Developing An Integrated Community-Based Environmental Governance and Management Framework for Combating Environmental Crisis in Akwa Ibom State, Nigeria

Ademola O. Oyebanji[1], Bulus Simon[2], Bimpe O. Fayigbe[3]

[1]Department of Public Administration, Federal Polytechnic, Ukana, Akwa Ibom State, Nigeria

[2]Department of Environmental Science and Management Technology, Federal Polytechnic, Ukana, Akwa Ibom State, Nigeria.

[3]Department of General Studies, Federal Polytechnic, Ukana, Akwa Ibom State, Nigeria

DOI: https://doi.org/10.47772/IJRISS.2026.101000754

Received: 28 October 2026; Accepted: 02 November 2026; Published: 17 November 2026

ABSTRACT

Environmental crises in Akwa Ibom State are increasingly associated with flooding, waste mismanagement, hydrocarbon pollution, erosion, and institutional weaknesses. This study examined the relationship between public administration mechanisms, community participation, and environmental crisis response, with the aim of developing an Integrated Community-Based Environmental Governance and Management Framework. A cross-sectional survey design involving 400 respondents was adopted for the study. Data were analysed using descriptive statistics, Pearson correlation, and multiple regression. The findings identified flooding (84.5%), inadequate waste management (79.0%), and oil-related pollution (71.0%) as prominent environmental challenges. Institutional arrangements recorded a low grand mean of 2.54, while community participation recorded 2.68. Public administration mechanisms significantly predicted environmental crisis response ($\beta = 0.36$, $t = 7.84$, $p < 0.001$), as did community participation ($\beta = 0.29$, $t = 6.21$, $p < 0.001$). Institutional coordination was positively correlated with crisis response effectiveness ($r = 0.58$, $p < 0.01$). The regression model explained 52.0% of the variation in response effectiveness ($R^2 = 0.520$). The study proposes an integrated framework combining institutional coordination, accountability, decentralization, community participation, indigenous knowledge, and adaptive monitoring to strengthen environmental governance and community resilience in Akwa Ibom State.

Keywords: Accountability; Community participation; Environmental governance; Environmental crisis response

INTRODUCTION

Environmental crises have emerged as critical development and governance challenges, particularly in regions where ecological vulnerability intersects with rapid urbanisation, population growth, resource exploitation, and institutional weaknesses. Across developing countries, environmental problems such as flooding, coastal erosion, land degradation, hydrocarbon pollution, biodiversity loss, and inadequate solid waste management increasingly threaten ecosystem integrity, public health, food security, and socioeconomic development. The growing intensity of these challenges demonstrates that environmental crises are not exclusively ecological problems but also reflect weaknesses in institutional capacity, public administration, regulatory enforcement, and community participation. The Intergovernmental Panel on Climate Change (IPCC, 2023) established that climate-related hazards are generating widespread adverse impacts on human and natural systems, with vulnerable communities experiencing disproportionately severe consequences. Similarly, the United Nations Environment Programme (UNEP, 2011), through its environmental assessment of Ogoniland, documented extensive petroleum contamination and its implications for environmental quality, human health, and community

livelihoods. These developments underscore the need for environmental management approaches that integrate ecological protection, institutional accountability, and community-based intervention.

Nigeria's Niger Delta presents a particularly important context for examining the relationship between environmental vulnerability and governance effectiveness. The region has experienced persistent environmental challenges associated with oil exploration, industrial activities, rapid urban expansion, flooding, coastal erosion, and inadequate waste management. These pressures have contributed to ecosystem degradation, pollution of soil and water resources, declining livelihood opportunities, and increased vulnerability among environmentally exposed communities. Ebegbulem et al. (2022) examined the relationship between multinational oil exploration, poverty, and environmental degradation in the Niger Delta, highlighting the socioeconomic implications of petroleum-related environmental pressures. Similarly, Zabbey et al. (2021) examined the prospects and challenges of using community science to strengthen environmental management in the coastal Niger Delta, emphasising the importance of local participation and environmental monitoring. These studies demonstrate that addressing environmental crises in the Niger Delta requires approaches that extend beyond conventional regulatory interventions to incorporate institutional collaboration and community-level environmental governance.

Akwa Ibom State, located within the Niger Delta region, provides an important setting for investigating these governance challenges. Its coastal environment, oil-producing activities, expanding urban settlements, and diverse ecological systems expose communities to multiple environmental pressures. These include recurrent flooding, coastal erosion, land degradation, hydrocarbon pollution, and inadequate solid waste management. Evidence from Uyo indicates that flooding constitutes a significant environmental vulnerability, with implications for community resilience. Abraham et al. (2022) investigated community resilience and environmental casualties in flood-prone areas of Uyo and identified recurrent flooding, inadequate drainage infrastructure, and the importance of community adaptation and coping strategies. Furthermore, Udoh et al. (2024) investigated the pollution status of municipal solid waste disposal sites in Uyo, Ikot Ekpene, and Oron, identifying groundwater contamination and associated environmental concerns. These studies demonstrate that environmental challenges in Akwa Ibom State affect different urban and community environments, requiring context-specific management strategies.

The environmental implications of oil exploration and production further complicate environmental management in the region. Hydrocarbon-related activities, including oil spills, inappropriate waste disposal, and associated industrial pollution, have been linked to soil and water contamination, ecosystem degradation, and declining livelihood opportunities in affected communities. The environmental assessment conducted by UNEP (2011) in Ogoniland revealed extensive petroleum contamination and the need for sustained environmental remediation. Ebegbulem et al. (2022) also examined the relationship between multinational oil exploration, poverty, and environmental degradation in the Niger Delta. Ewim et al. (2023) further reviewed wastewater problems arising from oil spills and pollution in the region. These findings demonstrate that environmental protection in oil-producing areas requires effective pollution monitoring, regulatory enforcement, remediation programmes, and institutional accountability.

From a public administration perspective, effective environmental crisis management depends on institutional coordination, clearly defined responsibilities, adequate funding, transparency, accountability, regulatory compliance, and efficient service delivery. Environmental problems frequently extend across administrative jurisdictions and require cooperation among ministries, departments, agencies, local government authorities, traditional institutions, community organisations, and private-sector operators. However, fragmented institutional responsibilities and inadequate coordination can weaken policy implementation and delay environmental interventions. Adekola and Grainger (2023), in their examination of institutional changes in environmental management in the Niger Delta, demonstrated how interactions between state and civil society networks influence institutional practices and environmental outcomes. Similarly, the OECD (2023) emphasised the importance of policy coherence, institutional coordination, and effective regulatory approaches in achieving environmental sustainability. These perspectives suggest that environmental crisis management should be understood as a core public administration responsibility rather than merely a technical environmental function.

