

ENVIRONMENTAL IMPACT ASSESSMENT (EIA): A CONCEPTUAL APPROACH FOR URBAN ENVIRONMENTAL MANAGEMENT FOR SUSTAINABLE NATIONAL DEVELOPMENT

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Abstract

Environmental Impact Assessment (EIA) is a means of finding the impact of a proposed project on the immediate environment and the appropriate measure to reduce the adverse effect. EIA emphasis in Nigeria is more on industrial projects than housing projects, hence, it does not mitigate the environmental problems in Nigerian urban towns. The urban EIA as conceptualized in the paper is meant to bring the government and the primary land developers (communities, families, kings and chiefs) to understudy an EIA of a layout land earmarked for development in the urban town. The urban EIA is purposely to identify topography structure, nature of drainage pattern, possible cause of flooding and flooded areas, areas susceptible to traffic congestion, areas suitable for residential, industrial and social amenities. The details study EIA also includes nature of soil, physio-chemical properties of underground water and structure of acceptable house and fence designed that ensure good ventilation and security alertness. When the urban EIA is adopted, developed and implemented by Federal Ministry of Environment Housing and Urban Development (FMEH & UD), it will reduce to barest minimum the urban environmental problem in Nigeria urban towns

The economic and technological growths of all nations degrade, pollute and upset the harmonious balanced environment. This is done through excessive consumption of non-renewal resources, production of waste, human over-population, urbanization and social deterioration. Consequentially, man suffers from serious environmental problems in numerous ways which include dramatic climate changes, increase in global warming, general poor health conditions, and living in filthy environmental conditions mostly slums in urban towns and sometimes, initiation of all sorts of natural disasters. All nations, sometimes regions are sensitive and concerned about the degradation of its immediate environment making policies and taking necessary steps to manage the environment. The peak of the global realization of the consequences of the activities of man on the environment were marked with the inauguration of the Preparatory Committee of United Nation Conference on Environment and Development (UNCED) at the earth summit in Brazil (Odubela, 2001). Nigeria's participation in the Earth Summit in Brazil led to the adoption of the summit agenda 21, building her interest to the awareness on environmental issues. Nigeria's involvement in the adoption of degree 186 on Environmental Impact Assessment (EIA) showed her concerted effort to achieve a sustainable development for the environment. The implementation guidelines and principles set out in the agenda 21 clearly clarified the position of the nation in modern environmental problems. This includes:

1. People are entitled to a healthy and productive life in harmony with nature.
2. Development today must not undermine the development and environmental need for present and future generation.
3. Nation shall enact effective environmental laws and development of national laws with regards liability for the victim of pollution and other environmental damages or where they have authority; nation shall assess the environmental impact.

Urban environmental management is a major environmental challenge many developing nations like Nigeria is condoning with. Urban towns in Nigeria are dotted with heaps of solid wastes, filthy residential drainages, blocked water ways and low plain lands filled with industrial solid wastes and liquid effluent (Ayeni, 1978). Atmospheric air is filled with noxious gases and particles from industrial gas emission and automobile exhaust. Experiences has showed that disastrous flooding and degrading soil erosion from run-off water result to lack of access roads cumulating into traffic congestion and poor transportation system. Most urban towns lack potable water as underground water is polluted with indiscriminate dumping of waste and countless underground septic tanks. According to Odubela (2001), there is a general poor condition with majority of people living in

dilapidated shelters in slums at advert poverty in the absence of social amenities and recreational infrastructures. Most of these people grossly indulge in various antisocial vices.

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process. For Nigeria to grow economically and technologically via industrialization, the country is constrained to pursuit the developmental process without assaulting and depreciating the environment in accord with the principles and guidelines of agenda 21. Thus, to develop creditably without compromising the natural integrity of the environment now constitutes a major challenge to sustainable development in Nigeria. The paper therefore be seen as an extended or collaborated conceptualized approach of using an important environmental awareness tool. Environmental Impact Assessment (EIA) which was already adopted by Nigerian government to tackle industrial environmental problem could now be use as a strategic management of urban environment, a major problem facing most urban towns Nigeria.

