# ENVIRONMENTAL AND SOCIO-ECONOMIC EFFECTS OF OIL EXPLORATION: STRATEGIES FOR SUSTAINABLE REGENERATION OF THE NIGER DELTA

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## Abstract

*The Niger Delta has been immensely subjected to huge environmental, social and economic (ESE) challenges arising from oil exploration and production. Despite being blessed with abundant natural oil and gas resources, the region possesses some of the lowest developmental indices known in the modern world. To many, the negative outcomes rendered by crude oil exploration and production in the region have outweighed the positive contributions culminating in the absence of visible sustainable development. Therefore, the aim of this paper is to explore the impacts of oil exploration activities with a view to recommending practical strategies for the regeneration of the region. The study adopted a mixed method research approach to gain an in-depth insight into the Niger Delta crisis and obtained primary data using 15 semi-structured interviews and 262 questionnaires which were administered to government ministries, departments, agencies, key leaders of the affected communities and representatives of oil producing companies operating in the area. Participant selection during both surveys was based on residency in the area, knowledge of the oil industry and experience of the impacts of industry-related operations. Findings from the study revealed that the Niger Delta is plagued by colossal environmental, social and economic challenges that must be addressed for any meaningful and sustainable development to occur. The degradation of the environment - which included pollution of lands, water systems and the air quality - has negatively impacted the biodiversity and caused irreversible damage to the built environment and sustainable development goals of the communities. Consequently, the paper recommended some notable solutions for the ESE regeneration of the area which included total environmental cleanup and remediation of the polluted water bodies and farmlands, economic empowerment, diversification of the local economy away from oil, accelerated energy transition to sustainable renewables, policy reforms, strict regulatory compliance and enforcement regimes.*

***Keywords:*** *Environment, Niger Delta, Regeneration, Sustainable development.*

## 1. Introduction

The Niger Delta accounts for over 90% of all the oil produced in Nigeria whose economy is heavily dependent on crude oil which accounts for about 80%, 90% and 95% of the government's revenues, export earnings and national budget respectively (Watts 2004; Ikelegbe 2005; Ugochukwu and Ertel 2008; Aghalino 2009; Mähler 2010; Kadafa 2012;

Adejumo *et al* 2013). Prior to oil's discovery in 1958, the indigenous people of the Niger Delta engaged profitably in subsistence fishing and farming, but the advent of the oil industry has rendered these professions non-existent in most host communities. Oil contamination has resulted in loss of soil fertility and has drastically reduced fish populations, putting pressure on the fishing and farming industries. It is widely estimated that from 1960 to 2010, a total of 13 million barrels of crude oil were spilled in the Niger Delta (Kadafa 2012; Albert *et al* 2018). During the same period, approximately 2.5 billion cubic feet of associated gas representing 70 – 75% of production were flared annually (Kashi and Watts 2008). These incidents have resulted in severe contamination of surface and ground water resources and destruction of marine life, deforestation, poor health of the locals, and mass migration of humans from the affected parts. The Federal Government of Nigeria, in recognition of the plight of the indigenous people of the Niger Delta, has on several occasions embarked on various initiatives to address the developmental deficit in the region. However, over sixty years of government interventions have failed to deliver the desired results, as the region remains largely under-developed, the environment destroyed, and means of livelihood decimated, leaving some of the 40 million inhabitants extremely frustrated and living in abject poverty and squalor amid plenty natural resources. The main objective of this paper is to explore the impact of oil exploration activities on the built environment and social life in the Niger Delta, evaluate the effectiveness of government's sustainable development initiatives in communities within the region and proffer solutions for the sustainable regeneration of the region. The paper starts by presenting a literature review on oil exploration and its impacts, existing laws and regulations governing oil exploration in the Niger Delta, causes of environmental pollution, the intervention agencies established so far, then proceeded to investigate through a survey, why the intervention measures of the government have been largely unsuccessful, and the barriers to sustainable development efforts in the Niger Delta.

