



Assessing the Perception of People on Environmental Resource Curse of Oil and Gas Exploration in Bauchi and Gombe States, Nigeria

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Abstract

Oil and Gas exploration was commissioned in Bauchi and Gombe state Nigeria in the year 2019 and the two states were about to be listed among oil and gas producing states in the North East Nigeria, after the discovery of oil in Niger Delta region 60 years ago. Because of that, the communities' optimism has widened on the perception that the oil and gas sectors were the turning point fortune for socioeconomic development and improvement in living standard of people. However, a major adverse implication of oil and gas explorations is the environmental pollution impact on the communities. Conflict may also resurface, for example land ownership, and Urbanization among the peaceful living communities. The study explored communities' perception regarding the environmental consequences of the oil and gas sectors. Data collected for the study with questionnaire. The findings revealed that majority of the respondents was pessimistic about the prospects of oil and gas sectors for ensuring national development and income distribution. It has been concluded that the communities received inadequate information about the environmental impacts of oil and gas exploration hence, eventually considered it as resource curse. It has been therefore recommended that strict compliance with environmental policy actions such as imposition of market based instrument environmental taxation in particular to protect the environment against the presence Cul-de-sac.

Keywords: Bauchi, Environment, oil and gas, Gombe, Pollution

JEL Code: Q50, Q53, Q56, Q59

Contribution/Originality: This study contributes to body of knowledge by exploring emerging issue of oil and gas that was recently discovered – with debates and perceptions lingering among the host communities. The study hopes to provide an understanding of the perception of people and contribute to body of knowledge with fresh findings that will pave way for further studies in the area.

1.0 Introduction

The environmental externalities associated with oil extraction and explorations which include water pollution, air pollution and greenhouse gases emissions exemplify a classic tragedy of the common (Adam; Caroline; Kemen; & Drew, 2019). Due to the enormous financial resources that accrue from this industry, the discovery of oil and gas in any location particularly in the developing countries is greeted with great optimism and becomes cheering news. Such is the case in Kolmani River I, which was first drilled in 1993 but it was latter terminated after 8000 feet only and recorded about 33 million standards cubic feet of gas resources, because it was considered not to have commercial quantity by International Oil Companies (IOCs) Shell; Chevron and Total, after seismic following Nigerian National Petroleum Corporation's (NNPC, 2019) data report. This led to suspension of the operation

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and relinquished the blocks in line with their contractual obligation in 2000 (Mohammad, 2018; NNPC, 2019).

The Federal Government does not relent in its effort in search of oil in the inland water ways and now, Kolmani River II well which is located at Barambu exploration site with oil prospecting licenses (OPL) 809 in Alkalari Local Government Area of Bauchi State, (NNPC, 2019, Punch Nigeria, 2019). This has emerged as cheering news, oil and gas field recently discovered in Bauchi and Gombe state area, hitherto agitation by the surrounding communities for listing among the oil producing states and enjoy the petro dollar like the Niger Delta Region. These states will start to get 13 percent derivation revenue beside the oil companies' intervention corporate social responsibilities to improve living conditions of the communities through corporate social responsibilities. The oil and gas are now discovered in commercial quantities (Baru, 2019). This has led the Federal Government of Nigeria to initiate seismic survey and spud - in to ascertain the quantities of hydrocarbon in the oil fields.

As a result, the host communities were very optimistic of the new development, hoping to create jobs and improve the economy through investment in infrastructure, education, and health, without foreseeing the environmental perceived challenges of the presence of oil and gas extraction and petroleum producing industries as it happens in Niger Delta Region which led to "resource curse", as noted by Ameichi (2010). The risk of "resource curse" associated with extractive industries is very critical and hence the redistribution of oil and gas resources should not be taken for granted (Brobberry, 2014). As it has been asserted by Mustapha, (2019) that environmental pollution and gas flaring have become the major challenges which continued to affect the means of their livelihood such as farming and cattle rearing and their healthy living which is awaiting the newly host oil producing communities.

