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Collaborative Environmental Management: A Case Study Research of Stakeholders' Collaboration in the Nigerian Oil-producing Region

Favour Makuochukwu Orji, Yingkui Zhao

Abstract—A myriad of environmental issues face the Nigerian industrial region, resulting from; oil and gas production, mining, manufacturing and domestic wastes. Amidst these, much effort has been directed by stakeholders in the Nigerian oil producing regions, because of the impacts of the region on the wider Nigerian economy. Although collaborative environmental management has been noted as an effective approach in managing environmental issues, little attention has been given to the roles and practices of stakeholders in effecting a collaborative environmental management framework for the Nigerian oil-producing region. This paper produces a framework to expand and deepen knowledge relating to stakeholders aspects of collaborative roles in managing environmental issues in the Nigeria oil-producing region. The knowledge is derived from analysis of stakeholders' practices – studied through multiple case studies using document analysis. Selected documents of key stakeholders – Nigerian government agencies, multi-national oil companies and host communities, were analyzed. Open and selective coding was employed manually during document analysis of data collected from the offices and websites of the stakeholders. The findings showed that the stakeholders have a range of roles, practices, interests, drivers and barriers regarding their collaborative roles in managing environmental issues. While they have interests for efficient resource use, compliance to standards, sharing of responsibilities, generating of new solutions, and shared objectives; there is evidence of major barriers and these include resource allocation, disjointed policy, ineffective monitoring, diverse socio- economic interests, lack of stakeholders' commitment and limited knowledge sharing. However, host communities hold deep concerns over the collaborative roles of stakeholders for economic interests, particularly, where government agencies and multi-national oil companies are involved. With these barriers and concerns, a genuine stakeholders' collaboration is found to be limited, and as a result, optimal environmental management practices and policies have not been successfully implemented in the Nigeria oil-producing region. A framework is produced that describes practices that characterize collaborative environmental management might be employed to satisfy the stakeholders' interests. The framework recommends critical factors, based on the findings, which may guide a collaborative environmental management in the oil producing regions. The recommendations are designed to re-define the practices of stakeholders in managing environmental issues in the oil producing regions, not as something wholly new, but as an approach essential for implementing a sustainable environmental policy. This research outcome may clarify areas for future research as well as to contribute to industry guidance in the area of collaborative environmental management.

Keywords—Collaborative environmental management framework, document analysis, case studies, multinational oil companies, Nigerian oil-producing region, stakeholders analysis.

I. INTRODUCTION

A. Collaborative Environmental Management in the Oil-Producing Region

COLLABORATIVE environmental management (CEM) has been considered by various studies, e.g. [1], [2], as an instrument for an effective environmental management that can be applied to understand roles and practices of stakeholders while exploring their cultural, political, and economic interests. CEM provides the drivers that facilitate avenues for collaborative responsibility in managing environmental issues [3], [4]. Since the development of 1992 Agenda 21 of the United Nations Conference on Environment and Development (UNCED), which clearly advocates that stakeholders should be conscious of sustainable environment, the need for effective collaborative roles and practices becomes inevitable in managing environmental issues. Reference [5] refers to the concept of environmental management as the administrative and operational activities with an objective of obtaining a sustainable environment. This task of managing environment, sometimes considered impossible, is a collective responsibility which demands understanding of stakeholders that affect and are affected by the environment [6].

Reference [7] suggested that it is important that stakeholders must collaborate, and their strategies must be designed collaboratively in managing environmental issues. Recent studies, e.g. [8], [9] offer insights into how collaborative environmental management might be implemented. However, some studies [10], [11] have focused on limited aspects of collaborative roles implementation but a framework has yet to be offered that integrates the roles and practices of stakeholders in the development of CEM in an oil producing region. For example, [10] tends to base their development of CEM frameworks on existing organizational culture and policy, such that developed frameworks stress the roles of stakeholders and their concerns. Yet these frameworks vary on their emphasis on the roles of stakeholders for either contributing to CEM or offering feedback to improve the development process.

