



Environmental Management Planning Imperatives For Promoting Sustainable Project Implementation In Ecologically Sensitive Areas Of Nigeria

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ABSTRACT

Climate change has increased the frequency and severity of local environmental hazards like flooding, erosion, desertification and drought, in Nigeria. Yet conventional institutional mechanisms and frameworks for sound land use control and environmental resources management like master plans, local area plans, ecological conservation plans, pollution control schemes, environmental impact assessment and management suffer from gross systemic and endemic failures in Nigeria. Against this background, the paper attempts a broad strategy for institutionalizing effective environmental management planning at the local community level during project implementation. This it suggests can be achieved through the structuring of existing relatively strong but un-coordinated local ecological knowledge (LEK) of relevant community development groups, environmental stakeholders, nature enthusiasts and organizations at the community level in Nigeria.

KEYWORDS :

1.0 Background to the Study

The issue of climate change and its hazards which appeared in many scientific discusses are not different from that in the developed world in the early 1980s, and what seem so abstract then to us in the developing world is now here with **manifest effects** in our communities and localities. What started then with the discovery of a huge ozone hole in the Antarctica first reported in the early 1980s led to the making of the Vienna Convention (CV) in 1985 and the Montreal Protocol followed soon afterwards in 1987 (Nisson and Pit, 1994). The Montreal Protocol was a carefully structured process for reviewing targets based on the evaluation of scientific data, environmental impacts, available substitutes, and the economic consequences of various options (Nitze, 1990).

A number of precedent initiatives, directive and protocols which attempted to highlight and address the protocols impact of the green house gases (the major causes of climate change) include the Geneva Convention (GO) of 1979; the Sofia Protocols (SP) in 1988; various European Commission Directives (1983-1989) and the Basel Convention (BC) in 1989. the Geneva Convention (GC) of 1979 prepared under the auspices of the UN/ECE was designed to counteract long-range transboundary air pollution in the northern hemisphere while the Sofia protocol (SP) in 1988 dealt with nitrogen oxides; agreement (including the USA) was reached on stabilization levels at 1987 levels. Whereas the various EC directives (1983-1998) required large combustion plants to reduce SO₂ emissions by 30% by 1993; the Basel Convention (BC) on the control of transboundary movements of hazardous wastes (1989); the Hague declaration (HD) on the protection of the atmosphere of March 1989, and the Nordwijk Ministerial meeting in November of the same year all provided useful scientific data, targets, projections, estimates and policy directives and commitments on dealing with global warming and climate change.

However, it was perhaps the activities of the Adhoc Intergovernmental Negotiating Committee (INC) of government representatives established in December 1990 in resolution 45/212 by the United Nations on one hand, and the predictions and judgments of the Inter-Government Panel on Climate Change (IPCC) on the other hand that significantly raised the stakes in global consciousness of the hazards of climate change and actions required to mitigate them. The IPCC consisting of scientists from any countries working together under the aegis of the World Meteorological Society and United Nations Environmental Programme (UNEP) predicted that unless emissions of green house gases (GHG) patterns change;

tury of 0.2-0.5^oc per decade 9 with an uncertainty range of 0.02-0.5^o C per decade); this is greater than that seen over the past 10,000 years These will result in likely increase in global mean temperature of 1^o C above the present value by 2025 and 3^oC before the end of the next century (CGC, 1992)'.

Its collective judgment (Hayes and Smith, 1993) is that, Rapid change in climate will change the composition of ecosystems; some species will benefit while others will be unable to migrate or adapt fast enough the effect of global warming on biological processes may increase the atmospheric concentrations of natural green house gases (Houghton, Jenkins, and Ephraïmet al 1990).

The IPCC's impact report concluded that this warming could cause major and mostly negative local impacts on agricultural, forestry, waste resources and natural ecosystem, air quality and coastal zones amongst other sectors important to humanity (Tegart et al, 1990). One of the responsive strategies to address these problems as suggested by IPCC was that although effective responses would requires global efforts to succeed, for better results to be achieved local efforts would be a critical requirement (See IPCC, 1991).

While there is wisdom in the various on-going international and national discussions on the relevant issues of this subject matter there is a growing fear that little or no concrete local efforts and activities are taking place in many particularly in the developing world. Such local efforts are particularly important to mitigate some of the environmental hazards of climate change in environmental sensitive but rich areas of the Niger Delta region of Nigeria as case study. Wetlands has been variously described as "the kidneys of the landscape (because of the functions they can perform in the hydrological and chemical cycles) and as "biological supermarkets" (because of the extensive food webs and rich biodiversity they support) (Mitsch and Gosselink, 1993).