Another important dimension of environmental governance is the extent to which affected communities participate in environmental decision-making and crisis response. Conventional government-centred approaches may concentrate environmental planning and implementation within formal institutions, leaving affected communities with limited opportunities to influence decisions concerning their immediate ecological environment. This is problematic because local communities are frequently the first to experience environmental hazards and possess valuable knowledge of local ecological conditions, historical environmental changes, vulnerability patterns, and adaptation practices. Sam and Zibima (2024), examining the Ogoni remediation project in the Niger Delta, highlighted the exclusion of women from environmental decision-making despite their exposure to the consequences of environmental degradation. Similarly, Zabbey et al. (2021) demonstrated the potential of community science to contribute to environmental monitoring and management in the coastal Niger Delta. These studies reinforce the importance of integrating local knowledge, community surveillance, and participatory environmental assessment into formal environmental management systems.

Community-based environmental governance provides an approach through which local communities can participate meaningfully in environmental planning, monitoring, resource management, and crisis response. Its effectiveness, however, depends on supportive institutional arrangements that facilitate collaboration between government agencies and community stakeholders. Ansell and Gash (2008) established that collaborative governance provides a framework for addressing complex public problems through structured engagement between government and non-governmental actors. Similarly, Wiederkehr et al. (2019), drawing on Ostrom's governance principles, demonstrated the relevance of collective institutional arrangements to sustainable natural resource management. In the context of environmental crisis management, these perspectives suggest that communities should not be regarded merely as beneficiaries of government interventions but as active partners in identifying environmental risks, monitoring ecological changes, mobilising local resources, and implementing appropriate response strategies.

Despite increasing recognition of participatory environmental governance, the integration of community participation with effective public administration mechanisms remains an important challenge. Environmental interventions may be weakened where community involvement is limited to occasional sanitation exercises, awareness campaigns, or informal consultations without corresponding opportunities for participation in planning, resource allocation, monitoring, and policy implementation. Effective environmental governance therefore requires institutional mechanisms that connect government responsibilities with community-level knowledge, participation, and accountability. This integration is particularly important in environmentally vulnerable areas such as Akwa Ibom State, where multiple environmental pressures require coordinated responses across institutional and community boundaries. Although existing studies have examined environmental degradation, flooding, hydrocarbon pollution, institutional arrangements, and community participation in different contexts, there remains a need for a context-specific framework that systematically integrates these dimensions within environmental crisis management in Akwa Ibom State. The relationship between public administration mechanisms, structured community participation, and environmental crisis response requires further empirical investigation. Consequently, this study examined community-based environmental governance and environmental crisis response in Akwa Ibom State, Nigeria, with particular attention to environmental challenges, institutional arrangements, community participation, and the effectiveness of governance mechanisms. It further developed an Integrated Community-Based Environmental Governance and Management Framework intended to strengthen institutional coordination, accountability, community engagement, environmental preparedness, and sustainable crisis response.

1.1 Statement of the Problem

Environmental crises in Akwa Ibom State have continued to threaten ecological sustainability, community livelihoods, public health, and socioeconomic development. Recurrent flooding, coastal erosion, land degradation, hydrocarbon pollution, and inadequate solid waste management demonstrate the growing complexity of environmental challenges confronting the state. Evidence from Uyo has established the recurring nature of flooding and its consequences for community resilience, particularly in areas characterised by inadequate drainage infrastructure (Abraham et al., 2022). Similarly, research on municipal solid waste disposal sites in Uyo, Ikot Ekpene, and Oron has identified groundwater contamination and associated environmental

pollution, demonstrating the implications of inadequate waste management for environmental quality and public health (Udoh et al., 2024). In oil-producing communities, petroleum-related contamination and environmental degradation further compound these challenges (UNEP, 2011; Ebegbulem et al., 2022). These conditions demonstrate that environmental crises in Akwa Ibom State require sustained institutional attention and coordinated management interventions. A major institutional challenge underlying this situation is the fragmentation of environmental governance responsibilities. Environmental management functions are distributed across different ministries, departments, agencies, and levels of government, often creating difficulties in coordination, accountability, resource mobilisation, and policy implementation. Adekola and Grainger (2023) demonstrated that environmental management in the Niger Delta is influenced by interactions between state institutions and civil society networks, with institutional arrangements having important implications for environmental outcomes. The OECD (2023) similarly identified the importance of coordinated regulatory systems, institutional cooperation, and effective policy implementation in addressing environmental challenges. These perspectives suggest that the persistence of environmental crises cannot be understood solely through their ecological causes; it is also necessary to examine the administrative structures and institutional mechanisms responsible for environmental prevention, monitoring, response, and recovery. Where these mechanisms are inadequate, environmental interventions may remain fragmented, delayed, and insufficiently responsive to community needs.

The problem is further compounded by the limited institutionalisation of community participation in environmental governance. Despite being directly exposed to environmental hazards, affected communities may have limited influence over environmental planning, monitoring, policy implementation, and crisis-response decisions. This weakens local ownership and limits the integration of indigenous knowledge and community-based adaptive practices into formal environmental management systems. Sam and Zibima (2024) demonstrated the importance of inclusive environmental decision-making through their examination of women's participation in the Ogoni remediation project. Similarly, Zabbey et al. (2021) identified the potential of community science in strengthening environmental monitoring and management in the coastal Niger Delta. These studies establish the importance of community involvement, but they also point to the need for institutional arrangements capable of translating local participation into sustained environmental management outcomes. Furthermore, the relationship between public administration effectiveness and community participation in environmental crisis response remains insufficiently integrated within the environmental governance discourse relating to Akwa Ibom State. Although collaborative governance provides a theoretical basis for cooperation between public institutions and non-state actors (Ansell & Gash, 2008), the practical application of such arrangements requires clearly defined institutional responsibilities, accountability mechanisms, resource commitments, and structured community representation. Without these arrangements, community participation may remain limited to occasional environmental sanitation and awareness activities, while critical decisions concerning environmental planning, monitoring, resource allocation, and crisis intervention remain concentrated within formal institutions.