This research attempts to bridge these gaps in the body of research by drawing a different research design. We used

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stakeholders' analysis to synthesize roles and practices of stakeholders to identify their interests, drivers and barriers. The outcome of the analysis produces a framework for effective CEM in the oil-producing regions. This outcome was derived in two strands: First, by identifying environmental management practices for stakeholders' collaboration in world's oil producing regions; second, by investigating stakeholders' roles and practices of CEM on environmental issues in the Nigeria oil-producing region. Second, while appreciating the subjective nature of this kind of grounded theory, constant comparative analysis was used as part of investigation of the practices of selected cases – Nigerian government agencies, multinational oil companies (MNOCs) and host communities.

The rest of this paper is structure as follows; the rest of this section provides understanding of the roles and practices through stakeholder analysis and in the case of the Nigerian oil-producing region. Section II looks into research design and how the document analysis was conducted. Section III provides the research results and discussion. Section IV highlights the recommendations of collaborative environmental management framework, and Section V concludes this paper while identifying the research limitation.

B. Stakeholders Analysis: Understanding Stakeholders' Roles and Practices

Stakeholder theorists, e.g. [12], [13] categorized stakeholders in the context of environmental management as polluters and victims, as from the notion of whom/what affects or is affected, to a notion of national capital investment, externalities, interests and property rights. In the case of the Nigerian oil-producing region (NOPR), the stakeholders (e.g. government agencies (NGAs), multinational oil companies (MNOCs) and host communities) have to contend with increasing environmental issues and the need for effective management has become acute [14]. However, there are debates [15], [16] about the legitimacy of the stakeholders and the best way for them to collaborate. Reference [17] suggested that stakeholder analysis can be used to understand how stakeholders can collaborate effectively to facilitate implementation of decisions and objectives. Hence, it is important, as suggested by [18], to understand the stakeholders' need, their roles, practices, priorities, and interests in the context of managing environmental issues. In addition, [17] suggests that such stakeholders' analysis is pertinent in environmental management; particularly in the case of the NOPR where there is need for a rights, influence, power sharing and priorities to be reached between the stakeholders. The need for stakeholder analysis is an essential tool in this current research which requires development of a CEM framework through the synthesis of best environmental management practices. It is important that the needs of the stakeholders are explored, in relation to their roles and practices, to understand how the best global environmental management practices can be applied in the NOPR. However, [19] advocates that stakeholder analysis may not lead to immediate solutions to CEM because of potential barriers in

appreciating stakeholders' views, but can be used as a tool to facilitate negotiation. In this way, stakeholders' analysis can facilitate a constructivist approach to CEM that identifies different perspectives of the practical and priority needs of the stakeholder that can be interpreted.

Reference [19] suggested various analytical methods for stakeholder analysis in relation to their collaboration. Reference [20] recommends that analytical approaches should be applied based on the analysis of the phenomenon in question and 'embedded in some theoretical perspectives of how the systems functions'. This can be used to illustrate stakeholder's levels of interest and influence, cooperation and competition, collaboration and threat, urgency, legitimacy and influence, and classifying them according to the degree they affect or are affected by environmental issues or their actions [21]. Other researchers [22], [23] advocate that stakeholders should be classified into key players, context setters and subjects. In this current research, the key players are government agencies and oil companies who are actively interested and have huge influence on the management of environmental issues in the NOPR.

Subjects are communities whom by definition have high interest and can be supportive but lack capacity like resources for impact. However, [19] cautioned that communities can be influential by forming alliances with other stakeholders. Reference [24] suggests where the main concern of the stakeholders is issues (as it is in this case) of costs, planning and implementation, all the essential stakeholders may need to be explored; but, priority should be given to the key stakeholders who are most likely to impact on the functioning of environmental projects or institutions who have contributed their interests, influence and resources.

