

Original Research Article

Oil Spill Incidents and Their Socio-Economic Consequences on Host Communities in the Niger Delta

Amachree Temple Temple^{1*}, Evelyn Tyger¹

¹ Center of Excellence in Sustainable Procurement, Environment and Social Standards CE-sPESS, Federal University of Technology, Owerri, Imo State, Nigeria (FUTO), Nigeria

Correspondence should be addressed to Amachree Temple Temple: temple_amachree@yahoo.co.uk

Article No: 037 | **Accepted:** 02 August 2026 | **Published:** 10 August 2026

Abstract: Oil spill incidents remain one of the most persistent environmental challenges in the Niger Delta region of Nigeria, particularly in Rivers State. Despite the region's critical contribution to national revenue through petroleum production, host communities continue to experience severe environmental degradation and socio-economic hardship. Recent reports indicate that Nigeria recorded over 500 oil spill incidents annually between 2023 and 2024, with significant volumes of crude oil discharged into the environment due to pipeline vandalism, oil theft, equipment failure, and aging infrastructure (National Oil Spill Detection and Response Agency [NOSDRA], 2023; Amnesty International, 2024). Oil spills have resulted in widespread contamination of soil and water resources, destruction of biodiversity, and disruption of livelihoods such as farming and fishing. Consequently, affected communities experience income loss, unemployment, food insecurity, migration, and increased health risks. Governance challenges, including weak regulatory enforcement, lack of transparency, and inadequate community involvement, further worsen the situation (United Nations Development Programme [UNDP], 2024). This study examines the causes, environmental impacts, and socio-economic consequences of oil spills in Rivers State. Using a descriptive survey design, data were collected from 150 respondents and analyzed using descriptive statistics. Findings reveal that vandalism and pipeline corrosion are the dominant causes of oil spills, while loss of farming income and reduced fish catch are the most significant socio-economic impacts. The study concludes that effective governance, infrastructure improvement, and community participation are essential for mitigating oil spill impacts and promoting sustainable development in the Niger Delta.

Keywords: Oil Spill, Environmental Degradation, Niger Delta, Governance, Socio-Economic Impact, Host Communities, Sustainable Development, Statistics

1.0 Introduction

The Niger Delta is one of the most ecologically diverse and economically significant regions in Africa, serving as the hub of Nigeria's oil and gas industry. However, decades of oil exploration have resulted in severe environmental degradation, primarily due to frequent oil spill incidents. Despite regulatory efforts, oil spills remain common, with hundreds of cases recorded annually (NOSDRA, 2023; Anyanwu & Nwafor, 2023; UNDP, 2024). Oil spill incidents are caused by both technical and human factors. Pipeline corrosion and equipment failure are primary technical causes, while vandalism and illegal refining constitute the human-induced causes (Amnesty International, 2024; Okafor & Onyekachi, 2023). Sabotage and theft account for a significant proportion of spills, reflecting underlying socio-economic challenges such as poverty, unemployment, and community marginalization (Yusuf & Adebayo, 2023). The environmental consequences of oil spills are profound. Crude oil contamination affects soil fertility, water quality, and biodiversity. Agricultural lands become unproductive, and aquatic ecosystems are disrupted, leading to declining fish populations (UNEP, 2023; World Bank, 2023). These impacts directly affect livelihoods in communities that depend heavily on natural resources. Beyond environmental damage, oil spills have socio-economic consequences. Communities experience reduced income, increased poverty, and deteriorating health conditions due to exposure to toxic substances (Nanadeinboemi et al., 2024; Eze & Okeke, 2024). Social unrest and conflicts with oil companies also emerge as a result of persistent spills (UNDP, 2024). This study provides a comprehensive analysis of oil spill incidents and their socio-economic consequences in Rivers State, integrating environmental, health, and governance dimensions.

1.1 Statement of the Problem

Despite decades of oil production, the Niger Delta continues to experience frequent oil spill incidents, releasing thousands of barrels of crude oil annually (NOSDRA, 2023; Amnesty International, 2024; Anyanwu & Nwafor, 2023). These spills have caused extensive environmental damage, including soil degradation, water pollution, and loss of biodiversity. Consequently, farming and fishing, the main sources of livelihood, have been severely affected (UNEP, 2023; Eze & Okeke, 2024). Socio-economic consequences include unemployment, poverty, food insecurity, and migration. Weak governance, poor enforcement of regulations, and inadequate infrastructure exacerbate spill persistence (Yusuf & Adebayo, 2023; UNDP, 2024; World Bank, 2023). This situation highlights the urgent need for comprehensive research to understand causes, impacts, and mitigation strategies for oil spills in the Niger Delta.

