

Impacts of Oil Exploration (Oil and Gas Conflicts; Niger Delta as a Case Study)

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Abstract

The discovery of Oil and Gas in Nigeria led to exploration of crude oil for revenue basis. Oil exploration and exploitation caused environmental problems which resulted into major conflicts in the Niger Delta area of Nigeria. The article examines the impact of oil exploration, and oil and gas conflicts in Niger Delta area and it highlights the problems of pipeline vandalism, structure of oil and gas and the general obstacles in the industry. It discovers that pipeline vandalism, crude oil theft, pollution, oil spillage causes serious environmental degradation which resulted into serious conflicts. The article discovered that environmental problems in the area dislodged the people of their means of livelihood both in the area of fishing and farming. It recommends that there should be a compelling environmental restoration of natural resources by deploying land treatment technologies. Government should sanction multinational companies discharging oils or creating environmental pollution through necessary laws and regulations.

Keywords

Environmental Pollution, Degradation, Oil Exploration, Oil and Gas Conflicts

1. Introduction

From the creation of Nigeria, in the year 1914 to the end of colonialism, agriculture remained the chief source of revenue in the year 1914. From 1914-1959, Nigeria was known for its agricultural products. The major products were cocoa from the west, groundnut and cotton from the North and Palm oil from the east with Niger Delta inclusive.

The primary research goal is to compare policy issues affecting the implementation of environmental laws that should curb the harmful activities of oil

exploration in Nigeria and the impact on achieving the goal of universal environmental quality. Oil exploration by multinational and local companies poses social, health and economic challenges in the society, but the right set of policies can equip society to meet these challenges on time.

From the creation of Nigeria, in the year 1914 to the end of colonialism, agriculture remained the chief source of the economy. During the colonial period from 1914-1959, Nigeria was exploited for its agricultural products. The major products were cocoa from the west, groundnut and cotton from the North and Palm oil from the east with Niger Delta inclusive.

Revenue from oil in the early 1960's accounted for less than 10% of Nigeria's revenue base. The *Oil and Gas Journal of 2005* estimated Nigeria's oil reserves to be at 35.2 billion barrels. In February 2005, Nigeria announced the award of 5 oil blocks in the *Joint Development Zone* shared by the neighboring areas such as Sao Tome, and Principe. The *JDZ* at the time held reserves of 11 billion barrels, and could yield up to 3 million barrels a day. Nigeria also had an estimation of 176 trillion cubic feet of proven natural gas reserves, where the country would have done one of the top ten natural gas endowments in the world and the largest endowment in Africa and with over 200 trillion cubic feet (TCF) of proven gas reserves, (Twumasi and Merem, 2006), it holds the biggest gas deposits in Africa and is currently the continent's biggest LNG exporter.

2. Structure of the Oil and Gas Industry

The oil industry is mainly confined into the offshore and onshore parts of the Niger Delta (Tyokumber, 2014). The industry is usually considered to be divided into distinct classes of the upstream and downstream sector.

The upstream sector: This is basically exploration services carried out within the oil wells. They include prospecting production and transportation of oil which in simpler terms mean the searching for of oil deposits in commercial qualities, the actual pumping of the discovered oil out of the ground and the movement of the unrefined crude oil to the refineries.

The downstream sector: This is the most important stage where the oil is now refined into various products like petrol, diesel, kerosene etc. This is the most important stage because it is the stage where the crude oil is transformed into its most valuable stage. The actual stage that makes oil exploration a very lucrative business. After these stages, the refined products are transported to customers by pipelines, sea road and rail tankers. These activities have adverse effects on the flora and fauna of these oil-rich areas. These effects and their remediation are the basis of this research.

3. Obstacles Faced in the Oil and Gas Industry of Nigeria

Although Nigeria is the 10th largest oil producer in the world, and the 3rd largest in Africa, it still has so many obstacles that are preventing it from reaching its full potential as an oil producing country. Most of the crude oil in Nigeria comes from numerous producing fields located in Niger Delta, Anambra state, Benue

state, Chad Basin and Benin (Quadri, 2018). The products are also exported through 7 terminals and a number of floating production vessels. However, I would be discussing the obstacles and challenges faced in this aspect of oil exploration in Nigeria with emphasis to the Niger Delta, and they are as follows.

3.1. Pipeline Vandalism

Oil Pipeline Vandalism is the act of drilling into the pipelines with the intent to steal the products, deterioration of pipelines used in transportation networks, makes these pipelines vulnerable to punctures, breaks and exposure for vandals with the sole purpose of stealing petroleum products.