C. Managing Environmental Issues: A Case of the Nigerian Oil Producing Region

Reference [25] defines the environment as "the natural and social conditions surrounding all mankind, and including future generations". Through this concept of environment, the meaning of man's impact on the environment to ensure a sustainable environmental management is redefined [26]. This research appreciates that a sound management framework that supports the goal of sustainable environmental management should be conceptualized on the collaborative management of natural resources and their outputs. This opinion could be transferable to the management of environmental resources and the emerging issues in Nigeria Oil Producing Region. Since the discovery of oil in the Nigeria, the federal government has enacted various policies to manage environmental issues in the NOPR. In 2000, several NGAs (e.g. Niger Delta Development Commission (NDDC) and Nigeria Federal Ministry of Environment) were established. After evaluating the roles and practices of these agencies, [27] suggest that they have failed to meet their goals because of major challenges: fragmented environmental management. Reference [28] suggests that specific policies for CEM are deficient because they are characterized by uncoordinated sectorial legal regimes. Consequently, [29] suggests that

stakeholders that implement the policies often find themselves in regulatory competition because of overlapping roles and vague responsibilities. In addition, lack of involvement of host communities by the conveners and initiators of collaborative roles of managing environmental issues in the NOPR hinders/delays policy implementation [30]. The host communities tend to embrace 'compensation packages' and 'neglect/ignore' the environmental issues, as they 'see' environmental issues as an opportunity to enrich themselves, or responsibilities of MNOCs and NGAs [31]. Consequently, MNOCs and NGAs may not, single-handedly, resolve the impacts of environmental issues for effective environmental management, as the community needs to be involved in making decisions on environmental activities concerning them. Amidst these barriers, other researchers (e.g. [32]-[34]) advocate that collective efforts of stakeholders in managing environmental issues may not provide effective environmental management in the NOPR without comprehensive analysis of the roles of stakeholders. The question, however, is how can stakeholders work together effectively, amidst the aforementioned challenges to achieve an effective environmental management in the NOPR? The answer to this question necessitates the need for this study to develop a CEM framework, grounded with stakeholder analysis, which expands and deepens how stakeholders related to one another in relation to their interests, responsibilities, and practices in managing environmental issues in the NOPR.

The stakeholders need to have genuine involvement, that their interests are vital and included in relevant framework and that they are active partners in environmental management policies [21]. In developing such a framework, it is important that it is comprehensive and placed in the context of the NOPR. This requires the establishment of a more favorable platform for stakeholder's engagement through effective CEM. Reference [32] advocates that a framework for effective environmental management issues in the NOPR should focus on two key issues: integration of stakeholder collaboration in decision-making processes and recommendations for management alternatives.

As the Nigerian economy, which is dependent on the export earnings from petroleum resources, provides Nigeria with an estimated annual \$ 59 billion in gross revenue. For this reason, the case of environmental issues in the NOPR should be considered important and warrant specific investigation.

II. RESEARCH METHODOLOGY AND DESIGN

A. Qualitative Case Study Design

Reference [36] suggests that qualitative research can offer a researcher a theory grounded on experiences – the in-depth world view – of those likely to be affected by a policy decision or thought to be part of the problem. Reference [37] suggests that a qualitative case study approach is useful to provide an in-depth explanation when phenomenon under investigation has been given little attention. Moreover, this is case for this study, as little research has been done on investigation of the roles and practices of stakeholders'

collaboration in managing environmental issues in the Nigerian oil- producing region (NOPR). As part of grounded theory, multiple case studies of stakeholders – those with interests in managing environmental issues in the NOPR, were carried out through literature review and document analysis. As an exploratory research, document analysis was designed and applied by situating stakeholders in relation their roles with their subjective interpretation of environmental management issues at the centre. In doing so, emphasis was placed on investigating their practices. Reference [38] advocates that only by adopting an interactive and interpretivist status and by occupying a constructive role, may research of this nature look into environmental management culture to produce expected research outcomes.

