Socioeconomic Effects of Oil and Gas Exploration on Livelihoods, Poverty, and Unemployment in Rivers and Bayelsa States, Nigeria

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Abstract
The purpose of this research was to determine how oil and gas exploration impacted poverty, unemployment, and means of existence in Nigeria's Rivers and Bayelsa States. The study was prompted by worries about the effects of oil-related environmental degradation on the economic prosperity of oil-producing towns and the customary livelihood activities practiced there. Combining qualitative interviews with quantitative survey data, a convergent parallel mixed-methods research design was used. Stratified random sampling was used to choose 400 questionnaire participants out of 228,118 stakeholders in oil-producing regions that made up the target audience. In addition, semi-structured interviews were conducted with 20 purposefully selected stakeholders. Descriptive statistics, simple linear regression, and Pearson Product-Moment Correlation were used to analyze the quantitative data, and the hypotheses were evaluated at the 0. 05 level of significance. According to the results, 94. 3% of participants said that oil and gas exploration had decreased farming operations, and 89. 3% claimed that oil contamination had reduced the availability of fish. Furthermore, 96. 0% concurred that community members had lost their traditional livelihood sources, and 93. 3% claimed negative consequences on trading and other income-generating activities. In terms of poverty and unemployment, 92. 5 percent of those surveyed linked a rise in community poverty to regular oil spills, 94. 5 percent stated that gas flaring made it difficult to generate a consistent income, 95. 3 percent attributed youth unemployment to oil and gas exploration, and 96. 0 percent stated that oil pollution caused financial hardship for families. A substantial negative relationship between oil and gas exploration operations and livelihood results was discovered using Pearson correlation analysis ($r = -0.752$, $p < 0.001$). Additionally, a statistically significant positive relationship was discovered between oil spills and gas flaring, as well as between poverty and unemployment ($r = 0.697$, $p < 0.001$). As a result, both null hypotheses were disproven. The study finds that the deteriorating socioeconomic situations and livelihood conditions in the study regions are significantly correlated with the environmental issues caused by oil and gas exploration. It calls for increased environmental control, effective remediation of polluted ecosystems, and sustainable livelihood restoration and job programs for residents who have been impacted.

Keywords: *Oil Spills, Gas Flaring, Poverty, Unemployment, Livelihoods, Oil and gas & Exploration*

INTRODUCTION

The search for black gold (petroleum or crude oil) started in 1908 after the colonization of Nigeria in 1900 January. Nigeria is located in Sub Sahara African. The colonial government gave Nigerian Bitumen Corporation and British Colonial Petroleum a royal charter in 1908. After being handed the royal charter they began the search for "black gold" in Western Nigeria which was disrupted by the world war 1 in 1900s.

"Black Gold has been a major source of Nigeria's economic and foreign exchange revenue, 75% of federal government revenue (Otitio, 2014). The word black gold is another phrase for wealth coming from crude oil. The socio-economic challenges the Niger Delta region of Nigeria has experienced as a result of "Black Gold cannot be erased from the inhabitants of these host communities. These broken communities are faced with environmental degradation and economic instability. "Black gold when refined into hydrocarbon fuels, chains of carbon, and hydrogen molecule, it is transformed into useable fuel because it has a high density for energy (Duncan, 2008). It is also a raw material or source for products (Morris, 2006) which can be broken down into kerosene, fuel, gasoline, paraffin, wax, lubricating oil, and naphta etc.

Black Gold in Nigeria cannot be brushed aside as it is used for power generation, manufacturing, space heating. In 2008, black gold provided about 34% of the energy needs in the entire world, presently nine (9) states out of 36 are located in the Niger Delta blessed with this mineral. The post-independence period after 1960 offshore and onshore rights were open to other multinational companies who were into oil exploration. The post-independence period birthed the discovery of oil in Obagi field and Ubata field precisely in 1963 and 1965, while the Ebocha field was also discovered in 1965, Philips oil discovered oil too in Old Bendel State.