This is basically an action involving deliberate destruction of or damage to petroleum pipelines with the sole aim of stealing crude oil and associated petroleum products. The effects of the above acts are huge economic losses from the pipeline and plant shutdown due to the destruction made to get the oil out illegally, environmental pollution which consists of both Land, Water and air depending on the location of the pipe busted, fire outbreaks by virtue of spillage made coming in contact with other flammable substances (Ukoli, 2001). All these in return amount to scarcity and shortage of petroleum products and a reduction in electric power generation.

3.2. Crude Oil Theft

Nigeria has a record of over 1 million barrels lost to corporate oil thieves. This is because most oil companies base their total production figures on estimated volumes using dipsticks to make volume calculations. This form of data management and calculation is prone to manipulation especially through the alteration of physical properties of the crude at the exportation stage. Molecular Power System which is a due diligence company was engaged to provide technical data records of crude oil and liquefied natural gas lifting in Nigeria as obtained from the NNPC, and landing certificates at global destinations to verify the possibilities of non-declaration to the federal government by multinational companies. In subsequent investigations made it was confirmed that the crude oil declared to have been exported from Nigeria between January 2011 and December 2014 was less than what was imported into the United States of America from Nigeria.

3.3. Pollution

Tolulope (2004) and Ukoli (2001), this is basically introducing contaminating or foreign bodies into water, land, air or even as a form of noise. These are the existing forms of pollution that can be derived from oil and gas exploitation and exploration in Nigeria and around the globe. It is the slow poisoning of the above-mentioned areas of the environment and destruction of Vegetation and agricultural land by oil spills which occur during operations (Tolulope, 2004). This is the exact problem and issue in the Niger Delta region of Nigeria. The

government have been quite reluctant and uninterested to control these environmental problems created by the industry though there are a couple of existing laws provided to this effect which are either repugnant or inactive in the execution stage. The *United Nations Development Programme, (UNDP)* report shows that there has been a total of 6817 oil spills between 1976 and 2001 which is equal to 3 million barrels of oil, of which 70% was never recovered. 69% happened offshore, and a quarter which was in swamps and the remaining 6% was spilled on land.

3.4. Inadequate Pipeline Infrastructure

This has been said to be our major challenge in the domestic gas supply and market growth. In relation to this, it is also seen that the available gas infrastructure in the country was largely limited to the *Escravos Lagos Pipeline System, ELPS*, adding that most of the other gas pipelines were project specific, point-to-point and lacks flexibility. This is also in conjunction with poor gas funding etc.

3.5. Fire Outbreak

This is basically caused by mismanagement of petroleum products or raw materials itself. Nigerian Oil Production has been said to have killed over 2000 people from fire outbreaks. In relation to this fact the operation has also led to the death of people through diseased water caused by oil spillage. This spillage is up to 540 million gallons and it may cost a thousand dollars to return it back to restitution.

4. Effects of the Poor Management of the Environment Caused by Oil Exploration in Nigeria

4.1. Transfrontier Pollution

This is a form of pollution generated in one country and is transferred to another country by air or water. This form of pollution causes damages and illness and generally constitutes nuisance in the affected places it resides. The solution to this form of pollution in for it to be solved internationally and for awareness and deliberate attempts to be made and practiced by the citizens or culprits responsible for such pollution. The pollution from the Niger Delta on a scale could be regarded as one of the worst among similar delta areas in the world. The Niger Delta has a humid, semi-hot equatorial climate (Ana, 2011). The temperature ranges are small and constant through the year. The hottest month in the Niger Delta **28 degree Celsius** which is also approximated to **(82.4 Farenheight)** and its coolest month is at **26 degrees Celsius** which can also be equated to **78-degree Farenheight** with the temperature range of not more than **2-degree Celsius (5 Farenheight)** Precipitation. The nature of this environment is such that it rains almost all year round with short breaks in August and longer breaks from December to January. As a result of this the area is usually flooded

and this flooding also extends to urban areas. Another disadvantage of this is that the soil consists of mainly Silt and clay and as such becomes saturated, when this happens, the soil quality is thereby reduced to its barest minimum and leads to run-offs. These transfrontier pollutions in the Niger Delta have now encamped around Rivers state as its effects or residue which is the black soot is now all over areas in Rivers State and majorly in Port-Harcourt. This form of pollution makes the atmosphere uncondusive for people because it affects the breathing or inhalation, causes other forms of challenges to the respiratory system. It also settles in the water, on surfaces and the clothing of residents, making the environment highly uncomfortable for people to stay in. Similar cases like this can be seen in the *1988 KOKO INCIDENT* case where toxic and harmful waste was dumped and the effects were similar to that of this black soot caused by gas flaring and illegal oil bunker in the Niger Delta and some areas of Rivers state too.

