

Justifying Integrating Environmental Impact Assessment into Construction Processes For Sustainable Development

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Abstract

Environmental Impact Assessment (EIA) is a management mechanism used to predict the effects of actions on the environment with a view to providing mitigation measures and determining whether a development action should go ahead. The United Nations Environmental Protection (UNEP) set the baseline for countries to adopt EIA as a tool for environmental and project sustainability. Most countries adopted and enacted the law in their peculiar forms. However, the effective implementation as the case of Nigeria, with specific reference to the infrastructure sector leaves a lot to be done. The objective of the paper is to demystify and establish the justification for the integration of EIA with building construction project process to secure the environment from threats of construction impacts. A survey of some companies in the Federal Capital Territory, Abuja and two other states to determine whether institutional framework for the implementation of EIA existed was made. It was found out that of the nine (9) organizations contacted, only one (1) had EIA Department, buttressing the fact that no institutional framework for implementation is in place. Furthermore, data for a period of 10 years of registered and approved EIA projects was obtained from the Department of Environment (DOE), Federal Ministry of Environment (FME), Abuja. The data from 1995-2005 shows that a total of 479 EIA projects were registered and 275 were approved in the period. The housing and urban development sub-sector could only account for two (2), raising an alarm that need to be addressed.

Keywords

Environmental Impact Assessment; Building Construction Projects; Integration; Sustainable Development; Construction Impacts

I. Introduction

The construction industry is an important and inevitable service industry that contributes immensely to the process of the development of the environment. The Construction of houses, hospitals, schools, factories, roads and other heavy engineering works such as dams, bridges, irrigation and water works are the physical basis on which the developmental efforts and the improvement of the environment are based upon. The industry provides a significant source of economic resources and social environments resulting in employment opportunities and other social amenities on the one hand and displacement of communities, accidents and pollution of the environment on the other. It has been estimated that the industry employs about one-third of any country's total registered labour force, hence the extent of the effect of man's interaction with the environment (Glasson et al., 1999). For the sustenance and the dynamism of livelihood, every growing society is characterized by the erection of structures (either permanent or temporary) for the purposes of shelter, being the second basic necessity of life. The design, construction, maintenance and use of these structures have impacts on the environment, some of which are significant. These impacts may cause adverse effects and could contribute to irreversible changes

in the global climate, atmosphere and consequential damage to the ecosystems. The production processes of the built environment, which is bedevilled by activities that cause environmental changes, need to be examined so as to identify the impacts for the purposes of mitigation.

Environmental considerations are increasingly becoming crucial in development planning and policy decision-making processes of many countries; both developed and developing. This is because of the increasing concerns for the effects of development activities on the environment. The effects of air and water pollution, deforestation, soil erosion and unsustainable exploitation of natural resources threaten quality of life. This trend, according to UNEP (1988), must be discouraged so as to conserve the natural base of the environment for the present and future generations.

With the impending environmental threats in Nigeria, one of the main problems encountered is the level of implementation of the EIA Act in the respective sectors of the infrastructural development areas. Very few environmental assessments have been prepared since the enactment of the law. To a certain extent, this could be attributable to administrative pragmatism. Hence, the resultant significant problem is therefore the lack of political will on the side of government in integrating EIAs into national physical and socio-economic development aspirations.

The dominant problem of implementation of EIA in the building construction sector seems to be lack of defined structure in the conventional production process, making it difficult to integrating the EIA component satisfactorily. Another task in this regard is the failure of the stakeholders to develop the process of identifying specific impacts for EIA in the building process because impacts in the oil and gas fields vary considerably to those in the building construction sector, hence the ranks to severity of impacts of every development sector unavoidable. Though, the provision of the EIA law made the implementation of EIA activities mandatory on defined building projects, yet no appreciable progress is recorded, which gives so much concern.

A. Aim of Paper

To justify how EIA could form integral part of construction process and indeed the fourth project objective of the client.

B. Environmental Impact Assessment for Sustainable Development

Underlying the estimation of potential impacts as the central role of EIA makes it one of the instrument used to achieve sustainable development that does not cost the earth (Glasson et al., 1999). There exist environmentally harmful developments that need to be managed carefully. In extreme cases, EIA may be ignored, but that may still leave residual environmental problems for decades. Economic and social developments must be placed in the context of the environment.