What is Environmental Impact Assessment (EIA)?

The general recognition that all activities of man ranging from agriculture, construction, industrial processes, mining, manufacturing, housing etc degrade or deteriorate the environment awakened the concept of Environmental Impact Assessment (EIA) with the realization that the environmental integration and development required policies, planning and well articulated management. The comprehensive and wider environmental impact assessment by both government and private development projects started with United State National Environmental Policy Act (NEPA) of 1969, which was passed into law in January 1st 1970. After the American States countries like Canada adopted EIA legislation in 1973, the Netherlands in 1981, Japan in 1984, and some other developing countries like Columbia, Brazil, Thailand, and Philippines that later cancelled EIA legislation. In Nigeria, EIA legislation become effective from EIA degree of 1992 Institute of Chartered Chemist of Nigeria (ICCON, 2010).

Adejemilua (2003) defined environmental impact assessment as a process or study in which the potential physical, biological, economic and social impact of a proposed development on the immediate and more distance environment are identified, analyzed and predicted. ICCON (2010) defined environmental impact assessment as a process used for predicting the environmental consequences of a proposed major developmental project and planning the appropriate measure to reduce adverse effect. On the whole, EIA focuses on the potential problems, conflicts, natural resources, constraints, environmental changes that affect the viability of the project and also examines how the project could cause harm to the people, their properties and socio-economic livelihood or other nearby developments. These impacts, either adverse or favourable are satisfactorily assessed and fully incorporated in the planning, design, authorization and implementation of the project. According to ICCON (2010) EIA degree defines environment to mean the:

- (i) Component of the earth and its included land, water, and air including all layers of the atmosphere.
- (ii) All organic and inorganic matter and living organism.
- (iii) The interacting natural system that include components referred to in (i) above.

Bilateral and multilateral agencies such as the World Bank, Organization of Economy Cooperation and Development (OECD), United Nation Development programme (UNDP) make EIA mandatory for finding a developmental project. In short, United Nation Commission on Environment and Development (UNCED) (1992) proclaimed in principle 17 that “Environmental Impact Assessment as a natural instrument shall be taken for proposed activities that are likely to have significant adverse impact on the environment and are subject to a decision of a component of National Authority. ICCON (2010) made it clear that EIA is an environmental management tool for officers, managers, engineers and policy makers who take important decisions about major developmental projects Odubela (2001) see EIA as an economic and engineering process and environmental feasibility study that presently regarded as sine qua non in the design and executions of viable sustainable economic project.

Based on the foregoing definitions of EIA, the major aims or purpose of EIA among others include:

1. To study the effect of the proposed action on the environment.

2. To predict the likely change in the environment quality and in terms of magnitude, extent and significance of the proposed action.
3. To help provide option in design, sitting, operation and even abandoning the proposed project.
4. To find a way of reducing, compensating, remedy the unacceptable impact and assist the developer to introduce the best mitigation measure right from the beginning of the project designing and planning.
5. It helps to bring the various stakeholders, community people, the developer and government together to less friction in development.

EIA mandatory project are categorized into three types based on six criteria:

- i. Extent of or scope.
- ii. Duration and frequency
- iii. Associated risk
- iv. Duration of impact
- v. Availability of mitigation measure for association and potential impact identified.

Thus, the three categories of developmental project covers – agricultural project, infrastructures, construction, mining activities, petroleum activities, manufacturing industries, power generation and housing.