One of motivations of the study is that extractive industries such as oil and gas are known to have pervasive adverse social and environmental impact on the communities in which they operate, especially in developing countries where there is very weak regulatory policy on environmental protection. Although the issue of environmental pollution is crucial in Nigeria it has often been relegated to the periphery in empirical literature. There is no solid support of environmental awareness and protection which will help in climbing up the political agenda, the greening politics, the idea of using market base instruments to control pollution and environmental degradation has to be taken up in the political discussion from ward to the federal level (Rapanos, 2004).

Similarly, another area that has also suffered a little neglect in the extant literature and studies was on application of market base instrument such as environmental taxation in particular which is considered the best for pollution abatement is of particular importance. since the pollution control measures may affect growth and employment, which are burning issues in Nigeria, because of its low per capital income. Furthermore, the theoretical literature in this area is also limited. Based on this observation, this research study was necessitated to fill these gaps and therefore, contribute to the existing literature and academic knowledge in the focus area.

The paper aimed to examine the social factors such as health; environmental impacts of oil and gas extraction; migration; and urbanisation which have affected the communities in the places where it has been found. This paper is organized as follows. Immediately after introductory part, we review theoretical and empirical studies relevant to our research problem. Next, I describe the data and the methodology for realizing the objectives of the study. We then present and discuss the results. Finally, we conclude of the paper with some recommendations.



2.0 Literature Review

2.1 Theoretical Underpinning: Theory of “oil-rich or wealth nation”

This theory was propounded by Amoako and Owusu, (2012). He asserted that countries with well-endowed oil and gas resources turn to grow at a faster pace but with a high level of crimes. The theory explains that the oil and gas extractive industries usually have greater opportunities to expand their economies through socio-economic infrastructural development leading to job creation, provision of social amenities and better living standards. However, this often comes with costs. When the resources are not properly managed this could mean that any attempt by the state to misappropriate the revenue generated from the oil and gas extractive industries could lead to unfortunate circumstances such as disorder in the form of political instability, environmental pollution and resource curses. Indeed, this theory is relevant for this study in two ways. First and at least, it places Bauchi and Gombe state in the context of oil-rich state in Nigeria as one of the six oil producing country in the world, which the research work found to be correct. Secondly, it advances the argument made early that oil wealth economies are often manipulated and controlled by the capitalist economy. For example under the capitalist economic system, the aim of economic agents is to maximize profit only. Oil and gas or any natural resources, are explored by the multinational corporation from exploration to exploitation and from transformation to the marketing of the products.

The fact is that the exploration and exploitation of natural resources require huge capital investment and this is usually undertaken by those multinational companies (Collins, 2015). To this end for a developing country like Nigeria, owning a national resource does not automatically transform the citizens and the country into fabulous rich as the resources or oil-rich nations, theory projected. Besides the role played by the multinational corporations (MNCs), the MNCs whose activities were largely responsible for degradation of the area had cashed in on the weakness of those institutions to shortchange the region and also undermine environmental laws in Nigeria. Given that those companies are themselves not transparent in disclosing the damage done to the environment in their annual financial statement as noted by (Pulver, 2007); invariably conflict will always be the resultant effect. Therefore, it is very rare to find any oil-rich nation in sub-Saharan Africa operating a transparent and accountable oil and gas economy due to pervasive patronage politics and crony capitalism (network involving cronies' advantage position for mutual reciprocating benefit).

This study finds this theory to be reflecting the reality of the oil and gas extraction economy, in terms of failure to disclose the actual damage costs of pollution as a result of their operations. And therefore, it is argued that the theory could have shown how oil-rich nations could also serve to benefit other economies and not seen as only facilitating doom. Oil and gas revenue could promote national development if media have access to information about the sector and stakeholders do not lack insight into the operations, and government and oil and gas partners desist from patronage politics and excessive capitalism.

The researcher conducted an exhaustive review of the theoretical literature and solicited expert advice to identify the potential health and environmental risk associated with oil extraction and production which led to adverse environmental impact on soil, forest and water of the Niger Delta communities in Nigeria (Kadafa, 2012). It has been also been noticed by Aigbedion , Iyayi and Agbeboh 2007, that the oil explorations has ultimately affected peasant agriculture in a variety of ways, which ultimately have caused problems of environmental refugees. Some of the landless farmers migrate to other more fertile lands in other rural communities in Bayelsa state, putting pressure on scarce fertile lands. While some



of the displaced farmers out-migrate to the urban areas in search of other means of livelihood like trading.

