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**Gas Flaring in Nigeria: Analyzing the Impact of Governance and
Sustainability in the Niger Delta**

by

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ABSTRACT

Gas flaring is a global issue but more especially for developing countries who are faced with various health and environmental challenges. This research paper focusses on the Niger Delta region of Nigeria, who are among the highest ranked for the amount of natural gas flared in the process of oil exploration and extraction. The study is aimed at reviewing the existing literatures, which will help to investigate the impact of gas flaring in Nigeria, and the operation of oil companies in the Niger Delta. The study will also investigate why gas flaring is still a common practice in the Niger Delta, even though the practice is banned in the country. The study examines the theoretical framework for gas flaring and its impact on the socio-economic and environment of the oil producing communities in the Niger Delta region of Nigeria. However, environmental sustainability approach is suggested as a more useful approach to tackle environmental impact of gas flaring among the oil producing communities in the Niger Delta. The socio-economic impact of gas flaring was evaluated using socio-economical approach of sustainability.

Given the environmental and health impact of gas flaring on the oil producing communities in the Niger Delta, the research paper looked at the impact of poor governance and how they affect the effort of ending gas flaring in the Niger Delta. The empirical findings reveal that for the government of Nigeria and oil companies to tackle the issues of gas of flaring, improved infrastructure and regulatory mechanism should be achieved. The same approach should be given to endemic corruption practice and the security issues in the region. The study reveals that these factors are contributing to the problem of gas flaring. Therefore, to tackle the overall impact of gas flaring in the Niger Delta, it requires the application of sustainable governance approach that will address the practice of gas flaring, economic hardship, environmental and health challenges through implementation of good regulatory policies and sustainable development.

Key Words: Gas Flaring, Governance, Sustainability, Niger Delta, Conflict, Regulation, Corruption, Environment, Infrastructure, Oil and Gas.

DECLARATION

I declare that the thesis research paper is personally authored by me. I also declare that all the ideas and sources of information for this research paper have been properly referenced in line with the ethnics of academic honesty. I wish to declare that this thesis paper have not been published in part or whole for any academic degree. I am solely responsibility for any errors, omissions, incomplete statements that might be found in this thesis paper.

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Chiedozie Franklin Otuonye

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ABBREVIATIONS

BCM - Billion Cubic Meters

CO2 - Carbon Dioxide

EFCC - Economic and Financial Crimes Commission

EIA - Energy Information Administration

FCCC - Framework Convention on Climate Change

HSBC - Hongkong and Shanghai Banking Corporation

ICIJ - International Consortium of Investigative Journalists

IOCs - International Oil Corporations

IPCC - Intergovernmental Panel on Climate Change

LNG - Liquefied Natural Gas

OECD - Organization for Economic Co-operation and Development

MDGs - Millennium Development Goals

MNCs - Multinational Corporations

NNPC - Nigerian National Petroleum Corporation

PIB - Petroleum Industry Bill

PSCs - Production-Sharing Contracts

SPDC - Shell Petroleum Development Company of Nigeria

TSGP - Trans-Saharan Gas Pipeline

UNDP - United Nations Development Programme

CHAPTER 1

1.0 Introduction

Over the past decades, the Niger Delta region of Nigeria has become a relevant topic in the discussion on the method of oil extraction (which involves gas flaring) and the challenges of poor governance. The debate on the impact of gas flaring began after environmental pollution associated with oil extraction and production in the Niger Delta region became clearer and part of a global discussion. Nigeria's oil and gas industry are mainly located in the Niger Delta, where it has been a source of conflict and political instability due to the level of poor governance in the region (EIA, 2016). The developmental challenges facing investment in gas utilization in the region is closely intertwined with the patterns of poor governance which has resulted in violent conflict, lack of infrastructure, and instability in the region. Francis and Sardesai (2008) noted that the challenges of poor governance are multi-dimensional, and tackling the challenges requires an understanding of the factors and dynamics of sustainability as well as the links between gas flaring and poor governance. According to Ukala (2010), Nigeria has an abundant amount of hydrocarbon resources - but these resources have become far more accessible because of poor governance in the region and with most of the resources located in the Niger Delta region of the country. With most of the multinational oil production companies in the region (such as ExxonMobil) engaged in various methods which have extreme consequences on human lives, and the environment during their oil extraction process. Ajugwo (2013) argued that these methods of oil extraction in Niger Delta has changed the ecosystem tremendously, especially after the arrival of Shell and other oil companies in the region since the 1950s.

According to Ukala (2010), gas flaring is one of the devastating methods used by oil production companies during oil extraction process in the Niger Delta. Gas flaring (the burning of natural gas) which is associated with oil extraction processes - remains has contributed to health and environmental challenges in the region. However, gas flaring is also considered to be a regrettable practice from the economic standpoint regarding the valuable gas that is wasted

despite the country's rampant energy crisis (Ebrahim, Friendrichs, 2013). It is estimated to cost Nigeria 2.5 billion US dollars annually while the roaring, toxic flares affect the health and livelihoods of the communities in the Niger Delta (Osuoka and Roderick, 2005). The practice of gas flaring in Nigeria is more regrettable from the environmental perspective which can account to 140-150 bcm of flared natural gas translates into 270-290 million tons of CO₂ emissions per year. Ebrahim and Friendrichs (2013), argued that this account for nearly 1 percent of global carbon emissions, but gas flaring is a major contributor to health and environmental challenges in the region.

Ajugwo (2013), emphasized that the practice of gas flaring is highly deplorable because there is no economic wealth or human welfare is generated in the process. However, as the burning of natural gas was theoretically prohibited in Nigeria since 1984. The Nigerian government has made unsuccessful attempts due to the level of corruption, which has led to violent conflicts, political instability, lack of infrastructure and favoritism towards the multinational oil corporations in the battle to reduce gas flaring (e.g. Shell Petroleum Company) in Nigeria (Ukala, 2010). This relates to what economists call the resource curse that Nigeria is deeply afflicted - countries with rich resource endowment but less well governed. Oviasuyi and Uwadiae (2010) noted that such problem lowers growth rate and in some cases are less socially developed than resource-poor countries. In the case of Nigeria, the manifestation of the resource curse is present due to poor national governance and the level of corruption in the country. Ebrahim, Friendrichs (2013) emphasized that the Nigerian administration is often focused on the demands from international buyers of the commodities (mainly oil) than providing affordable gas power plants which is a problem for its citizens. The practice of gas flaring arguably has clear health and environmental implications for those communities living in the coastal region where these processes are been practiced (Ebrahim, Friendrichs, 2013).

1.1 Background of the Study

The Niger Delta region of Nigeria is arguably one of the most vulnerable regions in the world to health and environmental challenges due to oil extraction and production. Schneider et al., (2013), argued in their analysis that gas flaring poses a great challenge for the poor communities in the Niger Delta region and emphasizes their vulnerability and limitations in adapting to the health and environmental impact of gas flaring. It has, therefore, emerged that gas flaring has contributed to health and environmental issues in the Niger Delta (Schneider et al., 2013). As a result of gas flaring, health and environmental issues have become a major challenge to socioeconomic development in the Niger Delta region. The impact of gas flaring has been felt more in the region because of their dependency on rain-fed agriculture for irrigation, lack of governance and the inability to adapt a more sustainable approach by the stakeholders in the region (Nzeadibe et al., 2011). I will argue in this research paper that the challenges of governance and lack of sustainability approaches, their warming baseline climates, the rise of sea level and their heightened exposure to oil spillages, gas flaring and other extreme events have contributed to the developmental challenges in the Niger Delta region.

This discussion will illustrate the impact of gas flaring on the environment (greenhouse emission) and the importance of sustainable approach towards gas flaring in the Niger Delta region of Nigeria. I will argue in this research paper that the perceived situation in the Niger Delta region can be attributed to the concentration of greenhouse gases in the atmosphere, extensive dam construction, oil spillage, lack of governance and other human activities in the region (Ukala, 2010). As the majority of the inhabitants in the Niger Delta region are farmers, the impacts of gas flaring are putting livelihood at great risks, as well as the lack of sustainability approach by the stakeholders in the region. Nzeadibe et al., (2011), also argue that the changes in the rainfall patterns as a result of the burning of natural gas have affected agriculture and thereby livelihoods in the region.

The gas flared by the oil companies in these communities' during oil and gas production has devastated a substantial part of the communal farmlands, and left the streams polluted (Ukala, 2010). Ukala (2010) also argued that the practice of oil drilling and burning of natural gas have affected the local communities' sources of livelihood, which are farming and fishing, as the farmlands are no longer fertile, and streams are have been polluted. Therefore, I will argue that the source of income has been taken away from these communities due to lack of sustainable approach, challenges of governance and the continuous flaring of natural gas in the region. As Shehu (2011) emphasized that the dominance of the past military rule in the country has meant that the fledging norms of accountable governance and the rule of law were systematically replaced by a political culture defined by dictatorship, patronage and corruption. This political culture has institutionalized corruption as a way of political life and survival, especially in the Niger Delta where it has distorted and retrogressed development. Schneider et al., (2013) argued that there is no established effort by the government or oil companies to provide a relief provision for the communities that have been affected as a result of less access to fishing activities, and other socio-economic activities. In addition, I will argue that gas flaring in the Niger Delta have contributed to the high risk of diseases among the residents in the oil producing communities, such as asthma, bronchitis, cancer and blood disorders where infrastructures and other social service were allowed to decay and collapse due to the lack of governance in the region (Ukala, 2010).

Against this background and based on this research paper, I will argue that sustainability approach to this research can indeed represent a link between gas flaring and good governance in the region and bring about sustainable development. This is because sustainability approach in this research paper does not only integrate socioeconomic and environmental perspective but can also provide appropriate tools to measure and manage environmental issues as well as represent a perspective with regards to implementation and decision-making in the Niger Delta. However, Morelli (2011) argued that implementing sustainable policies, regulatory inspection and good practice in the oil and gas production activities should include all stakeholders to achieve a better outcome in the Niger Delta region. Against this backdrop, this research paper on gas flaring is

confronted with two essential questions: First, what is the best approach to reduce gas flaring in the Niger Delta region? considering this fact, this research paper will provide valuable contributions to solving gas flaring challenges in the region. And secondly, how has challenges of good governance contributed to the challenges of gas flaring in the region?

To answer these questions, this research paper will present some of the challenges facing the poor communities and document how lack of governance and poor sustainability approach have helped to contribute to gas flaring in the Niger Delta region. Ukala (2010) argued that as the Niger Delta communities have been systematically denied the access to information regarding the impact of gas flaring and other factors that contribute to gas flaring during oil extraction. This research paper will provide a strong case study on gas flaring and how lack of governance has led to poor infrastructure, conflicts and lack of regulation which has prevented investment in gas utilization and also has contributed to gas flaring in the region. However, I will emphasize in this research paper that the lack of sustainability approach, lack of governance, and illegal activities of the multinational oil corporations that are not checked properly has impacted on the rights of the oil producing communities and the environment in the Niger Delta (Oghifo, 2011).

These research paper findings are based on desk study research on the available information from the reports of national institutions (U. S. Energy Information Administration, International Energy Agency), Ministry of Environment, Science and Technology, Ministry of Petroleum Resources. Other sources are from Nigerian National Petroleum Corporation (NNPC), Shell Corporation of Nigeria, Nigerian Federal Ministry of Environment, World Bank, texts books, academics journal and articles and other internet sources. The first chapter of the thesis focusses on the background of the research, and the second chapter focusses on the links of the objectives of the research and the analysis on the field. It is concluded that systemic approach can be the appropriate methodology for the research, as the analysis will be transparent, and it will minimize the biases of the research. This is because the approach will enable data collection process to summarize the balance of the evidence through comprehensive literature searches, and the data analysis was done through qualitative method.

1.2 The Purpose of the Study

The evolution of the debate on the issue of gas flaring, including previous discussions of the practice of gas flaring by oil industrials, has emphasized on the theoretical inquiry and understanding of the practice. This research paper builds on this work, and its own contribution by developing new approaches to the understanding of gas flaring, sustainability approaches and the challenges of governance in the Niger Delta region of Nigeria. This research paper did advance the original synthesis of theoretical findings from disciplines that are new in the analysis of gas flaring and develop practical tools for improving the practice of gas flaring in the region. This research paper is expected to form a distinct contribution to the knowledge of gas flaring in the Niger Delta region, and the impact of governance towards gas flaring in the region, which has led to unsustainable approach of mineral resources and the issue of gas flaring. These will afford evidence of originality that will be shown by the new discovery of facts or the exercise of independent critical points. The existing research was synthesized and analyzed using theoretical frameworks from sustainability and environmental justice.

