

## THE EFFECTS OF CRUDE OIL EXPLOITATION ON FOOD PRODUCTION AND THE HEALTH OF OLOIBIRI IN HABITANT BAYELSA STATE, NIGERIA

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### ABSTRACT

The study examined the effects of oil exploration and exploitation activities on food production and the health of the inhabitants of Oloibiri environ in Bayelsa State. Two objectives and two hypotheses were generated. The hypotheses were tested at 0.5 significant level of probability. A sample of 390 people from three communities were randomly selected. The data-set were selected using the effects of oil exploration activities on human health and food production determinant questionnaire (EDEHFO), designed and used to elicit the data for the study. The one-way analysis of variance (ANOVA) was used for the data analysis with the aid of the statistical package for social sciences (SPSS). The results based on the first hypotheses which states that there is a significant difference in food production resulting from oil exploration and exploitation activities are accepted. Since  $F\text{-cal} (0.25) < F\text{-Crit} (3.00)$  at 2 and 689 degree of freedom at 0.05 level of significance - by and large the results indicates a negative impact on the environment of the study area.

**Keywords:** Effects, Oil exploration, Health, Food production.

### INTRODUCTION

The environment in popular parlance is our mother. It comprises the air, water, land, atmosphere and everything contained in them. This implies all the organisms both living and non-living within the environment are part of the environment. The oil industry operate and function in our environment with the aim of maximizing profit with little or no attention to the spill-over effects of the oil exploration, exploitation and environmental degradation (Okoli, 2006).

The earth's renewable resources are perhaps the only sound basis on which to build hopes for sustainable living. For example, over-exploitation of limited inshore fisheries and destruction of vast area of the tropical rainforest to extract valuable hardwoods have proved to be short-lived and shortsighted policies (Okoli, 2006, Digha *et al.*, 2010). In like manner, the effects of crude oil exploration and exploitation involved the shooting of dynamite cause seismic waves, which in turn damage buildings crops and other landed properties of the oil producing communities in Oloibiri environ (Okilo, 1992). The effects on buildings result in residual stress, which further deteriorates the property and infrastructures. The transverse lines on land destroy vegetation, food crops, economic crops, plants of medicinal values, shrines and ponds (Gabriel, 2004; Okoli, 2006; Akinyode, 2009; and Digha etal, 2010).

According to Digha et al., (2010), that there is a great physiological impact on crops planted in the vicinity of gas flares. This usually affects the growth rate, maturity and the yield. White Akpan (1998) and Martin (2003) affirmed that gas flaring causes degradation of the vegetation and ecological destabilization resulting to loss of biodiversity.

Gas flaring has been identified as one of the major causes of low agricultural productivity, fishing and hunting in the Niger Delta (Alakpodia, 2000, Daudu, 2001; Aregbeye and Adeboye 2001). The modified microclimate gas flare environment efficiency emergence and growth rate, leaf area accumulation and yield of yam and cassava (Odjugo, 2007). See plate 1.



**Plate 1: Kolo Creek Gas Flaring Station, Imiringi, Ogbia, Bayelsa State.**

Agriculture which initially had been a dominant occupation of Ogbia kingdom is witnessing its ruin. The oil industry employs less than 1% of the labour force as against the 80% which agriculture is their employer of labour. Oil spillage has been observed as one of the major causes of low agricultural production or decline in agricultural yield in oil producing communities and their environs (Akpan 1998, Worgu 2000, and Bnang 2012). In the same vein, Chukuigwe (2000) points that hydrocarbon arising from crude oil spillage connotatively affect fishing activities. The highly toxic lower boiling aromatic in oil pollution is what has the capacity of killing fish, their eggs and other sea lives. While Anijah-Obi (2001) writing mainly on aquatic life and oil spillage noted that the direct short term affects of oil pollution are reasonably well recorded. In extreme cases, it causes organisms to be killed through food, oxygen or sunlight starvation, destruction or perturbation of one tropic level carries over into the next (Anijah - Obi, 2001; Daudu, 2001). Some of the other effects of oil spills on fishes include fin erosion, skin sores, liver damage and inflammation of the olfactory tissue. Cod, Pollack and pilchard eggs were all found to be vulnerable to oiling. If they do not die, the wound ones are hatched with malformed injuries, problems with the vertebral column, heart reduce rate loss of coordination and equilibrium and degeneration of the nerve