1.2. Objectives of the Study

The main objective of this study is to assess the socio-economic consequences of oil spill incidents on host communities in Rivers State. The specific objectives are as follows:

1. To examine the causes and frequency of oil spill incidents in the Niger Delta.
2. To analyze the environmental impacts of oil spills on land, water, and biodiversity.

3. To evaluate the socio-economic effects of oil spills on livelihoods, income, and living standards.
4. To assess the role of governance and regulatory institutions in managing oil spill incidents.
5. To analyze statistical trends in oil spill incidents.
6. To propose policy recommendations for improving environmental protection and community development.

1.3 Research Questions

1. What are the major causes of oil spill incidents in Rivers State?
2. How do oil spills affect environmental resources and ecosystem sustainability?
3. What are the socio-economic consequences of oil spills on host communities?
4. What statistical trends exist in oil spill occurrences?
5. What strategies can be implemented to reduce the occurrence and impact of oil spills?

2.0 Literature Review

2.1 Theoretical Framework

This study is anchored on two key theories: The **Sustainable Livelihoods Framework (SLF)** and the **Environmental Degradation Theory**. These frameworks provide a comprehensive understanding of how oil spill incidents affect both the environment and socio-economic conditions of host communities in the Niger Delta.

2.1.1 Sustainable Livelihoods Framework (SLF)

The Sustainable Livelihoods Framework (SLF) is widely used in development studies to analyze how individuals and communities sustain their means of living through access to various forms of capital namely **natural, human, financial, social, and physical capital**. In rural regions such as the Niger Delta, natural capital (land, water, forests, and fisheries) plays a dominant role in sustaining livelihoods. Oil spill incidents directly undermine this framework by damaging natural capital. When crude oil contaminates farmland and water bodies, it reduces soil fertility, destroys crops, and leads to the death of aquatic organisms. This disrupts farming and fishing activities, which are the primary sources of income for many households in Rivers State (World Bank, 2023; United Nations Development Programme [UNDP], 2024). Furthermore, the impact of oil spills extends beyond natural capital to other livelihood assets:

- **Financial capital:** Loss of income due to reduced agricultural productivity
- **Human capital:** Health problems reduce labor productivity
- **Social capital:** Conflicts and community displacement weaken social networks
- **Physical capital:** Damage to infrastructure such as water sources

The SLF also emphasizes vulnerability to external shocks. Oil spills represent environmental shocks that increase poverty levels and reduce the resilience of affected communities. Repeated exposure to such shocks creates a cycle of vulnerability, making it

difficult for households to recover (UNDP, 2024). Thus, the Sustainable Livelihoods Framework explains how oil spill incidents translate into socio-economic challenges by disrupting the resource base upon which communities depend.

2.1.2 Environmental Degradation Theory

Environmental Degradation Theory explains how human activities particularly industrial and extractive operations lead to the deterioration of the natural environment. The theory posits that unsustainable exploitation of natural resources, without adequate environmental protection measures, results in long-term ecological damage. In the context of the Niger Delta, oil exploration and production activities have contributed significantly to environmental degradation. Frequent oil spills introduce toxic hydrocarbons into the ecosystem, leading to:

- Soil contamination and reduced fertility
- Water pollution and unsafe drinking water
- Destruction of mangroves and wetlands
- Loss of biodiversity (UNEP, 2023)

The theory also highlights the cumulative nature of environmental damage. Unlike one-time incidents, repeated oil spills lead to long-term ecological decline, making environmental recovery slow and, in some cases, irreversible. Studies show that contaminated soils in the Niger Delta can remain polluted for decades, affecting agricultural productivity and ecosystem health (UNEP, 2023). Additionally, Environmental Degradation Theory links environmental damage to human well-being. Degraded environments reduce access to clean water, food, and healthy living conditions, thereby increasing health risks and economic hardship (World Bank, 2023).

Environmental Degradation Theory explains *how oil spills damage ecosystems*, while Sustainable **Livelihoods Framework** explains *how this damage affects human livelihoods*. Together, they establish that oil spill incidents are not just environmental issues but also socio-economic crises that affect income, health, and overall well-being.

2.2 Empirical Studies

Empirical studies on oil spill incidents in the Niger Delta provide substantial evidence of their environmental, economic, and health impacts on host communities. Recent research has focused on the multidimensional consequences of oil pollution.