The post-civil war era after 1970 witnessed oil price rose in the international oil market. The economic growth of Nigeria's oil export and earning were significantly on the profit end and within the same period shell production surpassed 1 million barrels a day. Nigeria had strict control of its oil and gas the way other nations had, and as a result of this, Nigerian National Petroleum Company was formed in 1979. The oil exploring companies were operating under joint operating agreement which stated their stakes and that of the government in the agreement.

Nevertheless, due to some limitations associated with the main joint operating agreement, production sharing contract was initiated. Profiteering oil exploration is done under joint venture agreement between the Nigerian government and the companies. The exploring companies received 40% formerly and the government 60% but recently it was reviewed 57% for the Nigerian government and 43% for oil exploring companies per day.

Aim and Objectives of the Study

The aim of this study is to assess the socio-economic impact of oil and gas exploration on the black gold broken communities of the Rivers and Bayelsa States. To achieve this aim are the following objectives to;

i. Assess the impact of oil and gas exploration activities on the livelihood sources of communities in Rivers and Bayelsa States
ii. Examine the relationship between oil spill/gas flaring incidents and the incidence of poverty and unemployment in the study area.

Hypotheses

H_{01}: Oil and gas exploration has no significant impact on livelihood sources in Rivers and Bayelsa communities

H_{02}: There is no significant relationship between oil spill/gas flaring and poverty and unemployment rates.

Materials and Method

To determine the socioeconomic effects of oil and gas exploration in Rivers and Bayelsa States, Nigeria, this study used a convergent parallel mixed-methods approach (Creswell & Plano Clark, 2018). Concurrent collection of quantitative survey data and qualitative semi-structured interview data was done, then they were separately examined and finally interpreted together. N=228,118 important stakeholders from oil-producing regions—including locals, local leaders, government officials, oil company representatives, and civil society groups—made up the target population. Using Yamane's (1967) formula at a 95% confidence level with a margin of error e=0.05, a representative sample size (n) was ascertained for this limited population:

$$n = \frac{N}{1 + N(e)^2}$$

Substituting the population parameters:

$$n = \frac{228{,}118}{1 + 228{,}118(0.05)^2} = \frac{228{,}118}{1 + 228{,}118(0.0025)} = \frac{228{,}118}{571.295} \approx 399.30$$

The estimated sample size of 399.30 was rounded to n=400 respondents to enable data distribution and guard against non-response. To guarantee proportional representation and reduce selection bias, a stratified random sampling approach with proportional allocation was applied to distribute the n=400 quantitative questionnaires across the five stakeholder strata (Saunders et al., 2023). Semi-structured interviews with n=20 deliberately chosen expert stakeholders were also done to get qualitative depth across the five research goals of the study. Research methods and environmental management professionals reviewed face and content validity to define them. A pilot study (n=20) helped to establish internal consistency by accepting constructs with a Cronbach's alpha of ≥0.70 (Hair et al., 2022). Using SPSS v29, survey results—measured on a 5-point Likert scale with a criterion mean threshold of 3.00—were analyzed. Using Pearson's Product-Moment Correlation and Simple Linear Regression, hypotheses were tested at α=0.05

Presentation and Interpretation of Demographic Information of Respondents

The demographic data of the respondents was collected, presented, and a proper analysis was conducted upon them through the use of percentage points and frequency distribution. The data were presented in a tabular format and interpreted below.

Table 1: Demographic Data of Respondents

S/N	Variables	Items	Frequency (n)	Percentage (%)
1	**Age**	Below 25 years	36	9.0
		25-34 years	92	23.0
		35-44 years	130	32.5
		45-54 years	80	20.0
		55 years above	62	15.5
		Total	**400**	**100.0**
2	**Gender**	Male	205	51.3

		Female	195	48.8
		Total	**180**	**100.0**
	State of Residence	Rivers state	200	50.0
3		Bayelsa State	200	50.0
		Total	**400**	**100.0**
4	**Occupation**	Farmer	30	7,5
		Fisherman/Fish erwoman	54	13.5
		Trader	109	27.3
		Civil Servant	108	27.0
		Artisan	52	13.0
		Student	47	11.8
		Total	**400**	**100.0**
5	**Length of Stay in Community**	less than 5 years	36	9.0
		5-10 years	46	11.5
		11-15 years	96	24.0
		16 -15 years	124	31.0
		Above 20 years	98	24.5
		Total	**400**	**100.0**