## 2. Environmental impacts

Environmental challenges that have occurred in the Niger Delta as a result of oil exploration and production include oil spills and pollution, gas flaring, deforestation and land degradation, water pollution, destruction of aquatic ecosystems, and loss of biodiversity (UNEP 2011, Kadafa 2012, Lindén and Pålsson 2013). Oil spillages specifically destabilise the fragile ecosystem of the region which comprises of a network of waterways, farmlands, rainforests, mangrove forests, grasslands and a wide range of wildlife. Oil spills also pose serious threat to human health including foetal development and neonatal mortality (Bruederle and Hodler, 2019). Food chain contamination is another deleterious effect of oil spillages. It has been shown that toxic substances in the spilled oil are ingested by fish, marine organisms (e.g., molluscs and periwinkles), animals and plants which when consumed as food by humans can cause ill health. There have been reported cases of food poisoning traced to food items that contain hydrocarbon residues (Lindén and Pålsson 2013). Ogwugwa *et al* (2018) wrote that the ingestion of heavy metals released into the environment during oil exploration activities like water-soluble barium cause vomiting, abdominal cramps, breathing

difficulties, diarrhoea, blood pressure abnormalities, facial numbness, and weakness of the muscles (Ogwugwa *et al* 2018). Furthermore, contaminated soils alter the geotechnical behaviour of building foundations and civil structures which invariably can cause the collapse of such buildings and may even lead to needless deaths (Khamehchiyan *et al* 2007; Adejumo 2012; Kermani and Ebadi 2012; Alfach and Wilkinson 2020). Another dangerous culprit in the destruction of the built environment in the Niger Delta is gas flaring or burning of unwanted gas. As a result of gas flaring, black soot is constantly deposited on building roofs and gaseous emissions (such as $CO_2$, $SO_2$ and $NO_2$) from flaring combine with rainwater to form an acidic medium that leads to very high corrosive rates of zinc which is the roofing material mostly used in the Niger Delta (Nkwocha & Pat-Mbano 2010; Iyorakpo & Odibikuma 2015). Exposure of buildings to gaseous pollutants from flaring also cause their increased degradation (Nkwocha and Pat-Mbano 2010; Anochie and Mgbemena 2015).

## 3. Socio-economic impacts

The social impacts of oil exploration and production in the Niger Delta revolve around health complications, social inequalities, forced migration, social insecurity and unrests, societal disruptions and a multiplicity of conflicts over resource control. Harmful particulates released from combustion of flared gases lead to chronic diseases like bronchitis and heart defects to locals within the immediate vicinity of flow stations, while the greenhouse gas $CO_2$ produced is a major contributor to climate change and ozone layer depletion (Ndubuisi and Asia 2007; Kadafa 2012). Kashi and Watts (2008) wrote that as a result of the high rate of environmental disasters and the massive plundering of the region's natural resources with little or no infrastructural development and gainful employment for natives to show for it, pockets of non-violent agitations by aggrieved locals began to emerge in the early 1990s. These conflicts led most of the oil companies to relocate to other regions like Lagos and Abuja, further deepening the economic downturn plaguing the area. Economically, the degradation and alienation of agricultural lands coupled with the pollution of water bodies by oil industry operations have greatly affected the livelihoods of the residents of the oil producing communities. As previously noted, the people of the Niger Delta traditionally engage mainly in subsistence farming, fishing and forestry. But with the destruction of mangroves and rainforests, and the pollution of agricultural lands and water systems by oil exploration processes and procedures, fishing and agricultural activities have been largely diminished. This loss of viable means of livelihood comes with a very high rate of poverty, increased unemployment, food insecurity, devastating economic losses and a cycle of social unrests in the Niger Delta. Kashi and Watts (2008) stated that the economic well-being of communities in the Niger Delta is also negatively impacted by gas flaring. By burning the produced associated natural gas, a precious resource that may be used for revenue generation, energy production, industrial and economic growth is wasted. A cycle of underdevelopment and poverty in the area is sustained when natural gas with its economic potential is lost since it diminishes the possibilities for export markets, local industries and power generation.