cells (Paul, 2010, 2011). Most humans are not directly, exposed to heavy oil spills. However, those percent during the spill and clean-up experiences illness and injuries. The strip wrecks themselves are obviously life-threatening. General health of cleanup workers and local inhabitants is shown to deteriorate, psychiatric symptoms are also detected. Poly-aromatic hydrocarbons are found in most crude and refined oils and are carcinogenic to mammals. They can be taken up into exposed commercial fish and shellfish, and cause food poisoning in human (Kperegbeji *et al.*, 2005; Paul 2010, 2011).

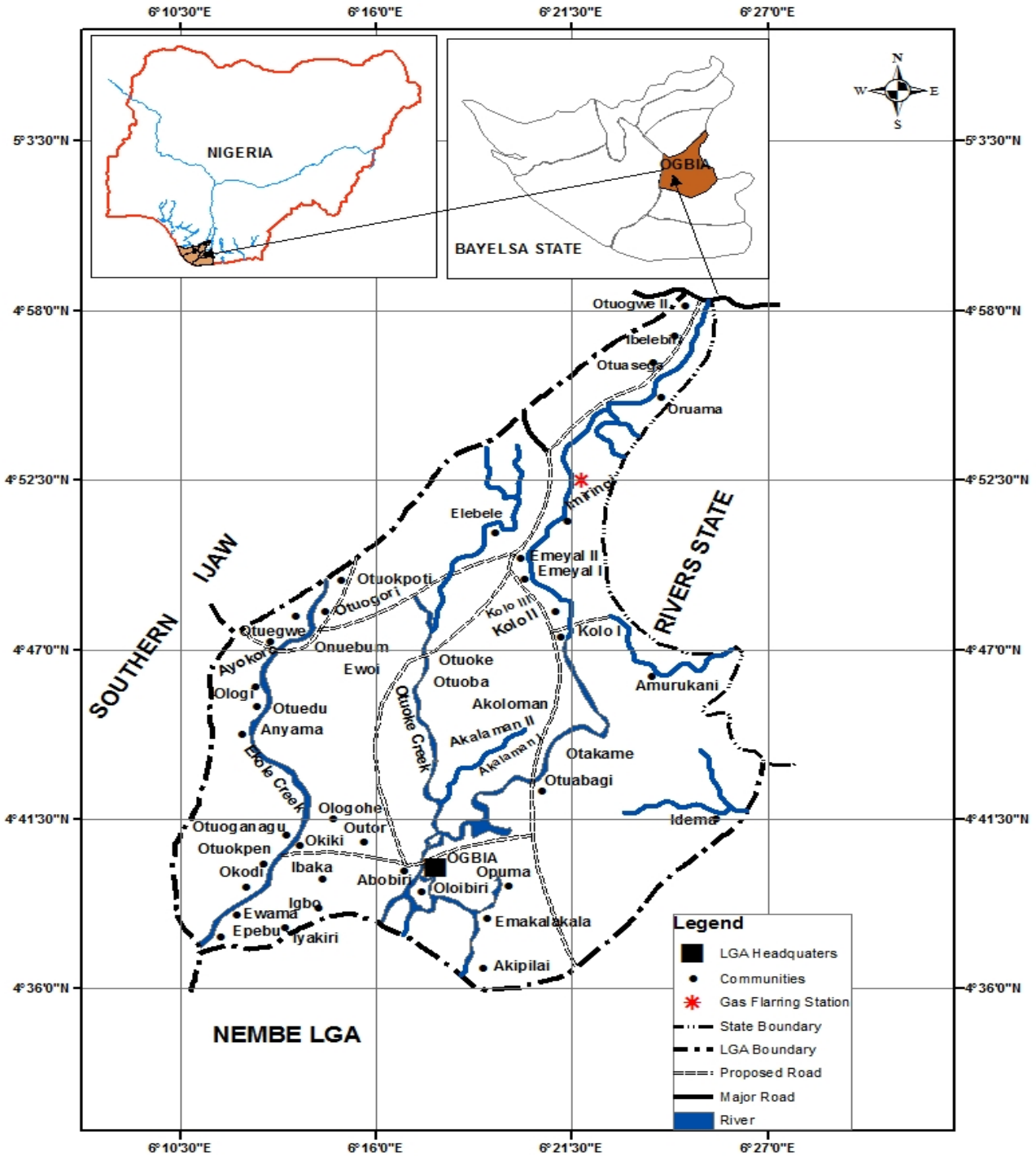
Arising from the above backdrop, the study is aimed at investigating the effects of crude oil exploration on food production and the health of the inhabitants of Oloibiri.

