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Environmental impacts of oil production activities in Niger Delta, Nigeria

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Abstract

The exploration and production of oil is a significant global industrial development. In Nigeria, oil production has attracted several benefits both positive and negative. The negative aspect of the oil producing companies has manifested in environmental degradation; while positive impacts have influenced several infrastructure developments. In the sampling process, Niger Delta was stratified into Rivers, Delta and Bayelsa States. While the selected states were further stratified into Local Government Areas where oil production activities were dominant. Ebubu-Eleme and Ogbagi (Rivers State); Olomoro and Oghara 1 (Delta State); and Bisemi and Iminringi (Bayelsa State) communities were purposely selected. Thereafter, 1659, 1512 and 1332 buildings were respectively identified in Rivers, Delta and Bayelsa States LGAs. Through systematic sampling, one out of all 10th (K=10) buildings were selected. Thus, 453 questionnaires were administered on the household heads or its equivalent in the study area. Moreover, Average Weighted Mean through the adoption of Likert scale was used to compute Mean Index (Relative Agreement Index) for each variable identified. The study established that some notable impacts; business opportunity (4.21), connections (4.05), job and exposure (3.91), sanitation issues (3.90), youth restiveness (3.79) and environmental pollution (3.77), among others. These findings align with existing studies on the positive and negative impacts of oil production activities in the region. It was recommended that the government should be more accountable to the affected communities in terms of sustainable developments. Also, the basic social responsibility of the oil companies should be enforced by the appropriate government agencies with transparency.

Keywords: Environment; Oil Production; Environmental Impact; Exploration; Community

1. Introduction

The exploration and production of oil is a significant global industrial development. The oil industry is a major source of jobs and revenue for many oil producing economies globally. Oil wells which are located in communities in the Niger Delta has significantly contributed to the growth of the country. They have however rendered the region one of the five most severely petroleum damaged ecosystems in the world (Ogwu et al., 2015). The environment of oil producing communities has suffered from decades of oil exploration due to neglect by federal government to legislate and enforce the management of negative economic externalities. The discharge of petroleum hydrocarbon from in form of oil spills or gas has contaminated the area with dangerous toxic substances thus reducing the biodiversity in the communities. The effects could last for decades even after clean-up exercises.

In Nigeria, oil exploration began in the 1950s in Niger Delta Region where extensive production facilities were established. Nigeria a member of the Organisation of the Petroleum Exporting Countries (OPEC) is currently the largest oil producer in Africa and the world's eighth largest exporter of crude oil (Iloeje, 2016; Enyoghasim et al., 2019). Production of crude oil in Nigeria has substantially improved the nation's economy over the past seven decades.

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However, this is associated with negative and significant impacts on the quality of environmental components in the communities (Sambo, 2012; Oyedepo, 2012). Discharges of crude oil and its attendant waste streams in oil producing communities of the Niger Delta have caused environmental pollution (air, soil and water), adverse human health effects, socioeconomic problems and degradation of physical appearance of the oil producing communities (UNEP, 2002; Kadafa, 2012). Collins (2018) traced the history of oil production in the Niger Delta. The study enumerated the various benefits that the Nigeria state has benefitted from the production of crude oil. It however noted that residents of the oil producing communities perceive oil production as a curse as they suffer from pains, traumas, afflicts, negligence and under-development. While these studies have all identified the various implication of oil exploration on the socioeconomic and cultural life of the inhabitants of oil producing communities.

Despite the improvement in the technology adopted in carrying out these activities, exploration activities continue to reveal complex environmental implications (Bayode et al., 2011). This complex environmental implication has significantly affected the physical, social and economic aspect of human life and the general quality of life in the oil producing communities in Niger Delta (Kadafa, 2012; Aniefiok et al., 2013). However, the specific impacts of this oil production in the host communities are empirically sparse in the body of knowledge; with a view to providing information that could enhance environmental planning and sustainability in oil producing communities. Thus, this paper is positioned to understudy the salient effects owing to the operational activities in the study area.