2.2.1 Environmental Impacts

Several studies have documented the environmental consequences of oil spills. According to the **United Nations Environment Programme (UNEP, 2023)**, oil spills lead to severe contamination of soil and water resources, resulting in long-term ecological damage. The report highlights that oil pollutants persist in the environment, affecting soil structure and reducing agricultural productivity. Similarly, the **World Bank (2023)** notes that oil contamination significantly reduces ecosystem services, including food production, water purification, and biodiversity conservation. The destruction of mangrove forests,

which serve as breeding grounds for fish, has particularly severe implications for aquatic life.

2.2.2 Economic Impacts

Empirical studies consistently show that oil spills have devastating economic consequences for host communities. Research indicates that oil pollution leads to a decline in agricultural output due to reduced soil fertility. Farmers experience lower crop yields, resulting in income loss and increased poverty levels (World Bank, 2023). Fishing activities are also heavily affected. Oil spills contaminate rivers and creeks, leading to the death of fish and other aquatic organisms. This reduces fish catch and affects the livelihoods of fishing communities. Furthermore, the loss of income often forces individuals to seek alternative livelihoods, which may be less stable or sustainable. In some cases, this leads to migration and urban overcrowding (UNDP, 2024).

2.2.3 Health Impacts

Health-related studies have shown that oil pollution poses serious risks to human health. Nanadeinboemi et al. (2024) found that exposure to contaminated water and air leads to:

- Respiratory diseases
- Skin infections
- Gastrointestinal disorders

These health conditions reduce labor productivity and increase healthcare costs, further worsening the economic situation of affected households. In addition, prolonged exposure to oil pollutants has been linked to chronic health conditions, including cancer and reproductive issues, although these require further investigation (UNEP, 2023).

2.2.4 Causes of Oil Spills

Recent studies identify multiple causes of oil spill incidents. The **National Oil Spill Detection and Response Agency (NOSDRA, 2023)** reports that pipeline corrosion, equipment failure, and operational errors are major technical causes. However, human factors such as vandalism and oil theft have become increasingly significant. According to **Amnesty International (2024)**, sabotage accounts for a large proportion of oil spill incidents in the Niger Delta. These activities are often driven by poverty, unemployment, and perceived marginalization of host communities. Empirical evidence also highlights the role of governance in the persistence of oil spill incidents. Weak regulatory frameworks, poor enforcement of environmental laws, and lack of transparency have been identified as key challenges (UNDP, 2024). In many cases, oil companies fail to adhere to environmental standards, while government agencies lack the capacity to enforce compliance. Additionally, limited community participation in decision-making processes reduces accountability and trust. Despite extensive research, gaps remain in understanding the combined environmental and socio-economic impacts of oil spills at the community level. Most studies focus on either environmental or economic aspects, with limited integration of

both. This study addresses this gap by providing a comprehensive analysis that combines environmental, socio-economic, and governance perspectives.

3.0 Research Methodology

A descriptive survey design was used. Data were collected from 150 respondents using questionnaires. Analysis was done using frequencies, percentages, and charts.

3.1 Research Design

This study adopts a descriptive survey research design using both quantitative and qualitative methods. The approach allows for comprehensive assessment of oil spill incidents, including their frequency, causes, environmental impacts, and socio-economic effects on host communities (Creswell, 2014).

3.2 Sample Size and Sampling Technique

A total of 150 respondents were selected using purposive sampling, which is suitable for studies requiring participants with direct experience or knowledge of specific phenomena (Etikan et al., 2016).

3.3 Data Analysis

Quantitative data were analyzed using descriptive statistics, including frequency distributions, percentages, mean scores, bar charts, pie charts, scatter plots, and cross plots. Qualitative data from interviews were coded and thematically analyzed to capture nuanced community perspectives (Bryman, 2016).

4.0 Results

4.1 Statistical Presentation of Data

The data collected from the 150 respondents were analyzed and are presented below. Table 1 shows the distribution of oil spill causes in the selected communities, while Table 2 presents the socio-economic effects of oil spills on the respondents.