C. Sustainability Justifications

The framework of this paper is predicated on the principles researched by some scholars in the built environment.

- Wathern (1988) established that impacts of construction projects on the environment are not static and that EIA is synonymous with feasibility studies, used by officials as planning and management tool for policy formulation on development projects. Here the proposition further strengthens the fact that impacts are relative on individual project sites.
- Bamisile (1999) maintained that feasibility and viability studies cannot be fully completed until and unless EIA is conducted. The statement further requires consulting professional Builders to advise clients on the need to include EIA report in the terms of engagement, if not originally considered.
- Ofori (1992) suggested that to develop a culture of environmental protection in construction, clients should adopt ‘the environment’ as the ‘fourth’ project objective in addition to the conventional time, cost and quality.

D. Integration of EIA in project cycle

The EIA system has been described as a procedure for the identification and disclosure of the environmental consequence of a proposed development and the incorporation of environmental considerations at the earliest stage so as to influence the project planning, design, implementation and management (Ebisemiju, 1991). Effective incorporation can only be achieved if EIA is a fully internalized element of the project planning process, as demonstrated in fig. 1. Bamisile (1999) noted that by virtue of the EIA laws in Nigeria and the increasing concerns for environmental issues worldwide, feasibility and viability studies for construction project cannot be fully completed until and unless an EIA is conducted. This means that the environmental assessment should be carried out at the inception of a proposed action when there is still a real choice between alternative courses of action, such as alternative sites, designs, feasible strategies of action, technologies for aspects of the project, as well as the do nothing alternative.

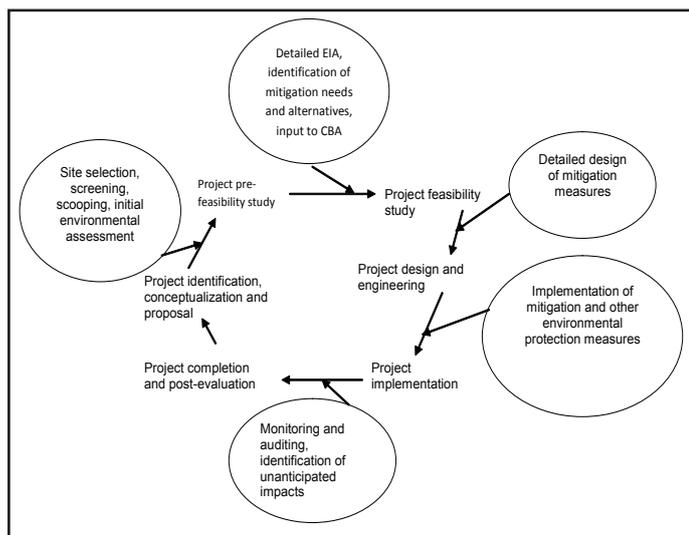


Fig. 1: Integrating EIA into the Project Cycle
Source: Glasson et al (1999)

II. EIA Survey Data

Data culled from a PhD research study by the author highlights the gabs needed for the integration of environmental impact assessment (EIA). The Nigerian situation is similar to other developing nations; hence the recommendation for proper

integration could be applied elsewhere to ensure sustainable development in construction of project implementation, avoiding effects of impacts.

A pilot survey of some companies in Nigeria shows that institutional frameworks for the implementation of EIA barely exists as revealed in Table 1. A further cursory inquiry in the official ministry charged with the implementation and monitoring of EIA in Nigeria shows that the housing and urban development sub-sector has virtually no record of EIA approved projects (Table 2). Thus indicating the need for an alternative to make EIA an integral part of the building construction processes.

Furthermore, the result of survey by Keftin (2009) in Nigeria show that building construction activities constitutes the following adverse impacts ranked according to severity:

- Destruction of the vegetation
- Energy/material wastages
- Noise of construction operations
- Air pollution
- Dust
- Soil erosion and desertification
- Water pollution
- Flooding
- Visual disturbance
- Loss of wildlife

The effect of an impact may be unique and relative to a specific environment, the order notwithstanding. For instance, though loss of wildlife is ranked least by this research but it may turn out to be the most significantly adverse impact in a certain area of consideration. Hence, the examination of these impacts is imperative during an EIA on a selected project.