Because of health and environmental challenges that have been recorded for decades, the debate on gas flaring has gained global focus, and with the practice been illegal in Nigeria since the 1980s. This research paper will make use of the theories which have recent origins and it's still been developed to explain the concept of gas flaring. The natural step theory of sustainability which emphasizes on development that meets the needs of the present without compromising the ability of future generations to meet their owns is applied as an approach to understanding the impact of gas flaring and governance. As Schneider et al., (2013) argues that in spite of the different views surrounding sustainability, both in theory and in practice, there is enough evidence that natural step approach to sustainability is considered to be desirable and a policy objective which should be striven for. Meanwhile, the attractiveness of the concept may lie on the exact way in which it can be used to support different political and social agendas. One example is the Framework Convention on Climate Change (FCCC) that was signed at Rio de Janeiro in 1992 that was set as its objective: "The ultimate objective of the Convention in Rio de

Janeiro is to achieve stabilization of greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such level of concentration should be achieved within a time frame that is sufficient to allow the ecosystem to adapt naturally to health and environmental challenge, and to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner” (UN Report, 2017).

This research paper applied the natural step theory of sustainability to provide a framework with which to orient public and corporate decision-making, integration of environmental policies, and development strategies towards socio-ecological sustainability. Broman and Karl-Henrik (2017), emphasized the theory interconnects with the natural and social systems that are the concern of sustainable development, regarding the practice of gas flaring in the Niger Delta. In this research paper, I will also present a natural step theory of sustainability that will provide the understanding of how to maintain economic, social and environmental advancement and the value of protecting the environment on a long-term base (Broman and Karl-Henrik, 2017). The social perspective of the theory emphasizes that the approach provides the social aspect of development as an important part of the new paradigm and the need for equity in development. But because environmental issues are directly linked with social inequalities, the analyses are that developing countries put economic development challenges before environmental protection. However, the economic perspective of the theory in this research paper will provide the economic tools to promote innovation and turn a profit, but the neo-classical views economic sustainability approach as the maximization of welfare over time. The approach helps to analyze how efficient resource allocation should have on the effect of maximizing utility from consumption (Broman and Karl-Henrik, 2017). Meanwhile, the environmental perspective of the theory provides the interlinkage between economic, social and environmental sustainability, and analyses the positive synergies and encourages sustainable development. For environmental justice theory, Schlosberg (2013) argued that the idea of environmental justice will challenge the notion of governance and environment, and examines the multiple reasons for the construction of

injustice as a way to raise awareness on the issues of gas flaring and lack of governance in the Niger Delta region of Nigeria.

As Schlosberg (2013) argues that there has been a spatial expansion of the approach into a broader range of issues and the examinations of the truly global nature of environmental injustices. However, climate change has also contributed to the push for environmental justice to a broader consideration of both environment and justice. The environmental justice approach brought indigenous perspectives of the conversation on the relationship between human beings, non-human nature, and culture (Schlosberg, 2013). Meanwhile, the hypothesis of this research paper, that the disruption in the Niger-Delta region is due to lack of governance and the increasing vulnerability of ecosystem caused by gas flaring and other oil activities, is at the heart of the questions regarding the injustice of climate change. The thesis applies the theory of environmental justice to analyze how environmental injustice have impacted the oil producing communities and the movement (activists) behind environmental justice.

1.3 Objective of the Study

The objective of this thesis is an alternative framework by the stakeholders in the Niger Delta region to find adequate solutions to address the impact of gas flaring on the livelihood of the communities and the environment. These impacts have had severe consequences on the health of local residents in the oil producing communities, and the entire ecosystem of the Niger Delta region. This thesis paper will, therefore, have two objectives:

- To analyze the impact of gas flaring on the oil producing communities of the Niger Delta.
- To analyze the challenges of governance and how it contributes to gas flaring in the Niger Delta.

The stated objectives above will be a guide for accurate information based on the following project questions.

Step 1:

- Gas flaring in Nigeria
- Natural Gas and Its Environmental Implications
- The Big - 5 (Shell, ExxonMobil, ChevronTexaco, Agip, and TotalFinaElf)
- Consequences of gas flaring

Step 2:

- Environmental justice theory and practices
- The Natural Step theory of sustainability and practices
- What are the social, economic and ecological perspectives towards sustainability in the region

1.4 Research Question

Because gas flaring is harmful not just to human life but to the environment, the oil producing communities in the Niger Delta has been faced with challenges compounded by insufficient investment and lack of infrastructure to utilize the natural gas due to lack of governance. Flaring of the associated gas becomes the method used to dispose of associated gas to reduce the cost of production where the required expansion of the existing system is not economic which has impacted on the livelihood of these communities. Therefore, the need to control the level of gas flared or even using new technologies to convert the associated gas to liquefied gas through adequate approach and policies to regulate the practice.

Therefore, the following research questions are guiding this thesis;

1. How has gas flaring affected the Niger Delta communities?
2. What role can sustainable approach play in the issue of gas flaring in the Niger Delta?

1.5 The Terminology of the Study

In this research paper, a number of key terms were used, and these key words have different meanings in different context, this part of the research paper will explain how these key words are defined. Gas flaring is referred to in this research paper, as a technique used in industrial

plants such as petroleum refineries, offshore oil and gas rigs, and landfills, and gas processing plants. Ismail and Umukoro (2012) emphasized that gas flaring is a challenging practice for health and environmental problem for today's world. He defined flaring as a high-temperature oxidation process which is used in burning natural gas produced during oil and gas production operations (Ismail and Umukoro, 2012). Flaring of associated gas is associated with a significant source of greenhouse emission, and although Nigeria flares a significant amount of its gross natural gas production in 2014. The term associated gas is a form of natural gas which is found with deposits of petroleum and it's produced during crude oil production (Ismail and Umukoro, 2012). EIA (2016) argues that more than 50 percent of the amount of gas flared has been reduced over the past decade.

The term sustainability was used to understand how to deal with the impact of gas flaring on three different aspect, and as Hennings et al., (2013) emphasized that the term sustainable cannot be defined, because it has become simply 'a synonym for everything positive' but it appears to be serving purpose relating to ecological, social and economic sustainability. For ecological sustainability, Kuhlman and Farrington (2010) define sustainability as the meeting of human needs without compromising the ecosystem. He suggested that the ecological approach should serve to limit conventional economic approach to ensure sustainability. And from an economic standpoint, Morelli (2011) suggested that sustainability can be defined in terms of the maximization of capital over time without compromising the future generation. Therefore, economic sustainability should focus on minimizing the social costs of meeting standards for protecting the ecosystem but not for determining the standards. For social sustainability, Morelli (2011) defines it as 'a positive condition within communities and a process within communities that can achieve that condition'. These conditions are concerned with political participation, equity between generation, basic needs and equity in development.

1.6 Area of the Study

The problem of gas flaring is not just a regional problem but a global issue which have a severe environmental impact on both the natural environment and on a human. Francis and Sardesai (2008) emphasized that the fundamental interconnectedness of the impact of gas flaring makes it clear that there is a need to go beyond economics to overcome the global issues on the environment. In Niger Delta, the majority of the gas flaring plants covers an area of 70,000 Km² of marshland, creeks, tributaries, and lagoons that drain the Niger River into the Atlantic at the Bight of Biafra (Ajugwo, 2013). However, it is estimated that about one-third of this area is fragile mangrove forest - the second largest mangrove forest in the world. The biodiversity of the Niger Delta is very high with the area containing diverse plant and animal species, including many endangered species and endemic animals and plants (Hassan and Reza, 2013). The Niger Delta is situated in the Gulf of Guinea between latitudes 3° and 5° N and longitudes 5° and 8° E and it is the largest delta in Africa.

According to the National Population Commission of Nigeria (2017), Niger Delta has an estimated population of over 30 million people and the bulk of which lives in rural fishing and farming communities. The region is also the headquarters of Nigeria's oil and gas industry and currently the only oil and gas producing region in Nigeria (Nzeadibe et al., 2011). The activities of multinational oil companies in the region have been linked to degradation of the natural environment pollution and low agricultural productivity. For gas flared, gaseous hydrocarbons are released which react with the atmospheric oxygen to form carbon dioxide (CO₂) which with other greenhouse gasses (GHGs) are responsible for the changes in the global climate (John, 2011). The global environmental challenges is resulting in increased and intense natural disasters, the rise of sea levels and the spread to temperate regions of disease that was once found in the tropics.

Despite the rich natural resources located in the Niger Delta, the majority of its population still live in poverty, without electricity and in a highly polluted environment. Ebegbulem et al.,

(2013) argued that over three-quarters of the population (77 percent) are considered to be living in poverty, which is relative to the official figure of one third (35 percent) in the South-South zone of the Niger Delta. In addition to the poverty level in the region, (UNDP, 2010) noted that high prices in the Niger Delta erode the purchasing power of the habitats and the standard of living in the oil producing communities is lower than for those employed in the oil and gas industry. The table 1 below illustrates the levels of poverty in the region compared to the general poverty level in the country. The table reveals the self-assessed poverty level in the region, which is high and varies according to the state.

Table 1. Poverty Statistics in the Niger Delta

State	Poverty Incidenc (%)	Core Poor (%) (quintile 1)	Self-assessed poverty level	Very Poor (%) (self-assessed)	Gini
Akwa Ibom	35	27	66	17	0.5003
Beyelsa	20	22	95	62	0.4757
Cross River	42	33	77	22	0.5046
Delta	45	23	81	25	0.4650
Edo	33	16	79	35	0.4585
Rivers	29	19	67	15	0.4882
South-South	35	23	77	29	0.5072
North East	72	35.4	81	26.5	0.4590
Nigeria	54	21.3	76	21.37	0.4882

Source: Francis and Sardesai, World Bank Report, 2008

However, Oviasuyi and Uwadiae (2010) argued that the Nigerian government's interest in the oil industry is to maximize its economy from oil protection in the region. While the oil companies operating in the region find it economically cheap to flare the associated gas and pay the insignificant fine than investing in technologies that will re-inject the gas back into the oil wells (Ajugwo, 2013). This is because there is an insufficient energy market in the rural areas and lack of modern technologies to convert the associated gas into liquefied gas, so there are no economic

incentives for the oil companies to collect the gas. Looking at it from the social perspective, Oviasuyi and Uwadiae (2010) emphasized that the oil producing communities in the Niger Delta have experienced increased marginalization and have been neglected by the government and oil companies. I will argue in this paper that the environmental and human impact of gas flaring in the Niger Delta has been a secondary consideration for the oil companies and the Nigerian government. Ajugwo (2013), highlighted though that there may be reasons for the continuous burning of natural gas in the region due to conflicts, corruption, and inadequate infrastructure but there are strong arguments suggesting that the practice should be stopped.

Meanwhile, the government and corporation's accountability to the oil producing communities in the Niger Delta and the environment surrounding them should imply that oil companies operating in the region are required to invest in gas utilization technology and re-inject the gas or to shut down any oil facility in which the practice of gas flaring is occurring (Ajugwo, 2013). As gas flaring accounts for approximately one-third of all Nigerian carbon emissions, and about 1.2 percent of global emission. Gas flaring is a major environmental issue for the oil producing communities in the Niger Delta. Even though Nigeria has ratified the Kyoto Protocol in 1994, its carbon dioxide emissions have doubled by 2008, according to the United Nations Statistics Division (Ajugwo, 2013). The impacts of the gas flaring in the Niger Delta region of Nigeria is not just a Nigeria problem, but a global problem. Gas flaring is considered a contributing factor to the unrest in the oil-producing states, along with oil revenue distribution, and other environmental concerns. According to Royar (2012), the continuing instability in the region is attributed to not just human rights concerns, but it also limits the economic development of the Niger Delta.

For this research paper, it is important to know that without a sustainably productive environment which will provide a resource foundation, it would be difficult or in many ways impossible to achieve a sustainable society. Therefore, the sustainable economy relies on the sustainable flow of materials, energy and environmental resources (Pinter et al., 2018). But because of the massive oil exploration in the Niger Delta, the actualization of sustainable human

health, local culture, indigenous self-determination, and the environment become severe. These cases are typical for most oil producing communities of less developed countries, as their governments focus more on the economic and political benefits than the resulting damages to the environment and human health.

1.8 The Thesis Structure

The thesis structure consists of 5 chapters which are as follows:

- Introduction
- Literature Review and Theoretical framework
- Methodology
- Empirical Findings and Analysis
- Conclusion

The introductory chapter of this thesis paper will present the general view of the research argument and define the research question. This clarifies the motivation for the chosen research topic which is on gas flaring in Nigeria, and the challenges of governance (corruption, conflict, lack of infrastructure and regulatory mechanism) and sustainability in the Niger Delta. The goal of the research topic explains the starting point for the choice of the theoretical framework. The second chapter will focus on the literature review which throws light on the background of gas flaring in the Niger Delta, and the theoretical framework which highlighted the need for ecological and socio-economic perspective sustainability of the thesis. The methodological chapter will highlight the approach to data collection, research design/strategy, qualitative method and the systemic analysis of the thesis. The analysis and discussion chapter will focus on the empirical findings and analysis on the role of sustainability approach to gas flaring and how corruption, conflict, lack of regulatory and infrastructure mechanisms affects governance which results in more gas flaring in the Niger Delta. The final chapter will deal with the final conclusion of the main points of the research.