The inductive nature of this research seeks to produce a framework derived from outcome of reviewed best environmental management practices for stakeholders' collaboration in the world's oil producing regions. The review was done with particular regard to stakeholder analysis as a means to provide the theoretical basis for multiple case studies of selected stakeholders [39]. Case studies were selected using theoretical sampling with particular regards to stakeholders' organizations: Nigeria government agencies (NGAs), multi-national oil companies (MNOCs) and host communities, whom represent main stakeholders and have a strong influence based on their efforts in collaborative environmental management in the NOPR. NGAs are major agencies used by Nigeria federal government in managing environmental issues in the NOPR [40]. The MNOCs (e.g. Shell, Chevron, Mobil and AGIP) were chosen because they account for more than 75 per cent of operation in the NOPR [41]. The MNOCs have experience in CEM, as they have had to respond to several environmental management-related crises in the NOPR [42]. Communities (e.g. Akwa-Ibom, Bayelsa, Delta and Rivers) were selected because of their oil land ownership rights which produce 80 per cent of oil in the NOPR [28].

B. Document Analysis

The method of analysis is based on Richie and Spencer's Framework (RSF) [43]. This involved five stages: familiarization and selection; identifying a thematic framework; indexing and charting; mapping; and interpretation. In essence, documented comments and views of stakeholders regarding their collaborative roles in managing environmental issues in the NOPR were captured through systematic process and integrated into an analytical or pictorial schema. Accordingly, this supports the choice of RSF as a document analysis technique, particularly for the investigation of written statements and documented evidence [44].

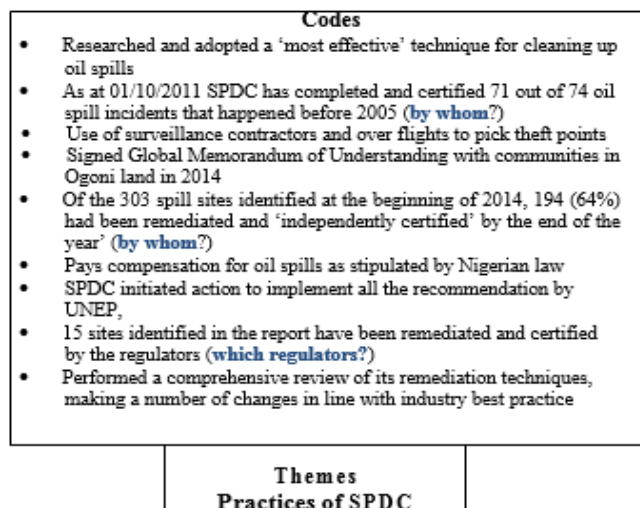


Fig. 1 Sample of coding process for the practices of MNOCs

The RSF technique adopted in this study allowed the researcher to classify stakeholders and their collaborative roles concepts and themes; characterize and sort written inputs; identify patterns and relationships between stakeholders' roles concepts and themes, and process out asymmetric information (e.g. statements not related to collaborative roles of stakeholders in managing environmental issues in the NOPR). In addition, the RSF allows researchers to select and familiarize with targeted documents, identify and extract key research concepts, index the identified concepts prior to coding of concepts within inputs [43]. In essence, this involved manual coding process in data content analysis [45].

Fig. 1 illustrates a sample of how phrases found in documents were coded. The stakeholder's inputs were collected from the NGAs, MNOCs and host communities' web pages, newspapers reports and scholarly literature. These documents report the impacts of environmental issues (e.g. pollution); the implication of the impacts and roles and practices of stakeholders as regards to management. Importantly, the scope of the environmental issues inquiry provided a source of stakeholder data for this study, with a breakdown of stakeholder groups, roles, practices and interests.

The majority of inputs came from MNOCs that held significant exposure to environmental issues. Notwithstanding the small number of host communities' inputs, the stakeholders input provided interesting views of stakeholders' roles and practices in managing environmental issues in the NOPR. However, this process is subjective, by adopting the process of annotating the textual data in the documents; the process is accessible to others, perhaps for verification and repetition. The research outcome relies on the researchers' skills in extracting meaning from the documents while providing provide answers of the research questions to achieve research objectives. For instance, the charting process involves charting using index heading. A single document may contain a number of different themes.

