

# Effects of Oil Operations on Epebu Community in Bayelsa State

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**Abstract:** Exploration and exploitation of oil and gas in the Niger Delta region of Nigeria has being quite heavy since oil was struck in commercial quantities in 1956. These operations have dire consequences on the environment and have greatly impacted the lives of the people in the region; even though crude oil is a resource and ought to be a source of wealth to any given society. The impact of oil activities in the region has become a major issue of concern to all which have evoked the research of their impact on health, the environment, agriculture and the lives of the people generally. Therefore this paper looks into Epebu community and how the operations of the oil company impacted the environment and the lives of the inhabitants generally. While secondary data was used for literature, 95% of the questionnaire administered on the respondents was retrieved. The study revealed that contamination of fresh and ground water (RII = 5.51), internal and external conflicts (RII = 4.77), reduced economic activities (RII = 4.58) and destruction of trees forest (RII = 4.28) are the major effects that oil operations impacted on the community. The principal component analysis conducted also corroborated this as it showed that these four components accounted for 69.19% of the effects on the community. Therefore, the study recommended that the Nigerian Agip Oil Company (NAOC) manage their operations and relationship with the community in a sensitive and professional manner to avoid conflicts and losses as this will result in the reduction of the negative effects oil operations in Epebu Community.

**Keywords:** Bayelsa State, Epebu Community, Niger Delta, Nigeria, Oil operations

## **1.0 Introduction**

Prior to the discovery of crude oil, the agricultural sector was the main stay of the Nigerian economy; the income earning exports were cocoa (Southwest) groundnuts, cotton, and hisdes/skin (North) and palm oil (Southeast). It accounted for 95% of the foreign exchange earnings, generated over 60% of her employment capacity and approximately 56% of her gross domestic earnings (Salako, Sholeye and Ayankoya 2012; World Bank, 2013). However, since the production and exportation of petroleum began in 1958, activities in the agricultural sector and other industries gradually took a down turn affecting the nation's economy both positively and negatively. Report has it that the proceeds from oil production accounts for 95% of Nigeria's export earnings and over 80% of her revenue which is spent to drive the economy (Nweze and Edame 2016). According to Sagay (2001), oil has been vital in financing the country's economic growth and development in the last 30 years and as a matter of fact government activities will grind to a halt, if money from oil proceeds is not available. In affirmation Ugoh and Ukpere (2010) posit that Nigeria has benefited enormously from oil, both the federal and the state governments are basically dependent on oil resources from the Niger Delta. This degree of dependency indicates the huge resource flow from the region and the high level of operations in the oil industry with resultant negative effects on the people and the environment. The argument from various quarters is that the huge revenue generated by the Niger Delta region does not commensurate with its human and infrastructural development; rather it is plagued with environmental degradation, health, problems, conflicts

and poverty (Balouga, 2009; Tuodolo, 2009; Ugoh and Ukpere, 2010; Jike, 2010; Kadafa, 2012; Kaur, 2013; Nwakwo, 2015).

Nigeria is the most populous black nation in Africa and having such a large population with attendant needs that require satisfaction from the petroleum proceeds; it becomes pertinent for the development, well being as well as the environmental and economic sustainability of the region generating this resource to be prioritized (Balouga, 2009). On the contrary, literature has shown a total neglect of the region by the government and multinational oil companies; hence, instead of the petroleum resource to be a blessing it is termed a curse to the host communities of the multinational companies in the region (Saliu, Luqman and Abdullahi 2007; Oviasuyi and Uwadiae 2010; Aminu 2013).

Well documented in literature are the negative effects of oil exploration activities on the people of the Niger Delta region which includes violence, environmental degradation and destruction of the flora and fauna, not forgetting the health problems. According to Nweze and Edame (2016), oil exploration causes a range of environmental problems which includes contamination of both surface and ground water, contamination of soil by oil spills and leaks, increased deforestation as well as the economic loss and environmental degradation stemming from gas flaring. But perhaps there are other issues both positive and negative caused by oil and gas operations which are peculiar to the people of Epebu community which are yet to be discovered; thus this study attempts to identify the effects of the operations of oil and gas activities on

these people. The question is, are there any significant changes positive or negative caused by the activities of the oil and gas multinational company (NAOC) to this community and the indigenes in general? Is the presence of the oil company a blessing or a curse to these rural dwellers?