With these logics, the quest for integrating EIA in the process of building construction delivery becomes justifiable.

Table 1: Availability of EIA Departments in Organizations

S/No	Name of Organization	Location	EIA Dept.
1	Federal Capital Dev. Authority (FCDA)	Abuja, FCT	No
2	Terrestrial Dev. Const.	Abuja, FCT	No
3	African Petroleum plc.	Abuja, FCT	No
4	Madugu Const. Co.	Yola - Adamawa	No
5	Solid Builders	Abuja, FCT	No
6	Julius Berger of Nigeria plc.	Abuja, FCT	Yes
7	Federal Housing Authority (FHA)	Abuja, FCT	No
8	Vatt net Nig. Ltd	Abuja, FCT	No
9	Yekco Nig. Ltd.	Takum - Taraba	No

Source: Culled from Authors' PhD dissertation report (2010)

Table 2: Breakdown of Approved Infrastructure EIA Projects in Nigeria.

Yr/sub-sector	Coastal Dev.Proj	Port & Harbor Dev.Proj	Transportation proj	Housing & Urb. Dev.Proj.	Domestic water & waste disposal	Power transmission	Total
1995	0	0	0	0	0	1	1
1996	0	1	1	0	0	0	2
1997	0	1	1	0	1	2	5
1998	1	0	2	0	0	2	5
1999	0	0	3	0	1	1	5
2000	1	0	0	0	2	0	3
2001	0	2	2	0	0	1	5
2002	2	2	0	0	3	2	9
2003	1	2	2	0	2	4	11
2004	1	1	2	1	1	4	10
2005	0	2	2	1	1	5	11
Total	06	11	15	02	11	22	67

Source: Culled from Authors' PhD dissertation report (2010)

III. EIA as a Preliminary Activity

A typical construction project cycle involves conceiving the idea of the work by the client, which is usually defined in a brief form. Then a preliminary investigation is carried out (including feasibility studies) to determine the viability and sustenance of the project to conclusion. The working drawing is then developed, while the instruments of the construction are being mobilized. Construction then commences in earnest and at completion, the built product is commissioned and occupied.

Feasibility and viability study (FVS) is a critical investigation that establishes and examines structures, advantages and disadvantages of project for the environment over a period of time with the investigation of alternatives. A feasibility and viability study is therefore simply a preliminary activity that is meant to predict whether a project could proceed or not.

On the other hand, EIA is a process designed to predict the environmental consequences of any development project and also determines whether a development action could proceed or not. This makes FVS synonymous with EIA, given that their objectives are similar. Juxtaposing the conception and implementation of FVS with EIA gives a better understanding of the need to integrate environmental issues with construction of building processes. Fig. 2 shows a graphic illustration.

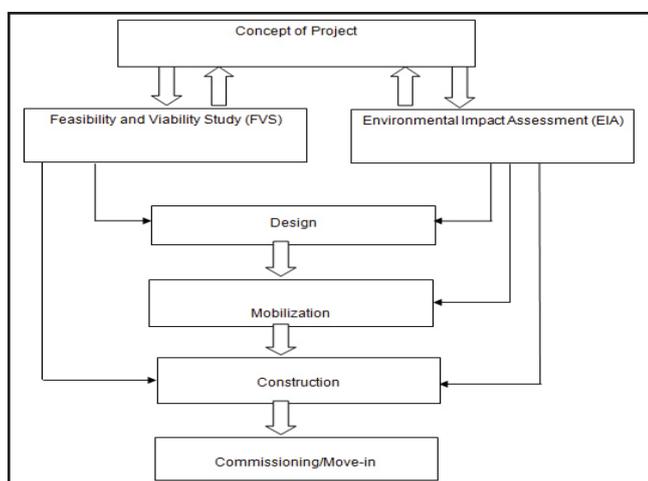


Fig. 2: Synonymy of FVS and EIA
Source: Authors' concept, 2010

IV. Environmental Impact Assessment as a Project Objective

In line with Ofori's suggestion that 'the environment' should be the fourth project objective, a further relationships of cost, time, quality and the environment is developed in the form given in figure 3. This concept is expected to be reflected in the overall objectives of the client, now and in future to address damning environmental challenges that accompany building construction activities.