4.2. Corrosion Effects on Materials and Other Artefacts

The acid rainfall in the Niger Delta increases the corrosion rate of metal oil pipe casings used to transport oil to various areas. When such metals are corroded, it emits pollutants into the atmosphere and it thereby pollutes the environment for people to breathe in good air and live healthy. A similar situation was seen in the *MINAMATA Case of 1956*. Where citizens in Japan died as a result of methyl mercury in the water. When the metal pipes or their casings get corroded in the water, the disadvantage involved is that it endangers the health of the residents and other living organisms that exist, thereby reducing biodiversity of animal migration in the environment. When these organisms are reduced or gotten rid of completely, it renders the men in the community jobless as their major occupation there is fishing and hunting games. Again, when the environment gets too unfriendly for the residents' health wise, they have to leave the area to save themselves and at the same time, this people may not afford the means or resources to leave the environment leading to a life and death situation.

5. Oil Spillage in Nigeria (Data Analysis from 1990-2021)

In recent times, 881 cases of oil spills have been recorded between January 2019 and April 2021. This spillage happened in 12 states within the country. The information stated above is obtained from a government-run satellite tracker known as the NOSDRA. It was also recorded that 77 percent of the spills majorly occurred in only 3 oil-producing states in Nigeria. The total oil spillage within this period has been equated to about 43,000 barrels of oil of which the monetary value is worth \$3 million at the international market and 1.23 billion naira in the national markets. It is proper to understand that these figures are not static because more spills are still recorded on daily bases. (Akinpelu, 2021), States with the highest spills includes Rivers, Delta and Bayelsa States respectively. With Rivers State leading by 352 spills. Delta State by 233 spills and Bayelsa State by 89

spills which is equal to 674 spills in total (**Table 1**).

In terms of quantifying the total oil spills made, about 26,268 barrels have been recorded to be lost in Rivers state, 1219 barrels lost in Bayelsa State and 9134 barrels lost on Delta State respectively, such data is captured in **Figure 1**.

Oil spills lead to health and environmental and socio-economic problems. All the effects of oil spillage are a threat to the ecosystem and peoples means of livelihood. It has already been mentioned in this research work that oil spillage usually occurs when infrastructures are poorly built, or maintained. It also occurs when there is theft or vandalism by criminals and when accidents due to negligence or other vices happen. When incidents like this occur, there is supposed to be a clean-up exercise by the culprits involved but research has shown that there are very low records of successful clean-ups by some defaulting companies. The oil spillage data also reveals spillage records from the 1970's, and the average number of spills were 79% annually but by 2010, it decreased to 50% (*ITOPF Wed Design Agency, 2022*). This is better explained in **Figure 2** below.

Most of these spills identified by the NOSDRA in the past years were as a result of oil theft and exploration sabotage also known as oil bunkering. Another effect of this oil theft has led to a major issue in areas like Rivers State where airborne transfrontier pollution known as soot has invaded the city and neighboring villages as well. Oil theft affects the nation's pipeline facilities and creates massive drain on the economy and environment of the country. A total of 3342 pipeline points were vandalized across Nigeria from October 2018-September 2020. Reports of pipeline repair, summed up to 15 billion naira from January

Table 1. Oil spillage in States indicating Incidents and Barrels with the ratio of oil spills in the 12 affected states within Nigeria. Such data is captured in **Table 1**.