Table 1: Causes of Oil Spill Incidents in Selected Communities

Cause	Frequency	Percentage
Pipeline Corrosion	45	30%
Equipment Failure	30	20%
Vandalism	50	33%
Operational Error	15	10%
Illegal Refining	10	7%

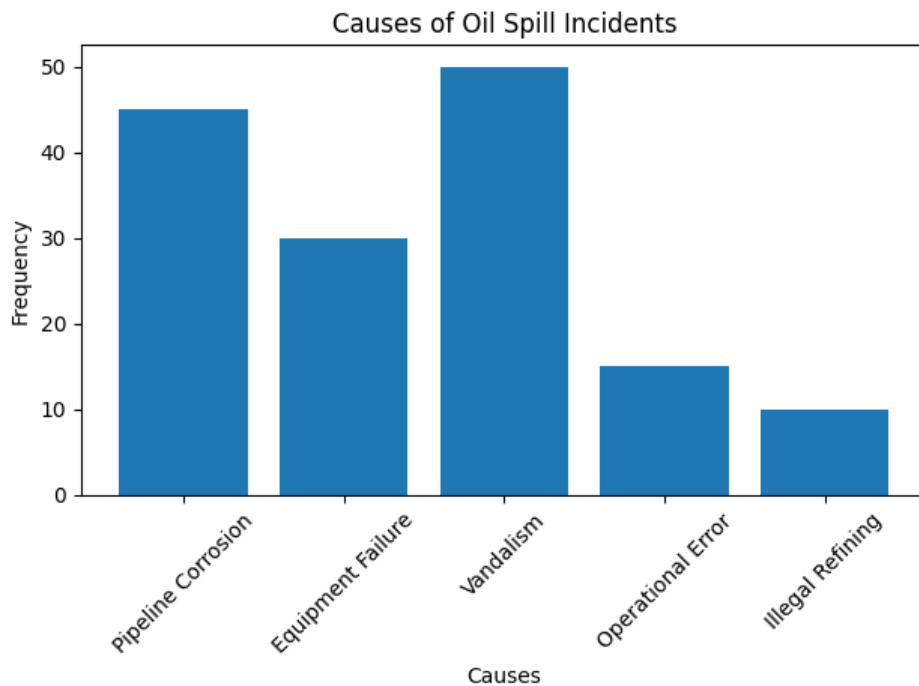


Figure 1: Bar chart showing causes of oil spills; vandalism (33%) and pipeline corrosion (30%) are predominant.

Figure 1 presents the distribution and relative proportions of the major causes of oil spill incidents in the study area. Vandalism accounts for 33%, followed by pipeline corrosion at 30%, equipment failure at 20%, operational errors at 10%, and illegal refining at 7%. The predominance of vandalism highlights the strong socio-economic and political dimensions underlying oil spill occurrences in the Niger Delta. Persistent poverty, high unemployment rates, and perceived inequities in the distribution of oil revenues have contributed to community dissatisfaction, which often manifests in the deliberate sabotage of oil infrastructure (Amnesty International, 2024; United Nations Development Programme [UNDP], 2024). This suggests that oil spill incidents cannot be viewed solely as technical or criminal issues but are closely linked to broader structural and governance challenges affecting host communities.

Pipeline corrosion, which represents 30% of spill incidents, reflects significant deficiencies in infrastructure management within the oil industry. Aging pipelines, inadequate maintenance practices, and weak monitoring systems increase the vulnerability of oil facilities to leaks and ruptures (National Oil Spill Detection and Response Agency [NOSDRA], 2023). This indicates that a substantial proportion of oil spills could be prevented through improved infrastructure investment and proactive maintenance strategies. Although equipment failure and operational errors account for smaller percentages (20% and 10% respectively), they remain critical contributors to oil spill incidents. These factors often exacerbate environmental damage, particularly when response mechanisms are slow or ineffective, thereby increasing the scale and duration of contamination (World Bank, 2023). Illegal refining, which accounts for 7% of oil spills,

also contributes significantly to environmental degradation. The use of crude and unregulated refining techniques leads to the release of toxic substances into the environment, further polluting land and water resources (United Nations Environment Programme [UNEP], 2023). Overall, the analysis of Figure 1 demonstrates that oil spill incidents in the Niger Delta are driven by a complex interaction of human activities, technical failures, and institutional weaknesses. This underscores the need for a comprehensive approach that addresses not only infrastructural deficiencies but also the underlying socio-economic and governance issues contributing to the persistence of oil spills.

