ISSN: 4338 -6212
Volume 11, Number 1, 2026
International Journal of Research in Environmental Science and Technology
Deakin University, 221 Burwood Highway, Burwood, Victoria 3125, Australia
www.bwjournal.org

ENVIRONMENTAL MANAGEMENT PRACTICES AND LIVELIHOOD SUSTAINABILITY IN OIL AND GAS HOST COMMUNITIES IN PORT HARCOURT METROPOLIS

Onwuka, Gloria Onyinyechi & Prof. Olanrewaju Lawal
Email: Glo4luvin@gmail.com
Department of Geography and Environmental Management
Faculty of Social Sciences, University of Port Harcourt

Abstract
The study examined environmental management practices and livelihood sustainability in oil and gas host communities in Port Harcourt Metropolis. A cross sectional design was adopted. The population comprised households in selected oil and gas host communities within the metropolis. A total of 200 respondents were selected using a multistage sampling technique. In the first stage, purposive sampling was used to select oil- and gas-bearing communities within Port Harcourt metropolis. In the second stage, proportionate sampling was applied to select four communities, one each from the North, South, East, and West (Choba, Elelenwo, Eneka, and Trans-Amadi) to represent the study area. The study examined environmental management techniques and livelihood sustainability in the oil and gas host communities of Port Harcourt Metropolis. A cross-sectional design was employed. The population was made up of households in some of the city's oil and gas host communities. A total of 200 respondents were selected through a multistage sampling process. In the first phase, oil and gas-producing communities in the Port Harcourt metropolitan area were selected using purposeful sampling. Using proportionate sampling, four communities—one from each of the North, South, East, and West—were selected to represent the research region in the second stage: Choba, Elelenwo, Eneka, and Trans-Amadi. It was concluded that the current environmental management efforts are insufficient to support sustainable livelihoods. It recommended among others that Government and regulatory agencies should enhance enforcement and monitoring of environmental management practices to ensure proper implementation and compliance by oil companies in Port Harcourt Metropolis.

Keywords: Environmental Management, Practices and Livelihood, Sustainability Oil and Gas Host Communities, Metropolis, Environmental Pollution.

Introduction
In 1956, Nigeria's economic landscape shifted dramatically with the discovery of crude oil in Oloibiri, positioning the country as a major oil producer in Africa. Since then, the oil and gas sector has remained a significant source of both domestic revenue and foreign exchange earnings (World Bank, 2021). However, alongside its economic importance, oil extraction and exploration have brought about serious environmental challenges, particularly in host communities like Port Harcourt Metropolis.

Environmental pollution from oil spills, gas flaring, and industrial waste discharge has negatively impacted the quality of land, water, and air in the Niger Delta region. These environmental problems have disrupted traditional livelihoods such as farming and fishing, which are the primary sources of income for many rural residents (UNDP, 2006). As a result, the stability of these communities' livelihood systems has been compromised, leading to increased poverty and economic vulnerability (Obi, 2010).

To address these issues, government agencies and oil companies have implemented various environmental management strategies, including pollution control measures, environmental regulations, and remediation programs. However, the effectiveness of these techniques is often hampered by poor coordination, insufficient community participation, and weak enforcement (Ibaba,

2018). Consequently, environmental degradation persists, raising concerns about the long-term viability of livelihoods in oil-producing communities.
Despite decades of oil production in the Niger Delta, there is still a lack of solid data on how environmental management techniques affect the sustainability of livelihoods in oil and gas host communities. This gap in knowledge limits the ability of stakeholders and policymakers to develop effective strategies that balance socioeconomic well-being with environmental protection.Therefore there is the need to study environmental management strategies and their impacts on the sustainability of livelihoods in Port Harcourt Metropolis.

Aim and Objectives of the study
The aim of this study is to examine environmental management practices and livelihood sustainability in oil and gas host communities in Port Harcourt Metropolis. The specific objectives are;

1. Assess the extent to which environmental management practices are implemented in oil and gas host communities in Port Harcourt Metropolis.
2. Examine the level of livelihood sustainability among households in Port Harcourt Metropolis.

