

An Evaluation Of The Effects Of Petroleum Exploration And Production Activities On The Social Environment In Ogoni Land, Nigeria

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ABSTRACT: The exploration and production of petroleum and its subsequent transportation and distribution in the Niger Delta have led to pollution of aquatic habitats with serious threats to associated flora and fauna. Consequently, most studies have concentrated on the effects of crude oil and its products on aquatic flora and fauna, with little emphasis on the socio-economic environment. Evaluation of the effects of petroleum exploration and production activities on the social environment in Ogoni land of Rivers State is the main focus of this study. Therefore, in order to fill this gap, there is the need to investigate the effects of crude oil spills on the socio-economic environment, including the livelihoods of people. This is done by; examining the impact of intensive resource exploitation on the social environment of the oil producing communities in Ogoni land which has further degraded the environment to the peril of the inhabitants. Also to examine how the Oil and Gas Multinational Companies have contributed to the management of the environment in these selected communities. The target population comprised 478 respondents across 4 major Oil fields of Ogoni land which is a 5% probability sample. The study employed two sampling techniques: Multi-stage Sampling technique and simple random sampling technique. The study revealed that the hazards and effects associated with crude oil spill are enormous and conspicuous. It was also found out that, there is no proper mechanism for the dissemination of information about the environmental hazards associated with spills on the environment. The study proffered recommendations appropriate workable Environmental Management Programme (EMP) which will help mitigate and enhance the environmental quality of the Ogoni land through baseline studies of the environment and carrying out full Environmental Impact Assessments (EIAs) to understand the ecology of coastal environment for sustainable development to be achieved.

Keywords: Environment, Mitigation and perceived Mitigation, Petroleum Exploration and Production, and Socio-economic Impact,

INTRODUCTION

Nigeria, the most populous country in Africa, is also one of the best endowed in terms of natural resources. Yet, it is one of the poorest countries in the world. As it is the case with many oil-rich developing countries; oil reserves have proved a mixed blessing for Nigeria. Since 1974, only 14 years after independence, oil production for export has been by far the main source of revenue for the government. The oil industry had expanded in Nigeria at the expense of other previously important production sectors, such as agriculture and manufacturing. This has created regional imbalances and an increasingly unequal distribution of wealth between different sectors of society, deepening the potential for conflict in this complex multi-ethnic nation.

The Niger Delta, one of the world's largest wetlands, and the site of most of Nigeria's biodiversity, is also the area where the main oil reserves are found. During the last four decades, hundreds of billions worth of crude oil have been extracted from the Niger Delta wetlands, earning huge profits for a privileged few, while virtually robbing the affected communities of both life and livelihood, UNPO (2006). Ogoni land like most part of the Niger Delta of Nigeria, where offshore and onshore drilling is common, there are bound to be spills from wells and transporting mishaps from which oil may spread to form a surface film. As the spill occurs in this region, emulsification occurs and there is the degradation of the immediate and adjoining environment. This seriously jeopardizes the chances of survival of those who fishing and farming are of commercial importance to them in these areas. The indiscriminate discharge of oil from oil and gas exploration activities has resulted in the accumulation of these products in water, by land drainage. Such accumulations endanger estuarine and marine organisms. The Ogoni people are a distinct indigenous minority nationality living in an area of 404 square miles (about 100,000 square kilometers) on the south eastern fringe of the Niger Delta River, in what is geographically referred today as the South-South of Nigeria. The Ogoni people number around 750,000 based on the last census and has a population density of 1,250/Km², one of the very highest in any rural setting of the world and compares favorably with the Nigeria national average of 250, Saro-Wiwa, (1993). Succinctly, access to this locally deposited natural resource; the inhabitants of the Niger Delta region have seen few benefits from the large-scale operations carried out in the proximity of their communities. In fact, in their comprehensive 3-year long study, Human Rights Watch states that "Despite the vast wealth produced from the oil found under the Delta, the region remains poorer than the national average; and the disparities between the rich and poor are more obvious in the areas where gas flares light up the night sky. Human Rights

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Watch, (1999). The question has always been what is responsible for the food crises in Nigeria? Is it as a result of Oil and Gas exploration activities which have had negative impacts on the environment with respect to loss of nutrients in the soil, as its direct consequence on food production that there exists food shortage in these once hitherto food producing parts of Ogoni land?

