow of information from the agency or power holders to the public which does not allow for public feedback or response. This is done by publishing some information in the media, pamphlets, posters and banners without making any room for feedback from the public. This rung limits the opportunity for people to contribute to the table especially if the information is given at late stages of the whole planning process. *Consultations* are done through attitude surveys, neighborhood meetings, and public inquiries. It involves inviting citizens’ views but without allowing those views to influence the process. Participation undoubtedly remains a window dressing ritual under consultation (Arnstein, 1969). *Placation* is exemplified in the form of engaging community members in committees.

Under this rung, local citizens have the power to advise and plan but the onus lies on the power holders or the government to judge the rationality or legitimacy of the advice especially where the citizens have no ‘muscle’ (Arnstein, 1969). This stage allows the have-nots to hear and have a voice which is relatively participatory but only the powerholders have the capacity to determine the rationality of those views because the citizens or the have-nots lack the power to push for the views or suggestion to be implanted in the final decision of the powerholders. The ‘have nots’ are the community members, affected groups, and adjacent land users and the powerholders are the government institutions and agencies mandated to make environmental decisions.

Degree of Citizen Power

The last category of the ladder is citizen power which is more participatory. Under this level, *Partnership*, *Delegated Power*, and *Citizen Power* are the main rungs. Here, power is allocated or given to the citizens or public to make a decision. The partnership is demonstrated through

negotiation between citizens and the powerholders. In delegated power, citizens ultimately have larger representation as far as decision making is concerned. With respect to citizen control, local people or the community tend to execute virtually the whole process of decision making, and planning without any obstacles or limitation from the state or powerholders.

This is a more bottom-up approach to participation which gives more power to citizens to determine issues that affect them. This particular stage of participation is the true feature of democracy yet, a very difficult if not impossible development that can take place in environmental decision making of many countries

2.2.1 Limitation of the Ladder of Participation

The ladder of participation is limited as it tries to portray the have-nots and the powerholders as homogenous entities which are not true in real world situation. Each group has their competing interests and various values. The theory according to Arnstein (1969), fails to analyze the most important roadblocks to ensure a genuine level of participation. These roadblocks on the side of the powerholders include racism, paternalism, and resistance to power redistribution. The roadblocks on the side of the have-nots include; inadequacy of the poor community's political socio-economic infrastructure and knowledge and the difficulty in organizing representatives to push for their participation.

2.3 Habermas Theory of Communicative Action (TCA)

The Theory of Communicative Action (TCA) was developed and first published originally in German by a German Philosopher Jürgen Habermas in 1981. The theory aims at eliminating human society from any forms of unnecessary domination from state actors. The Theory of Communicative Action (TCA) is the interaction between at least two subjects capable of speech and action who establish interpersonal relations either by verbal or non-verbal means. These actors according to Habermas “seek to mostly come to an understanding about the action situation and their plans of action in order to coordinate their action by agreement” (Habermas, 1984a, p. 86).

The Theory of Communicative Action postulates a situation where actors or those in management positions try to come to understanding and to coordinate action through a consensus, arguments, and cooperation rather than strategic action purposefully in pursuit of their own goals. (Habermas, 1984, p.86). Habermas Theory of Communicative Action, provides a theoretical basis to

understand public participation, sharing of information with the public, reaching consensus through public dialogue rather than exercise of power by technical experts and bureaucrats who determine what rationality is (Argyris & Schön 1974, Schön 1983, Innes 1995, Wilson 1997 cited in Bolton, 2005, p. 2 cited in Habermas, 1984b).

TCA is designed by Habermas to promote a common understanding in a group or community and also to enhance cooperation as opposed to strategic action designed to benefit entirely individuals or personal objectives. Habermas is associated with the term “public sphere” where people or citizen engage in rational discussion or deliberations that inure to their benefit. This theory is applied to how the various actors come into a consensus or dialogue and to explore how one actor influence and exercise power over the other. This theory promotes a communicative sphere where the divergent views of the community are deliberated on by the larger community and an agreement is arrived at. The details of a particular decision or action are communicated to the people to ensure a broader knowledge of a project or action through dialogue. The decision as a result of this communicative action becomes a rational decision representing the interest and desires of the people. The theory ensures that no individual or group of individuals take decisions that undermine what is in the public good. The theory undermines the exercise of unnecessary power by institutions in making any decision. The decision is made through a communicative consensus.

The weaknesses of Habermas theory is that it fails to establish the relationship between understanding and evaluating linguistic utterances (Honneth & Joas, 1991). This means that, in communicative rationality, language and the use of technical terms can influence the agreement reached by different groups. The theory also tends to be ambiguous in its effort to assume there exist communicative rationality. Rationality is not a universe concepts but influenced by many factors.

2.4 Political Ecology

Political ecology is the complex interaction between politics and the environment. It has to do with how political decisions influence the allocation, distribution, and management of environmental resources. Political ecology is “the study of interdependence among political units and of interrelationships between political units and their environment concerned with the political consequences of environmental change”(Hempel, 1996, p. 150). Political ecology to Watts (2000,

p. 257) is “to understand the complex relations between nature and society through a careful analysis of what one might call the forms of access and control over resources and their implication for environmental health and sustainable livelihoods”. Political ecology is concerned with the social and human forces that influence the environment. The field of political ecology has been studied in areas like geography, forestry, environmental studies and development studies. Environmental decisions that result in environmental problems or have that potential brings about public anxiety. Sustainable development is one very important aim of every government and this is realized through implementation of environmental programs. Political ecology syndicates the concerns of ecology and a well-defined political economy. To Forsyth (2004), political ecology is seen as a more specific analysis of Marxist debates on justice, materialism, and nature in capitalist societies to ensure fair and just distribution of environmental resources. Political ecology focuses on social justice of environmental disputes in many parts of the world. Environmental conflicts are the result of the interaction that exists between or among various actors from state to those at the grassroots.

Political ecology has reflected the belief that injustice is being committed against both locals and the resources of the environment in many developing countries which are valuable to people (Peet & Watts, 1996 cited in Forsyth, 2004). Under political ecology, politics is considered first in the process of understanding the interaction that exists between human and the environment (Bryant, 1998). The assumption here is that politics and environment are intrinsically linked. According to Moore (1996 cited in Bryant,1998), the purpose of local politics in influencing resource access and conflict with respect to group relation and surplus extraction is as a result of global capitalist production. Political ecology has five dominant narratives. These include degradation and marginalization, conservation and control thesis, environmental conflict and exclusion thesis, environmental subjects and identity thesis, and political objects and actors thesis (Robbins, 2012). Environmental decisions at certain level results into increasing poverty and over-exploitation. This condition creates the marginalization of some group of people who suffer from this decision. Environmental activities lead to the destruction of baseline resources like forest, water bodies and loss of endangered animal and plant species. Land for agriculture production in some cases are converted into industrial land denying local communities of their livelihoods. The development is seen in many parts of the developing world where governments have to relocate communities for the construction of dams, airports, harbors, nuclear plants. Because many governments want to

construct these projects for political gains, community welfare is not so much a priority. Political decisions in environmental activities marginalize some groups and at some point leads to degradation of the environment by state actors or by the affected communities who have no decent means of livelihood than to degrade resources to meet their basic needs.

In the process to conserve and control resources by global interest and government officials, the livelihoods of local people who depend on such resources are also destroyed. Conflicts and agitations also erupt from the environmental decision of state actors when many people are disadvantaged or affected negatively by changes in environmental management policy and programs. Environmental conflicts are common in the management of essential resources like water, forest, wildlife reserves and national parks. The narratives on environmental conflict are either caused by action and inactions of government organizations or that of community members. When communities feel that they are not protected in a particular environmental decision, conflict sparks. Political decisions by state actors and international organizations in environmental management and policy in some cases affect the vulnerable in society.

Looking more closely at the way ecology and politics interrelate then it becomes imperative we get a better handle on how to approach environmental/ecological questions (Harvey, 1993, p.25 cited in Bryant, 1998, p.82). Political ecology explores the power relation that exists between both state and non-state actors in the management of environmental resources and the landscape as far as issues of participation and decision making is concerned.

There are two main critiques of political ecology that emerged during the period of its development (Penna-Firme, 2013). Vayda & Walters (1999), argued that political ecologists are making a priori assumptions about the linkages between local environmental change, national and global economic systems. The second critique of political ecology is that there is no need for the term ecology in political ecology, as research in the field has only indirectly focused on ecology and environmental change (Penna-Firme, 2013).

2.5 Marxist Political Economy

Economic systems apparently influence public engagement in environmental decision making. Karl Marx's work on capitalism and other materialist theories gave a picture of unfairness and inequalities that come with diverse economy and modes of production. To Marx cited in Hubbard et al, (2002), economic and social circumstances influence the beliefs and the behavior of people

in society. Capitalism puts poor and disadvantaged classes in a marginal urban space with inadequate infrastructure and quality of life, which denies them from participating actively in the decision-making process (Harvey, 1982 cited in Hubbard, 2002). Capitalism creates inequality where it damages geographical arrangements at some point in order to create new and business space which Smith, (1996 cited in Hubbard, 2002) acknowledges leads to underdevelopment of the non-profitable geographical space. Many projects and activities are located in populated parts of cities because of the economies of scale the cities and towns bring to the business.

Increasingly, investors are determined to invest in geographical spaces that will accrue more profit. This to a large extent influences the strategic location of the businesses in residential or urban areas with little lands as compared with the highways and rural areas with vast land. Marx and Engels observed that environmental degradation was an element of capitalism of which they claimed during the industrial revolution. Environmental issues were mostly linked to class, industrialization, and accumulation of wealth in capitalist systems and other economies. Capitalist response to environmental challenges does not work to find solutions to the problems because that will mean a total restructuring of capitalist economy which will adversely affect the modes of production (Barry, 2007). Capitalism could be regarded as a roaring engine which increases contradictions that must be solved either through the exploitation of people and the natural environment and that there cannot be capitalism without exploitation and degradation of the environment (Robbins, 2012). People will be marginalized and forced to accept certain activities which affect their existence but benefits the economy under a capitalist ideology.

Critiques of Marxist political economy argue that capitalism was a fetter holding back the inevitable tide of progress, denying its fruit to be enjoyed equally by all (Barry, 2007). The irrational capitalist ecological approach becomes the responsibility of society to bear. Considering the fact that, businessmen are investing huge sums of money to benefit from the profit these high-risk sectors provide. Profit seems to move these investors relatively than the danger people are exposed to. Capitalist to Dryzek (1987 cited in Barry, 2007), implement displacement policies and strategies to reduce environmental effects rather than eliminating the cause. Externalities of capitalist economic growth are distributed in a manner that promotes marginalization of minority groups (Barry, 2007).

It is interesting to note that, the affluent in capitalist economies mostly protect themselves against the negative externalities of their actions. The poor suffer in many capitalist economies partly not because of the unjust distribution of environmental risks but poverty and inequality can at some level cause environmental problems. The Marxist political economy produces systematic biases in the distribution of risk. Weston (cited in Barry, 2007), remarks “the accumulation of wealth and its concentration in the hands of few people creates the levels of poverty that is a major determinate of environment that we experience”. This economic system with the targets and determination to making profit only leads to marginalization, inadequate or non-representation of public interest, oppositions and concerns. This is the case in many parts of the developing world where neo-liberal economic policies have influenced environmental decisions that are relatively destructive and inimical to human health. According to Barry (2007), humanity, in general, is not responsible for the destruction of the web of life on earth but capitalist systems and the classes within the global system. The welfare and livelihoods of the most vulnerable people are at risk under the capitalist economic agenda. The establishment of high risk yet lucrative businesses have been predisposed to the capitalist ideology of proponents who promote profit above the welfare, health and safety needs of people.

2.6 Risk and Risk Perception

According to Slovic et al, (2004 p.311) risk as a “feeling refer to the fast, instinctive and intuitive reaction to danger”. Risk considers reason, and science in their analysis. When our instincts and modern scientific analysis clash then risk becomes a matter of politics. Risk however, varies from one sector or activity and environment to the other. The public perception of risk varies from one individual to the other especially in circumstances where some benefit at the expense of others from risk generating activity. Benefits and risk may be positively correlated with environmental activities but several studies indicate there exist negative relations among the minds of people (Finucane et al, 2000). That is to say, the greater the perceived benefits of an activity the lower the perceived risk and the vice versa.

Risk can be subjective and objective. Subjective risks are determined by the individual sense of judgment while objective risks are generally accepted risk by many in society and is often quantified. There are collective risks and individual risk. Collective risks are not possible to withdraw from. Collective risks include water and air pollution, explosion, fire, and climate change. Individual risks include risk taking behavior by an individual such as driving, hiking,

sexual behavior and working in a dangerous risk industry. Benefits and risks can also be positively related. The figure below shows the positive correlation between risks and benefits in an activity.

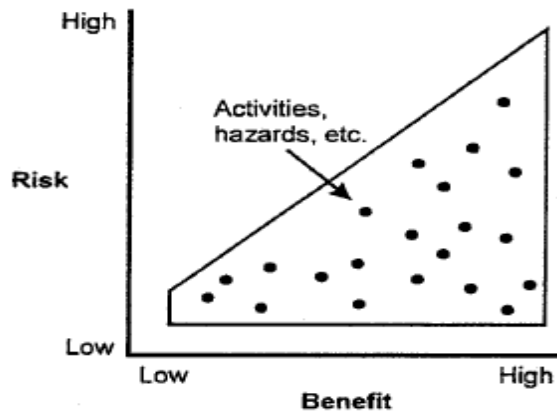


Figure 2. 2 (Hypothesized positive correlation between risks and benefits adapted from Finucane et al, 2000 p.4)

Risk (losses) and benefits of an activity can be inversely related in the minds of people because of affective feeling which refers to the situation where the risks and benefits of an activity are judged (Slovic et al, 2004). Individuals’ sense of reasoning, logic, and environment influence their judgment on risks and benefits of an activity. The judgment of risk and benefit are assumed to be obtained from the overall rational or objective evaluation of an activity or projects by individuals and the society. The diagram below illustrates the judgment of people on risk and benefits which is influenced by affect.

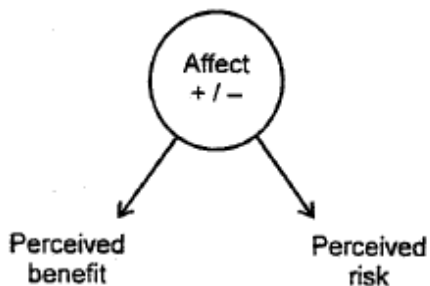


Figure 2. 3 A model of the affect heuristic explaining the judgment of risk and benefit as observed by Alhakami and Slovic (1994) adapted from (Finucane et al, 2000 p.4)

2.7 Environmental Impact Assessment (EIA)

Environmental Impact Assessment (EIA) debates are generally set in the framework of sustainable development which is a global movement to protect the environment, culture and society for posterity at local, regional, national and international levels of governance (Glasson et al, 2005). EIA is a systematic process by which the likely significant effects of a project on the environment are identified, assessed and taken into account by regulatory authorities in the decision-making process (Nunoo, 2008). EIA is also the process for identifying the expected consequences for the biogeophysical environment and for man's health and welfare of implementing particular activities and for conveying this information at a stage which it can materially affect their decision to those responsible for sanctioning the proposals (Munn, 1979). It examines the environmental impacts of either proposed or existing projects in advance. From the UN National Environmental Policy Act, of 1969 through the European Directive on EIA in 1985, EIA has been adopted by many countries across the world (Glasson et al, 2005). In the United States, EIA required under the National Environmental Policy Act of 1969, (NEPA) presents a federal association to land planning which has created a situation where decisions on major federal activities are taken with the intelligence of the potential environmental impacts (Wathern, 2013).

According to (Bank, 1995), EIA has moved from the fringes of development planning to become a widely recognized tool for sound project decision making. The EIA process involves series of stages depending on the type of project and the country as presented figure 5.1 and 5.2 respectively in Chapter five of the study. The EIA starts from a screening stage through a series of stages to the decision making and monitoring stages. EIA according to Glasson et al (2005), involves the interplay of mixed approaches including both scientifically based rationality and community informed participation. The EIA is regarded an environmental permitting requirement for various projects in the world. EIA is designed as a fundamental procedure for assessing the environmental implications of legislation, the implementation of policy and initiation of development projects (Wathern, 2013).

The United Nations Environmental Program (UNEP) has provided guidance on the assessment of development proposal (UNEP, 1980 cited in Wathern, 2013). A number of bilateral and multilateral institutions over the years have become interested in EIA potentials. For example, the Organization for Economic Co-operation and Development (OECD) approved recommendations concerning EIA within its component states in 1974 and 1979 and for development aid projects in

1985 (Wathern, 2013). A number of studies on EIA in developing countries have also been supported by United Nations Environmental Program (UNEP) and UNEP has sought to identify ways through which EIA could be implemented effectively and consistently (Ahmad & Sammy, 1987). EIA procedure varies in detail around the world but they are integrated into being designed to deal with particular issues with universal objective to safeguard environment and lives and to ensure appropriate spatial planning.

Geographically, 'impacts' have both spatial and temporal components and is described as the change in an environmental parameter over a specified period and within a defined area as result of the implementation of a project compared to the original state of the location (Wathern, 2013). To reduce conflict and to promote safety protocols, spatial planners emphasize the need to subject development projects to EIA evaluation. Under the EIA regulation, every country has a list of projects or undertakings for which EIA is required or mandatory. Development project location is a major component and a key determinant of an impact because the impacts of various projects differ depending on the spatial location of the project and the category of project. EIA is used for identifying impacts and to create a platform for public participation in the environmental decision-making process at local unit levels to the national level.

CHAPTER THREE

METHODOLOGY AND RESEARCH PROCESS

3.1 Methodological Approach

In geographical research and in the social sciences generally, researchers employ both qualitative and quantitative methods in the collection of data. According to Clifford et al (2010), quantitative methods usually involve the use of physical science concepts, statistical and mathematical models. Quantitative methods involve numerical data and frequencies. Many human geographers mostly engage with qualitative methods which basically explore the subjective meanings, emotions, intentions and values that make up the world (Ley 1974, Seamon 1979 cited in Clifford et al., 2010). Qualitative data is mostly expressed in the forms of words, experiences, opinions, actions, and behavior. Quantitative data helps to establish a correlation between given variables and outcomes (Choy, 2014). Quantitative methods take short time to administer survey and data collected is more reliable and can easily be transferred to computer readable format for easy analysis (Neuman, 2006 cited in Choy, 2014). Quantitative methods have weaker in-depth human perception and experience to its study which could be a weakness.