Table 2: Socio-Economic Effects of Oil Spills

Impact	Frequency	Percentage
Loss of Farming Income	60	40%
Reduced Fish Catch	35	23%
Health Problems	25	17%
Unemployment	20	13%
Migration	10	7%

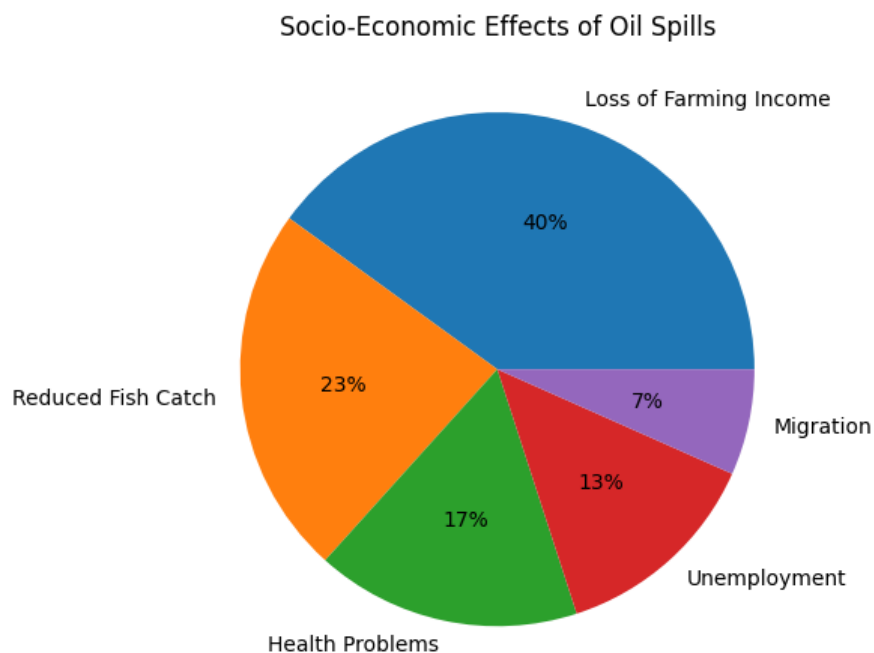


Figure 2: Pie chart showing socio-economic effects; loss of farming income (40%) and reduced fish catch (23%) are most significant.

Figure 2 presents the socio-economic consequences of oil spill incidents on households in the study area, showing that loss of farming income accounts for 40%, reduced fish catch 23%, health problems 17%, unemployment 13%, and migration 7%.

These results underscore the significant impact of oil spills on livelihoods, particularly in agriculture and fishing, which constitute the primary economic activities in Rivers State (World Bank, 2023; UNDP, 2024). Oil contamination leads to soil degradation and reduced fertility, while aquatic ecosystems are disrupted, resulting in both immediate and long-term reductions in income and food security (UNEP, 2023).

Health problems, representing 17% of the observed impacts, highlight the indirect but profound consequences of oil pollution. Exposure to hydrocarbons and other toxic substances contaminates water and air, increasing the prevalence of respiratory illnesses, skin infections, gastrointestinal disorders, and other waterborne diseases (UNEP, 2023; Amnesty International, 2024). Such health burdens reduce labor productivity and exacerbate household economic vulnerability. Unemployment and migration, accounting for 13% and 7% respectively, often emerge as coping strategies. Individuals displaced from their primary livelihoods are forced to seek alternative income sources, which are frequently unstable or less sustainable, further entrenching cycles of poverty (UNDP, 2024). Overall, the pie chart illustrates that oil spills generate multi-layered socio-economic challenges, affecting income, health, and social stability. The findings indicate that interventions aimed at reducing environmental contamination must be complemented by strategies to support livelihoods, healthcare, and community resilience in affected areas.