STATEMENT OF THE PROBLEM

Oil exploitation and exploration has impacted most disastrously on the socio-physical environment of the Niger Delta oil bearing communities massively threatening the fragile subsistent peasant economy and bio-diversity and hence their entire social livelihood and very survival. The exploration and production of petroleum (oil and gas), and its subsequent transportation and distribution in the Niger Delta have led to degradation and subsequent pollution of aquatic habitats with serious threats to associated flora and fauna, Akinjide (1997). Spills which are the major challenge in the exploration and exploitation of petroleum affect the ecosystem in several ways. Fishes and other aquatic organisms use the food-rich estuary and creeks as breeding, nursery and feeding grounds and spend their adulthood in the nearby ocean, but the oil spills have reportedly driven them away. Some experts argue that oil spills may not cause any significant direct mortality to pelagic fish, but their eggs and larvae, Reish et al, (1976). Hunting is also impacted because the affected vegetation and the depleted environment may adversely affect survival rates of wildlife. Hunters in the affected areas usually complain that their occupation is negatively affected by spills. The basic activity of the people is fishing and farming. Therefore the spill and its effects will linger for a long time especially with the thorns and thistles all over oil spill affects the amenity value of the area in several ways. Contamination of coastal amenity areas is a common feature of many oil spills leading to disquiet and interference with recreational activities such as bathing, boating, angling and diving. The spills also affect household income. The terrestrial life and the aquatic life in the impacted areas are substantially destroyed. Apart from spending money to buy basic foodstuffs from other farmers, it is also evident that peoples' diets are also prone to serious adjustment. The vegetation is indicative of the unproductive nature of the soil. It is possible that it would take as long as 15 years or more for spill-impacted soils to regain fertility. The dependency rate has also increased tremendously. Before the oil spills began their damage according to available information, every youth had a livelihood in the land which the spill has completely destroyed and therefore such supportive tendencies are no longer seen in the village, thus, increasing the burden on each household. An oil spill can cause loss of market confidence since the public may be unwilling to purchase aquatic products from the region irrespective of whether the seafood is actually tainted. This has been the case in Ogoni land as people from neighbouring states who patronize the Ogonis have pitched tents with her neighbours who have little or no impact of petroleum exploration and exploitation activity. Farming is highly unproductive and health hazards have permeated the fabric of the society. They created a system of agriculture; their traditional means of livelihood ensured the sustainable management and sustainable

exploitation of natural resources. The Ogoni people have a tradition and custom that is deeply rooted in nature and this helped them to protect and preserve the environment for generations. The land on which they live and the rivers which surround them are viewed by them not just as natural resources for exploitation but with deep spiritual significance. "Land is viewed as the abode of our ancestors from where they oversee our lives, it is also a god and we revere it as such, ESCR, (2000). It is based on these identified challenges in Ogoni land that this study tends to empirically evaluate the resultant consequences of the exploration, exploitation and subsequent production of petroleum and its related products. And to proffer necessary recommendations for enhanced mitigation measures on the social environment in Ogoni land.

GOAL AND OBJECTIVES OF THE STUDY

The goal of this study is to evaluate the effects of petroleum exploration and production activities in Ogoni land with a view to finding its impact on the social environment. The objectives of this study are:

- To examine the impact of intensive exploitation, on the social environment of the oil producing communities in Ogoni land.
- To assess the extent to which intensive extraction has led to environmental degradation as a result of intensive extraction in Ogoni land.
- To determine if these oil companies have empowered the people economically and socially.
- To examine how the Oil and Gas Multinational Companies have contributed to the management of the environment in selected communities.
- To make necessary and appropriate recommendations towards finding enduring mitigation measures against the effects of petroleum exploration in Ogoni land.

SCOPE OF THE STUDY

Ogoni land has nine (9) Oil Fields namely: Ajokpon, Akuba, Bodo West, Bomu, Ebubu, Onne, Korokoro, Tai, and Yorla. (SPDC 1998) The study cut across only eight selected communities: two (2) communities each from Eleme, Gokana, Khana, and Tai local government areas which are four (4) major oil fields out of the existing (9) Oil Fields in Ogoni land. These communities include; Agbeta and Ejamaa in Eleme Local Government representing Ebubu Oil Field, K-Dere and Mogho in Gokana Local Government representing Bodo West, Buan and Kpean in Khana Local Government representing Yorla Oil Field, and Korokoro-Tai and Gio-Tai in Tai Local Government Area representing Korokoro Oil Field. However, this study is based on empirical deductions on the social environment as seen by the researcher as at the time of carrying out this study between 1995 and 2008.

LITERATURE REVIEW

OIL RESOURCE EXPLORATION AND PRODUCTION IN NIGER DELTA

The effect of oil resource extraction on the environment of the Niger Delta has been very glaring in terms of its

negative effect on the region. Inyang (1997), stated that Oil exploration and exploitation has over the last four decades impacted disastrously on the socio-physical environment of the Niger Delta oil-bearing communities, massively threatening the subsistent peasant economy and the environment and hence the entire livelihood and basic survival of the people. Suffice it to note that, while oil extraction has caused negative socio-economic and environmental problems in the Niger Delta, the Nigerian State has benefited immensely from petroleum since it was discovered in commercial quantities in 1956. The Central Bank of Nigeria (CBN) 1981 annual report stated as follows, "Oil which was first discovered in 1956 and first exported in 1958 accounted for more than 90% of Nigerian exports by value and about 80% of government revenue as at December 31, 1981. The overall contribution of the oil sector to the national economy also grew from an insignificant 0.1% in 1959 to 87% in 1976." There is no doubt that the Nigerian oil industry has affected the country in a variety of ways at the same time. On one hand, it has fashioned a remarkable economic landscape for the country, however on the negative side, petroleum exploration and production also have adverse effects on fishing and farming which are the traditional means of livelihood of the people of the oil producing communities in the Niger Delta, Nigeria. If the oil industry is considered in view of its enormous contribution to foreign exchange earnings, it has achieved a remarkable success. On the other scale, when considered in respect of its negative impact on the socio-economic life and the environment of the immediate oil bearing local communities and its inhabitants, it has left a balance sheet of ecological and socio-physical disaster. This rightly provides a framework to evaluate the work of neo-classical economists whom argue that the development of primary resource materials for export in the periphery is the basis for development in the peripheral countries.