The central problem, therefore, is not merely the persistence of environmental crises in Akwa Ibom State, but the absence of an empirically developed and context-specific governance framework that systematically integrates public administration mechanisms with structured community participation and environmental management strategies. Existing studies have provided important insights into flooding, waste pollution, petroleum-related environmental degradation, institutional change, and participatory environmental management. However, these dimensions require further integration to explain how administrative coordination, accountability, decentralisation, community engagement, and environmental monitoring can jointly strengthen environmental crisis response at the community level. Therefore, this study addressed this institutional and research gap through the development of an Integrated Community-Based Environmental Governance and Management Framework for Akwa Ibom State. By examining the major environmental crises affecting communities, existing institutional arrangements, levels of community participation, and the influence of governance mechanisms on environmental crisis response effectiveness, the study sought to generate empirical evidence for improving environmental management. Its contribution lies in providing a context-specific approach for strengthening institutional collaboration, promoting meaningful community participation, improving environmental preparedness, and advancing coordinated and sustainable environmental crisis response.

1.2 Aim and Objectives of the Study

The aim of this study is to develop and validate a Community-Based Environmental Governance and Management Framework that integrates public administration principles and environmental management strategies for effective environmental crisis response in Akwa Ibom State, Nigeria. In order to achieve the aim, following objectives were rigorously pursued:

i. Identify the major environmental crises affecting communities in Akwa Ibom State.
ii. Examine existing public administration and institutional arrangements for environmental crisis management in Akwa Ibom State.
iii. Assess the level and effectiveness of community participation in environmental governance and crisis response.
iv. Evaluate the influence of public administration mechanisms, particularly institutional coordination, accountability, and decentralisation, on environmental crisis response.
v. Develop and validate a community-based environmental governance and management framework for effective environmental crisis response in Akwa Ibom State.

1.3 Research Questions

i. What are the major environmental crises affecting communities in Akwa Ibom State?
ii. How effective are existing public administration and institutional arrangements for managing environmental crises in the state?
iii. To what extent do communities participate in environmental governance and crisis response?
iv. How do public administration mechanisms, particularly institutional coordination and accountability, and decentralization, influence environmental crisis response in Akwa Ibom State?
v. What community-based environmental governance and management framework can enhance environmental crisis response in Akwa Ibom State?

1.4 Research Hypotheses

H_{01}: Public administration mechanisms have no significant influence on environmental crisis response in Akwa Ibom State.

H_{02}: Community participation has no significant effect on environmental crisis response in Akwa Ibom State.

H_{03}: There is no significant relationship between institutional coordination and effective environmental crisis governance in Akwa Ibom State.

LITERATURE REVIEW

Environmental crises are severe disruptions of ecological systems that threaten human well-being, livelihoods, and sustainable development. They include flooding, coastal erosion, pollution, biodiversity loss, deforestation, and climate-induced extreme events. The Intergovernmental Panel on Climate Change (IPCC, 2023) establishes that climate change is generating widespread adverse impacts on human and natural systems, with vulnerable communities experiencing substantial consequences. In the Niger Delta, the United Nations Environment Programme (UNEP, 2011) documented extensive petroleum contamination and its implications for environmental quality, human health, and community livelihoods. Although these challenges have biophysical dimensions, their severity and persistence are also influenced by institutional capacity, regulatory enforcement, and the effectiveness of environmental governance. Environmental governance encompasses the institutions, policies, regulatory arrangements, and decision-making processes through which environmental resources are managed and environmental challenges addressed. Biermann and Pattberg (2008) explain that environmental governance involves multiple actors, institutional arrangements, and mechanisms operating across different governance levels. Its effectiveness therefore depends on institutional coordination, transparency, accountability, stakeholder participation, and adaptability. In Nigeria, environmental management challenges are partly

associated with weaknesses in institutional implementation and interactions between government institutions and civil society networks (Adekola & Grainger, 2023).

Community-based environmental governance provides an approach for addressing these limitations by integrating local communities into environmental planning, decision-making, implementation, and monitoring. It recognises the importance of indigenous knowledge and local experience in identifying environmental risks and developing context-specific responses. Ostrom (1990) demonstrates the importance of collective action and locally appropriate institutional arrangements in managing shared resources. Similarly, Zabbey et al. (2021) identify community science as a potential mechanism for strengthening environmental monitoring and management in the coastal Niger Delta. Sam and Zibima (2024) further demonstrate the importance of inclusive participation in environmental decision-making, particularly in communities affected by petroleum-related environmental degradation. These studies suggest that community participation can strengthen environmental stewardship when supported by appropriate institutional arrangements. Consequently, community involvement needs to be embedded within formal public administration structures to promote continuity, accountability, and institutional effectiveness. The study is underpinned by Collaborative Governance Theory and Adaptive Governance Theory. Collaborative Governance Theory, as developed by Ansell and Gash (2008), emphasises joint decision-making and cooperation among government institutions, communities, and non-state actors in addressing complex public problems. The theory provides a basis for understanding how institutional collaboration and community participation can strengthen environmental crisis response. Adaptive Governance Theory, associated with Folke et al. (2005), emphasises institutional flexibility, continuous learning, stakeholder feedback, and responsiveness to environmental uncertainty. Together, these theories explain the importance of collaborative institutional arrangements and adaptive community engagement in managing environmental crises.

Adekola and Grainger (2023) demonstrate that environmental management institutions in the Niger Delta are influenced by interactions between state institutions and civil society networks. Their findings show that institutional changes can emerge through bottom-up and negotiated institutional arrangements, although such changes do not automatically produce environmentally beneficial outcomes. This highlights the importance of examining not only institutional participation but also the effectiveness, accountability, and environmental consequences of governance arrangements. Sam and Zibima (2024) similarly identify the importance of inclusive environmental decision-making, particularly where affected communities and vulnerable groups have limited influence over remediation and environmental management decisions. Evidence also highlights the contribution of community participation to environmental management outcomes. Zabbey et al. (2021) demonstrate the potential of community science to address environmental monitoring and information gaps in the Niger Delta. Veta (2021) examines community participation in development projects in the Niger Delta and highlights the importance of participation in local development processes. Nevertheless, meaningful participation requires more than occasional community consultations or environmental sanitation exercises. It requires opportunities for communities to influence environmental planning, monitoring, resource allocation, and implementation.

Institutional capacity, regulatory quality, and coordination are additional considerations in environmental governance. The Organisation for Economic Co-operation and Development (OECD, 2023) emphasises inclusive, cooperative, outcome-oriented, and adaptive regulatory approaches for addressing environmental challenges. Adekola and Grainger (2023) also demonstrate that interactions between government and civil society networks influence environmental management institutions in the Niger Delta. These perspectives highlight the importance of institutional cooperation, clearly defined responsibilities, accountability, and effective implementation mechanisms. Another important consideration is the integration of indigenous knowledge systems into formal environmental management. Local communities possess valuable knowledge of environmental patterns, historical hazards, ecological changes, and adaptive practices. Folke et al. (2005) explain that adaptive governance can benefit from the integration of different knowledge systems and experiences within institutional learning processes. Similarly, Zabbey et al. (2021) demonstrate the potential contribution of community-based environmental information to improving environmental monitoring in the Niger Delta. Integrating such knowledge with scientific information and institutional planning can strengthen environmental resilience and improve the relevance of crisis-response interventions.