2. Empirical review of oil production

Nigeria has over 2000 oil drill sites where oil is explored in the Niger Delta region. The cumulative impact of past and present exploration and production of crude oil activities in oil rich communities in Nigeria has affected livelihood in the communities. These events if not effectively managed could lead to total destruction of the ecosystem in the areas. As expressed by Ophori (2006), evaluation of ground water in the oil producing areas revealed that it is increasingly tilting toward a watershed approach due to large-scale contamination, technological development, rapid population growth and land use changes. According to Kafada (2012), the estimated amount of oil spilled over the last 50 years in the Niger Delta is about 1.5 million tons. This is 50 times the estimated volume spilled in Exxon Valdez oil spill in Alaska 1989. Getter, (1998) reported that the cases of crude oil spillages between 1976 and 1997 were about 5334 cases releasing about 2.8 million barrels of oil into the land, swamp, estuaries and coastal waters of Nigeria. Also, statistics showed that between 1976 and 2005, the total reported cases of oil spill incidences were 9,107 with about 3,121,909.8 barrels of oil spilled into the environment (Omorede, 2014). The spills of oil have negatively affected marine life and human health as a result of consumption of contaminated environment. Also, oil spill and release of toxic gases has led to the destruction of farmlands, rivers, building roofs thereby causing drawbacks in fishing and other activities of the natives. Gas flared during crude oil extraction generate tremendous heat which inhibits plant growth and destroys the aesthetics of the environment (Alakpodia 2000; Ejuwa 2005).

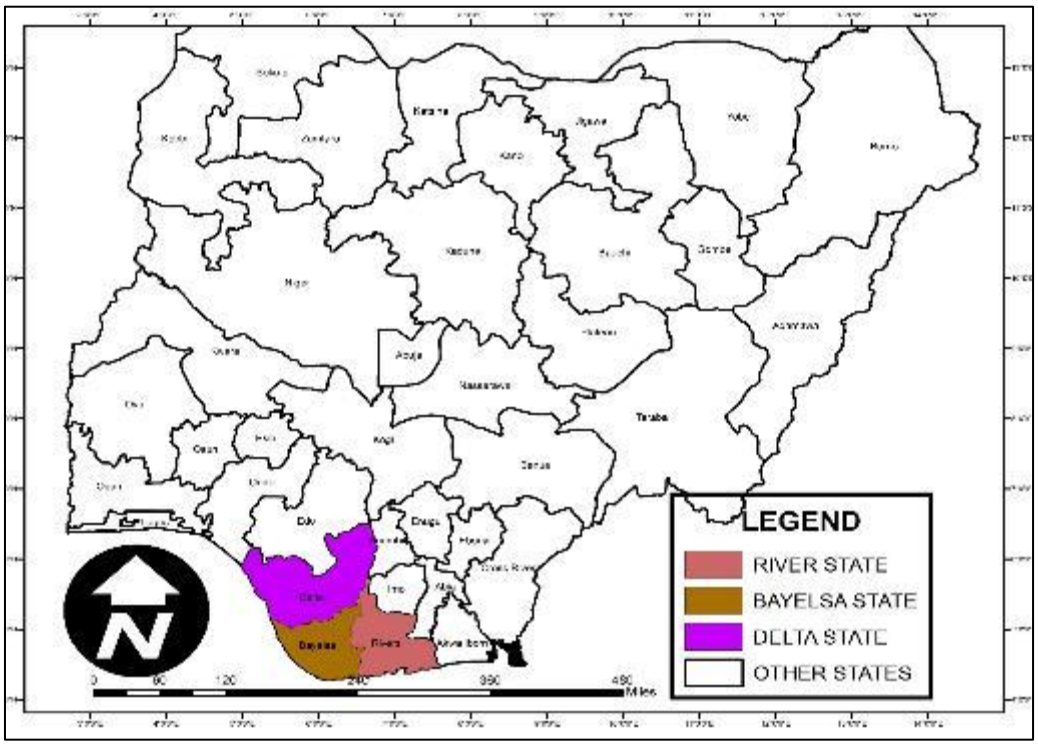
Crude oil extractions are meant for economic empowerment of the country where they are located. However, in Nigeria residents of oil-bearing communities are totally impoverished and their communities grossly underdeveloped (Omorede, 2014; Collins, 2018). An overwhelming majority of the people in these communities live in abject poverty even as the only source of meeting their basic economic needs have been devastated by incessant oil spills that pollute the land and aquatic environments, gas flaring and other forms of environmental degradation (Bayode et al., 2011; UNEP, 2011; Aniefiok et al., 2013). According to Oluduro and Oluduro (2012), indigenes in oil rich communities have not benefited much from the profits of the country source of wealth rather they have been subjected to undue hardship and economic stagnation since the commencement of oil production on a large scale in their communities (Oguduvwe, 2013). This is evident in the level of severe degradation and neglects by both the operators of the oil companies and the government whose are feebly pursued thus contributing to socioeconomic, environmental and infrastructural deprivation of residents of the community (Akhakpe, 2016).

