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Review

Integrating indigenous environmental knowledge into the environmental impact assessment process

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Emerging challenges of Environmental Impact Assessment (EIA) indicate that environmental impacts are becoming larger and more complex, hence the need for the incorporation of Indigenous Environmental Knowledge (IEK) as well as the integration of aboriginal people into EIA research, policy and process. In most cases, most EIAs are far from this realization, hence ineffectiveness. IEK is the knowledge, experiences, wisdom and philosophies about the environment in which the people live and can bring to bear in environmental assessment and management. To achieve this, research on indigenous knowledge and management systems should include taxonomical, spatial, temporal, and social perspectives. This paper therefore suggests that IEK should be documented and backed-up by law, if we are to achieve sustainable project development.

Keywords: Environmental Impact Assessment, Indigenous Environmental Knowledge, sustainable project development, Valued Ecosystem Components.

INTRODUCTION

Environmental Impact Assessment (EIA) is one method of safeguarding the environment from adverse impacts of development projects. Reducing the burden of environmental impacts is necessary if development is to become sustainable, hence, EIA is a tool for decision-making. This role is formally recognized in principle 17 of the Rio Declaration on Environment and Development. Simply defined, EIA is a systematic process to identify, predict, and evaluate the environmental effects of proposed actions and projects (UNEP 2002). The social, cultural and physical impacts are considered as integral parts of the EIA process. The key trend and imperatives of EIA for sustainable development is its sustainability which reconciles environmental, economic and social aims.

Emerging challenges of EIA indicate that environmental impacts are becoming larger and more complex. The problems with EIAs have been accentuated in the past decades as the size of proposed development projects has increased. Thus, as the demand for the reliance on

EIAs increase, so does scrutiny of the research, process, policy and the underlying assumptions. This is particularly true where the impacts of development affect indigenous communities. Agreeing with this, Appiah-Opoku (2005) opines that increasingly, developing countries are implementing institutional and procedural frameworks for EIA that are based on Western, European and North American models, thereby applying international environmental prescriptions that have much stronger linkages with western science and policy than with the socio-economic and institutional conditions in their own countries. Earlier, Stevenson (1996) has identified two fundamental limitations that affect EIAs, as lack of adequate ecological baseline data, and the lack of an adequate framework or method to link ecological and social components of the environment. As a panacea to these limitations, the EIA process should incorporate the roles of indigenous knowledge as well as integrate the aboriginal people into decision-making in EIA research, policy and process. This means that any useful process

must be sensitive to local circumstances, socio-economic and cultural as well as ecological perspectives.

A number of experts have advocated for the inclusion of indigenous knowledge into EIAs (Marie, 2002; Usher, 2002; Appiah-Opoku 2005). In her contribution, Marie (2002) sees indigenous knowledge as comprehensive and interdisciplinary in nature, dynamic and innovative in character, and predictive in power. Currently, these are far from realization, hence the ineffectiveness of most EIAs. This paper therefore explicitly advances a process of incorporating indigenous knowledge into the EIA process as a panacea to the achievement of sustainable project development.

Overview of EIA Legislation and Practice

EIA is an innovative process recommended by different international agencies as a valid environmental protection tool, and endorsed by the experience gained in developed countries that have incorporated it into their legal systems (Espinoza and Richards, 2002). EIA implies greater creativity and social responsibility in the design and execution of proposed actions and projects. This means that the particular components, stages and activities of the EIA process depend upon the requirements of the country or donor. However, most EIA processes have a common structure as the application of the main stages is a basic standard of good practice.

Governments have found various ways to put the theoretical objectives of EIA into action. However, there are times when practice and theory do not match. This is a fundamental conflict, as is further compounded by the fact that the political jurisdiction, not the ecological considerations of government agencies often set the boundaries for an impact assessment.

Overview of Indigenous Environmental Knowledge (IEK)

A more appropriate term for the knowledge, experiences, wisdom and philosophies that indigenous/aboriginal people can bring to bear on environmental assessment and management, is **indigenous environmental knowledge** (IEK). This term, which is beginning to find favour with indigenous organizations (ICC 1993) and academicians alike (Gombay 1995), is less contentious, more inclusive and thus more empowering than any other kind of knowledge (Stevenson 1996). According to Usher (2002), some call it traditional indigenous knowledge (TIK), others refer to it as aboriginal knowledge (AK), and some, local ecological knowledge (LEK). From these, one may see IEK as conceived of something specific to place and particular people, and is differentiated in both form and content from other types of knowledge generally and from science specifically.