## 4. Regulation of the oil industry

Oil industry operations in the Niger Delta are coordinated by a comprehensive regulatory framework comprising of policies, laws, regulations, specialised regulatory institutions and agencies charged with ensuring that oil exploration and production activities are executed in such a manner as to protect the environment, ensure the social wellbeing of members of the host communities, the working population and the general public, and guarantee sustainable economic development of the oil producing areas. Successful implementation of these policies, laws and regulations plays a vital role in the achievement of sustainable development in the Niger Delta region. The foremost legislations regulating the Nigerian oil and gas industry are the Constitution of the Federal Republic of Nigeria, Mineral Oils (Safety) Regulations (1963) and the Petroleum Act of 1969. These are complemented by the Land Use Act (1978), Associated Gas Re-injection Act (1979), Environmental Impact Assessment Act (1992), Oil Pipelines Act (1956), Oil in Navigable Waters Act (1968), Federal Environmental Protection Agency (FEPA) Act (1988), Harmful Waste (Special Criminal Provisions) Act (1988) and Oil Pollution Act (1990) amongst others. But even though Nigeria has numerous laws that control how oil exploration and production activities are executed to ensure safe operations and minimise their impact on the environment, the current state of affairs in the Niger Delta imply that these regulations are largely inadequate and effective. According to Albert *et al* (2018), failure of the regulations to achieve their objectives may be attributed to lack of proper implementation strategies overlaps of legal positions, mandates and enforcement problems arising from role duplications, policy inconsistency, lack of transparency, and lack of proper compensation structures.

## 5. Sustainable development interventions in the Niger Delta

Since the inception of the oil industry in Nigeria, various interventionist initiatives and agencies have been launched over the years to ensure environmental sustainability, socio-economic development, poverty alleviation, employment and provision of adequate infrastructures in the Niger Delta. The first of these was the Niger Delta Development Board (NDDB) which was set up in 1959, following the Henry Willink Minorities Commission report of 1958. Others included the Niger Delta River Basin Development Authority, NDRDBA (1976), Clean Nigeria Associates, CNA (1981), Oil Minerals Producing Areas Development Commission, OMPADEC (1992), Niger Delta Environmental Survey, NDES (1995), Niger Delta Development Commission, NDDC (2000), Ministry of Niger Delta Affairs, MNDA (2008), the Niger Delta Presidential Amnesty Programme, NDPAP (2009), and the Hydrocarbon Pollution and Remediation Programme (HYPREP) that was established in 2012, following the UNEP report of 2011 (Okonta and Douglas 2003; Kashi and Watts 2008; UNEP 2011).

## 6. Causes of oil pollution in the Niger Delta

Oil and gas pollution in the Niger delta occurs mainly through oil spillages, gas flaring, fire explosions, poor management of process wastes and effluents, hazardous gas emissions, deforestation, noise emissions, and land degradation. The spillages are caused by blowouts,

pipeline corrosion, equipment failure and sabotage although the percentages allocated to them differ. Ndubuisi and Asia (2007) and Nwilo and Badejo (2008) indicated that 50% of spillages are caused by pipeline corrosion, 28% by sabotage, 21% by oil production operations, while only 1% is attributed to ineffective or improper procedures.

## 7. Barriers to sustainable development initiatives

Several barriers exist in the Niger Delta that have continued to pose challenges to, and hinder the realisation of, positive sustainability indicators in the region. In addition to the environmental challenges caused by oil exploration and production such as pollution from oil spillages and gas flaring, lack of political will, negligence, policy limitations and inconsistencies, widespread corruption, governance and leadership failures, lack of accountability, policy formulation and implementation issues, inadequate funding, social and economic inequalities, lack of grassroot participation and the absence of interventionist project monitoring and evaluation prevent long-term sustainability (Aghalino 2009; Albert *et al* 2018). Overcoming these challenges necessitate that they are clearly identified, and effectively addressed before any semblance of sustainable development can be attained in the Niger Delta.