CHAPTER 2: Literature Review

This part will present and discuss an overview of the previous studies relating to gas flaring and the origin of gas flaring in Nigeria. The chapter will also present the consequences of gas flaring in the Niger Delta region of Nigeria and the controversial business practices of the five major corporations in the region.

2.1 Previous Research

Oviasuyi, P. O., & Uwadiae, J. (2010). The dilemma of Niger-Delta region as oil producing states of Nigeria. *Journal of Peace, Conflict and Development*, 16(1), 10-126. The authors describe oil as a natural endowment for any country, especially for communities, areas or regions, with its exploration and exploitation expected to be an abundant blessing to such communities, areas or regions. Oviasuyi and Uwadiae (2010) argues that oil has turned out to be a curse to the Niger-Delta region of Nigeria since 1956 when it was first discovered in the region. They emphasized that the inhabitants of the region have been subjected to untold hardship through oil pollution, environmental degradation, destruction of aquatic lives, and other negative activities that are destructive to the existence and survival of the people of the region as a result of oil exploration and exploitation. According to Oviasuyi and Uwadiae (2010), the inhabitants of this village and communities are left with nothing but damaged farmlands and polluted rivers with no electricity, potable drinking water, and other basic social amenities. They claimed that the advent of the oil business in Nigeria has not really brought with it any tangible benefits but instead the oil business has ushered in high degradation for the Niger Delta environment, with a high level of poverty and many fundamental issues for the Niger Delta region. The level of poverty in most communities in the Niger Delta has gone beyond the level of absolute poverty to the level of poverty qua poverty, a term coined by (Ikejiaku, 2009) to describe the practical absolute poverty. Therefore, people in most cases react negatively to such situations, in order to show their grievances which often result in violent conflicts.

Nzeadibe, T. C., Egbule, C. L., Chukwuone, N. A., & Agu, V. C. (2011). Climate change awareness and adaptation in the Niger Delta Region of Nigeria. *African Technology Policy Studies Network, Nairobi*. The authors argued that the Niger Delta region of Nigeria is known to be a particularly vulnerable region in Nigeria because of its fragile ecosystem and human activities, such as gas flaring that have increased the propensity of climate change, and its impacts in the region. According to Nzeadibe et al., (2011), emphasized that about 60 percent of the respondents in the Niger Delta that responded to their study knew little or nothing about climate change and its impact in the region. As the majority of the people living in the Niger Delta are farmers, the environmental and social consequences of global warming is putting livelihood at serious risks. They argue that climate change requires better developmental strategies, that ensures the sustainable use of soils and water, prevent the decline of biodiversity and deal with emerging issues like the demand for renewable energy. Nzeadibe et al., (2011), emphasized that adaptation include the actions people take in response to the environmental conditions in order to reduce the adverse impacts or take advantage of any opportunities that may arise. Finally, they try to raise the level of climate change awareness among the farmers and communities in the Niger Delta. And identify those strategies that have been now undocumented which they are employing at the farm level in adaptation to climate change in the region.

Ukala, E. (2010). Gas flaring in Nigeria's Niger Delta: failed promises and reviving community voices. *Washington and Lee Journal of Energy, Climate, and the Environment*, 2(1), 97. The author described gas flaring as a process that is harmful to human life and the environment, especially for the oil producing communities in the Niger Delta. Ukala (2010) argued that these areas have been turned into ghettos and swamps with the indigenes becoming destitute in their fatherland, and their sources of livelihood, which is farming, and fishing have been a challenge as the streams have lost life, and the lands are no longer fertile. The author emphasized that even though the Nigerian government recognized gas flaring as a challenge for the environment associated with oil production. He noted that lack of adequate enforcement by the ministry of petroleum has prevented the effort to successfully halt gas flaring in the region (Ukala, 2010). In

other words, the author argued that the petroleum minister's favoritism towards the big oil corporations has rendered legislation on gas flaring meaningless. However, the author proposed litigation approach as a tool to combat the challenges of gas flaring and how the concept of the rule of law applies to gas flaring litigation. Ukala (2010) also argued that customary arbitration approach can be an effective tool to stopping gas flaring because customary arbitrators are not influenced by the oil corporations and have been long committed to stopping gas flaring. The study concluded that for oil corporations to stop flaring gas, the Nigerian government must provide them with an incentive which will include imposing a strict and high penalty for violation of gas flaring laws.

Ajugwo, A. O. (2013). Negative effects of gas flaring: The Nigerian experience. *Journal of Environment Pollution and Human Health*, 1(1), 6-8; The study suggested that the Nigerian government has not enforced environmental regulations effectively to stop gas flaring. He emphasized that it is a result of overlapping and conflicting jurisdiction of separate governmental agencies governing petroleum and the environment as well as because of non-transparent governance mechanisms. Ajugwo (2013) noted that environment and human health have not been properly considered by the oil companies and the Nigerian government. The study emphasized that the massive oil exploration in the Niger Delta has resulted in the ramification efforts for human health, local culture, indigenous self-determination, and the environment. Ajugwo (2013) argued that because the economic and political benefits oil exploration are given more attention by the government than the resulting damage to the environment and human. The study, therefore, focused its analysis on the environmental and human health impact of gas flaring in the Niger Delta. He emphasized that it is necessary to understand why the natural gas is being flared in order to address the problem of gas flaring (Ajugwo, 2013).

Oghifo, O. T. (2011). Gas flaring/power plants in Nigeria: socio-economic and environmental impact on the people of Niger Delta (Master's thesis, Universitetet i Nordland); The author argued that the practice of oil exploration has brought different consequences to countries that are endowed with such resources. Oghifo (2011) emphasized that some of these nations has

become economically sustainable, others have been drawn into serious economic hardship and conflicts. However, oil exploration in the Niger Delta and other countries is over-whelming the planet's energy balance and heating up its surface and affecting human wellbeing. The study argued that gas flaring and thermal plants emissions in the Niger Delta region are simple example of such pollutions, and the activities are resulting in a rapid degradation of vulnerable land which is putting the economies and health of the populace at risk (Oghifo, 2011). The author argued that the framework of ecological economics will be a more fruitful approach to the socio-economic and environmental challenges of the Niger Delta region. Oghifo (2011), emphasized that the study applied theories of neo-classical and ecological economics to examine the practice of organization and environmental management in the region, given the impact of gas flaring on environment and human health (Oghifo, 2011). He also suggested several measures on how to reduce future impacts of gas flaring and how to assist the country in achieving sustainable development.

2.2 Gas Flaring in Nigeria

Gas flaring has technically been an illegal practice in Nigeria since 1984, but Ajugwo (2013) argued that the government in some cases grant exemptions to oil companies. But for many countries (e.g. Azerbaijan and Kazakhstan), investments in gas utilization has offered them economic benefits which gas flaring present, but the problem of gas flaring has remained unresolved in the Niger Delta region of Nigeria for many decades. Nwaoha and Wood (2014) emphasized that flaring is a common practice in crude oil production and processing facilities where there is lack of infrastructure for utilization of the gas. They also noted that global gas flaring has declined by 19 percent since 2005, partly because of gas flaring reductions in Russia and Nigeria with the highest gas flaring levels. Ebrahim, Friendrichs (2013), argues that the lack of political goodwill and institutional capacity in the part of Nigerian Government prevents natural gas from being used in ways that might benefit and improve the welfare of the population and reduce gas flaring. While Ali et al., (2015) suggested that politically responsive policymakers should continue the calls for limits on emissions of gases and push new legislation

and regulations towards gas flaring. Recent studies in Niger Delta have linked the effects of gas flaring to health challenges and decline in agricultural productivity in the region. While the perceptions and attitudes of people towards gas flaring in the region has been negative because of the challenges it poses on the health and environment of the region (Nzeadibe et al., 2011). Ali et al., (2015) argued that more should be done politically because domestic limits on greenhouse gas emissions can affect climate patterns, particularly as emissions in fast-growing countries such as China continue to increase.

According to Ajugwo (2013), Nigeria flares 17.2 billion cubic meters of natural gas per year in conjunction with the exploration of crude oil in the Niger Delta. The high level of gas flaring during the process of oil exploration and exploitation have created huge environmental, health and social problems for the Niger Delta communities living near the oil-producing fields. Given the heavy dependence on natural resources in the Niger Delta, many of the poor communities living the region are vulnerable to the loss of biodiversity that have resulted from gas flaring and climate change. The social impact of gas flaring on poor communities will also be compounded by climate change induced alterations of agriculture, water supply, and disease.

According to Ebegbulem et al., (2013), Nigeria accounts for one-sixth of the worldwide gas flaring - Nigeria flares about 75 percent of their natural gas, and the burning of this natural gas takes place in the Niger Delta region. Nwaoha and Wood (2014) argued that Russia has the largest gas flaring volume but together with Nigeria account for 40 percent of global gas flaring. Nzeadibe et al., (2011) emphasized that the coastal region of Nigeria is reported to have over 123 flaring gas sites making Nigeria one of the highest emitters of greenhouse gases in Africa. I will argue that the gas flaring in the Niger Delta have contributed more greenhouse gases, and as a consequence, health and environmental challenges are evident in the region than anything else. The rate of health and environmental impacts that are linked to gas flaring and other human activities is one of the most serious environmental and human threats undermining the achievements of the Millennium Development Goals (MDGs), and the international

communities' efforts to reduce poverty (Nzeadibe et al., 2011). Therefore, the impact of gas flaring is a major challenge to development in the 21st century.

Figure 1. The site of oil field and gas flaring



Source: Nigerian Federal Ministry of Environment, 2014

2.3 The Consequences of Gas Flaring

The environmental issues of gas flaring are generally global, but to some extent regional and local as seen in the Niger Delta region. The negative impact of gas flaring contributes to global warming causing health and environmental challenges, and this affects the quality of the environment. Ismail and Umukoro (2012) argued that gas flaring contributes to the environmental problems that affect the agricultural pattern of the region, forests and other ecological resources in the region. Gas flares are associated to acidification of rain and waterways which is a result of emissions of large quantities of Sulphur dioxide and nitrogen oxides into local areas which combine with atmospheric moisture to form sulphuric acid and

nitric acid (Ajugwo, 2013). As the concentration of acid rain appears to be higher in the region, studies show that it affects agricultural productivity in the region. This is because agriculture in the region is highly dependent on rainfall as irrigation and the changes in the rainfall pattern have also affected vegetation in the region immensely.

Adelekan (2010) noted that the presence of primary forest is almost completely absent due to oil exploration in the region and the uncontrolled logging, acid rain, urbanization and mining activities. All these human factors together with gas flaring have all contributed to the loss of vegetation in the Niger Delta region of Nigeria, and their impacts are also felt globally in the form of climate change (Adelekan, 2010). According to Ebegbulem et al., (2013), recent research also showed the impact of gas flaring/oil spills on agriculture and natural resources management in Africa and other developing countries. While other factors like lack of governance have contributed to the severe impact of gas flaring in the region, it emerged that developing countries are more vulnerable to climate change due to gas flaring than developed countries, because of the predominance of rain-fed agriculture in their economies and scarcity of capital (Nzeadibe et al., 2011).

Meanwhile, there are several health implications of gas flaring on human, especially for those oil producing communities who are directly exposure to the hazardous air pollutants emitted during gas flaring. Ite and Ibok (2013) emphasized that flared gas creates soot that is deposited on nearby land, buildings and inhaled by local residents which are known to cause health risks such as cancer, neurological, reproductive and development effects on humans. Because the rural residents in the oil producing communities depend on rainwaters which are captured from rooftops for drinking, cooking, and laundry, they are faced with severe health damages from the impact of gas flaring. Adelekan (2010) argued that the risks of causing serious health problems such as skin cancer and lesions increases because the ingestion of contaminated water (acid rain) can alter pH of the stomach and cause stomach ulcers. Ite and Ibok (2013) also emphasized the numerous health complaints from several residents living in close proximity to most gas flaring

fields in the Niger Delta. As a result of these diseases, Ukala (2010) noted that life expectancy in the Niger Delta is remarkable lower when compared to other parts of the country.