The peoples' aspiration and hopes with the domiciliation of oil in their communities have shattered. According to Iloeje, (2016) the persistent environmental degradation in the communities has resulted in pervasive poverty. This has also culminated into sense of deprivation of resource benefits to the host communities (Oyem, 2001). Furthermore there is a relationship between decreased agricultural livelihood, income and poverty status of the host communities and the level of mineral resources exploitation (Apata 2010). In order to address this, there is a need for the identification of peoples' need in order to actualise their desires (Omofonmwan and Odia, 2009). As established by Iloeje, (2016) people's core interests and aspirations have not been properly articulated and factored into the extraction of oil in the region.

3. Materials and methods

3.1. Study Area

The Niger Delta region is located at the apex of the Gulf of Guinea along the western coast of Africa, within Nigeria's South–South Geopolitical Zone (Haack et al., 2000; INEC, 2019). It covers approximately 75,000 km^2, representing about 7.5% of Nigeria's total land mass, and is home to an estimated 31 million people (Young, 2012). Administratively, the region comprises nine oil-producing states: Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Ondo, Imo and Rivers; it encompasses a total of 185 Local Government Areas. The region hosts over 900 oil-producing wells and numerous crude oil production facilities distributed across several oil-bearing communities (Osuji and Onojake, 2004). Ecologically, the Niger Delta is characterised by two major vegetation zones: tropical rainforest in the northern part and mangrove forests along the warm coastal belt. The mangrove forests and swamps, frequently inundated by saline water, form part of a highly sensitive and complex ecosystem that supports diverse flora and fauna while sustaining the livelihoods of local communities (Ugochukwu and Ertel, 2008). Furthermore, Figure 1.1 showed the major states with the highest concentration of oil production activities in Nigeria, notably Bayelsa, Rivers and Delta States.



Source: National Space Research and Development Agency (2026)

Figure 1 Selected Niger Delta States in the Context of Nigeria

4. Methodology

The study adopted multistaged sampling procedure in administration of questionnaire and observation of the physical condition of the oil production activities in the area. First stage involved the stratification of Niger Delta Region into three major oil producing states. These are Rivers, Delta and Bayelsa States. Second stage involved stratification of the selected states into oil producing LGAs where oil operational activities were dominant such as Eleme, Ogba/Egbema/Ndoni (Rivers State); Isoko South and Ethiope East (Delta State); and Yenagoa and Ogbia (Bayelsa State). The third stage involved purposeful selection of notable oil producing communities directly experiencing severe activities of oil operations in the selected LGAs. The communities selected were Ebubu-Eleme and Ogbagi (Rivers State); Olomoro and Oghara 1 (Delta State); and Bisemi and Iminringi (Bayelsa State). Thereafter, 1659, 1512 and 1332 buildings were respectively identified in Rivers, Delta and Bayelsa States LGAs

The fourth stage was systematic sampling of 1 out of 10th (K=10) buildings in the selected communities of the study area. Across the communities selected total number of 4,503 buildings were identified. The details of the communities' buildings were presented in Table 1.1. Across the communities 453 buildings were selected for the study. The selected

453 (sample size) buildings represented 10% of the total number of buildings identified in the study area. Thus, 453 questionnaires were administered on the household heads or its equivalent in the study area. Moreover, frequency table, percentages and photographic evidences were used to analyse the specific and dominant oil producing operational activities at play in the study area.