## 8. Research methodology

This study employed a mixed research method using a questionnaire and semi-structured interviews as the main data collection tools. The method was chosen to provide a comprehensive understanding of the Niger Delta problem since it leverages the strengths of both qualitative and quantitative research while mitigating their individual limitations. Whereas the qualitative data offered depth and provided insights into individual experiences and meanings, the quantitative data provided breadth and revealed patterns and generalisations across large populations and facilitated faster data collection from a large proportion of the study population with less effort and costs (Saunders et al 2016). Also, using multiple methods to study the same phenomenon enabled cross-verification of the results thereby enhancing the validity and reliability of the findings. Moreover, while the quantitative data revealed what was happening in the Niger Delta to a large extent, an explanation on why and how it was happening was obtained from the qualitative data. To complement the primary data, secondary data from the existing literature on oil exploration in the Niger Delta was also reviewed. The questionnaire was randomly distributed, and the interviews were administered to the three major stakeholders in the Niger Delta: oil companies, government officials and representatives of oil producing communities in the Niger Delta with five participants selected from each stakeholder segment. **Table 2** provides information about the questionnaire respondents.

## 9. Research method

A total of 300 questionnaires were sent to the respondents by electronic mail and 15 semi-structured interviews were conducted. All participants gave their informed consent and voluntarily agreed to participate in the study. 262 questionnaire responses were received

from respondents, resulting in a response rate of 87%. The respondents were asked to rate the questions according to their understanding of the issue under investigation on a 5-point Likert scale: Strongly agree, agree, neither agree nor disagree, disagree or strongly disagree. Data was analysed using SPSS. Descriptive and bivariate analysis was performed to achieve the research objectives. A reliability test was performed **(Table 1)** and the Cronbach Alpha value was 0.915, implying that the questionnaire has excellent internal consistency and therefore reliability (Pallant 2016). **Table 3** summarises the survey results, while **Table 4** shows the results from the semi-structured interviews.

***Table 1: Results of reliability test***

| **Reliability Statistics** | | |
|---|---|---|
| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
| .915 | .899 | 42 |

## 10. Research results

**Table 2** shows a distribution of the profiles of respondents to the questionnaire survey, while the key issues that were examined with respondents are as shown in **Table 3**.

***Table 2: Profile of respondents to the questionnaire survey on impacts of oil exploration***

| **POSITION IN COMMUNITY** | **NO OF RESPONDENTS** | **% TOTAL RESPONDENTS** |
|---|---|---|
| Oil industry professionals | 85 | 32% |
| Government institutions | 72 | 28% |
| Community representatives | 105 | 40% |
| **Total** | **262** | **100%** |

***Table 3: Summary of results of the questionnaire survey on impacts of oil exploration***

| **SURVEY INDICATOR** | **NO OF RESPONDENTS WHO AGREED** | **% OF TOTAL RESPONDENTS** |
|---|---|---|
| Oil exploration affects communities | 207 | 79% |
| No issues if no exploration activities | 172 | 66% |
| Communities benefit from oil exploration | 85 | 32% |
| Awareness of laws and regulations on industry | 102 | 39% |
| Existing government policies are sufficient | 68 | 26% |
| Existing government policies should be reviewed | 226 | 87% |
| Awareness of intervention agencies | 155 | 60% |
| Communities benefit from intervention agencies | 82 | 31% |
| Agencies must deliver SDGs | 198 | 76% |
| Intervention agencies are effective and efficient | 146 | 56% |
| Federal government contribution is good | 43 | 17% |
| Satisfied with government's efforts | 35 | 13% |
| Achievement of sustainability factors low | 132 | 50% |

| | | |
|---|---|---|
| Sustainability drivers influence policies | 135 | 51% |
| Performance of intervention agencies is good | 45 | 17% |
| Evaluation, funding, and corruption as barriers | 184 | 70% |
| Policy inconsistencies, no political will as barriers | 178 | 68% |
| Increase oil proceeds up from 13% to Niger Delta | 187 | 72% |