Qualitative methods, on the other hand, raise more broad and open-ended inquiry and understands the values of belief and assumptions (Choy, 2014). The disadvantage of qualitative methods is that it lacks a more objective and verifiable procedure. It is not possible to develop broad patterns of distribution and trends for instance inequality patterns based on qualitative data. It is also time-consuming and needs a lot of acumen and skills in using the various qualitative methods like interviewing skills. Taking into account the objectives of the research which determines the type of methodology to employ and largely dependent on the theories to use, the use of qualitative methods will be much appropriate to help in the deeper understanding of the emotions, anxieties, and fears as far as the involvement of the public in the EIA process of the oil and gas retail sector is concerned. The use of qualitative methodology will also help to ascertain the risk concerns of those located close to these sectors and even people who patronize the facility including the employees.

3.1.1 Methodological Justification

According to Creswell (2013), qualitative research approach is used to explain and understand the meanings that individuals and groups give to societal or human problems which are largely influenced by the sense of their world, history and social perspectives of humans.

Qualitative methods foster the deeper understanding and engagement of a study on a number of issues a research seeks to find. The emotional expression of the researched and the observation that are made by the researcher will help better understand the research objective.

This study which focuses on public participation in the impact assessment of the oil and gas retail sector, aimed at assessing the level of public engagement in the Environmental Impact Assessment of the oil and gas retail sector, and the risk that the public is exposed to as far as the establishment and operations of oil and gas retail companies are concerned. The study is an exploratory and an inductive investigation for an understanding of findings for future studies. I will, however, gather meanings from the data collected which makes the use of qualitative methods appropriate for the study. Qualitative methods are also “very useful when there is little knowledge or research on issues that need to be investigated and understood” (Creswell, 2013, p. 20). Qualitative methods according to Steckler et al, (1992, p.4) is to expound various opinion on an important issue and not to provide answers to an empirical question. These arguments informed my decision to use qualitative methods as much work has not been done to investigate public participation in the EIA process especially in the oil and gas retail sectors in Ghana and in other parts of the world.

3.2 Collection of Primary Data

Oil and gas retail companies are one of the lucrative business ventures in Ghana. Getting information regarding participation, accidents, risk, and public health are very challenging. Oil and gas retail companies may not put health, environment, and safety highest on the agenda and would want to suppress possible risk because the sector is attractive to several related businesses. In line with that, I have to employ different methods to help me get the relevant information for the study. These sectors allegedly are owned by people in authority in Ghana and getting such vital information is demanding. Various theories and concepts as presented in chapter two, such as Arnstein ladder of participation (Arnstein, 1969) will examine the levels of participation to determine which rung of the ladder has the public participation of the Environmental Impact Assessment of the oil and gas retail sector has reached, and how politics and power relations influence the environmental permitting and certification process of fuel and gas stations. For an efficient use of the concepts and theories discussed in the theory chapter, I employed interviews (structured and semi-structured) and non-participant observation.

3.3 Choice of Informant and Data Collection Area.

The data for the study encompass both primary and secondary data sources. The research explores the level of public participation in the environmental impact assessment of the oil and gas retail sector. As part of the study, information was gathered from primary and key informants in the Sekondi-Takoradi Metropolis in the seven neighborhoods of (Kwesimintsim, Fijai, Anagyi, Ntankoful, Kasawuradu, Sekondi, and Takoradi) from households and communities and institutional heads and representatives (see Map in figure 4.2). One key informant interview was conducted at the national office of the Environmental Protection Agency in Accra. It is important to note that, Sekondi-Takoradi is the metropolis and has Sekondi and Takoradi as separate neighborhoods. The primary informants are sampled into four categories and are made of people who are potentially affected directly or indirectly by the activities of the oil and gas retail sectors at different locations.

3.3.1 Characteristics of Informants

Primary informants are people who represent their own interest, risk perception and views and contribute to issues the way it affects them. They don't represent the interest of any government institution. The primary informants are people who are able to voice out their views based on personal experience with regard to any issue of concern. The key informants are the representatives of the official interest or views of central government and other state institutions as far as this study is concerned. The key informants work within some regulations and legal procedures. They implement policies in the interest of their employer and not based on their personal knowledge and experience. The key informants have a constitutional responsibility to execute and are remunerated by the state.

3.3.2 Primary Informants and Sampling Procedures

The primary informants for the purpose of the study include the owners of the fuel filling and gas stations, workers/employees of the stations, adjacent land users (neighbors) and the business people who ran business activities near fuel and gas stations located in remote areas (see table 3.1). Primary data was gathered from an aggregate of 28 primary informants during the months of June-August, 2016 in Sekondi-Takoradi. Primary informants were made up of women and men, married and unmarried between the ages of 20-52 years. Primary informants were selected purposively to satisfy as far as possible the data the researcher needs. The fuel and gas stations were categorized into two for the data collection to enable the researcher to do some comparison

between the locations. Those located among residential and busy commercial areas with components activities like a lube bay, washing bay, mart and a vulcanizing shop and other neighborhood functions like local streets, yards, outdoor areas, houses, and gardens. The other category were those located along the highways which are isolated or distant from residential or busy commercial areas but has other small scale business activities like spare part shop, hairdressing salon, mini grocery shops popularly known as ‘provision stores’ in Ghana, and other minor trading activities nearby.

Table 3.1 shows some characteristics of primary informants in the study. Four owners of fuel service and gas station, (one female and three male between the ages of 30-45 years), eight workers or employees, (three female and five male aged between 20-30 years), twelve adjacent land users or neighbors, (four female and eight male between 20-50 years) four businessmen (between 30-45 years) from companies adjacent to the fuel service and gas stations located along the highways distant from residential areas. A total of four owners of the fuel filling and gas stations were also chosen to give their respective perspectives on the ways they have or can engage the public both during the constructional and operational phases of the stations and also the health and safety measures they have put in place to eliminate or minimize some potential impacts their operation might have on the local public. Eight workers of these fuel filling and gas stations were also selected to widen the perspective for the researcher to assess the risk factors involve in their operation and to also explore how the ‘June 3 Fire and Flood Disaster’ at Circle a suburb of Accra (see chapter one and six) which claimed more than 150 lives on June 3, 2015, influenced their perception on working or living close to a fuel and gas station. The twelve neighbors or adjacent land users were sampled because of geographical proximity to the fuel and gas station and they stand a higher chance of being affected by any accident, issues of air quality, noise in any form from the fuel filling and gas station. The study sampled both female and male informants into various age groups because they may have different risk perception views and approaches to risk reduction.

As a result of the language barrier especially with interviewing the adjacent land users and some community members, a male field assistant was engaged to help easy translation of the local language Fante to English and vice-versa during questioning and the response. The researcher could speak and understand Fante a little and this helped to be informed partially also on the

responses of the informants. The field assistant is a graduate and for that matter, the process of translation to English from Fante was very good avoiding any blunder of words and meaning. All sampled primary informants were willing to participate though some participated on certain conditions such as no audio recordings of their interviews.

Table 3. 1 Characteristics of Primary Informants in the Field Study

Fuel and Gas Stations	Category of informants	Female	Male	Subtotal	Age group (years)
Neighborhoods/ neighborhood interviews	Owners: fuel and gas stations	1	3	4	30-45
	Workers of the stations	3	5	8	20-30
	Neighbors & Adjacent land users	4	8	12	20-50
Remote areas/ interview with business people around the stations	Businessmen around the stations	0	4	4	30-45
TOTAL		8	20	28	

Source: Author's construct

3.3.3 Key Informants

Four key informants were sampled for the primary data. The key informants include the representatives of the Environmental Protection Agency (EPA), Town & Country Planning Department (TCPD), Ghana National Fire Service (GNFS) and the National Petroleum Authority (NPA). The key informants include two male representatives of the Environmental Protection Agency (EPA) at the regional office in Sekondi-Takoradi, and one at the national office in Accra, one female representative of the National Petroleum Authority in Sekondi-Takoradi, and one male representative of the Town & Country Planning Department (see table 3.2). All the key informants were people of management positions at the respective institutions who represent the interests of their employers. The key informants operate within specified guidelines established by a legal act.

The Environmental Protection Agency was considered as one of the key organizations because they have been mandated by the laws of Ghana to administer the Environmental Impact Assessment (EIA) of the oil and gas retail companies and consequently issue Environmental Permit and Certificates. National Petroleum Authority (NPA) also issues a construction permit to the oil and gas retail companies and they contribute to the education of the public on health and safety regulations. The Town & Country Planning Department (TCPD) was also selected because they plan and execute what is called zoning of areas into commercial, industrial, residential, mixed activity enclaves. They fundamentally determine where a particular undertaking, project or building should be located.

In point of fact, after the June 3 Fire and Flood Disaster as mentioned in chapter one and further presented in section 6.1.3 of the study, a new guideline was developed through a joint and concerted effort of the Environmental Protection Agency, National Petroleum Authority, Ghana National Fire Service, and the Town & Country Planning Department. The Ghana National Fire Service was one of the key organizations for this study but the researcher could not get any information from them because of their continuous rescheduling of interviews coupled with their limited time and that of the researcher. All the key informants from the four key organizations were purposely and meticulously selected because they matter and are very relevant stakeholders in the permitting and certification of fuel filling and gas station across Ghana.

Table 3. 2 Characteristics of Key Informants in the Field Study

Key Informants	Female	Male	Total	Comments
Environmental Protection Agency (EPA)	0	2	2	Chief Program Officer (Deputy Regional Director) and Program Officer. Both worked with EPA for more than 8years
National Petroleum Authority (NPA)	1	0	1	Interviewed in the capacity of a Regional Director
Town and Country Planning Department	0	1	1	An officer interviewed in the capacity as assistant Regional Director
Ghana National Fire Service	0	0	0	No interviews due to rescheduling and limited time
TOTAL	1	3	4	

Source: Authors Construct

3.4 Interviews and Content

The interview was conducted using both structured and semi-structured interview guides (included in appendix I-V). Two main categories of interview guides, one for primary informants and one for key informants with various sub-sections for all key informants with a version of which was adjusted to fit a particular informant. Appendix I is the key informant interview guide for representatives of the Environmental Protection Agency. Appendix II is the key informant interview guide for representatives of the National Petroleum Authority. Appendix III is the key informant interview guide for Town & Country Planning Department. Appendix IV and V are the primary informant interview guides for owners and workers of fuel and gas stations and adjacent land users. The interview length was between 6-55 minutes of which some were recorded using an audio recorder and notes were taken in cases where the informant is not comfortable being recorded. The primary informants' interviews were conducted with the succor of a field assistant partly because of the language barrier especially with the interview of several adjacent land users who could not speak English but Fante. These interviews were based on purposive sampling for oil and gas retail sectors located in residential areas and those located along the highway. The field assistant and I conducted the interview for the adjacent land users using an interview guide specifically prepared for them premised on both structured and semi-structured guide (see appendix V). The semi-structured guide helped the researcher to delve deeper into issues that were raised by the informant which wasn't captured in the interview guide but represents very important data for this study. The interviews for the primary informants were conducted in residential homes of adjacent land users, in the offices of business people and within the premises of the fuel and gas stations for both employees and the owners. The interview for the employees was full of interruptions because they have to attend to customers during the interviews. However, it was ultimately a successful interview.

The interview process at a point was very conversational and sometimes issues that don't matter to the study came up and I had to find a way to respond to some of the issues in order for me to get the informant back to the interview guide. For instance, during the interview of one community member about the risk she is exposed to, she mentioned some risks but added that because there is no better employment opportunity, she has to take the risk of doing business close to a filling station.

The interviews explore issues like how the informant is involved or consulted in the EIA process before and during the operation of the oil and gas retail sector, the health and risk they are exposed to, how the sector affects their activities, how economic and political power influences their concerns and what the informant thinks can be done to engage them wholly in the EIA process. I interviewed owners of the fuel filling stations to assess how they have engaged the public in their operation and the risk the sector posed to property and lives.

Regarding the key informants, I interviewed also the representatives of the Environmental Protection Agency (EPA) at the regional office in Sekondi-Takoradi and national office at Accra, to assess how the Environmental Impact Assessment (EIA) is done for the oil and gas retail sectors and how they have engaged the public over the period. The EPA was also interviewed to find out how public concerns and agitations have influenced their EIA process. The interview for the EPA lasted for fifty-five minutes. Other institutions' representatives like the Town and Country Planning Department in Sekondi-Takoradi was interviewed for fifteen minutes in the regional office at the Regional Coordinating Council (RCC) to ascertain which geographical enclaves are suitable for oil and gas retail sector as far as zoning is concerned. The National Petroleum Authority (NPA) representative was interviewed at the regional office of NPA at Harbor Road, Takoradi on education for the public and what goes into their permitting process as far as public engagement is necessary. This interview also lasted for twenty minutes.

3.5 Observation

I used non-participant observation to enable access to information that I may not get from the field directly. I observed by inspecting the fuel station and the adjacent land users as well as other components of the fuel station before I started the interviews. I did this by moving around each station to do a feasibility study of the physical environment to see if the station falls within my sample category. I also observed most importantly the risk reduction behavior of the workers and those who patronize the station. For instance, at one fuel station, the workers poured sand on any leaked fuel and collected the sand before refueling cars. At another station, drivers were asked to switch their engines off before refueling their cars. There was also a public display of some safety protocols which reads 'switch off your mobile phone, no smoking zone, no fireworks, way in and way out'. These are all vital information that I was not told during the interviews but prior to my observation, I gathered an important information. As part of my observation, the workers wear uniformed overall protective cloth and safety boots. The non-participant observation wasn't a

hidden observation, on the other side, I did not announce my presence and nobody realized what I was actually doing.

3.6 Researchers Position and Reflexivity

Reflexivity considers a number of factors which concerns mostly the researcher. It embraces the perceptions of the research from the time of preparation and to the time after field work which includes also the data collection process. Reflexivity is a “process of constant, self-conscious scrutiny of the self as researcher and the research process” (England, 1994 cited in Hay,2010, p.31) To Hay & Israel (2006, p.142 cited in Hay, 2010, p.30), reflexivity is about “the commitment to theoretically informed, self-critical ethical conduct, revolving around awareness of how to identify and resolve ethical dilemmas when they arise”. I tried as much I could at every stage of the data collection process to reflect on my personal idiosyncrasies to ascertain whether that has not influenced my interview process especially. The field assistant was also informed about reflexivity to avoid any bias during the interview.

Though my hometown is not Sekondi-Takoradi, I have previously stayed there for one year and that made me feel more comfortable with the entire interview process. Most adjacent land users were reluctant and dispirited to open up for the interview because they were frustrated by the location of the oil and gas retail sectors of which they claimed petitions were sent to the relevant organizations in charge but nothing has changed. I had to motivate them enough before they granted the interview. During the data collection process, a number of interesting issues came up which I later considered very important for the data collection upon meticulous reflections. Most of the informants illustrated that politics has a lot to do with the non-involvement of the public in the EIA process of the oil and gas retail sector. These claims have influenced me to use some power relations theories in relation to the study as presented in the theory chapter.

3.7 Secondary Data

The study employs secondary data sources from academic publications, news items from the media, scholarly articles and journals to supplement the primary data from the field. Secondary data from the Environmental Protection Agency and the National Petroleum Authority in the forms of annual reports, Petroleum Guideline, Environmental Assessment Regulations, 1999, LI 1652 which is the regulatory framework within which EPA works. Annual Environmental Reports (AER) submitted to EPA by some selected oil and gas retail sectors in the region were reviewed to determine the level of public engagement in the impact assessment in the report. The EA1

registration form for fuel and gas stations (see Appendix VI) which clearly indicates the consultation process was also reviewed. There weren't enough documents on preconditions, premises, and procedures for effective public participation. Access to secondary data sources from key informants involves quite a number of bureaucratic procedures.

3.8 Data Processing and Analysis

Data processing starts with the transcribing of the recorded interviews, group them based on the various guides for the respective informants, and do qualitative coding by categorizing the findings into risk, participation, and way forward, and use some interesting direct quotations from the informants. Findings from the interviews are related to the various theories as presented in the theory chapter two. Contextual content analysis using keywords in relevant and meaningful context is employed where responses from the informants are categorized into various context to analyze the similarities and differences in the responses.

3.9 Challenges and Limitation

The research work implies a number of uncertainties. It does not always go smoothly as the researcher plans. These inconveniences can affect the data collection process and to some extent modify the research objective. My field work, especially with the interview at the community level, was limited by the language barriers. I don't speak Fante ¹ which is the local language of the people. This made me arrange for a field assistant whose convenient days for the fieldwork was not suitable with my plans. I had to eventually adjust my plans to fit his. The field assistant did the interpretation and translation of the interview. Hence, I had to trust his accuracy and translation of the Fante statement. The unwillingness of the informants to accept the use of the recorder, made me lose track of some details during the interview because I could not make note of everything that was said. At some point, I was mistaken for a journalist and the informants feared I might send their recordings to the media. The interview with especially the key informants was not on the scheduled dates. It was characterized by rescheduling and this has taken much time and financial resources.

3.10 Quality of the Study and the Data.

A Scientific study in general aims at coming up with an investigation or report that will be accepted and be used for future studies. According to Kitchin & Tate (2000), people undertake researches

¹ Fante is the local language spoken in Sekondi-Takoradi

for reasons such as to explore, describe, explain and to make a prediction which mostly involved a combination of reasons. For my study, it is both exploratory and explanatory. Every scientific research must be valid and reliable (Kitchin & Tate, 2000). Qualitative research has over the period encountered some critique for not being valid and reliable. These issues are discussed in the following sub-chapters. To Gatrell & Elliot (2009), the nature of the qualitative research makes it possible for criticisms. Since the data collection for the research involves a very sensitive and at the same time a lucrative industry in Ghana, human assertions may be influenced by the unpleasant representation of the state of affairs. To ascertain whether the study can be reliable and credible involves the use of concepts in line with what Gatrell & Elliot (2009), termed as rigors in a qualitative study. Lincoln & Guba 1985 cited in Gatrell & Elliot (2009), identified four ways of establishing rigor in a qualitative study. These include credibility, transferability, dependability and confirmability.

