



ENVIRONMENTAL IMPACT STATEMENT AND ASSESSMENT: A DISCOURSE FOR SUSTAINABLE ENVIRONMENTAL PROTECTION IN NIGERIA

Bala M. B¹, Ibrahim Bello², Yahaya Umar Faruk³ & Muhammad Hamza Maishanu⁴

^{1,3&4}Department of chemistry, Shehu Shagari College of Education, Sokoto

²Department of Educational Foundation, Shehu Shagari College of Education, Sokoto

Corresponding author email: Balambkasarawa@gmail.com

ABSTRACT

Manmade or induced pollution is direct consequence of man's activities in attempt to make the environment worth living. It includes indiscriminate disposal of waste materials and industrial projects that discharges as their by-products or waste such dangerous materials like poisonous gases, toxic chemical elements and compounds. Added to this is the drive for urbanization, road and rail construction, water projects and other projects for human comfort. Environmental Impact Statement (EIS) seeks to aid decision making before embarking on projects as to the likely effects of the projects on the environment. Environment Impact Assessment (EIA) on the other hand involves accumulation and interpretation of all collected data describing the existing quality of the environment in the vicinity of the project site. This paper discusses the policies and legislation made by the Federal Government to guide agencies embarking on projects. In order to create minimal negative impact on the environment as required in the National Policy on the Environment.

Keyword: Environment, Pollution, Waste Materials, Projects, Impact, Statements, Assessment, National Policy.

INTRODUCTION

We live in an environment and everything around us constitutes the environment. Different environment exist depending on one's perception. There are home environment, school environment, Farm, Office and industrial environment e.t.c. When we consider the earth as an entity, we can broadly categorize environment scientifically into four major types:

Biospehere: is the environment in which plant and animals as well as man thrive. It is biosphere that sustains life on earth.

Atmosphere: is the gaseous envelop of the earth. It contains the gases nitrogen, oxygen, carbon-dioxide, argon and other gases which sustain life processes on earth.

Lithosphere: is that part of the earth crust just beyond the level reachable by roots of plants. It is in the lithosphere that most of the minerals exploited for man's wealth is found, example is crude oil.

Hydrosphere: is the water bodies of the earth rivers, lakes, streams, springs and oceans. The hydrosphere support both plant and animal life and also contained minerals which are exploited for wealth.

Environmental science is the study of all systems of air, land, water, energy and life that surround man.. It includes all sciences directed to the level of understanding of the environment, especially upon such disciplines as physics, chemistry, biology, mathematics and engineering. Environmental systems contain the complex processes that must be mastered in the solution of such human problems as the maintenance of renewable resources, the conservation of non-renewable resources, reducing effect of natural disasters, alleviation of chronic damage, abating pollution by man and coping with natural pollution (Nsi, 2007)

Environmental Pollution

An environment is said to be polluted when matter and energy is accumulated in it in a quantity more than "normal". Normal is referred to the natural quantity of that matter or energy in that environment which does not constitute any problem to the ecosystem (Tsafe, 2012).

Environmental Impact Statement (EIS)

The environmental impact statement is a mechanism to ensure that major projects or programmes undergo comprehensive review prior to construction or implementation. The review entails multidisciplinary, multi-agency, and public assessment of the environmental, economic and social impact of project or programme proposals, as well as consideration of alternative proposals for accomplishing public agency and private interest goals. An underlying premises of the (EIS) is that substantive

decision making that will improve a balance will emerge between public agency and private interest goals, if a broad range of environmental attributes and alternatives to a proposed action are examined before final decisions are solidified. In order to minimize or avoid adverse impacts, the (EIS) process can aid decision makers in identifying action likely to degrade environmental quality. (Nsi, 2007).

In other words (EIS) is the effect that people actions have on the environment. For example, when volatile organic compounds from industrial site, factories or laboratories are released into the environment, the effect or impact is pollution in the form of smog, in this case being negative. The (EIS) is a governmental document that outlines the impact of a proposed project on its surrounding environment. In Nigeria these statements are mandated by federal laws for certain projects (F.E.P.A, 2016).

Environmental Legislation

The federal government of Nigeria in 1998 established the Federal Environmental Protection Agency (FEPA) now federal ministry of environmental with effect from September, 1999). To protect, restore and preserve the ecosystem of the federal republic of Nigeria. There are two main subjects of environmental laws, control of pollution and the conservation and management of land, both sections of environmental law protect land, air, water and soil, corresponding to scientific biosphere, atmosphere, hydrosphere and lithosphere. FEPA requires all Federal agencies to prepare an (EIS) on any proposals for legislative and other major federal action significantly affecting the quality of human environment (FEPA) specifically requires that each (EIS) must contain detailed statement describing the following items;

- I. The environmental impact of the proposed action
- II. Any adverse environmental effect which cannot be avoided, should the proposal be implemented.
- III. Alternative to the proposed action
- IV. The relationship between local short-term uses of the human environment and maintenance and enhancement of the long-term productivity.