***Table 4: Results of the semi-structured interviews on impacts of oil exploration***

| Challenge explored | Agree | | Disagree | | Neutral | |
|---|---|---|---|---|---|---|
| | Frequency | % | Frequency | % | Frequency | % |
| Oil has negative impacts | 13 | 86.6% | 1 | 6.7% | 1 | 6.7% |
| Oil has benefits | 5 | 33.3% | 9 | 60.0% | 1 | 6.7% |
| No issues if no oil* | 10 | 66.7% | 5 | 33.3% | - | - |

**Issues in the context of this study refer to environmental pollution, loss of livelihood, poverty, poor economy, health challenges, peaceful protests, armed militancy, kidnappings, attacks on oil industry personnel and installations, and the general insecurity in the Niger Delta.*

## 11. Discussion of the findings

The results of the study presented in Tables 3 & 4 showed that oil exploration has caused untold hardships to the people and the built environment in the Niger Delta region of Nigeria and underscores the need to urgently implement comprehensive sustainable development strategies in the Niger Delta. 79% of the questionnaire respondents and 86.6% of those interviewed agreed that most people in the region have been negatively affected by the industry through personal experiences of the harmful effects of oil exploration. Overall, the gathered findings confirmed that oil exploration and production have considerable damaging environmental, social, and economic impacts on the Niger Delta region, and revealed growing dissatisfaction with existing efforts towards sustainable development in the Niger Delta. And judging from the responses obtained during the interviews, it was quite easy to appreciate the level of frustration being experienced by the people of the Niger Delta. From the perspective of the communities, it has not been a pleasant experience and although the discovery of oil in the Niger Delta was initially seen as a blessing, it is now being viewed as a curse because the negative consequences of oil exploration and production in the region have overshadowed the economic benefits. A relatively large proportion of local community residents (66%) see oil exploration as an activity that does not benefit their communities economically, socially or environmentally. And it is generally believed that the current ESE challenges in the Niger Delta would not exist without oil exploration in the region. Curiously, results from the study showed that most of the respondents were not familiar with the regulations governing the oil industry. Therefore, the ability of the locals to hold operating companies accountable for their misdeeds or to legally challenge these companies in court is greatly impeded because they do not know when these companies are breaking the law of which they are unaware. It is almost impossible to accuse someone of breaking the law if you do not know the law and its provisions. Furthermore, perhaps judging by the state of underdevelopment and environmental degradation of the Niger Delta, most respondents disagreed that current government policies are sufficient to achieve sustainable development in the region and pointed out that current policies should be reviewed. Respondents indicated