Source: Field Survey, (2026)

The demographic features of the 400 respondents are shown in Table 1. According to the age distribution, those aged 35–44 years accounted for the largest percentage (32. 5%), followed by those aged 25–34 years (23. 0%). This suggests that the majority of respondents were in the economically active age groups and may have been involved in livelihood activities that were impacted by oil and gas exploration. Males made up 51. 3% of the population, while females made up 48. 8%, indicating a relatively equitable gender distribution. Equal numbers of respondents were selected from Bayelsa and Rivers States (50. 0% each) to ensure that the two study areas were equally represented. The largest occupational groups were civil servants (27. 0%) and traders (27. 3%), and 31. 0% had resided in their communities for 16 to 20 years. A large percentage of long-term residents indicates that a significant number of people who participated in the poll have experienced changes in their communities. Because age, occupation, gender, and length of stay may all have an impact on livelihood experiences and perceptions of environmental consequences, these demographic characteristics are important. Nevertheless, the gender total in Table 4. 1 needs to be changed from 180 to 400, and the "16-15 years" category should be double-checked; it probably refers to "16-20 years.

Table 2: Assess the impact of oil and gas exploration activities on the livelihood sources of communities in Rivers and Bayelsa States.

N	Questions	SA	A	SD	D	U	Mean	SD
1	Oil and gas exploration has reduced my farming activities.	206(51.5)	171(42.8)	12(3.0)	4(1.0)	7(1.8)	1.59	.757
2	Oil pollution has reduced the quantity of fish available for fishing in my community.	204(51.0)	153(38.3)	22(5.5)	12(3.0)	9(2.3)	1.67	.884
3	Oil and gas exploration has negatively affected trading and other means of earning income in my community.	261(65.3)	112(28.0)	7(1.8)	15(3.8)	5(1.3)	1.48	.813
4	Many people in my community have lost their traditional means of livelihood because of oil exploration.	258(64.5)	126(31.5)	-	10(2.5)	6(1.5)	1.45	.761

Source: Field Survey, (2026)

Table 2 indicates that the majority of respondents believed that oil and gas exploration negatively affected the traditional ways of living in their communities. Specifically, 94. 3% of participants believed that exploration had decreased farming operations, and 89. 3% believed that oil pollution had lowered the amount of fish that could be found. Similarly, 93. 3 percent believed that prospecting had a detrimental impact on commerce and other revenue-generating activities, while 96. 0 percent believed that community members had lost their traditional means of sustenance. Assuming that the response coding gave 1 to Strongly Agree, the lowest reported mean (M = 1. 45, SD = 0. 761) was for the loss of traditional livelihood sources, indicating the highest agreement among the four assertions. This finding indicates that the environmental damage from oil and gas operations is thought to go beyond the direct consequences of pollution to include agricultural output, fishing activities, trade, and household income.

Table 3: Examine the relationship between oil spill/gas flaring incidents and the incidence of poverty and unemployment in the study area.

S/N	Questions	SA	A	SD	D	U	Mean	Std.
1	Frequent oil spills have increased poverty in my community.	270(67.5)	100(25.0)	18(4.5)	5(1.3)	7(1.8)	1.45	.790
2	Gas flaring has made it difficult for many people to earn a stable income.	238(59.5)	140(35.0)	10(2.5)	9(2.3)	3(.8)	1.50	.725
3	Oil and gas exploration has contributed to unemployment among	282(70.5)	99(24.8)	19(4.8)	-	-	1.34	.567

	youths in my community.							
4	Many households in my community struggle financially because of the effects of oil pollution.	228(57.0)	156(39.0)	3(.8)	7(1.8)	6(1.5)	1.52	.742

Source: Field Survey, (2026)

Table 3 illustrates the opinions of the poll participants regarding the connections between oil spills, gas flaring, joblessness, and poverty in the area under study. The findings suggest that 92. 5% of respondents concurred that regular oil spills had led to increased poverty in their communities, and 94. 5% concurred that gas flaring had prevented residents from having consistent income. Additionally, 95. 3% of participants believed that youth unemployment was caused by oil and gas exploration, and 96. 0% stated that families were suffering financial hardship as a result of oil pollution. The statement on youth unemployment received the lowest average score (M = 1. 34, SD = 0. 567), implying the strongest agreement, assuming that Strongly Agree was coded as 1. These data indicate that respondents view oil-related environmental concerns as significant factors to economic hardship, especially by upsetting established ways of life and restricting access to consistent jobs.