3.10.1 Credibility

Credibility is the authentic illustration of experience and is equivalent to what a quantitative researcher would think of as validity (Lincoln & Guba 1985 cited in Gatrell & Elliot, 2009). This has to do with trustworthiness and whether what the informants tell is the truth. The field work for the study involves the use of a field assistant whose translation and interpretation might not be a detailed representation of what the people said because some of the interviews in Fante cannot be directly translated into English for want of words. Notwithstanding the fact that owners of the oil and gas retail company would want to paint a good image of their sector, made positive claims as far as their engagement and relationship with the public is concerned. This claims may cooperate with biases and personal interests which I highly recognize in the data collection process. The claims by the adjacent land users or community members were the same concerns (fuel station should not be located in residential areas, politics tends to influence participation) as those raised by many Ghanaians during the June 3 Fire and Flood disaster in Accra as a result of an explosion of a fuel station in a busy commercial area as elaborated in the introduction. The credibility will hence be influenced by some biased and distorted information due to the nature of this study.

3.10.2 Transferability

Transferability is defined as “the fit of the research findings outside of a specific study situation and is tantamount to the notion of generalizability in quantitative research” (Gatrell & Elliott, 2009, p. 83). The EIA is a general planning tool that is used in almost every part of Ghana and the

issuing of a permit to oil and gas retail outlets follow a general guideline administered by EPA in the ten regions of Ghana. As far as public engagement is concerned, the same levels of consultation are involved in other parts of the country. This was confirmed during the interview with the Environmental Protection Agency representative. Oil and gas retail sector across the country are located in both residential areas and along the highways. For me, any findings from this study as far as participation is concerned can most likely be used as general findings across the country. Except that there might be place specific variations but the details within the field can be used to study other areas. Cities with high population particularly in Accra, Tema, Kumasi, and Sunyani will have similar features as it is in Sekondi-Takoradi because these cities are congested and people carry out daily activities close to the stations. The case might vary in terms of population and closeness to fuel station in the Northern and other parts of Ghana that are less populated. However, the issues of consultation and public participation can be generalized across the country as the fear, anxieties and the risks people are exposed are the same. The awareness in Ghana could be higher than in other countries due to the June 3, Fire and Flood Disaster.

3.10.3 Dependability

Dependability is the “minimization of idiosyncrasies in the interpretation and is similar to what quantitative researchers will refer to as reliability or replicability” (Gatrell & Elliott, 2009, p. 83). I reflected carefully on my personal idiosyncrasies and perception during the data collection process and in particular in the interviews. I tried not to give any possible prejudgment or interpretation to the assertions of the informant. I related very well with informants putting aside every recognition locals normally give to someone who has traveled abroad to enable smooth and valuable interview. The interview was conducted in the most comfortable environment where everybody voiced out what they think affects them and what can be done.

3.10.4 Confirmability

Confirmability refers to “the extent to which biases, motivations, interests or perceptions of the inquirer influence interpretations”(Gatrell & Elliott, 2009, p. 83). This relates to objectivity in quantitative study. As a qualitative researcher, I may be influenced by the situation of oil and gas industry in Ghana as far as participation is concerned. But I tried not to give any interpretation to any statement made by the informant that will derail from the details the informants have provided. This is quite demanding to achieve, but to stick to ideals of objectivity and to make my study as reliable and valid as possible, I will represent and interpret the views of the informants to make

the research extensive and that it can be used to confirm researches across other geographical areas primarily within Ghana and other larger regions of West Africa. This study has been influenced by some limitations and I was particularly motivated after the June 3 disaster to conduct this research which can affect the findings but I hope similar researchers will arrive at the same results.

The research is based on a reasonably high trustworthiness of the collected data, without the strong impact of biases and systematically distorted views or statement. However, the main limitation as regarded by the researcher are; the unwillingness to speak and rescheduling of interview among the key informant especially in the case of Ghana National Fire Service. The limited number of fuel and gas station though this is not a quantitative study, some comparison could have been done between cities if there is time and available resources.

CHAPTER FOUR

DESCRIPTION OF THE STUDY AREA

4 Introduction

This chapter is a description of the study area, which is Sekondi-Takoradi in the western region of Ghana. The chapter explores a general profile of Ghana and a specific description of western region in terms of the socio-economic, infrastructure and the culture of the people. The chapter focuses also on the oil and gas exploration and other related activities in Ghana with emphasis on Sekondi-Takoradi and current developments in the oil and gas industry in Ghana.

4.1 Profile of Ghana

Ghana is located in West Africa and it was the first country to gain independence from the British in Sub-Saharan Africa. Accra is the capital city of Ghana where the seat of government is located. The Country has ten administrative regions (Western, Volta, Ashanti, Central, Brong-Ahafo, Northern, Upper East, Upper West, Greater-Accra and Eastern regions). Each region has a unique culture and language. Ghana has a total population of about 25 million (GSS, 2012). The headquarters of most oil and gas companies are located in Accra and their respective operational networks in Sekondi-Takoradi. Oil and gas exploration activities in Ghana brought about proliferation in a number of oil and gas-related service companies in the country. The exploration of oil and gas coupled with other economic activities improved the economy of Ghana resulting in the growth of low income to middle-income country. The oil and gas production motivated the movement of investors from across the world into the country's economy to invest. Some of these companies are partly owned by Ghanaian investors and other nationals. The companies invest in services like warehouse for oil and gas companies, insurance and quality control, logistics and haulage, engineering and construction services, waste management, shipping (export and import of drilling and other heavy equipment), human resources services, clearing and forwarding of crude oil, food services, transportation services for personnel on oil rigs (sea/air), environment, health and safety services as well as consultancy services in oil drilling and control service.

These related oil and gas undertakings have created employment for many in Ghana including foreign employees. Multi-national and foreign companies like Tullow Oil, Kosmos Energy, Seaweld Engineering Ltd, Antrak Ghana, Ghana Oil Drilling Academy & Consultancy (GODAC) Ltd, Bristow Helicopter International Ltd and numerous companies have invested in the oil and gas industry over the years in the delivery of various services. There are a number of registered

service companies with permit across the country providing oil and gas related services. There are about 88 Oil Marketing Companies (OMCs) across the country (NPA, 2017). These OMCs in the supply chain, distribute the oil and gas purchased from Bulk Oil Distribution Companies (BDCs) to retail outlets (oil and gas fuel filling and service stations) and then the retail outlets sell to the final consumer. Oil and gas are one economic product that has a proportionate impact on the supply and the prices of other goods and services in Ghana. That is to say, an increase in the price of petroleum products like diesel, kerosene, gas, and petrol cause an equivalent increase in the prices of goods and services especially transportation fares. Shortage of petroleum products likewise brings to a standstill most economic activities that rely on gas and fuel to operate the transportation services and other mechanized activities.

4.2 Western Region

Western Region is one of the ten (10) administrative regions in Ghana. It has Sekondi-Takoradi as its regional capital. The Western Region is located in the South-Western part of Ghana. Western Region has a total population of 2,376,021 which represents 9.6% of the total population of Ghana (GSS, 2012, p. 21). The Western Region has a total land area of 23,921sq.km, representing about 10% of the total land size of Ghana (GSS, 2013, p. 1). The region has the twin city of Sekondi-Takoradi as its regional capital which is presently unofficially named the ‘Oil City’² of Ghana following the discovery and exploration of oil and gas field in the region. The Western Region is bordered on the North by Ashanti and Brong Ahafo Regions, East by Central Region and West by Cote d’Ivoire. The Southern part is bordered by the Gulf of Guinea portion of the Atlantic Ocean stretching to about 192km. The figure below is a map of Ghana showing some oil and gas activities in the Western Region.

² Unofficial name for Sekondi-Takoradi following the exploration of oil



Figure 4. 1 Map of the Ghana showing oil and gas activities in Sekondi-Takoradi.

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

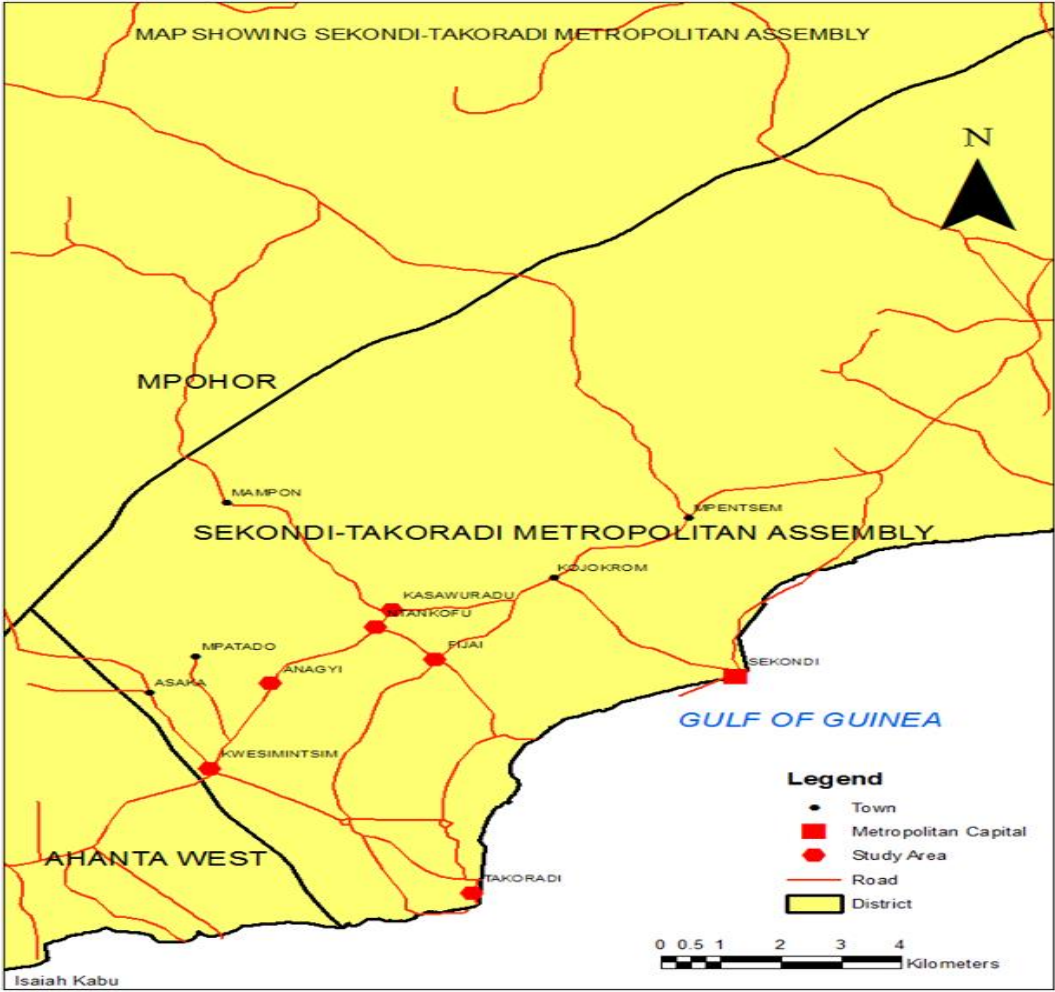
The southernmost part of Ghana lies in the Western Region, at Cape Three Points near Busua, in the Ahanta West District where oil and gas exploration is operational (EPA, 2013). Oil and gas consumption in the region is profound in industry, agriculture, fishing, and transportation, trading, and service provision and in domestic use. Logging activities are very common in the forest areas of the Western Region. Chainsaw operators use fuel to power their machines for logging.

4.3 Sekondi-Takoradi

Sekondi-Takoradi is the regional capital of the western region. The individual local language is Fante. The area is made up of coastal communities with underdeveloped fishing as the mainstay of the natives. The city is called the ‘oil city’ following the discovery and exploration of oil in commercial quantities in the Jubilee field at Cape three point. Sekondi-Takoradi is a metropolis with a total population of 559,548 (GSS, 2012, p. 93) Sekondi-Takoradi is a cosmopolitan city made up different ethnic groups like the Akans, Ewes, Ga, and Hausa. Sekondi-Takoradi

Metropolitan Assembly is one of the 17 Districts in the Western Region. It is bounded to the North by Mpohor-Wassa East, to the South by the Gulf of Guinea, West by Ahanta West District and to the East by Shama District. It has a total land area of 49.78 km² with Sekondi as the administrative headquarters. The metropolis is located on the west coast; about 280 km west of Accra and 130 km east of Cote d'Ivoire. It is thus strategically located considering its closeness to the sea and the airports and accessibility to major cities by road. The study is conducted in the Sekondi-Takoradi Metropolis within the seven neighborhoods of Kwesimintsim, Fijai, Anagyi, Ntankofu, Kasawuradu, Sekondi and Takoradi. The map below shows the study area.

Figure 4. 2 Map of the local study area in Sekondi-Takoradi



Source: (K-Kabu, 2017)

4.4 Socio-Economic Activities Demanding Gas and Fuel

4.4.1 Agriculture

About half of the total population of the Western Region are involved in agriculture (GSS, 2013). This varies from the districts as some record higher number of agriculture activities than others. Sekondi-Takoradi has the lowest number of agriculture in the Region. The Western region has significant agricultural sectors like the Ghana Rubber Estate Limited (GREL), Benso Oil Palm Plantation (BOPP) and NORPALM Ghana Limited which produce Rubber and Palm oil for industrial use. The region has about 614,106 farms cultivating 65 different crops (GSS, 2013, p. 146). Agricultural activities in the region include the cultivation of leading crops like Cocoa (37.9%), Coconut (1.9%), Oil palm (6.9%), plantain (15.5%), cocoyam (2.9%), yam (1.9%), and maize (1.9%) on commercial scale for export which contributes to the GDP of the country and crops cultivated on mono-cropping are carrot, cocoa, coconut, lemongrass, oil palm, rubber, shallot, sorghum and spinach. Mixed cropping is used for cocoyam, peas, and yam, while intercropping is used mainly for black pepper, tiger nut and tobacco (GSS, 2013).

The male population of the coastal communities in Sekondi-Takoradi engages in fishing and the women process the fish for sale in the local market (Author's Field Observation, 2016). Other people within the communities engage in the rearing of farm animals like the sheep, goat, cattle and poultry business to feed the local market. Chicken (64%) constitute the highest number of livestock in the region followed by fish from fish farming (10.0%), goat (9.2%) and sheep (8.2%) which are the four main livestock within the region (GSS, 2013, p. 147). Fuel powered generator sets are used to pump water from the rivers to the farms during dry seasons for irrigation. Outboard motors of fishing vessels use fuel for fishing in the region which is a popular practice along the coastal communities in the region.

4.4.2 Industry

The region has a number of industries like the Ghana Cement Factory (GHACEM), Pas Timber, Stanwood and Primewood which process timber for export (Quayson, 2012). After the agriculture, the second largest industry is the wholesale and retail, repair of motor vehicles and motorcycle in the region (GSS, 2013). Mining and quarrying industry is very profound in certain parts of the region like the Tarkwa Prestea area. The region has a number of oil and gas-related industries from

haulage, transportation, and exploration of oil and gas. The region has oil and gas industries most importantly Schlumberger, Baker Hughes, Tullow Oil, and Kosmos Energy. Oil market companies (OMCs) such as Shell, Total, Allied Oil, and Goil are located in the region which distribute oil and gas to retail companies within and outside of the western region. Large scale industries like the mining and quarry industries and manufacturing companies in the western region use fuel to power the engines of their heavy machines and trucks in the exploration of the gold, bauxite, manganese, and stones and in the production and processing of cement, rubber, and wood. The menace of illegal mining industry popularly known as ³‘galamsey’ where people mine gold, diamond, and other mineral resources without legal backing is very common in the region. This industry also uses fuel powered heavy machines to perform the illegal operations.

4.4.3 Services

The region has number of banking sectors, an airport and a number of oil and gas retail companies. The region has a number of hotels and restaurants located along the sea that offers accommodation for tourist and businessmen. Western region is endowed with a number of tourist attraction sites like forest reserves (Bonsa River reserve, Cape Three Points National Park), warm sandy beaches, historic castle and forts, Nzulezu Settlement - village on stilts, over lake Tandane, Another attractive place in the region is Nkroful, the hometown of Ghana’s first president Dr. Kwame Nkrumah. These tourist sites attracts a number of people from within Ghana and abroad to the Western Region which has implication for road and vehicle use and traffic. Oil and gas consumption in Sekondi-Takoradi influences the economic activities and livelihoods of the people. Gas is used in residential places for cooking and for selling fast foods by the road side which is a popular activity along the streets of Sekondi-Takoradi (Author’s Field Observation, 2016). Sekondi-Takoradi has a large market circle where various produce and products from different part of Ghana are traded. The markets attracts vehicles to Sekondi-Takoradi loaded with food crops from the forest areas of Ghana. This has momentous sway on the vehicular traffic in Sekondi-Takoradi and the consumption of oil and gas by these vehicles. During intermittent electricity power supply popularly known as ⁴‘Dumsor’ in Ghana, households use fuel driven generator sets to supply electricity to their homes. The practice is the same across offices in the market circle in

⁴ Dumsor is the local name in Ghana for the intermittent electricity supply

Sekondi-Takoradi where traders use generators to power their shops except for some establishments like banks, hotels, restaurants that use plant generators. Sekondi-Takoradi appears to be the hub of transportation services in the region comparatively because it is the regional capital and has a lot of economic activities and explicitly the oil and gas activities. Sekondi-Takoradi has a bus terminal for the State Transport Corporation (STC) which provides transport services to and from Sekondi-Takoradi to other parts of Ghana. Adjunct to that are other privately owned bus terminals regulated and managed by the Private Road Transport Owners Association (PROTOA) and the Ghana Road Transport Union (GPRTU). The region has a border town at Elubo between Ghana and Cote d'Ivoire. Vehicles moving from other parts of Ghana or from neighbouring countries like Togo, Nigeria, and Benin to Cote d'Ivoire use the Western region as a thoroughfare. These vehicles stop at the oil and gas stations along the highways to refill their fuel tanks through the journey.