- V. Any irreversible and Irretrievable communications of resources which could not be involved in the proposed action should it be implemented.

The Federal ministry of Environment makes policies on environment and gives guidelines and implementation by FEPA. The role of the FEPA is to advise the establishment on the environmental policy and to prepare an annual report describing the status of trends in the national environment. FEPA issues guidelines setting forth the rules and procedures agencies must follow in the preparation of the EIS, document. These guidelines, with the aid of legal interpretation have had the effect of defining the scope of the EIS document and the review responsibilities of the agency which prepare it. Guidelines include among others:

1. EIS limited to about 150 pages
2. Statements in plain English
3. Require short summary for each statements.
4. Establish a time limit for submitting statements.
5. Establish a framework for inter-agency cooperation in preparing the statement and solving disputes among the agencies.
6. Require documents to be accurate and objective.
7. Ensure that an involved agency follows up on its statement and deals with problems resulting from its actions. (FEPA, 2016).

Preparation of Environmental Impact Assessment (EIA)

An environmental impact statement should enable agencies and individual reviewing the document to make a complete and balanced assessment of the potential of the degree of technical analysis, an educated person should understand the conclusions and the reasoning, which led to the conclusions of an EIS. The method of preparation and the form of an EIS will vary as widely as the diverse projects that require EIS. Current guidelines require all EIS's to address several generic topics.

The following six topics encompass the essence of EIS requirements.

1. Description of the existing environment
2. Description of alternatives
3. Probable impact of each alternative

4. Identification of the alternative chosen and the evaluation which led to its choice
5. Detailed analysis of the probable impacts of the proposal
6. Description of the techniques intended to minimize the adverse impacts (Inunkiwere, 2020).

Organizing an Environmental Impact Assessment (EIA) of Projects

Careful organization is crucial because different projects require different details of analysis, different research terms, and different plans of action. Making an accurate and rapid assessment of the proper detail of analysis, research personnel needs, and a plan for developing and coordinating the analysis is a key to the ultimate utility of the EIS. The discussion is then divided into:

1. The breadth and depth of an impact statement
2. The role of the multidisciplinary research term, and
3. The formulation of a research plan.

Generally, the breadth and depth of an analysis are determined by the specific proposal. Clearly a federal office building or a 100-unit housing development should not require the same level of impact statement as the oil pipeline or a nuclear power plant. Because each project is unique. The level of detail in its impact statement must be based on its own characteristics. Some of the characteristics to be evaluated include:

1. The geographic extent of the proposal (e.g has impact on area of an entire state)
2. The potential future ramification (e.g local, short term damage problems, oil spill contaminating an important estuary or a bread factory polluting the fresh air of a community with carbon dioxide from large fires).
3. The generality versus specificity of the proposal (e.g a general plan for housing renewal in a local government, proposal to build utility along a specific corridor).
4. The complexity of primary and secondary effects (e.g new housing leading to better housing and some additional short term construction jobs; petroleum refinery leading to possible water and air quality degradation, major addition of jobs and therefore, people move into the region, and need for hazardous waste recovery facility.

Overall, extent of research and information collection should reflect the potential cost to society of the adverse impacts. Specific projects and the environmental resources they use determine the overall dimensions of an impact statement and also the areas of emphasis within the statement. For example, in urban areas impact on social, economic and aesthetic conditions are likely to be crucial, whereas the impacts on the flora and fauna of an already significantly altered natural environment might be relatively small. A proposed dam would require greatly expanded section on water quality and flooding.

Therefore, an impact statement must be comprehensive enough not to miss any significant impact, and must identify the areas of greatest concern and concentrate on these areas (Inunkiwere, 2020).

Environmental Impact Assessment (EIA)

The first step in comprehensive environmental assessment is a decision as to whether or not it is necessary to prepare a detailed environmental impact statement on a particular proposed activity. If it is decided that an EIS must be prepared, certain procedures must be followed in accordance with FEPA. In the first step, the initiating agency prepares an environmental assessment of the proposed action. Included in this assessment is the accumulation and interpretation of all collected data describing the existing quality of the environment in the vicinity of the project site. If agency personnel feel that no impact statement is necessary, a brief appraisal of the predicted environmental impact is made and a document describing that appraisal is prepared. A declaration that no EIS is required (negative declaration) is prepared and circulated to federal, state and local agencies, interested persons, local newspapers and other media. The appraisal document, the negative declaration and supporting baseline environmental information are made available for inspection by other agencies or by individuals. If, on the basis of reviewers comments, the initiating agency personnel re-evaluate the situation and decide an impact statement is necessary, a full review of the project will be made (FEPA, 2016).