the following key issues as problem areas that must be urgently addressed for the significant development of the region: lack of adequate regulation of the sector, ineffective distribution or lack of public awareness of the laws and regulations governing the oil industry, and insufficient policy making in the sector. Also, most of the respondents admitted to being aware of government intervention bodies such as Oil Minerals Producing Areas Development Commission (OMPADEC) and Niger Delta Development Commission (NDDC) and their activities. But since a large part of the population is aware of their existence compared to the actual existing projects, it can be argued that the government and intervention agencies are more concerned with publicity stunts than actual implementation of the projects. The results support the findings of Okonta and Douglas (2003) who wrote that during the decommissioning and closure of OMPADEC in 1999, the region had more signposts than completed projects because most projects in the region were abandoned due to funding problems, inadequate oversight of projects by commission officials, or blatant disregard for contracting and implementation ethics by government officials, commission staff, and contractors. In their report, Okonta and Douglas (2003) concluded that the commission did not achieve its goals because it did not emphasize environmental sustainability, lacked personnel necessary to achieve ecological goals, lacked long-term planning, lacked project evaluation methods and maintenance culture, and did not encourage community participation and integration during project conception, development, planning and design. The survey also showed that the majority of respondents did not agree that they benefit from the projects supported by the intervention agencies either as individuals or as a community. To them, while the agencies fund some projects in the communities, these projects have little or no impact on large parts of the population and their living conditions. Nevertheless, respondents concurred that intervention agencies are an effective and efficient way to bring sustainability to the region, although the current performance of intervention agencies and the overall contribution of the government to the sustainable development of their communities were rated poorly. Also, the study refuted the claim that public intervention bodies were a waste of money and resources and therefore irrelevant in achieving sustainability. It follows that although the people of the Niger Delta believe in the use of these agencies to bring development to their region, they clearly only disagree with the implementation strategies adopted by the agencies. The general perception was that lack of monitoring and evaluation, coupled with corrupt practices and apparent disregard for grassroots participation in project planning, design, implementation and implementation were major obstacles to sustainable development initiatives in the Niger Delta. Other barriers identified were indifference, policy inconsistency, government discontinuity and a general lack of political will. These findings are in line with the observations of Ughakpoteni (2018) and Ebeku (2020) who wrote that the main challenges of strategic development interventions in the Niger Delta are implementation or enforcement and official corruption. During the surveys, sustainability drivers were clearly identified as influencing policies and decisions related to the implementation of development programs in the Niger Delta, especially those related to corporate reputation and legal and contractual obligations. Meanwhile, a large

number of survey respondents said that they would welcome the implementation and establishment of sustainable development goals or sustainable development factors such as ending poverty and hunger, providing clean water, energy and affordable housing, access to quality education, provision of decent work, infrastructural development and accelerated regional economic growth. Finally, according to survey data, participants supported increased funding for development programs in oil-producing countries in the Niger Delta region. The 13% allocated from the current federal account was considered grossly inadequate due to the underdevelopment of the Niger Delta and the continued debilitating effect of oil exploration in the region.

## 12. Recommended strategies for regeneration of the Niger Delta

Based on the findings from the study and the supporting data from existing literature, the authors would like to proffer the following recommendations and solutions as possible ways out of the Niger Delta predicament:

(a) *Environmental restoration and protection:* The first step towards ensuring sustainability in the region would be a complete restoration of the pristine natural environmental conditions and quality sanitary circumstances that prevailed before the advent of the oil industry. Achieving this encompasses the remediation of all polluted lands and water bodies. Government and the oil companies must endeavour to systematically engage in proactive avoidance of land, air and water pollution during oil extraction, cleanup and restoration of degraded lands and water systems that have suffered from oil pollution, using appropriate internationally approved industry standards, technologies and methodologies. Aggressive reforestation of rainforests and mangrove forests that have been impacted by the activities associated with oil exploitation should also be pursued to restore the vital ecosystems of the Niger Delta. Moreover, gas flaring should be discouraged and outlawed immediately except in emergency situations for which approvals must be sought from the appropriate authorities.

*(b) Adoption of green technologies:* In line with the global push towards net carbon zero by 2050 and beyond, one possible way of reducing the environmental pollution and devastation in the Niger Delta is to embrace green technology and energy production from renewable sources e.g., hydropower, solar and wind power. Firstly, the Niger Delta is surrounded by a massive water body (the Atlantic Ocean), while at the same time housing tributaries to two of Africa's largest rivers - River Niger and the Benue River. This makes the region a viable candidate for hydropower generation. Secondly, the region enjoys an abundant supply of direct sunlight all year round, and because of the excessive winds experienced in the region due to its strategic location around the Atlantic Ocean and at the edge of the continental land mass, wind power generation could be explored in the area to further push down the need for over-reliance on energy generation from fossil fuels and other non-renewable fuel sources which are exacerbating the environmental problems in the Niger Delta. *(c) Policy reforms and implementation:* During the study, it was revealed that adequate policies are in place in Nigeria, but the practice or implementation was lacking mainly due to government corruption, poor enforcement and monitoring and general bad governance. To be effective,