4.4.4 Health

The Western region has 421 health facilities made up of 2 polyclinics, 25 hospitals, 268 health center and clinics both private and government, 61 privately owned maternity homes, and 65 CHPS with the highest number of health facilities in the Sekondi-Takoradi Metropolis (GHS, 2010, p. 14). The region has nurses training colleagues which train health workers for the various health centers in the region. The Effia-Nkwanta Regional hospital is the main health facility in the region which provides health services to the region in the areas of clinical care, public health care, training of health professionals (Quayson, 2012). Health service providers in the region also use fuel-powered generator sets to operate the facility in the periods of erratic power supply.

4.4.5 Education

The Education is synonymous to literacy rates in the region. Sekondi-Takoradi has the highest literacy rate (89.5%) in the region (GSS, 2013). The region has pre-secondary and secondary institutions in many parts of the various districts in the region. Western region has the University of Mines and Technology (UMAT) and some private universities. The region has Takoradi Polytechnic located in the metropolis. There are a number of privately owned basic schools within the region especially in the Sekondi-Takoradi which offers quality education to the children of the business class within the region. Oil and gas career programmes are organized by international

institutions within Sekondi-Takoradi in the areas of Health and Safety, Oil and Gas management, Procurement to augment the inadequate local labour skills for the oil industry which is largely influenced by the exploration activities within the region (Field Observation, 2016)

4.5 Oil and Gas activities in Sekondi-Takoradi

The region witnessed the exploration of oil and gas succeeding the discovery of oil and gas field in 2007. This has created a lot of economic opportunities for individuals and companies in Sekondi-Takoradi and beyond. Employment opportunity has been created for many people through the oil and gas related activities. Between 2004 and 2008, Ghana National Petroleum Corporation (GNPC), on behalf of the Government of Ghana, entered into petroleum agreement covering 12 offshore blocks, including the five key exploration blocks in the deepwater Tano Basin, sometimes also referred to as the Western Basin according to Energizing Economic Growth in Ghana by the Energy Group, Africa Region, World Bank, June 2013 (EG-ARWB, 2013 cited in EPA, 2013). In 2007, significant results of oil yield were found within the Mahogany and Hyedua discoveries by a consortium of Tullow Ghana Limited, Kosmos Energy Limited, Ghana HC and Anadarko on the West Cape Three Points and Deep Water Tano concessions areas respectively in the Western Basin in the Western Region of Ghana (EPA, 2011). The discoveries, about 65km offshore of Cape Three Points, were unitized to be developed as a single oil field name Jubilee Field to mark the coincidence of the discoveries with Ghana's Golden Jubilee year (EPA, 2013). In 2010, UK based Tullow Oil began drilling oil wells for its production in the Jubilee field constituting Mahogany-1 and Hyedua-1 (exploration) oil wells. Already, the pumps are producing around 120,000 barrels of oil a day (EPA, 2013) These discoveries confirmed the fact that Ghana is endowed with four sedimentary basins where the commercial quantity of hydrocarbon accumulation can be found. These basins are offshore Western Basin (Tano and Cape Three Points), Central Basin (Saltpond), Eastern Basin (Accra/Keta) and onshore Voltarian Basin (EPA, 2011). The region is considered the economic pole for growth in the country.

Aside Mahogany-1 and Hyedua-1 production oil wells, several significant discoveries had already been made in the Western Basin close to West Cape Three Point and Deep Water Tano concessions areas. They include Tweneboa, Enyenra-3A, Ntomme abbreviated TEN-project which has started exploration in 2016 (TEN Project, Draft EIS, 2013 cited in EPA, 2013). Because the exploration

of oil and gas within the region, a number of oil and gas retail companies are being established within Takoradi. A number of Oil Marketing Companies (OMCs) both local and multi-national corporation are located within the region. These OMCs include Total Petroleum, Shell, Goil, Petrosol, Oasis, Pacific oil, Galaxy oil, Petro Afrique, Unipetrol, Frimps oil, Champion oil, Union oil, Allied oil. These oil marking companies supply oil and gas to retail outlets like the gas and fuel filling stations who then retail the products to the consumer. A number of new fuel and gas stations are being constructed within Takoradi (Field Observation, 2016) and this has some developmental concerns on the environment and the economy of Sekondi-Takoradi. These fuel and gas stations create employment for people within the region as sales persons and contribute to the economic growth of Ghana. The increasing economic spin-off from gas and oil production create economic growth, growth in transportation and demand for private vehicles.

The ensuing development is the increase in the construction of the oil and gas stations across Sekondi-Takoradi to supply gas and fuel to the emergent oil and gas related industries in the region. As a result of the exploration of oil and gas in the region, a number of oil-related service providers like engineering, insurance, shipping, and transportation companies have established offices in Sekondi-Takoradi. Because of the exploration of oil, a number of commercial airline businesses fly passengers to Accra and the oil rigs which previously did not exist in Sekondi-Takoradi. Sekondi-Takoradi has a domestic airport which provides infrastructure for the oil industry and for easy movement of workers and business people and tourists in the region.

4.6 Enhanced Risk Awareness at Sekondi-Takoradi

Aftermath the June 3, 2015, fire and flood disaster caused by an explosion of a fuel tank in a fuel station at Circle in Accra, the awareness of people in Sekondi-Takoradi on fire disaster at fuel and gas stations has become profound. Just as the oil and gas retail industry have contributed tremendously to the economy of Ghana in general and Sekondi-Takoradi in particular, the industry posed some environmental challenges to the resources and lives in Sekondi-Takoradi. As mainstream offshore oil and gas exploration is associated with impacts such as noise, destruction of marine mammals' habitat, waste generation, pollution of water and air, likewise oil and gas retail operations have some potential impacts on resources and lives in Sekondi-Takoradi like the risk of fire, pollution of water bodies and soil through oil spillage, explosion, vehicular traffic and the increase in the construction oil and gas retail companies in residential enclaves. The fuel and gas stations in Sekondi-Takoradi engage the services of the sales person who pumps fuel and gas

to the consumer as a measure put in place to ensure safety precautions are adhered to by both the salesperson and the customer. The sale persons are trained skillfully in health and safety to manage the stations. The oil and gas retail company in Sekondi-Takoradi are made of those with other component facilities like a lube bay, car washing bay, and a shopping mart (fuel service station) and those that only sell gas (gas station) and fuel (fuel filling stations). The oil and gas activities in Sekondi-Takoradi both offshore and onshore are regulated by various institutions like the Environmental Protection Agency (EPA), National Petroleum Authority, Ghana National Fire Service, Town, and Country Planning Department, Fisheries Commission, Ghana Naval and Air forces and other relevant institutions depending on the interest and the specific constitutional function they perform. All these regulatory institutions have decentralized units in Sekondi-Takoradi and they work within specific guidelines and regulatory frameworks.

CHAPTER FIVE

5 EVALUATION OF THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF GHANA AND PARTICIPATION

5.1 EIA PROCESS OF GHANA

The initial phase of this research involves a review and risk judgment of documents on the environmental impact assessment accessed through secondary data sources and also from the office of the Environmental Protection Agency (EPA) in Sekondi-Takoradi. The data gathered from the reviewed documents were triangulated with data from the field interviews conducted with key informants (Environmental Protection Agency, National Petroleum Authority, and Town & Country Planning Department) including documents from the Ghana National Fire Service which representative the researcher was not able to interview because of time constraint. Primary informants (adjacent land users, owners of fuel filling and gas stations, employees of the stations) are also included. The information assembled through these sources address the first objective of the research which explores the level of public participation in the impact assessment of oil and gas retail sectors.

Environmental Impact Assessment (EIA) is a planning tool that is used in Ghana for environmental assessment of various industries, projects, and undertakings. The EIA is mandatory to be carried out on specific “undertakings” or projects in Ghana as a means of safeguarding environmental soundness and sustainability. Undertaking is “any enterprise, activity, scheme of development, construction, projects, structures, buildings, work, investment, plan, programme, and any modifications, extension, abandonment, demolition, rehabilitation or decommissioning, and the implementation of which may have significant impact on the environment” (EPA, 1999). The Environmental Protection Agency Act 490, 1994 establishes the Environmental Protection Agency (EPA) as the constitutionally mandated body to administer environmental impact assessment in Ghana and to issue environmental permit and certificate to undertakings including the fuel filling and gas stations across Ghana. The EIA of Ghana is increasingly becoming robust due to efforts by governments and international organizations to build capacity through the use of contemporary tools like Geographic Information System, Global Positioning Systems, and workshops to promote the development of an effective EIA system to ensure environmental sustainability. The EIA is project and sector specific but generally, requires some level of participation or consultation by the respective regulatory institutions. The EIA systems across the world are the same in terms of scope and objective but have some minor national variations. The figures below show the general

EIA that is valid for many nations and the specific EIA of Ghana. The EIA of Ghana has similarities with the general EIA but the standards at each stage and the requirement differ from one project to the other. Every nation has specific guidelines and requirements in the various stages of their EIA. The emphasis is on the public participation section of the flow charts.

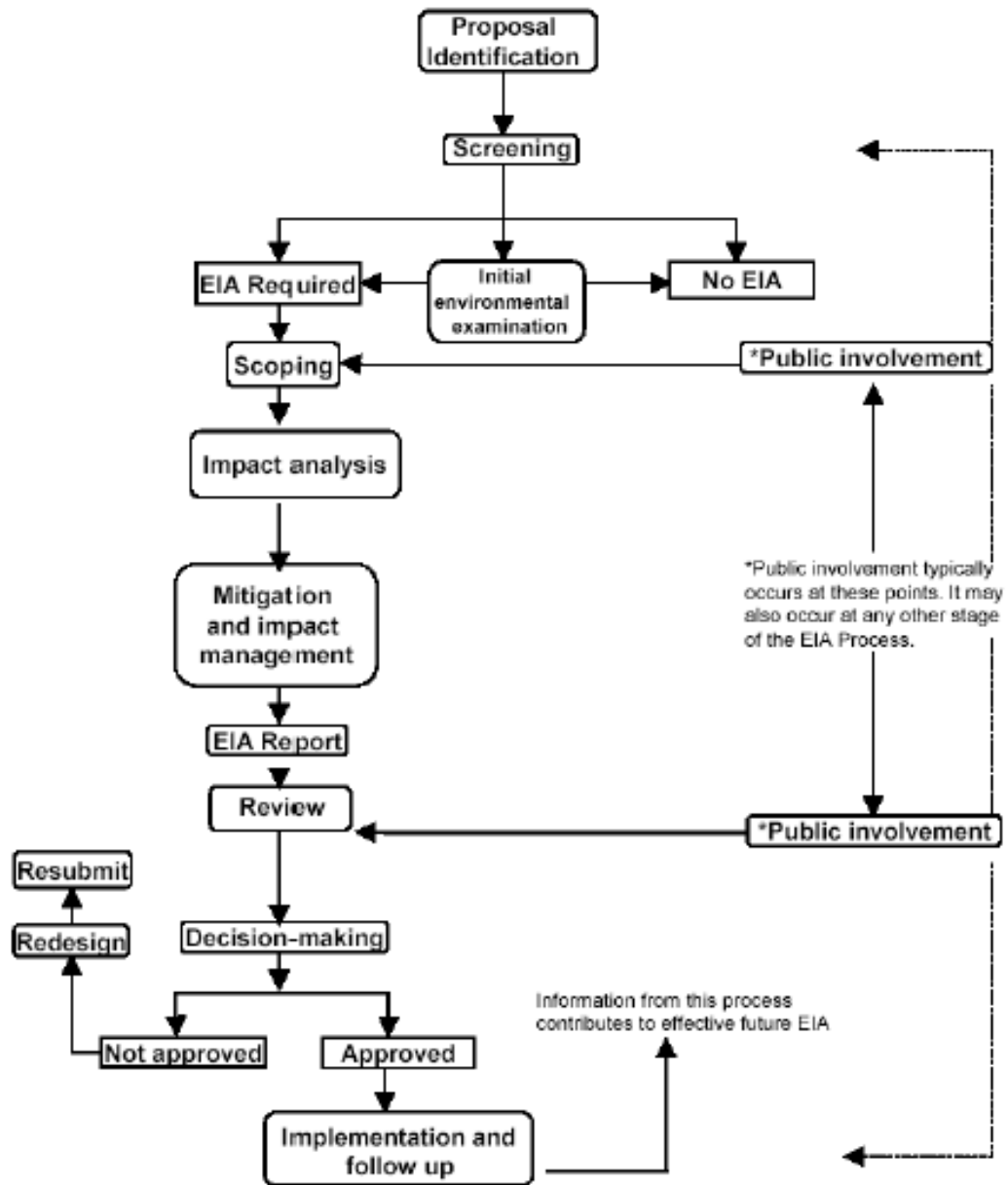


Figure 5. 1 General EIA flow chart Adapted from (Ogola, 2007, p. 6)

5.1.1 EIA procedure in Ghana.

Under Ghana's Environmental Impact Assessment (EIA) as shown in Figure 5.2 below, the Environmental Protection Agency (EPA) formerly known as the Environmental Protection Council (EPC) has the constitutional mandate to determine which activities require an EIA. In the process, EPA consults with various stakeholders at both institutional and community level as presented in table 5.1 in section 5.2.1 of this chapter. Where in the judgment of the public, a proposed undertaking could result in a momentous impact on the environment, the proponent or owner of the facility is asked to consult with interested and affected parties herein, the adjacent land users and prepare a scoping report (Appiah-Opoku, 2001). Standards and threshold are the measures against which the degree of significance of potential impacts of a development project are assessed and determined (Glasson, 2008). Standards and threshold influence the EIA process in its entirety from the screening phase to the final decision-making stage. Threshold refers to the discrete points that must be exceeded to begin producing a given effect or result to elicit a response and it is mostly made up of limits- upper and lower, beyond which there will be an effect (Glasson, 2008). Standards provide procedures to adjust the effects of an activity especially human activity on people and the environment. Standards state a desired position on an activity or project. Standards in the EIA of Ghana are indicated in the flow chart in Figure 5.2 composing each level and what is required. The level of consultation varies from one undertaking to the other. At some point, EPA consults with the public and under some cases, the proponents consult with the affected and interested parties. Some level of consultation or public engagement is done by EPA.

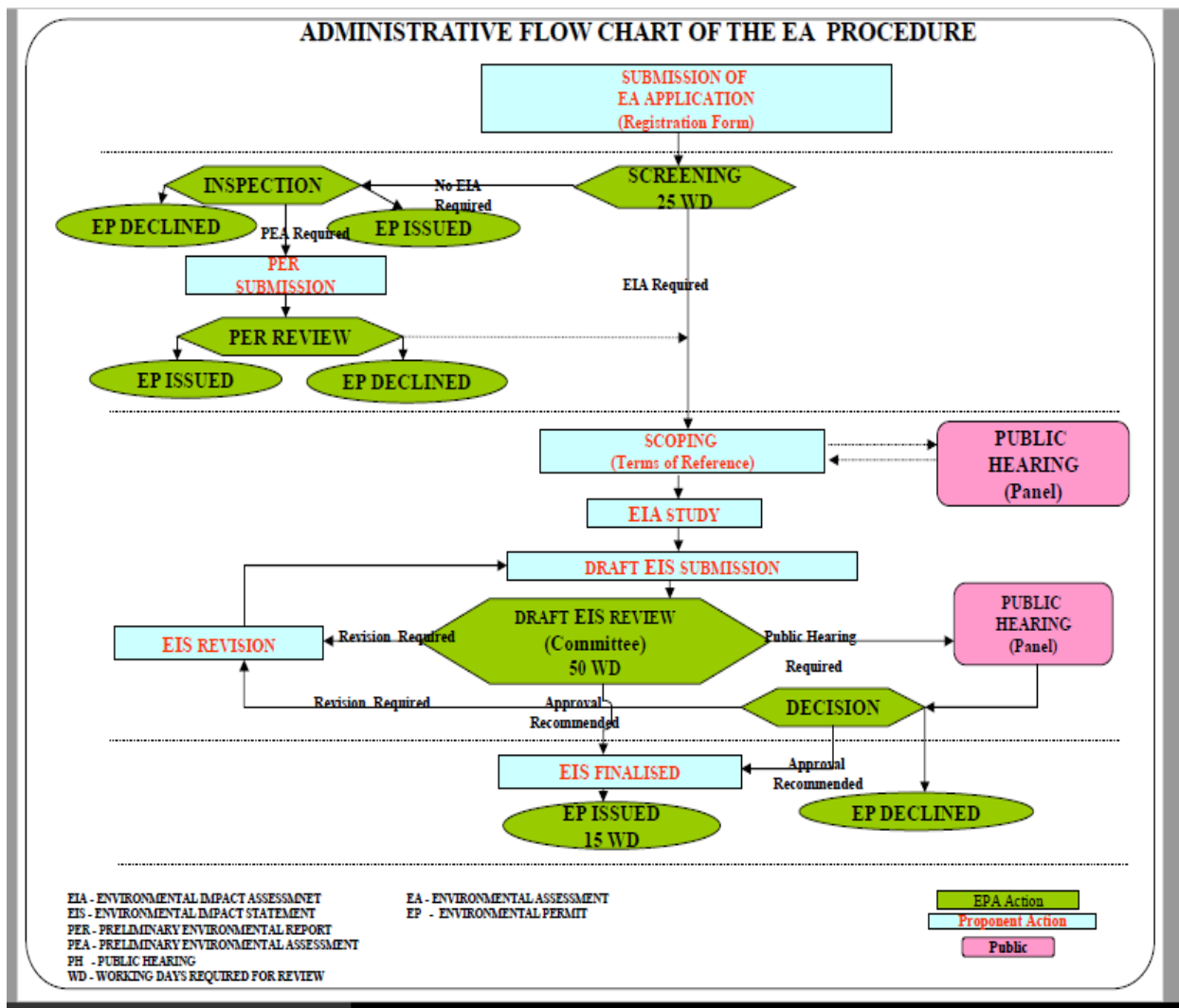


Figure 5. 2 EIA administrative flow chart of Ghana adapted from (EPA, 2011, p. 18)

5.1.2 The Summary of the flow chart

The EIA process involves at the initial stage registration by the proponent at the office of the Environmental Protection Agency (EPA). Usually, the proponents buy various forms from Environmental Protection Agency depending on the type of undertaking. The fuel and gas retail sector register with the Form EA 1 (see appendix VI). The proponent registers the undertaking on the form and submits to EPA. The form captures the company's details and the raw information on the proposed site and location. The EPA then takes the application through the EIA process as outlined below.