Stevenson (1996) views IEK as having two sources – traditional and non-traditional knowledge. This perspective acknowledges two facts; first, is that indigenous people also possess knowledge and experiences, and secondly, that indigenous knowledge is the articulation, and frequently the dialectic, of traditional and non-traditional knowledge. It can therefore be seen that IEK is intertwined into people, their history, culture and ecosystems, and continually grows and changes as ecological pressures influence its development (Grenier 1998, Battiste and Henderson 2000, Sillitoe 2002, Mead, 2003). These give credence to IEK being often referred to as TEK, to emphasize the symbiotic nature of the relationship between humans and the natural world (Ruddle 1993).

The International Indigenous Committee's (IIC) 1991 report to the United Nations Committee on Economic Development found three general features of IEK. These are ecological knowledge (which is sought through experimentation as well as observation), means or analogies from human kinship (that often express it), and finally, as geographical (organized by reference to particular places and people). The rights of aboriginal people to fully participate in decisions concerning developments that affect their lands, cultures and lifestyles have been recognized in international agreements (e.g. Agenda 21, UNCED 1992). Also, the Convention on Biological Diversity (CBD) refers to the knowledge of indigenous and local countries (Article 8(ii)) as the indigenous knowledge, and should be integrated into development activities. At the same time, growing recognition of the limits of conventional science in solving ecological problems of increasing complexity and magnitude has resulted in calls for the incorporation of indigenous knowledge and practice into resource management and development (WCED 1987, Wolfe *et al* 1992, ICC 1993, Appia-Opoku 2005).

Indigenous Environmental Knowledge (IEK) and Environmental Impact Assessment (EIA)

Although there is a growing body of literature on the value of IEK throughout the world, only in recent years have researchers seriously examined the potential of using this knowledge in conjunction with western science to study the impacts arising from development projects (Sallenave, 1994). Johannes (1993) had earlier examined the potential for incorporating IEK into EIAs. He suggested that for IEK to be useful for EIAs, research on indigenous knowledge and management systems should include four perspectives – taxonomical, spatial, temporary and social. His rationale for these showed:

- i. Taxonomic perspective: Where researchers must identify and understand the significance of geological and physical resources taxon to the inhabitants of the region.
- ii. Spatial perspective: here, sites and routes of

sensitive environments and animals should be verified and identified and these are easily known by the inhabitants.

iii. Temporal perspective: where indigenous resource users know the location and timing of a host of significant geological events, and

iv. Social perspective: here, EIAs require an understanding of how indigenous people perceive and use the environment.

IEK was well established prior to government-conceived natural resource management in many parts of the world, and so we might assume that it greatly informs, and is reflected in EIA. However, when we look for examples of EIAs that demonstrate this reality, we find virtually none. For instance, the EIA legislation in Nigeria offers very little in the way of concrete involvement of indigenous knowledge. Nevertheless, indigenous people will continue to seek ways of including their knowledge and input to improve environmental relations and assessments of development projects in their traditional territories. As a panacea, Spalding *et al* (1993) identifies four categories of IEK relevant to EIA. They are:

- i. Knowledge about the environment
- ii. Knowledge about the use of the environment
- iii. Values about the environment, and
- iv. The knowledge system.

While culturally heterogeneous and diverse, many indigenous elders assert that they, in common, have a responsibility as stewards of mother earth. However, in modern nation states, this point is in direct conflict with legislation and regulatory agencies, which have been assigned the responsibility 'for the good of all citizens' to determine the most effective and efficient use of resources. Indigenous communities assert their sovereignty to traditional lands and resources through discourses of rights and title. In Nigeria, the present land reform policy is aimed at solving some of these sovereignty problems between indigenous communities and the Land Use Act. This is equally the heart of the conflict, which is expressed through public policy on environmental matters, and displayed most prominently in the actions of resource development and environmental assessments.

Sadler and Boothroyd (1994) observe that traditional perspective is holistic because environmental assessment is an integral part of daily life. It is a feedback loop of which people observe the consequences of past and present actions and consider the likely impacts of future action. According to Nwafor (2006), EIA is integral with the cultural life of the community, and is practiced directly and continuously by those who simultaneously harvest, manage and control environmental resources.

Incorporating IEK into the EIA Process

The EIA process must recognize ecosystems health as well as the complex histories, rights and titles of indigenous people by affirming indigenous relationships at the interfaces within the EIA process. An indigenous knowledge-based environmental assessment process is more a theory than a reality, but such a process could reflect what Penny (1994) terms a "sustainability paradigm" According to him, recognition of sustainability embraces community participation fitting with IEK as a body of knowledge built up by a group of people through generation of living in close contact with nature. Johnson (1992) sees it as a system of clarification, a set of empirical observations about the local environment, and a system of self-management that governs resource use.