Research Questions
The following questions guided the study;

1. To what extent are environmental management practices implemented in oil and gas host communities in Port Harcourt Metropolis?
2. What is the level of livelihood sustainability among households in Port Harcourt Metropolis?

Literature Review
Environmental management
To ensure long-term growth, environmental management is essentially a systematic strategy to using, protecting, and conserving our natural environment. It's about having laws, sensible policies, and systematic processes that lessen the damaging things we do to the environment. It's also about using resources wisely and preserving nature's balance. Due to climate change, growing environmental damage, and the pressing need to find a balance between environmental preservation and economic growth, this idea has received a lot of attention (Adams, 2009).

Integrating human actions with environmental care is at the core of environmental management.
According to the United Nations Environment Programme (UNEP), it means steering how we interact with nature to keep ecosystems healthy while still meeting our needs today and in the future. This involves taking care of our air, water, land, and all living things through careful planning and putting smart policies into action (UNEP, 2019).
Environmental management includes several important pieces: environmental planning, environmental impact assessments (EIAs), pollution control, waste management, and protecting natural resources. An EIA, for example, is a vital tool that helps us figure out the potential environmental consequences of projects before they even start. This helps decision-makers put measures in place to lessen any negative environmental effects (Glasson, Therivel, & Chadwick, 2012).
In countries like Nigeria, environmental management is especially important due to problems like pollution, weak enforcement of rules, and the overuse of resources, particularly in areas that produce oil.

Environmental management practices

The precise actions, plans, and procedures that individuals, groups, and governments take to lessen environmental harm and promote the sustainable use of natural resources are known as environmental management practices. These include measures to reduce adverse environmental effects, such as waste management, pollution control, energy conservation, environmental impact assessments, and resource efficiency (Adams, 2009). Effective environmental management techniques are essential for maintaining the equilibrium of nature and guaranteeing that things can endure for future generations, according to the United Nations Environment Programme.

One key part of environmental management is waste management, which means properly collecting, treating, and getting rid of waste to prevent pollution. Another important practice is pollution control, which involves reducing emissions from industries and homes to protect the quality of our air and water. Additionally, environmental impact assessments (EIAs) are widely used to assess the possible environmental effects of projects before they're carried out, allowing us to lessen any harmful impacts (Glasson, Therivel, & Chadwick, 2012). Organizations also use environmental management systems like ISO 14001, developed by the International Organization for Standardization, to consistently improve how they affect the environment (ISO, 2015).

Implementation of environmental management practices

The degree to which environmental strategies are implemented by oil corporations, regulatory bodies, and host communities is referred to as the adoption of environmental management practices in oil and gas host communities. It emphasizes the practical implementation of policies such as waste management, pollution control, environmental monitoring, and environmental impact assessment, rather than merely their existence on paper (Glasson, Therivel, & Chadwick, 2012). Despite the existence of formal environmental regulations and frameworks like ISO 14001 developed by the International Organization for Standardization, the extent of implementation in oil-producing regions like Nigeria is frequently hampered by weak enforcement, limited institutional capacity, and poor coordination among stakeholders.

Different levels of implementation are shown by research. Hemba and Phil-Eze (2021) found that although oil and gas projects in Bayelsa and Rivers States have Environmental Management Plans, there is a deficiency in the actual application of waste management, pollution control, and monitoring procedures. In a similar vein, Hemba and Usman (2025) claimed that environmental management procedures were implemented moderately in the Niger Delta, but they pointed out that their efficacy is limited by inadequate coordination and enforcement. Additionally, James et al. (2022) discovered that environmental techniques, such as environmental restoration and spill response, are frequently used superficially and inconsistently.

Livelihood

The resources, abilities, and pursuits that people or households employ to obtain basic needs like food, money, shelter, and general well-being are referred to as livelihoods. It encompasses not just economic activity but also the social, human, and environmental resources that people rely on to improve their quality of life and survive. A more comprehensive understanding of livelihood that takes into account vulnerabilities, support networks, and resource access has replaced the earlier narrow focus on only earning money (Chambers & Conway, 1992). In developing nations like Nigeria, where many households depend on unofficial economic activities like farming, fishing, and small-scale trading, livelihood is particularly crucial.