5.1.2.1 Screening

The Environmental Protection Agency receives the registration forms and proceeds with screening. EPA does two types of screening, which include a desktop screening and the screening at the field. The desktop screening involves requesting the proponent to submit supporting documents such as and not limited to:

- Applicants particulars (company information)
- A site plan of the proposed site to determine the land size
- A block plan
- Fire permit from the Ghana National Fire Service
- Pictures of the proposed site
- Zoning letter from the Town and Country Planning Department

The field screening is where EPA goes to the proposed site to verify the information provided by the proponent against the realities on the site. It is during the screening process that EPA consults with the public in the case of a fuel and gas stations. EPA then comes out with a screening report which may require the proponent to take certain actions like submitting a Preliminary Environmental Report (PER) or undertake a full EIA or a rejection or approval of the undertaking to proceed or additional information required. This decision by EPA varies from one undertaking also among gas and fuel filling station cases across the country. Every project has specific threshold and standards required under the EIA. Some projects undergo the full EIA and other projects are limited or restricted to specific stages of the EIA.

5.1.2.2 Scoping

Scoping is mostly not requested by EPA of the proponents of fuel and gas stations in Ghana. In cases where undertaking requires a full EIA, scoping is required. This is where the proponent has to do a broader consultation with the public (interested parties, pressure groups, Non-Governmental Organizations and the general public) by publishing or advertising the proposed project in the media for public inputs. The concerns from the public are sent to the proponent and then the proponent produces a scoping report. The establishment of the fuel and gas stations do not require publishing or advertising the project in the media for public scrutiny and inputs. The public hearing consists mostly of the cross-stakeholder panel from community leaders, environmental organizations and some Non-Governmental Organizations (NGOs). The scoping

report outlines the concerns of the public and the potential impacts of the project and proposed mitigation measures for EPA to examine in the Terms of Reference as indicated in Figure. 5.2. The scoping report is reviewed by the Technical Review Committee (TRC) which is composed of experts from various departments within EPA. The review is done at the regional office and the application is forwarded to the headquarters of EPA in Accra for further review. Application for permit for some undertaking or projects like the fuel and gas stations do not require a scoping report in Ghana so the permit is either issued or declined after the screening process as shown in Figure 5.2 above.

The aftermath of the scoping report may require the preparation of an Environmental Impact Statement (EIS) by the proponent which incorporates concerns such as; “a description of the proposed undertaking and analysis of the need or reasons for the undertaking, the objective(s) of the undertaking; options for carrying out the undertaking; a description of the present environment that would be affected directly or indirectly by the undertaking (baseline information), a prediction of future environmental conditions of the area with and without the undertaking, proposed measures to prevent or mitigate adverse environmental impacts; and a proposal for environmental management programs to cover construction, operation, and decommissioning stages of the undertaking”. (Environmental Protection Agency (EPA), 1995 cited in Appiah-Opoku, 2001, p4).

5.1.2.3 Permit Procedure

The EPA after receiving either the full EIA of proponents or the preliminary EIA as for the fuel and gas stations, EPA can issue an environmental permit to the proponent. The environmental permit is issued by EPA under the authority of the Executive Director of EPA. The environmental permit generally comes with permit conditions that the proponent must follow. The permit is recognized valid within 18 months of the issue and this permit can be revoked by EPA when it deems necessary. Environmental permits are subject to renewal after 18 months. It is interesting to note that, EPA does not consult with the public after issuing the permit but only takes feedbacks from the public because EPA claimed to have done a quality assessment before issuing an environmental permit.

5.1.2.4 Monitoring and Compliance

To ensure that, proponents observe the permit conditions very religiously, EPA does compliance monitoring periodically to check the state of operation of the various undertaking including the fuel and gas stations. The proponent is requested first and foremost by EPA to conduct a self-

compliance on their activities. In the case of fuel and gas stations, checking fire extinguishers, checking tanks to determine leakages, waste management, health, and safety training and workshop for employees, open display of caution and warning signs and periodic renewal of fire permits are required. The proponent is also required to submit an Environmental Management Plan (EMP) to EPA during the eighteen months of operation and subsequently submit an EMP every three years.

In addition, an Annual Environmental Report (AER) may be requested by EPA after every twelve months in the case for fuel filling and gas stations. All these reports from proponents to EPA vary from one undertaking to the other. The determination on what to submit is done by EPA in accordance with the Environmental Assessment Regulation Legislative Instrument (LI 1652) of Ghana.

However, the fuel and gas stations do not require an Environmental Impact Statement (EIS) but are required to submit Annual Environmental Report (AER). The requirement for an EIS depends on the scale and type of activity. The EIA of the fuel and gas stations is required at the screening stage as illustrated in Figure 5.1 above and after the screening EPA makes a singular decision to either approve or decline the permit without public representation.

5.2 Participation in the EIA of Oil and Gas Retail Sector

5.2.1 Who Participates

Public participation is a cornerstone of an environmental assessment (Fischer & Gazzola, 2006). The EIA of the fuel and gas stations in Sekondi-Takoradi requires some level of public engagement which uses consultation. The EIA process is sector specific and not an overall objective system, therefore depending on the conditions on the proposed site for the fuel and gas stations, EPA does not have a specific group of people to consult with. Generally, the adjacent land users are consulted in most cases. The EPA consults with other state institutions depending on the site information gathered by EPA in the EIA process to ensure proper planning. Table 5.1 below indicates the category but not limited to the agencies consulted by Environmental Protection Agency in the EIA process of fuel and gas stations.

Table 5. 1 Institutions consulted by the Environmental Protection Agency (EPA) in the EIA process and their respective roles

STAKEHOLDERS	STAKEHOLDER GROUPS	REMARKS/ ROLES
PUBLIC	<ul style="list-style-type: none"> • Adjacent land users 	Residential facilities close to the fuel and gas stations, business activities close to the stations,
GOVERNMENT	<ul style="list-style-type: none"> • Ghana National Fire Service (GNFS) • National Petroleum Authority (NPA) • Town & Country Planning Department (TCPD) • National Road Safety Commission (NRSC) 	<ul style="list-style-type: none"> • Issues Fire Permit • Issues Construction Permit • Gives Zoning Letter • Measurement of distance of fuel and gas station from highway
UTILITY SERVICE PROVIDERS	<ul style="list-style-type: none"> • Ghana Water Company Limited (GCWL) • Electricity Company of Ghana (ECG). • Telecommunication Companies 	<ul style="list-style-type: none"> • Concern about pipelines in a proposed site • Responsible for electric cables that may be affected or influenced by oil and gas activities • Look out for Telecom mast and other wires installed around the proposed site.

Source: Author's Construct

According to a (male representative of Environmental Protection Agency in Sekondi-Takoradi, aged 40);

“There is an aspect of EIA that allows for public participation and that the LI 1652 gives us a strict administrative guideline on how EIA is to be carried out in Ghana. If you look at the screening aspect there is a clear column for consultation put by EPA, and even your EIA depending on the level is sector specific. At the community level, we consult with the adjacent land users. But at the institutional level, we consult Town and Country Planning Department regarding zoning of a geographical area and other utility agencies like Ghana Water Company and Electricity

Company of Ghana if there are pipelines passing the proposed site and other challenges with the electric grid. There are many instances where the pipelines were relocated. EPA also consult road user agencies so that the site wouldn't be in the right of way. We have a general guideline but the situation varies from one site to the other. Our EIA process is not objective but subjective. Subjective in the sense that, based on your background we are able to make a guideline of what we think is appropriate. So when you go to the field, the site information will be able to tell you who to consult. We don't have an objective system that says even though it is proper to do A, B, C, D. When we go to the site, depending on the adjacent land uses we know which type of engagement to do". (Representative, Environmental Protection Agency, Interview).

The assertion of the EPA representative indicates that some level of consultation is done by EPA with the public and at the institutional level. The consultations cut across various stakeholders of society but then again this is done at the subjective discretion of the Environmental Protection Agency (EPA).

The consultation process at the community level for the fuel and gas stations does not inform the participant ahead of time but it's done during the screening stage when EPA visits the proposed site to assess the suitability of the place for the proposed project and to compare the information on the application form EA1 to the site information. Consultation at the community level is done based on the degree of the propinquity of residential facilities and other adjacent activities to the fuel and gas stations. Participation is not pro-active and inclusive in the initial location decision. Rarely, the Environmental Protection Agency does not consult the adjacent land users and continues to issue environmental permit for fuel and gas stations under this context;

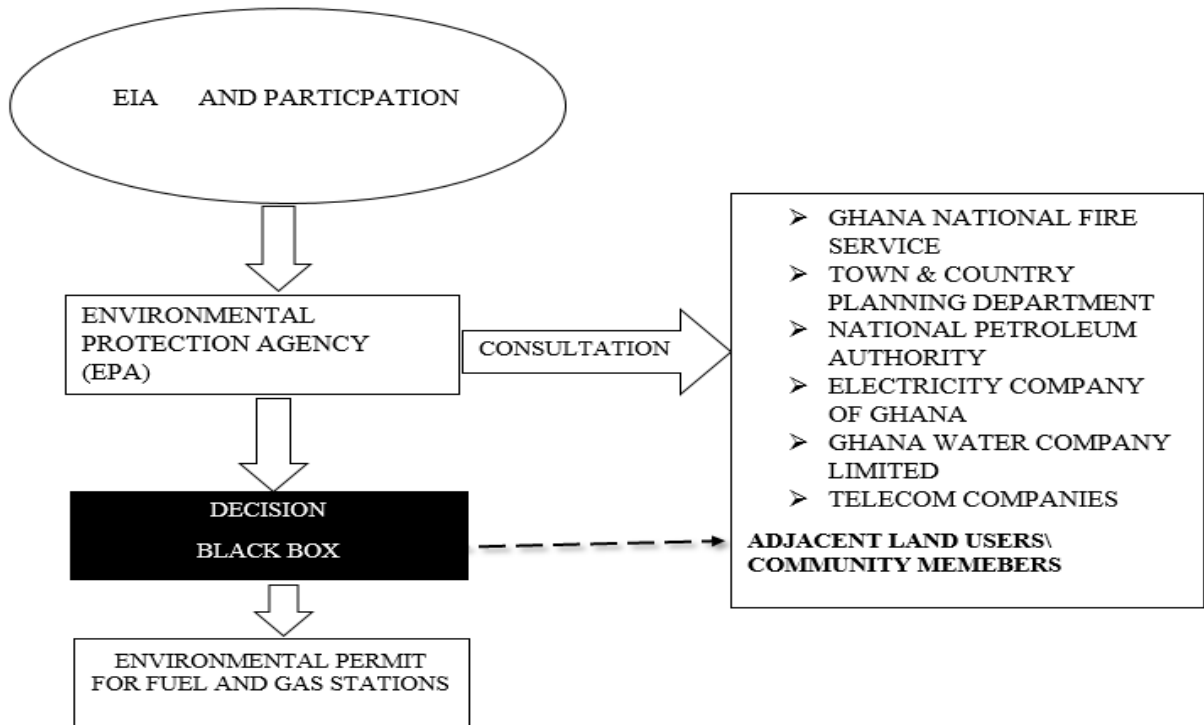
"Yes, there have been a lot of instances where we don't involve the public yet we give a permit. Like the Ghana Free Zones Board (GFZB) has an industrial enclave. Is already an industrial enclave that everybody knows and once there is a letter from the Ghana Free Zones Board telling EPA that the land has been allocated we go and look at the compatibility and we give the permit"(A male representative aged 40, Environmental Protection Agency, Interview).

This criterion for assessment may be subject to some forms of concerns from the public where especially the public contemplates it is environmentally suicidal to put up a facility there when the site has already been zoned as an industrial enclave by the Ghana Free Zones Board. This response

was to answer the research question under what conditions EPA issue an environmental permit without any consultation with the public.

The diagram below shows the current EIA and participation for fuel and gas stations based on the field information obtained.

Figure 5. 3 Observed EIA Procedure and Participation for Fuel and Gas Stations



Source: Authors Construct

The framework above is the consultation process for the fuel and gas station grounded on the field information obtained. The EIA is the tool for issuing a permit to fuel and gas stations and consultation is a component of the EIA. Environmental Protection Agency (EPA) being the institution mandated to conduct the EIA consults with the various institution as indicated in Figure 5.3. The black box is the decision-making box for EPA where there is a thin line between adjacent land users or community members of proposed sites for fuel and gas stations because there is little or no consultation. Within the decision, black-box permitting of fuel and gas stations are done by EPA and it's considered not a transparent process by some informants. The consultation process and who to engage depends on the decision of Environmental Protection Agency. The consultation

process for the adjacent land users is specifically an integral part of the EIA for fuel and gas stations. This provision is incorporated in a neighborhood consultation form as presented in appendix VI, which the proponent must attach to the EA1 form upon submission to EPA. The neighborhood consultation form is limited in terms of capturing the detailed concerns, fears, and comments of the public on the fuel and gas station. The people who participate in the consultation process do not have a deliberative meeting with either the proponent or the representatives of the Environmental Protection Agency. This development consequently, undermines and limits the number of stakeholders who participate especially at the community level. The people consulted are not informed ahead of time before the consultation is done. It is more of an unsystematic selection of participant in this process.

5.2.2 Methods of Participation

The Environmental Impact Assessment (EIA) of the fuel and gas stations employs public meetings with adjacent land users using interviews and questionnaires. EPA at this point, take the opinions and anxieties of the people about the envisaged potential impacts the fuel and gas stations on their prevailing activities. During the process of public consultation, the Environmental Protection Agency does not engage in any broadcast media such as radio announcement, newspaper, and television to inform the public about the construction and operation of the fuel and gas station in a geographical space.

Nonetheless, public hearings for specific projects like oil drilling field, an airport and a harbor that require the relocation of communities are published in the media for public inputs and comments. The consultation process for fuel and gas filling station is more of informing the people about the fuel and gas stations rather than a full participation where the views of the public influence the decision of EPA. It's a one-way information (top-down) not a real exchange of views and discussions of (other) alternatives and options. This top-down process of consultation and issuing environmental permit has elements of political ecology where politics and power relations influence public views and concerns on the location and operation of fuel and gas stations. The consultation for a high-risk industry like the fuel and gas stations is inadequate and lacks what constitutes a full and deliberative participation. In response to the question of public complaints about inadequate consultation, a male representative of EPA intimated that;

“Such complaints influence the permitting process. Complaints keep making our permitting procedures very dynamic. Because of the feedback, we tighten our permitting procedures. We don’t have a straight-jacket permit condition for all filling stations depending on where you are located the permit is structured to fit your location” (Male representative aged 40, EPA, Interview)

5.2.3 Level of Participation

The consultation of the public in the establishment of fuel and gas station in Sekondi-Takoradi is implausible to consider as a demonstration of appropriate democratic and deliberative participation. The consultation process is one directional flow of information from the Environmental Protection Agency to the public.

The feedback and the concerns of the public have little or no influence on the final decisions of EPA as far as issuing out permits and certificate to fuel and gas stations to operate is concerned. The public has no representation either directly or indirectly on any board in determining what transpires at the Technical Review Committee (TRC) of EPA. The Technical Review Committee of the EPA makes a final determination on which applications for an environmental permit can be declined or approved including the fuel and gas stations giving a number of conditions. In line with Arnstein Ladder of participation presented in chapter two, the consultation process of the fuel and gas station could be placed under the first rung and second rung of the ladder as indicated by Fig.2.1. The first rung unequivocally indicates non-participation. Under this rung, no consultation is done where the area is zoned by the Ghana Free Zones Board. The Environmental Protection Agency does not consult the public in situations like this and continues to issue an environmental permit. The decision of the Environmental Protection Agency could affect the public yet this provision does not make room for public feedback and scrutiny of the project.

The second rung of Arnstein Ladder is the degree of tokenism. At this stage there exist some level of participation but it's more about giving information to the public about the establishment of a fuel and gas station. There is no real participation and influence. The feedback from the public has little to do with the final decision of EPA. The public does not have any representation to push their concerns to the decision table. According to Arnstein (1969), the first rung is non-participatory and just a public relation process. The consultation for fuel and gas stations is diminutive and what transpires at the decision-making stage is not transparent. There is no

community representation on any committee as far as environmental decision making is concerned.

5.2.4 The Need for Participation from Public Perspective

Considering the high risk posed by fuel and gas station, informants express the concerns for their active participation. After the June 3 fire and flood disaster in 2015 and the subsequent gas explosion at Trade Fair centre in Accra, public awareness on participation, change in risk perception and risk attitudes have been enhanced. The adjacent land users and communities recognised the need to be consulted thoroughly in the EIA process of fuel and gas stations. A male primary informant aged 33, specifically indicated that;

“There is the need for the Environmental Protection Agency (EPA) to give a briefing to everybody in an area where fuel and gas stations are located because petrol and gas are flammables and the public need to be informed and educated on the ways of managing the risk of fire, explosion and other related risk”. (Adjacent Land User, Interview).

This is very necessary because most informants do not really know how to manage the risk of living close to fuel and gas stations especially avoiding activities that can cause fire and other disasters. Education of the public on the risk of fuel and gas stations is important. Some activities like a restaurant where they set open fires, smoking and drinking bars are not compatible with fuel and gas station. Therefore, education of the public will reduce fire that may be caused by these risk factors.

One male adjacent land user interviewed, indicated the need for broader stakeholder consultation and indicated that;

“Though EPA has the expertise to deliver, the public has to be consulted to make the process more transparent and democratic. All members of the community must be consulted, it’s a stakeholder thing, and the District Assembly must be consulted. Also, the Assemblyman, Town & Planning Department at the District, Unit committee, the District Chief Executive and the Traditional Rulers like the Chiefs and elders or family heads should also be consulted because they are at the grass root and knows much about the areas where the filling stations are located. You might set up a facility at a place that you think is appropriate but the community members will have a baseline information about the location that is historical”

With regard to the comment above, it will be a herculean task for EPA to consult every member of a community and this can be reduced by consulting with the community leaders who represent the interest of the community and most importantly those located close to the fuel and gas station. Consulting every community member will stimulate delays in the issuing of the permit.

