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**Overview of Environmental Impact Assessment of Oil and Gas Projects in Nigeria**

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**Abstract**

*The environmental impact assessment (EIA) of oil and gas projects in Nigeria and the process of delivering it was examined with oil and gas projects. Several processes of EIA were developed with regard to oil and gas operations in Nigeria, they include: gathering and reviewing of information on the project and the area where it will be sited; development and submission of the EIA proposal to the Federal Ministry of Environment (FMENV) and also the oil and gas regulatory body, Department of Petroleum Resources (DPR); Determination of level of stakeholders participation in the EIA based on the scale of the EIA as categorized by FMENV; EIA scoping of project to fully inform communities and other relevant stakeholders of the project; Selection of consultants for the impact assessment on the natural, social and health components of the environment; Determination of issues covered by the EIA and development of its work*

*plan; Field investigation for the collection and recording of geographical coordinates of the sampling points and field data points; Analysis of data/sample and impact quantification; Drafting of EIA report of impact quantification through which the Environmental Management Plan (EMP) is obtained to give guide on the appropriate means of managing the environment during the various project activities. Several Policies were also outlined that could help in the reduction of the impact of oil and gas projects on the environment.*

**Key words:** Environment, Project, Oil and Gas, EIA, Proposal, Safety, Field work, EIA report, EMV, Operators, DPR, FMENV.

## **Introduction**

Public involvement in the EIA field dates back to developments in the USA in the late 1960s and 1970s (International Association for Impact Assessment, 1993). Its adoption as a necessary companion activity to EIA has been entrenched in many jurisdictions since then. Since 1989, the World Bank has incorporated a requirement for public involvement into its Operational Manual. Operational Directive 4.01 (International Association for Public Participation, 2004) and successor documents require that affected groups and non-governmental organizations (NGOs) be consulted as part of the EIA of projects and particularly those with potentially significant impacts (Category A) (International Finance Corporation, 1998).

Since 1995, Nigerian EIA legislation provides for stakeholder consultation by way of a continuous programme of public participation, public forums, the public display and review of documents and public attendance at panel reviews (The Shell Petroleum Development Company, 2004).

Environmental Impact Assessment (EIA) refers to the assessment of impacts of a project on the natural, health, social and economic environments. In Nigeria, EIA is a statutory requirement for all categories of petroleum exploration and production (E&P) projects as well as some non-oil and gas projects. It was made mandatory by various legislation, which includes the petroleum Act of 1969 and EIA Act No. 86 of 1992 (Echefu and Akpofure, 2007). EIA covers three components, namely natural, social and health environmental impact assessments. Oil and gas operators carry out EIA in order to comply with statutory requirements, its policy and institute best environmental management practice.

In response to the various EIA concerns, a process for delivering EIAs has been developed and this process requires teamwork (Mackenzie Valley Environmental Impact Review Board, 2010). It advises oil and gas operators to work with consultants, community stakeholders, non-governmental organizations (NGOs) and regulatory bodies to carry out EIAs. This way, EIAs would become more beneficial to the communities and the environment. The assessment of the impact of every stage of oil and gas business on the people and environment, through the improved EIA process, would lead to the development of better business practices.

The EIA process is a step-by-step procedure to determine the likely effect of a project on the surrounding environment as well as the health and social wellbeing of the communities in the project area (Dadiowei, 2009). The EIA process ensures that measures are put in place that assist in the reduction of negative effects and enhancement of positive effects on the ecology, health and social wellbeing of the communities in the project area (Federal Environment Protection Agency, 1998). The EIA process is the procedure followed in determining likely effects of projects on the environment, health and social wellbeing of communities in the project area. The EIA is an input into the project definition, basis for design, detailed design, construction, operation, decommissioning and end-of-project phase. There is a continuous flow of information to regulators and stakeholders at relevant stages of the EIA process. It is important that communities get involved in relevant stages of the EIA process to minimize disagreements within the project's lifecycle.

### **Objectives of EIA**

- EIA identifies, qualifies and assesses the environmental impacts of a new project/activity at a very early stage of development.
- It prevents and/or minimizes any adverse environmental effects up-front.
- EIA encourages meaningful participation of the stakeholders in the EIA process.
- It builds mutual trust and understanding between the stakeholders and the company.