Forced resettlement was also identified as association with development of extractive industries, it has been reported that in Niger Delta Region of Nigeria thousand were forcefully evicted to make way for crude oil extraction in Nambe Local Government Area of Rivers state as such the people of the community lost venerated ancestral homes, died from contamination of oil spillage and their livelihoods was jeopardized (Ikelegbe, 2017). UNEP, (2011) report indicates that local communities in the Niger Delta Region were affected by diseases such as respiratory diseases; skin rashes; coughing; gastrointestinal problems, different kind of cancers and malnourishment were very common amongst the children. However, Kadafa, 2012 asserts that when petroleum hydrocarbon is released into the environment, processes alter the chemical composition. Physical weathering will be notice and therefore, affect the living organism.

The effects can be either direct damage of resource or the ability of the environment to support a resource. In the Niger Delta Region, there is lack of compliance with technical legislations on permissible levels of many pollutants on the practices for the management of production waters, drilling mud's and gas flaring. The activities of oil companies operating in the area have led to contamination of air, water and soil in residential areas close to oil fields, (Kponee, Chiger & Kakulu, 2015).

2.2 Empirical Review

Akpokodje and Salau (2015) examined oil pollution on agricultural productivity in the Niger Delta region of Nigeria and applied Ramon Lopez's Cobb Douglas production function model. This finding shows that increasing level of oil spill and forest loss negatively affects agricultural production. It has been well documented that western countries seem to be deriving more blessing from the oil discovery and exploration at the expense of Africans, particularly Nigeria.

A good case in point is Norway which was understood as the poorest country in Scandinavia at the end of 1960s, before the discovery of oil, but as of today ranks among the wealthiest country. Akosua, (2019) attributed this success to Norway's ability to prevent, rent- seeking behaviour and corruption in their oil and gas sector, which have been identified as core elements of the resources curse to the African countries. A study from the Niger Delta Region of Nigeria, reports a higher frequency of neurological, haematological and severe irritation symptoms in inhabitants from a community. The main sources of their drinking water are contaminated with refined oil products, compared to a neighbouring community (Kponee, Chiger & Kakulu, 2015).

Studies from the Peruvian Amazon in Latin America compared blood lead levels among indigenous children and adults according to distance from place of residence to the oil field blood leads levels were high in the area, (Orta & Napolitano, 2015 as cited in Cristina & Marti, 2016).

Furthermore, groundwater in Rivers State has been heavily contaminated as a result of oil extraction which caused a lot of public health issue by the community members at extremely risk (UNEP, 2011) and thus, lets to observation of the surrounding creeks which is widespread and severely impacting many components of the environment. On extraction related contamination leads to exposure to a mixture of contaminants. Produced waters originate in the natural oil reservoir and are separated from oil and gas in the production facility, produced water represent the major petroleum derived waste ((Kponee, Chiger & Kakulu, 2015). They contain toxic compounds of natural origin, such as polycyclic aromatic hydrocarbon (PAHs) BTEX (benzene, tolouence, ethybenzene, and xylenes), heavy metals and



occasionally naturally occurring radioactive materials, and may also contain chemicals from drilling fluids and treatment chemicals (Abdullah & Biak, 2009).

A world development report of the United Nations Conference on Trade and Development (UNCTAD, 2007 as cited in Akosua, 2019), stated that extractive activities (including oil explorations) can also have profound social and political impacts. They can have positive effects on development by creating jobs; encourage businesses and providing vital infrastructure for remote communities such as roads; electricity; education and health. As well as negative effects such as gas flaring; high risk of diseases; conflict among the communities and degradation of eco system.

However, the presences of these hydrocarbons reserves has been identified by many scholars as a potential mixed blessing for oil producing countries and communities (World Bank, 2006). Although the discovery of oil creates a sense of hopes and expectations amongst the communities that the revenue would lead to the development of local communities and region as whole, in most cases this dreams has remained illusory as the extraction of all resources has led to destruction of local communities and anarchy in the area therefore, causing serious conflict.