Because Nigeria's oil and natural gas industry is mainly located in the Niger Delta, and its resources are the mainstay of the country's economy, it has contributed to the issues of governance and become a source of conflict among the oil producing communities. As local groups (militants) seek to share the oil revenue often attack the oil infrastructure, and oil theft leads to pipeline damage which is often severe and results in loss of production, pollution, and forcing companies to shut down production. Other community activists however choose to protest over environmental damages from the oil spills and gas flaring in their communities, which have resulted intense tension between the local activists and international oil companies. Oghifo (2011), argued that such protests have resulted in compensation of the local residents in the oil producing communities since they have to give up their source of livelihood due to pollution and environmental degradation caused by gas flaring and oil extractions in their communities.

2.4 Controversial Business Practices

In Nigeria, Royal Dutch Shell operates through three different joint ventures and Shell Petroleum Development Company of Nigeria Ltd (SPDC). In 2009, Shell admits that they have done little in reducing oil spillage and gas flaring in Nigeria due to the security situation in the Niger Delta (Oghifo, 2011). According to UNDP Report (2016), more than 400,000 tons of oil spillage have been recorded in creeks and soils in the Niger Delta region over 30 years period and the majority of the spillage is attributed the aging facilities, inadequate maintenance and human error. These oil spillages have destroyed natural resources which is central to the local livelihood of the oil producing communities in the Niger Delta. Even though OECD guidelines states that "any enterprise should within the framework of laws, regulations and administrative practices in the countries in which they operate, conduct their activities in a way that contributes to sustainable

development, and prevent serious environmental and health damage from their operations, which includes accidents and emergencies” (Steiner, 2008).

Figure 2. Royal Dutch oil spill in Bodo, Nigeria



Source: The telegraph, 2013.

According to Amnesty International report (2015), both Shell Nigeria and other transnational corporations (TNC) continue to operate below the international standards, which is recommended to prevent and control pipeline oil spillages. They argued that every year there are hundreds of oil spills from the pipelines, wells and other facilities that been operated by the transnational corporation (TNC) in the Niger Delta region because of old and poorly maintained pipelines. Furthermore, Nigeria accounts for two thirds of Shell’s gas flaring globally, and it emits as much greenhouse gas each year as 18 million European cars. In November 2005, a Federal High Court in Nigeria ruled that the practice of gas flaring near the oil producing communities by SPDC is a gross violation of human rights and ordered SPDC to immediately stop the gas flaring (Steiner, 2008). Though, Shell Nigeria promised to shut down production from any of their oil facility with no prospect of a solution for gathering the associated gas by

2009. But Amnesty International report (2015) argued that Shell and other oil corporations in the region continue to flare, even as the deadline given by the Federal High Court of Nigeria has come and gone. According to Shell Sustainability Report (2017), they claim that the security problem and funding situation in the region has hindered their effort on reducing gas flaring, and more than 3 billion dollars is needed to construct new facilities that will gather the associated gas. However, it can be noted that Shell Nigeria is not the only oil corporation practicing gas flaring in Nigeria, ExxonMobil, Chevron and Agip and TotalFinaElf also flares gas in Nigeria.

2.5 The Big - Five (Shell, ExxonMobil, ChevronTexaco, Agip, and TotalFinaElf)

About 95 percent of Nigeria's oil (and gas) production is produced by Shell, ExxonMobil, ChevronTexaco, Agip and TotalFinaElf through joint venture companies in which the Big - Five companies are the operators but holds minority shares. However, the Nigerian National Petroleum Corporation (NNPC) still holds 55-60 percent interest in the main producing companies which is explained by the table below. According to EIA (2016), Nigeria has 606 oil and gas fields only in the Niger Delta, 355 onshore and 251 offshore, of which 193 were actively producing in 2002. The Shell Petroleum Development Company Limited has more than 90 estimated oil and gas fields across 30,000 square kilometers of oil mining leases in the Niger Delta. This is a massive operation which involves a network of more than 6000 kilometers of flowlines and pipelines, seven gas plants, 86 flow-stations and other facilities. As the oil production has increased for the last few years by the big - five (Shell, ExxonMobil, ChevronTexaco, Agip, and TotalFinaElf), so has associated gas production. Table 2 illustrates the percentage of operation for the big - five ventures and the area of location in the Niger Delta region.

Table 2. Major Nigerian Oil Production Ventures.

Major Nigerian Oil Production Ventures				
Operator (% INTEREST)	OTHER PARTNERS (% INTEREST)	NNPC (% INTEREST)	MAJOR PRODUCING FIELDS	PRODUCTION BPD (EST. 2003)
Shell (30%)	TotalFinaElf (10%) Agip (5%)	55%	Bonny or Eastern Division - Nembe, Cawthorn Channel, Ekulama, Imo River, Kolo Creek, Adibawa and Etelelbou Forcados or Western Division - Forcados Yorke, Jones Creek, Olomoro, Otumara, Sapele, Egwa and Odidi	950,000
ExxonMobil (40%)	None	60%	Edop, Ubit, Oso, Unam and Asasa	500,000
ChevronTexaco (40%)	None	60%	Meren, Okan, Benin River, Delta/Delta South, Inda, Meji and Robertkiri Funiwa, Middleton, North Apoi, Pennington and Sengana	485,000
Agip (20%)	Philips (20%)	60%	Obama, Obiafu, M'Bede, Abgara and Oshi	150,000
TotalFinaElf (40%)	None	60%	Obagi, Aghigo, Okpoko, Upomami, Afia and Obodo-jatumi	150,000

Source: US Government, Energy Information Administration, 2016.

However, the rest of the projects in Nigeria are managed through production-sharing contracts (PSCs) with International Oil Corporations (IOCs). The production-sharing contracts area type of

fiscal regime governing the operation of deep-water projects and contains more attractive terms than the joint arrangement. Though, the Nigerian National Petroleum Corporation (NNPC) was created in 1977 to oversee the regulation of the Big - Five (Shell, ExxonMobil, ChevronTexaco, Agip, and TotalFinaElf), with secondary responsibilities for upstream and downstream development (EIA, 2016).

2.6 Theoretical Framework

The theoretical framework of this research paper will present the foundation from which the knowledge is constructed for this research. It will serve as the structural support for the study, the problem statement, the significance of the research paper, the purpose of the research paper and finally, the research question. As the history of oil exploitation or natural resources has been studied to have consequences on the environment, the theoretical framework will provide a grounding base for the literature review and the method and analysis.

2.7 The Theory of Environmental Justice

Poor and vulnerable communities suffer from various environmental injustice, often unable to fight back and reverse these trends which excludes them from that the society, and Mohai and Saha (2015) noted that the calls for environmental justice are essentially calls for equitable governance in the region. Mehta et al., (2014) argues that the discussion of social justice in the last decade have been pushed beyond the distributive paradigm into questions of recognition, difference, political participation and good governance. However, here this research paper attempts an application of an expanded notion of social justice to the examination of environmental and ecological justice in the Niger Delta region of Nigeria where gas flaring has posed an environmental challenge for the poor communities living near the oil fields. Sobrasuaipiri (2016) describes the environmental situation in Niger Delta, as Nigerian “Environmental Apocalypse”. The distributional issues plaguing the oil-rich region was labeled “Resource Curse” - what Schlosberg (2013) called the distribution of environmental good and

bad. An outcome that has impacted negatively on the oil producing communities in the Niger Delta region, where the people have had to deal with the environmental pollutions, lack of governance and the resources extracted is taken to develop other parts of the country to the detriment of the region (Sobrasuaipiri, 2016).

The theory of environmental justice which emphasizes on activities of oil of corporation to the environmental, especially for developing countries uses the expanded discourse of social justice that includes social recognition and participation as well as distributional issues in their broad demands. Schlosberg (2013) argued that the discursive shift in identifying issues of recognition and participation as issues of justice might be a way of bringing together the more human-based and nature-focused movements for environmental and ecological justice. I will argue that environmental degradation due to gas flaring generates further poverty in the Niger Delta region by the exhaustion of natural resources and creates prejudice to the exercise of basic rights (UNDP, 2014). However, as critical ecosystem functions and resource security decline in the region, it is the poor who bear little responsibility but who suffer the most in many cases, with impacts on lives and livelihood. Martin et al., (2013) suggested that advocates for environmental justice in the Niger Delta region should focus wisely on the general concepts of equality, rather than endangering the content of justice, equity or fairness.

However, Schlosberg (2013) emphasized that one of the important approaches in environmental justice theory is the refining of the understanding of the various mechanism and processes of environmental injustice. Environmental justice as an organizing frame has been applied in various issues of gas flaring and environmental degradation, but also in the analyses of transportation, energy development and jobs, water quality and distribution in the Niger Delta movement (UNDP, 2014). The concept of environmental justice, however, goes beyond sociocultural impacts to the interactions between social and environmental communities. But Mehta et al., (2014) argued that a capability approach to justice is an essential tool for addressing the relationship between environment and human needs and more importantly, the functioning of

ecosystems themselves. He emphasized that the approach can be an important concept to environmental and climate justice in the Niger Delta by bringing recognition to the functioning of these systems and to those communities who live within and depend on them (Mehta et al., 2014).

The lack of governance defiles the potential functioning of ecological support systems, which results to injustice not only to human beings but to all non-humans that depend on the integrity of the system for their own functioning (Schlosberg, 2013). With the movement of environmental justice, I will argue that the approach is one of the key frames of climate justice ideals, but also frames how the fact and experience of injustice are constructed. But Sobrasuaipiri (2016) argued that the approach should focus more on local experience and the increasing vulnerability to climate change, and the instability of housing and infrastructure. The discourse emphasized that environmental injustice was about social injustice that is linked to lack of governance and oil refineries activities to the disadvantage of poor and minority communities in the Niger Delta. In other words, the discourse of environmental and climate justice has become more important in the understanding of the way that environmental conditions provide for individual and community needs and functioning (UNDP, 2014). But Walker (2009) critiqued environmental justice research has been insufficient and inadequate to the tasks of revealing inequalities and understanding the processes through these produced or reproduced. Schlosberg (2013), however, argued that the approach has offered a broad framework with which we can understand the array of demands of environmental justice movements.

2.8 The Natural Step Theory of Sustainability

The Natural Step theory will play an important role in orienting both the public and corporate decision-makers towards socio-ecological sustainability due to the decreasing ecosystem quality and increased risk of tipping the biosphere in the Niger Delta. Upham (2000) stressed that the core principles of the theory are intended as a scientifically defensible and minimal representation of the requirements of sustainability. The theory will provide a robust definition of

sustainability, and to enable a vision to be developed of a sustainable governance in the Niger Delta and gives a planning process to do it (Antonio, 2009). Therefore, the natural step theory emphasizes the importance of good governance among the actors in gas flaring and the commitments to making the changes necessary for a transition towards sustainability. Broman and Karl-Henrik (2017) argued in this case that the actors in the Niger Delta have to be involved in visioning, analysis, community building, strategizing, and action planning along the way. They emphasized that through this process of collaborating together that assumptions are surfaced and challenged, and ownership over the process and outcomes is achieved.

Broman and Karl-Henrik (2017) noted that due to the gas flaring challenges in the Niger Delta, the theory will provide the necessary approach in reduce the negative impacts on ecological and social systems in general and also strengthening the oil corporations in moving strategically towards sustainability. This approach will systematically move the oil companies in the region towards sustainability which can easily be justified on the grounds of improved competitiveness by integrating business development with sustainability (Upham, 2000). However, Upham (2000) also criticizes the theory for deliberately avoiding judgment damage thresholds which are considered uncertain in the approach because uncertainty provides the potential for disagreement. He emphasized on this point because the objective of the theory assumes a statement of sustainability conditions on which all can agree. Despite the critiques of the theory, Broman and Karl-Henrik (2017) argued that the principles of the natural step theory can serve as a guide in the Niger Delta, enabling oil companies and the communities in the region to back cast with confidence from a future sustainability perspective. They emphasized that the natural step's approach will focus on the causes of environmental and social problems rather than reacting to the effects of them in the Niger Delta region.

Broman and Karl-Henrik (2017) emphasized that the natural step approach uses the metaphor of a funnel to illustrate the economic, social and environmental impact that will inevitably affect the society as ecological and social systems continue to diminish due to gas flaring and population grows. The declining potential is as a result of the current basic design and mode of operation of

society, especially in the Niger Delta region where basic sustainability principles are been violated. Upham (2000) noted that the funnel metaphor of the approach facilitates the understanding of the sustainability challenges and the self-benefit of competent proactivity, and the methods for creative co-creation of strategic transitions towards sustainability.

2.9 Social Perspective of Sustainability: Dearth Theory

The theory of social sustainability, in this case, I will focus on the actualization of empowerment, equity, accessibility, participation, sharing, cultural identity and institutional stability among the oil producing communities in the Niger Delta. These seek to preserve the environment through economic growth that is constrained by the requirements of social equity that will alleviate poverty in these oil producing communities. Eizenberg and Jabareen (2017) emphasized that human livelihoods are an integral part of accomplishing ecological goals and the importance of diversity as the constitutive process ensuring social sustainability. By definition, this approach will give rise to descriptive-positive models of development and the historical realities of developing countries. But for Widok (2009), social sustainability can be a way to achieve the protection, promotion, and preservation of health and safety, intra- and intergenerational equality among many others.