Methods of Environmental Impact Assessment (EIA)

Environmental impact assessments and the investigations associated with such assessments are quite complex. In order to facilitate such assessment, and to provide some means of comparing the results of assessments, several attempts have been made to develop standard method for such assessment.

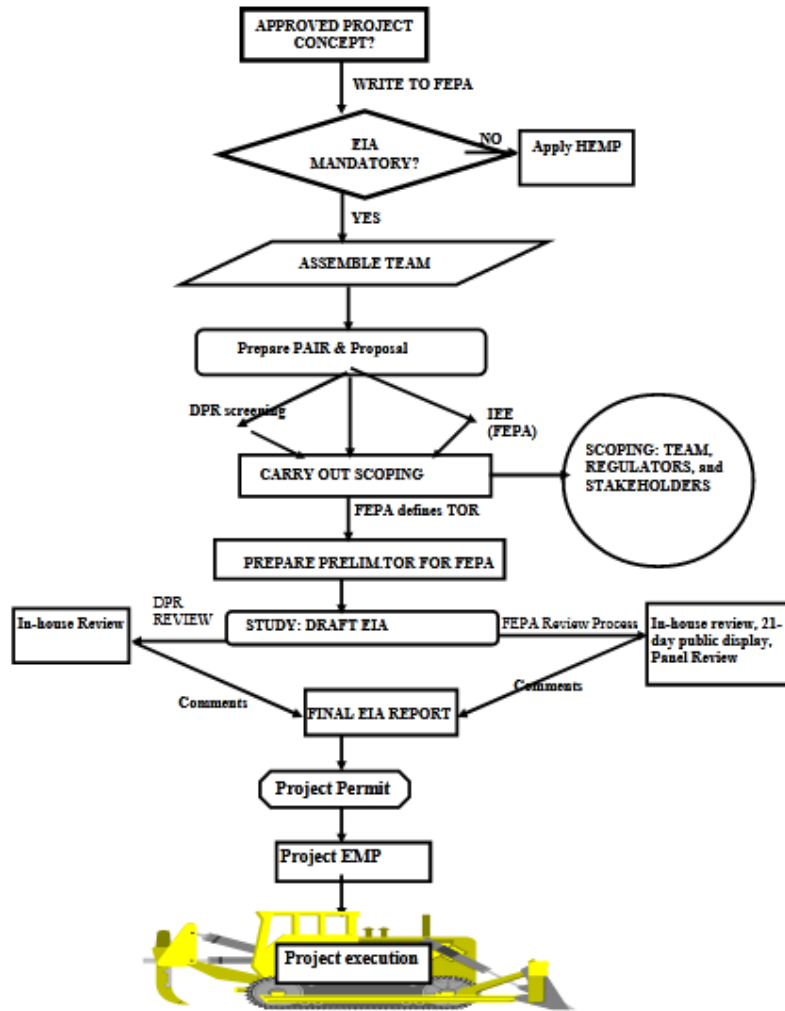
Economical analysis has been found inadequate for environmental assessment, because of the difficulty in assigning monetary values of environmental characteristics. Similarly techniques of graphical comparison have been used in an effort to visually represent the location and degree of impact in a proposed activity. More sophisticated techniques have been developed to graphically represent environmental impacts. These techniques include the use of maps overlays, computer mathematical analysis, value profiles, shaded matrices, relative merit analysis, physical models and contour mapping of impact severity (Bamidele, 2016).

In general, graphical techniques are useful primarily for communication. They are not inherently quantitative, nor are they sufficiently precise to allow accurate representation of the degree of impact. Sometimes, colours are sufficiently precise to allow planners to make informed decisions or to allow members of the public to form accurate impressions of the predicted impact of particular actions. Because of the difficulties in representing degree of impact in a quantitative fashion, some investigators have developed numerical systems for environmental analysis. These quantitative methods include ranking systems, priority rating, expected value methods, value matrices, utility theory applications and decision models etc. Unfortunately, none of the quantitative numerical methods of assessment, which have been developed, are sufficiently discriminatory. In order to be convenient for many projects the systems have been oversimplified.

Another method, which has been utilized in preparing environmental impact assessment, can be classified as a type of checklist. In this type of method, a long list of possible impact is compiled and the investigator reviews this list of potential impact while examining the possible effects of the proposed action. The analysis simply proceed through the checklist in order to uncover

many possible areas of impact. This type of method is useful primarily as a memory aid, not a quantitative investigation tool (Inunkiwere, 2020).