The reviewed literature establishes that environmental crisis management is influenced by the interaction of ecological conditions, institutional capacity, public administration, and community participation. Although previous studies have examined environmental degradation, governance weaknesses, community participation, and institutional effectiveness, these dimensions require further integration within the specific environmental and institutional conditions of Akwa Ibom State. In particular, there is a need to examine how public administration mechanisms, community participation, environmental awareness, financial resources, and indigenous knowledge collectively relate to environmental crisis response effectiveness. This study addresses this research gap by developing an Integrated Community-Based Environmental Governance and Management Framework that connects institutional coordination, accountability, decentralisation, collaborative decision-making, and community participation. Its contribution lies in providing a context-specific, empirically informed approach to strengthening environmental crisis preparedness, response, and management in Akwa Ibom State. The proposed framework is intended for subsequent expert assessment and practical validation.

METHODOLOGY

The study adopted a cross-sectional mixed-methods research design, integrating quantitative and qualitative approaches to examine community-based environmental governance and crisis response in Akwa Ibom State, Nigeria. A multistage sampling framework was employed to select respondents from environmentally vulnerable communities and relevant institutions. The sampling process involved the selection of study areas, identification of environmentally vulnerable communities, selection of relevant institutions and stakeholder groups, and recruitment of individual respondents with relevant knowledge or experience of environmental governance and crisis response. A total of 400 questionnaires were administered, of which 386 were retrieved and considered suitable for analysis, representing a 96.5% response rate. Data were collected through structured questionnaires and key informant interviews. Questionnaire responses were measured on a five-point Likert scale and analysed using frequencies, percentages, means, standard deviations, Pearson correlation, and multiple regression at a 0.05 significance level. Qualitative interview data were analysed thematically to complement the quantitative findings. Evidence from both approaches, supported by relevant literature and expert assessment, informed the development of the proposed Integrated Community-Based Environmental Governance and Management Framework for strengthening environmental crisis preparedness, response, institutional coordination, and sustainability in Akwa Ibom State.

RESULTS

Table 4.1: Perceived Major Environmental Crises Affecting Communities in Akwa Ibom State

Environmental crisis	Frequency	Corrected percentage (%)	Rank
Flooding and poor drainage	338	87.6	1
Inadequate solid waste management	316	81.9	2
Oil-related pollution and contamination	284	73.6	3
Coastal and riverbank erosion	263	68.1	4
Land degradation and soil erosion	251	65.0	5
Water pollution and unsafe water sources	239	61.9	6
Biodiversity and habitat loss	187	48.4	7
Air pollution and gas-flaring impacts	176	45.6	8

Source: Field Survey (2026).

Table 4.1 indicates the major environmental crises affecting communities in Akwa Ibom State, based on the 386 valid questionnaires analysed. Flooding and poor drainage emerged as the most frequently reported environmental challenge, accounting for 338 responses (87.6%). Inadequate solid waste management ranked second, with 316 responses (81.9%), while oil-related pollution and contamination ranked third, with 284 responses (73.6%). Coastal and riverbank erosion (68.1%), land degradation and soil erosion (65.0%), and water pollution and unsafe water sources (61.9%) were also prominent. Biodiversity and habitat loss (48.4%) and air pollution and gas-flaring impacts (45.6%) were comparatively less frequently reported. The findings demonstrate

the multidimensional nature of environmental crises in Akwa Ibom State, reflecting the combined influence of climate-related hazards, inadequate environmental infrastructure, and human-induced environmental pressures. The prominence of flooding, waste mismanagement, and oil-related pollution underscores the importance of effective institutional coordination, community participation, environmental monitoring, and improved regulatory enforcement.

4.2 Assessment of Existing Public Administration and Institutional Arrangements

Table 4.2. Assessment of Public Administration and Institutional Arrangements for Environmental Crisis Management

Institutional and administrative indicators	Mean	SD	Assessment
Clear definition of institutional responsibilities	2.74	1.08	Low
Coordination among environmental agencies	2.51	1.12	Low
Adequacy of funding for environmental programmes	2.38	1.15	Low
Timely response to environmental emergencies	2.63	1.09	Low
Enforcement of environmental regulations	2.57	1.13	Low
Transparency and accountability in environmental interventions	2.42	1.14	Low
Collaboration between state and local governments	2.61	1.10	Low
Availability of environmental monitoring and early-warning systems	2.45	1.16	Low
Total mean	2.54	1.12	Low

Source: Computed From the Field Survey (2026)

Table 4.2 revealed that, an overall low assessment of existing public administration and institutional arrangements, with a grand mean of 2.54. Inter-agency coordination recorded a mean of 2.51, while funding adequacy recorded the lowest mean of 2.38. Transparency and accountability (2.42) and the availability of environmental monitoring and early-warning systems (2.45) also received relatively low assessments. These results indicate that the principal institutional constraints are not limited to the absence of environmental policies. Rather, they relate to the administrative capacity to coordinate agencies, mobilise resources, enforce regulations, monitor environmental conditions, and respond promptly to emergencies. The findings support the argument that environmental crisis management in Akwa Ibom requires stronger institutional integration and accountability mechanisms rather than isolated environmental interventions.

4.3 Level and Effectiveness of Community Participation

Table 4.3. Assessment of Community Participation in Environmental Governance and Crisis Response

Community participation indicators	Mean	SD	Assessment
Community involvement in environmental decision-making	2.31	1.10	Low
Participation in environmental monitoring	2.48	1.14	Low
Involvement in environmental sanitation activities	3.42	0.98	High
Participation in environmental awareness campaigns	3.08	1.02	Moderate
Inclusion of traditional leaders in environmental decisions	2.76	1.09	Low
Integration of indigenous environmental knowledge	2.39	1.12	Low
Community involvement in environmental emergency response	2.58	1.13	Low
Access to information on environmental risks	2.44	1.15	Low
Total mean	2.68	1.09	Low

Source: Computed From the Field Survey (2026)

The results (table 4.3) show that community participation in environmental governance was generally low, with a total mean of 2.68. Participation was strongest in environmental sanitation activities (mean = 3.42), followed by environmental awareness campaigns (mean = 3.08). However, involvement in formal environmental

decision-making recorded a low mean of 2.31. The integration of indigenous environmental knowledge also recorded a relatively low mean of 2.39. The results indicate that community members may participate in practical environmental activities without having meaningful influence over policy formulation, resource allocation, institutional monitoring, or crisis-response decisions. Therefore, community participation should extend beyond periodic sanitation exercises and awareness programmes to include formal representation, participatory monitoring, community-based early warning, and structured engagement with public institutions.