Table 1 Total and Selected Number of Buildings in the Oil Producing Communities

State/LGAs	Selected Communities	Total number of residential buildings	Number of selected residential buildings
Rivers Eleme	Ebubu - Eleme	889	89
Ogba/Egbema/Ndoni	Ogbagi	770	78
Delta Isoko South	Olomoro	797	80
Ethiope East	Oghara I	715	72
Bayelsa Yenagoa	Bisemi	653	66
Ogbia	Imiringi	679	68
Total		4,503	453

Source: Google Earth Imagery (2026)

Furthermore, the respective views of the residents on the effects (good and bad) on the oil producing activities were computed descriptively using the variables mean score values through the adoption of five-point Likert scale in determining the agreement of the community residents with issues raised in the area. The views of the respondents were rated accordingly; in the order of: strongly agreed (5), agreed (4), just agreed (3), disagreed (2) and strongly disagreed (1). Consequently, Mean Residents' Agreement Index ($\overline{RAI}$) was computed from the respondent's views; followed by Mean Deviation (MDs), Variance, Standard Deviation (SD) and Co-efficient of Variance (CV). This can be expressed mathematically as:

- $\overline{X} = \sum F_i / n$.....(1)
- F_i = Frequency of the oil production effects in Niger Delta oil producing communities *i*
- n = Total number of the identified variables in the study area.
- $WV = F_iV_i$.....(2)

The Weighted Value (WV) for each oil activities effects were obtained as the product of the number of respondents for each effect being identified and their respective weight values.

- WV = Weighted Value
- F_i = Frequency of the oil production effects rating *i*
- V_i = Weight attached to oil production effects *i*

Furthermore, the Summation of Weighted Value (SWV) for each oil production effects' characteristic were derived by adding the product of the responses of each rating for oil production effects and their respective weight values.

- SWV = $\sum F_iV_i$.....(3)
- SWV = Sum of the weighted values
- F_i = Frequency of the oil production effects rating *i*
- V_i = Weight attached to the oil production effects *i*

The Resident Agreement Index (RAI) for each effect was obtained by dividing the *SWV* of each oil production effects by the total number of the responses. This can be computed mathematically as,

$\overline{RAI} = \sum F_iV_i/N$.....(4)

The summation of the RAI in the study area was divided by the total number of the identified oil production effects (n = 14). Consequently, the Mean Deviation (MD), Variance (V), Standard Deviation (SD) and Co-efficient of Variance (CV) of the oil production effects were computed for Rivers, Delta and Bayelsa State communities. Also, the negativity of Mean

Deviation has no presumption that oil production effects, was poor or good. Presented in Table 1.2 is the agreement level of oil production effects across the study area.

Table 2 Likert Scale Decision Table for RAI of Environmental Impacts

Likert Scale	Interval	Difference	Rating
1	1.00 to 1.79	0.79	Strongly Disagreed
2	1.80 to 2.59	0.79	Disagreed
3	2.60 to 3.39	0.79	Just Agreed
4	3.40 to 4.19	0.79	Agreed
5	4.20 to 5.00	0.79	Strongly Agreed

5. Results and Discussion

The presence of crude deposit in Niger Delta Region has occasioned the emergence of social and environmental consequences. These consequences are conceptualised on the impacts of the various identified oil production activities peculiar to the study area. This section documents the outcomes of the effects of oil production activities in Niger Delta Region. Subsequently, 14 variables were identified which were majorly the effects (good and bad) of oil production activities in Niger Delta Region. These were good housing, urban crime, environmental pollution, sanitation issues, youth restiveness, job and exposure, good connections, business opportunities, community security, access to raw food, facility maintenance, amnesty fund, facility provision and high living standard.