5.2.5 Limitations or Challenges of Participation.

One of the major criticism of the EIA as identified is that they have an immaterial influence on the decision-making process, inadequate environmental benefits and deficient prospects for public involvement, and a source of interruption in executing development projects. Power relations is one of the major factors militating against the full participation of the public. The political influence exercised by proponents of fuel and gas stations who have political relations with the government machinery limits public inputs. The fuel and gas station are alleged to have been owned by top politicians and their respective allies. Political power tends to determine environmental decisions especially under conditions where the concerned industry is lucrative. The EIA process is undoubtedly a top-down process which gives many powers to the Environmental Protection Agency and creates less room for grass root capacity to influence the environmental decision. The affected individuals are physical, socio-economically and psychologically distant to the power elites. The regulatory institution of fuel and gas stations are much concerned about the management (observing safety protocols) and not the where (location) of fuel and gas stations. The media interviews of the regulatory institutions specifically the Ghana National Fire Service after the June 3 Fire and Flood Disaster on June 3, 2015, and the recent gas explosion at Louis Gas Station behind the Accra International Trade Fair Centre at Labadi on 22nd December demonstrate low sensitivity to the public concerns and human lives.

In addition, mistrust and powerlessness has engulfed the psychological orientations of the public and they repose little or no confidence in concerned government institutions. The grievances of the public seem not to be addressed by the appropriate institutions. In the words of a female respondent at one of the communities:

“We are tired of the system, we have made complaints to the Environmental Protection Agency (EPA) and the Metropolitan Assembly but the story remains the same” (Adjacent Land User, Interview).

This points to the fact that, adjacent land users and other affected people repose little or no confidence in the regulatory institutions in reviewing or revoking the environmental permit of the fuel and gas station amidst complaints because their resigned objections are not considered seriously. This could result in people fighting to push their interest and grievances to be addressed through conflicts, destructive demonstration and riots, and other means which may be unconstitutional and ultra vires of societal conducts. When people lack self-assurance in institutions and feel rejected, it has bad implications for development and the relations between the public and the institutions. Institutions are created to meet the various needs of society. Therefore, the feeling that institutions do not deliver on their duties is problematic.

5.3 Summary

There public participation in the EIA of the fuel and gas stations cuts across institutions to the community level. The consultation of the public is more of receiving information from EPA without much incorporation of the views of the public. The EIA of fuel and gas stations is not very objective because consultation is done based on the information EPA gathers from the proposed site. The EIA process of the fuel and gas station does not go through the full EIA process. Environmental permits are issued after the screening, unlike other undertakings that have to go through the full EIA procedure. Consultation at this level is very weak compared with public hearings organized for projects like airport, harbor, and dams. Public hearing is much participatory and engages views of affected parties and people of interest. Public hearings are announced in the media and this makes it much easy for the general public to make inputs into the process. Participation is important to the public because of the risk posed by the fuel and gas stations and the enhanced awareness and changed risk perception created by the June 3 fire and flood disaster and the gas explosions at Trade Fair Centre in Labadi which resulted in some fatalities. As a limitation to participation, the public feels they are distant from the regulatory institutions and that their views are not considered much important by these institutions. The concerns of the public as far as location of fuel and gas stations are concerned are limited in implementation and this makes the whole EIA procedure a top-down process.

CHAPTER SIX

FEARS AND RISK OF FUEL AND GAS STATIONS

6.1 Introduction

Risk assessment (RA) is parallel to Environmental Impact Assessment (EIA) (Wathern, 2013). Risk as presented in Chapter two, section 2.6 of the study can be collective and individual risk. Risk of fuel and gas station are more of objective risk as the fire disasters indicate the reality of the risk. Risk assessment in EIA are the impacts that are identified about a project. Risk assessment is used to evaluate the probability and likely consequence of a particular project. The judgement of informants on the risk and benefits posed by the fuel and gas stations are mixed reaction amidst the fact that the industry is high risk one as shown by recent incidents. Risk assessment tend to be highly numeric appraisal, they are essentially statistics analyses of likely events based on certain probability of occurrence (Wathern, 2013). The incidents of the fire and gas station explosion disasters in Ghana provide statistical assessment of the probability of occurrence. The judgements of the informants are premised on the societal overall benefits one gets from the fuel and gas stations and the risk posed to lives and property. The fuel and gas stations provide employment to people as fuel station attendants and managers. Some group of employees also work at the shopping marts and in the washing and lube bay attached to some fuel and gas stations. Some adjacent land users as part of the benefits patronise the shopping mart and also have access to gas for their domestic use. The fears and risk of fuel and gas station influenced by the fire disasters impact the risk perception of adjacent land users.

6.1.1 Risk of Fuel and Gas Station

The risk of fuel and gas stations are numerous and each informant is exposed to the risk depending on their location to the fuel and gas station and the activities they engage in. Every fuel and gas station irrespective of the size and location has some risk factors which can be a collective risk and individual risk. Generally, the risk identified by the informants include; the risk of fire, explosion, arm robbery attacks, noise, vehicular traffic, pollution of air, land and water bodies and soil through leaching of leaked fuel, and exposure to chemicals from the petrol and gas. The consequence could be shortened lifespan depending on the length and intensity of exposure. The exposure to such risk is a matter of public health concern. The concern of fire and explosion was expressed by both adjacent land users and workers at the various fuel and gas station as not the most likely to occur but has the most dangerous consequences prior to what happened at the June 3 fire and flood disaster. The probability of an explosion and fire cannot be determined as nobody

knows when the next explosion will strike. Other forms of risk like robbery, air, water and land pollution, noise, vehicular traffic are judged by informants as the most likely to occur and has long-term consequences on health with a high degree of exposure. Air pollution from petrol and gas could exacerbate asthma and increase the risk of pulmonary diseases and lung cancer. Explosion and fire seem to be the number one risk identified by the informant. A male worker at a fuel and gas station stated that;

“One of the risks over here is that we stand for 17 hours without sitting and you can only sit when you visit the washroom. I suffer severe restlessness and waist problem. Also, since the fuel contains some chemicals, we inhale a lot of chemicals from the petrol which makes me fall sick very often. Air quality at the station is polluted. The risk of fire is what I fear most” (Male worker at a fuel and gas station, age 30, Interview).

This quotation supports the observations the researcher made at the various fuel and gas stations. Workers will have to stand close to the pumping machine without sitting for long hours. The chemicals from the fuel and gas are so strong that the researcher felt very uncomfortable inhaling the chemicals. Staying under this condition without nose mask could be dangerous to the health of people. Some informants considered the activities of people around the fuel and gas station like smoking and working with fire occasionally or non-regularly in connection to selling processed food as a risk factor. Open fires are set up by hawkers along the streets close to some fuel and gas station which can easily spark and cause fire.

6.1.2 Fears of the Public and Nimby

One of the major problems of facility siting is that people living adjacent a proposed site typically identify the benefits associated with the facility as low in relation to the cost and benefits of the project (Kunreuther et al, 1993). Nimby (Not in my backyard) as indicated in Chapter two, section 2.1.5 of the study is influenced by the high risk of fuel and gas stations. The Nimby syndrome has largely been reinforced by the gruesome incident of the June 3 disaster and the La Trade Fair Gas explosion both in Accra which killed some 160 people in total. The casualties sent message to the general public about the location of fuel and gas station in Sekondi-Takoradi and across the country. The fact that, there is no compensation for people living close to fuel and gas stations which consequently creates losers and winners as presented in chapter two, many adjacent land users oppose the location of fuel and gas stations.

The Nimby syndrome has taken over the location of fuel and gas stations across Ghana and this is indicative of the awareness of some adjacent land users about the dangers associated with living close to a fuel and gas station. A quintessential example is the protest by Students of the University of Professional Studies, Accra (UPSA) against the location and operation of SEL fuel filling station behind the university which the students and the university community claimed put their lives at risk (Citifmonline, 2017). Explosion and fire associated with fuel and gas station have become more of a collective risk than an individual risk and the probability of explosion and fire from fuel and gas station is very high. The Nimby syndrome leads to the objection of the fuel and gas stations which probably would emanates into a cyclical relocation of fuel and gas stations. This is because, nobody wants it to be located in their backyard holding constant, the risk coupled with no compensation. Especially in areas where people's awareness levels have increased, the establishment and operation of fuel and gas stations will witnessed gross rejection. Consequently, fuel and gas stations will be located in "lower status" areas where people's awareness level and resistance are lowest. In situations where, the attitude and views of the people in an area are the same with counter power where the public is indignant at a chosen location, public rejection of fuel and gas stations becomes easy. The non-trust to safety management and culture around these fuel and gas stations also triggers rejection and public complaints especially where there are losers and gainers as presented in chapter two.

Environmental injustice as presented in chapter two where the disadvantaged poor are expose to the risk of living close to fuel and gas station and the owners who amass the benefits and do not live close to these fuel and gas stations. The risk of exposure is geographically and socially uneven as the poor and powerless people are unduly impacted. Research indicates that the exposure to risk is high in low-income communities than in affluent enclaves (Katz, 2012 cited in Walks, 2014). The poor are more likely to live adjacent hot-spot areas where there is a high danger of exposure (Freund & Martin, 2007). Environmental injustice as presented in section Chapter two, caused adjacent land users to oppose the location and operations of fuel and gas stations.

Sen identified three important approaches to what constitute a just distribution of benefits or risk in a society. These include universalization, fairness, and impersonality. Universalization involves making the same judgment of action irrespective of one's place or location in society or putting one's self in the situation of others (Sen, 2014). This approach argues for a spatial equality in the

distribution of risk and benefit as a fair distribution. The debate of fair distribution of risk and benefit would not be fully recognized in the location of fuel and gas stations in Sekondi-Takoradi and Ghana in general because of class, the ethnic, political and economic status of people in society. The rich or owners of the fuel and gas stations would not want to live close to these stations where there are a greater risk but would prefer a safer spatial location. The poor or low-status people suffer the risk.

Sen's second approach is fairness. According to Sen (2014), fairness means presenting things the way they are without knowing which particular group of people's interest to satisfy in the process and when there will be an effect. The EIA of the fuel and gas stations in Ghana as far as location is concerned tends to be a subjective tool which creates losers and gainers and makes the process unfair.

Impersonality is the third approach which involves the state where individuals have equal rather than an unknown probability of being in any position (Sen, 2014). This also points to equality where individuals have an equal chance of living in a spatial location. The chance is limited in many cases for different individuals. This is the case where the poor individuals risk of living close to fuel and gas stations. The rich and owners of the facilities live in lower risk areas. The poor will always be disadvantaged in the exposure to risk compare to the rich who can easily influence environmental decisions. Sen's three approaches influence the location of people with respect to fuel and gas stations and the how the risk and benefits of fuel and gas stations are distributed.

6.1.3 The June 3 Fire and Flood Disaster and Trade Fair Gas Explosion and Awareness Creation

The June 3 Fire and Flood Disaster which occurred on the 3rd June 2015 in Accra as a result of the explosion of fuel filling station led to the loss of lives and damage to properties killing some 150 people (BBC, 2016).

Similarly, there was a gas explosion at the La Trade Fair centre killing some 10 people and in 2015, two similar gas explosions were recorded in Accra at Ngleshie Amanfrom near Kasoa and at Dansoman near the Wesley Grammar Senior High School of which two people died in the Amanfrom incidents and scores were injured (Ghanaweb, 2016). These fire and explosions created awareness in the public especially the June 3 Fire and Flood disaster which transpired before the fieldwork was conducted. Some informants have expressed fear and anxiety of living close to fuel

and gas stations because of the June 3 fire and flood disaster. Passing or stopping by a fuel and gas station to refill a vehicle's petrol tank or buying from the marts attached to the fuel station was seen as an individual risk-taking behavior by some informants. Explosion and fire disaster of fuel and gas station tends to become more of an objective risk than what is subjective because of the facts on severe events that occurred. The figures below illustrate the section of the June 3 GOIL fuel filling station explosion which has exterminated a number of lives and destroyed properties.



Figure 6. 1 Photo of the outside view of June 3, 2015, Fire Disaster in Accra,

Source: <http://www.myjoyonline.com/news/2015/august-7th/june-3-disaster-caused-by-cigarette-smoker-committee.php>



Figure 6. 2 Photo of the inside view of June 3, 2015, Fire Disaster in Accra

Source: <https://www.newsghana.com.gh/ghana-flood-disaster-3-days-mourning-begins-today/>

The fire disaster was fatal as cars and people were burnt beyond recognition. Unfortunately, a number of people were taking shelter at the fuel filling station as a result of a heavy rainfall before the disaster occurred. Many victims died and others survived with various degrees of injury. The disaster has put fears in many of the informants regarding the severity of fuel and gas station explosions.

An adjacent land user indicated that,

“The June 3 disaster has put a lot of fears in me as an individual and anytime am in a vehicle that stops at a fuel station to buy fuel I ask to ‘drop’ because of the fear of my life” (Male Adjacent land user, aged 45, Interview).

The mere mention of the June 3 Fire and Flood Disaster send shivers down the spine of some informants and they expressed distaste for talking about the June 3 Disaster. Protests over the location of fuel and gas station have much to do with the fires and explosions recorded across the country. Comparatively, there has not been much of public concern or outrage over fuel and gas station location and operation in the previous years to the new development of public protest. Some informants have identified the loophole in the public participation which they assume could have changed the frequency of fire and explosion if considered by the regulatory institutions. Some informants have become more alert in patronizing and working at the fuel and gas stations aftermath the recorded fire disasters across the country.

Some informants petitioned the regulatory institutions particularly the Environmental Protection Agency (EPA) after the June 3 Fire and Flood Disaster. Education and information on the risk of fuel and gas station preceding the June 3 disaster have not been appreciated much by some of the informants. The June 3 disaster has opened the eyes of some informants on the risk associated with proximity to fuel and gas stations which they have previously lived with a false awareness of the low risk that it will not happen near them.

6.1.4 Risk Reduction Strategies

Risk reduction strategies are necessary for the reduction of risk associated with fuel and gas stations. Risk reduction strategies have been put in place to minimize or eliminate some risk associated with fuel and gas station. These strategies institutionalized protocols laid down by the regulatory institution that is; the Ghana National Fire Service (GNFS), National Petroleum Authority (NPA), and the Environmental Protection Agency (EPA) to reduce the risk of fire and explosion, water and air pollution, sand contamination, traffic congestion, and accidents.

The Ghana National Fire Service in the process of issuing fire permit to the fuel and gas station conducts some health and safety checks on the petroleum tanks, pumps and gas cylinders, inspect fire extinguishers, organizing workshop, training and education for workers on how to prevent fire,

fire safety and explosion, and appropriately provide technical advice on building plans (GNFS, 2016).

The Environmental Protection Agency (EPA) as part of their permit conditions also have clearly outlined procedures that fuel and gas stations must follow to reduce risk. These strategies include training for employees on health and safety standards, use of fire extinguishers and periodic checking of the petroleum tanks and gas cylinders. However, at the various fuel and gas stations, internal risk reduction strategies have been instituted which enforcement or implementation are not regularized. The employees at some fuel and gas stations as part of the researcher's observation strictly require drivers to put off their car engines before refilling the petrol tanks or gas cylinders. This exercise is not the same at other fuel and gas stations hence it is not a standardized practice to reduce the risk of fire emanating from car engines.

Other risk reduction strategies are displayed in the forms of warning notices to both workers and those who patronize various services at the fuel and gas stations. Warning and caution notices, for example, read "*No Smoking, Inlet and Outlet, Highly Inflammable, Restricted Area, Danger Zone, No entry and Emergency Assembly Point*" as presented below.



Figure 6. 3 Photo of Warning/ Safety signs at a fuel and gas station, pictures from field work

Source: Author's photograph

In addition, oil spillage on the floor is cleared with sand by simply soaking the spilled oil in the sand. This is implemented mostly at the discretion of the workers of the fuel and gas stations to reduce the risk of fire and contamination of water bodies and the soil. Generally, fuel and gas

stations in Sekondi-Takoradi are fenced in order to protect their properties and premises from intruders. Most importantly, the fuel and gas stations are fenced to contain any risk from spreading to adjacent land users. This strategy can be highly contested and for that matter subjective because adjacent land users are still exposed to other risks like air pollution, noise, and even gas explosion considering the fact that, some residential facilities share fenced walls with fuel and gas stations. The air quality for that matter is undermined as some informants indicated that they have health issues with the chemicals from the petrol and gas. A female informant at her words indicated that;

“How can a fueling station share a wall with a residential facility? Anytime they are discharging the petrol, I can’t stay in my room because of the chemicals from the petrol. Do you know the bedroom is a comfort place to relax after a hard day’s work?” (Female adjacent land user, age 46 Interview)

Irrespective of the fenced wall, adjacent land users are exposed to other forms of risk which some informants expressed worry and concern about. Some fuel and gas station make a loud noise from sound systems which the fenced walls cannot contain. The negative externalities are suffered by the adjacent land users.

Limited accidents may not be considered appropriate for long term frequency and could not probably influence policy decision or standards (Elvik, 2006). The frequency of fuel and gas explosion in Ghana is limited as nobody knows when the next explosion or fire will occur and which groups of people will be affected. As a result, it would be difficult for these events to influence policy decision on the EIA process of fuel and gas stations. In maximizing policy objective, cost and benefit analyses is conducted in monetary terms. Monetary benefits are maximized against the risk in many cases. When the benefit outweighs the risk, policies are difficult to change. Accidents associated with fuel and gas stations in Ghana, may not influence policy change of the EIA because the benefits probably outweigh the risks over the years.

Keeney (1980), argued that cost-benefit analysis cannot readily be applied to make trade-off between these three policy objectives;

- Seeking maximum reduction of the total number of accident fatalities
- Reducing disparities in fatality rate
- Preventing disaster: reducing frequency of accidents with multiple fatalities.

The economic benefits of fuel and gas station in Sekondi-Takoradi and for that matter, Ghana would be difficult to trade-off because aftermath these explosions and fires, regulatory institutions have instituted some measures to reduce the number of fatalities and reduce the high risks. This is exemplified in the new petroleum guideline designed by the joint effort of the Environmental Protection Agency, National Petroleum Authority, Ghana National Fire Service, and the Town and Country Planning Department to regulate the activities of oil and gas retail outlets. These preventive and management strategies which were taken will be difficult to witness a total overhaul of the EIA process of fuel and gas stations across the country.