It is the intention of this paper to explore a strategy for institutionalizing effective project environmental management planning in a sustainable manner at the community level (or localities) in Nigeria. This has become imperative because of the apparent failure of relevant statutory agencies to deal with the myriad of environmental problems and their attendant hazards to agriculture, human health and welfare. The rest of the paper is divided into four parts. Section 2 examines the nature of environmental problems (or hazards) experienced at different ecologically sensitive areas in Nigeria as a result of the impacts of climate change while the need to adopt a strategic approach to the amelioration of these hazards is discussed in section 3. The elements of the environment management planning framework are delimited,

^aA rate of increase in global mean temperature during the next cen-

delineated and characterized in section 4 and the paper is concluded in section 5.

Environmental hazards experienced at different localities in Nigeria.

A hazard is a danger, peril, source of harm, or an adverse impact on people or property. Risk is an expression of chance, a function of the likelihood of an adverse impact and the magnitude of its consequences (Lohani, Evans, Ludwig, Everitt, Capenter and Tu 1997). A number of human activities and human induced processes have been corroborated with environmental hazards in Nigeria in general and the Niger Delta in particular. These include but not limited to oil exploration, production, transportation, marketing and refining; farming related activities like irrigation, use of pesticides, fumigation chemicals and fertilizers; housing production and delivery activities involving bush clearance, burning, excavation and replacement of natural soil with paved surfaces; burning of fossil fuels including the generation, transmission distribution and utilization of electricity amongst others.

While it is a recognized fact that these development activities and processes generate environmental effects and hazards, a number of institutional mechanisms or frameworks exist at regional, national and international levels to effectively manage these effects and mitigate their hazards in many developed and developing countries. Pollution control regulations, landuse planning, environmental impact assessment, environmental risk assessment, on one hand and allocation of money and efforts for risk reduction at both local and national levels on the other have been known to be effective in the management of these problems in many developing countries. However, in Nigeria these measures have been non-existent at the community level (not to talk of being effective). Indeed landuse plans, master plans, structure plans, regional development plans, which are traditionally associated with regulating *development-environment relationships* are hardly prepared in Nigeria in recent times and those that had been prepared in the last 50years were hardly implemented (Essaghah 2011). Environmental impact assessment, environmental management system activities, environmental remediation plans, and waste management plans in various sectors of the economy especially in the oil and gas industry are poorly implemented by operators, and weakly enforced by regulatory agencies in Nigeria (Orubima 1996, Ikwuegbu, 2007 Essaghah, 2008).

The consequences of the apparent failure of various regulatory measures, instruments, and strategies by many government agencies in Nigeria have left many localities with little or no option than to take desperate measures to ameliorate the adverse impacts of these problems. Today, in many local communities' residents inform statutory agencies of incidents like oil spills, oil spill fires and other industrial accidents that ordinarily would have been reported or made public by statutory agencies. In spite of the relatively weak information, manpower, resource and economic base of most local communities (compared to their urban counterparts) their responses to managing these problems have been noted to be relatively successful in Nigeria in the amelioration of erosion hazards (Omota 1986, Chokor 1988), desertification hazards (Inyang 2010), impacts from the degradation of coastal tropical mangroves (Agao and Dore, 1997), degradation of farmlands and fishing surface water bodies (Ashton-Jones and Oronto 1994; DESERP, 2010) to mention but a few

Inspite of these modest efforts, many rural communities suffer in ecologically sensitive areas from a myriad of environmental, social and economic challenges which are now further exacerbated by effects of climate change:

- Rapid drought and desertification in the Northern parts of Nigeria is alarming. It is estimated that desertification that derives from increasing aridity, forest fires and excessive grazing has caused 1650 square kilometer of land loss in Northern Nigeria as at 2006; rate of land loss is estimated at 350, 000 hectares per year; migrating sand dunes have covered sensitive habitats while the desertification front is migrating southwards on a 1500 km front (Inyang 2010).
- Rainfall v
- olume, intensity and variability have drastically changed in many localities in Nigeria; late arrival of raining season and the concomitant heavier rainfall (down pours) now more frequent in many southern cities have led to serious flooding in Benin city, Uyo,

Portharcourt, Aba, Lagos, Asaba, Warri, Ughelli, Yenogoa and other coastal cities. In a recent study by the Delta State Economic Reintegration Strategy (DESERP) in 2010 it was revealed that in many oil producing communities overland flow resulting from frequent heavy rainfall have deposited huge quantities of sediments and containments from oil wells, oil flow stations, petrol stations, petroleum products tanks farms, refinery and petrochemical plants into rivers and ponds thereby increasing their turbidity and altering related physico-chemical parameters. A combination of this and other anthropogenic factors have led to the formation of more than 1500 gully erosion sites in Nigeria; 267 billion cubic meters of surface water have been so degraded while more than 1000 abandoned ponds have been indicated in the middle belt of Nigeria alone (Inyang 2010).