3.0 Methodology

3.1 General features of the Study Area

The study area comprises of the village surrounding Kolmani River II well which was located at Barambu, Kwaimawa, and Dogonruwa. These villages are lying less than 5 km from the oil well which is located in Alkaleri and Akko Local Government Area of Bauchi and Gombe state in North Eastern Nigeria. The villages are located on latitude $10^{\circ} 88'47''$ and longitude $11^{\circ}51'48''$. i.e Latitude 10 degree 88 minutes and 47 second and Longitude 11 degree 51 minutes 48 second respectively. The climate of the area is humid tropical characterized by wet (April – November) and dry season (December to March). The vegetation around the areas is mostly Millet, Corns, Maize and to some extent cassava which were produced by the community year in year out long before the discovery of oil.

The communities in the study area were predominantly peasant farmers and were mostly male with 78.5 percent of the population. Five villages were chosen from the area where 123 respondents were randomly selected out of the sample size meaning that is about 83 Male and 40 Female who were randomly selected responded to the questionnaire. Most of them were married (above 89 % in both areas), and the household size was quite large in both cases ranging from 3- 8 persons. The literacy level of the peoples in the vicinity of oil well area is about 42.7 % and this may also create a low awareness of the danger of oil pollution and gas flaring in the targeted area. So the tendency to value lowers the damaging impact. Majority of the respondent in the area are indigenes and on ethnocentric grounds indigenes in oil and gas discovery area are more likely to avert damage and seek for greater intervention by the government to reduce the pollution.

3.2 Survey Instrument

The instrument used for this study was a questionnaire consisting of 13 items that measure public perception. The items of the questionnaire were adapted from the previous studies of Joseph, (2019) on Uganda Albatine region, and further modified for use in this study. A total of five experts were involved in the validity process of the questionnaire. The questionnaire was used on 5 Likert scale rating where 1 = very untrue 2 = not true 3 = quite true 4 = true 5 = very true. The questionnaire also went through reliability test. A pilot study was conducted with 90 respondents of similar environmental challenges. The results of the pilot study showed that the copies of the questionnaire were highly reliable



because the Cronbach Alpha value of the stud's construct (refer to Table 1) was greater than .90 according to Hair, Black, Babin and Anderson (2010) claim that if the Cronbach Alpha coefficient of a question exceed .70 this indicates that the questionnaires has good reliability. Therefore, the questionnaire was ready to be used in the field of study without having to go through any amendment

Table 1 Cronbach's Alpha Coefficient α for Study Constructs

Construct	Sub Construct	No of items	Cronbach's Alpha α
Positive and Negative Expectation	Access to Health, Education	5	.920
	Access to Electricity, Drinking water	6	
	Access to Good road	5	
Negative Expectation	Environmental degradation, reduction in agricultural yield, conflict of interest, force resettlement	8	.953
	Land crisis, environmental pollution, loss of livelihood, animal grazing interference	9	

4.0 Presentation and Discussions of Results

4.1 Descriptive Statistics of Respondents

The descriptive statistics of constructs of the questionnaire administered are indicted in the table 2 showing the mean, standard deviation, kurtosis and skewness scores of the construct the average score from the 5 point Likert scale are computed to show the proportion of the respondents that are either very untrue or very true with the various items. The mean score of each item in the questionnaire are obtained through the use of SPSS Computer variable version 23.

Table 2: Responses on the Positive Expectations of Oil Extraction

Items	Mean	Standard Deviation	Skewness	Kurtosis
Access to health	3.9930	.75523	.012	-1.235
Access to Education	4.0070	.74585	-0.11	-1.189
Access to Electricity	3.9441	.69986	.077	-9.36
Access to Safe Drinking Water	4.0699	.67813	-0.86	-8.02
Access to Good Road	4.1119	.71311	-1.66	-1.010

Source: Researcher compilation 2020

Table 2 depicts the responses of respondents from access to health to access to good road in the questionnaire as the positive expectation for the improvement of social service delivery in the study area. Access to health present a mean score of 3.9930 on 5 point Likert rating and a standard deviation result of 0.75523. The mean indicates that the distribution is positively skewed indicating high scores.