## **2.0 Study Area**

Epebu is a community in Ogbia Local Government Area of Bayelsa State. The 47 towns and villages in Ogbia kingdom speak the same language with the same culture and way of life. The main occupations of these people are fishing, farming, palm oil milling, trading, timber lumbering, palm wine tapping, brewing of local gin, weaving and carving (Jim-Ogbolo 2011). The area is blessed with crude oil and agricultural produce such as sugar cane, cassava, mango, banana, plantain and cocoyam. Apart from these resources, there are abundant timber trees, raffia palm and Indian bamboo. Epebu is a community in Ogbia Local Government Area and shares the same social and economic life as other Ogbia communities. It is located at the extreme of the Ikoli River and can only be accessed by boats since there is no access road. It is bordered on its right by Emadike, left by Okodi, adjacent to it is Ewama and on the far rear are Okigbene and other Ijaw communities of Southern Ijaw Local Government Area. Oil operations in Epebu dated back to 1964 when the first oil well was drilled at Amanobhi Bush called Obama 1, though it was a dry well. In 1995 the second oil well referred to as Prighbene A was drilled at Asaraba Creek and in 1998 the controversial Prighbene B was drilled at Igoniebi Bush. Both Prighbene A and B are connected to Obama Flow Station located at Okoroma/Tereke in

Nembe Local Government Area of Bayelsa State. The residents of Epebu co-existed peacefully with neighboring towns for years until NAOC, the only oil company operating within the community, discovered oil at Igoniebi bush. This led to disagreements between Epebu, Emadike, Okodi and Okigbene over the ownership of the piece of land in question. Eventually the crisis climaxed between Epebu, Emadike and Okigbene leading to the death of several people and the total destruction of Emadike community. However, the aim of this study is to examine the effects of oil operations and the impact made on Epebu community and its inhabitants.

## **3.0 An Overview of Oil Operations in the Niger Delta**

Crude oil exploration in Nigeria dated back to 1908 with the discovery of deposits at Araromi area in Ondo State. Later in 1956, Shell D'Arcy now Shell Petroleum Development Company (SPDC) of Nigeria discovered oil in Oloibiri in the present day Bayelsa State and commercial production commenced in 1958. By 1961 a host of other multinational oil companies have made their way into the Niger Delta region of Nigeria carrying out oil operations both on-shore and off-shore. Presently, the operations of the oil industry are quite visible in the region with a high network of pipelines, oil wells and flow stations spanning a vast expanse of land and wetlands. SPDC alone operates over 31,000 square kilometers. Other Multi-National Oil Companies (MNOCs) include Mobil, Chevron, Texaco, Elf, NAOC, Pan Ocean and some Nigerian indigenous companies like Dubril, Summit and Consolidated Oil. (Sagay 2001;

Ohwofasa , Anuya and Aiyedogbon, 2012; Kaur, 2013; Akujuru, 2014).

Sagay (2001) identified oil operations to include onshore seismic prospecting, onshore drilling, oil production and gas processing. He opined that all these phases of petroleum exploration and production have grave environmental effect that retard and stunt the growth of flora and fauna and other renewable resources. The ground water is equally polluted due to spills from storage tanks, pipelines, and abandoned wells. Bearing same opinion Saliu et al (2007) and Akujuru (2014) opined that all stages of oil related activities from exploration and drilling to transportation result in the destruction of the natural environment and the livelihood of the local inhabitants who depend on the land and creeks of the Delta for their survival. On the other hand, Jike (2010) opined that the seismic explosions and vibrations in the course of oil explorations create ample stress for existing structures in the built environment. In summary, Nweze and Edame (2016) stated that the petroleum industry covers the exploration and production of crude oil as well as petroleum refining, marketing and all of which impact on the environment and the people of the Niger Delta region immensely.