government must strengthen the regulatory and enforcement arms of the industry and ensure all violating parties are punished as stipulated by the various laws. *(d) Economic empowerment:* The study showed that poverty and unemployment were major barriers to sustainable development in the Niger Delta. As an accelerated mechanism to lift people out of poverty and economically empower the inhabitants of the region, government should set up a form of universal basic income or social support payment for the unemployed citizens to ensure that people live above the poverty threshold. This way, no one will be left behind and live below the poverty line. The move will also create some stability especially when people lose their sources of income or livelihood. Also, to achieve sustainable development in the Niger Delta, it is recommended that a concerted effort be put in place by the government and oil companies to unequivocally support the diversification of the region's economy away from the over-reliance on the oil-based economy e.g., by promoting and actively supporting small-scale agricultural and manufacturing enterprises especially farming and fishing activities. In line with the above, microcredit schemes and banking programmes should be established that can make low single-digit-interest capital loans and credit facilities available to members of the host communities aimed solely at productivity-oriented business ventures in the region. *(e) Social equality, fairness and inclusion:* For there to be any meaningful development and eradication of inequalities in any society, basic amenities and facilities must be accessible to the citizenry, with education and health at the forefront. To achieve this in the Niger Delta, government must ensure that training facilities like schools and vocational training centres are built and well-maintained. Healthcare facilities like hospitals and maternities should also be readily available; well-equipped and adequately staffed. Moreover, basic facilities like access to clean water and electricity must be provided. Infrastructural development including construction of roads, bridges, jetties and other road and water transport structures must be built to open up the development landscape. *(f) Decentralisation and grassroot participation:* During the study, it was observed that resource ownership is a major bone of contention in the Niger Delta. Therefore, a crucial step towards achieving sustainable development and restoration of the Niger Delta is decentralisation of resource ownership and control. The local governments in all nine states of the Niger Delta should have the power and ability to control the mineral resources within their respective domains and pay taxes and royalties to the central or federal government instead of the federal government controlling the exploitation of these resources and giving the regional states and their local governments a mere fraction of the accrued proceeds. This approach will ensure that a substantial part of the revenues derived from oil exploration in the Niger Delta will be retained in the oil producing states for sustainable development activities. Furthermore, for sustainability initiatives to succeed in the Niger Delta, policy and decision makers must ensure effective grassroot collaboration with host communities during sustainable development programme design conceptions and execution to engender a spirit of recognition and foster a sense of project ownership. This will promote an innate willingness to support intervention initiatives by locals in host communities who currently feel neglected by the government and oil companies. Likewise, host communities must also play their role in ensuring these interventions work. Having been

part of the design and conception of the projects, they should speak up when things are not going to plan through monitoring progress of projects and holding erring parties accountable. They should also work tirelessly to reduce incidences of oil companies' operational disruptions, pipeline vandalism, oil theft and illegal refining. *(g) Governance, transparency and accountability:* For all of the recommendations to be effective, government must strengthen the regulatory and enforcement arms of the industry and ensure all violating parties are punished as stipulated by the various laws. Also, the intervention agencies must be autonomously run by a class of individuals with integrity, selflessness, and high moral standing that are devoid of corrupt practices and who adopt the long-term approach to the management of the state's natural resources for the benefit of all citizens with no political interference from the ruling politicians and their political parties. Governments and oil companies must be open and transparent in all their dealings with revenues generated from oil production and sales, allocation of resources and sustainable development agendas.

## 13. Conclusion

During the study, it was revealed that oil exploration activities have caused untold hardship to the people and the built environment of the Niger Delta region of Nigeria. And although numerous laws and intervention strategies have been implemented in the Niger Delta, the impacts of these regulations and initiatives are minimal resulting in the dismal state of underdevelopment that persists in the region. Therefore, in conclusion, this paper strongly believes that with the recommendations outlined above coupled with strategic intervention agencies and their schemes or projects, if well implemented, will create much needed jobs, address infrastructural deficits in the region and provide a huge outlet for resolving the high unemployment situation and greatly tackle the environmental destruction in the region.

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