CHAPTER SEVEN

POLITICAL ECOLOGY AND POLITICAL ECONOMY OF FUEL AND GAS STATIONS

7 Introduction

“Environmental problems are not merely technical, they also raise inherently political questions and thus bears directly on long-standing challenge of democratic theory and practice” (Coenen et al, 2012, p. 1). This varies from strong centralized states that make environmental decision for its people to those that allow citizens to make environmental decision under the regulation of the state. Political and economic power as presented in chapter two, section 2.1.1 is a powerful force that influence the making of environmental decisions in many countries. The interaction between various actors in environmental issues is considered of enormous importance as their interaction can lead to conflict (Forsyth, 2004). The forces of capitalism and fraught state policy has momentous effects on indigenous people and the environment. Power relations between the public and the environmental regulatory institutions is of great concern as far as permitting and public participation in the Environmental Impact Assessment (EIA) of fuel and gas stations is concerned.

To be able to understand some informants’ claims about political and power relations influence in the permitting of fuel and gas station, this chapter focuses on the how political power and political economy influence the permitting and participation processes. Political power tends to control many affairs in Ghana especially where there is conflict of interest for a particular government in power. The class factor with regard to the middle class and poor class plays a significant role in how the public interest and concerns influence the location and operation of fuel and gas stations in Sekondi-Takoradi. The people exposed to the risk of fuel and gas stations have the challenge of sending their grievances to the regulatory institutions for redress because of the power dichotomy that exists. Political and economic power is regarded a dominant determinant of environmental decision amidst public rejection and agitations. The power to influence people’s choices and possibilities define who can influence risks, as risk of located fuel and gas stations. Environmental decisions are taken to foster economic growth and to ensure sustainability. In situations where there is an economic interest, public concerns are considered secondary. This chapter seeks to explore the dynamics of power in determining location and participation in the EIA of fuel and gas stations.

7.1 Power Relations in the EIA Process of Fuel and Gas Stations

The political system in Ghana reposes a lot of powers in governments who influence decision to suit their party interest and ideology. The appointment of heads of various government institutions, agencies and departments undermines the neutrality of the appointees in taking environmental decision in the public interest. This appointees may be tempted to take and implement policies that will favor the government in power. The heads of most regulatory institutions in Ghana are appointed by the President who represent a political party. The executive head of the Environmental Protection Agency is appointed by the government in power and this has a number of implications on taking a transparent environmental decision devoid of any bias. The possibility that the appointee can be influenced by politicians to take environmental decisions that benefit them is on the high side. The political appointees may try to ‘catch the eye’ of the President or the government that appoints them than being objective in deciding what is in public interest. The claim by some informants that a number of fuel and gas stations in Sekondi-Takoradi and for that matter Ghana are owned by politicians still remains an assertion to be explored. Some informants expressed, political interest or influence in the permitting of fuel and gas stations. One male informants indicated that;

“Most of the fuel and gas stations are owned by some politicians, so no matter the political party in power, they will continue to open fuel and gas stations across the country. Even if you make complaints it will not hold” (Male informant, aged 46, Interview).

Another male informant indicated also that;

“The regulatory institutions are part of the government, therefore, they will carry out actions that will favor the political-business class and not what is in the interest of the general public”.

This assertions were made by some other informants but the researcher does not know the veracity of the claims. This could be possible since many businessmen are one way or the other connected to a political party for contracts.

Political and economic power relations between the public and regulatory institutions is one of hierarchical structuration of rationality exercised by the politically and economically powerful over the powerless. As Agrawal (1995) noted, the definition of any locality or group’s interest or concerns as local knowledge often implies that such groups are less powerful or subaltern or have

little voice. Local knowledge and concerns are mostly not recognized as technical knowledge but expressed based on emotions and personal ideologies.

7.2 Political Influence in Permitting Fuel and Gas Stations

Political ecology as presented in chapter two, section 2.4 of the study, has an important place in the permitting of fuel and gas stations. The decision taken by political influence creates losers and winners depending on the wavering interests and convictions. Environmental decisions influenced by politics can also lead to degradation and conflict. The permitting of fuel and gas stations have some interactions that exist between politics and the environment. The basis of political ecology is the power relation in the distribution, management and allocation of environmental resources. The unconfirmed assertions that politicians own most fuel and gas stations in Ghana by some informants have implications for spatial planning and location of fuel and gas stations. Since, most of the fuel and gas stations are owned by politicians, any complaints or concerns from the public about location and operation would likely not affect the permit of the fuel and gas stations. When the regulatory institutions and the politicians are on the same side, subjects of trust disappear. To Spivak (1988), it was irrational attempt to recompense political imbalances simply by finding who is not represented and inviting them to take part, because the subaltern cannot speak. Drawing insights from the statement, the adjacent land users of fuel and gas stations may not be able influence the decisions taken especially where there is much political influence. Considering also the fact that, the fears of explosion and fire do not occur frequently and nobody knows which groups of people will be the next victims, political business class can instigate the location of fuel and gas station to places that will attract more customers. This is similar to what Shiva (1993, p. 59), described as “universal bullying” of global ecology as demonstrated by the regulatory institutions of fuel and gas stations against the local people.

Irrespective of the risk the public is exposed to, politicians and economically influential class will make their way through to acquiring an environmental permit because of the magnitude of power they wield. It is an implicit cost-benefit assumption to the overall benefits of the society. The economically and politically powerful, trade-off risk with benefits from the lucrative oil and gas business on the assumption that the whole society wants high mobility and efficient motorized transport and oil and gas consumption. Some oil marketing companies like the Ghana Oil Company (GOIL) are owned by the government and this can also determine where the oil

marketing company's fuel and gas stations should be located without much inputs and influence from the public.

The June 3 fire and flood disaster, for example, occurred at a GOIL fuel service station which was located in a busy commercial area. Political parties and governments would want to accrue money to finance party and developmental projects and to better the lives of party members. Because of the lucrative scope of the fuel and gas business, politicians and businessmen would invest without much consideration for risk as the regularity of explosion and fire cannot be determined. In line with Habermas theory of communicative action (TCA) as presented in chapter two of the study, which provides some theoretical approach to ensure public participation and elimination of state domination in decisions making through a consensus, political influence in the permitting of fuel and gas stations could lead to state domination and less public participation or undermine deliberative democracy where the public takes active interest in making decisions. The theory of communicative action will be undermined if there are too much state domination and less public engagement in the permitting of fuel and gas stations. The results could be conflicts, the use of unconstitutional means to seek redress by the public like protest and destructive demonstration which has been witnessed in some parts of the country. A quintessential example is the University for Professional Studies, Accra (UPSA) student's demonstration against the SEL filling station in Accra. Public participation process must enhance cooperation among the various groups and not benefit some individual at the expense of others.

Successful public participation must produce not only fair or competent decisions but also unearth the communal needs and desires that represent the public interest and fosters democratic development (Webler et al, 1995). When local public knowledge is incorporated in environmental decision making, it projects the competence of the decision made and provides legitimacy also to the undertaking or project. When citizens are involved in working out a mutually acceptable solution to an environmental decision making, they mature into responsible citizens who affirm democratic values (Barber, 2003). Webler et al (1995), identified fairness, competence and social learning as the three criteria for evaluating public participation. Therefore, any environmental decision taken should aim at these three criteria through the participation process.

7.3 Political Economy of Fuel and Gas Stations

Sekondi-Takoradi, as presented in chapter four of the study, is an oil producing city of Ghana. As such the region has attracted a number of oil-related industries. Consequently, the demand for fuel and gas has increased and this has resulted in the establishment of new fuel and gas stations in the region to meet the increasing demand. This development is in line with the concept of political economy which has capitalist underpinnings against social and environmental interest. Profit-making or investment is the focus of capitalism.

In addition, the increasing use of vehicles in the major cities of Ghana requires a corresponding increase in fuel and gas stations. This has economic benefits yet could pose either short or long term risk to lives and property. Profit tends to lead the decision on fuel and gas station location and operation. The highest contemplation of decision makers has been to ensure that economic benefits accumulating from development projects outstrip the costs (risks). The EIA of many countries makes use of the Cost-Benefit Analysis (CBA) to make environmental decisions (Wathern, 2013). The establishment of fuel and gas stations promotes economic growth by creating jobs for people, increasing the revenue base of the government through tax, providing gas and fuel for domestic and industrial use. This boosts the economy and gives a good indication of the political system that exists. The “assumption is that automobile and by association the infrastructure that arose to support it use (fuel and gas stations), emerged as a result of the combined preferences and agency of autonomous individual exercise of freedom of choice in an open market” (Walks, 2014, p. 12). Because every government wants to create jobs and increase their revenue base, the fuel and gas station activities are promoted. The benefit of car-dominated society is the increase in the taxes and road tolls for the government. This has positive implication also for mobility and trade. Motor cars have reflective effects on people’s mobility, settlement patterns, expectation, the global economy and the environment (Merriman, 2009). Ghana as a middle-income economy is becoming highly motorized and the safety protocols for fuel and gas stations not keeping pace. The shortage of fuel and gas directs negative signals to the economy of Ghana particularly the government in power and has associated effects on other activities. The increase in the supply of fuel and gas through increasing the fuel and gas stations in the country is considered economically sound.

In planning, the government presumes to discern not only what everyone values but also what strategies will yield the utmost utility and welfare (Walks, 2014). This is mostly not the case as

some in the society regard the process by the government as the imposition of their will on the majority.

In line with Habermas theory of communicative action as presented in section 2.3 of chapter two, structures of communication process influence individuals in a constructive and coordinated fashion (Webler et al, 1995). Communicative action where people can learn to agree on a mutual societal issue is linked to social learning. Social learning is “the act by which changes in the social condition occur - particularly changes in popular awareness and changes in how individuals see their private interest linked with the shared interest of their fellow citizen” (Webler et al, 1995, p. 445). This involves a community of people with divergent interest on a particular project who come together to reach a consensus on a collective action to solve a mutual problem. This is engineered through dialogue and meetings among community groups to avert the situation where regulatory authorities impose their desires and interest on the community. The participation of communities where these fuel and gas stations are located should be cross representational and the outcome of the decision communicated to those outside the direct participation process either through the media or by a briefing from their representatives. Communications concerning fuel and gas station activity does not descend to the local people and this creates the opposition by the people. Communication about fuel and gas stations should be done at the community level to ensure that people have some knowledge about the project, how the risk can be mitigated, how their concerns can be addressed and the relevant channel to legally communicate their concerns. Communication and consensus in impact assessment is very significant. Participation through communicative action about environmental decision to the local people builds trust and ensures public approval of projects. Fuel and gas station location decisions doesn't represent the communicative verdict of the majority in society.

CHAPTER EIGHT

8 Summaries, Conclusion and Recommendations

The drive of this research has been to explore the level of *public participation* in the *environmental impact assessment* (EIA) of fuel and gas retail station and to contribute to the debate on *planning issues* (location) and *participation* in the management of the environment. The research has been inspired by the fatal June 3 fire and the flood disaster that occurred on the 3rd June, 2015 in Accra as a result of the explosion of fuel service stations located in a busy commercial area. The thesis sought to identify how the public is engaged both at the institutional and individual level in the environmental impact assessment of fuel and gas station in Sekondi-Takoradi with regards to location or siting of fuel and gas stations. Accordingly, the study sought to explore why the public rejects the location of fuel and gas stations in their backyard. The study sought to identify the background and impact of the fatal June 3 fire and flood disaster and several small fires and explosions of fuel and gas station across the country and the retroactive effect on awareness creation on the *risk* associated with living close to a fuel and gas station. The study also sought to identify the various risks associated with fuel and gas station ranging from those events which are objective and subjective. Finally, the thesis sought to assess and analyze how power relations at various geographical levels influence the EIA process of fuel and gas station with much emphasis on political and economic power.

The conceptual framework of the thesis include; the concepts of power, participation, hegemony and everyday resistance, environmental justice, nimbyism, winning and losing, environmental impact assessment and risk. The theoretical frameworks of the study include Habermas theory of Communicative Action as presented by Habermas (1984a), political ecology, political economy, and a more specific analytical framework; Arnstein ladder of participation as presented by Arnstein (1969).

The study is *exploratory* among other things because such studies are few or rare and with limited knowledge and research especially in the oil and gas retail sector. The study has employed *qualitative methods* in the collection of data. The study involved ethnographic methods; *interviews, (structured and semi-structured), non-participant observation* in exploring exhaustively the level of participation and concerns of the public on the location of fuel and gas stations. This gives the researcher the benchmark to measure his position and influence in the field with regards to issues of critical reflexivity. Since the research topic is sensitive in terms of getting

the right information, the study employed non-participant observation to complement some ambiguities in the data collection process and analysis. The study has used *four key informant interviews and four primary categories informant interviews* comprising targeted groups of various interests and importance to the study, which sums to a total of 28 informants. Primary data was supplemented with both published and unannounced secondary data sources like annual environmental reports, EA1 form (see appendix VI) and petroleum guidelines from Environmental Protection Agency, National Petroleum Authority and some published articles and books. The following findings and conclusions are made in the light of the main objective and sub-objectives of the research.

8.1 Participation in the Environmental Impact Assessment (EIA) of Fuel and Gas Stations.

Participation specifically as known as public consultation in the EIA of projects or undertakings like the fuel and gas stations is an important aspect of the EIA of Ghana. As part of the main objective of the research *to explore the level of public participation in the environmental impact assessment of fuel and gas stations*, the study sought to research into participation in line with the Environmental Assessment Regulation 1995, LI 1652 of the Environmental Protection Agency (EPA) of Ghana. The research questions in line with the main objective include: *how the public is currently engaged in the EIA of fuel and gas stations and why the local public is not adequately involved in the EIA process?* The consultation is carried out to ascertain the views of the public on a proposed undertaking or existing projects with regards to the impacts of the projects on the environment, existing activities and lives of people. The consultation process is carried out, but lacks what constitute a deliberative and effective participation where citizens have control and influence over the environmental decisions. The imbalance in the siting of fuel and gas stations in terms of distribution of benefits to investors and state actors against the local risk burden of adjacent land users fosters the need for local participation to be pursued by community members. In point of fact, there is some level of top-down oriented public engagement in the EIA of fuel and gas stations which, in line with Arnstein ladder of participation, is more of *informing, consultation, and placation* which is pragmatically non-participatory. Ideals or standards set by the central regulatory authorities deviate substantially from local realities and far from a dialogue where local stakeholders can give their inputs or views to the point where they can track their implementation.

8.1.1 Summary and Conclusion

The level of participation identified is one directional flow of information from the Environmental Protection Agency (EPA), without any broad and robust local control and influence over environmental permit decisions of fuel and gas stations. This centralized top-down process has made some informants lose confidence in the consultation provision in the EIA of fuel and gas stations and they regarded it as weak, limited and devoid of public control. The concerns of the local public with regards to the location of fuel and gas station do not change the permit decision of the stations determined by the Environmental Protection Agency. In the midst of local protest and anxiety of negative external effects, environmental permits are issued to fuel and gas stations to operate. This has much to do with the fact that, EPA has officers or staff that are trained and equipped with the requisite technical skills to determine which areas are suitable for siting fuel and gas stations. It is not a debate between expertise and counter-expertise groups since the local population affected cannot mobilize alternative technical expertise, for example on risk issues. The official procedures of the process of locating fuel and gas stations make it demanding for the public to be proactive. The decisions are already made in a 'remote democracy'. Therefore, the concerns from the local public are belittled on the basis of lacking technical and scientific facts.

The local people live close to these fuel and gas stations and therefore have deep knowledge of the baseline information of the location than the regulatory institutions. Local or indigenous knowledge is principal in making environmental decision as it can reverse the pernicious effects of global discourses and increase understanding into environment and local needs that can only come from local people (Forsyth, 2004). The public concerns about broader participation where they can influence the location of fuel and gas station was inspired by the fact that, they suffer the high risk of inhaling chemicals and other toxic gases from the petrol and gas which caused respiratory problems and other forms of risk like traffic accidents, noise, water and soil pollution. Local knowledge is considered as an effort to repel domineering global notion about environmental issues which is founded on the supposition that indigenous knowledge is accurate. According to Sachs (1993, p. 149) "global knowledge does not represent the universal interest, it represents a particular local and parochial interest which has been globalized". This comment is in agreement with the point where local knowledge has been suppressed by regulatory institutions with their working or operating standards and guidelines which seems not to represent the public interest and local reality. Local people expressed frustration and alienation of not being heard in the process.

Therefore, whatever affects the adjacent land users should be treated with respect hence the need for broader participation. The public desire for an effective participation is the process that will allow delegation of some real environmental decision powers to the public, partnership and the exercise of citizen control presented by (Arnstein, 1969) as the *degree of citizen control* in chapter two. This to the informants is the only way by which public rejection, demonstrations and protests against fuel and gas stations can be minimized.

In the process of making a determination on permit of fuel and gas stations, institutions like the Town and Country Planning Department, Ghana National Fire Service, National Petroleum Authority are consulted in various areas of expertise like zoning, environment, health and safety and construction permits. These institutions make regulations on what is required for a fuel and gas station and where appropriate it should be located based on their respective technical standards and thresholds. There is the need for the local public and the adjacent land users to contribute their knowledge and experiences in the issuing of environmental permit.

The course of action of the regulatory institution needs to be in congruence with their concerns and desires. According to Jain et al (1993), encouraging community involvement in problem identification and dialogue without impact on the ultimate decision is not an answer to the problem rather it becomes a charade. The Technical Review Committee of the Environmental Protection Agency which makes final decisions on environmental permit have no representation of community groups, traditional leaders, NGOs on the committee. This actually makes the process to be subjected to public suspicions of bias in issuing an environmental permit to fuel and gas stations. The limitation to full participation is that some concerns of the public were subjective and based on mere expression of fear especially after the June 3 fire and flood disaster.

Public concerns and agitations hardly overturn any environmental permit already issued by the regulatory institution because environmental guidelines and quality assurance protocols have been surveyed before permits are issued. Public consultation in the EIA of fuel and gas station seems to be an exercise of information intended to be in compliance with the laid down provision. The limitation to full and effective participation by the public is an issue of institutional standards deemed accurate against the standards of local society which is reckoned as subjective and based on emotions. The public participation is limited, weak and for that matter presents little opportunity for public influence.