Nigeria is the largest petroleum producer in Africa and the seventh largest producer of sweet crude oil among OPEC member countries (Ugoh and Ukpere, 2012). Its benefits to the country cannot be over emphasized since its derivatives dominate the Nigerian economy making up about 98 percent of exports, over 80 percent of government's annual revenue and 70 percent of budgetary expenditure (Ohwofasa et al. 2012). Balouga (2009)

asserted that oil production is central to the development of Nigeria and constitutes the backbone of the economy and in fact it provides the only immediate hope for the development of the rest of the economy. With such revenue generated for the nation, it is imperative that the development of the region and its people be put into consideration by all stakeholders. In fact, the well-being of the inhabitants should have being improved after several decades of minting money. However, in terms of costs and benefits, majority of the local people bear all the environmental costs but receive no economic benefits (Sagay 2001). The experience in the region has being massive poverty, illiteracy, unemployment, poor infrastructural development, epileptic or non-existent utilities, lack of roads and potable water. Oil and gas production has caused farming and fishing outputs to be on the decline, due to widespread pollution. Environmental challenges include coastal erosion and rising sea level, which has led to large portions of the landmass being eroded, acid rain resulting from gas flaring which damages roofs and causes respiratory and other medical problems. Meanwhile, the primary beneficiaries of the oil operations are the oil companies, the highly paid technical and managerial staff and the plethora of corrupt officials, politicians and military personnel (Sagay, 2001, Balouga, 2009, Tuodolo, 2009; Jike, 2010, Ugoh and Ukpere, 2012; Kaur 2013). On the contrary Tuodulo (2009), Adams (2014), Okolie- Osemene (2015) and Nwankwo (2015), were of the view that, the oil companies, Shell in particular have largely contributed to the development of the Nigerian economy and that of the host

communities in the Niger Delta with regards to social responsibility. According to the various authors (op. cit) Shell's participation in community development activities include educational programmes by awarding scholarships for primary and secondary schools to university education, skills development programmes, the construction of water pipelines, access roads, the presentation of farming equipment to farmers and training them in its usage, and the provision of electricity within oil producing communities. However, Saliu et al. (2007); Tuodolo (2009); Oviasuyi and Uwadiae (2010) and Aminu (2013) are of the view that these contributions are minimal and insignificant when compared with the level of damage done to the environment and the host communities.

One trademark of the oil industry in the region is violence and protests due to the formula for sharing the revenue from mineral resources which gradually reduced and virtually disappeared from 50% of all proceeds of mineral resources allocated to producing states in the sixties (1960-1969) to one and half percent by 1992. The relevant laws and statutes that expropriated land from the owners vesting all mineral resources in the federal government even made matters worse (Sagay, 2001; Salako et al., 2012). These issues led to peaceful protests initially which later turned violent with bombings of pipelines and flow stations, kidnappings and oil theft. All of these activities and incidents resulted in loss of lives, facilities, resources and revenue of the government, MNOCs and the host communities.

Well documented in literature are the effects of gas flaring and oil spillage. As stated by Takon (2014), the

consequences of gas flaring are enormous; so a deadline was set for 1985 to end flaring which was extended to 2004 but that was not feasible hence, it was further postponed to 2008. But obviously, gas flaring is still ongoing in the region with its negative effects on humans and the ecosystem; however, the 2015 report of the Department Petroleum Resources (DPR) shows amounts paid as fine by gas flaring defaulters. The question then is, does the money benefit those who suffer the consequences of the gas flaring directly? Quite enormous are the effects of the operations of oil companies in the Niger Delta region but few are discussed in the next section.

### **3.1 Effects of Oil Operations**

Several problems can be associated with the disturbance caused by oil and gas exploration and their related activities such as site clearance, road construction, Right of Way for pipelines, and other land modifications necessary for the drilling of exploration and production wells and also the construction of production facilities. In the USA, Yousif and Nancy (2005) asserted that exploration for and productions of petroleum have caused local detrimental impacts to soils, surface and ground waters, and the ecosystem in the 36 producing states. While Delt and Igben (2012) averred that the increased operations of petroleum exploitation like seismic surveys, land acquisitions, drilling, transportation, storage, waste dumping and associated oil spillages have increased the degradation of the physical environment and resulted in the deprivation and destruction of economic livelihoods of the people in the Niger Delta region. The entire region is laden with a network of

pipelines, oil wells and flow stations indicative of the huge oil and gas operations which impact on the environment and the people negatively. The pipelines and other means of transporting crude oil and petroleum often lead to oil spillage contaminating land and water. Takon (2014) asserted that oil spillage, gas flaring and blowouts which are by-products of oil operations in Niger Delta releases crude oil, chemical wastes and toxic substances which are sometimes caused by equipment failure, operation mishaps, human error or deliberate destruction of facilities arising from criminal activity into the atmosphere. Bearing similar opinion is Atubi (2015) who asserted that oil operations involve the release of hydrocarbons and other noxious materials into the atmosphere, gas combustion with the generation of intense heat and flares and the disposal of industrial wastes; these may affect the fertility of the inhabitants in such a manner that fecundity may fall and the birth of abnormal babies may increase. Thus, the effects of the operations of the oil industry on the host communities and their environment are discussed in the succeeding sub-section.