However, these livelihoods are often threatened by environmental degradation, economic instability, and policy limitations, which can reduce income opportunities and resilience (Ellis, 2000). Understanding how livelihoods work is therefore crucial for creating policies and interventions aimed at reducing poverty, promoting economic empowerment, and fostering sustainable development.

Livelihood sustainability is all about how well people or families can keep their lives going and improve them over time. This means dealing with any rough patches – like environmental issues, economic ups and downs, or social problems—without messing up the natural resources they depend on. It's about being tough in the long run, protecting resources, and always having access to the things that help people make a living, like money, skills, and connections with others (Chambers & Conway, 1992). This idea comes from the sustainable livelihood framework, which was promoted by the Department for International Development. It says that a good, sustainable livelihood can handle tough times and get even better for future generations (DFID, 1999). In places like Nigeria, it's often hard to keep livelihoods sustainable because of things like environmental damage, unstable economies, and not having enough access to resources. That's why it's super important for planning and making policies that help (Ellis, 2000).

Level of Livelihood Sustainability

How well households are able to sustain and raise their standard of life over time is a measure of their livelihood sustainability. They ought to be able to manage environmental, social, and economic issues without depleting all of their resources. This demonstrates how stable, resilient, and varied their means of subsistence are, guaranteeing them a steady supply of money, food, housing, and other necessities (Ellis, 2000). According to studies, households in oil and gas host towns frequently struggle to sustain their way of life due to environmental degradation, and their traditional jobs aren't as productive. For example, Odubo and Vivien (2024) discovered that oil pollution in the Niger Delta significantly lowers income and makes it harder for families to sustain their livelihoods because it hurts farming and fishing. Similarly, Eni et al. (2023) noted that even with programs to help people in oil-producing communities in Abia State, many families still have unsustainable livelihoods due to ongoing environmental damage and a lack of other job options. In another study, Jack (2025) saw that households try to cope and find different ways to make a living in response to environmental pollution. However, these efforts usually aren't enough to ensure they can sustain themselves in the long term. These findings indicate that while people are trying to adapt, livelihood sustainability remains weak and uncertain for households in oil and gas host communities.

Theoretical Framework

This study is theoretically based on the Environmental Kuznets Curve (EKC) theory. It investigates the connection between economic growth and environmental harm, arguing that early phases of economic growth, such as the exploitation of oil and gas, increase environmental deterioration because of excessive resource extraction and lax regulation. But as society gets richer, it tends to spend more on environmental preservation, which lessens environmental harm (Grossman & Krueger, 1995). The Port Harcourt metropolis' oil and gas host towns can benefit from the application of the EKC theory.Although oil exploration initially boosts the economy, it also pollutes the environment through waste discharge, gas flaring, and oil spills. Due to their detrimental effects on fishing, agricultural output, and household income, these environmental problems pose a danger to the sustainability of livelihoods. According to the hypothesis, effective environmental management techniques including pollution control, environmental monitoring, and remediation can lessen environmental degradation and enhance the sustainability of livelihoods in the impacted populations.

Methodology

This study used a cross-sectional survey research design, which allowed for data collection at a single point in time to examine environmental management practices and livelihood sustainability among households in oil and gas host communities in Port Harcourt Metropolis, without manipulating any variables. The population included households in selected oil and gas host communities within

the metropolis. A multistage sampling technique was used to select a total of 200 respondents. First, purposive sampling was used to select oil- and gas-bearing communities within Port Harcourt metropolis. Second, proportionate sampling was applied to select four communities, one each from the North, South, East, and West (Choba, Elelenwo, Eneka, and Trans-Amadi) to represent the study area. Third, a simple random sampling technique was used to select 50 respondents from each community, resulting in a total sample size of 200. Data were collected using a structured questionnaire called the "Environmental Management Practices and Livelihood Sustainability Questionnaire" (EMPLSQ) and key informant interviews. The questionnaire included sections on the extent of implementation of environmental management practices and the level of livelihood sustainability, measured on a 4-point Likert scale. Experts in Environmental Management validated the instrument, and a reliability index of 0.82 was obtained using the Cronbach Alpha. Data were analyzed using descriptive statistics (mean and standard deviation).