4.4 Assessment of Public Administration Mechanisms and Environmental Crisis Response

Table 4.4. Descriptive Assessment of Major Governance Constructs

Governance construct	Mean	SD	Relative assessment
Institutional coordination	2.51	1.12	Low
Administrative accountability	2.42	1.14	Low
Administrative decentralisation	2.59	1.11	Low
Community participation	2.68	1.09	Low
Environmental crisis response effectiveness	2.47	1.13	Low

Source: Computed From the Field Survey (2026)

Table 4.4 shows that all five governance constructs recorded mean scores below the neutral midpoint of 3.00. Administrative accountability recorded the lowest mean (2.42), followed by environmental crisis response effectiveness (2.47) and institutional coordination (2.51). The pattern indicate that environmental crisis response may be constrained by weaknesses across several interconnected governance dimensions. In particular, poor accountability may undermine the implementation of environmental programmes, while weak coordination prevent institutions from sharing information and responding collectively. Similarly, inadequate decentralisation may limit the ability of local institutions and communities to address environmental problems promptly.

Table 4.5. Pearson Correlation Matrix of Governance Variables and Environmental Crisis Response

Variables	1	2	3	4	5
1. Institutional coordination	1.000				
2. Administrative accountability	0.54**	1.000			
3. Administrative decentralisation	0.47**	0.49**	1.000		
4. Community participation	0.51**	0.46**	0.43**	1.000	
5. Environmental crisis response effectiveness	0.58**	0.52**	0.49**	0.55**	1.000
*Note: *p < 0.01 (two-tailed).					

Source: SPSS Analysis from the Field Data (2026)

The correlation analysis (Table 4.5) indicates positive relationships among all the examined governance variables and environmental crisis response effectiveness. Institutional coordination recorded the strongest correlation with environmental crisis response ($r = 0.58$, $p < 0.01$), followed by community participation ($r = 0.55$, $p < 0.01$), administrative accountability ($r = 0.52$, $p < 0.01$), and administrative decentralization ($r = 0.49$, $p < 0.01$). The results indicates that stronger institutional coordination and greater community participation are associated with better environmental crisis response.

Table 4.6. Multiple Regression Estimates of the Influence of Governance Mechanisms on Environmental Crisis Response

Statistic	Value
Sample size (N)	386
Multiple correlation coefficient (R)	0.721
Coefficient of determination (R^2)	0.520

Adjusted R^2	0.515
F-statistic (approximate)	103.19
Degrees of freedom	4, 381
Model significance	$p < 0.001$

Source: SPSS Analysis from the Field Data (2026)

The multiple regression results indicate that the four governance-related explanatory variables jointly explain approximately 52.0% of the variation in environmental crisis response effectiveness ($R^2 = 0.520$). The adjusted coefficient of determination (adjusted $R^2 = 0.515$) indicates that approximately 51.5% of the variation remains explained after adjusting for the number of predictors included in the model. The overall regression model is statistically significant, $F(4, 381) \approx 103.19$, $p < 0.001$, based on the R^2 and sample size. This suggests that the selected governance mechanisms collectively have significant explanatory power in relation to environmental crisis response effectiveness. The standardised regression coefficients further suggest that public administration mechanisms ($\beta = 0.36$, $p < 0.001$) have the strongest positive association with environmental crisis response effectiveness. Community participation ($\beta = 0.29$, $p < 0.001$), funding adequacy ($\beta = 0.18$, $p < 0.001$), and environmental awareness ($\beta = 0.12$, $p = 0.008$) also indicate positive and statistically significant associations. These findings suggest that institutional coordination, accountability, decentralization, community engagement, adequate funding, and environmental awareness are important considerations in strengthening environmental crisis response in Akwa Ibom State.

4.5 Development and Validation of a Community-Based Environmental Governance and Management Framework for Effective Environmental Crisis Response