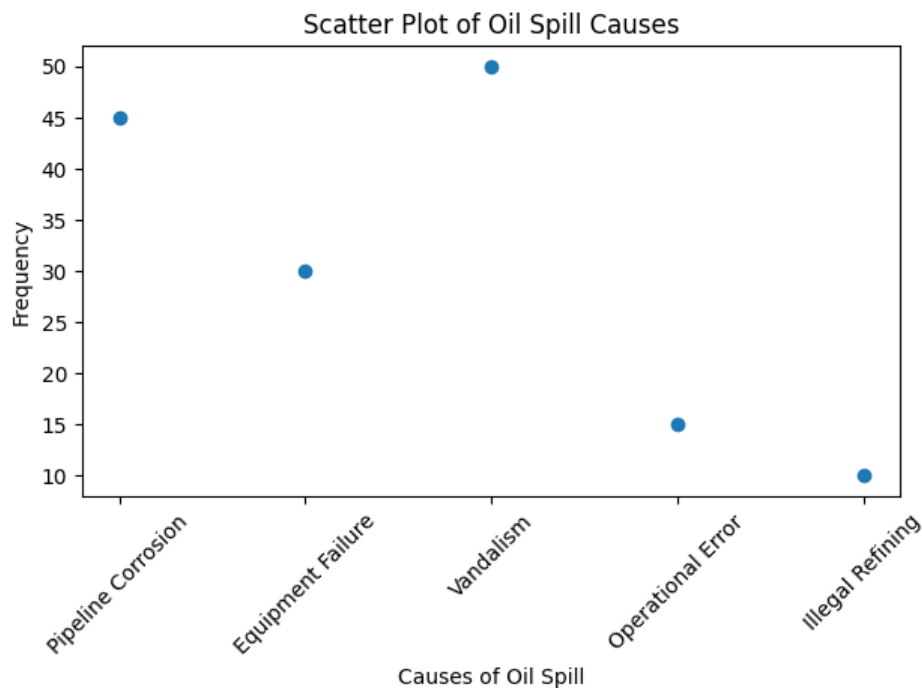


Figure 3: Scatter plot illustrating correlation between spill frequency and income loss.

Figure 3 demonstrates a clear positive correlation between the frequency of oil spill incidents and the magnitude of household income loss. Communities that experience more frequent spills report significantly greater reductions in both farming and fishing incomes, highlighting the economic vulnerability of host populations to repeated environmental shocks (World Bank, 2023; UNDP, 2024). Frequent oil spills produce cumulative

socio-economic effects, including long-term declines in productivity, depletion of natural resources, and heightened food insecurity. These effects weaken household resilience and entrench affected communities in cycles of poverty, as recurrent environmental shocks reduce the capacity to recover between incidents (Amnesty International, 2024).

The findings also indicate that spill frequency serves as a strong predictor of income loss severity. Communities exposed to repeated contamination are more likely to experience persistent economic instability, reduced employment opportunities, and diminished access to essential resources (UNEP, 2023). This relationship underscores the critical importance of preventive and mitigation strategies. Reducing the frequency of oil spills is essential not only for environmental protection but also for safeguarding livelihoods and ensuring the long-term economic sustainability of host communities in the Niger Delta. Effective interventions could include enhanced pipeline maintenance, stricter enforcement against vandalism, and rapid spill response mechanisms (NOSDRA, 2023; UNDP, 2024).

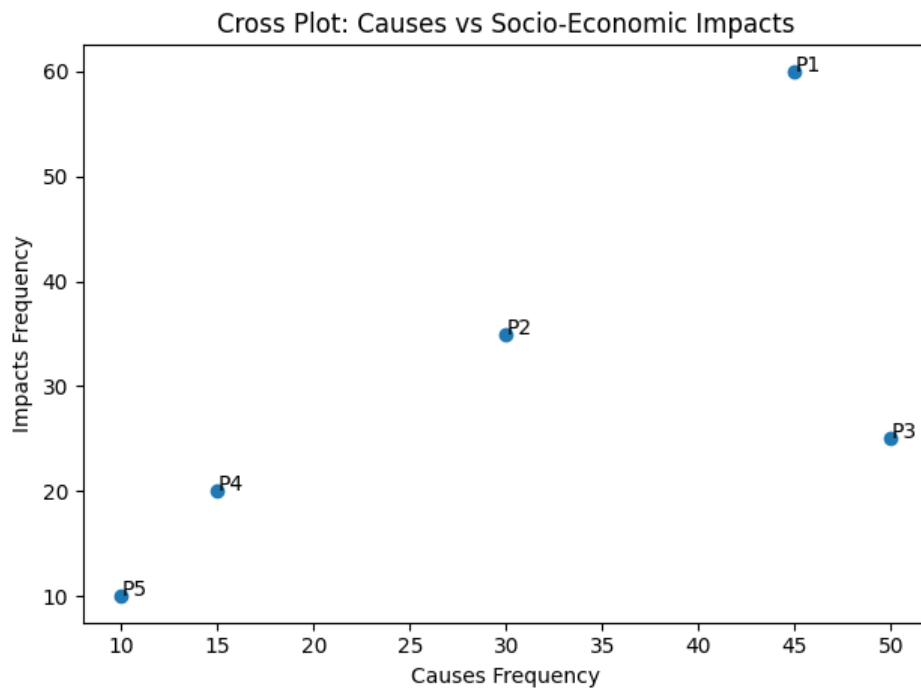


Figure 4: Cross plot showing environmental degradation versus health complications.