### **Legislation and Standard**

#### **1. FMENV Regulations (EIA Act No. 86, 1992)**

The Act mandates the Federal Ministry of Environment (FMENV) to regulate EIA in Nigeria. Among other things, it sets out the procedures and method that enables the prior consideration of EIA for certain public or private projects.

The Act specifically requires an EIA for any oil and gas project that involves:

- Seismic exploration activities
- Drilling operations (exploratory, appraisal, and development wells) in onshore, near-shore and offshore locations.
- Construction of crude oil production, tank-farm and terminal facilities.
- Laying of crude oil and gas delivery lines, flow line and pipeline in excess of 50km in length
- Hydrocarbon processing gas plant

Other relevant environmental regulations in Nigeria include:

- Oil in Navigable Waters Decree No. 34 of 1968.
- Petroleum Act Decree No. 51 of 1969
- Associated Gas Re-injection Act Decree No. 99 of 1979
- Explosives Act Decree No. 38 of 1967
- Decree 33 of 1977 establishing DPR (NNPC)
- Land Use Act Decree No. 6 of 1978
- Factories Act Decree No. 16 of 1987
- Harmful Waste Decree No. 42 of 1988
- FEPA Act Decree No. 58 1988

## **Relevant Policies in Oil and Gas Projects**

### **1. Environmental assessment**

It is the policy of oil and gas operators to:

- Carry out ‘Environmental impact assessment’ and ‘Environmental Evaluation Reviews’ in relation to all aspects of the natural and social environment that may affect, or may be affected by oil and gas activities.
- Identify any such interface for the complete life-cycle of both new and existing facilities and operations.
- Enhance positive effects and prevent intolerable impacts from accruing.

- Limit the nature and extent of any residual negative impacts, however caused, such that they are as low as practicable.
- Consult relevant stakeholders
- Develop and maintain effective long term relationships.
- Assure that the EIA process leads to the development and implementation of social investment.
- Leave the environment at the end of the useful life of any operation in a condition suitable for future use.
- Routinely monitor the environmental status of each operation and take corrective action as necessary.

## **2. Health, safety and environment**

Oil and gas operators should:

- Have a systematic approach to Health , safety and environment management designed to ensure compliance with the law and to achieve continuous performance improvement;
- Set targets for improvement and measures, appraise and report performance;
- Require contractors to manage health, safety and environment in line with this policy.
- Require joint ventures under their operational control to apply this and use their influence to promote it in their other ventures;
- Include health, safety and environment performance in the appraisal of all staff and rewards accordingly; and
- Hold regular open debates on their environmental objectives and performance with all shareholders including expert non-governmental organizations.

## **3. Community development**

In order to improve the quality of life in the communities, oil and gas operators shall:

- Establish a community development programme which applies world standards of practice to serve their host communities.
- Work in partnership with host communities and where appropriate with government, donors, non-governmental organizations, community-based groups and other stakeholders.

- Encourage the full participation of their communities in project planning, implementation and monitoring.
- Maintain communication with all social segments of host communities in order to address their needs.
- Focus community development assistance on activities having high impact and broad benefits for the host population.
- Pay special attention to the most economically disadvantaged social groups.