ENVIRONMENTAL AND SOCIAL IMPLICATION OF INTENSIVE OIL RESOURCE EXPLOITATION IN THE NIGER DELTA

In this section, the researchers will look more specifically at various environmental and socio-economic problems that have been identified as a result of the intensive extraction of natural oil resources in the Niger Delta communities in Nigeria are:

- **Environmental Problems**

Nwankwo and Ifeadi (1988), identified the following factors as some of the pollution problems associated with oil exploration and production in the Niger Delta

- **Contamination of Streams and Rivers**

In the course of oil exploration and production in the Niger Delta, various materials are released into the environment. For example during exploration, drill cuttings, drill mud and fluids are used for stimulating production.

- **The Problem of Oil Spills**

Transportation and marketing, damage to oil pipelines and accidents involving road trucks and tankers generate oil spills and hydrocarbon emissions which according to Ikporukpo (1988), have a far more reaching effects, because the toxicity of the oil adversely affect the soil, plant, animal and

water resources.

- **Forest Destruction and Bio-diversity Losses**

The major constituents of drill cuttings such as barytes and bentonite clays when dumped on the ground prevent plant growth until natural processes develop new topsoil. In water according to Nwankwo and Ifeadi (1988), these materials disperse and sink, killing marine animals.

- **The Environmental Effect of Gas Flaring**

Flaring of natural gas has also been identified as having negative impact on surrounding vegetation, Isiche and Stanford (1976).

- **Effluent Discharge and Disposal**

Refinery wastes also contain very toxic chemicals, which constitutes potential land, water and air pollutants. Atmospheric contaminants from refinery operations include oxides of nitrogen, carbon and sulphur. Liquid refinery effluents usually contain oil and grease. These compounds contain organic chemicals such as phenol cyanide, sulphide-suspended solids, chromium and biological oxygen demanding organic matter, which on getting in contact with land and water pollute them.

- **Gross Socio-Economic Underdevelopment**

The Niger Delta communities have remained grossly socio-economically underdeveloped and pauperized amidst the immense oil wealth owing to systematic dis-equilibrium in the production exchange relationship between the state, the Trans-national companies and the people. Enormous money had been derived from oil export but the area has been subjected to severe land degradation, socio-economic disorganization, increasing poverty, misery, military occupation and bloody violence, Pegg (1999). Oil extraction has impacted most disastrously on the socio-physical environment of the Niger Delta oil bearing communities massively threatening the fragile subsistent peasant economy and bio-diversity and hence their entire social livelihood and very survival. The oil producing communities have basically remained dependent and underdeveloped, persistently dis-empowered, socio-culturally marginalized and psychologically alienated. The wealth derived from oil resource exploitation and exports benefit directly only the operators of the oil industry and the bureaucrats in government.

- **Conflicts between Oil Companies and Host Communities**

Of the two most appropriating external systems, that are the government and the Trans-national oil companies, the Trans National Companies are in more direct and physical contact with the communities and their expropriated inhabitants. The deprived peasants currently make demand for social services from the oil companies, than they can make from the often-inaccessible Nigerian State. This has often led to conflict as the oil companies are engaged in the process of collaborating with the Nigerian regime to use violence as a means of pacifying the protesting communities, Pegg (1999).

- **Intra and Inter-Community Conflicts**

Oil exploration and exploitation have over the last four decades also instigated and intensified bitter and

bloody conflicts between emerging interest groups within and between communities. These conflicts now range between elite groups and between youth organizations on one hand, between the urban resident elite and the village community resident on the other scale. This could be seen within the concept of what Phillips (1997), wrote in respect of his analysis of the Honduran development of shrimp farm industry for export. He stated thus "The preservation and advancement of basic human rights, the equitable use of land and resources, and the preservation and sustainable use of the countries natural environment are three inextricably connected aspects of a single historical process". The conflict that has emerged in the Niger Delta as a result of the extraction of oil has its roots in the violation of the rights of local community people as a result of the promulgation of obnoxious legislation's. This has inevitably led to greater poverty and landless groups of people whose basic sustenance as peasant farmers have been negatively affected as a result of oil extraction for export. As a cumulative effect, this has led to more environmental problem in the region.

METHODOLOGY

This area focused on the various ways adopted in data collected, handling and analysis. It also dealt with the statistical methods used in the analysis of the data as well as description of the statistical tools and instruments used for the data collection were also presented in this section. Key variables used for the validation of the hypothesis were listed in this chapter. Two major sources of data were used for this study. They are primary and secondary sources of data. Primary sources of data are information collected by the researcher directly in the field basically for the purpose of the study. However, in this study they were collected through the use of questionnaires, direct personal observation, interviews of key informants and photographs. Secondary sources of data include articles from journals, census report, government official publications and internet sourcing.

