

# Surveying and Appraising the Impact of Oil Production Activities on Ogoniland, Niger-Delta

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*Abstract- Crude oil exploration areas in Nigeria is found predominantly in marine environment of coastal areas which are fragile, vulnerable and complex containing critical habitat as well as valuable resources of great socio economic significance. Oil spill activities are endemic mostly in the Niger Delta Region of Nigeria; this is because of the oil production activities take place in the area and intense environmental degradation. Thus, this paper aimed at appraising the impact of oil production activities on the environment of Ogoniland and also examines the socioeconomic impact on the people. A stratified random sampling technique method was adopted for precision of the sample and a total number of 120 respondents were selected from the area of study and questionnaires were administered among them. The data collected were analyzed using simple descriptive statistics which include the use of frequencies and percentages. The findings of this paper revealed that the externalities of oil production have resulted in profound adverse impacts on traditional lifestyles and livelihood patterns in the study area where unchecked oil exploration and exploitation had taken place for the past forty years. Therefore, this paper suggests the use of abatement procedures and environmentally sound and cleaner technologies for oil exploration and exploitation in order to mitigate/minimize these negative impacts and enhance the positive impacts to achieve a sustainable healthy environment.*

**Keywords:** exploitation, exploration, Environmental pollution, Niger-Delta and Ogoniland.

## I. INTRODUCTION

Oil is the single and most important commodity in the entire world today and also the largest resource for man's demand for energy [1]. Crude oil or petroleum is the oil believed to have originated from plants and animals remains over a long period of time [2]. Crude oil is derived from organic molecules formed by living organisms millions of years ago, and this substance, organic compound formed over millions of small plants and animals and so it is known as hydrocarbon [3]. Analysis of the hydrocarbons found in oil deposits suggest that they may have come primarily from marine bacterial and other micro-organisms rather than higher plants and animals. If this hydrocarbon is left undisturbed, it can remain intact for millions of years. However, when used, it is non-renewable. [4] observed that crude oil originates from dead aquatic and organic matters and materials which were removed gradually and settled to the bottom of the sea or land and are covered with other materials, like mud, silt and other sediments. Heat and pressure change the plants and animals remains into crude oil.

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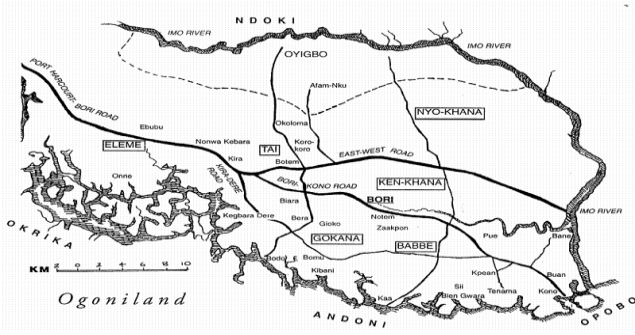
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In Nigeria, the development of oil industry has contributed very significantly to the socio-economic wellbeing of Nigerians. The Nigerian economy is heavily dependent on oil just like the economies of other Oil Producing and Exporting Countries (OPEC). Nigeria is practically a monoculture: about 80% of the national income, 90-95% of the export earnings and more than 90% of the foreign exchange revenues evolve from the oil sector [5]. Oil affects the lifestyle of mankind directly and indirectly in more than one way. Some authors conclude that it is therefore the lifeline of man's existence since oil and its associated products are used in virtually every sector of man's activities for example in domestic, industrial and commercial. However, in the industrial sector, machines and other automotive equipment cannot function without oil and if that is made possible through oil, then industrial production and expansion in the economic invariably depends on oil, which will guarantee growth. Therefore, oil is so important to every economy that its influence is both positive and negative. The proceeds from oil production in Nigeria have no doubt contributed to the social, economic and political development at the same time causing negative impact to both the environment and those living in that environment. It has rendered the ecosystem nearly useless due to oil spillage. The high level of environmental degradation is not unconnected with the activities of oil industries. In fact, in recent times, there have been many cases of spillage in some oil producing communities with its obvious consequences on farmlands; aquatic lives and air are all affected directly or indirectly. Environmental pollution or degradation is the immediate and direct consequence of oil production both in Nigeria and the world at large. It is not peculiar to Nigeria alone but the distinguishing mark is its management where there are found.