In Rivers State the average $\overline{RAI}$ for the effects of the oil production activities in the communities was 3.55 (Table 1.3). This implied that the respondents agreed with majority of the effects of the oil production activities identified in the area. The respective highest (upper boundary) and lowest (lower boundary) $\overline{RAI}$ are 4.12 (environmental pollution) and 3.09 (facilities provision). This connotes that the most evident effects of the oil activities in the area was environmental problems, while facilities provision in the area received minimal responses. In essence, the positive MDs about $\overline{RAI}$ of the oil production effects in the Rivers communities are: 0.57 (environmental pollution), 0.45 (urban crime), 0.37 (business opportunity), 0.34 (sanitation issues) and 0.32 (job and exposure). The respondents agreed with all (environmental pollution, urban crime, business opportunity, sanitation issues, job and exposure) the positive variables as major effects that arise from oil production activities in the Rivers State communities.

On the other hand, the corresponding variables of negative MDs (-0.01, -0.05, -0.06, -0.16, -0.18, -0.33, -0.36, 0.42, -0.46) about $\overline{RAI}$ were good connections, good housing, high living standard, access to raw good, youth restiveness, community security, facilities maintenance, amnesty fund and facilities provisions. It was observed that the respondents rated good connections, good housing, high living standard agreed (upper boundary), while oil activities effects such as, access to raw food, youth restiveness, community security, facilities maintenance, amnesty fund and facilities provisions were rated just agreed by the sampled population. Further analysis of variance (0.12), standard deviation (0.34) and coefficient of variance (9.9%) revealed closeness in the respective views of the respondents in the area. This implies that 90.1% of the respondents' opinions were accurate.

Table 3 Residents' Agreement Level of the Effects of the Oil Production Activities in Rivers State

	Rivers State			
Effects of Oil Production	**SWV**	**RAI**	**MDs**	**Rating**
Good Housing	1656	3.50	-0.05	6
Urban Crime	1118	4.00	0.45	2
Environmental Pollution	2002	4.12	0.57	1
Sanitation Issues	1234	3.89	0.34	4
Youth Restiveness	2300	3.37	-0.18	10
Job and Exposure	1053	3.87	0.32	5
Good Connections	2006	3.54	-0.01	7
Business Opportunity	1096	3.92	0.37	3
Community Security	2194	3.22	-0.33	11
Access to Raw Food	2174	3.39	-0.16	9
Facility Maintenance	1404	3.19	-0.36	12
Amnesty Fund	1547	3.13	-0.42	13
Facility Provision	1163	3.09	-0.46	14
High Living Standard	1102	3.49	-0.06	8
Total	2194	49.72	1.644	

Note: RAI = Residents Agreement Index; $\overline{RAI}$= Mean Residents Agreement Index; $\overline{RAI}$Rivers = 3.55; Variance Rivers = 0.12; Standard Deviation Rivers = 0.34; Coefficient of Variance Rivers = 90.1%

The effects of oil production activities investigations results were presented in Table 1.4. It presented the residents' agreement level of the effects of the oil production activities in Delta State. In the Delta State the average value of $\overline{RAI}$ was 3.58 (agreed). This implied that many of the identified effects of the oil production activities in the area was agreed by the respondents. The upper (highest effects) and lower boundary (lowest effects) around $\overline{RAI}$ in the respective communities are, 4.51 (business opportunities) and 3.00 (amnesty fund). The positive variables (business opportunities, good housing, youth restiveness, sanitation issues, environmental pollution and job/exposure) of the MDs about the $\overline{RAI}$ are 0.93, 0.68, 0.43, 0.13, 0.09 and 0.05. The respondents rated effects of the activities such as, business opportunities, good housing, youth restiveness, sanitation issues, environmental pollution and job/exposure agreed in the Delta oil producing communities.