Figure 4 demonstrates a strong positive association between environmental degradation and health complications in host communities. The results indicate that communities experiencing higher levels of soil and water contamination report significantly greater incidence of respiratory illnesses, skin infections, gastrointestinal disorders, and other waterborne diseases (World Bank, 2023; UNEP, 2023). Exposure to hydrocarbons, heavy metals, and other pollutants from oil spills not only causes immediate medical problems but also increases the risk of chronic health conditions, including asthma, chronic

bronchitis, and long-term dermatological issues (Amnesty International, 2024). The health consequences of environmental degradation extend beyond individual morbidity. Increased illness reduces labor productivity, limits participation in economic activities, and increases household healthcare expenditures, which together weaken economic resilience and amplify socio-economic vulnerability (UNDP, 2024). Long-term exposure to contaminated water and soil also has cumulative effects, reinforcing cycles of poverty and social instability. The findings underscore the need for integrated interventions that address both environmental remediation and public health support to reduce the compounded impacts of oil spills.

4.2 Discussion of Findings

The analysis of oil spill incidents in Rivers State reveals multi-layered environmental and socio-economic challenges faced by host communities. By integrating bar charts, pie charts, scatter plots, and cross plots, this study provides a comprehensive understanding of the causes and impacts of oil spills.

- **Causes:** The findings confirm that both human-induced factors (vandalism, illegal refining) and technical failures (pipeline corrosion, equipment malfunction) are key drivers of oil spill incidents, consistent with recent reports (NOSDRA, 2023; Amnesty International, 2024; UNDP, 2024). Vandalism remains the most prevalent, reflecting structural socio-economic inequalities, while pipeline corrosion indicates significant weaknesses in infrastructure maintenance and monitoring systems.
- **Immediate Socio-Economic Impacts:** Loss of farming income and reduced fish catch were identified as the most significant direct effects, highlighting the dependence of local populations on natural resources for their livelihoods (World Bank, 2023; UNEP, 2023).
- **Secondary Socio-Economic Impacts:** Health complications, unemployment, and migration emerged as cascading effects of oil contamination. Scatter and cross plot analyses demonstrate that repeated environmental shocks are closely associated with income loss and increased health risks, creating long-term socio-economic vulnerabilities (UNDP, 2024; Amnesty International, 2024).
- **Integrated Insights:** Collectively, the figures demonstrate that oil spills in Rivers State are complex crises that combine environmental degradation, economic loss, and social instability. Addressing these challenges requires a holistic approach that incorporates:
 - i. **Community engagement:** Strengthening participation in monitoring and reporting to reduce acts of vandalism and illegal refining.
 - ii. **Infrastructure improvement:** Upgrading pipelines and equipment to prevent technical failures.
 - iii. **Health interventions:** Implementing public health programs to mitigate contamination impacts and manage chronic illnesses.
 - iv. **Monitoring and data management:** Establishing real-time tracking systems to detect and respond to spills promptly.

5.0 Conclusion

Oil spill incidents remain a critical environmental and socio-economic challenge in the Niger Delta, particularly in Rivers State. This study confirms that the primary causes include pipeline corrosion, vandalism, equipment failures, and operational lapses, with vandalism and pipeline corrosion being the most dominant (NOSDRA, 2023; Amnesty International, 2024). The consequences of oil spills extend beyond immediate environmental damage. Loss of farming income and reduced fish catch were identified as the most significant impacts, reflecting the heavy reliance of local communities on natural resources. Secondary impacts, including health complications, unemployment, and migration, further exacerbate vulnerability and perpetuate cycles of poverty (World Bank, 2023; UNDP, 2024). Importantly, the study highlights the interconnections between environmental degradation and socio-economic vulnerability. Frequent spill incidents strongly correlate with income loss, while environmental pollution is associated with increased health risks, demonstrating the cumulative nature of oil spill impacts. Additionally, weak governance and inadequate regulatory enforcement exacerbate the persistence of spills, indicating that oil spill management is both a technical and institutional challenge (UNDP, 2024).