Hypotheses Testing

Hypothesis One (H_{01}): Oil and gas exploration has no significant impact on livelihood sources in Rivers and Bayelsa communities.

Table 4: Pearson Product Moment Correlation (PPMC) Analysis of Oil and Gas Exploration and Livelihood Sources (N = 400)

Source	N	Mean	Std. Dev.	r-value	Sig. (2-tailed)	Decision
Oil and Gas Exploration Activities	400	4.22	0.73	-	-	-
Livelihood sources	400	2.31	0.78	-0.752	0.000	Reject H_{01}

Significance level – 0.05%

Table 4 presents the Pearson Product-Moment Correlation analysis of the relationship between oil and gas exploration activities and livelihood sources among the 400 respondents. The result shows a strong negative correlation ($r = -0.752$, $p = 0.000$), indicating a statistically significant relationship at the 5% significance level. Since the reported p-value is below 0.05, the null hypothesis is rejected. This suggests that higher reported levels of oil and gas exploration activities are associated with poorer livelihood outcomes in the study communities. The result supports the descriptive findings in Table 4.2, which showed widespread agreement that exploration activities had adversely affected farming, fishing, trading, and other traditional sources of income. The finding agrees with Osuagwu and Olaifa (2018), who established a negative relationship between oil spills and fish production in the Niger Delta, and Sam et al. (2024), who documented substantial disruption of farming and fishing livelihoods in Ogoniland. The negative association may be explained by the contamination of agricultural land and fishing waters, reduced productivity, loss of livelihood assets, and the limited availability of alternative employment. The policy implication

is the need for stronger environmental monitoring, effective remediation, livelihood compensation, and economic diversification in oil-producing communities.

Hypothesis Two (H_{02}): There is no significant relationship between oil spill/gas flaring and poverty and unemployment rates.

Table 5: Pearson Product Moment Correlation (PPMC) Analysis of Oil Spill/Gas Flaring and Poverty/Unemployment (N = 400)

Source	N	Mean	Std. Dev.	R	Sig. (2-tailed)	Decision
Oil spill/gas flaring	400	2.31	0.65	-	-	-
Poverty and unemployment	400	4.20	0.72	0.697	0.000	Reject H_{02}

Significance level – 0.05%

Table 5 presents the Pearson correlation analysis between oil spills/gas flaring and poverty/unemployment. The result indicates a positive correlation ($r = 0.697$, $p = 0.000$), which is statistically significant at the 5% level. Consequently, the null hypothesis is rejected, indicating a significant positive relationship between oil spills/gas flaring and poverty/unemployment in the study area. This implies that higher reported exposure to oil spills and gas flaring is associated with greater reported poverty and unemployment. The finding agrees with Nwokoma et al. (2022), who found that oil exploration-related environmental degradation was associated with persistent poverty and unemployment in the Niger Delta. It is also consistent with Sam et al. (2024), whose findings demonstrated that oil contamination had undermined traditional livelihoods and socioeconomic conditions in Ogoniland. The relationship may be explained by the destruction of natural livelihood resources, declining agricultural and fishing productivity, reduced household income, and insufficient alternative employment opportunities. The policy implication is that interventions should go beyond the payment of compensation to include sustained environmental restoration, youth employment, vocational training, community enterprise development, and transparent monitoring of oil-company social investment programmes.