SIMPLIFIED EIA PROCEDURE



(Augustine, 2000)

Environmental Impact Assessment in Water Quality Management Planning

A first step in the development of the facilities planned for the study area involves the evaluation of the existing water treatment facilities, in order to determine the potential for development of comprehensive waste water management plan, the political, jurisdiction and administrative situation, in the study area is analysed. Generally, this development would help to eliminate point sources of water pollution, would help to improve water quality, and would help to obtain economy of scale in the design and construction of facilities.

In order to determine the capabilities for facilities design and construction, it is necessary to investigate the fiscal resources capabilities of the study area. This investigation of resources should include determination of funds available from federal, state and community participation. Systematic optimization techniques are employed to determine the alternative for waste water management that would require the lowest capital and operating expenses. Alternative sewer system configurations, alternative facility location, alternative degrees of treatment, alternative degrees of infiltration, inflow treatment and correction requirements are included in this phase of the study. It is possible to develop an environmental assessment of the proposed management plan for the area, and to include the alternatives, which had been identified as feasible also taking into consideration comments from the community. Next, the proposed water quality management plan is described. The location of the waste water treatment facilities and configuration of the proposed sewer systems as the schedules for construction and completion of the proposed water quality (Isah, 2012).

As required under the guidelines for environmental assessment prepared by FEPA (2016 report) in the evaluation of environmental impact of a proposed water quality management plan four general categories of impact are identified: ecological impact, impacts on the physical environment, socio-economic impacts; and aesthetic impacts. With regard to ecological environment, four environmental parameters are considered: effects on aquatic flora; effects on terrestrial fauna, effects on aquatic fauna and effects on

terrestrial flora. The physical systems impact are quantified with regard to impacts on water quality; land quality, air quality, hydrology, geology and noise levels. The socio-economic factors which are utilized in identifying socio-economic impacts include existing and future land use, economic development in the area, archeological resources, historical sites, religious facilities and sites, existing and planned transport facilities in the study area. After obtaining ratings of impacts for each environmental parameters describe above, it would be found that the null alternative for the area would have a significant detrimental impact on water quality (Isah, 2012).

CONCLUSION

The essence of environmental impact statement and assessment process in Nigeria is aimed at ensuring informed decision-making and sustainable development. The commitment to sustainable development is evident in the provision that development must be socially, environmentally and economically sustainable and require the consideration of all relevant factors. In addition, the preventive principles is required to be applied, i.e that the disturbance of ecosystems and loss of biological diversity minimized and remedied. The disturbance of the landscape and the nation's cultural and religious heritage is avoided in the constructions of projects or policies aimed at human development, where it cannot be altogether avoided is minimized and remedied. Considering existing environmental legislation and environmental laws that control, protect, restore and preserve the ecosystem of the federal republic of Nigeria.

RECOMMENDATIONS

1. Environmental education has a very strategic and important role in preparing people to solve global environmental problems. People needs continued education, especially in this area, because the environmental has been advancing rapidly (NSI, 2007).
2. Environment and other related issues are concerns of all the educationist facilities at any level. The top level politicians, executives, administrators and all the other entrepreneurs should also be educated.

3. One of the basic properties of the environmental education is the need from a close relation between the inter-discipline and inter-professionals-inter-discipline education requires different views and approaches to the same topic.
4. To assess potential environmental impact of an industrial plant or fiscal project, EIA needs to be carried out and the agencies that do not have EIA should be warned.

REFERENCES

- Augustine O. Isichei, (2000). Environmental Impact Assessment Report, Environmental Assessment Department, Shell Petroleum Company, Nigeria Limited, Warri.
- Bamidele, Fubara, R, (2016). Low of Environmental Protection, Material and Text, Caltop Publications (Nigeria) Limited, Ibadan.
- F.E.P.A (2016). Federal Environmental Protection Agency Strategic Environmental Pollution Control methods overview. Federal Ministry of Environment Abuja, Nigeria
- Inunkiwe, R. Isah, (2020). Environmental Guideline and Standards for the Petroleum Industry in Nigeria, Department of Petroleum Resources, Lagos State, Nigeria.
- Isah, Inunkiwe, R, (2012). Environmental Impact Assessment of Pipeline Project Eleme East, Department of Petroleum Resources Lagos State, Nigeria.
- Nsi, E.W., (2007), Basic Environment Chemistry, Department of Chemistry, Benue State University, Makurdi.
- Sadar, M.H., and Associates (1996). Environment Impact Assessment, Carleton University Press Ontario, Pakistan.
- Tsafe A.I, Alhassan, Y., (2012). Phytochemical Screening of Spinach Grown Using Waste water Irrigation method, Usmanu Danfodiyo University Sokoto State, Nigeria.