The kurtosis of the sample indicates that the distribution is flatter than the normal indicating that the distribution is platykurtic. Thus result on the average show that 72 % (123) of the respondents in the study area support the notion that oil exploration will improve access to health well-being of the communities, which is consistent with the perception of respondents of the Niger Delta Region in the empirical literature by Ikelegbe, (2017) endangering civil society.

Responses on second items Access to Education revealed a mean of 4.0070 and a standard deviation result of .7485. The mean indicates that the distribution is negatively skewed which indicates low scores, whereas the kurtosis of the variables also indicates that the distribution is flatter than the normal indicating that the distribution is platykurtic. Thus result on the average show that 72 % (103) of the respondents in the study area support the notion that oil exploration will improve access to good education for the communities.

Further, a critical review of the responses on variable three showed clearly that on a whole, respondents represent a percentage proportion of 78 % affirming that access to electricity will help in improving positively the expectation of the people in the attainment of social life status of the communities. As seen with mean of 3.9441 and standard deviation of .69986 which indicates the positive skewness of the distribution, although the kurtosis has indicates the distribution is platykurtic due to its further away from mean.

Also, responses on access to safe drinking water revealed out rightly that about 78% of the responses support the fact that access to safe drinking water is a well- coming development this is also reflected in the mean value of 4.0669 and standard deviation of .67813. The mean as shown indicates a negative skewness with the value of -.086 and also the kurtosis is flatter than the normal distribution indicating platykurtic.

Finally the descriptive statistics as captured in Table 2, the mean, standard deviation, skewness and kurtosis are all displayed in this part on 5 point Likert scale, however, the mean value for the items as related in positive expectation is very high 4. 119 compare to the various mean value this shows the responses interest that they are more concern with access to good road.

Table 3 Responses on the Negative Expectations of Oil Extraction

Items	Mean	Standard Deviation	Skewness	Kurtosis
Environment will severely degraded	4.0769	.77892	-226	-1.058
It will lead to reduction in agricultural yield	4.1748	.75353	- 401	-811
Conflict of interest	7.0350	.73379	3.887	13.350
Force resettlement	4.1818	.62389	-853	3.820
Environmental pollution will worsen	4.3217	.57655	-161	-624
Loss of livelihood	4.2448	.54665	0.76	-306
Livestock Grazing	4.3077	.57201	-117	-588

Source: Researcher compilation 2020

Table 3 presents the mean, standard deviation, Kurtosis and Skewness of the respondents on their various opinion severity of the damage of oil exploration to the environment to livestock grazing in the questionnaire administered. Responses are targeted to address the research questions for the study which



has to do with the negative expectation of oil discovery. Responses on negative expectation revealed a mean of 4.0769 and a standard deviation result of .77892. The mean indicates that the distribution is negatively skewed which indicates low scores, whereas the kurtosis of the variables also indicates that the distribution is flatter than the normal indicating that the distribution is platykurtic.

Furthermore, from Table 3 it has shown that only conflict of interest that has a positive skewness of 3.887 which indicate a high scores, whereas the kurtosis of the variable also indicates that the distribution is leptokurtic in nature indicating peaked distribution.

4.2 Oil discovery and the host community expectation

Due to human nature when substantial resources are discovered in its surrounding particularly oil and gas, people tend to form high esteem expectations with the belief that their livelihood will change for the better (Kliza, Bategeka, & Sewanyana, 2011). The positive expectation anchored around expected improvements in social services delivery, infrastructural development, employment opportunities, and so on.

i. Positive expectations

The results from the household survey indicated that with regard to improvement in the social service delivery including improved to access to healthcare (78%), education (83%), electricity (84%), safe drinking water (70%), and infrastructure such as roads (87%) as indicated in Table 4.

These expectations is partly reflect the needs of the local communities especially where the oil extractions are taking place. It is fair to say that, some of the expectations are influenced by the ongoing efforts by the government with regards to infrastructure development projects such as road constructions, hospitals and also upgrading some schools to petroleum exploration institutions at Alkalari LGA that will be critical to youthful population to get the require skills that is needed in the oil industry in the area. It should be however, emphasized that before the oil discovery access to such service was very difficult in the entire region. Infrastructure facilities will help boosting their economy; people can now take their agricultural produce to a far distance market at low cost and higher price. The survey results indicate that 90% of the communities that responded to the questionnaires expect to benefit from the improved business opportunities.