The columns replicate the textual extracts and the content of index categories which relate to the key themes and how different themes are interwoven (Fig. 1).

III. RESULTS AND DISCUSSIONS

A. Environmental Management Practices

Various researchers (e.g. [33]-[35]) argue that collective efforts of stakeholders may not have achieved effective environmental management in the NOPR because global best environmental management practices and standards (e.g. ISO 14001) are not contextualized in the NOPR. The United Nations Environment Programme [46] recommends that best environmental management practices needs to be performance-based systems, as opposed to the traditional command and control approach, where contextual application of the practices need to consider stakeholder roles to achieve successful implementation. Adhering to these suggestions, some documents of recommended management practices were selected and reviewed, especially those that have been recommended by top environmental management bodies (e.g. UNEP, EPA, EMAS, etc.). Some of the documents include: U.S. Environmental Protection Agency (EPA) Working Paper [47], Asia Industrial Gases Association (AIGA)'s Good Environmental Management Practices for the Industrial Gas Industry [48], The European *Eco-Management and Audit Scheme's (EMAS)* Sectoral Reference Documents on Best Environmental Management Practice (2014) etc. [49]. Environmental management practices that are common to these documents include but are not limited to: clear and comprehensive oil project legislation, establishment of fiscal terms such as tax reduction and pollution reduction based on methodological approaches (e.g. identification of risks and strategies consistent with host government policies) [48]. UNEP [46] requires a compliance framework and strict enforcement and recommends application and integration of Health, Safety, and Environmental Management Systems (HSE-MS) with ISO 9000 series and ISO 14000 series. The main components of the standards include policy and strategic objectives; organization, resources and documentation; evaluation and risk management; planning; implementation and monitoring; and review.

Reference [49] emphasizes that the host government should develop policies that cover entire MNOCs operation life cycle and should be designed around environmental assessment, emission and discharges, emergency, and reclamation of sites. Reference [48] suggests that for these practices to thrive there must be a culture of commitment and resource management through leadership and communication; public environment through training, awareness, and institutional capacity building; and a concept of self-regulation, goal setting, consultative and negotiated agreements.

B. Stakeholders' Efforts in Managing Environmental Issues in the NOPR

The effective use of CEM in the NOPR is dependent on the understanding of stakeholders interests observed in the

documents. These include: economic interests (corporate investments, profits, and corporate image), community engagement, sources of income being destroyed, underdevelopment, health risks and conflicts. In addition, these roles and practices are associated with drivers and barriers that affect CEM adoption in the NOPR.

Stakeholders' Roles and Practices

The roles of stakeholders are reflected in a series of socio-political and cultural influences exhibited by them in collaborative environmental management decisions. Some of the driving factors of collaborative roles are categorized according to the stakeholder groups. In total, 21 different stakeholder groups were identified, who have contributed in various aspects of managing environmental issues in the NOPR. Their major contributions include environmental issues awareness and education, funding and convenorship and the criminal justice system. Among these stakeholder groups, NGAs, MNOCs and host communities roles influence the majority of environmental management decision making in the NOPR. For instance, in the stakeholders' treatise of oil spill case by the Shell Petroleum Development Company of Nigeria (SPDC), SPDC often refer to its collaborative role with the National Coalition on Gas Flaring and Oil Spills in the Niger Delta (NACGOND). Similarly, the SPDC comments on their relationship with communities. For instance, SPDC documents stated '*we visit spill sites in-line with government regulations, led by representatives of regulatory bodies, state government, police and impacted communities*'. However, this document did not report the name of the representative of the regulatory bodies, as coded in Fig. 1.