### **Procedure/Analysis**

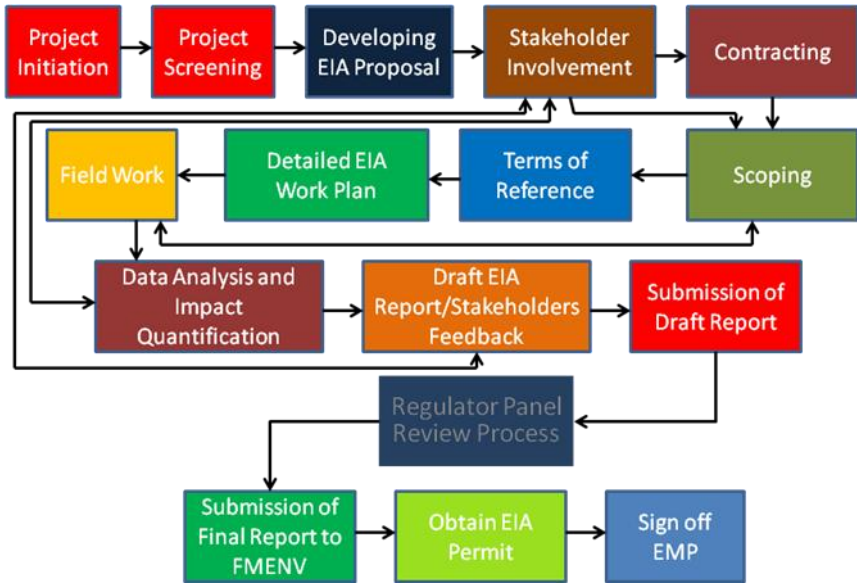
Fig 2.1 shows the overview of the environmental impact assessment process.

The stages of the EIA process in this work are the relevant aspects where communities need to know what oil and gas operators and various regulators are to do and the expected roles they need to play for the success of the EIA and the project. They are outlined as follows:

#### **1. Project initiation**

In planning any new project, the project manager who requires on EIA initiates the process and has overall responsibility for delivering the EIA. The project manager sets up the project EIA team made up of members from environmental, Community Development, Health, Land departments and the project team.

The project EIA team gathers and reviews all written information on the project and the area where the project will be sited. The project plan allows for an EIA to start early in the project lifecycle, so alternatives can be considered where necessary. Usually, an EIA should be initiated 18 months before a project begins (Dadiowei, 2009).



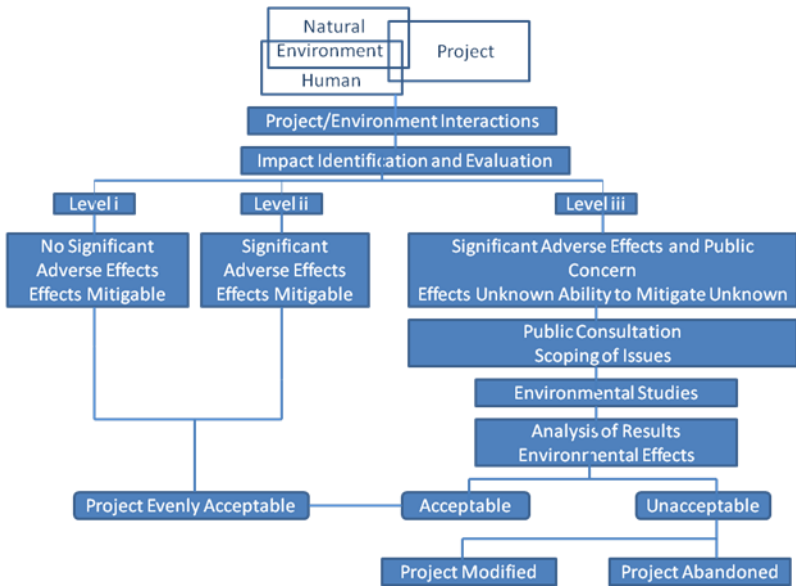
**Fig 1: Environmental Impact Assessment Process**

**Source: The Shell Petroleum Development Company of Nigeria Limited, (June, 2003)**

## 2. Project Screening

Screening is a process in which the environmental decision making process proceeds in a sequential series of steps with milestones that reflect the ability to identify and ameliorate any significant effects of the project. The process begins with the development of preliminary project design criteria and the assembly of all available physical, biological and social data for the project area, as shown in Fig 2.2.

Environmental management team members use checklists, map overlays and matrices to identify all the project/environment interactions



**Fig 2: The Screening Process of Environmental Impact Assessment**

Source: Alconsult International Limited, (2011)

### 3. Developing the EIA proposal

The project EIA proposal is developed in accordance with the EIA procedural guidelines, 1995 of the Federal Ministry of Environment (FMENV). The proposal, a completed registration form and a registration fee are submitted to the FMENV. The ministry screens and categories the EIA and sends a report, which contains the scale of the EIA. This scale determines the level of stakeholders' participation in the EIA process. However, there is always engagement of the affected communities. The EIA proposal is also sent to DPR.