SAMPLE FRAME

Ogoni land has nine (9) Oil Fields namely: Ajokpon, Akuba, Bodo West, Bomu, Ebubu, Onne, Korokoro, Tai, and Yorla, (SPDC, 1998). This study cuts across only eight (8) selected communities: two (2) communities each from Eleme, Gokana, Khana, and Tai Local Government Areas which are part of the four (4) major oil fields out of the existing nine (9) Oil Fields in Ogoni land. These communities include; Agbeta and Ejamaa in Eleme Local Government representing Ebubu Oil Field, K-Dere and Mogho in Gokana Local Government representing Bodo West, Buan and Kpean in Khana Local Government representing Yorla Oil Field, and Korokoro-Tai and Gio -Tai in Tai Local Government Area representing Korokoro Oil Field. The population projection formula used in this study is Linear Extrapolation Model. The projected population up to 2008 for these selected communities is done with the aid of the Exponential Projection Formula.

SAMPLING TECHNIQUE

In the course of carrying out this study, two sampling techniques were used and these include: Multi-stage sampling technique and simple random sampling technique. This involves the listing and classification of the entire nine (9) Oil Fields in Ogoni land. Four (4) Oil Fields out of the nine (9) Oil Fields which cuts across the entire Ogoni land was chosen and from each Field, two (2) communities who are major host to the oil and gas Multinational in each of the (4) Local Government Area as shown in Table 1, was chosen and respondents were chosen at random from each of the selected communities. The distribution of questionnaire to the various communities is shown in table 1 below.

Table 1: Questionnaire Distribution Table

S/ N	Oil Field/ LGA	Community	Population 1991	Population Projected 2008	No. of Respondents
1	BODO	Kedere	9,518	14,049	117
2	WEST/ GOKANA	Mogho	9,387	13,855	116
3	YORLA/ KHANA	Buan	2,553	3,768	31
4		Kpean	4,227	6,328	53
5	KOROK	Gio	714	1,054	9
6	ORO/ TAI	Korokoro	3,026	4,466	37
7	EBUBU/ ELEME	Ejamaa	3,779	5,578	47
8		Agbeta	5,537	8,173	68
Total			38,741	57,271	478

Source: Authors' Field Survey, 2010

DISCUSSION OF FINDINGS

AGE-SEX DISTRIBUTION

The table 2 below shows the Age-Sex distribution table of the study area. From the data above, it is evident that people between the ages of 25 to 29 years represent most of the respondents which was represented by 18.2%. This is closely followed by those between the ages of 35 and 39 years with 12.4% and those between the ages of 45 and 49 years are the least respondents with 1.25%.

Table 2: Age-Sex Distribution

Age Cohorts (Yrs)	Male		Female		Total (M+F)	
	N	%	N	%	N	%
0 – 4	55	2.7	42	2.0	97	4.7
5 – 9	103	5.0	110	5.3	213	10.3
10 – 14	14	0.7	103	5.0	117	5.7
15 – 19	114	5.5	53	2.6	167	8.1
20 – 24	117	5.7	61	3.0	178	8.7
25 -29	163	7.9	214	10.3	377	18.2
30 – 34	115	5.6	105	5.1	220	10.7
35 – 39	139	6.7	118	5.7	257	12.4
40 – 44	55	2.7	35	1.7	90	4.4
45 – 49	6	0.3	19	0.9	25	1.2
50 – 54	56	2.7	21	1.0	77	3.7
55 – 59	22	1.1	71	3.4	93	4.5
60 – 64	50	2.4	26	1.3	76	3.7
65 and above	53	2.6	29	1.4	82	4.0
Total	1,062	51.4	1,007	48.6	2,069	100

Source: Authors' Field Survey, 2010

LEVEL OF EDUCATION OF HOUSEHOLD MEMBERS

The levels of Education of household members were ascertained from the field. It was established that those that have completed their Secondary Education are the modal class of respondents with 19.2%, which is closely followed by those who have completed Tertiary level of education represented 16.4% and those who had No Formal Education is represented with 2.2%. From the data so far, it is very evident that there are lots of young school leavers in Ogoni land which portend greater potential for an active but idle work force, which makes the entire social environment susceptible to violence and youths' restiveness. This situation requires urgent attention by all concerned in the entire Ogoni land. See figure 1 below

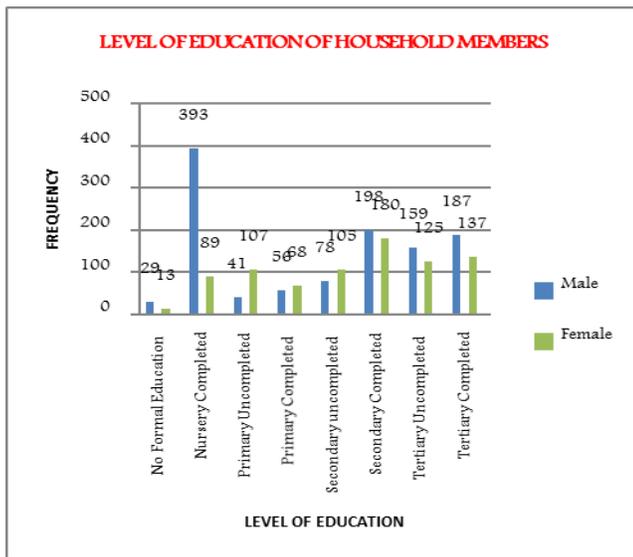


Figure 1: Level of Education of Household Members
Source: Authors' Field Survey, 2010