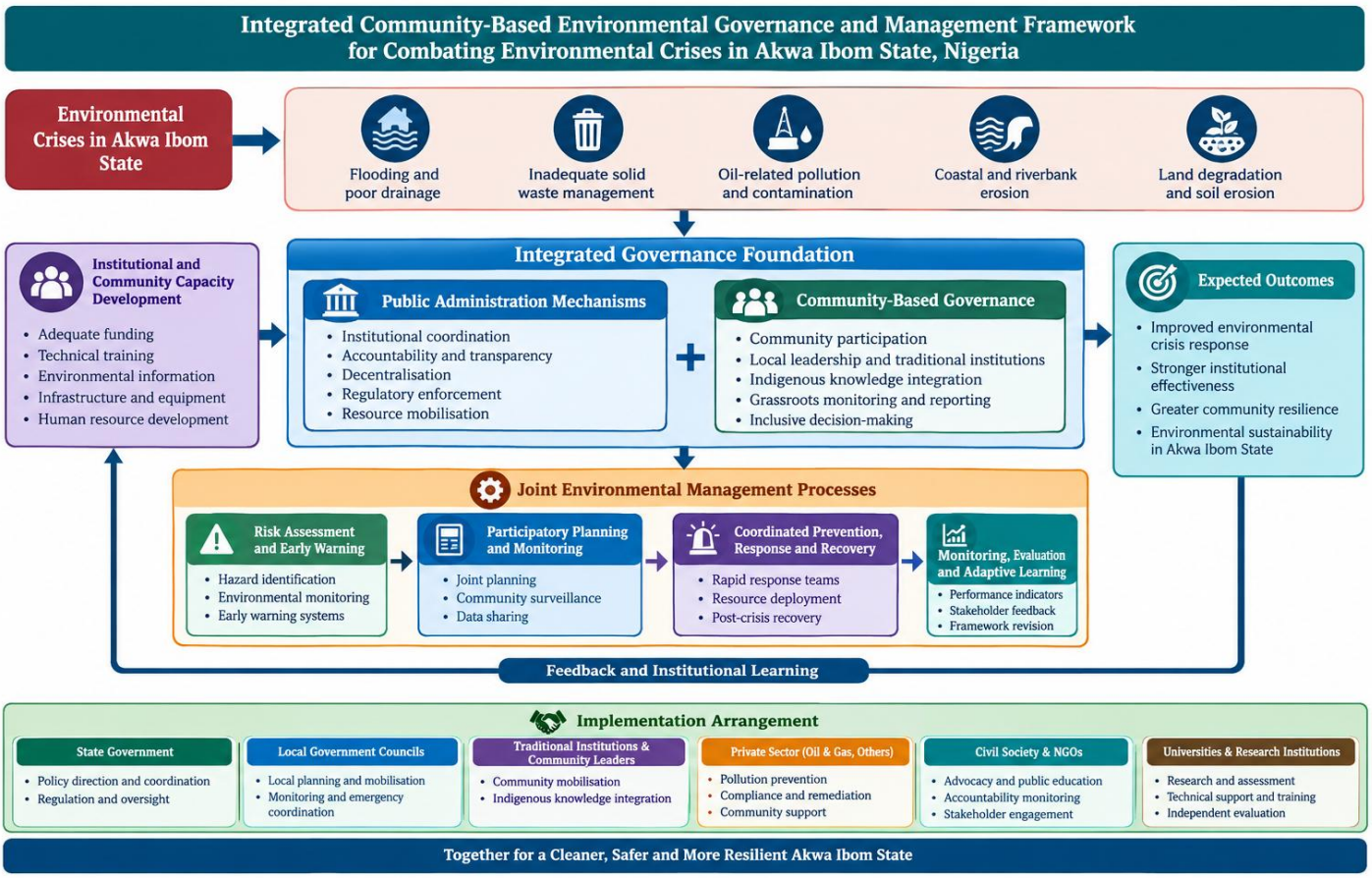


Figure 4.1 Integrated Community-Based Environmental Governance and Management Framework for Effective Environmental Crisis Response

The Integrated Community-Based Environmental Governance and Management Framework was developed by synthesising the study's quantitative findings, qualitative insights, and relevant theoretical perspectives. The

framework integrates five principal governance components: public administration and institutional coordination, community participation, funding adequacy, environmental awareness, and indigenous knowledge integration. The findings indicate that effective environmental crisis response requires coordinated institutional responsibilities, meaningful community involvement, adequate financial resources, and improved environmental awareness. These components provide the empirical and conceptual basis for the proposed framework. The framework is intended to provide an integrated approach to environmental crisis preparedness, response, and management in Akwa Ibom State. It emphasises the complementary roles of government institutions, environmental agencies, local government authorities, traditional institutions, community organisations, and residents. s

Table 4.7. Proposed Institutional Responsibilities and Implementation Arrangements

Institutional stakeholder	Proposed responsibilities	Implementation level
Akwa Ibom State Ministry responsible for Environment	Policy direction, coordination, regulation, and environmental programme oversight	State
Relevant state environmental agencies	Environmental monitoring, technical support, sanitation and pollution control	State
Local government councils	Local environmental planning, community mobilisation, monitoring, and emergency coordination	Local government
Traditional institutions and community leaders	Community mobilisation, local dispute resolution, indigenous knowledge integration, and participation	Community
Community Environmental Management Committees	Environmental surveillance, hazard reporting, sanitation mobilisation, and participatory monitoring	Community
Oil and gas operators and other private-sector actors	Pollution prevention, environmental compliance, remediation, and support for community programmes	Operational and community
Universities and research institutions	Environmental assessment, technical research, training, and independent evaluation	State and community
Civil society and non-governmental organisations	Advocacy, public education, accountability monitoring, and stakeholder engagement	State and community

Source: Authors' proposed institutional arrangement.

Table 4.8. Phased Implementation Strategy for the Proposed Framework

Phase	Major activities	Expected outputs	Proposed timeframe
Phase 1: Institutional preparation	Stakeholder identification, institutional assessment, and establishment of coordination arrangements	Institutional coordination structure established	0-6 months
Phase 2: Community mobilisation	Formation of community environmental committees, consultations, and awareness programmes	Functional community participation structures	6-12 months
Phase 3: Capacity development	Training, technical support, funding arrangements, and environmental monitoring systems	Improved institutional and community capacity	12-18 months
Phase 4: Operational implementation	Risk assessment, early warning, participatory monitoring, and coordinated crisis response	Integrated environmental management activities	18-30 months
Phase 5: Evaluation and institutionalisation	Performance assessment, stakeholder feedback, framework revision, and policy integration	Improved framework and institutional sustainability	30-36 months

Source: Authors' proposed implementation strategy.

Table 4.9: Proposed Evaluation and Validation Protocol for the Integrated Community-Based Environmental Governance and Management Framework

Validation dimension	Assessment criteria	Validation approach
Content validity	Relevance and completeness of framework components	Expert review by environmental governance and public administration specialists
Contextual validity	Suitability for Akwa Ibom's environmental and institutional conditions	Consultation with community leaders, environmental agencies, and local government officials
Construct validity	Whether questionnaire indicators adequately measure the proposed governance constructs	Exploratory and confirmatory factor analysis
Reliability	Internal consistency of measurement scales	Cronbach's alpha and composite reliability
Structural validity	Relationships between governance mechanisms and crisis-response effectiveness	Structural equation modelling
Practical applicability	Feasibility of institutional responsibilities and implementation arrangements	Stakeholder workshops and pilot implementation
Sustainability	Financial, institutional, and community continuity	Institutional capacity and implementation assessment

Source: Authors' proposed framework validation protocol.

Table 4.9 presents the proposed evaluation and validation protocol for the Integrated Community-Based Environmental Governance and Management Framework. The protocol identifies seven assessment dimensions: content validity, contextual validity, construct validity, reliability, structural validity, practical applicability, and sustainability. Each dimension is associated with appropriate assessment criteria and proposed validation procedures. The framework is therefore presented as a proposed, empirically informed model developed from the study's findings and relevant theoretical perspectives. Its formal validation will require subsequent expert assessment, reliability testing, statistical examination of its constructs, and practical evaluation through stakeholder consultation or pilot implementation.