### 4. Stakeholder involvement

After the FMENV and DPR have categorized the EIA, the stakeholder involvement starts and continues throughout the EIA process. The communities are notified of the need to participate fully in relevant stages of the EIA process beginning with the scoping exercise at this stage.



Thereafter, during a series of meetings, the communities are encouraged to select people (chiefs/elders, men, women, opinion leaders and youths) that will fully represent their interest to participate in the scoping exercise.

## **5. Contracting process**

The project EIA team selects consultants who carry out the impact assessment on the natural, social and health components of the environment. These consultants are the main parties that will work with the communities during the field work.

## **6. Project EIA scoping**

Project EIA scoping involves interacting with stakeholders in order to fully inform communities and other relevant stakeholders of the project and identify:

- The appropriate boundaries for the EIA study
- Important issues and concerns of the communities
- Effects and cultural factors to be considered in the EIA.

During scoping, reasonable and practical alternatives are considered and discussed with the people who are likely to be affected by the proposed project. The project EIA team organizes the scoping exercise involving the EIA consultants, representatives of communities, Community Based Organizations (CBOs), Non Governmental Organizations (NGOs) and regulators (FMENV, DPR, NAPIMS, State EPAs).

A scoping report is written based on issues and concerns raised by stakeholders during the scoping exercise. This report forms the basis for the Terms of Reference (ToR) and the Preliminary Assessment of Impact Report (PAIR) that are sent to the regulators for approval.

## **7. Terms of reference (ToR)**

The Terms of Reference is an agreed list that defines all the issues the EIA must address. The ToR is submitted to the FMENV for approval after which it is used to develop the detailed work plan for the execution of the EIA.

## **8. Detailed work plan**

The detailed work plan contains a full description of the methods used for gathering information on the natural, social and health components of the environment, sampling locations, time frame and techniques for analysis of

data. The communities are informed of the commencement of field investigation as stated in the detailed work plan.

### **9. Field Work (Investigation)**

A reconnaissance visit may be carried out before the field investigation. If this visit takes place, consultants, oil and gas operators' representatives, NGOs and the communities in the project area meet to plan the field investigation and for the communities to provide assistants who will work with the environmental, social and health consultants.

During the full field investigation, it is important that the communities participate actively in assisting the EIA consultants in collecting relevant samples and data. The regulators are involved in the fieldwork supervision and Quality Assurance and Quality Control inspections. During the fieldwork, geographical coordinates of the sampling points and field data points are recorded and stored in the oil and gas operators' Geographical information System (GIS) database.

### **10. Data/sample analysis and impact quantification**

Data and samples collected from the study area are analyzed using internationally acceptable methods and tools for quantification and prediction. The significance of potential impact of the project throughout its lifecycle and its alternative is determined in order to avoid or minimize negative effects on the environment, as well as the health and social wellbeing of the communities in the project area.

### **11. Draft EIA report and stakeholders' feedback**

The consultants working with the project EIA team produce a draft EIA report. Thereafter, the project EIA team reviews the draft report in accordance with SPDC's EIA review criteria. The oil and gas operators' Legal department reviews the entire draft report. All identified corrections and concerns are collated by the project EIA leader and passed on to the EIA consultants. The results of the EIA study will be presented to the communities for discussion and feedback.

### **12. Submission of final draft EIA report to regulators**

The final draft EIA report in which feedback from stakeholders has been incorporated is submitted to the regulation (FMENV) with a processing fee in accordance with the EIA procedural guidelines, 1995 of FMENV.

Should the scale of the EIA demand, the FMENV puts copies of the final draft EIA report on public display for 21 working days and it is publicized on radio and newspapers. FMENV sends copies of the report to local government headquarters of the communities. The entire public is invited to read and make comments on the report so displayed before the panel review session.

### **13. Regulator panel review process**

Panel review, involving participation of various stakeholders, may be required by FMENV and DPR as part of the EIA approval process. The panel is constituted by the Minister for Environment to listen to comments from all stakeholders and interested public/organizations and to ensure that all important issues/concerns raised by stakeholders are addressed in the EIA Report. The project EIA team facilitates the panel review by arranging logistics, venue, site-visits and presentations. At the panel review, the oil and gas operators make presentations on the technical aspects of the report as well as environmental, social and health issues addressed in the report. Stakeholder communities are given opportunities to express their concerns and observation to the Panel Review meeting.