OCCUPATIONS OF RESPONDENTS

The various occupations of the respondents are shown in figure 2:

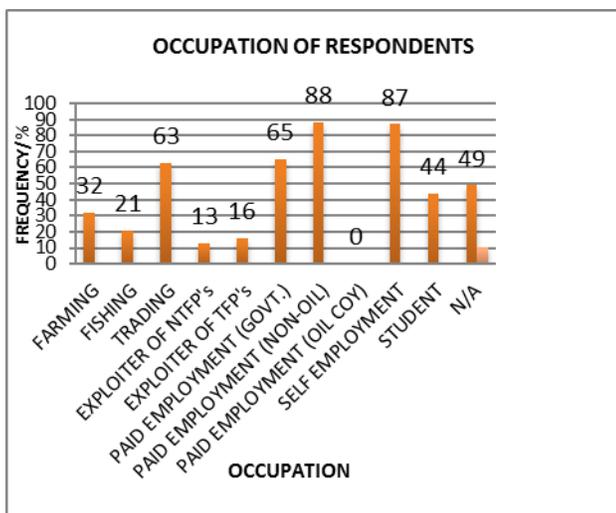


Figure 2: Occupation of Respondents
Source: Authors' Field Survey, 2010

Paid Employment

About 18.4% of the respondents are mainly engaged in various forms of paid employment that is private and non-Oil and Gas oriented. This is closely followed by those who are self employed. Self employment in this study entails quite a lot of occupations embedded in one as self employment.

Self Employment

This occupation has the second highest number of respondents from the field, these are: Hunting, Sand mining, private consultancy services, Artisans, Craftsmen, commercial motor cyclists, dealers in G.S.M. recharge cards and accessories and the like. All these set of occupations are put as self employment in the course of this research, and are being represented by 18.2% of the respondents.

Fishing

Fishing activities are done by quite a few of the respondents due the nature of the terrain as some parts of the study area have no rivers that could encourage large scale fishing activities. The few that engage themselves in fishing practice boat fishing which involves the use of dug-up canoe and shore fishing, the fishing gear normally employed include gill nets, hook, line and sinker, traps and other types of gear. The species of fishes caught were Tilapia, Catfish, Mullet, Crayfish, Crayfish, Mudskipper, Shrimps, Lobsters, Sardine and Sting ray. The number of fish craft owned depends on the number of households and the extent of engagement in the business, since it has not been the main stay of the local economy in the area. Some fisher folk only preserve their catch if there is no possibility of marketing the fish in the fresh form. The fishes are then smoke-dried or sun-dried, salted, or fried. Fisher folk market large-sized fishes in the fresh form, while fish landed alive are sold alive. The level of income gotten from fishing depends on the kind of fish caught. Some fisher folk make an average of between ₦ 80,000 – ₦120,000.00 monthly. Fisher folks encounter some challenges during and after fishing such as tidal movement, sea piracy, and rotten fishes due to non availability of storage facilities to preserve their catches and in recent times no catch due to exploration and production activities of Oil and Gas the resultant consequences of Crude oil spillages on the water as fishes migrate to safer grounds to breed. Below are some pictorial evidences of some fishing activities: gears and polluted rivers and streams with some dead fishes causing more harm than good to the aquatic habitat and the entire bionetwork.

Farming

Owing to the nature of soil in the terrain, subsistence agriculture is practiced for the sustenance of the people. They farm on limited size of farm lands depending on the ownership status ranging from 1 hectare to 5 hectares and above. The produce got from the farming exercises are Yam, Maize, Pepper, Pumpkin, Melon, Garden eggs, Cassava, Plantain, Cocoyam, Pawpaw, Orange, Guava, Pear, Pine apple, 3-leaf yam, Okra. The farmlands are allowed to fallow between 2yrs and 5yrs depending on the type of farm produce. The people are complaining about the loss of farm hands due to the presence of exploration and

production of activities petroleum in Ogoni land, there is also a change in the farming calendar due poor soil fertility and poor crop yield which is a direct consequence of exploration and production of petroleum. Furthermore, the farmers told the researcher that there is no fixed monthly income got from farming since it is a seasonal affair and not done monthly. This occupation is represented by 6.2% of the respondents. Below are some pictorial evidences showing the severity of the impact of exploration and production of crude oil on land generally, since land is used for various purposes ranging from farming, building of houses and other ancillary facilities and services.

HOUSEHOLD EMPLOYMENT

Figure 3 represents the employment status of respondents in the study area. From the data, it is very obvious that those respondents that are engaged in one form of schooling are the modal class with 30.9% for both males and females, this closely followed by those respondents that are engaged in one form of employment or another mostly in the private non-oil related sector ranging from government employment to self employment and the like, are represented with 30.3%. However, those household members that are unemployed are represented by 24.7%, while Retirees were mainly male bias, while those that are Full-time house wives were strictly females. They are represented by 0% for the females in the retirees' aspect and 0% for the males in area of full-time house wives respectively.