Deliberative participation in the permitting of fuel and gas station will remain an issue of public concern as long as Environmental Protection Agency continues to works within the specific guideline which makes room for passive engagement with broader stakeholders in issuing an environmental permit. The concerns of the public will continue to be exhibited through fierce and unconstitutional means if the government and regulatory institutions of fuel and gas stations do not review the Environmental Impact Assessment (EIA) process to suit public concerns. For participation to be effective the local public must have access to further and more detailed information on fuel and gas stations and at an early stage of the process. The lack of information impedes effective citizen involvement in many instances of environmental decision making (Jain et al, 1993).

To conclude, the local public practically is perceived as people with little or no technical knowledge on issues of environment rather than, being seen as active and knowledgeable state actors who can contribute to an effective environmental decision. The local public are not represented on advisory boards, committees that make the real decisions. The regulatory institutions should initiates various participation techniques to make room for broader and de-facto stakeholder involvement.

8.2 Risk Associated With Fuel and Gas Station and Issues of Awareness

Fuel and gas station is a high risk industry and in the events of the June 3 flood and fire disaster, awareness levels have risen on the risk associated with fuel and gas stations across Ghana. As part of the research sub-objective *to identify the risk posed by fuel and gas stations to individual and the environment*, a number of risks have been identified. This is linked to the debate why the local public feels their participation in a high risk industry is necessary. Various forms of risk have been identified ranging from those considered as high risk and low risk and those which are collective and individual risks. Institutionalized and irregular measures like (pouring sand on leaked petrol) have been put in place by regulatory institutions and the workers and management of fuel and gas stations to reduce the risk. The main risks include fire, explosion, vehicular traffic, noise, armed robbery attacks and air, water and soil pollution. These risks accompanied with no compensation to adjacent land users fosters rejection of fuel and gas stations by community members. The risk of fuel and gas stations can be characterized in terms of high consequence and low probability. This is because, the risk of fire and explosion do not happen fairly frequently but the extent of damage and fatality is very high in the event of any disaster. The extent of risk is determined also

by the location of the facility. Those located in busy commercial and residential areas have relatively high risk than those in the remote areas or along major highways.

8.2.1 Summary and Conclusion

Risk has a corresponding effect on how society responds to development projects. So is the case of the fuel and gas stations. The fires and explosions that have occurred in some fuel and gas stations in Ghana is not a hypothetical case but a reality that has influence people's perception of risk of fire and explosion. The Nimby syndrome associated with fuel and gas stations hinge on the high risk perceived by adjacent land users coupled with no compensation for people living close to a fuel and gas stations. Since there is no compensation to take care of the health and material needs in the events of exposure to risk, the adjacent land users do not benefit so much from the fuel and gas stations. Though some people appreciated relative benefits of fuel and gas stations like proximity to services such as shopping at the mart, filling of gas cylinders for domestic use and local employment, the risk of fire, explosion, air, water and soil pollution and arm robbery attacks, grossly outweighs the benefits at the community level. The risk reduction strategies such as soaking leaked oil in sand, putting off car engines and the use of warning and caution notices (see figure 6.3) are perceived as not robust to reduce the risk of fire and explosion.

8.3 Power and the Influence in the Permitting of Fuel and Gas Stations

Political and economic power on one side as environmental decision disparages the ability of public to influence decision to meet their desires. As part of the sub-objective of the research to *ascertain how power relations influence the participation process in the Environmental Impact Assessment (EIA) of fuel and gas stations*, political and economic power plays a pivotal role in determining the siting of fuel and gas stations and who participates. As a result of the political economy of fuel and gas stations, profit considerations tend to lead the discussion and mostly not risk. Oil and gas are sensitive products that have strong and far reaching economic implication when supplied and demanded. Underlying interest and values such as high mobility, freedom to drive a private car are highly important societal targets. The governments of Ghana would find it expedient to increase the supply of fuel and gas to commensurate with other economic activities like the increase in vehicular use and other industries that require the consumption of fuel and gas. Political influence in the location of fuel and gas station quashes the effort of participation and citizen control. The bureaucratic process of responsibility influences the ability of citizens to have some power to influence permit of fuel and gas stations. Since, some fuel and gas stations are

owned by political businessmen, the ability to counter public concerns by the influential class is high. The hegemony of the business class in making environmental decisions promotes everyday resistance from local people against the location of fuel and gas filling stations in their neighborhoods.

8.3.1 Summary and Conclusion

Political appointments of heads of the regulatory institutions particularly the Environmental Protection Agency (EPA) undermines the credibility and legitimacy of environmental decisions. The appointee can be biased to take decisions that is in the interest of the party or government that appoints. The EPA and other regulatory institutions are part of the government and have some political wings in their administration and management. Therefore, such regulatory institutions may carry out the policies (actions and inactions) of the government on matters that concern a particular group of people and mostly not in the interest of the general public.

Political and economic influence is not on the same scale of importance as the risk associated with fuel and gas stations. Public needs and desires do not take paths likened to the political interest of governments especially where such political influence undermine the concerns, inputs, and fears of the public. Various geographical decision levels and remote managing hampers an open democratic process and real influence by local people. Political influence leads to losing of confidence in public institutions to deliver. No resilient counter political expertise in strong environmental political parties or Non-Governmental Organizations to counterbalance the prevailing policy of suppressing environmental issues.

8.4 Limitation of the Study

In the methodology chapter of the thesis, as presented in Chapter three, several limitations have been discussed in line with the data collection and the methods employed in section 3.9. This section presents a brief list of limitations that might have influence the quality of data, the analyses and the conclusions of the study.

- The inability of the researcher to interview the Ghana National Fire Service which was considered part of the key informants for the study because of time constraints might lead to the loss of some details on the risk reduction strategies for fire and other health safety procedures at the fuel and gas stations.

- The unwillingness of some informants to accept the use of recorder, make the researcher lost track of some specific details because it was difficult taking note of everything that has been said
- Local people are critical about issues of the location of fuel and gas stations and participation which made their interviews full of displeasure and expression of despair as this might influence the responses objectively.
- The findings of the study are limited by the fact that the Environmental Impact Assessment (EIA) for fuel and gas stations contrast in details across countries and the provisions for participation may vary which makes it challenging to present a general pattern of participation.
- Limited research work has been done on participation in oil and gas retail sectors and this has restricted the number of secondary data available for the study. The general lack of public documents which allow scrutiny and investigation of preconditions and levels of participation.
- Contextual conditions in Sekondi-Takoradi may influence the findings hence, the findings cannot be unconditionally generalized to other big and busy commercial cities or settlements in Ghana.

8.5 Recommendations for Effective Participation and for Further Enquiry

This section presents recommendations that are considered as ‘best practice’ to ensure an effective public participation in the environmental impact assessment for fuel and gas stations.

- The study reveals that some sort of compensation for people living close to the fuel and gas stations should be incorporated in the Environmental Impact Assessment (EIA). By such measures, systematic negative indirect effects may be mitigated. Further study can be conducted to link compensation to how people react to the risk of fuel and gas stations.
- The consultation in the EIA of fuel and gas stations as mandated should be revised so it will be more of deliberative process rather than the one-way flow of information from Environmental Protection Agency to the adjacent land users. The study reveals that the consultation process should be replaced with the public hearing which is more deliberative and involves various stakeholders and interested parties. Under public hearing, the

proposed fuel and gas station would have been published in the media and this gives the public enough time to make inputs. Both affected and interested parties should know their position and the processes involved in issuing environmental permits. The consultation should be done to capture the broader scale of public interests ranging from traditional leaders, assembly members, Non-governmental organizations and civil society groups.

- Planning regulations on locations of fuel and gas stations should be revised by the Town and Country Planning Department. The study reveals that zoning of areas for the establishment of fuel and gas station should be far from residential and busy commercial areas. Separation of such dreaded activity to non-residential and less busy areas where evacuation of local people is not necessary in the case of the unwanted event and a reduction in the number of casualties.
- The Technical Review Committee (TRC) of EPA should have representation from the community level who will be equipped with the necessary information on fuel and gas stations. The need to educate local representatives in risk perception, risk analyses, and risk assessment.
- The study reveals that for public participation in the EIA of fuel and gas stations to be effective, there should be a comprehensive provision on participation in the EIA, access to information, two-way flow of information and the ability to appeal environmental decisions by the public. A type of superior and impartial environmental body should be instituted and empowered to look into issues of activity or project siting.
- Participation should be incorporated into the various stages on the EIA and not limited to a particular stage. Each stage of the EIA from screening to monitoring and evaluation should have some provision for public involvement so people can be proactive and get insight into views, ways of thinking, and pre-decisions prior to final decision.

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Appendices

Appendix I

KEY INFORMANT INTERVIEW GUIDE FOR REPRESENTATIVES OF THE ENVIRONMENTAL PROTECTION AGENCY (EPA)

Norwegian University of Science and Technology, Trondheim

Topic: Public Participation in the Environmental Impact Assessment (EIA) of Ghana: A Case Study of the Oil and Gas Retail Sector in Sekondi-Takoradi.

SECTION A: Levels of participation in the EIA of fuel and gas stations

1. Is there any provision for public participation in the EIA process of the oil and gas retail sector?
2. How is the public involved in the EIA to that effect? In what ways?
3. Is there any instance where the establishment of oil and gas retail sector does not see the involvement of the public or any form of consultation with the public?
 - a) *What could be the possible reasons?*
 - b) *Without consultation with the public can permit/certificate be issued to these companies? Any reasons?*
4. Have you had any form of complaints from the public about the location, health and safety concerns of oil and gas retail companies in Sekondi-Takoradi?
 - a) *Have the public concerns/complaints influence the permitting of these companies? Whether the permit was given or it has been revised or rejected?*

SECTION B: Limitations to effective participation

5. What are the limitations or challenges of involving the public in the EIA process of the oil and gas retail sector?
6. Is there any form of public involvement in the EIA process after permits/certificates are issued to the oil and gas retail companies?
7. Is the current state of public participation in the EIA of oil and gas retail companies the best? Why and why not?
8. What do you think is the way forward to ensure effective involvement of the public where the views of the public can be incorporated at the decision-making stage and can influence

the permitting/ certification process beyond normal consultation with the public? *Is full involvement wanted or desirable?*

Appendix II

KEY INFORMANT INTERVIEW GUIDE FOR REPRESENTATIVE OF THE NATIONAL PETROLEUM AUTHORITY (NPA)

Norwegian University of Science and Technology, Trondheim

Topic: Public Participation in the Environmental Impact Assessment (EIA) of Ghana: A Case Study of the Oil and Gas Retail Sector in Sekondi-Takoradi.

1. How do you engage the public in the process of issuing certificate/permits/ construction permit to oil and gas retail companies?
2. In which ways do you engage the public on the risk of fuel and gas stations?
3. Do you face any challenges as an institution in engaging the public before permits are issued?
4. How do you engage with other oil and gas regulatory institutions?

Appendix III

KEY INFORMANT INTERVIEW GUIDE FOR REPRESENTATIVE OF THE TOWN & COUNTRY PLANNING DEPARTMENT (TCPD)

Norwegian University of Science and Technology, Trondheim

Topic: Public Participation in the Environmental Impact Assessment (EIA) of Ghana: A Case Study of the Oil and Gas Retail Sector in Sekondi-Takoradi.

1. What are the categories of spatial zoning you carry out?
2. Where can a fuel and gas station be located under your current zoning regulations?
3. What factors do you consider before locating fuel and gas stations?
4. Is it safe to locate fuel and gas station close to residential and busy areas? *Kindly give reasons.*

Appendix IV

PRIMARY INFORMANT INTERVIEW GUIDE FOR OWNERS OF FUEL AND GAS STATIONS

Norwegian University of Science and Technology, Trondheim

Topic: Public Participation in the Environmental Impact Assessment (EIA) of Ghana: A Case Study of the Oil and Gas Retail Sector in Sekondi-Takoradi

1. Have you notified the adjacent land users about the establishment of the facility?
2. Have you had any complaints from the public about the location of the facility and how did you address it?
3. Has EPA done any consultation with the adjacent land users and some community members?
4. Can you explain some of the risks the company poses to the community and the staff?
5. What in your opinion must be done to ensure adequate public engagement as far as the establishment of oil and gas Retail Company is concerned?

Appendix V

PRIMARY INFORMANT INTERVIEW GUIDE FOR COMMUNITY MEMBERS/ ADJACENT LAND USERS

Norwegian University of Science and Technology, Trondheim

Topic: Public Participation in the Environmental Impact Assessment (EIA) of Ghana: A Case Study of the Oil and Gas Retail Sector in Sekondi-Takoradi

1. Have you ever been consulted during the establishment of fuel and gas filling stations in this area?
 - a) *How was the consultation done and by who?*
2. Has such facility posed any threat to your habitation and existence?
3. Do you identify any possible risk factors in terms of disasters for these fuel filling stations?
4. Has the June 3 disaster in Accra put some fear in you as far as oil and gas stations are concerned?
5. What do you think should be done by EPA and the government to ensure that your views are considered not partially but wholly?

Appendix VI

ENVIRONMENTAL ASSESSMENT REGISTRATION FORM EA1 WITH DETAILS ON CONSULTATION AND PUBLIC CONCERNS

Norwegian University of Science and Technology, Trondheim

Topic: Public Participation in the Environmental Impact Assessment (EIA) of Ghana: A Case Study of the Oil and Gas Retail Sector in Sekondi-Takoradi

ENVIRONMENTAL PROTECTION AGENCY



0000147

ENVIRONMENTAL ASSESSMENT REGISTRATION FORM

(To be completed in Duplicate)

FEE GHC

FORM EA 1

Proponent: _____

Address for correspondence _____

Contact person _____ Position _____

Phone No. _____

Email _____

Environmental Protection Agency (Head Office)

P.O. Box M 326

Accra, Ghana

Tel: 6646718, 664223, 662465

Email: info@epa.gov.gh

Website: www.epa.gov.gh

This form shall be submitted to the relevant EPA Regional, District and Zonal Offices. It is important that you read carefully the guide for completing the form before starting.

GUIDE FOR COMPLETING AN ENVIRONMENTAL ASSESSMENT REGISTRATION FORM

The Environmental Assessment Registration Form is designed to provide enough relevant information to enable the EPA to set an appropriate level of assessment for proposal referred to it. Failure to provide detailed information in a comprehensive manner may delay the assessment process. It is not expected that this form will be appropriate for all purposes and, depending on your proposal, a lengthier document may be necessary in addition to this form.

PROPOSAL

A simple, brief description of the proposal or proposed undertaking is required and must include: input processes, end results, outputs, quantities and timing. Please include flow diagram if available.

LOCATION

A site/block plan is essential.

It should indicate the geographical coordinates of site (Longitude and Latitude), elevation and slope of the site, any nearby areas or features of environmental significance (e.g. proposed or declared reserves, water courses, wetlands) and adjacent land uses, including the nearest homes or areas zoned residential.

SERVICES

Details of water supply, storm water drainage, power corridors, access to and impact on roads and transport can all be significant and should be noted where relevant.

ENVIRONMENTAL IMPACT

Criteria for assessing a project and setting a level of assessment are:

1. The character of the environment
2. The potential impact of the proposal
3. Resilience of the environment to cope with change
4. environmental impacts
5. The input of other statutory decision-making bodies
6. Degree of public interest.

The following potential environmental impacts may be relevant:

1. Impacts on geomorphology, land stability and landscape
2. Impacts on drainage and water quality (surface and ground)
3. Impacts on biota
4. Impacts on access and transport systems
5. Impacts on existing services including power, water and telephone
6. Impacts on existing community facilities
7. Impacts on existing contingency plans for safety and emergency services.
8. Impacts on emission (Gas, Dust, Noise and heat)

- 9. Management of solid and liquid waste and storm water
- 10. Impacts on adjacent land uses including any conservation and recreational aspects
- 11. Impacts of constructional and operational activities
- 12. Visual impacts
- 13. Social impacts

Proponents would be required to pay appropriate processing and permit fees in accordance with the current existing LI for fees and charges (Amendment) Instruments.

1. PROPOSED UNDERTAKING/DEVELOPMENT

Title of proposal (general classification of undertaking)

Description of proposed undertaking including unit processes (flow diagram), raw materials, list of chemicals (source, types and quantities), storage facilities, waste by-products (soil, liquid and gaseous)

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Scope of proposal (size of labor force, equipment and machinery, installed production capacity, product type, area covered by facility/proposal, market)

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2. PROJECT SITE

(Location attach a site plan/map)

Plot/House No..... Street/Area Name.....

Town..... District..... Region.....

Major Landmarks (if any).....

Current Zoning.....

Distance to the nearest residential and or other facilities (in meters) provide coordinates (where possible)

.....

Adjacent land uses (existing and proposed) – (Describe in details and attach pictures)

.....

Site description (immediate activities and adjacent land uses should be described)

.....

3. INFRASTRUCTURE AND UTILITIES

Structures (building and other facilities proposed or existing on site)

.....

Access to water (source, quantity)

.....

Access to power (type, source and quantity)

.....

Draining provision in the project area

.....

7. ATTACHMENTS

Tick appropriate box indicating that the following required documents have been attached.

- Authentic site plan (signed by a licensed surveyor and certified by survey dept.)
- Block plan of the site
- Photographs of the site
- Zoning letter from Town and Country Planning Department (TCPD)
- No objection letter from the National Petroleum Authority (NPA) (For Petroleum Products retail outlets (FSS & LPG))

8. DECLARATIONS

I,hereby declare that the information provided on this form is true to the best of my knowledge and shall provide any additional information that shall come to my notice in the course of processing the application. I also declare that the information provided is true.

.....
.....

.....

.....

Signature

Date

Use additional sheets where the spaces provided are inadequate.

NEIGHBOURHOOD CONSULTATION FORM

(TO BE ATTACHED TO EAI FORM)

Title of

Proposal:.....
.....

.....
.....

This is to confirm that on the..... representatives of the above undertaking had a meeting with me. The meeting centered on the proposed project and its impact on the environment as well as the mitigation measures.

No.	Full Name	House Number and Telephone Number	Location in relation to the project site	Comments

Full Name of Proponent
Date

.....
.....

Signature

.....