Stakeholders Interests

It is of interest to all stakeholders that major causes of environmental issues in the NOPR are identified to reduce environmental risks and impacts. In particular, one of the documents analyzed, which assessed the Oil Pollution Management and Environmental Assessment in the Niger Delta: A Case of Chevron Nigeria Ltd in Delta State of Nigeria, listed common environmental issues. These include: oil pollution, corrosion of the pipelines, blow outs, sabotage, equipment malfunction, accident from third party, natural causes (rain, flood, etc.), operations / maintenance error, movement of heavy and light vehicles, problem of disposal of spent lubrications, spent drilling muds, chemicals and well blow outs, effluent discharges, gas flaring and emissions, tank leakages, valve malfunctioning, fire outbreaks, pipeline ruptures, tank leakages and overflows, malfunctioning of valves and pumps at jetties or depots and hose ruptures. Impacts of these issues to the NOPR are significant and widespread: from cultural, health, climatic, conflicts to forced migration. Some documents presented discrete impacts of oil in the region 'as oil producing regions', there is no comprehensive data to show overall distribution of the impacts in a 'defined state or region'.

Government agencies rely only on MNOCs self-reporting of accidents, leaks, and emissions. For instance, the above A

Case Study of Operations of Chevron Nigeria Ltd [41]. In Ugborodo Community in Delta State of Nigeria claimed that over 90 per cent of oil spills cases were linked to their MNOCs negligence (e.g. use of old and corroded equipment, non-compliance to best environmental management systems) to best environmental management practices. Instead of imbibing with best practices, MNOCs are more interested to provide scholarship programmes, infrastructures, and payment of compensation to the communities. However, the case of the SPDC is different. SPDC shows some interests on commitment to environmental protection, joint management inspection and certification by stakeholders: NGAs (e.g. NACGOND) and host communities and effective implementation. However, most of the MNOCs, SPDC as an instance, have a vested interest in economic gains accruing from oil exploration, business profits, corporate image and community engagement. This is shown by their strong and influential in lobbying of NGAs and host communities. This is evidenced in Fig. 1 coded as *SPDC signed Global Memorandum of Understanding with communities in Ogoni land in 2014*. This shows that MNOCs has various practices of CEM framework to relate with host communities in the NOPR. SPDC uses memoranda of understanding (MoU) with host communities as an integrated corporate social for it corroborative practices (Fig. 1). Similarly, for the case of Chevron, it uses an environmental principle framework as a collaborative influence to host communities, which it refers to as an 'Operational Excellence Management System (OEMS)' to identify and manage risks associated with environmental issues. Drawing from the data input coded from [41], Chevron expresses their concerns as follows: '*...we use our Operational Excellence Management System (OEMS) to help us identify and manage risks and to improve reliability and safety in all our operations. Our Environmental Principles help us guide our decisions*'.

C. Drivers for an Effective Collaborative Environmental Management in the NOPR

Some of the factors driving stakeholders' collaboration include: a need for host communities to confidence and trust in decision-making of government agencies and MNOCs, greater host communities' expectation for better environmental management, and policy commitments made by Nigeria government agencies and MNOCs to involve (at least key) stakeholders in their collaborative management roles. Although, MNOCs invest a lot, among other stakeholders, for effective environmental management in the region but they only attain 50 per cent of compliance to pollution regulations because of a lack of enforcement by government agencies. However, MNOCs investments are less likely to have impact on the effective management of environmental issues in the NOPR unless the Nigerian government agencies create strategic support their economic viability. For instance, the existing Petroleum and Pollution Prevention Acts advocate good oil exploration practices but a few provide clear scientific criteria and standards while enforcement of the basic regulation depends on non-stringent rules.

The Nigeria Federal Ministry of Environment is the main regulatory body under which other states and communities agencies operate to provide legal and institutional frameworks. However, this structure has failed to live up to expectation due to duplication of roles and scarce resources and lack of commitment to enforcement. The institutional frameworks for enforcement have not made much impact because they are ill-equipped to discharge their roles and these have led to frustrations among communities. The communities perceive that there is collusion between MNOCs in matters of implementing policies. They argue that NGAs conceal environmental issues because 90 per cent of Nigeria's revenue is hugely dependent on oil production. This is the reason government agencies lack economic and political will to enforce relevant laws in the NOPR. Government agencies fear that strict implementation of laws might hurt revenues and profits from oil production. There is a perception that communities are excluded from key decision-making processes regarding oil production. Consequently they express their frustration by indulging in bunkery, vandalisation of oil facilities, kidnapping of oil workers for ransom, and sabotage by damaging pipelines for compensation.