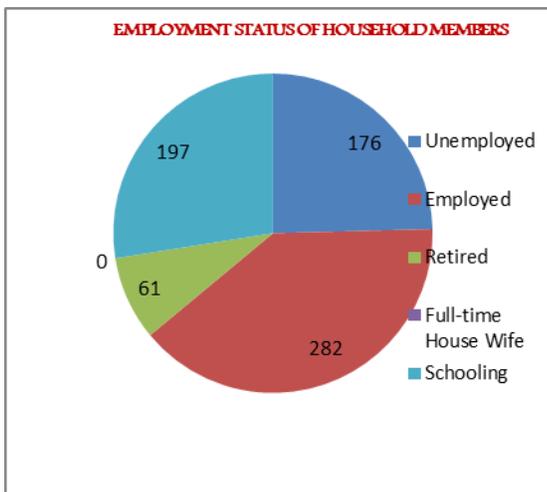


Fig 3 EMPLOYMENT STATUS OF HOUSEHOLD MEMBERS
 Source: Authors' Field Survey, 2010

AVERAGE MONTHLY HOUSEHOLD INCOME

Figure 4 below shows the average monthly income of respondents was ascertained from the respondents in the study area. From the data above, 19% of the respondents earn between ₦ 30,000 – ₦ 49,999 these respondents are mostly those employed by the government and other private individuals who are not involved in exploration and production activities in Ogoni land, this is closely followed by respondents who earn between ₦ 20,000 – ₦ 29,999 also these are the respondents who are traders. About 3.6% of the respondents earn less than ₦ 10,000 averagely

in a month. Also, 13.8% of the respondents earn above ₦ 100,000 as a monthly average, they are mainly those respondents who deal in Timber Forest Products (TFP's) and sand mining, some private sector CEO's, and some privileged few in the study area. 5.2% of the respondents did not respond. This type of housing depicts the level of impoverishment of the people due to exploration and production activities.

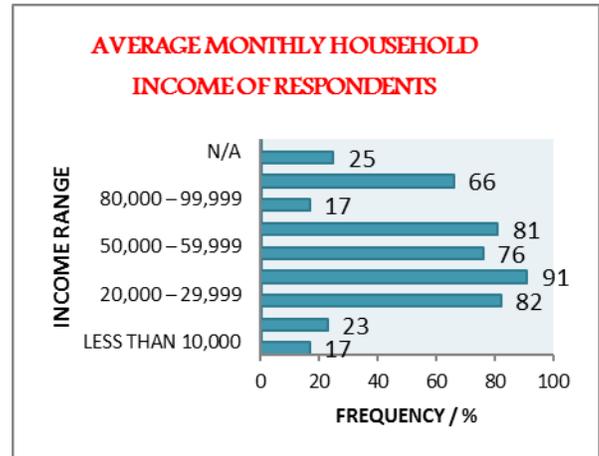


Figure 4: Average Monthly Household Income of Respondents
 Source: Authors' Field Survey, 2010

RESPONDENTS' RATING OF THE EFFECTS OF EXPLORATION AND PRODUCTION OF PETROLEUM

From the responses gathered in table 3 below, 92.5% of the respondent confirmed that the effect of exploration and production of petroleum on poverty level is 'very severe', while 82.5%, 76.6%, 73% and 69% of the responses also indicated that the impact of exploration and production of petroleum is 'very severe' on the Overall social environment over time, Cost of living/inflation, Farming, and Land for mix uses respectively. Furthermore, 53.1% of the respondents averred that the effect of exploration and production of petroleum had affected them as 'Severe', also 50.8%, 42.7%, and 38.7% of the respondents averred that the effects of exploration and production of petroleum on Potable water supply, Fishing and Hunting are 'Severe'. Besides, 23.8%, 10.5%, and 1.3% of the respondents chose the 'Don't know/Uncertain' response on the effects of exploration and production of petroleum on Hunting, Non-Timber Forest Products respectively. While 51.3%, 16.7% and 6.5% of the respondents said that the effects of exploration and production of petroleum on Sand mining, Non- Timber Forest Products and the overall social environment over time is 'Slight' respectively. And 29.7%, 9%, 1.5% of the respondents are of the perception that the effects of exploration and production of petroleum on is 'Very slight'. But 1.7%, 1.7% and another 1.7% of the respondents did not respond with respect to the effects of exploration and production of petroleum on Potable water supply, Poverty level, and the overall social environment over time.

Table 3: RESPONDENTS' RATING OF THE EFFECTS OF EXPLORATION AND PRODUCTION OF PETROLEUM

S/N	Aspect of the Social Environment(social Sensitivities)	1 Very severe	2 Severe	3 Don't know/ Uncertain	4 Slight	5 Very Slight	No Response
	Land for mix uses	69%	22.2%	0	0	8.8%	
2	Fishing	48%	42.7%	0	7.7%	3.6%	
3	Hunting	11.5%	38.7%	23.8%	9.4%	6.5%	
4	Timber Forest Products (TFP's)	22%	53.1%	10.5%	9.4%	5%	
5	Non-Timber forests Products (NTFP's)	41.6%	32.6%	-	16.7%	9%	
6	Farming	73%	16.3%	1.3%	7.3%	1.5%	
7	Sand mining	5.9%	6.5%	6.7%	51.3%	29.7%	
8	Cost of Living/ inflation	76.6%	23.4%	-	-	-	
9	Potable water supply	32.4%	50.8%	3.6%	10%	1.5%	1.7%
10	Poverty level	92.5%	5.9%	-	-	-	1.8%
11	Overall Social Environment over time	82.45	9.4%	-	6.5%	-	1.7%