Urban Environmental Growth and its Problem on Planning

Urban towns are so classified based on number of residing people and extent of available modern infrastructure. Presently, Nigeria has more than 200 urban towns that are undergoing rapid development. Nigeria urban towns experienced unprecedented growth in the last decay due to urbanization accelerated by ever changing social, political and economic atmosphere as well as rapid population growth (Falea, 2000). Among other factors that are responsible for rapid urban growth is better housing, urban serenity of beautiful appearance, entertainment freed from constrain of village traditions, urban prestige, better educational opportunity and variability of religion freedom devoid of village traditions. Also, the urban town offers affordable opportunity in art, craft, professionalism, trade and industries (UNDP, 2001). It is a known fact that most urban towns in other parts of the world and Nigeria represent an amalgamation of many urban systems that evolved through different times and period in varying socio-economic milieu (Ayeni, 1978). The urban system expand gradually through housing project as layout or large portion of land area mapped out and sold by different authorities, communities, executives, kings, chiefs, organized families and businessmen land owners. Sometimes, it comes from the overlapped growth of independent close communities with the communities not eliminating their peculiar individualistic characteristics.

The major problem of urban town is that of environmental deterioration emanating from inadequacy of existing urban facilities and over utilization of the available few facilities without the ability to maintain, provide new ones to meet the need of the current rate of urbanization, a situation that give rise to number of problems, viz:

- (1) **Flooding and effect of runoff:** Where natural water channels are blocked by construction activities and drainage ways are covered with solid waste and garbage, it leads to flooding. Similarly, as surface vegetation are removed by construction activities, runoff water become fast thereby accelerating erosion that gradually form gully that consequentially, wash away houses, foundation of structures and roads.
- (2) **Traffic congestion and bad roads:** Large number of automobile and human population cause traffic congestion that subsequently gives rise to inadequate transportation. Sometimes, stress demand for residential building create problem as there are no proper access road, a situation that complicate the transportation of services and goods. Besides, exhaust emission from automobile and other machinery fill the air noxious gases and harmful particles.
- (3) **Solid and liquid waste effluent:** Urbanization in the absence of proper waste management give rise to accumulated solid wastes in cities while industrial liquid effluents are emptied into streams and low plane lands. These pollute underground water and surface water provides shelter for disease vectors of all kinds.

- (4) Lack of potable water as surface water and underground water are polluted.
- (5) Poor shelter infrastructure, especially the collapse of building and inability to maintain the over utilized obsolete infrastructure especially those residential buildings that belong to the informal sector.
- (6) General poor health condition as water, air is highly polluted as there is no adequate provision for health facilities for the populace.

Roles of Environmental Impact Assessment (EIA) in Urban Environmental Management

Urban environment problems so far mentioned originated from urban land development pattern and usage, thus this aspect needs thorough surveillance (Mobogunje, 1974). The land usage pattern is usually classified into residential, industrial, commercial and social amenities, urban land units. However, the primary developer – (the chiefs, organized families, kings) in disposing the land to the secondary developers – (individuals, cooperate bodies, business men) do not consider the urban land usage pattern neither do they cogitate the biophysical structure – e.g. topography, natural drainage pattern, and socio-economic atmosphere etc prevailing in the urban system. To closely monitor and find ways of mitigating to some extent removal of environmental problems, the government in collaboration with the primary developer need to carryout environmental impact assessment (EIA) of the proposed new layout purposely to expose the perceived environmental problems This is all paper is intended to address.

A concept is thought, idea, principle, logical construct derived from senses, impression, perception and experiences which only has meaning within some frame of reference (Ajanlekoko, 2001). The frame of reference of EIA concept visualization as applied to urban environmental management entails the followings:

- a) The urban EIA is government statutory developmental policies.
- b) The EIA will be directed on the development of a new layout in the urban area.
- c) The EIA will be jointly developed by the primary developer authorities (family, community, kings, chiefs) and the state government.
- d) The urban EIA authorization will be resided under a state directorate of Federal Ministry of environment, Housing and Urban Development (FMEH & UD).
- e) That land development by both secondary and primary developers in the urban towns can only be done in a layout whose EIA has been certified completed.
- f) The New urban land or layout earmarked for development must be up to or more than 50 hectare (0.5Km²) and must have its EIA study certified completed

The conceptualized urban EIA procedure indicates the various steps to follow in an urban EIA program for complete development of a new urban layout. It has six steps which include:

- (i) Screening
- (ii) Preliminary assessment
- (iii) Full EIA study
- (iv) EIA review
- (v) Public participation.
- (vi) Past environmental auditing.