## II. THE STUDY AREA

Eleme Local Government Area is located in Ogoni land in River State, Nigeria. Ogoni land is a 404 square mile region in the south-east of the Niger Delta Basin. The Ogoni land is made up of rural villages and a minority ethnic group with about half a million people [6]. Eleme is one of the six kingdoms of Ogoni and is an Island town on the Bo River in River state of Nigeria and is situated on latitude 5°N and longitude 6°E. The area has a size of 30.72km<sup>2</sup> but if added to the mainland which has a total boundary of 60.40km<sup>2</sup>. The vegetation of the area is within the mangrove forest zones of Nigeria and has a very high rainfall density and with a daily average temperature of 27°C and a range of 20°C (Figure 1).



**Figure 1: Eleme within Ogoniland**  
**Source: Mitee Research Foundation 1995**

### III. RESEARCH METHODS

The success and acceptability of the result obtained from any research work depends on the procedure adopted in implementing it. This paper utilizes questionnaire instrument for the study for the purpose of gathering relevant data in the study area and physical observation of the study area was also carried out and informal interview with the resident of the community was also conducted. However, following the investigative nature of the study, questionnaire survey method was employed. A total of 120 respondents were selected based on stratified random sampling technique for precision of the sample. Here the population is divided into strata or sub-sets and a random sampling is selected from each stratum. This allows the different variables in the population such as occupation, level of income etc to be correctly represented in the sample.

### IV. RESULTS AND DISCUSSION

#### 4.1 The Impact of Oil Spill in Eleme Community

There have been several reported cases of oil spill within the Eleme community. About 80 percent of the respondents attested to the fact that there have been varying degrees of spillages within the past decade despite the fact that drilling has stopped within the area which continues to affect the physical environment, the socio-economic life of the people as well as their health. This was in fact the basis for carrying out this study. The respondents testified to the fact that they have continually suffered from the side effects of oil production that was earlier been carried out in their community. Every once in a while, a ruptured pipe begins to leak again and again, causing further damage to an already damaged environment (Figure 2). Some respondents were enlightened enough to share some of the knowledge they have on the resultant effects of the spillages and how it has affected them.



**Figure 2: Disused Oil Wellhead Spills**  
**Source: UNEP Report 2011**

#### 4.2 The Impacts of Oil Pollution on the Wellbeing of the People of Eleme

Oil pollution has impacted on the Eleme community in several ways.

(a) Impact of oil production activities on socio economic life one of the fallout of oil pollution in the Eleme area is the destruction of the traditional local economic support system of fishing and farming (Figure 3). The combination of the effects of oil spill and acid rain resulting from gas flaring has been soil degradation which affects crop yield and harvest. Fish are driven away from in-shore or shallow waters into deep-sea as a result of flaring. The ultimate result of this is the poor crop yield as the soil has been rendered infertile and poor fish catch, as most fish has been driven into deep waters and the Eleme people do not have the fishing gadgets to go into deep-sea fishing. The whole impact of this is food shortage and which has affected the ability of most families to feed themselves. As a result of the above, Eleme that was once among the major food producing area of the Niger Delta, is now fully dependent on imported food.



**Figure 3: Inland waterways being Destroyed by Oil Production Activities in Eleme**

(b) Destruction of traditional means of livelihood Another implication of oil pollution is that having destroyed biodiversity, it has also rendered the agricultural sector, which used to be the largest employer of labour in Eleme community, unprofitable. Hence, most of the youth and women have become jobless since their local economic support system of fishing and farming is no longer sustainable. The mangrove forest which serves as habitats for fish and mollusks as well as a source of raw materials for communities in Eleme have been lost to the ravages of oil pollution. The land, the sea and the environment can no longer support the subsistence life that this local Eleme community, which they have been dependent upon for thousands of years.

(c) The impact on cultural values and spirituality Oil spills and Gas flares knows no boundaries so there are adverse impacts on cultural values and social harmony. One of the most telling impacts of oil pollution on the Eleme community is that it has led to the death and possible extinction of medicinal plants and herbs that are rooted in their traditional medicine and spirituality and have deep spiritual significance to the community. This degradation is brought about by the fact that most of these herbs and plants are found in sacred grooves,

shrines and forests, which have fallen under direct destruction in the course of oil exploitation and the toxicity of oil pollution.

### 3. The impact on tourism and recreation

The contamination of the shoreline with oils is a common characteristic of many oil spills, and when attractive coastal beaches and resorts are affected the costs could be high as it may seriously restrict such recreational activities as bathing, boating, angling and diving for shorter or longer periods of time. As a result, hotel and restaurant owners, and others who have their income from recreational activities— boat renters, tour operators, angling tour operators and many more have suffered significant economic losses.