Source: Authors' Field Survey, 2010

From table 4 below there are perceived adverse effects being suffered by the respondents in the study area. The data shows that about 80% of the respondents in the 1st, 2nd, and 3rd mentions of the adverse effects encountered complained of the poor crop yield in their various farms which has brought untold hardship to them in terms of income from Agriculture which used to be the mainstay of the entire Ogoni land as they were formerly referred to as 'the food basket of the Niger Delta'. Also the pollution of the marine habitat due to exploration and production of petroleum in Ogoni land was the second most perceived adverse effect of exploration and production of petroleum in Ogoni land as most of the marine bionetwork had been destroyed due to spillages in the rivers and streams. The has further made the few species of fishes that survived the spillages to move to safer grounds to breed thereby making the fisher folks strive without fruitful catch in most of their endeavours. This has made the local economy to suffer as income is drastically reduced and the fisher folks are further impoverished. Again 30.7% of the respondents responded that the major sources of potable water have been polluted due to the activities of exploration and production of petroleum in Ogoni land. This has made the people vulnerable to epidemic and other adverse health problems as stated by Achebe and Epstein, 'Oil spills and spills are capable of generating serious air pollution whether or not the oil undergoes combustion. The toxic fraction of light crude oil (found in The Niger Delta Region), evaporates most easily carrying with it a deadly cocktail of PAHs, including benzene (a known human carcinogen) and toxic fumes, such as toluene, xylene, butane, and propane. Air quality after such spills is compromised for an extended period of time – enough to seriously impair human health. Acid rain further complicates the problem, altering surrounding streams, creeks and polluting ground water. The incidence of skin diseases from bathing in polluted water has dramatically increased. Ground water pollution causes repeated outbreaks of diarrhea. Malnutrition with the evidence of Kwashiorkor has returned to this part of Nigeria (it was last evident during the Civil War). The combined impact of water and land pollution is responsible

for crop failures and diminishing fish populations Achebe and Epstein, (2004) However, communal clashes were not recorded in both the 1st and 2nd mentions, but only in the 3rd mention with 1.5% of the respondents. This is a clear indication that there were fewer skirmishes that are linked with exploration and production of petroleum in Ogoni land.

Table 4: Perceived Adverse Effects of Respondents

S/N	Perceived Adverse Effects	First Mention		Second Mention		Third Mention	
		N	%	N	%	N	%
1	Poor Farm yield	203	43.5	146	30.5	32	6.7
2	Sleeplessness due to exploration flame	-	-	-	-	25	5.2
3	Pollution of the marine habitat	121	25.3	73	15.3	38	7.9
4	High cost of living	-	-	22	4.6	-	-
5	Poor drinking water	26	5.4	43	9.0	78	16.3
6	Air pollution (Acid Rain)	18	3.8	53	11.1	46	9.6
7	Rusting of roofing sheets	22	4.6	-	-	22	4.6
8	Loss of Sacred land	11	2.3	27	5.6	26	5.4
9	Poor health due to pollution	16	3.3	35	7.3	72	15.1
10	General Unemployment	17	3.6	12	2.5	36	7.5
11	Youths restiveness and militancy	-	-	31	6.5	13	2.7
12	Upsurge in female prostitution	-	-	11	2.3	11	2.3
13	Inflation/ high cost of living	10	2.1	-	-	12	2.5

14	Communal clashes	-	-	-	-	7	1.5
15	Not Ascertained (N/A)	29	6.1	25	5.2	60	12.6
	Total	478	100	478	100	478	100

Source: Authors' Field Survey, 2010

Table 5 below shows the mitigation measures the respondents want the Oil Company operating in their environment to do as palliative measures to pacify the agitating youths and other community members who may be aggrieved over the non performance of the oil company. From the above table, 18.6% of the respondents want to be employed by the exploration and production Company. This goes to buttress the fact that the company did not employ members of their host communities who are qualified and ready, willing and able to work. While 10.3% of the respondents wanted funds to be provided for the purchase of fertilizers for the farmers to boost rural agriculture and produce more food and reduce youths' unemployment. Also, 14.2% of the respondents want the oil and gas multinational company sign and implement the Global Memorandum of Understanding (GMOU) which was agreed to and by the company and their host communities. But 20.1% of the respondents did not respond to that question.

Table 5: Perceived Mitigation Measures Carried Out by the Company

Variable Code	Measures of Mitigation	N	%
1	General employment	89	18.6
2	Scholarships	-	-
3	Construction of some rural roads	31	6.5
4	Provision of Electricity	8	1.7
5	Provision of potable water	-	-
6	Provision of social amenities	40	8.4
7	Stop gas flaring	11	2.3
8	Minimize spillage	38	7.9
9	Build Schools	-	-
10	Implement the M.O.U.	68	14.2
11	Provide funds for fertilizers to farmers	49	10.3
12	Skills Acquisition	-	-
13	Build Head office in their host communities	17	3.6
14	Clean-up the land/ soil for better yield	31	6.5
15	Not Ascertained (N/A)	96	20.1
Total		478	100

Source: Authors' Field Survey, 2010



Plate 1: A man with Traditional Fishing trap in a Crude oil Polluted River in Korokoro Town, Korokoro Oil Field.