### **3.1.1 Effects on Health**

Oil operations are known to have deleterious effects on human health especially gas flaring and oil spillage which contaminates the air, land and water. Most communities in the Niger Delta region do not have access to portable water but depend on water from the rivers and rain water for sustenance. The hydrocarbons released into the environment and gases such as CO and CO<sub>2</sub> have negative effect on human health. Skin contact with certain chromium compounds can cause skin ulcers and ingesting large amounts of it can cause stomach upset and ulcers,

kidney and liver damage and even death (Egbe and Thompson, 2010). Generally, the environmental pollution caused by oil operations can cause health problems like respiratory problems, increased blood pressures, heart rhythm changes, stomach irritation, muscle weakness, changes in nerve reflexes, swelling of brains and liver, lungs diseases and cancer, kidney and heart damage, diarrhea, asthma, eye infections, bronchitis, skin infection, headaches, dizziness, nausea, vomiting, eye and throat irritations, as well as breathing difficulties (Oseji, 2011; Salako et al., 2012 and Atubi, 2015).

### **3.1.2 Effects on Mangrove and Aquatic Life**

The UNEP 2011 report on Ogoniland revealed that oil pollution in many intertidal creeks has left mangroves denuded of leaves and stems, leaving roots coated in a bitumen-like substance sometimes 1 cm or more thick. The report explained that mangroves are spawning areas for fish and nurseries for juvenile fish and that the extensive pollution of these areas is impacting the fish life-cycle negatively. Hence, fishes tend to leave polluted areas in search of cleaner water, and fishermen must therefore also move to less contaminated areas in search of fish. This situation which is a usual occurrence in most host communities of MNOCs definitely makes life more difficult for the rural dwellers. A similar situation is found among fishing communities in Angola which rely almost exclusively on fishing as a source of livelihood (Baumuller, Donnelly, Vines and Weimer 2011). They asserted that the whole of the sea space around Cabinda province in Angola is negatively affected by oil production. The fishermen complain

that the bay of Cabinda no longer yields fish and they have to travel farther in order to succeed in their expedition which is obviously uneconomical. According to Egbe (2012), statistics has shown that the majority of oil spills incidents between 1976 and 1980 occurred in the mangrove swamp zones and the offshore areas of the Niger-Delta, which constitute the most productive biological areas. Within six months, mangrove vegetations die while the adverse effect on crabs, molluscs and periwinkles is almost immediate. Meanwhile, the mangrove forest not only provides shelter, nutrients and nursery for some species of aquatic animals but also acts as a filter for major towns in Niger Delta; it serves as a buffer from storms, which reduces damage to property and loss of life in the communities (Takon, 2014). Explaining further, he stated that the forest is also a repository of unorthodox medicines, source of fire wood and charcoal, timber for industry, and construction materials for riverine communities.

### **3.1.3 Effects on Soil Fertility and Agriculture**

The Niger delta is a region with a massive rural population and one of their principal activities and means of lively is agriculture; a source of employment and income to rural dwellers. But the oil and gas operations in the region have become a major threat to this means of sustenance. Egbe and Thompson (2010) asserted that oil spills have degraded most agricultural lands of host communities and have turned hitherto productive areas into wastelands because of increased soil infertility due to the destruction of soil micro organisms. Oil spill hampers proper soil aeration as oil film on the

soil surface acts as a physical barrier between air and the soil. Egbe (2012) was of the view that the government places too much importance on the oil industry to the detriment of agriculture. He asserted that the overbearing dependence on crude and petroleum is a harbinger to hunger, starvation and unemployment since crude/petroleum is not only an exhaustible resource but beyond the exploitation capabilities of rural dwellers. Ubani and Onyejekwe (2013) and Digha (2015) examined the moisture content and bacteria count of the soil with a view to ascertaining the effect of gas flaring on the fertility of the soil. Their results showed that the soil closer to the flare site has the lowest moisture content and bacteria count but increased with distance away from the flare site. This means gas flaring inhibits the thriving of indigenous bacteria species in the soil thereby reducing its fertility.