Results and Discussion

Table 1: Mean of Respondents on the Extent of Implementation of Environmental management practices

S/N	Items	Respondents (N=200)		
		$\bar{X}_1$	SD_1	Remarks
1.	Environmental Impact Assessments (EIA) are properly conducted before oil and gas projects are implemented in my community	3.20	.98	Moderate extent
2.	Oil spill response measures are promptly implemented when environmental incidents occur in my area.	2.70	1.01	Moderate extent
3.	Waste generated from oil and gas activities is properly managed and disposed of in my community	2.40	1.07	Low extent
4.	Environmental monitoring and inspection of oil and gas activities are regularly carried out by relevant authorities.	2.50	1.20	Moderate extent
5.	Oil and gas companies in my community comply with environmental protection regulations and standards.	2.40	1.20	Low extent
	Criterion mean =2.50 Average	**2.64**	**1.09**	**Moderate extent**

1.00–1.49 = Very low extent, 1.50–2.49 = Low extent, 2.50–3.49 = Moderate extent, 3.50–4.00 = High extent

Table 1 above shows the extent of implementation of environmental management practices within Port Harcourt metropolis. In Item 1, the mean of respondents is 3.20 which reveals a moderate extent, depicting that Environmental Impact Assessments (EIA) are fairly conducted before oil and gas projects are implemented. In item 2, the mean of respondents is 2.70, which connotes a moderate extent. Hence, it indicates that oil spill response measures are fairly implemented in the study area. In Item 3, the mean score of 2.40 indicates **a** low extent, suggesting that waste generated from oil and gas activities is not properly managed and disposed of. Item 4, the mean of respondents is 2.50 which indicate **a** moderate extent, meaning that environmental monitoring and inspection are fairly carried out by relevant authorities. In Item 5 the mean of respondents is 2.40

which align within the low extent range. Hence, it indicates a weak compliance of oil and gas companies with environmental protection regulations and standards.
In summary, the average mean score of 2.64 indicates a moderate extent, which means that environmental management practices are moderately implemented in oil and gas host communities. This suggests that while some practices are in place, their implementation is not fully effective or consistent across the study area.

Table 2: Mean of Respondents on the level of livelihood sustainability among households in Port Harcourt Metropolis

S/N	Items	Respondents (N=200)		
		$\bar{X}_1$	SD_1	Remarks
6.	My primary source of livelihood is stable	2.35	1.06	Low sustainability
7.	Environmental conditions support my livelihood activities	1.95	.97	Low sustainability
8.	Pollution has negatively affected my income	2.60	1.16	Moderate sustainability
9.	I have access to alternative sources of livelihood	2.30	1.05	Low sustainability
10.	My household can cope with environmental challenges	1.88	1.11	Low sustainability
	Criterion mean =2.50			
	Average	**2.22**	**1.07**	**Low sustainability**

1.00–1.49 = Very low sustainability, 1.50–2.49 = Low sustainability, 2.50–3.49 = Moderate sustainability
3.50–4.00 = High sustainability
Table 2 above shows the mean of respondents on the level of livelihood sustainability among households in Port Harcourt Metropolis. In Item 6, the mean score of respondents is 2.35 which indicate low livelihood sustainability, showing that many households experience unstable primary income sources. Item 7, the mean of respondents is 1.95 which indicates low sustainability, which implies that environmental conditions do not adequately support livelihood activities. In Item 8, the mean score of respondents is 2.60 which show a moderate level of agreement; this indicates that many respondents agreed that pollution has negatively affected their income. Item 9, the mean of respondents is 2.30, which reveals low sustainability. This suggests limited access to alternative livelihoods. In Item 10 the mean of respondents is 1.88 which indicates low sustainability, showing weak household coping capacity against environmental challenges. In summary, the average mean score of 2.22 indicates a low sustainability, which means that livelihood sustainability among households in the study area is generally low, with weak income stability, limited diversification, and poor resilience to environmental shocks.