- Increasing degradation of coastal tropical mangroves in the Niger Delta (it is the third largest tropical mangrove in the world and one of the most extensive coastal wetland in Africa that is very rich and productive in oil and gas resources) due to unsustainable exploration, production, refining, transportation and marketing of oil and gas resources. The current pattern of oil exploitation has led to extensive degradations of farmlands, fishing waters bodies, deforestation of the very essential tropical mangrove forests including severe diminution of air quality in many oil refining and gas flaring sites (Institute of Pollution Studies 1991, Isichei and Sandford 1976, Ifeadi and Orubima, 1996, Ibeh, 2011, DESERP, 2010). More recent studies by Ikwuegbu (2007) and Essaghah (2008) both revealed that combined effects of frequent deposition of large quantities of crude oil, refined petroleum products from tank farms and oil related industrial activities into farmlands and rivers in the Niger Delta Region has drastically reduced farming activities and fishing outputs (the only source of food and income in many communities in the area). Expectedly this has exacerbated poverty, social suspicion and rivalry, youth restiveness and violence, and youth criminality in oil based communities in particular and, in the Niger Delta as a whole. (Essaghah, 2008). Nigerians need to monitor activities of project developers in their communities before their environmental effects from such activities create another Niger Delta debacle in other parts of the country.

The hazards these major environmental problems pose for agriculture, domestic water supply, human health and social wellbeing in many communities is very frightening and graphic indeed:

- agriculture which accounts for 42% of Nigerian GDP and employs over 65% of Nigeria's labor force would be severely threatened due to loss of arable farmlands, lack of adequate water for irrigation purposes, and loss of soil fertility.
- sea level rise in the Niger Delta will inundate about 35% of land for farming and urban development activities. Brackish water that is fish habitats in coastal areas will become increasingly salinated threatening fisheries production.
- drought will increase suspended particulate matter (SPM) in ambient air leading to increased dust inhalations particularly in urban areas and high populated cities. This will inevitably lead to re-distribution of pests causing increase of malaria, cholera and other related respiratory tract diseases.
- drinking water contaminated by chemicals in runoffs from different surface media and industrial sites will also cause rapid rise in diseases. Already 100,000 new cases of cancer in Nigeria is reported annually; 3 million Nigerians are living with cancer and 500 children die daily from diarrhea in Nigeria (Inyang, 2010).

Obviously the challenges of addressing these environmental hazards effectively at the local level would be outside the current cosmetic practice in Nigeria where EIA project consultants and contractors of major development projects consult with community groups and environmental stakeholders to identify project's probable impacts and mitigation measures. Community development and environmental stakeholders are hardly involved in the management of environmental effects of projects during the implementation period. Neither do regulatory authorities have field officers in project sites to enforce provisions contained in project environmental management plan (EMP) to achieve effective mitigation measure. To successfully combat the increasing and devastating hazards of flooding, soil erosion and desertification in Nigeria, efforts must go beyond such weak and ineffective adhoc practices to include *structured collaboration* between project

proponents, regulatory agencies and development partners on one hand, and communities stakeholders on the other. To achieve effective structured collaborative effort, a paradigm shift in approach would be required. Such will involve a new participatory and institutional architecture with enhanced capacity of community – based environmental stakeholders and groups to perform both internal and external monitoring, and auditing of effects during implementation of mitigation projects and or measures. *This is the focus and locus of the proposed strategy*

Concept of the Strategy.

For the proposed new approach to environmental management of project effects to be successful, it must be **data based and driven** just like environmental planning and management (EPM) process. Whether as land-use planning, environmental planning, urban planning or environmental planning and management, the approach must be essentially interactive with positive and negative feedback loops depending on the nature of the information generated and or applied. Strategic planning pre-supposes proactiveness in assessing site's environmental (or community's) priority problems, anticipates future situations (need and hazards) and capability in dealing with interacting and cumulative effects. Deep understanding of a community environmental problems can usually be generated through scientific means in combination with local ecological knowledge of the residents (who bear the greater burden of environmental problems and hazards).