Similarly, the negative MDs about the $\overline{RAI}$ in the communities are: -0.05 (high living standards), -0.07 (urban crime), -0.08 (good housing), -0.25 (facility maintenance), -0.33 (community security), -0.38 (facility provision) -0.51 (access to raw food) and -0.58 (amnesty fund). In essence, the high standard of living, urban crime and good housing clustered round average $\overline{RAI}$ and thus were rated agreed by the respondents. While variables such as, facility maintenance, community security, facility provision, access to raw food and amnesty fund were rated just agreed. Moreover, the computation of variance (0.18), standard deviation (0.42) and coefficient of variance (11.7%) showed that the opinions of the respondents in Delta communities were very close; with percentage value of 88.3% of the similarity index.

Table 4 Residents' Agreement Level of the Effects of the Oil Production Activities in Delta State

	Delta State			
Effects of Oil Production	**SWV**	**RAI**	**MDs**	**Rating**
Good Housing	1214	3.51	-0.07	8
Urban Crime	1362	3.50	-0.08	9
Environmental Pollution	1311	3.67	0.09	5
Sanitation Issues	1031	3.71	0.13	4
Youth Restiveness	1233	4.01	0.43	3
Job and Exposure	1234	3.63	0.05	6
Good Connections	1377	4.23	0.68	2
Business Opportunity	1361	4.51	0.93	1
Community Security	1287	3.25	-0.33	11
Access to Raw Food	1154	3.07	-0.51	13
Facility Maintenance	1306	3.33	-0.25	10
Amnesty Fund	1137	3.00	-0.58	14
Facility Provision	1227	3.20	-0.38	12
High Living Standard	1205	3.53	-0.05	7
Total		50.15	2.466	

Note: RAI = Residents Agreement Index; $\overline{RAI}$= Mean Residents Agreement Index; $\overline{RAI}$ Rivers = 3.58; Variance Delta = 0.18; Standard Deviation Delta= 0.42; Coefficient of Variance Delta = 88.3%

As documented in Table 4, the average $\overline{RAI}$ in Bayelsa State was 3.62. This computed figure stipulated that many of the respondents agreed on the prevalence of the identified effects of the oil production activities in the area. For instance, good connections (0.78), business opportunity (0.58), job and exposure (0.52), sanitation issues (0.49) and youth restiveness (0.48) were rated agreed by the sampled population in the area. While the negative MDs about the $\overline{RAI}$ such as, high living standard (-0.08), environmental pollution (-0.11), and access to raw food (-0.14) were all agreed upon as effects of the oil production activities in the area. The respondents were of the view that facility provision (-0.28), facilities maintenance (-0.30), community security (-0.32), urban crime (-0.40) and good housing (-0.57) were just agreed as part of the effects of the oil production activities in the area. This standpoint of the respondents was further affirmed through the computation of variance (0.19), standard deviation (0.44) and coefficient of variance (12.2%) of the respondents' view in the area. The opinions of the respondents about the effects of the oil production activities were similar; with reliability and accuracy level of 88.7% of the sampled population perspectives.

The residents' agreement level of the effects of oil production activities in the Niger Delta Region was presented in Table 1.6. The average $\overline{RAI}$ of the aggregated views of the respondents in Rivers, Delta and Bayelsa State was computed as 3.59. The computed value revealed that the respondents across the selected states of Niger Delta agreed with the identified variables of the study. The highest (4.21) and the lowest (3.21) boundary around $\overline{RAI}$ were also computed. This implies that some variables were agreed while some were just agreed upon. For instance, all the positive MDs (0.62, 0.46, 0.32, 0.31, 0.20 and 0.18) about $\overline{RAI}$ were being agreed upon (business opportunity, good connections, job and exposure, sanitation issues, youth restiveness and environmental pollution) by the respondents in the study area.