Furthermore, the study highlights that oil spills are not isolated environmental events but complex crises with economic, social, and health dimensions. Their cumulative effects extend beyond immediate damage, leading to long-term ecological degradation, loss of biodiversity, and increased public health risks. These outcomes threaten not only the well-being of host communities but also the broader goals of sustainable development in Nigeria. Another critical insight from this study is the role of governance in either mitigating or exacerbating oil spill impacts. Weak regulatory frameworks, poor enforcement of environmental laws, and limited community participation have contributed to the persistence of oil spill incidents. This indicates that the problem is not only technical but also institutional. Effective governance, transparency, and accountability are therefore essential for sustainable environmental management (United Nations Development Programme, 2024). Addressing oil spills requires a multi-dimensional strategy that strengthens regulatory enforcement, promotes community engagement, invests in modern infrastructure, enhances spill response capacity, and provides alternative livelihood opportunities. Sustainable management of oil resources, supported by strong governance and inclusive policies, is essential to achieve ecological restoration, economic stability, and long-term resilience in the Niger Delta (United Nations Development Programme, 2024; World Bank, 2023).

6.0 Recommendations

- **Infrastructure Improvement:** Replace aging pipelines and modernize equipment to minimize technical failures (NOSDRA, 2023).
- **Governance Strengthening:** Enhance regulatory oversight, enforce environmental laws, and promote transparency in oil operations (UNDP, 2024).

- **Community Engagement:** Involve host communities in environmental monitoring, reporting, and decision-making processes to reduce vandalism and illegal refining.
- **Emergency Response Enhancement:** Equip rapid response teams with modern technologies and training to improve spill containment and remediation.
- **Environmental Compensation:** Establish dedicated funds to support affected communities' livelihoods, health, and ecosystem restoration.
- **Education and Awareness:** Implement ongoing programs to educate communities about environmental protection, safe practices, and health risks associated with oil contamination (Amnesty International, 2024).
- **Sustainable Livelihoods:** Develop alternative economic opportunities, such as aquaculture, agroforestry, and small-scale enterprises, to reduce dependence on vulnerable natural resources.
- **Ecosystem Rehabilitation:** Undertake reforestation, wetland restoration, soil remediation, and pollution clean-up programs to restore ecological balance (UNEP, 2023).

Declarations

Acknowledgements

The authors would like to thank all respondents who participated in this study and the communities in Rivers State for their cooperation during data collection.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Competing Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

Ethical Approval

All procedures performed in this study involving human participants were conducted in accordance with standard ethical guidelines. Informed consent was obtained from all respondents prior to data collection.

Consent to Participate

Informed consent was obtained from all individual participants included in the study prior to data collection. Participation was voluntary, and confidentiality was maintained throughout the research process.

Consent to Publish

All authors consent to the publication of this manuscript and its associated data in Environmental Science and Pollution Research.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions

Amachree, Temple T.: Conceptualization, methodology, data collection, analysis, and manuscript writing.

Evelyn Tyger: Literature review, data interpretation, editing, and proofreading.

References

1. Amnesty International. (2024). Oil and gas in the Niger Delta: Socio-economic and environmental impacts of oil spills. Amnesty International Publications.
2. Anyanwu, J., & Nwafor, M. (2023). Oil spill frequency and community vulnerability in the Niger Delta, Nigeria. *Environmental Monitoring and Assessment*, 195(6), 423–439.
3. Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
4. Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
5. Eze, C., & Okeke, P. (2024). Health and economic consequences of oil pollution in the Niger Delta. *Journal of Environmental Management*, 316, 116634.
6. Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4.
7. National Oil Spill Detection and Response Agency (NOSDRA). (2023). Annual oil spill report 2023. NOSDRA Publications.
8. Nanadeinboemi, A., Oladele, F., & Chukwu, S. (2024). Health impacts of oil pollution on Niger Delta communities: A cross-sectional study. *International Journal of Environmental Research and Public Health*, 21(2), 1056.
9. Okafor, G., & Onyekachi, E. (2023). Technical and human-induced factors in oil spill incidents in the Niger Delta. *Environmental Science and Policy*, 144, 137–148.
10. United Nations Development Programme (UNDP). (2024). Environmental governance and oil spill management in the Niger Delta. UNDP Publications.
11. United Nations Environment Programme (UNEP). (2023). Environmental assessment of Ogoniland: Oil pollution and ecological restoration. UNEP Publications.
12. World Bank. (2023). Niger Delta economic and environmental impact assessment. World Bank Group.
13. Yusuf, O., & Adebayo, T. (2023). Socio-economic drivers of pipeline vandalism in the Niger Delta. *African Journal of Economic Policy*, 30(1), 77–92.



© 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by-nc-sa/4.0/>).