The studies of Oseji (2011), Ozabor and Obisesan (2015) and Olisemauche and Avwerosuoghene (2015) indicated that gas flaring has led to a general increase in temperature of the environment and the effects of the flaring include acid rain, air pollution, temperature rise and deforestation and reduction in agricultural produce. Some of the effects on crops include the stunted growth and red leaves observed in the cassava, plantain, palm trees, yam and other crops. The consequence is migration of the inhabitants of such areas who are mostly farmers to other towns whose environment is friendly for farming activities.

### **3.1.4 Effects on Fresh Water and Groundwater**

Most communities in the Niger Delta region are surrounded by rivers, creeks and ponds from which they fish, bath

and consume. The pollution of these sources of water by oil operations results in dire consequences for inhabitants. Contamination affects both fresh and underground water. For example, if rivers, streams and wells that provide water are contaminated, the people in the area will not only find it difficult to access portable water but the fishes and other water bodies will also be destroyed. The report of the UNEP (2011) indicated that water taken from wells in communities adjacent to contaminated sites in Ogoniland contained hydrocarbons 1,000 times higher than the Nigerian drinking water standard of 3µg/l. Meanwhile, these local communities continue to use the water for drinking, bathing, washing and cooking as they have no alternatives despite being aware of the pollution and its dangers. Egbe (2012) averred that oil pollution on the water surface could prevent natural aeration and lead to the death of trapped marine organism. In some cases, fish may ingest the spilled oil or other contaminated food materials with oil and die or even become inedible for humans.

### **3.1.5 Effects on Economic Activities**

The rural dwellers in the oil rich zone mainly engage in fishing and farming for sustenance and also for trading but threats to this source manifests in the depletion of aquatic lives, reduction and abandonment of farm lands and loss of biodiversity resulting from over exploitation of existing resources and the resultant pollution. Fishing and farming produce have reduced drastically as oil and gas operations in the region gained ascendancy (Egbe, 2012). Thus, most rural dwellers seek alternative means of survival and migrate to better locations and urban

centres leading to the dissipation of most rural communities.

Akujuru (2014) asserted that the impact of oil operations on economic activities includes:

1. Loss of arable land, vegetation and forest resources.
2. Increase in land and water transportation with attendant consequences like aggravation of shore erosion, disturbances between life and fishing activities.
3. Improper disposal of dredge spoils along water ways, channels causing blockades to bush paths and waterways used for access to farmlands, fishing parts and timber logging areas.
4. Oil pollution which pollutes drinking water sources destroys fisheries and farms and generally destroys the ecosystem.

### **3.1.6 Effects on Peace and Stability**

A major aftermath of oil activities in host communities is inter-communal and intra-communal conflicts which often leaves the people worse off. Watts, Ike and Dimieari (2004) explained that intra-community and inter-community conflicts may operate simultaneously, and one may spill over into, or be generative of, the other. They examined the relations between resources, firms, states and communities and the circumstances under which the oil-producing communities become sites of extreme conflict and violence. Hence, assessed the conflicts between Ogoni/Elemo/Okrika in Rivers State; Warri in Delta State, Epebu/Emadike in Bayelsa State amongst others. While, Dimieari (2005) gave a vivid account of the conflicts that rocked Nembe kingdom for many years because of proceeds from oil operations. He

asserted that in the coastal area of Bayelsa State all the communities are involved in at least two unrelated conflicts, over territorial claims of oil rich land, or as in the case of the conflict between Akassa and Egweama, on mere suspicion that the land may be rich in oil. Most conflicts result in loss of lives and properties; for example, the conflict in Pereamabiri claimed more than sixty lives and was the result of a faction seeking access to SPDC. When crisis and conflicts persist in such areas it hinders the growth and development of the area and its people, hence people begin to wonder if the resource is a blessing or a curse. Consequently, instead of the development and general improvement in the well being of the people; poverty, illiteracy, hunger and the desertation of such areas becomes the order of the day.