However, the urban EIA study has a different operational approach and few steps that include:

- (i) Layout identification,
- (ii) Location and choice of land usage pattern,
- (iii) Identification of environmental problems,
- (iv) Identification of physico-chemical features;
- (v) Identification of socio-environmental features

- (i) **Layout identification:** This is the actual mapping out and the dimensional survey of the land layout in areas and blocked identification using the following identification characteristics:

Viz

- a. Into terrain of low and high plains;
- b. Physical dimensional survey of the land;

- c. Topography study of the area;
 - d. Natural drainage pattern of the land and
 - e. Direction of wind movement and speed of the wind
- (ii) **Location and choice of land usage pattern:** Based on step one above, the layout land area is mapped into residential area, industrial area, commercial area, social-amenity area. However, it is not mandatory that the land usage pattern of each EIA unit must contain all sections mentioned above. Sometimes, two or three etc EIA urban could have a common recreational facilities, social-amenities and industrial area.
- (iii) **Identification of environmental problems:** In the conceptualized urban EIA procedure, the possible perceived problems will be pre-identified and well stated in the framework ideals, under the following headings Viz
- a. Generation and best management of waste – solid and liquid; this includes the projected amount of possible waste.
 - b. Runoff water and flooding and the suggested control method or systems.
 - c. Design of net work of roads.
 - d. Identification of traffic congested vulnerable areas – roads, road junctions, and the possible projected ways of controlling the congestion.
 - e. The projected potable water demand and the distribution.
 - f. Distribution and locating of social amenity schools, hospitals, community conference halls, motor parks etc.
 - g. Location of recreational facilities – sport pitches, amusement parks, relaxation parks.
 - h. Designed of centre sewage treatment system.
- (iv) **Identification of physio-chemical features:** This involves the collection of data in respect of physio-chemical parameter of the area well indicated in zonal locations within the specified EIA urban area under study with special reference to the following properties.
- a. Soil nature of the EIA area.
 - b. Underground water quality of the area – this include PH value, presence of trace metal ions, dissolved salts etc.
- (v) **Identification of socio-environmental features:** Identification and proposal of educational model and management, type of schools, size and location.
- a. Health services provision – health centres, clinics and maternity.
 - b. Nature and size of acceptable house in the layout. This could be only down houses, one story or two story building etc depending on the soil composition of the area. Size of minimum open spaces of a compound and the type of compound fence that will encourage good air ventilation and security alertness.

Conclusion

1. Government should focus on the development of urban EIA study as a means of raising the awareness of Nigerians about the deterioration of environmental condition of its immediate inhabitant.
2. The urban EIA should be made mandatory for the development of new layout in urban towns' especially residential housing which will reduce the poor environmental sanitation condition in urban towns.
3. The urban EIA development and implementation is an alternative means of taking care of the health condition of the urban dwellers.
4. The implementation of urban EIA in urban development is a means of beautifying urban town with little or no extra cost from inception of development.
5. The incorporate of urban EIA in urban plan helps to reduce the mental stress and physical fatigue the inhabitant of urban towns encounters on daily basis.

Recommendations

1. The state and local governments in collaboration with the primary developer should develop the concept of urban EIA.
2. The federal Ministry of Environment and Urban Development (FMEN & UD) at the state level directorate should mandatorily implement the urban EIA as regards to urban house project and infrastructure construction in the urban towns.
3. The government should impose serious penalty on any developer who fails to abide with the urban EIA development guidelines

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