Discussion

Table 2 assess the impact of oil and gas exploration activities on the livelihood sources of communities in Rivers and Bayelsa States and the results agreed with Ushie et al. (2020), who conducted research in Bayelsa State's Kolo Creek, found that oil pollution reduced food production and fish catches, damaged water quality, and undermined the residents' means of subsistence, are consistent with the findings on livelihood disruption. Likewise, Sam and others (2024) stated that in Ogoniland, 91% of those polled said that their fish catches were declining, and 42% of those who relied on farming and fishing had looked for new jobs because of oil pollution. Oil spills and oil output were also found to have a detrimental impact on fish farming in the Niger Delta, according to Osuagwu and Olaifa (2018). The current findings are consistent with these research. The consistency may be due to the fact that many host communities rely on wetlands, rivers, creeks, and productive farmland, all of which are susceptible to pollution from oil spills and other petroleum operations. Trading activities and household income might subsequently be jeopardized by lower marketable produce, falling fish stocks, polluted fishing grounds, and decreased soil productivity. The policy consequence is that oil contamination management should be supported

by quick cleanup of contaminated land and waterways, programs for restoring livelihoods, remuneration for impacted fishers and farmers, and encouragement for alternative income-generating endeavors.

Similarly, the results in table 3 assess the relationship between oil spill/gas flaring incidents and the incidence of poverty and unemployment in the study area and the findings is in line with Nwokoma et al. (2022) studied. According to Nwokoma et al. (2022), despite government and oil company efforts, the environmental degradation caused by oil exploration has exacerbated poverty and unemployment in the Niger Delta host towns. Sam et al. (2024) also documented the socioeconomic repercussions of oil contamination in Ogoniland, such as disrupted livelihoods and the necessity of finding other ways to live. Odubo and Odubo's (2024) research on six communities in Bayelsa, Delta, and Rivers States indicated a strong correlation between livelihood sustainability and income and artisanal refining and oil pollution. The present findings are in line with these investigations. Among the potential causes are the decimation of productive natural resources, fewer chances to work in fishing and farming, insufficient employment possibilities in the petroleum industry for locals, and the restricted efficacy of measures in revitalizing household incomes. While the results of this questionnaire alone do not prove a direct causal relationship between gas flaring and poverty or unemployment, gas flaring may have additional effects on people's livelihoods through environmental and health-related disturbances. The political significance is that governments and oil firms ought to improve spill prevention, uphold regulations against gas flaring, boost employment opportunities for residents, and put into effect clear livelihood restoration and skills-development initiatives.

CONCLUSION

This research looked at the socioeconomic consequences of oil and gas exploitation on poverty, unemployment, and livelihoods in Nigeria's Bayelsa and Rivers States. According to the findings, environmental issues associated with oil and gas exploration are largely believed to jeopardize traditional sources of income, especially agriculture, fishing, commerce, and other income-generating activities. There is a statistically significant relationship between exploration activities and poorer reported livelihood conditions, as shown by the strong negative correlation between oil and gas exploration activities and livelihood outcomes ($r = -0.752$, $p < 0.001$). Likewise, the substantial positive connection between gas flaring and oil spills and unemployment and poverty ($r = 0.697$, $p < 0.001$) suggests that an increase in reported exposure to these problems is linked to an increase in reported socioeconomic suffering. The results indicate that environmental deterioration in oil-producing communities not only damages the ecosystem but also has an impact on household income, financial security, and job opportunities. As a result, the study concludes that effective environmental protection, the revival of damaged livelihoods, and inclusive economic development are necessary to solve the socioeconomic issues of oil-producing towns. However, because the quantitative findings are based on respondents' accounts and correlational analysis, they demonstrate substantial correlations rather than conclusive causal effects.

Recommendations

i. Environmental agencies should enhance surveillance of gas flaring and oil spills, enforce environmental laws that are applicable, and order oil companies who are accountable to clean up contaminated rivers, fishing grounds, creeks, and farmland without delay.

ii. Federal and and government governments, along with with corporations, should provide help for affected farmers and fishermen to recuperate their livelihoods, get fair recompense,

better their agricultural goods, and get support to restore their fishing and other income-generating activities that have been disrupted.

iii. Governments and oil companies should create transparent apprenticeship, local employment, small-business support, and vocational training initiatives to improve employment opportunities for young people in Rivers and Bayelsa States and to reduce reliance on environmentally fragile means of subsistence

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