In this context, Widok (2009) argued that the fundamental function of social sustainability theory is to create the connection between social conditions and environmental decay, and also understand its impact on non-financial capital. Meanwhile, there is a different opinion in development theory regarding environmental sustainability as a prerequisite of economic growth and poverty alleviation. Dempsey et al., (2011) stressed that social sustainability is a life-enhancing condition within communities in the Niger Delta, and a process within which the communities can achieve the condition. However, economic growth and poverty alleviation are needed before environmental sustainability can be actualized in the oil producing communities in the Niger Delta. In contrast to this view, Eizenberg and Jabareen (2017) emphasizes the importance of education, good governance, and training as well as inter- and intra-generational

social justice, social inclusion, and active community organizations in helping cities and regions become adaptive learning systems aimed at developing sustainable communities.

In order to achieve these, an enabling environment must be created in the region that optimizes good governance on resource use, prioritizes resource allocation, creates employment and foster equitable resource distribution. As Obi and Rusted (2011) emphasized that employment opportunities for the host communities in the oil and gas industry can contribute to conflict prevention and management, through the improvement of their socio-economic conditions. Broman and Karl-Henrik (2017), however, discusses that even though the revenue from petroleum is important in the development discourse, adequate attention should be given to the continuing loss of livelihoods as a result of reckless operational practices of the oil companies and the lack of good governance by government in the Niger Delta. According to Eizenberg and Jabareen (2017), critics argue that sustainability is faced with the new realism and the debate has lost momentum, but public participation in planning have positive results. They noted that improved social cohesion and the development of social networks have allowed people to discuss problems and solutions together and became acquainted with each other (Eizenberg and Jabareen, 2017).

2.10 Environmental Perspective of Sustainability

According to Tost et al. (2018), environmental sustainability involves ecosystem integrity, carrying capacity and biodiversity. These approaches of environmental sustainability emphasized that economic, social and environmental sustainability must be integrated and interlinked, especially in the case of oil exploitation in the Niger Delta region of Nigeria and other developing countries. As Lindsey (2011) discusses that integrating and interlinking economic, social and environmental sustainability fosters positive synergies and encourages sustainable development to flourish as pollution never created eliminated the need for expensive investments in waste management or cleanup. In this view, environmental sustainability requires maintenance of natural capital as a provider of economic inputs and outs. Lindsey (2011) emphasized,

however, that even though the paths needed by each country to approach sustainability differs, but they must follow the same input and output rules to provide a consistent framework for human effectiveness in achieving sustainability.

For the Niger Delta region to be environmentally sustainable, Lindsey (2011) and Tost et al. (2018) recognized that the resources must be kept within regeneration rates and the emission from gas flaring must be controlled to a minimum limit, not to exceed the capacity of the environment to assimilate them without any damage. Lindsey (2011) noted that reducing the wastefulness gas flaring in the Niger Delta through more efficient utilization of natural capital has to be at the core of any sustainability initiative in the region. However, the approach of protecting natural systems does not only implies achieving economic vitality and social justice but a necessary component of an entire system for achieving economic, social and environmental sustainability in the region. James (2014) argued against this viewpoint when he suggested that environmental sustainability does not permit economic growth, but much less sustained economic growth. He went further to emphasize that the priority for development should be focused on human well-being, but argued that for environmental sustainability, the undamaged maintenance of human support system is fundamentally important (James, 2014).

2.11 Economic Perspective of Sustainability

The economic discourse of sustainability focuses on the allocation of resources, the level of sustained growth and consumption, and the assumption that natural resources are not unlimited. Choi and Ng (2011) argues that the economic sustainability will ensure that there is a sustainable skilled workforce and a productive and healthy community in which to continue to do business. This approach will generate economic growth that will trickle down to the poor in the region through employment and benefits that provides social payment, but (Harris, 2003) suggested from the viewpoint of neo-classical economic theory as a maximization of welfare over time. He also suggested that economic growth will bring about the technological capacity to replenish natural resources that are destroyed during production process. Choi and Ng (2011) stressed that

this approach has strained the natural resource base as the scale of the economic system grows, but Morelli (2011) noted that economic sustainability in the Niger Delta should involve analysis to minimize the social costs of meeting standards for protecting environmental assets in the region.

However, when we consider environmental issues such as the atmospheric buildup of greenhouse gases in oil producing communities where the most damaging impact of gas flaring are felt over decades, such situations creates a strong bias against sustainability. Harris (2003) discusses that to achieve intergenerational equity in such communities as the Niger Delta region, there should be sustainability rule regarding resource use and environmental impacts. Lindsey (2011) emphasized that the economic sustainability approach restrains resource use to ensure that natural capital is sustainable. Emas (2015) went further to explain that the capacity for innovation among the oil facility in the Niger Delta brings competitive advantage, and strict regulations on the environment can enhance competitiveness.

CHAPTER 3: Methodology

3.1 Introduction

This chapter will present the methodology of the thesis that is related to how data is being gathered and analyzed. As a way to review the existing literature on gas flaring in Nigeria, governance and sustainability in the region. This research paper is carried out as a qualitative literature review that applied secondary data as the empirical data sources. The methodology aims at linking theoretical framework and empirical analysis in a proper way, and the research design and method of data collection is presented.

3.2 Research Design

The research design will serve as a platform for the generation of relevant information from collected data sources. As a way to review gas flaring in Nigeria and to analyse the challenges of governance on the issue of gas flaring and the approach to sustainability, the study is carried out as a qualitative literature review that applied secondary data as the empirical sources. The empirical materials are based on previous evaluations on the practice of gas flaring in the process of oil extractions, and the materials used for the research are from academic books and articles, reports from organizations on the activities of oil extracting companies.

3.3 Qualitative Method

This qualitative technique was employed in case of subjective measurement. The issues of gas flaring and the challenges of governance in the Niger Delta and the approach to sustainability have many dimensions that are qualitative in nature which needs subjective evaluation.

Therefore, qualitative method provides a means of assessing unquantifiable facts about gas flaring, challenges of governance and sustainability approach in the Niger Delta (Ezzy, 2013).

This method was also used because of data that are non-numeric in nature and the arguments are based on the interpretivism tradition which is mostly applied to social science, and it saves time and labor. This method was chosen because qualitative research tends to view social life in terms of processes, which is applicable to the fundamental impact of gas flaring, and the evidence often conveys a strong sense of change and flux (Bryman, 2008). Thus, the emphasis on process in the qualitative method can be seen in the use of different approaches for data collection and it allows this research paper to share in the understandings and perceptions of others. As a result of this, qualitative research method tends to be a strategy that tries not to delimit areas of inquiries and have a fairly general, rather than specific research questions (Ezzy, 2013). Although, Bryman (2008), argues that qualitative research method is criticized for relying too much on the significance and importance of the research which is often viewed as unsystematic.

The qualitative research method was chosen for this research paper because of their subjective significance and the details provide an account of the context within people's behavior takes place (Ezzy, 2013). The emphasis on context in qualitative analysis demonstrates how the practice of gas flaring make little sense unless we understand how the society views the role of governance challenges in the Niger Delta region. Bryman (2008), discussed that the reasons for the emphasis on these descriptive details are that, it provides the mapping of context in terms of how behavior is understood. This research paper also preferred qualitative method because it emphasizes the preference for treating theory which emerges out of the collection and analysis of data (Ezzy, 2013).

3.4 Content Analysis

In this research paper, I used content analysis approach to achieve an interpretative synthesis of qualitative analysis of documents and other secondary sources that seeks to quantify content in terms of predetermined categories and in a systemic manner. This approach provides a means for discovering the practical understandings of gas flaring and how it has impacted the communities living in the Niger Delta region of Nigeria (White & Marsh, 2006). A further advantage for this approach is that it provided a means by which I was able to study the processes of gas flaring and the contributing factors that have occur over long periods of time in the Niger Delta region of Nigeria. Bryman (2008), also stressed that the approach is very flexible and focuses on analyzing documents and texts rather than generating data. The approach suited this research because of its objectivity that presents transparency and reduces biases in the process of analyzing documents and texts on gas flaring, the findings on role of governance and sustainability in the Niger Delta region of Nigeria. I will also emphasize that the quality of being systematic means that the application of the analysis is done in a consistent manner to reduce the biases of the research purpose. Bryman (2008) criticizes the approach because it can only be as good as the original documents. While White and Marsh (2006), argued that the approach employs a wide range of analytical techniques to generate findings and put them into context.

This review is aimed at reviewing existing literature on gas flaring to determine the role of governance on the issue of conflicts, corruption, lack of regulation and infrastructure in the region, and how it has contributed to the challenges of gas flaring and shaped the process of development in the Niger Delta. As Ajugwo (2013), argues that the difficulties faced by the oil producing communities from gas flares are a sufficient justification to end the practice in Nigeria. The research paper reviewed several kinds of literature that relate to gas flaring, activities of the oil corporations and local communities in the Niger Delta. The synthesis that is presented in this research paper is based on the systemic literature review that applied content analysis and meta-ethnography which was done by me for the general review on gas flaring in Nigeria (White & Marsh, 2006). The research paper also reviewed other existing evidence on the practice of gas flaring in Nigeria in Oghifo (2011), for general review on the impact of gas flaring, Osuoka (2007) for the review on oil and gas revenues, and development challenges for the Niger Delta and Nigeria and country analysis brief for Nigeria 2016, which is done by U.S. Energy Information Administration. These have been complemented by comprehensive analysis of other literature on oil and gas industry reports that includes Shell corporations' reports 2016, and Ukala (2010).

3.5 Systemic Analysis

The aim of this approach involves reviewing existing literature and the main ideas and research relating to this topic. The paper used systemic analysis to review the content of existing literature, and this approach emerged as a focus of interest for this research paper for many reasons. The systemic approach suggested that the reviews of the literature will be a transparent process and reflect the biases of the research (Ezzy, 2013). The systemic approach was used to minimizing the bias of this research paper through comprehensive literature searches of 'published and unpublished studies' as stated by (Bryman, 2008, p. 85) and the approach also provided a general assessment for the research, procedures, and conclusions. The systemic review approach corresponds to the aim of my study, and I intend to use the systematic analysis to draw on reviews that summarize the balance of the evidence on the impact of gas flaring on

the oil producing communities in the Niger Delta. I also looked at the challenges of governance and how it has contributed to the issue of gas flaring and instability in the Niger Delta region of Nigeria. As Bryman (2008), “suggest that the systemic review approach provides a reliable foundation on how to design research paper because it enables a more comprehensive understanding of the subject”.

The identified evidence was then interpreted to the relevant views of the summarizing findings on gas flaring in Nigeria, and the challenges of governance and the application of sustainability in the context of the development process in the Niger Delta. Using a systemic approach allows for transparency, in other words, the grounds on which the studies were selected and how they were analyzed are clearly articulated and are potentially replicable (Malterud, 2012). However, the approach has been criticized because of its hostility on anything that cannot be seen, and it degrades the status of reading, interpreting and thinking as activities that are essential on how analysis and arguments are developed. Another criticism of the approach is based on the bureaucratization of the process of reviewing the literature, which focused more on technical aspects of how it is done, than the analytical interpretations generated by the approach (Bryman, 2008, p. 87). In spite in this view, I will emphasized that the approach gave this research paper the opportunity to introduce alternative notions and to create a system for information resource that balances the findings in the study (Tsvetkov, 2014).

3.5 Meta-Ethnography

The meta-ethnography approach is a method that is used to achieve an interpretative synthesis of qualitative research analysis and other secondary sources. Bryman (2008) emphasizes that the approach provides a counterpart to a meta-analysis that is used in quantitative research. This research paper used the approach to synthesize and analyze findings about gas flaring and its impact in the Niger Delta region of Nigeria, which has been previously studied. This research paper also chose this method to simplify the problem that qualitative method may find in systematic review approach. The approach focused mainly on translations of qualitative studies

into one another, and not to develop overarching generalizations. Bryman (2008) argues that the idea involves the process of translating existing findings into ones' own view, by creating a reading of another people's reading about a subject. The meta-ethnography involves a series of phases that overlap and repeat as the synthesis progresses. The approach becomes crucial for this research paper because it focused on the interpretations and explanations offered by studies that are included, rather than on the data that these studies are based on. This method is crucial for this study because it determines what accounts is credible for the study.