On the other hand, the negative MDs about the $\overline{RAI}$ are: -0.02, -0.07, -0.24, -0.28, -0.31, -0.33, -0.38 and -0.51; with corresponding variable values of urban crime, high living standard, good housing, access to raw food, facility maintenance, community security, facility provision and amnesty fund. It was revealed that the MDs (-0.02 and -0.07) that clustered round $\overline{RAI}$ were rated agreed by the respondents across the oil producing communities in the study area. These are: urban crime and high standard of living. While the MDs (-0.24, -0.28, -0.31, -0.33, -0.38 and -0.51) that scattered about $\overline{RAI}$ such as, good housing, access to raw food, facility maintenance, community security, facility provision and amnesty fund were rated just agreed by the total respondents in the study area.

Table 5 Residents' Agreement Level of the Effects of the Oil Production Activities in Bayelsa State

	Bayelsa State			
Effects of Oil Production	**SWV**	**RAI**	**MDs**	**Rating**
Good Housing	1210	3.05	-0.57	14
Urban Crime	1302	3.22	-0.40	13
Environmental Pollution	1231	3.51	-0.11	7
Sanitation Issues	1189	4.10	0.49	4
Youth Restiveness	1090	4.00	0.38	5
Job and Exposure	1251	4.14	0.52	3
Good Connections	1272	4.38	0.76	1
Business Opportunity	1222	4.20	0.58	2
Community Security	1279	3.30	-0.32	12
Access to Raw Food	1209	3.48	-0.14	9
Facility Maintenance	1219	3.32	-0.30	10
Amnesty Fund	1022	3.11	-0.51	8
Facility Provision	1211	3.34	-0.28	10
High Living Standard	1351	3.54	-0.08	6
Total		50.69	2.663	

Note: RAI = Residents Agreement Index; $\overline{RAI}$= Mean Residents Agreement Index; $\overline{RAI}$ Rivers = 3.62; Variance Delta = 0.19; Standard Deviation Delta= 0.44; Coefficient of Variance Delta = 87.8%

Across the Niger Delta communities, it was revealed that the major effects of the oil production activities in the communities are: business opportunity, good connections, job and exposure, sanitation issues, youth restiveness and environmental pollution. While the minor effects on the communities are, good housing, access to raw food, facility maintenance, community security, facility provision and amnesty fund in the study area. It was observed that the level of accuracy and reliability of the respondents' opinions on the effects of crude oil activities on the communities in the study area was high (90.8%). This was in antecedent to computation of variance (0.11) and standard deviation (0.33) of the sampled population responses in the study area. The earlier study conducted by Kadafa (2012) was in consonance with the outcomes of this current study on the devastating nature of the oil spillage on the destruction of farm lands (Figure 2) thereby orchestrating food shortage in the area.

Figure 2 Adverse Effect of Oil Activities on Farm Lands in Oghara I Community, Ethiope LGA, Delta State

Table 6 Residents' Agreement Level of the Effects of the Oil Production Activities in the Study Area

	Niger Delta			
Effects of Oil Production	**SWV**	**RAI**	**MDs**	**Rating**
Good Housing	4080	3.35	-0.24	9
Urban Crime	3782	3.57	-0.02	7
Environmental Pollution	4544	3.77	0.18	6
Sanitation Issues	3454	3.90	0.31	4
Youth Restiveness	4623	3.79	0.20	5
Job and Exposure	3538	3.91	0.32	3
Good Connections	4655	4.05	0.46	2
Business Opportunity	3679	4.21	0.62	1
Community Security	4760	3.26	-0.33	12
Access to Raw Food	4537	3.31	-0.28	10
Facility Maintenance	3929	3.28	-0.31	11
Amnesty Fund	3706	3706	-0.51	14
Facility Provision	3601	3.21	-0.38	13
High Living Standard	3658	3.52	-0.07	8
Total		50.21	1.610	

Note: RAI = Residents Agreement Index; $\overline{RAI}$= Mean Residents Agreement Index; $\overline{RAI}$ Rivers = 3.59; Variance Delta = 0.11; Standard Deviation Delta= 0.11; Standard Deviation Niger Delta = 0.33; Coefficient of Variance Niger Delta = 90.8%