### **3.2 Oil Activities in Bayelsa State**

Although, Bayelsa State is one of the highest oil producers in the Niger Delta, there is paucity of research on the activities of MNOCs in Bayelsa State. Ereibi (2011) is of the opinion that considering the level of damage done to the environment by oil operatives, host communities ought to have been developed but that is not the case; citing that the proceeds of the first oil well of Oloibiri and others were not used to develop the communities infrastructurally and otherwise. He argued that MNOCs were expected to manage exploitation activities responsibly, sensitively and effectively in such a way that biodiversity, ecosystem, fauna, the soil system and the atmosphere were preserved, productive, stable, healthy and safe for human livelihood. That this would have prevented the region, especially the host communities from becoming a breeding

ground for crime, youth restiveness, repression/violence, disarticulated and divided communities, deaths, prostitution, heightened health hazards/illness and the destruction of facilities.

Efere (2014) identified these as the negative impact of oil exploration in Bayelsa State:

1. Crop productivity: prevention of crops from germinating, reduced cultivated plots, low yield of crops, infertile land and a reduced percentage of people involved in farming.
2. Livestock: difficulty in providing suitable drinking water for livestock, loss of local breed and deterioration of animal health, displacement of livestock from their habitat, scarcity of suitable grasses and shrubs for animals and loss of local breed.
3. Forest: retarded growth of valuable forest trees, extinction of some valuable species of trees, difficulty in harvesting mature forest trees because of lack of access roads and poor regeneration of cut trees.
4. Aquatic habitat: constraint to aquatic production, reduction of aquatic population, difficulty in rearing aquatic animals in ponds, destruction of fish eggs and the loss of financial resources from aquatic culture.
5. Agriculture: agricultural activities declined seriously over the past two decades which in turn affects the standard of living of farmers.

### **4.0 Methodology**

The research was conducted using primary and secondary data. The secondary data was obtained from relevant scholarly articles and were used for literature, while the primary data was obtained from administered questionnaires and interviews.

Questionnaires were administered to 60 respondents which were selected on the basis of one person per household. There are 220 houses in Epebu which were numbered serially and stratified approach was used in selecting the 60 houses starting with the 4th house. A total of 57 questionnaires (representing 95%) were retrieved and used for analysis in this study. Before administering the questionnaire, it was subjected to criticism by colleagues both in the academia and in practice while all their comments were taken into consideration with necessary corrections made. The statistical tools used for data analysis include the frequency distribution and percentages. Frequency distribution and percentage tables were used to order the data collected so as to show the various groupings of the respondents and also

the range and the percentage of observations falling within each groupings. Relative importance index (RII) was also used to identify the mean and ranking of each variable after applying Liker Scale of 1 – 5 indicating the level of importance of each variable. This was done in order to identify the most important effects that oil operations have on the community. Finally, a further test was conducted using principal component analysis (PCA) to identify the various components (variables) that the respondents identify to be of great importance and hence, require further treatment.

### 5.0 Data Presentation and Analysis

The data collected were collated and analysed as shown in Tables 1 – 5.

Table 1: Effects of Oil Operations on Epebu Community

Statements (Variables)	1	2	3	4	5	Total	RII	Ranking
Contamination of Fresh water and Ground Water	1(1)	2(4)	12(36)	21(84)	21(105)	314/57	5.51	1 <sup>st</sup>
Internal and External Conflicts	0(0)	0(0)	2(6)	9(36)	46(230)	272/57	4.77	2 <sup>nd</sup>
Reduced Economic Activities	0(0)	0(0)	1(3)	22(88)	34(170)	261/57	4.58	3 <sup>rd</sup>
Destruction of Trees and Forest	0(0)	4(8)	5(15)	23(96)	25(125)	244/57	4.28	4 <sup>th</sup>
Affects Crops Negatively	0(0)	5(10)	5(15)	21(84)	26(130)	239/57	4.19	5 <sup>th</sup>
Reduced Agricultural Produce	1(1)	1(2)	8(24)	8(24)	23(115)	238/57	4.18	6 <sup>th</sup>
Destroy fishes and other water bodies	1(1)	2(4)	8(24)	22(88)	24(120)	237/57	4.16	7 <sup>th</sup>
Destruction of Ponds and Fishing Waters	1(1)	2(4)	9(27)	22(88)	23(115)	235/57	4.12	8 <sup>th</sup>
Negative impact on soil fertility	1(1)	2(4)	11(33)	20(80)	23(115)	233/57	4.09	9 <sup>th</sup>
Destruction of Fishing Gears and Boat	3(3)	5(10)	6(18)	26(104)	17(85)	220/57	3.86	10 <sup>th</sup>
Disrupted Peace and Stability	4(4)	6(12)	13(39)	8(32)	26(130)	217/57	3.81	11 <sup>th</sup>
Reduced size of farm land	1(1)	8(16)	10(30)	20(80)	18(90)	217/57	3.81	11 <sup>th</sup>