### **14. Final EIA report**

At the end of the panel review, the Regulators issue an official statement to the operator based on discussions during the review session. FMENV could grant provisional approval of the EIA which enables the start of the project while corrections on the draft EIA report are being addressed. Issues contained in the statement are then incorporated into the final draft EIA report by the consultants supervised by the project EIA team. This is the final EIA report. Copies of the final EIA report are sent to the Regulators, who on acceptance of the report may distribute it, as they deem fit.

### **15. EIA permit**

After accepting the final EIA report, both FMENV and DPR issues EIA permits separately. The granting of the EIA permit is an indication that the operator has adequately determined the potential project impacts as well as selected mitigating measures to minimize the impacts on the environment, health and social wellbeing of the communities in the project area. Also the environmental management plan put in place for the project is considered adequate.

## **16. Environmental management plan (EMP)**

After the approval of the EIA by the regulators, the Environmental Management Plan (EMP) for the project is pulled out of the EIA report as a stand-alone document. The EMP details how significant impacts from project initiation to closeout will be managed. It provides a guide on the appropriate means of managing the environment during the various project activities as well as incorporating a community development plan indicating health, social and economic benefits that will accrue to the communities in the project area during the project lifecycle.

The project manager reviews, adopts and signs the EMP and is responsible for its implementation throughout the project lifecycle. The regulators monitor the implementation of the EMP to ensure the operator complies with its obligations to lessen negative impacts and boost positive impacts of its projects on the communities where it operates.

### **Benefits of Environmental Impact Assessment**

- Environmental Impact Assessment helps to give the oil and gas operators, stakeholders and the community people awareness of the impacts of oil and gas projects on the environment and also incorporates stakeholder analysis.
- EIA gives preventive measures to certain problems which could have resulted from the impact of oil and gas projects on the environment.
- EIA proffers solutions to the problems caused by the impact of the projects on the environment since it helps to determine the likely effect of a project on the environment. It facilitates informed decision making by providing clear, well-structured dispassionate analysis of the effect and consequences of proposed projects.
- It helps the oil and gas operators in meeting the statutory requirement of Nigerian legislation for all categories of Exploration and Production projects.
- It helps in the improvement of the safety conditions of oil and gas personnel involved in Exploration and Production.
- EIA helps to institute best environmental management practice through its environmental management plan (EMP) and ensures that measures are put in place that assist in modifying feasible projects - mitigation of negative environmental and social impacts and

enhancement of positive effects in the ecology, health and social wellbeing of the communities.

- It helps in the protection and conservation of natural resources.
- EIA encompasses policies that help in HSE improvement and community development.
- It helps in pre-emption or early withdrawal of unsound proposals.
- It assists in the selection of alternatives, including the selection of the best practicable and most environmentally friendly option.
- It guides formal approval, including the establishment of terms and conditions of project implementation and follow-up.
- EIA serves as an adaptive, organizational learning process, in which the lessons of experience are feedback into policy, institutional and project design - Enhancement of positive aspects
- It helps in the development of better business practices for oil and gas operators.
- It helps in the establishment of balance between project demand and ability of environment to meet demand (The Shell Petroleum Development Company, 1999).

## **Conclusion**

The EIA process explained in this write-up is still evolving. Effective involvement of community stakeholders in the process will further help refine the process to ensure that the impact of oil and gas business on the environment, social and health of the communities will be minimized.

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## **NOMENCLATURE**

CBO = Community Based Organisation

DPR = Department of Petroleum Resources

EIA = Environmental Impact Assessment

EMP = Environmental Management Plan

E & P = Exploration and Production

EPA = Environmental Protection Agency

FMENV = Federal Ministry of Environment

GIS = Geographical Information System

IA = Impact Assessment

NAPIMS = National Petroleum Investment Management Services

NGO = Non-Governmental Organisation

PAIR = Preliminary Assessment of Impact Report

ToR = Terms of Reference