States	Incidents	Barrels reported spilled
Others	74	1805.65
Abia	41	1599.58
Akwa Ibom	26	1.29
Bayelsa	89	1219.1
Bayelsa, Rivers	1	105
Delta	233	9133.99
Edo	19	93.45
Imo	31	2189.89
Kaduna	2	41
Lagos	11	100.63
Ondo	2	8
Rivers	352	26267.83
Total	881	42565.42

Volume of oil barrel reported spilled

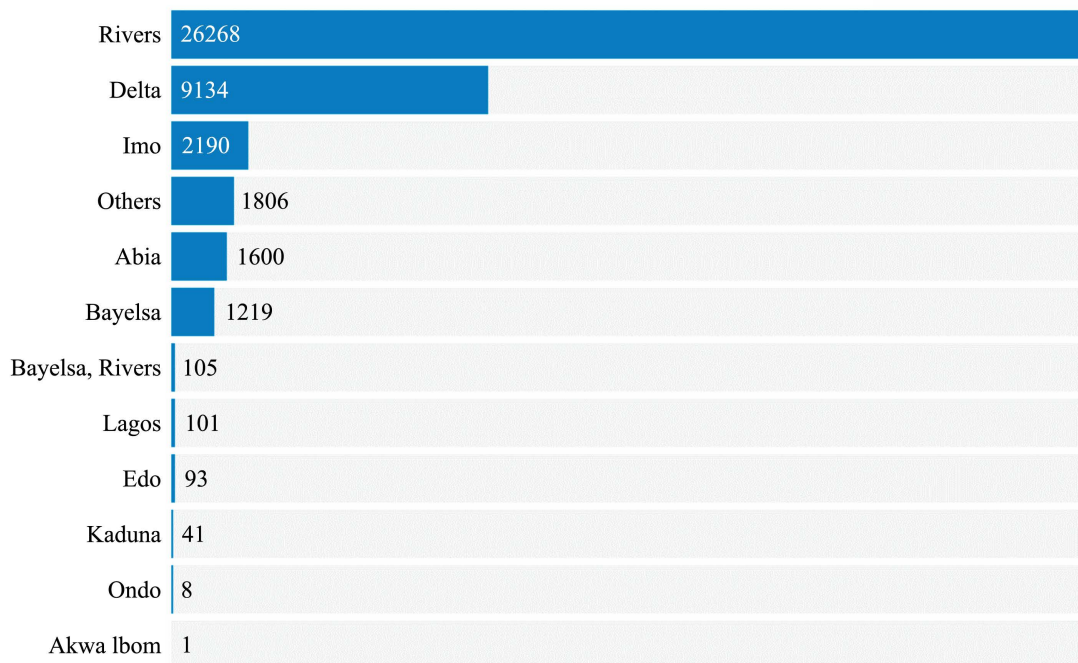


Chart: Yusuf Akinpelu · Source: NOSDRA · Created with Datawrapper

Figure 1. Volume of oil spilled in Nigeria within the 12 states.