Furthermore, there are high expectations on job opportunities in the current state of development in the oil and gas sector. The result indicated that no households with at least one member who has a skillful qualification that will enable him to find direct employment in the international oil company on higher rank. Instead, the majority of the jobs available is for the unskilled labour such as security personnel and drivers etc and this may necessitate the low level of employment in particular industry.

Another positive expectation is that the communities expect to gain access to clean water and stable energy supply, because of the most of the household in Barambu and Kwaimawa area depends on the environment, harvesting firewood in order to meet their energy demands. Due to the low level of modern energy use, and low electricity access rates in the area majority of the households hope that government with support from developing partners will implement a rural electrification project in the area.



Table 4: Positive Expectations from the oil and gas industry in Percentage

	Yes	No
Access to Health	78	22
Access to education	83	17
Access to Electricity	84	1
Access to safe drinking water	70	30
Access to good road	87	13

Source: Researcher compilation 2020

ii. Negative Expectations

The communities express concern with regard to likely arriving of some migrant (72% in search of new economic opportunities from within and outside the region, land crisis (68%), environmental pollution (71%), interference with livestock grazing (54%) and loss of livelihood (46%) (see Table 5).

The communities fear that the development of oil and gas sector is likely to result in two separate challenges: the issue of land conflicts and the issue of rapid urbanisation (Joseph, 2019). The threat of urbanisation is expected to exert pressure on the delivering of social services such as water, education, health etc, but could also trigger other secondary social cultural challenges which are not known before, such as prostitution; theft; alcoholism; promiscuity; and insecurity (Tantua, Devine & Maconachie, 2018, Obi, 2010). All these challenges post threats for the local environment development. For example prostitution; alcoholism; and promiscuity are risk factors for the spread of sexually transmitted diseases; crime and generally breakdown of immorality (Joseph, 2019). Increasing land crisis and conflict over control of land among the two states considered as one of the most serious social impacts that is bound to come up.

Land related conflict is not common in the area before, but with this development conflict on ownership of land and border is perverse among the two states and the communities. The two states were now in war of word about the actual location of the oil well (Daily trust Nigeria, 2019). Therefore, conflict also emerged when some absentee landlords sought repossession of their land with the intention to benefit from speculated compensation from the oil companies for acquisition for damage done to their land as a result of oil mining activities.

Table 5: Negative expectations from the oil and gas industry in percentage

	Yes	No
The environment will be severely degraded	75	25
It will lead to reduction in agricultural yield	70	30
Conflict of interest may be the order of the day	55	45
Oil extraction will led to force resettlement	72	28
Land crisis will increase	68	32



Environmental pollution will worsen	71	29
Loss of livelihood	54	46
Interference with livestock grazing	46	54

Source: Researcher compilation 2020

4.3 Findings

The findings have indicated that from access to health to access to good road has shown that on average of 80.4 percent of the respondents has expressed their expectation to be highly positive. Whereas, on the negative side of the expectation of oil exploration the finding has indicated that from severely degraded to livestock grazing has shown that on average 62.3 percent of the respondents indicates low scores compare to positive expectation.

The fact that oil has been discovered in an ecological fragile region of the northeastern part of the country presents risk of environmental management and biodiversity conservation, the risk of environmental degradation, water and soil contamination and their related adverse health risk have to be examined with the broader sense of human development to ensure that the oil industry create an enabling environment for the communities.

5.0 Conclusion and Recommendations

The discovery of the oil and gas has presented a significant opportunity for social and economic transformation of the state. However, exploitation of natural resources is also associated with negative impacts hence, lead to resources curse effects. Despite the negatives expectations expressed by the communities of the affected area, this research work is of the view that oil and gas resources has the potential to improve both the economic and social well being of the communities.

Therefore, the study recommends amongst others to open up a discussion on environmental justice to the affected communities as most of these damages are caused by external factors the industries as a result of their nature of productions of goods and services which are hazardous to the environment while the host communities suffered. Therefore, imposition of market base instrument approached environmental taxation in particular to tax the polluting industries so as to reduce the rate of pollution to the environment.

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