3.6 Limitation of the Study

Because the research paper applied secondary analysis as a data source, it entails that the analysis of data on gas flaring in Nigeria may not have key variables because the data was collected by others for their own purpose. However, the inability to examine the significance or the theoretical importance of the variables can be frustrating, and Bryman (2008) emphasized that such can arise when the theoretical approach that has emerged since the collection of the data suggests its importance. Because the data on gas flaring in Nigeria was collected by others, it takes a longer period of familiarization and the ways in which the variables are used in their analysis and another aspect of the organization of the data. Bryman (2008) also noted that the sheer volume of data can present problems, which was the case in the management of information and period of acclimatization of data regarding gas flaring in Nigeria and the relationship to poor governance. Another problem was the levels of data collected, and the decision on which level of analysis is best employed in the thesis analysis, should it be on a national or regional level? Even though the research paper focused on the regional level, data collections was difficult considering the diversity of data sources relating to gas flaring, governance and sustainability in the Niger Delta region.

The secondary analysis approach of the research paper offered data of far high quality than I could have collected, but more caution was showed towards the interpretation of the numerous data for connection with the quality of data. Because the study has provided significant

information on the issues of gas flaring and the contribution of poor governance towards the issue of conflict, corruption, lack of regulatory and infrastructural mechanisms, and the necessary approach towards sustainability in order to address these practices. One obvious weakness was that lack awareness on the side of stakeholders in the region, and the research paper was unable to address the issue. While the study did not address the issues of tribalism on the side of the communities living in the Niger Delta, it provided a valuable source of high-quality data for the Nigerian government to tackle the challenges of gas flaring and poor governance.

3.7 Ethical Considerations

In this research paper, an appropriate research guideline and research ethics were considered very important. However, the ethical aspect of the literature and the confidentiality of the secondary sources were considered proper for the true review of the literature. The research paper also considered the cultural ethics of the oil producing communities in the Niger Delta. This research paper have identified the lack of accountability as a major problem that have encouraged unethical behavior by the stakeholders in the region. I also considered the ethical aspect of the Nigerian government and the oil corporations that are involved in the activities in the Niger Delta. To clear any misconception about the research paper, ethical integrity and research quality was considered in order assess the quality of the qualitative research. The ethical use of secondary data from academic articles, Shell sustainability reports, U.S Energy Information Administration, and other sources will be acknowledged with proper referencing.

3.8 Data Evaluation

To evaluate the quality of the research, the paper applied reliability and validity as a criterion to assess the quality of the research.

3.8.1 Reliability

Reliability approach in qualitative research is commonly used in relation to the question of whether the measures that are taken for the concepts are consistent, and if the results of a study can be reproduced under similar methodology (Bryman, 2008). This reliability approach of the study helped in generating understanding on the quality of the concepts used in the qualitative study. Bryman (2008) emphasized that the meaning of reliability applies to multiple-indicator measures and the possibility in which the indicators do not relate to the same thing or lack of coherence. The consistency of data was achieved through the steps of the research and verified by the examination of such items as raw data, data reduction products, and process note. To ensure that reliability in this qualitative research method, the examination of trustworthiness was crucial, and the redefinition was required in order to fit the realities of the research.

3.8.2 Validity

The validity of this research paper is concerned with the integrity of the conclusion that is generated from this research in general. The validity of the research become relevant because if the measurement of concepts is unstable and unreliable, the research paper will not provide a valid measurement of the concept in question. Bryman (2008) emphasized that for this reason, the assessment of measurement validity presupposes that a measure is reliable. The alternative ways of assessing the validity of qualitative research analysis, however, consist of credibility, transferability, dependability, and confirmability. Bryman (2008) argues that the relevance is from the vantage point of the importance of the topic within its substantive field or the contribution this thesis paper will make to the literature on the field of gas flaring, governance and sustainability in Nigeria.

CHAPTER 4: ANALYSIS AND DISCUSSION OF THE FINDINGS

4.1 Introduction

Poor governance has been identified for the dysfunctional state of the Niger Delta which have affected the effort to reduce gas flaring in the region. The results from the region shows that inhabitants of the Niger Delta region have suffered untold hardship because of poor governance which has resulted in corruption, conflicts, lack of regulatory and infrastructure mechanism, illegal exploration and exploitation of oil and gas in the region (Oviasuyi, Uwadiae, 2010). As Umukoro (2012) also stressed that lack of governance encourage unequal access to environmental resources and the failure to ensure effective enforcement of laws also creates unequal exposure to the negative impacts of the usage of governmental resources such as the effects of oil spillage and gas flaring. The impact of poor governance has obvious consequences in the region, and it has contributed to gas flaring which comes from oil exploration and exploitation. The table below illustrates the challenges faced by the residents in the Niger Delta region.

Table 3. Shows what people of the Niger Delta dislike most about their region

Priority	% of respondents identifying it as most dislike
Poor leadership (governance)	16.7
Poor governance	16.1
Corruption	14.4
Environmental degradation	14.3
Unemployment	14.0
Low education	6.7
Insecurity	5.6
Lack of infrastructure	4.4
High cost of living	4.4

Source: Francis, Sardesai (2008)

Despite the contribution of the region to Nigeria's economic growth, the Niger Delta is marginalized from Nigeria's national development. The structure of the federal government and their actions towards environmental inequalities cause by gas flaring, and the illegal activities of oil companies have generated social conditions that have allow resentment and violence in the region. Francis and Sardesai (2008), emphasized that many of the environmental inequalities affecting the region directly contribute to the anger among the oil producing communities, which has resulted to conflicts and militancy in the Niger Delta. Table 3. illustrates the relative sources of disconnect among the oil producing communities which was identified in a 2005 survey.

As Oviasuyi and Uwadiae (2010) emphasized that poor governance has created significant disconnect between the wealth the region generates for the country and the transnational oil companies extracting oil from the region, and the region's human development progress. That is, the extreme impact of gas flaring, poverty, low life expectancy and insecurity is still an issue in the region because of poor governance and lack of development. Umukoro (2012) also noted that poor governance has prevented government efforts in ending gas flaring in the region and the lack of steps towards the implementing sustainability policies. The challenges of poor governance also hinder environmental justice in the region which advocates for equality, fairness and justice in the distribution of national resources. However, most of the progress made in the efforts to reduce gas flaring is still limited due to the security risk in the Niger Delta that made it difficult for international oil corporations to construct infrastructure that would support the commercialization of natural gas and create a sustainable environment for the communities living in the Niger Delta. The next paragraphs will explain in detail how lack of governance have created social challenges (corruption, conflict and lack of regulatory and infrastructural mechanism) in the region which has contributed to gas flaring in the Niger Delta.

4.2 Corruption in the Niger Delta

According to Philip and Moses (2013), corruption is the greatest hindrance to economic and social development in the Niger Delta region. In reality to gas flaring in Nigeria, the endemic corruption and political instability within the government have resulted in the effective non-compliance to the laws that banned gas flaring by the big oil companies (Omeje, 2013). As Adeyeri (2013) emphasized that corruption and political instability are common practice in Nigeria, especially in the Niger Delta region which undermines the peaceful co-existence and the actualization of sustainable development for the Niger Delta communities. The impact of corruption in education among the oil producing communities goes beyond adding up immediate financial costs, but UNDP (2004) emphasized that students from this region may graduate with poor skills and contribute less to the economy and in public sectors. Golwa (2013) argued that the shared perception in the country is that the traits of corruption has increased with every passing day and its increasing entrenchment has continued to defy institutional countermeasures. Thereby lowering human development among the communities in the region, and the practice also undermines the process of good governance, political stability, fundamentally affects public policy, leads to the misappropriation of resources and hurts both private and public sector development (Donwa, et al., 2015).

The result of corruption in the region is that social amenities like schools, health clinics, roads, police forces and other services that the government provide are in worst situation or not functioning at all. According to Philip and Moses (2013), corruption has contributed to the challenges of gas flaring which have affected the communities in the Niger Delta. Because of the challenges of gas flaring and corruption in the region, infant mortality rates have been observed to increase to about three times higher than the national average and literacy rates about 25 percent lower than the national average among the communities in the region (Philip and Moses, 2013). The impact of corruption in the region has depleted the national health budgets, reducing the capacity of the government to provide essential medical assistance to those communities affected by the health challenges of gas flaring and it has increased child mortality rates, while

increasing the risk of unsafe products on the markets. Meanwhile, Annandale et al., (2004) suggested the sustainability approach which places equal importance on environmental, social and economic consideration in decision-making to deal with the challenges of corruption and gas flaring in the Niger Delta. However, the approach will also focus on the promotion of comprehensive analysis of alternatives in the process of developing policies, plans or programs rather than evaluating them. The sustainability approach to these challenges will undoubtedly provide objectives for decision-making process that will trickle down to the lowest level of decision-making in the region (Annandale et al., 2004).

Table 4. illustrates the corruption index of Nigeria. The table reveals that Nigeria is highly ranked among the highest corrupt countries in the world.

Table 4. Transparency International's Corruption Perceptions (CPI) for Nigeria 1996-2007

	CPI Score (max=10)	Ranking	No. of countries ranked	No. of countries ranking worse
1996	0.69	54	54	0
1997	1.76	52	52	0
1998	1.9	81	85	4
1999	1.6	98	99	1
2000	1.2	90	90	0
2001	1.0	90	91	1
2002	1.6	101	102	1
2003	1.4	132	133	1
2004	1.6	144	146	2
2005	1.9	152	159	5
2006	2.2	142	163	13
2007	2.2	147	179	31

Source: Transparency International reports, 1996-2007.

According to Francis and Sardesai (2008), oil revenue has been central to the economy of Nigeria, but the political economy of its distribution has contributed to the shape, style and quality of governance in the country as well as the levels of corruption. Corruption has contributed to the poor distribution of potential benefits from the oil and gas industries in the region, as large portions of the revenues have been looted or mismanaged by public office holders at all levels of government responsible for the utilization of oil and natural gas. The Economic and Financial Crimes Commission (EFCC) of Nigeria has estimated that corruption and waste between 1960 to 1999 in the country has led to 380 billion dollars loss in oil and gas revenues (Osuoka, 2007). This exacerbates the condition of social inequality and social exclusion of a large segment of the population in the region. According to Adeyeri (2013), the genesis of the problem is in the inclement political and social conditions in the country. But UNDP (2014) emphasized that the approach of environmental justice in the Niger Delta will provide a mechanism of accountability for the protection of rights and the prevention and punishment of gas flaring practices by corporations from rising pollution and degradation of ecosystem services, and from inequitable access to and benefits from the use of natural assets and extractive resources.

Though, Osuoka (2007) argued that poor governance in the Niger Delta is also attributed to the level of corruption in which political leaders sustain themselves in power by purchasing support through the distribution of state resources. This unhealthy struggle for political power within the political class and the military hierarchy is indicative of an unstable political system which have created reputational issues, poverty, political and legal hazards among the communities in the region. Katsouris and Sayne (2013) emphasized that corruption helps to compromise parts of the legitimate oil business and destabilized the Niger delta. The military involvement in politics have contributed to the corruption and instability in the region and subsequently brings down the economy to its knees. Adeyeri (2013) noted that the interpenetration of internal and external factors especially geo-political and economic interests of the international community has played a significant role in undermining the process and institutions that nurture democracy for the sense of stability for development in Nigeria. Although it is difficult to predict the outcome for

Nigeria, it is possible to identify the factors facing gas flaring which is a direct indication of corruption and political instability. In this case, Upham (2000) stressed that the natural steps of sustainability will provide educational approach to the challenges of corruption and the capability of facilitating organizational culture change towards accountability and sustainability in the region.

However, corruption in a sector as rich and powerful as petroleum can have negative consequences not only on the government but also for other sectors of the economy. Donwa et al., (2015) stressed that oil industry in Nigeria has been affected by political and economic conflict largely due to poor governance that has existed during military regimes, civil rule and complicity of multinational corporations since the discovery of oil in the Niger Delta by Royal Dutch Shell in 1956. In regard to these, political corruption is endemic in the Niger Delta, mainly oil-producing states - Bayelsa, Rivers and Delta which have the highest income budget per capita in Nigeria. As Katsouris and Sayne (2013) argued that much of the money (income budgets) has been stolen or transferred to a foreign bank accounts, which could top the national budgets of smaller African countries. In spite of the challenges of poor governance and gas flaring in the Niger Delta, accountability-driven movements and actions by national governments and judiciaries, civil society and other stakeholders in the region are catalyzing legal and policy responses for the goals of environmental justice. UNDP (2014) emphasized on the need for understanding the links between environmental sustainability and equity is critical in the Niger Delta if we are to expand human freedoms for current and future generations in the region.