## **MATERIALS AND METHODS**

The study area is located between longitude 6° 28' East of the Greenwich Meridian. It is bounded by latitude 4° 35' and 5° 05' North of the Equator (0°) see figure 1. Ogbia Local Government (Oloibiri) Area of Bayelsa State is situated in the Central Niger Delta of Nigeria. It is about 25km distance to the Atlantic Ocean and about 14km from Yenagoa to the first oil well at Otubagi in Oloibiri. Geologically, the study area is made up of three tertiary lithostratigraphic units, Benin, Agbada and Akata formations (Akpokodje, 1987; Digha *et al.*, 2009). The area is drained by maze of rivers and creeks as well as streams which includes Anyama (Ekole), Otuoke, Abobiri, Oloibiri, Emakalakala and Kolo creek among others (China and Digha, 2010). There are two distinct seasons in the study area, the wet and the dry seasons. These seasons were usually influence by the tropical maritime air mass and the tropical continental air mass. The area also experiences double maximum rainfall regime with a short break (short dry season) between late July and August, this period is usually known as "August Break" (Digha, 2008). The rainy season usually last between 8-9 months annually depicting the equatorial type of climate. Specifically the climate of the area is 'A' type of Koppen's system of classification (Oyegun, 1999). The rainfall values obtained in this region falls in June (322.93mm) August (438.334mm) and September (439.8mm), (Oyegun, 1999). The major economic activities in the study area include crude oil exploration and exploitation, fishing, and farming as well as various local craft (Digha, 2008).

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**Figure 1: Map of Ogbia Local Government Area**

**Source: Culled from Bayelsa State Ministry of Lands and Housing Map (2002)**

The population of the study area is according to the National Census Report of 2006. The sample for this study is 390 choose from three communities in Oloibiri environ (Otuabagi, Otuogidi, and Opume). Thus, the number of person chosen from each community is as follows; Otuabagi 110, Otuogidi 180 and Opume 150, total is 390 persons. The instrument used for the study was the rating scale, effect of oil exploration activities on human health and food production determinant questionnaire (TOEAFDU). The rating scale adopted the four (4) point scale with the following values: strongly agree = 4, agree 3, disagree = 2 and strongly disagree = 1 for positive questions. The one-way analysis of variance (ANOVA) SPSS software package was used for the data analysis.

## RESULTS AND DISCUSSION

The summary of the results of the study are presented in (table 1) and (table 2). The 1 is a summary of data analysis using, analysis of variance (ANOVA) based on the first hypotheses.

### Thus:

H<sub>1</sub>: There is a significant difference in food production resulting from the activities of oil companies operating in Oloibiri environ.

H<sub>0</sub>: There is no significant difference in food production resulting from the activities of oil companies operating in Oloibiri environ.

**Table 1: A Summary of the Results of the Data Analysis on the First Hypotheses Using One-Way Analysis of Variance**

Source of variation	Sum of Squares	df	Mean Square	f-cal	f-crit	Decision
Between groups	10.26	2	5.13			
Within groups	14104.63	689	20.41	0.25	3.00	Null Hypotheses rejected.
<b>Total</b>	<b>14114.88</b>	<b>691</b>				

Source: Researches fieldwork (2012)

\*S= significant at P<0.05

The result indicates a mean decrease in food production resulting from the activities of oil companies operating in Oloibiri environ, viz: Otuabagi (29.51), Otuogidi (29.32) and Opume (29.20) were respectively distinct from one another.