The need to incorporate the views of the local people has been stressed by Yli-Pelkonen and Kohl (2005) in a study in Finland. Under the land-use and building Act of 1999 in that country, decision makers are required to base land use decisions upon not only adequate ecological information from scientific studies, but also on views and knowledge of local residents, nature enthusiasts and other participants who can provide information on the area's biodiversity. Several studies suggest that supplementing scientific data with local traditional knowledge can broaden the information base needed for better decision-making regarding ecosystem and sustainable resource management (Yli-Pelkonen and Kohl 2005). Local ecological knowledge (LEK) refers to ecology as a natural science and includes person's general knowledge of nature as well as a more specific local knowledge. This according to the scholars can also be understood as a lay experiential knowledge which can be a blend of learned scientific knowledge and knowledge based on residents' own observations and experiences from surrounding nature. "LEK is therefore usually a hybrid and thus not strictly local or traditional; it should be kept in mind that every interaction and interactor has a context and a background and is from such that construction of knowledge emerges".

Elements of the Proposed Environmental Management Planning Framework

Having examined the concept of the strategy, we shall now proceed to characterize the organizational elements of the model and the architecture of collaborative activities necessary to make the environmental management planning of project – based EIAs more transparent and accountable in Nigeria. The major agency for hosting and driving the strategy is the Community Environmental Management Council (CEMC) that should be set up at major development centres across Niger Delta communities where means of livelihood and development have become seriously threatened. For it to effectively serve as the **locus and focus** of efficient local ecological resources management at that level, it should be a **standing independent body rather than ad-hoc** which can be domiciled in community town hall buildings. Necessary legislative backing can be derived from local community council legislatures or recognition can be given to them by the Federal Ministry of Environment (FMNEV) and designated as local environmental field offices or units.

The composition of the members of the CEMC and the full range of stakeholders (both organized and unorganized) required to play key roles in the process should be drawn from various background. Membership should be drawn from exiting community development committees, land-use planning committees, environmental management/compensation committees, traditional councils, age grade associations and towns associations. Experts or professional from relevant government organizations and establishments should form part of the proposed council. (There should be at least one member from each of the following categories).

- **Relevant government agencies** Federal Ministry of Environment (FMNEV)/ Department of Petroleum Resources (DPR), and State Ministries of Land, Housing, and Urban Development/ Town Planning Authorities; State Ministries of Environment depending on the nature of the environmental hazards concerned.
- Individual project proponents, Industrial Operators, and multinational oil companies.
- **National and international development and donor agencies:-** Niger Delta Development Commission (NDDC) State Oil Producing Areas Development Commission (SOPADEC), World Bank/United Nations Development Programme (UNDP)/United Nations Environmental Programme (UNEP).
- **Community based Organizations (NGOs):-** Nigerian Conservation Foundation, Nigerian Environmental Society (NES), Nigerian Society of Engineers, Environmental Management Association of Nigeria, and the myriad of community based environmental related groups and organizations, academicians and Human Right groups.
- **The traditional institutions:-** Traditional councils, Age grades, town unions, affected parties.
- **Contractors:** - Major and sub-contractors.

The proposed CEMC's core task will be internal monitoring and auditing of project-based EMP tasks and activities. This will address the pertinent question of "How do we assure that the EMP is properly implemented as laid down and as agreed during proposed project EIA". Table 1.0 summarize the types of monitoring and the probable parameters that would require monitoring for the successful implementation of any project based EMP (Essaghah, 2011).

Table 1.0 Types of monitoring for Proposed Project's EMP.

Types of monitoring	Description	Areas/Parameters/ Dimensions
Effects monitoring	Repetitive systematic measurement of environmental parameters during projects' 3 phases to detect changes attributed to proposed project (s).	Gaseous emissions, clogging of drainage channels, changes in ecology, local flooding pattern and soil erosion processes, structural changes on ground surface configurations, physical development pattern, building intensity etc.
Compliance monitoring	Periodic sampling or continuous measurement of environmental parameters to ensure that regulatory requirements are observed and standards met.	Compliance with air, water, soil pollution standards; procedures for mitigation, monitoring, programmes operations sampling, data collections, storage, processing and reporting etc.

Table 1.0 shows the scope of monitoring and auditing required for successful implementation of the project-based EMPs. Monitoring and auditing of the specified parameters/dimensions in order to check on predicted project impacts will ensure that environmental management guidelines are strictly maintained.

On the other hand, environmental impact auditing should be geared towards achieving the following:

- Examination of compliance with regulatory requirements
- Identification of potential environmental problems
- Management of project operational activities, practices and schemes.
- Checking of predictions, estimates, benchmarks, targets etc towards ensuring that relevant action-specific mitigation measures are being implemented and recommending improvement to be made to the management of operations.

For us to understand the nature of tasks that the proposed CEMC must take on board, there is need to examine the nature of internal and external monitoring tasks required to successfully implement project-based EMPs.