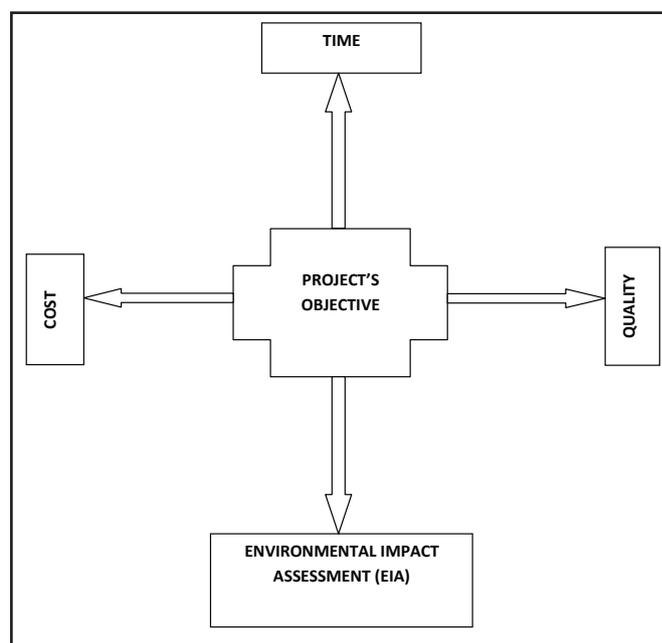


Fig. 3: Proposed Interrelation and Interdependency of Cost, Time, Quality and Environmental Impact Assessment
Source: Authors' concept, 2010

V. Conclusion

Today, the world is channeling so much human and financial resources to address the issue of global environmental threats, hence its call for countries to adopt EIA as an effective management tool to predict effects of actions on the environment with a view to providing mitigation measures. The implementations of this vary among countries mainly because of parity of resources, strategy and skills. Therefore, in order to attain a satisfactory level

of sustainability in the built environment, the Builder who is the progenitor of construction management and its processes must sensitize other relevant professionals to admit and integrate EIA with building construction processes, so as to preserve resources and materials, acknowledging that the environment is actually the 'fourth' project objective of the client.

VI. Acknowledgment

The Department of Environment in the Federal ministry of environment, Abuja is hereby acknowledged for supplying information in Table 2.

References

- [1] Bamisile, A., "Methodology for Feasibility and Viability Studies", Workshop on Professional Builders in Practice organized by NIOB/CORBON in Enugu, 27-28 October, 1999.
- [2] Department of Environment (DOE). (1989). Environmental Assessment. A guide to procedures. London; Her Majesty's Stationary Office (HMSO).
- [3] Ebisemiju, F. S., "Creating an enabling environment for Environmental Impact Assessment in Africa", Journal of Issues in Social Science 1(3), pp. 78-89, 1991.
- [4] Environmental Impact Assessment Act Cap 86. (1992). Federal Environmental Protection Agency. Lagos.
- [5] Federal Environmental Protection Agency. (1995). Environmental Impact Assessment. Procedural Guidelines. Abuja.
- [6] Federal Environmental Protection Agency Act Cap 131. (1992). Lagos.
- [7] Glasson, J., Therivel, R., Chadwick, A., "Introduction to Environmental Impact Assessment.. UCL press Ltd. London & Philadelphia; USA, 1999.
- [8] Keftin, N. A., "Assessment of Compliance of Building Construction Projects with Environmental Impact Assessment Requirements in Nigeria", FUTY Journal of the Environment, Vol. 4, No. 1, pp. 36-44, 2009.
- [9] Keftin, N. A., "Integration of EIA with Building Construction Projects in Nigeria", PhD Dissertation Report. University of Jos, Nigeria, 2010.
- [10] Munn, R. E., "Environmental Impact Assessment: Principles and Procedures", SCOPE Report 5, 2nd ed: Chichester, England. John Wiley, 1979.
- [11] Ofori-Cudjoe, S., "Environmental Impact Assessment in Ghana. An ex post Evaluation of the Volta Resettlement Scheme: The case of the Kpong Hydro-Electric Project. The Environmentalist 2(1), pp. 45-54, 1990.
- [12] UNEP, "Environmental Impact Assessment- Basic Procedures for Developing Countries", The World Bank, 1988.
- [13] Wathern, P, "Environmental impact assessment—theory and practice. London: Routledge, 1988.



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