The above findings across the three major oil producing States strongly align with the extensive body of literature documenting the severe negative impacts, particularly environmental pollution and its socio-economic consequences, as earlier indicated by Kadafa (2012). A comparison with very recent literature (2020-2024) reveals both consistencies and evolving perspectives on these dynamics. Environmental pollution was also a major effect reported in this study as negative impact of oil production; this mirrors the pervasive degradation of the Niger Delta ecosystem. For instance, Adati (2023) highlighted the persistent challenge of oil spillage, noting its detrimental impact on mangrove forests and aquatic biodiversity, which are critical for local livelihoods. This directly supports the above finding on environmental pollution. Furthermore, the link between this environmental damage and food shortage, which has was identified as a consequence of oil production represents a central theme in contemporary research endeavour. Okpara and Nwachukwu (2022) found a direct correlation between the extent of oil pollution in agricultural communities and the prevalence of food insecurity, reinforcing the outcomes of this paper's observation that spillage orchestrates food shortage. Also, youth restiveness was pinpointed as a major effect in the study area. Recent literature frames this not just as a simple outcome, but as a complex reaction to perceived environmental injustice and economic marginalisation. Obi (2021) argues that youth restiveness, including militancy, is a form of protest against the failure of oil companies and the state to provide sustainable livelihoods and remedy environmental damage.

Finding equally identified business opportunity, job and exposure and the amnesty fund; as other side of the coin to effects of oil production in the Niger Delta Region. The limited and often problematic benefits of oil wealth always call for retrospect. Recently critical examination of this gap was understudied by Egbule (2024). The study focused on the corporate social responsibility (CSR) initiatives by oil companies, which often include the provision of infrastructure such as good housing or facility provision. The study concluded that while such projects are present, they are often inadequate, poorly executed or designed to pacify communities rather than foster genuine, sustainable development. The amnesty fund while contributing to a reduction in overt conflict, has been critiqued for failing to address the underlying structural issues. Amadi and Allen (2020) argued that the program has created a cycle of dependency and has not led to comprehensive economic diversification, leaving former agitants and youth still vulnerable, which can perpetuate restiveness in the long term. This suggests that the amnesty program's impact, while a notable intervention, remains a superficial solution to deep seated problems.

6. Conclusion

The study established environmental degradation remains the dominant and most persistent impact of oil production in the study area. The consistency among the contrasting findings both earlier and current study indicates issues such as oil spillage, ecosystem destruction and biodiversity loss. These suggested that the identified environmental problems caused by oil production were not improving over time in the study area. Furthermore, findings established an intricate casual chain between environmental pollution and socioeconomic hardship of the people as conceived in agricultural land, water and overall ecological damage in the area. These have made farming and fishing activities for the community residents more difficult. This implied that food insecurity and healthy water supply for consumption are nut-to-crack in the Niger Delta Region. These were sequel to relative ineffective oil production activities in the area.

Finding also pinpointed youth restiveness in the study area. However, this could be attributed to a structural response rather than incidental behaviour. As established in other studies, militancy and unrest are rooted in perceived injustice, exclusion and economic marginalisation. All these formed the contest of youth restiveness in the area. Thus, the social instability in the region is symptomatic of governance failure and inequitable resource distribution not merely a security problem; but a social and governance construct. Unarguably, the presence of oil companies in the Niger Delta has attracted benefits; such as employment opportunities, exposure, amnesty programmes and Corporate Social Responsibility driven infrastructure projects. These developments are oftentimes limited, unevenly distributed and usually unsustainable. Based on current findings and the submission of the earlier environmental scholars in the region, it could be deduced oil production in the Niger Delta represents a paradox of resources and wealth co-existence with environmental decline, economic vulnerability and social unrest. The persistence of these challenges over time indicated a vacuum in oil companies, government and community cohesion towards sustainable development in the region. Thus, government through her agencies should make the companies more responsive to their social and basic responsibilities to the region. This could be achieved through corporate social responsibility agreement on infrastructure development, local economies boost programmes and housing development, among others.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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