In order to implement EIA mitigation measures, specific EMP tasks must be determined. This is a statutory requirement of EIA. A checklist of the likely EMP tasks to be undertaken throughout any project life cycle is given in table 2.0 (Essaghah, 2010).

Table 2.0 checklist of internal and external monitoring tasks and activities during proposed project implementation (with the use of project –based EMP)

Project Phase	EMP tasks
Pre-site preparation (internal monitoring activities)	Assign project staff to areas of proposed development to protect life, human safety and environmental quality. Constitute staff to oversee actual location, site development, planning operation and management of specific-project action areas; Movement of machineries, personnel and material with supervision of EMP management staff.
Road construction phase (internal monitoring and auditing activities)	Prepare and approve EMP specifications to cover daily work operations/schedules by contractors. Designate EMP staff to monitor compliance of contractors' staff/operations with agreed EMP specification and review results of daily/routine activities. Monitor effects and level of compliance with EMP procedures, practices and targets. Co-ordinate all abandonment and decommissioning procedures for project sites with contractors.
Post construction and operation (internal/ external monitoring activities)	Liaise with relevant public sector agencies/ operators with EMP staff to articulate and maintain appropriate operation at tasks and management measures to ensure safety of the public. CEMC management team liaise with relevant ministries local planning authorities (LPAs) and relevant state/regional/national development regulatory agencies to ensure integration of related mitigation measures future project planning and policies.

For the numerous EMP tasks listed in table 2.0 to be successfully implemented, the proposed CEMC must collaborate with relevant stakeholders to carry out external monitoring and auditing of project-based EMP teams, project compactors, EIA consultants and governmental regulatory activities and operations (table 3.0).

4.1 Responsibilities of the proposed CEMC during implementation of project-based EMP

For Environment Management Planning (EMP) tasks to be fully implemented, specific roles and responsibilities must be assigned to the various agencies involved in the implementation of the mitigation measures and management of environmental effects resulting from proposed and existing projects. Existing projects world require regular audits stipulated by regulatory authorities and results of such used to draw up new EMPs. To this end, a total of five entities and their corresponding roles are suggested (Table 3.0). it is suggested that proposed CEMC Management Team should carry out their activities from offices domiciled in Town Hall building available at the various communities in Nigeria.

Table 3.0 Roles and Responsibilities for the Implementation of Major Project-Based EMPs.

Entity	Role/Responsibilities
CEMC, EMP management team, local planning Authorities, Non-Governmental Organizations (NGOs), Community Based Organizations (CBOs).	Preparation of operational EMP components and produce stand-alone (project-specific) tasks and activities, as well as, endorse EMP.
Relevant federal and state Government ministries eg FMNEV	Approval of prepared EMP after due consideration and consultations

EMP Management Team, Project Contractors and consultants	Implementation of approved project-based EMP
Federal ministries of Environment, Relevant State Government Ministers and CEMC	Internal monitoring and auditing of tasks and implementation operations.
NGOs, CBOs, International Donor Agencies and Development Partners	External monitoring and auditing activities.

Performing the roles and responsibilities in table 3.0 would ensure that preparation of proposed project EMPs are not left for consultants alone but promote active participation of regulatory authorities community governance bodies, environment based local associations, groups and committees as against the current practice where EMPs are drawn up alone by EIA consultants and select in-experienced staff of the Federal Ministry of Environment. This singular practice has the potential of transforming resource use control and environmental management mechanism at the local government level in Nigeria through the enhanced democratization of the process and institutionalization of the bottom-up approach to project planning and management.

5.0 Conclusions

So far this paper has examined the major environmental problems and hazards that confront various communities and people in Nigeria in general and the Niger Delta in particular. We have also asserted that these hazards have been and would continue to be exacerbated by climate change since there is an apparent failure of current responses and measures by statutory agencies of government. Considering relative successes of unstructured independent local efforts to cope with and manage environmental hazards so far, we underpinned the need for a *structured bottom-up approach (or strategy)* that is more scientific, collaborative and democratic, which can be held accountable by the people. In other words, the need for a new environmental management strategy based on the cardinal principles of traditional project-based environmental management plans (EMP) has been stressed.

What is left is to further examine and discuss this strategy through further research to fine tune its various components and adapt it to the various local environmental eccentricities and legislative frameworks in many countries on the developing world in general and sub Saharan Africa in particular. Discussion of issues in an open and transparent manner is an essential requirement of any civilized society. The current administration in Nigeria must seize this approach and use it to transform environmental management practices in project-based localities and institutionalize sound landuse control in the community level at the Country.

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