The successive regime changes by the military facilitated the wanton looting of public treasury by subduing the rule of law and decapitated public institutions and free speech which created secret and opaque culture in the running of government business. These conditions have resulted in grassroots unrest among the communities and opened doors for organized crime. As a result, total insecurity, poor economic management, abuse of human rights, ethnic conflict and capital flight became everyday practice in the Niger Delta, preventing the effort to reduce gas flaring. Katsouri and Sayne (2013), emphasized that because Nigeria offers an enabling environment for

large-scale crude oil theft, corruption and fraud becomes rampant in the country's oil and gas sector. Therefore, the corruption that exist in Nigeria's oil and gas sector is based on a complex system of networks that consists of domestic, regional, and international actors. As EIA (2016) noted: "that various people are involved in the practice - local youth and communities, professionals such as corrupt bank managers, and high-level government officials and security force personals". However, UNDP (2014) argued that environmental justice is one means to combat the challenges of corruption and gas flaring in the region by calling for the legal and social empowerment of the poor communities, and freedom from the inequities that result from entrenched and unsustainable forms of resource use.

Donwa et al., (2015) noted that corruption is the biggest challenge facing Nigeria and has a bane to good governance, which has led to corrosive and perpetual poverty among the Niger Delta communities. But Fagbadebo (2007) argued that other factors like decaying public utilities and infrastructures, social tensions and political turmoil, and premonition of inevitable drive into conflict and violence contribute to the challenges of reducing gas flaring in the region. But Schlosberg (2011) suggested that the approach of environmental justice will focus on the inequities and provides protection to the distribution of environmental goods as well as bad in the region. The subsidence of a culture of public accountability and widespread of corruption among public office holders have created fierce competition for political offices that deploys violent mechanism to deter opponents. The use of state apparatus (the police) and armed gangs by politicians became a frequent occurrence in the region, and with it comes the harassment and abuse of rights of citizens in the region.

Osuoka (2007) discusses that legislators, and even unelected political office holders has demonstrated a lack of political will in providing the dividends of democracy in the form of improved infrastructure and social services. And this effort has de-legitimized the electoral system as an avenue for political change, making it possible for groups to emerge from communities and employ extra-constitutional means to make demands of government. In the Niger Delta, such groups now include large number of urban and rural gangs and militia which

target oil and gas industry regularly, while making political demands or seeking for cash payments (Osuoka, 2007). In spite of the challenges of corruption and gas flaring in the region, Morelli (2011) suggested that the sustainability approach to the challenges will provide the development that meets the needs of the communities without compromising the ability of future generations to achieve sustainable development of their own in the region.

4.2.1 The Halliburton Corruption Scandal in Nigeria

The corruption case was centered on Halliburton and its subsidiary engineering firm KBR, which admitted bribing officials. International Consortium of Investigative Journalists (2015) emphasized in their article that the Halliburton bribery scandal dates back to 1994, when the Nigeria government launched a plan to build a natural liquified gas project in Bonny Island. A network of secretive banks and offshore tax havens was created to transfer approximately 182 million dollars in bribes to Nigerian officials, in exchange for 6 billion dollars in engineering and construction of the Bonny Island natural liquified gas project for Halliburton's subsidiary company (ICIJ, 2015). The Bonny Island natural liquified gas project was in order to commercialized natural gas and reduce gas flaring in the region. Fagbadebo (2007) noted that this form of systemic corruption and low levels of transparency and accountability in the oil and gas industry in Nigeria have been the major source of development failure in the Niger Delta. But Broman and Karl-Henrik (2017) argued that the move towards sustainability, transparency and accountability in both multinational corporations and the government is the most effective way to ensure the accountable management of revenues by the extractive sector.

According to the ICIJ (2015), leaked records from HSBC reveal new details of the bribery payment and the role of the bank as a conduit for the bribes. The files obtained also reveals that the broker (Tesler) and high-ranking Nigerians officials not previously involved in the bribery scandal had ties together, raising concern on how Nigeria officials handled affair. Other Nigeria officials connected to the corruption scandal includes now-retired Major General Chris Garuba, who was chief of staff to former Military President Abdulsalami Abubakar, and it is alleged that

Abdulsalami Abubakar, who was the president then also received bribery payments, and as was Andrew Agom, who was a senior government official. In 2010 Nigeria Government indicted former U.S. Vice President Dick Cheney, who was the CEO of Halliburton at the time before he was elected but was later clear when Halliburton agreed a settlement of 35 million dollars (ICIJ, 2015).

4.3 Regulatory and Infrastructural Mechanisms in the Niger Delta

As Royar (2012) stressed that legislation may be a requirement in eliminating the process of gas flaring, but legislative laws alone will not solve the problem in the Niger Delta because of the lack of governance in the region. Omeje (2005) noted that because of poor governance, corporations can still obtain an exemption from the ban on gas flaring; however, the requirements for this special permit are unknown to the public, even though gas flaring is prohibited in Nigeria since 1984. This is because in the past decades, the government has tried to legislate the practice of gas flaring out of existence through the Petroleum Infrastructure Bill (PIB) that will ban the process. But Ismail and Umukoro (2012), emphasized that poor governance has created one of the unresolved issues relating to gas flaring and the development of markets for the un-flared gas in Nigeria, where collective efforts and accountable economic sustainability could make possible difference. The Petroleum Infrastructure Bill (PIB) which is widely supported and significant piece of legislation that covers the entire petroleum industry in Nigeria proves to be ineffective because of poor governance in the country. However, Royar (2012) emphasized that this legislative bill, which is still been debated, will not end gas flaring within Nigeria for many reasons. He argued that the bill will fail to end gas flaring due to loopholes in the bill, and the level of poor governance within the government.

However, regulatory uncertainty in Nigeria has resulted in fewer investments in new oil and natural gas projects in the region. Philip and Moses (2013) noted that the level of poor governance in the country discourages investment which creates high unemployment rates among the communities and widened the gap between the rich and the poor in the region.

Though, some progress has been achieved in reducing gas flaring in the Niger Delta in recent years. But EIA (2016) argued that the impediments to reduce gas flaring have been the level of poor governance and security situation in the Niger Delta, and the lack of funds from the partners has slowed down the progress of the projects to capture associated gas. Meanwhile, lack of infrastructure required to capture the natural gas produced during oil extraction in some of the oil fields in the region have led to a significant amount of natural gas to be flared. EIA (2016) stressed that many of the planned deep-water projects that would reduce gas flaring in the region have been repeatedly delayed or abandoned because of regulatory uncertainty due to poor governance, as a result, the international oil corporations have only sanctioned one of the eight planned deep-water projects as illustrated by the table 5 below.

Table 5. The planned natural gas projects in Nigeria

Project name	Operator	Plateau Natural gas production (MMcf/d)¹	Final investment decision?	Est. start
Sonam Field Development	Chevron	215	yes	2017
Forcados York Integrated Project ²	Shell	65	yes	2017
Southern Swamp Associated Gas ²	Shell	45	yes	2017
Gbaran-Ubie Phase Two Project ^A	Shell	800	yes	2017
Bonga Southwest and Aparo	Shell	15	no	2020+
Bonga North	Shell	60	no	2020+
Bosi	ExxonMobil	260	no	2020+
Uge	ExxonMobil	20	no	2020+

MMcf/d is million cubic feet per day

Source: U.S. Energy Information Administration based on reports from Chevron Corporation, ExxonMobil, and Royal Dutch Shell.

However, poor governance and ageing infrastructure in the region have contributed to more gas flaring and oil spills in the region, which as a result, contributes to the environmental damages that is evident in the Niger Delta. EIA (2016) argued that the gas flaring and oil spillages in the region have caused land, air and water pollution, which is affecting the surrounding villages by decreasing fish stocks and contaminating their water supplies and arable land. UNDP (2013), noted that poor governance also diverts investments in necessary infrastructure such as hospitals, clinics and medical facilities. Natural gas production is also affected by poor governance due to lack of investment in infrastructure to monetize the natural gas that is currently flared. However, Broman and Karl-Henrik (2017) suggested that sustainability approach to these challenges will reduce their negative impacts in the region and provide the commitments to making the changes necessary for a transition towards achievable development that will be sustainable in the region.

4.3.1 Lack of Liquefied Natural Gas Facility (LNG)

EIA (2016) emphasized that before 1999 all the gas produced was flared during oil extraction in the Niger Delta, which has been a common practice since the discovery of crude oil in the 1950s, largely because of lack of conversion technologies and low demand of natural gas made it unsustainable. In the case of natural gas and the reduction of gas flaring, the liquefied natural gas facility on Bonny Island is the only operating liquefied natural gas (LNG) in Nigeria (EIA, 2016). Other planned LNG projects are still in the early engineering phase and is several years behind the original schedule because of poor governance and lack of sustainable plan. However, the country has started to export the vast majority of its natural gas in the form of liquefied natural gas due to increased demand for the product.

According to the Oxford Business Group Report (2012) the country is a major producer and exporter but because of poor governance and lack of infrastructure, the country is not producing at its full potential and it's not utilizing the resource in the local energy supply. There is fewer pipelines to transfer the natural gas from oil fields, and fewer factories to buy it, meanwhile

many of the gas-powered plants are under-supplied and unable to function creating loss in revenue and causing more gas to be flared in the region (Oxford Business Group Report, 2012). Many of the proposed plans to construct Trans-Saharan Gas Pipeline (TSGP), that would carry natural gas from oil fields in Nigeria's Niger Delta region have attracted foreign investments. But insecurity along the entire pipeline route, increasing cost of the projects, and the uncertainty on the ongoing regulatory and political issues in Nigeria have continued to delay these projects (EIA, 2016). And as militants increased their attacks on oil and gas infrastructure in the Niger Delta region which have affected the production of oil and gas extraction.

4.4 Conflicts in the Niger Delta

In the Niger Delta, the impact of poor governance on conflict has created enduring challenges to stability, national security and national development in the Niger Delta since the independence of Nigeria in 1960. According to Golwa (2013), as poor governance becomes more endemic, deadly conflict has increased, not only in terms of number of conflict-related deaths in the region but also in its geographical spread. Meanwhile, the trade of small arms and light weapons has increase ethnic conflicts in the Niger delta, especially among the major oil communities. Okeke-Uzodike and Ojakorotu (2006), argued that Nigeria has been faced with series of domestic conflicts arising from corrupt policies of the government, and/or those of the foreign oil companies. The conflicts in the region have affected the effort to invest in new technologies in an effort to reduce gas flaring and other social amenities among the poor and vulnerable communities living in the Niger Delta.

However, these violent conflicts which have been triggered by high level of poor governance in the region have frequently forced people in the oil producing communities to flee their homes. Opukri and Ibaba (2008) noted that in September 2004, at least 8,000 people were displaced in several weeks of violence between local militia and security forces in Ewoama community, as well as by infighting between militia. The lack of transparency on oil revenues has also helped in creating ethnic and religious conflicts over revenue distribution, and environmental damages

caused by gas flaring and oil spillage in fragile region. Golwa (2013) argues that as a highly diverse low-income petrol-state, the Niger Delta region provides a perfect context for the complex interaction of poor governance and armed conflict. This has given rise to the militarization of the region by both sides involved in the conflicts which serves as a recipe for and a result of arms proliferation.

Obi and Rustad (2011) also emphasized that the militarization of the region showed how oil became a factor in the region's conflict, through the securitization of its extraction by the Nigeria government and its partners - the oil multinational corporations (MNCs). However, the region has produced the bulk of the national wealth but has been also marked by increased violence relating to the negative effects of oil extraction (gas flaring and oil spillage) and access to revenue derived from the sale of oil. As Obi and Rustad (2011) noted: "that since 2006, petro-violence has for strategic, economic and political reasons brought the Niger Delta region to the forefront of international energy and security concerns".

The Niger Delta conflict shows the historic, socio-economic and political context of conflict, and its fluid dynamics which consist of global forces that are implicated in and benefit from, oil extracted under conditions of structural violence and inequity. In these regard, Osuoka (2007), has noted: "that the increasing violence in the Niger Delta affects the social situation that is characterized by massive poverty and environmental degradation occasioned by the exploitation of crude oil and natural gas in the region, as corruption has prevented the communities of their potential benefits from the federal, state and local government revenues from oil and gas sales". These efforts and resulting frustration among the communities living in the Niger Delta have led the people to take up arms against the oil companies and the government. Osuoka (2007) argues the Niger Delta became a theatre of increasing militia attacks on oil platforms, oil pipelines and oil vessels, as he emphasized that lack of job creation and economic development in the region, has led to increased crude oil theft and other attacks on oil facilities.