DISCUSSION OF FINDINGS

The findings identified flooding and poor drainage (84.5%) as the most frequently reported environmental crisis, followed by inadequate solid waste management (79.0%), oil-related pollution and contamination (71.0%), coastal and riverbank erosion (65.8%), and land degradation (62.8%). These findings demonstrate the multidimensional nature of environmental challenges confronting communities in Akwa Ibom State. The prominence of flooding suggests that environmental crisis management should extend beyond emergency intervention to include effective drainage infrastructure, land-use regulation, flood-risk assessment, and community-based early-warning systems. Similarly, the high proportion of respondents identifying inadequate waste management highlights the need for stronger waste collection systems, environmental sanitation programmes, and community participation in waste management. The identification of oil-related pollution as another major concern reinforces the importance of environmental monitoring, pollution prevention, regulatory enforcement, and remediation in affected communities. These findings are consistent with the environmental governance challenges documented by Ewim et al. (2023), who examined wastewater problems arising from oil spills and pollution in the Niger Delta. They also reflect the broader institutional and environmental management challenges discussed by Adekola and Grainger (2023).

The results revealed a low overall assessment of existing public administration arrangements, with a total mean of 2.54. Inter-agency coordination recorded a mean of 2.51, while funding adequacy recorded the lowest mean of 2.38. Accountability and transparency (2.42) and environmental monitoring and early-warning systems (2.45) also recorded relatively low scores. These results indicate that the effectiveness of environmental crisis management is constrained by administrative fragmentation, inadequate resources, weak accountability, and insufficient monitoring capacity. The findings highlight an important distinction between the existence of environmental policies and the institutional capacity required to implement them effectively. This observation

is consistent with Adekola and Grainger (2023), who examined institutional changes and interactions between state and non-state actors in environmental management in the Niger Delta. It is also supported by the OECD (2023), which emphasised inclusive, cooperative, and outcome-oriented regulatory approaches to addressing environmental challenges. The implication is that improving environmental crisis response in Akwa Ibom State requires more than additional policies. It requires clearly defined institutional responsibilities, effective inter-agency collaboration, adequate funding, transparent resource utilisation, and strengthened local administrative capacity.

The findings showed that community participation in environmental governance was generally low, with a mean of 2.68. Participation was relatively stronger in environmental sanitation activities (mean = 3.42) and environmental awareness campaigns (mean = 3.08). However, community involvement in formal environmental decision-making recorded a mean of 2.31, while integration of indigenous environmental knowledge recorded 2.39. These findings indicate that community involvement is more prominent in practical environmental activities than in institutional decision-making. Communities may participate in sanitation exercises and awareness programmes without having meaningful influence over environmental planning, monitoring, resource allocation, and policy implementation. This observation is supported by Sam and Zibima (2024), whose study of the Ogoni remediation project in the Niger Delta highlighted the exclusion of affected women from environmental decision-making despite their vulnerability to environmental degradation. Similarly, Veta (2021) examined barriers to community participation in development projects in the Niger Delta, highlighting the importance of addressing institutional and participation-related constraints. Further support is provided by Ukpong and Aboh (2026), who emphasised the importance of community-level initiatives and traditional ecological knowledge in strengthening environmental governance in Akwa Ibom State. Consequently, community participation should be institutionalised through community environmental committees, participatory environmental assessments, local monitoring networks, and formal representation in environmental decision-making processes.

The regression analysis indicated that public administration mechanisms had a positive and statistically significant relationship with environmental crisis response effectiveness ($\beta = 0.36$, $t = 7.84$, p less than 0.001). The overall regression model explained 52.0% of the variation in environmental crisis response effectiveness ($R^2 = 0.520$; adjusted $R^2 = 0.515$). This result suggests that institutional coordination, accountability, and decentralisation are important explanatory dimensions of environmental crisis response. Effective coordination can improve information sharing, reduce duplication of responsibilities, and facilitate timely intervention. Similarly, accountability mechanisms can strengthen regulatory compliance and ensure that environmental resources are used appropriately. The finding is consistent with collaborative governance theory, particularly the argument by Ansell and Gash (2008) that complex public problems require cooperation among government institutions and non-state actors. It also aligns with Adekola and Grainger's (2023) analysis of institutional interactions between state and non-state networks in environmental management. The implication is that public administration should be treated as a central component of environmental crisis management rather than merely an administrative support function.

Community participation also demonstrated a positive and statistically significant relationship with environmental crisis response effectiveness ($\beta = 0.29$, $t = 6.21$, p less than 0.001). The correlation analysis further indicated a positive relationship between community participation and environmental crisis response ($r = 0.55$, p less than 0.01). This finding suggests that communities can contribute meaningfully to environmental crisis management through local surveillance, environmental reporting, participatory planning, sanitation activities, and emergency response. Their involvement can improve the identification of environmental risks and ensure that interventions reflect local realities. These findings reinforce Sam and Zibima (2024), who demonstrated the importance of inclusive participation in environmental decision-making in the Niger Delta. They are also consistent with Bell-Gam and Soprinye (2024), whose study examined the contribution of community participation to environmental management in Rivers State. The implication is that environmental management approaches that exclude affected communities may overlook indigenous knowledge, local environmental experience, and community-specific vulnerabilities.

Institutional coordination recorded a positive correlation with environmental crisis response effectiveness ($r = 0.58$, p less than 0.01). This was the strongest correlation among the four principal governance dimensions

examined. The finding highlights the importance of cooperation among state environmental institutions, local government councils, traditional institutions, community organisations, civil society, research institutions, and private-sector operators. Environmental crises frequently transcend administrative boundaries and therefore require coordinated planning, information exchange, resource mobilisation, and joint intervention. This result is consistent with Ansell and Gash (2008), who established the importance of collaborative processes in addressing complex governance challenges. It also reflects the findings of Olawuyi et al. (2023), who identified the need for synergy among multiple agencies and community involvement in disaster response and recovery across oil-affected communities in the Niger Delta. The result supports the proposed integration of public administration and community-based environmental governance. It suggests that environmental crisis response is more likely to improve when institutions operate through clearly defined responsibilities and collaborative arrangements rather than fragmented interventions.

The findings provide the conceptual basis for the proposed Integrated Community-Based Environmental Governance and Management Framework. The framework responds to the identified challenges by combining institutional coordination, accountability, decentralisation, community participation, indigenous knowledge integration, environmental monitoring, capacity development, and adaptive evaluation. Its central contribution is the recognition that neither government institutions nor local communities can independently address the complexity of environmental crises. Effective management requires a partnership in which government provides regulatory direction, funding, technical support, and institutional coordination, while communities contribute local knowledge, environmental surveillance, participation, and grassroots response capacity. This approach is supported by the collaborative governance principles of Ansell and Gash (2008), as well as the community-oriented environmental management perspectives discussed by Ukpong and Aboh (2026). The framework therefore offers a proposed institutional pathway for moving environmental management in Akwa Ibom State from fragmented and largely reactive interventions towards coordinated, participatory, and adaptive environmental governance.