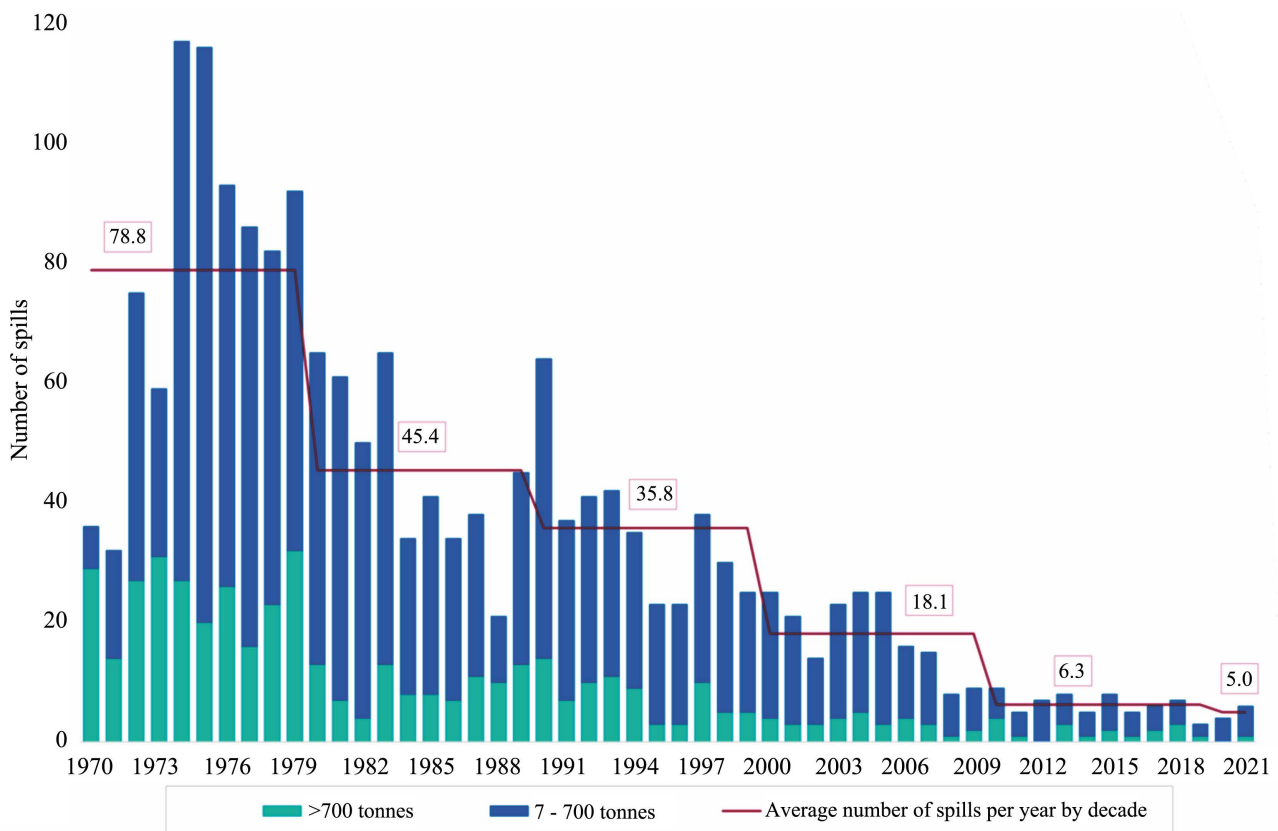


Figure 2. Number of oil spills in Nigeria from 1970-2021.

2019-January 2022. It is lawful for oil companies or multinationals to close off oil spill sites within at least 24 hours of being notified of a spill. After which a survey should be carried out to note the extent of the spill. This is to be done in the presence of the community representatives, the company's representatives and relevant government agencies or officials (Kareem, 2022). When clean ups are carried out, the evidence of successful clean ups will be presented to the relevant authorities. In a case where there is a breach in facility, the oil company who was at work at the time will take responsibilities for it, whether the spill was due to their operational negligence or not or by fraudulent members of the host communities. This may raise an argument on whether or not the company is still supposed to pay compensation to the host community if they were the ones responsible for the oil spill. The answer to this is that companies should only be asked to pay compensation of oil spillage to host communities if the spill is the Company's doing (Akinpelu, 2021). If it's not the company's fault then the local government in charge and within the host company will take liability for the effects of the spill caused by its community.

6. What Triggers Oil Spills?

Oil bunkering has become one of the most lucrative jobs in this part of the world. This is as a result of so many reasons. Such reasons include: Poverty. Lack of Jobs opportunities and the get rich quick syndrome. These reasons are basically from the aspect of host communities that are also guilty of causing oil spillage. The major factors of oil spill triggers include operational negligence from companies and theft. It is unlawful for identified oil spills not to be reported within reasonable time of occurrence. The policy of the polluter pays principle has not been effectively upheld because the already informed parties involved will not want to report to ensure that the clean-up is done properly. Instead, it has been observed that they would rather conceal the occurrence from the knowledge of the officials in order to embezzle funds allocated for such clean ups to be done. The result of this corrupt practice breeds nothing but a very unhealthy and degraded environment within the host communities and the state at large. On the flip side, host communities have been reported for preventing environmental repairs and maintenance from these oil-spillage clean-up teams from doing their job which primarily is to return their affected environments to their near pre-polluted state to make it more safe and habitable for them. The acts and attitudes of these host communities have planted a form of distrust and discouragement in the minds of the few oil companies who want to do right by them (host communities) in the aspect of being responsible for spills caused by their exploration events and implementing the clean-ups as they should be.

7. Management of Oil Spills

Oil spill incidents in the Niger Delta have been regarded as normal and regular happenings. In the previous part of this work, the ideas or measures such as oil