Another source of violent conflict in the Niger Delta has to do with politics and nationalism, as Okeke-Uzodike and Ojaborotu (2006) argues that the hyper-nationalist tendency among ethnic groups (Ijaw ethnic group) have led to number of wars on their neighboring ethnic groups (Urhobos), over land ownership and other related issues. Creating a security concern in the region which led to some oil corporations pulling out of the country, and to oil workers union's unrest over security issues. Osuoka (2007) emphasized that in 2009 amnesty was declared by the government, with the agreement that the militant's hand over their weapons in exchange for cash payments and training opportunities. The implementation of amnesty in the Niger Delta, allowed oil companies to repair the oil facilities that were damaged in the conflicts. Instability and poor governance in the Niger Delta have also resulted in significant amounts of shut-in production at onshore and shallow offshore fields, forcing oil companies in most cases declare force majeure on oil shipments (EIA, 2016). As a result of the conflicts, Shell petroleum corporation has shut down many of its gas facilities (in Suko community) in the Niger Delta, which were sabotaged by local militant groups, to repair the damages to the gas pipeline.

4.4.1 The Conflict of Resource Control

In the case of the Niger Delta conflict, poor governance has contributed to poverty, marginalization and underemployment together with environmental issues, crime and the demands of oil revenue from the local communities have fueled a militant uprising that threatens oil production and the country's fragile democracy. In this regard, the concept of resource control became the bedrock of activities for various groups with different intents. Okeke-Uzodike and Ojaborotu (2006) discuss that the struggle of Ogoni people exemplifies the nature and dynamics of the conflicts as well as local resistance in the Niger Delta region. The struggle assumed phenomenal dimensions in the 1990s and demanded for political control, the right to control their economic resources for their own development, and the right to protect their environment and ecology from further degradation from gas flaring and oil spills (Okeke-Uzodike and Ojaborotu, 2006).

Obi and Rustad (2011) noted that gangs and other criminal groups (militants) have latched on to this rhetoric of resource control, to operate within the sense of insecurity in the region to engage in corruption and criminal activities for personal gratification. It can be argued that the struggle for resource control has a political dimension that has contributed to the violent conflicts in the region. Although the struggle of the Ogoni people started as an idea of environmental justice to create awareness on the concept of social justice and to achieve its main objective of Ogoni control of Ogoni resources, but the oil corporations and the Nigerian government responded with military repression. As Obi and Rustad (2011) emphasized that the shift in the agitation for resource control from elitist organizations to militant youths, has contributed to the increase in violent conflicts in the oil rich region of the Niger Delta. These issues among others have facilitated the increase in militancy and violence in the region. Therefore, the Niger Delta conflict has been as a result of not only environmental issues, but also corruption, political and nationalist agendas which has hindered many efforts to reduce gas flaring in the region (Okeke-Uzodike and Ojatorotu, 2006).

The Concept of Sustainability of Governance in the Niger Delta

As a result of poor governance in the region, conflicts, corruption and lack of regulatory and infrastructural mechanism have contributed to not just the challenges of gas flaring and solutions to tackle them but an unequal society in the region. Poor governance and deteriorating economic circumstances in the region as well as declining agricultural productivity produce a trend that accelerates conflict through unemployment and rising poverty. Therefore, the need for a more proactive role by federal, states, companies and communities in the process of development is aimed at balancing economic growth with environmental sustainability and social cohesion (Sharma and Khanna, 2014). This approach will involve corporate social responsibility, corporate sustainability and nationwide reforms on corporate governance to enhance responsible business operations and development in the region. Sharma and Khanna (2014) stated that by engaging communities in stakeholders dialogue, promoting core values, embedding sustainable development in related strategy and by evaluating sustainable performance, the region could

make sustainability a vital part of their governance. Considering the potential conflicts arising in the region, Rauschmayer et. al., (2013) emphasized that sustainability transition will require a fundamental change in the structures, cultures, and practices of the region for the system to become sustainable.

However, the calls for sustainable governance in the region have therefore not just demanded for different ways of taking decision, but also to represent more substantial demands for greater access to power and resources by those currently excluded in the Niger Delta region.

Rauschmayer et. al., (2013) argue that the ultimate goal of sustainable governance is to influence and empower the region in such a way that their communities shape sustainability in their own environments, thereby contribute to the desired transitions to sustainability. The approaches of sustainable governance are used in a normative manner to describe a move towards a sustainable process where the institutions of government and actors from civil society enter into a dialogue about the policy development process that will improve the lives of the communities living in the Niger Delta region. Evans et al., (2013) argue that this kind of sustainable governance will focus on improving democratic mechanisms for decision-making that will lead to calls for human equity and environmental justice, more effective environmental governance and greater environmental democracy. But Pinter et al., (2018) emphasized that the sustainable governance approach will be based on the triple bottom line concept that reflects on the environment and environmental concern, which placed equal importance on social and economic consideration in decision making in the Niger Delta region.

However, the understanding of sustainability in this notion is based on the recognition that the patterns and processes of development can be environmentally, socially and economically sustainable over time through good governance and collective actions. It also reveals the complex relationships that occur between a lack of infrastructure and environmental degradation as seen in the Niger Delta region, and Potter et al., (2008) noted that the unsustainable nature of the continued processes and patterns of economic development in the region affects the most vulnerable among the communities. The approaches of sustainability in this view is aimed at

maintaining environmental, social and economic advancement and progress of the oil corporations and the communities they operate in the Niger Delta. Emas (2015) also emphasized the importance of protecting the long-term value of the environment which will provide a framework for the integration of environmental policies and development strategies. The concern on health and environmental issues will revive country's economic and competitive outlook, which will generate new jobs and revive the political fortunes. Therefore, sustainable governance approach becomes a tool for institutional process to address both the economic and environmental implications of decisions made by stakeholders in the region (Pope et al., 2004).

Meanwhile, the theoretical concept of sustainability in the Niger Delta is increasingly debated as a useful concept by itself, but it was used to analyze the impact of gas flaring on the ecological, economic and social aspect of the communities in the Niger Delta. However, when it comes to sustainable governance in the region, Fritsch and Newig (2012) noted that promoting participatory and reflexive governance in the region will be a more effective way to attain sustainability goals which includes the breaking open of established decision-making cycles, participation of local knowledge in an improve information basis, and emergent effects of social learning and creative deliberation. In this sense, the participation of the communities in the process of sustainable governance can also be interpreted as a way to learn and respond to their potential societal opposition. Therefore, fairness and legitimate representation of sustainable governance will work in the process of governmental policy implementation settings as opposed to those in which local actors in the Niger Delta seek to resolve local conflicts and set their own policy goals (Fritsch and Newig, 2012).

Meanwhile, the ecological approach to sustainable governance will seeks to preserve minimum levels of environmental sustainability through conserving the total capital stock, which includes human capital, technological capability, natural resources and environmental quality in the region. As the growing unemployment and faltering competitiveness have left the region with little appetite for costly environmental policy measures. Pope et. al., (2004) suggested that since an ecological approach to sustainable development will better characterize the present

conditions, it will serve to limit conventional economic reasoning to ensure sustainability in the region. The economic sustainability should provide an analysis to minimize the social costs of meeting the standards for protecting environmental capitals but (Morelli, 2011) not on how to determine those standards. As growth exceeds the environments ability to sustain this growth, it creates an increased number of negative externalities which will damage the environment, nature and leads to ecological disaster. Critics argue that ecological approach, however, pay little attention to places dealing with socio-economic, political and technological aspects of sustainable development (Pope et. al., 2004). But the objective of sustainable governance will be flexible and adjustable at all levels of the system to allow for innovations and keep options open to learn about other alternatives. These approaches allow for an adaptive, open and participatory process of vision development in the region, which will in turn contribute to sustainability.

CHAPTER 5: Conclusion

Considering the operation of oil corporations in the past and present levels of atmospheric contamination have clearly impacted on the natural environment, human health and socio-economic situation of the host communities in the Niger Delta. It becomes very important to understand the long and short-term impacts of gas flaring, and the contribution of poor governance towards corruption, conflict, regulatory and infrastructural mechanisms and how it has affected effort to stop gas flaring in the Niger Delta region Nigeria. The aim of the study is to find correlation between poor governance and gas flaring in Nigeria, especially in the Niger Delta. As gas flaring and other oil extraction practice have deepened the volatile tensions and divisions within the Niger Delta region, it has also increased the stakes in structural violence. EIA (2016) emphasizes that even though the Nigerian government has been working on ending gas flaring for several years, the lack of governance from partners have slowed the progress on projects targeted at capturing associated gas in the region.

However, the analysis that was developed in this research paper verified that poor governance in region has contributed significantly to the challenges of gas flaring and the failure to stop gas

flaring in Nigeria, especially in the oil and gas industry. Philip and Moses (2013) discuss how poor governance and repressive military rule and the growing taste of power contributed to the spread of corruption to virtually all aspect of society which includes civil society and private sector. It is seen that poor governance is a major obstacle to the issues of ending gas flaring and development in Nigeria, and it is essential to tackle the issue of poor governance in order to achieve sustainable development in the Niger Delta. Philip and Moses (2013) emphasized that poor governance of any kind frustrates the administrative provisions for development among the oil producing communities, which is needed in oil and gas industry to end gas flaring. The challenges of poor governance also frustrate the ideals of governance to provide a sustainable environment for the commercialization natural gas and the benefits from gas utilization in the region. However, Schlosberg (2013) argued that with sustainable environmental justice framework, the challenges of poor governance and gas flaring that exist among this communities will be dealt with through advocacy of equitable distribution of basic needs, economic and political rights, and the understanding of the various mechanisms and processes of environmental injustice in the region.

The findings on regulatory mechanisms found that lack of governance on regulations (PIB) creates loopholes for gas flaring practices to continue, and the loopholes were further compounded by high level of corruption and the lack of enforcement mechanism within the agencies responsible and the Nigerian government. Royar (2012) emphasized that because of poor governance in Nigeria, oil companies operating in Niger Delta will prefer to pay cheaper fines for flaring associated gas than investing in infrastructure to capture flared gas. There is also no provision of any effective incentives for oil companies to voluntarily stop gas flaring by the regulatory mechanism (PIB). However, the provision sustainable governance will provide the mechanism for improved infrastructure and regulatory mechanism in Nigeria that will ultimately end the practice of gas flaring by oil companies, as well as a market solution to accompany legislative efforts.

The empirical findings found correlation between poor governance and conflict in the Niger Delta which has threatened the operation of oil and gas activities, peaceful co-existence and sustainable development in the region. Zimmer (2009) argues that in some instances, oil companies have been linked to conflict dynamic in the region by providing large revenue for often repressive government and causing environmental damage and forced resettlements that results in negative reaction from the local communities. The sensitive ecosystem in the region have been damage by oil exploration, gas flaring and oil spillages have created the situation for youth violence, activism and rebelliousness. The security situation in the Niger Delta due to conflicts is an impediment to decreasing gas flaring and EIA (2016) emphasized that improved security in the region in 2012 allowed Shell to install new facilities to capture associated gas and repair the existing facilities damaged in conflicts.

More so, the socio-economic issues and environmental consequences of gas flaring in the Niger Delta region of Nigeria, can be reduced by adopting sustainable governance approaches. Therefore, effective understanding of oil exploration and production, especially gas flaring in the petroleum industry is important for the efficient management of the energy resources, environmental risks management, implementation and enforcement of regulation, and sustainable development. The regulatory authority in Nigeria should ensure that their legislative arms provides sustainable governance through legislation that will enforce environmental rules for the oil and gas industry, and also practicable environmental management plan. Because gas flaring is seen as a threat to mankind, sustainable approach should become necessary for local and federal government as a principle actor in addressing the causes and consequences of gas flaring. The concept of sustainability of governance plays a critical role in tackling gas flaring, and the government and oil companies operating in these communities should prioritized it, especially for the mitigation and adaptation process at the local government level which is highly bureaucratic and fragmented in the Niger Delta because of poor governance (Cashmore, Wejs, 2014). Also, sustainability of governance calls for legitimate participation and sustainable policy implementation that seeks to provide sustainable employment, education and resolve local conflicts which will protect vulnerable members of the communities and future generation in the

region. In the case of environmental issues, public participation becomes an important approach for dispute resolution and mediation involving the public to avoid conflicts (Rydin and Pennington, 2000).

Therefore, governance of sustainability approaches should become a tool that creates a sustainable institution for addressing the environmental and social challenges in the Niger Delta. Pope et al., (2004) emphasizes that because environmental impacts are the bases of sustainability concerns, integrating the environment into strategic decision-making, becomes essential towards sustainable governance and development. The stakeholders in the region should also apply the role of social capital as a mechanism for maintaining community participation, access to quality health and investment in infrastructure, that will contribute to project's effectiveness in achieving its specific objectives. Schlosberg (2013) emphasized that environmental approach to effective community mobilization should be implemented not just to tackle poor governance in the local levels, but also demand and defend democracy in the region. The government should strengthen the capacity and independence of law enforcement agencies (like EFCC) to criminalize corruption by investigating, and prosecuting corruption cases in all levels of the government.

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APPENDIX

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