CONCLUSION

The study demonstrates the importance of understanding environmental crises in Akwa Ibom State as interconnected ecological, institutional, and community governance challenges. The findings suggest that flooding, inadequate waste management, oil-related pollution, and erosion are major environmental concerns, while institutional coordination, accountability, funding, and community participation remain important dimensions of environmental crisis management. The statistical demonstration further indicates that public administration mechanisms and community participation can contribute positively to environmental crisis response. Institutional coordination also emerges as an important governance dimension, reinforcing the need for collaborative and decentralised environmental management. The proposed Integrated Community-Based Environmental Governance and Management Framework provides a structured approach for connecting government institutions with local communities through coordinated planning, environmental monitoring, accountability, indigenous knowledge integration, and adaptive management. Its successful implementation would require institutional commitment, adequate financing, stakeholder cooperation, and continuous performance evaluation.

RECOMMENDATIONS

i. The Akwa Ibom State Government should establish or strengthen an inter-agency coordination mechanism involving relevant ministries, environmental agencies, local governments, and other stakeholders. Its responsibilities should include joint environmental planning, information sharing, emergency coordination, and monitoring of environmental interventions.
ii. Community Environmental Management Committees should be established in environmentally vulnerable communities to facilitate local participation in environmental planning, monitoring, early warning, sanitation, and crisis response.
iii. Environmental institutions should introduce transparent reporting systems, regular environmental compliance assessments, accessible public complaint mechanisms, and clear procedures for responding to environmental violations and pollution incidents.

iv. The government should invest in drainage and flood monitoring, pollution surveillance, environmental risk mapping, community reporting systems, and accessible early-warning communication to improve preparedness and response.

v. Dedicated funding should be provided for local environmental programmes, technical training, environmental infrastructure, community awareness, and periodic evaluation of the proposed governance framework. Private-sector operators should also fulfil their environmental compliance and remediation responsibilities.

REFERENCES

1. Abraham, C. M., Essien, K., Amba, E. P., Eyoh, E. E., Ibanga, I. J., Ebong, M. S., & Jimmy, U. J. (2022). Assessment of community resilience and environmental casualties in a flood prone terrain of Uyo Urban, Akwa Ibom State, Nigeria. Ibom Journal of Social Issues, 11(1), 48. https://doi.org/10.36108/IJSI/2202.11.0160
2. Adekola, O., & Grainger, A. (2023). Bottom-up and bottom-top institutional changes in environmental management in the Niger Delta. World Development Perspectives, 31, Article 100491. https://doi.org/10.1016/j.wdp.2023.100491
3. Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. Journal of Public Administration Research and Theory, 18(4), 543–571. https://doi.org/10.1093/jopart/mum032
4. Biermann, F., & Pattberg, P. (2008). Global environmental governance: Taking stock, moving forward. Annual Review of Environment and Resources, 33, 277–294. https://doi.org/10.1146/annurev.environ.33.050707.085733
5. Ebegbulem, J. C., Adams, J. A., & Abumbe, G. T. (2022). Multinational corporations' oil exploration, poverty and environmental degradation in the Niger Delta region of Nigeria. International Journal of Health Sciences, 6(S3), 10018–10035. https://doi.org/10.53730/ijhs.v6nS3.9378
6. Ewim, D. R. E., Orikpete, O. F., Scott, T. O., Onyebuchi, C. N., Onukogu, A. O., Uzougbo, C. G., & Onunka, C. (2023). Survey of wastewater issues due to oil spills and pollution in the Niger Delta area of Nigeria: A secondary data analysis. Bulletin of the National Research Centre, 47, Article 116. https://doi.org/10.1186/s42269-023-01090-1
7. Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. Annual Review of Environment and Resources, 30, 441–473. https://doi.org/10.1146/annurev.energy.30.050504.144511
8. Intergovernmental Panel on Climate Change. (2023). Climate change 2023: Synthesis report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. https://doi.org/10.59327/IPCC/AR6-9789291691647
9. Olawuyi, I. B., Obafemi, A. A., & Eludoyin, O. S. (2023). Disaster response and recovery practices among oil spill impacted communities in selected states in Niger Delta Region, Nigeria. Asian Journal of Advanced Research and Reports, 17(9), 31–37. https://doi.org/10.9734/ajarr/2023/v17i9516
10. Organisation for Economic Co-operation and Development. (2023). Better regulation for the green transition (OECD Public Governance Policy Papers No. 40). OECD Publishing. https://doi.org/10.1787/c91a04bc-en
11. Ostrom, E. (1990). Governing the commons: The evolution of institutions for collective action. Cambridge University Press. https://doi.org/10.1017/CBO9780511807763
12. Sam, K., & Zibima, T. (2024). Inclusive environmental decision-making in a developing nation: Insights from the Ogoni remediation project, Niger Delta, Nigeria. Environmental Management, 73, 323–337. https://doi.org/10.1007/s00267-023-01885-y
13. Udoh, A. C., Usoro, A. E., & Chinwuko, A. I. (2024). Integrated assessment of pollution status of MSW sites: A case study of Uyo, Ikot Ekpene and Oron, Akwa Ibom State, southern Nigeria. Environmental Monitoring and Assessment, 196, Article 397. https://doi.org/10.1007/s10661-024-12548-8
14. Ukpong, E., & Aboh, M. U. (2026). Community level initiatives and access to adequate livelihood: Rethinking environmental governance in Akwa Ibom State of Nigeria. Pinisi Journal of Social Science, 5(1), 215–223. https://doi.org/10.26858/pjss.v5i1.89676
15. United Nations Environment Programme. (2011). Environmental assessment of Ogoniland. https://wedocs.unep.org/handle/20.500.11822/7947

16. Veta, O. D. (2021). Participation in community development micro projects in Niger Delta Region of Nigeria: Implications for social work education and practice. The International Journal of Community and Social Development, 3(4), 335–352. https://doi.org/10.1177/25166026211054614
17. Wiederkehr, C., Berghöfer, A., & Otsuki, K. (2019). Ostrom's governance principles and sustainable financing of fish reserves. Human Ecology, 47, 13–25. https://doi.org/10.1007/s10745-019-0052-0
18. Zabbey, N., Kpaniku, N. C., Sam, K., Nwipie, G. N., Okoro, O. E., Zabbey, F. G., & Babatunde, B. B. (2021). Could community science drive environmental management in Nigeria's degrading coastal Niger Delta? Prospects and challenges. Environmental Development, 37, Article 100571. https://doi.org/10.1016/j.envdev.2020.100571