Table 1 reveals the effects of oil operations on Epebu Community. The Table shows that contamination of fresh and ground water was ranked as number one effect with RII of 5.51. This was followed by internal and external conflicts, RII of 4.77 coming second in order of ranking. Reduced economic activities and destruction of trees

and forest having RII of 4.58 and 4.28 respectively were ranked third and fourth. With RII above 3, it could be concluded that all the variables identified constituted the effects of oil operations in Epebu Community. It could be deduced that contamination of freshwater and groundwater ranked first because any spillage in the community

renders both freshwater and groundwater unusable to the people which will in turn affect their health and also trap the marine organism (see UNEP, 2011; Baumuller et al. 2011 and Egbe, 2012). Communal crises are common occurrences in the study area with a view to establishing ownership of oil producing land. This has resulted into loss of able bodied lives including properties, hence internal and external conflicts came second. This supports the views of Watts et al. 2004 and Dimieari, 2005 that the oil-producing communities become

sites of extreme conflict and violence over territorial claims of oil rich land. Oil spillage has greatly affected the source of livelihood of the people of Epebu Community. It has resulted into the destruction of trees and forest which in turn has caused untold damages to economic activities, agricultural production and destruction of ponds/fishing waters hence killing of fishes. It could therefore be concluded that oil operations in Epebu Community has resulted into a lot of damages to the Community.

Table 2: Communalities

Components/Variables	Initial	Extraction
Reduced size of farm land	1.000	.649
Negative impact on soil fertility	1.000	.803
Reduced Agricultural Produce	1.000	.602
Destruction of Trees and Forest	1.000	.575
Affects Crops Negatively	1.000	.614
Destruction of Ponds and Fishing Waters	1.000	.703
Destroy fishes and other water bodies	1.000	.663
Contamination of Fresh water and Ground Water	1.000	.721
Destruction of Fishing Gears and Boat	1.000	.632
Internal and External Conflicts	1.000	.805
Disrupted Peace and Stability	1.000	.710
Reduced Economic Activities	1.000	.826

Extraction Method: Principal Component Analysis.

Table 2 contains the communalities which shows the how much of the variance (communality value) should be considered for further analysis. It is the mathematical sum of all the squared factor loadings for each variable. It is the rule that any

factor loading above 0.5 should be selected for further treatment hence, since all the factor loadings are greater than 0.5, all the variables were selected for further examinations.

Table 3: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative	% of		Cumulative %
			%	Total	Variance	
1	4.312	35.935	35.935	4.312	35.935	35.935
2	1.640	13.667	49.602	1.640	13.667	49.602
3	1.269	10.576	60.177	1.269	10.576	60.177
4	1.082	9.017	69.194	1.082	9.017	69.194
5	.907	7.559	76.753			
6	.690	5.746	82.500			
7	.545	4.540	87.039			
8	.478	3.985	91.025			
9	.400	3.335	94.359			
10	.340	2.834	97.193			
11	.186	1.552	98.745			
12	.151	1.255	100.000			

Extraction Method: Principal Component Analysis

The total variance explained is as depicted in Table 3. All components with eigenvalues greater than 1 were extracted and this shows that the first four components with eigenvalues of more than one were extracted. They are the underlying factors (components) that really affected the people of Epebu Community. It is evident from Table 3 that the four components, together,

accounted for 69.19% of the effects of oil productions in Epebu Community while the contribution of the remaining eight components could be subsumed in the first four components. It could therefore be concluded that with the four components, it is possible to predict 69.19% of the activities of oil companies in Epebu Community.