clean-up has been mentioned a number of times. This clean-up can come in several ways if the right equipment and technologies are used. Other approaches to manage oil spills in the Niger Delta include the Bioremediation Approach (Ukdiss, 2021). This is used in the evacuation of oil spilled under certain geographic and climate conditions. This approach comes after a routine mechanical clean-up has been carried out on the affected land. It promotes the total eradication of hazardous waste to a different area of the environment. Another form is that if the Mechanical Containment which has to do with other forms of oil spill Control mechanisms. The instruments used in this category are booms, skimmers and natural synthetic sorbent materials. Booms are clean-up materials used mostly to correct oil spillage in the marine bodies. They are built for quick response in the area where a spill occurred, while skimmers are used in conjunction with booms as they aid in the extraction of crude oil spills from the surface of the water bodies. There are also physical methods of clean-up that could be adopted by defaulting companies. It consists of the use of natural methods like evaporation, oxidation and biodegradation. This is the method that Nigeria has adopted and it has been in use since the rise of pollution incidents in the country because it requires little or no technology and it does not require a lot of financial commitment. This method tends to be slow for the amount and depth of pollution done in the Niger Delta. As a result of this, environmental degradation becomes so intense before the effect of the adopted clean-up method can take effect. There is a longer version of naturally method which is called Remediation. Remediation is an act of reversing environmental damage. Research shows that it seeks to return an already polluted site into its pre-polluted state. The procedure to Remediation includes removing the affected soil and taking it elsewhere to clean out the hazardous waste in which the affected land now carries, and returning it back to the area it was extracted from. After these steps are carried out, the land will be inspected by the relevant authorities and certified by the government agencies that such land or areas have been properly cleaned up.

8. Summary

The research covers the structure of oil and gas industry, upstream and downstream sector, obstacles in the oil and gas industry, pipeline vandalism, crude oil theft, pollution, inadequate pipeline infrastructure, effects of poor management among others stating the negative effects of excessive degradation due to oil exploration and conflicts in Niger Delta area.

9. Conclusion

Based on the result on the research work conducted:

- 1) It was deduced that oil exploration and exploitation services have caused alterations in the environment. These alterations have been examined and have been recorded to be Negative ones.
- 2) This research work has given a rise of hope that the terrible and devastating state of the Niger Delta can be salvaged and restored to normality if multina-

tional are properly monitored within their period of operations.

3) Proper monitoring is lacking in the Niger Delta region to a great extent.

4) It is also advised that companies should follow the proper protocols before starting up their exploration services in various areas of the country and not just the Niger Delta alone. The Federal Government has already put in place laws, rules and policies to be adopted by these multinational companies to curb these excesses of oil services from further destroying the environment but corruption is ruining everything gradually.

5) The government should not give up on the current state of the Niger Delta because if funds are continually put into the restorative clean-up project, the affected areas would become good and habitable once again with no side effects attached to it.

6) Finally, Mediation has been said to be a crucial aspect of this conflicts that have arisen in the past, this is because it seeks to reduce tension and also manages public and social progress well so it is also advised to be adopted in this case.

10. Recommendations

The Niger Delta and other oil affected areas within Nigeria deserves to be restored. This will go a long way in terminating the devastating legacy of oil production in Nigeria. When looking into the restoration of the land to a better state, the rights of the people (host communities) should be put into consideration first.

1) The issue of conflict and violence should be eradicated. This can be achieved by improving the security policies within the affected regions. There should also be a public protest against any form of human right violation by the multinational companies.

2) Public condemnation of acts of repression against environmental activities should be encouraged.

3) Mediation with host communities should also be supported. This includes working with communities to end unhealthy competition amongst ethnic groups for resources. Equitable units for distributing resources should also be determined.

4) A Judicial reform should be sought after by the government to curb corruption and disobedience to existing laws. Multinationals should ensure that indigenes and habitants find justice to protest any form of marginalization. Multinationals should also cease from influencing judicial officials into protecting their selfish interests to curb corruption and enable the goal of judicial reformation to be met.

5) Environmental Restoration can be achieved when we stop the practice of illegal dumping of oil and other hazardous wastes within our environment. This also includes prosecuting employees and officials responsible for authorizing illegal dumping. Adherence to DPR regulations for clean-ups should also be en-

couraged.

6) Another way to curb the issue in the Niger Delta is to conserve Natural Resources. Multinationals should see the need to commit to pursuing research on technologies for natural resource recovery and should also develop and deploy land treatment technologies.

7) Multinationals should help improve the standard of living in the host communities by still paying the required compensations to the benefactors when and where necessary.

8) In all these suggestions, it would only come in highly recommended that Nigerian Government redirects its investment to renewable energy sources, to reduce environmental pollution generally and the over use of our natural resources. This is where the application of the resource curse theory comes in.

It is important to understand that most of these recommendations have already been provided for in relevant environmental laws, but the enforceability is lacking. This research work also suggests that new legislations that effectively tackle the problems faced by the multinationals and their conducts within their host communities should be duly implemented and enforced by the Federal government.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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