Source: Authors' Field Survey, 2010

Plate 2: A Ruptured SPCD Operation Wellhead 2



Plate 2: A Ruptured SPCD Operation Wellhead 2 'Christmas Tree' in K-Dere, which has Polluted Farmlands and Crops in Bodo West Oil Field

Source: MOSOP Library, 2006

The table 6 shows the responses of the respondents on what mitigation measures should be taken by the government. About 22% of the respondents want the government to mediate between the oil company and the host communities, while 17.2% of the respondents want the government to abrogate all the unfriendly environmental laws in the country especially the Land Use Act of 1978. Also, about 10% of the respondents want the government to ensure that the company makes good policies and implement same so as to enhance the quality of life of the host communities, and 9.4% of the respondents want the government to monitor the activities of the company. Furthermore, about 6.9% of the respondents want the government to properly monitor the oil company to ensure that the Memorandum of Understanding signed between the company and their host communities are fully implemented. But 28% of the respondents did not respond.

Table 6: Perceived Mitigation Measures Respondents Want the Government to Do

Variable Code	Measures	N	%
1	Monitor the companies	45	9.4
2	Mediate between the Oil companies and the host communities	105	22.0
3	Good policies and implementation	48	10.0
4	Assist the Oil companies to develop the communities	32	6.7
5	Monitor the compliance of the companies with M.O.U.	33	6.9
6	Abrogate all the unfavourable laws. E.g. Land Use Act of 1978.	82	17.2
7	Not ascertained (N/A)	133	28.0
Total		478	100

Source: Authors' Field Survey, 2010

RECOMMENDATIONS

Inyang, (1997) stated that "Oil exploration and exploitation has over the last four decades impacted disastrously on the socio-physical environment of the Niger Delta oil-bearing communities, massively threatening the subsistent peasant economy and the environment and hence the entire livelihood and basic survival of the people." Suffice it to note that, while oil extraction has caused negative socio-economic and environmental problems in the Niger Delta, the Nigerian State has benefited immensely from petroleum since it was discovered in commercial quantities in 1956. The Central Bank of Nigeria (CBN) 1981 annual report stated as follows, Oil which was first discovered in 1956 and first exported in 1958 accounted for more than 90% of Nigerian exports by value and about 80% of government revenue as at December 31, 1981. The total study effort is summarized below. Using a combination of primary and secondary data sources the research found that:

- Consequent upon the recondite situations the communities are made to pass through which ranges from the destruction of their means livelihood to the environment itself, the spiritual personality of its inhabitants, it is pertinent, thus, that the petroleum exploration and production company should seriously put into consideration the impact mitigation and enhancement framework, as well as the social management plan in order to make those people whose environment have been directly impacted to have means of livelihood and a sense of belonging with improvements in the quality of their environment with respect to farmlands and rivers.
- There should be an effective spill detection and clean-up mechanism put in place; like the electrification of the host community directly from the flow station. Tie- in, in such a way that whenever there is oil leak the station goes down, the community will automatically go out of power. It becomes imperative that less incidents of spill

especially in cases of sabotage spill and regular supply of electricity to the community

- There should be the proper implementation of the Hazards and Effects Management Process (HEMP) to curtail the impacts of spill on the environment. As this will preempt the anticipated effects and proffer the right solution to such environmental hazards.
- Government should ensure that dialogue serves as basis for resolving conflicts and Environmental Management Education should be mainstreamed into the curricula of the Primary, Post Primary and tertiary institutions in Nigeria.
- Ensure that the Department of Petroleum Resources (DPR), effectively performs its regulatory function of monitoring and controlling the activities of the petroleum exploration and production including the processes of oil licensing, enforcement of the implementation of the Corporate Social Responsibility and the Global Memorandum of Understanding (GMOU) signed by both the petroleum exploration and production Multinationals and their host communities.

CONCLUSIONS

From this study a number of conclusions have been reached: Petroleum-related activities have been going on in the Niger Delta including Ogoni land since 1956. For much of that period, communities hosting oil-related facilities have suffered neglect from the petroleum exploration and production multinationals operating in the area. This singular act of neglect has caused a lot of setbacks in these communities as sources of livelihood, income, and occupation have been destroyed and the ecosystem distorted. The study revealed that the hazards and effects associated with crude oil spill is enormous and cannot be over-emphasized. Therefore it is pertinent that any spill incident should be addressed with immediate effect for remediation and proper clean up, as this will enhance the quality of the environment in the communities. As it is gathered, there is no proper mechanism for the dissemination of information about the environmental hazards associated with spills on the environment. Therefore the relevant Government Agencies, Ministries, Departments and Parastatals, Non-Governmental Organizations (NGO's), Community Based Organizations (CBO's), Faith Based Organization's (FBO's) should ensure that they partner with both the government and the people at the community level to properly educate the villagers on the effects of spills on the environment as to prevent loss of their means of livelihood, and increase in rural poverty and other social vices.

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