D. Barriers of Collaborative Environmental Management in the NOPR

The existing CEM in the NOPR is not well managed because stakeholders (e.g. communities), are not aware of or have not adapted to effective use (e.g. government agencies) and have not applied knowledge and practices (e.g. MNOCs) as used in developed countries. MNOCs and government agencies, as stated in [42] *'promotes cooperation in environmental science and conservation technology with international bodies'*.

Cooperate with Federal and State Ministries, Local Governments, statutory bodies and research agencies', 'Prescribes standards for regulations', 'monitors and enforce environmental protection measures', approved and certified by the joint government, community and SPDC inspection team, Works with communities and civil society (NACGOND) to build greater trust to clean up oil spills, signed Global Memorandum of Understanding with communities in Ogoni land in 2014, Federal government is required to take the lead on coordinating the activities of the numerous stakeholders involved'.

These are implemented in an ad hoc manner, thus failing to transfer and institutionalize policies and best practices. Some of the environmental management initiatives cannot be verified; even when they are done, they are verified in favour of the initiators.

SPDC claims in [42] that: *15 sites identified in the report have been remediated and certified by the regulators (which regulators?); As at 01/10/2011 SPDC has completed and certified 71 out of 74 oil spill incidents that happened before 2005 (by whom?); Of the 303 spill sites identified at the beginning of 2014, 194 (64%) had been remediated and 'independently certified' by the end of the year' (by whom?).* Although this document states that 15 sites were certified, it

did not provide the name of the regulatory body that certified the sites. The same question is left unanswered for the case of oil spill incidents. In these instances, the regulators were not verifiable. In addition, there is an 'uneven' relationship between MNOCs, government agencies and communities in the management. Evidence of this effect is that government agencies are insufficient, in some cases non-existent, management and regulation mechanisms during the approval of EIA that were carried out by MNOCs. Even, when government does, the communities are not involved in the decision-making because the communities are seen as 'incompetent' to contribute to an effective EIA because of lack of education in related to environmental assessment.

IV. COLLABORATIVE ENVIRONMENTAL MANAGEMENT FRAMEWORK FOR THE NIGERIA OIL-PRODUCING REGION

This section provides a synthesized CEM framework for the Nigerian oil-producing region (NOPR). This framework is structured based on three key elements: policy review, strategic management and systematic implementation; as the key environmental management practices recommended in section III.A. These recommendations are contextualized and interpreted to manage environmental issues raised in the section III.B, III.C and III.D, while suggesting how the stakeholders can work collaboratively in relation to their roles and practices.

Policy Review and Development

Various best environmental management practices recommended that policy review is essential if not indispensable to managing environmental issues in the NOPR.

Developing environmental management policies based largely on socio-economic consideration of the affected society are becoming important. The EU is a prime example where policies are implemented through integration of policies requirements of stakeholders: governments, companies and communities [49]. Nigeria government agencies should work with MNOCs and communities to set up a policy review committee comprising policy audit and environmental management experts. In case of NOPR with different administrative jurisdictions with complex processes, [46] suggests that legislation should be merged in to a single framework to ease delivery and implementation. To solve the problem of barriers to CEM in the NOPR (identified in Section III. D), new policy should be developed and delivered based on the identification of major environmental concerns which is oil pollution. This issue of pollution should be analyzed in relation to industrial operation and activities based on scientific evidence, regions most affected by pollution and strategies that required minimum resources to implement. The policy contents should be made available through a website designated for environmental management of NOPR, which should be accessible to all stakeholders. The website can be used as a reference point for: improvement of oil pollution prevention policies, setting up of management objectives, stakeholders' training and awareness. In addition, [46], [48]

noted that media campaigns should be established in the NOPR to conscientize the communities on their roles in working with other stakeholders [50].