#### 4.3(a) The Impact of Oil Production Activities on the Physical Environment

**Impact on biodiversity:** The most profound and adverse impact of oil pollution in Eleme with far-reaching implications on all other aspects of our traditional lifestyles and livelihoods, had been the total loss of biodiversity and destruction of habitats largely due to soil degradation. The results of the unchecked oil pollution in the land have been the complete destruction of ecosystems. Mangrove forests have fallen to the toxicity of oil spills and are being replaced by noxious nypa palms, the rainforest has fallen to the axe of oil companies, wild-life and game have been driven away and farmlands have been rendered infertile with gross implication on the right to adequate food (Figure 4). During oil spills, the process of photosynthesis which enhances plant diversity is impaired since the process is reduced due to the fact that spilled crude have a high absorbance property so when the crude spreads on to the surface of leaves, the latter find it difficult to photosynthesize and thus die, leading to biodiversity loss. The toxic crude also affects underground herbs and shrubs, while microbial organisms which form important groups in the food web, are also destroyed.



**Figure 4: Mangrove Forest Destroyed by Oil Spills in Eleme**

**(b) Impact on Fisheries and Aquaculture:** Valuable fishing and shellfish areas are closed for fishing because of the risks of the catch being tainted by oil. Concentrations of petroleum contaminants in fish and crab tissue, as well as contamination of shellfish, pose a significant potential for adverse human health effects, and until these products from near shore fisheries or aquaculture have been cleared by the health authorities, they should be banned from human consumption. Indirectly, the fish farmers in the community have suffered a heavy loss as consumers are either stopped

from using or unwilling to buy fish and shellfish from the region affected by the spill.

**Destruction of Zinc Roof:** One of the increasing socio-economic costs to most people in the community resulting from oil pollution and is the rapidity of which zinc roofs are easily corroded. Houses with zinc roofs that are close to the location of the flare stacks do not last for two years before they become corroded. This is different from other areas where zinc roofs last for at least ten years. This is a common trend that is also observed in other parts of the Niger Delta where oil extraction is presently taking place [7]. This zinc corrosion has added another dimension to the increasing socio-economic costs to the burden of the Ogoni people. It is a common knowledge that acid rain oxidizes zinc through the process of oxidation to form zinc oxides. This oxidation process is responsible for the corrosion. This has led Ogoni homeowners to resort to purchase of the expensive asbestos with its obvious potential health hazards.

**(c) The Effect on Underground Water:** A serious threat posed by oil related pollution is the impact on underground waters. When oil spills or when there is an effluent discharge or acid rain, it seeps into the ground and becomes mixed in the underground water system. It has been found that polluted underground water take many years before it can be remedied. Yet this underground water moves into streams and wells which are the only sources of local water supply in the community. This has affected the traditional relationship of the Eleme people with water. There is a palpable fear that rather than being the source of life, these water systems have become sources of misery, disease and death.

#### 4.4 The Impact of Oil Production on Public Health

The most worrisome aspect of oil pollution in Eleme is the rise in occurrence of certain ailments that were previously unknown in the area. It has been reported that there is correlation between exposure to oil pollution and the development of health problems [8]. In a recent research report released, University of Lagos, Nigeria, it was found that water samples collected from the sea, river, bore holes, lagoons, beach and so on from the Niger Delta region – especially in Delta and River States of Nigeria, indicates that more than 70% of the water in the Niger Delta contains a chemical called Benzo ( ) pyrene, with a high concentration of 0.54 to 4ug per litre, far above the World Health Organization (WHO) recommendation of 0.7ug/1 for drinking water [9]. As mentioned above, concentrations of petroleum contaminants in fish and crab tissue, as well as contamination of shellfish, could pose a significant potential for adverse human health effects, and until these products from near shore fisheries or aquaculture have been cleared by the health authorities, they could be banned from human consumption.

## V. CONCLUSIONS AND RECOMMENDATIONS

It is apparent that the externalities of oil production have resulted in profound adverse impacts on traditional lifestyles and livelihood patterns in the Eleme community of Ogoni land where unchecked oil exploration and exploitation had

taken place for the past forty years. The oil companies has not in any way helped matters as they continue to flout environmental regulations in their areas of operations and pay less attention to environmental protection regimes that would have helped to abate oil pollution. The government on its part has not shown any commitment to enforcing the minimal environmental laws which it created. A case in point is the government regulation which forbids the exploitation of oil in sacred lands yet this is routinely flouted without any government intervention on behalf of the community. It has been discovered that to abate these adverse effects which oil pollution have had on the Eleme Community, the oil companies and the government should show more commitment to the use of abatement procedures and environmentally sound and cleaner technologies for oil exploration and exploitation.

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