Discussion of Findings

The first finding (2026) shows that environmental management practices are moderately implemented in oil and gas host communities. This suggests that while some practices are in place, their implementation is not fully effective or consistent across the study area. This is in agreement with Hemba and Phil-Eze (2021) who found that even though Environmental Management Plans exist in oil and gas projects in Bayelsa and Rivers States, the actual implementation of pollution control, waste management and monitoring practices is low. Likewise, the finding is consistent with Hemba and Usman (2025) who reported moderate implementation of environmental management practices. Weak coordination and poor enforcement limit effectiveness, they said.

The second finding of the study revealed that livelihood sustainability among households in Port Harcourt metropolis is generally low, with weak income stability, limited diversification, and poor resilience to environmental shocks. The finding is in consonance with the result of Jack (2025) who discovered that although some adaptive responses exist, livelihood sustainability among households in oil and gas host communities remains weak and unstable. Furthermore, the findings agrees with Odubo and Vivien (2024) that oil pollution in the Niger Delta significantly reduces income stability and weakens household livelihood sustainability by affecting farming and fishing activities

Conclusion

The findings of the study revealed that environmental management practices are moderately implemented, while livelihood sustainability among households remains low. Based on the findings of the study it concludes that the current environmental management efforts are insufficient to support sustainable livelihoods.

Recommendations

Based on the findings of the study the following recommendations are put forth;

1. Government and regulatory agencies should enhance enforcement and monitoring of environmental management practices to ensure proper implementation and compliance by oil companies in Port Harcourt Metropolis.
2. Diversification programmes, skills training and environmental restoration should be pursued to make livelihoods more sustainable and reduce the impact of pollution on household income.

References

Cyril Obi. (2010). Oil extraction, dispossession, resistance, and conflict in Nigeria's oil-rich Niger Delta*. Canadian Journal of Development Studies, 30*(1–2), 219–236.

Department for International Development (DFID). (1999). *Sustainable livelihoods guidance sheets*. London: DFID.

Eni, D., Ibekwe, U., & Iwara, A. (2023). *Livelihood sustainability in oil-producing communities in Abia State*.

Fidelis Ibaba. (2018). *Environmental governance and development in the Niger Delta region of Nigeria*. Port Harcourt: University Press.

Frank Ellis. (2000). *Rural livelihoods and diversity in developing countries*. Oxford: Oxford University Press.

Hemba, J., & Phil-Eze, P. (2021). *Environmental management plan implementation in oil and gas projects in the Niger Delta*.

Hemba, J., & Usman, A. (2025). *Assessment of environmental management practices in the Niger Delta region*.

International Organization for Standardization (ISO). (2015). *ISO 14001: Environmental management systems—Requirements with guidance for use*. Geneva: ISO.

James, K., et al. (2022). *Environmental sustainability issues in oil and gas operations in the Niger Delta*.

Odubo, T., & Vivien, O. (2024). *Oil pollution and livelihood sustainability in the Niger Delta*.

Peter Morris Glasson., Riki Therivel., & Andrew Chadwick. (2012). *Introduction to environmental impact assessment* (4th ed.). London: Routledge.

Robert Chambers., & Gordon Conway. (1992). *Sustainable rural livelihoods: Practical concepts for the 21st century*. Brighton: IDS.

United Nations Development Programme (UNDP). (2006). *Niger Delta human development report*. Abuja: UNDP.

United Nations Environment Programme (UNEP). (2019). *Global environment outlook*. Nairobi: UNEP.

William M. Adams. (2009). *Green development: Environment and sustainability in a developing world* (3rd ed.). London: Routledge.
World Bank. (2021). *Nigeria overview*.

Jack, B. (2025). *Livelihood responses to environmental pollution in the Niger Delta*.

Gene M. Grossman., & Alan B. Krueger. (1995). Economic growth and the environment. *The Quarterly Journal of Economics, 110*(2), 353–377.