Since the  $f\text{-cal} (0.25) < f\text{-crit} (3.00)$  at 2 and 689 degrees of freedom and 0.05 level of significance (see table 1), the null hypotheses is therefore rejected and we accept the research or alternate hypotheses saying that there is a significant difference in food production as a result of oil exploration activities in the study area.

**Table: A Summary of the Results from the Data Analysis on the Second Hypotheses Using One-Way Analysis of Variance**

Source of variation	Sum of Squares	df	Mean Square	f-cal	f-crit	Decision
Between groups	15.96	2	7.98			
Within groups	6176.31	689	8.94	8.93	3.00	NS
<b>Total</b>	<b>6176.35</b>	<b>691</b>				

Source: Researchers Fieldwork (2012)

\*S = Significant at  $P < .05$

NS = N Significant at  $P < .05$

## HYPOTHESIS TWO

$H_1$ : There is a significant difference in the rate at which the inhabitation of Oloibiri environ fall ill as result of oil exploration activities.

$H_0$ : There is no significant difference in the rate at which the inhabitation of Oloibiri environ fall ill as result oil exploration activities.

The result shows that the mean rate which Oloibiri and its environment resident fall ill as a result of oil exploration activities, viz: Otuabagi (23.76), Otuogidi (24.13) and Opume (23.86) respectively. Since  $F\text{-cal} (.893) < F\text{-crit} (3.00)$  at 2 and 689 degree of freedom at 0.05 level of significance (see table 2), the null hypothesis is accepted. This implies that there is no significant difference in the rate at which the inhabitation of the study area falls ill as a result of oil exploration in the study area (Oloibiri and its environ). The Scheffes post hoc test also shows that the mean difference is not significant at 0.05 alpha level.

## DISCUSSION

The results of this research based on the first objective and hypothesis indicates that there is significant decrease in food production as a result of oil exploitation

and exploration activities. The findings this research supports the works of Okilo (1992), Akpan (1993), Daudu (2001) Kpreregbey *et al.*, (2005), Odjugo (2007) and Olusola (2012). They affirmed that there is a decrease in length, weight, starch, protein and ascorbic acid (vitamin C) content of cassava around gas flaring points. Also, acid rain in the region could be partly attributed to gas flaring. This result high acidity of the soils in study area (loss of soil fertility and the resultant effects is low food production. Oil spill, in water completely kill shell fish, worms, shrimps and plants. In farmlands, the soil is often oil logged and all economic crops and trees die (Odieta, 1999 and Olusola; 2012). This result portends a negative effect on food security. Therefore meeting the millennium developments becomes a mirage.

The results on the second hypothesis further shows there is no significant effects of oil exploration and exploitation activities on the inhabitation of Oloibiri and its environ. But earlier research results indicate that there is negative impact of oil exploration and exploitation activities on human health.

## **RECOMMENDATIONS**

Based on most revealing findings, the following recommendations were generated for the study.

- Environmental impact assessment (EIA) should be carried out prior to oil exploration. There should be clear environmental impact statement (EIS) showing the steps the companies or firms involved will carry out to prevent the environment from degradation. This should also be accompanied by post impact assessment of the environment.
- Citizenship participation should be encouraged, in the areas of environmental impact assessment (EIA), environmental impact statement (EIS) and post impact assessment (PIA).
- Government at levels should provide policy compelling oil companies not only to clean up oil spills immediately when they occur but they also apply various bioremediation and bioreclamation techniques to restore back the environment to its natural states.



- Above all, multinational oil companies such as shell and Agip should include fertilizers, pesticides, high-yielding varieties of seedlings as well as extension services to the local farmers.

## **CONCLUSION**

From the above backdrop, it is glaring that there is a significant decline in agricultural yield resulting from oil exploration and exploitation in the study area. The study also reveals that the activities of the multinational companies have a negative impact on the natural environment and the health of the inhabitation of Oloibiri environment. In a situation where the land and the aquatic ecosystem is polluted, the inhabitation cannot be proud of food security, safe drinking water and sanitation as well as sound health care. By and large, meeting the millennium development goals in the study area is a mirage.

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