Table 4: Component Correlation Matrix

Component	Component			
	1	2	3	4
Reduced size of farm land	.597	.501	-.119	.166
Negative impact on soil fertility	.669	.508	-.007	-.313
Reduced Agricultural Produce	.580	.393	-.235	-.237
Destruction of Trees and Forest	.653	-.073	-.098	.365
Affects Crops Negatively	.763	-.046	.020	.172
Destruction of Ponds and Fishing Waters	.755	-.358	-.027	-.061
Destroy fishes and other water bodies	.728	-.328	-.159	-.020
Contamination of Fresh water and Ground Water	.743	-.152	.382	.001

Destruction of Fishing Gears and Boat	.684	-.392	.093	.036
Internal and External Conflicts	-.066	-.054	.848	.281
Disrupted Peace and Stability	.196	.579	.516	-.264
Reduced Economic Activities	-.022	.467	-.152	.764

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Table 4 shows the rotated component matrix of the four components that accounted for 69.19% of the total variability in the original twelve variables. Variables greater than 0.5 were considered ideal for the study since loadings equal to 0.5 were considered average while loadings below 0.5 were considered less important. With this, the first component, contamination of freshwater and groundwater is most highly correlated with negative effects on crops (0.763) as well as destruction of ponds and fishing waters however, it

is less correlated with internal and external conflicts (-0.066). The second component (internal and external conflicts) is most highly correlated with disputed peace and stability (0.579). The third component (reduced economic activities) is most highly correlated with internal and external conflicts (0.848). Finally, the fourth component (destruction of trees and forest) is mostly correlated with reduced economic activities. It is evident from Table 4 that the correlations between the four components are strong.

Table 5: Benefits of Oil Operations to Epebu Community

Statements (Variables)	1	2	3	4	5	Total	RII	Ranking
Awarding Scholarship to Indigenes	0(0)	1(2)	3(9)	18(72)	35(175)	258/57	4.53	1st
Construction of Roads	1(1)	1(2)	0(0)	23(92)	32(160)	255/57	4.47	2nd
Involved in Community Projects	1(1)	0(0)	2(6)	26(104)	28(140)	251/57	4.40	3rd
Provision of Electricity	2(2)	2(4)	5(15)	26(104)	22(110)	235/57	4.12	4th
Improved Educational Facilities	3(3)	3(6)	5(15)	26(104)	20(100)	228/57	4.00	5th
Improved Health Care Facilities and Services	3(3)	5(10)	9(27)	17(68)	23(115)	223/57	3.91	6th
Housing Development	13(13)	0(0)	4(12)	22(88)	18(90)	203/57	3.56	7th
Provision of Portable Water	5(5)	6(12)	9(27)	28(112)	9(45)	201/57	3.53	8th
Improve Standard of Living of Resident	8(8)	5(10)	6(18)	29(116)	9(45)	197/57	3.46	9th
Improve Living Standard of Indigenes	7(7)	7(14)	10(30)	22(88)	11(55)	194/57	3.40	10th

The various benefits that have accrued to Epebu Community as a result of oil operations are listed in Table 5. The table shows that award of scholarship ranked highest (RII = 4.53). Construction of roads within the community was ranked second (RII = 4.47). The third ranking variable is the involvement of NAOC in community

development projects (RII = 4.40) while provision of electricity ranks fourth with RII of 4.12. With all the variables having RII above 3, it is concluded that the community actually benefited for the activities of the oil company operations. However, it remains to be seen how these benefits

commensurate with sufferings of the community.

#### 4.0 Conclusion and Recommendations

The study examined the effects of oil operations in Epebu Community. It has shown that oil operations have negative effects on the environment and the lives of host communities. With regards to the study area, the worse impact is the contamination of water, reduction in economic activities and conflicts that rocked the community (inter communal and intra-communal crisis). Irrespective of the huge efforts made by NAOC with regards to community development, it is clear that the benefits accruing to Epebu community does not commensurate with the negative impact of the oil operations in the area. It could

thus be said that the presence of NAOC in Epebu has spurred community development over the years; however, the negative effects of oil spill, environmental degradation, reduction of economic activities are quite grave. The major consequences of the conflicts that disrupted the peace and stability of the community left an indelible mark they are yet to recover from. In other words, oil operations affected the community positively but the negative effects are quite immense. Therefore, this paper recommends that the NAOC manage their operations and relationship with the community in a sensitive and professional manner to avoid conflicts and losses. This will result in reduction of the negative effects oil operations in the community.

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