Strategic Management Development

This component relies on policy delivery with reference to operations of the oil companies and prioritized environmental issues. The management will comprise of representatives from government agencies, companies' corporate managements and community leaders. The role of the management will be to develop strategy based on prioritized goals derived from evaluation and review of existing goals while considering their commercial and socio-economics requirements. The strategy will form a base-line to be used to drive management approval procedures, preparatory environmental review (PER) and environmental impact assessment (EIA). Although EIA exist in Nigeria the process is hampered by a lack of skilled and competent independent assessors. There is a need to incorporate other review approaches such as gap analysis to provide analysis and a best practicable environmental option (BPEO) [48]. The goal should be to prioritize environmental issues of concerns based on their significance, benefits to the company and financial implications.

The SMART approach: specific, measurable, achievable, realistic and time-scale, should be implemented. MNOCs will have to be compelled to apply this concept. Communities will monitor and report the progress of expected actions of the companies. The report of the monitoring will then be evaluated by the stakeholders to decide whether there is need for improvement regarding the specified actions, priorities and strategies. This collaborative participation among stakeholders will enable empowerment. In addition, it will encourage a team building mentality which will foster accountability, commitment, ownership and responsibility [50], [51]. However, commitment of stakeholders to collaboration would depend on the extent of political and structural changes (e.g. adoption of appropriate legal frameworks, leadership, political will).

Systematic Implementation of Strategies

Stakeholders should be allocated with clear tasks in the implementation process of environmental management practices. Reference [46] recommends a continuing and integrated process throughout the oil project life cycle. Considering the situation in the NOPR, there is need for stakeholders to agree and set up procedures for communicating the state of policy implementation in the region.

In the case of the NOPR, one of the major barriers to CEM is a lack of clear legislative control. UNEP recommends that MNOCs should initiate risk management decisions before consulting stakeholders for approval. Other legislative control decisions include standards for noise, radiation, chemical exposure, integrated pollution control (IPC) and protection of indigenous and cultural heritage. The strategic implementation of these practices will enable the stakeholders to reduce the impacts of the oil production projects on the environment.

V. CONCLUSION

Environmental issues in the NOPR have multifaceted dimensions and should be dealt with by collaborative participation of stakeholders from a holistic perspective. In terms of the socio-economic resources needed for implementation, public awareness is least expensive and perhaps most reinforcing. Education on awareness of environmental issues for the stakeholders is important. However, these recommendations might place the emphasis of managing environmental issues in the NOPR on the key stakeholders. Similarly, government agencies need to update their resource commitment. Legislation may have a huge impact on implementation, but delay in harmonizing the inconsistencies in existing policies may frustrate the goal of this framework. The clarity of the roles of stakeholders guided by specific legislation on their respective roles will provide an implementable platform for all components of the proposed framework. In summary, the success of this framework will depend on the following capabilities of the stakeholders;

- Demonstration of a clear commitment and defined objective,
- Effective communication, consultation and training,
- Genuine compliance with environmental regulatory policies,
- Concerted monitoring of environmental performance

This research outcome is based on the concept of collaborative environmental management, although there are other environmental management approaches which can be applied for studying environmental issue in the oil producing regions. In addition, explorative studies can be carried out that might challenge the findings of this research, though generalizing across organizations and industry sector can be difficult. These limitations should be considered when interpreting the findings. However, even despite the subjective and interpretive nature of this research, it offers several important contributions. This framework informs research in two ways. First, it applies stakeholder analysis, in particular their roles and practices to identify drivers and barriers towards CEM, and produced a CEM framework that requires validation with further research. This may be done by investigating the views of stakeholders on the framework's critical success factors and constraints. In practice, this framework will enable stakeholders to manage environmental issues in the NOPR.

Limitations to this study are that most of suggestions and recommendations identified can be applicable to the context of NOPR and the findings were solely based on the document analysis and research in the scholarly literature. However, future research may be conducted with a range of stakeholders, other than the key stakeholders. This may help identify some hidden but important roles and practices to identify the needs and interests that should be considered implementing the CEM across different stakeholders.

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