The EIA process comprises of project planning and design, screening, scoping, impact analysis, baseline studies, and review. Considering how IEK contributes to each of these processes of an EIA requires distinction among facts based on observation which can be verified, inferences or hypotheses which can be tested, and values and norms which are matters of personal preference, community consensus or cultural standards.

i) Project Planning, Design and Screening

The World Bank Operational Directive called for the involvement of the affected people in project implementation, particularly in the preparation of EIA (Burdge and Robertson 1990, Nwafor 2006). Such an early start is a precondition for the achievement of project sustainability and overall sustainable development.

The next step begins with screening. The purpose of screening is to determine whether or not a proposal requires an EIA, and what level of EIA is required. The involvement of indigenous people and integration of their knowledge into EIA begins when the indigenous communities most directly affected by proposed development identifies the Valued Ecosystem Components (VECs) from their perspectives. This process begins with community consultations and continues through to a direct exchange of information between the developers and with the target groups and individuals selected by the community members themselves. This allows the documentation of VECs expressed by indigenous communities. By this documentation, indigenous people participate directly and effectively in impact prediction and assessment, based on what they know, what they have experienced, or what they fear might happen in the future. On the other hand, the process affords the developer an excellent

opportunity to grasp and understand the reasons for these concerns, especially those based on indigenous knowledge, and the impacts proposed development activities will have on indigenous lands and lifestyles.

ii) Scoping and Impact Analysis

Scoping identifies the key issues and impacts, and should involve the key stakeholders (i.e. those to be affected by the proposal), the wider community, etc. Identifying the affected people and their knowledge at scoping phase generates the identification and discussions of key issues about the proposed project and thereby assists in the preparation of appropriate Terms of Reference (TOR). The key impacts identified here are considered significant if they affect community lifestyles, traditional land uses and values. At the technical heart of EIA are the notions of identification and prediction of impacts, the evaluation and management of those impacts, and the communication of information to decision-makers through the EIA report. Consultation at this stage should be comprehensive and adequate because the effectiveness of EIA very much depends on the TOR, as well as makes for the incorporation of local values into the decision-making process.

iii) Baseline Studies

Traditional laws are influenced and conditioned by historical, cultural, political and environmental variables that reflect very unique conditions. Cole (1993) observes that because nature is stochastic, many variables which play an important role in one geographical location may not apply for another area. According to Nwafor (2006), baseline studies seek to establish the state of the environment, society, and economy of the location of a proposed project. To buttress its importance, he further says that it usually refers to a collection of background information and data on the physical environment and socio-economic setting for a proposed development. The effectiveness of baseline data can be enlarged through IEK. IEK can contribute to environmental assessment by providing a broader and deeper understanding of baseline conditions and a fuller understanding of local environmental processes, at a finer and more detailed geographical scale. Specific indigenous environmental relations vary so widely that we need to reject the universality inherent in the current assessment approaches.

iv) IEK and the Determination of Significance of Environmental Impacts

Indigenous peoples have a special relationship to the

land, its resources and the environments that support the continued health and abundance of the land and the natural cycles. This long-standing relationship encompasses spiritual, social, cultural, economic, political and legal connections to the environment. As they still maintain this close relation and reliance on the land and resources, their concerns about the state of the environment are heightened. They have a greater degree of exposure to environmental degradation and change, and tend to suffer more directly from the impacts of environmental degradation. The exploration and development of natural resources occur mostly within the territories of indigenous people. The resultant and cumulative impacts of potential and past developments are affecting the suitability and well-being of indigenous communities. Their rights to a more inclusive and relevant process also include active participation in determining the significance of environmental impacts. This is advisable and necessary to avoid the loss and deterioration of their lands and resources, the disruption of their traditional lifestyles, as well as to protect their health and community well-being.

Indigenous people want, need and have the right to be involved at the stage of environmental assessment when the determination of the significance of environmental impacts occurs. They are best qualified to assess whether or not project-related environmental impacts are significant to them. Active and meaningful involvement of indigenous people at this stage will ensure that their values and knowledge contribute to understanding and identifying environmental effects.

v) EIA Review

The purpose of EIA review process is to establish if the information in an EIA report is sufficient for decision-making. One of the key objectives of the review process is to take account of public comments through public hearings. Public hearings generally involve separate technical and community sessions.

EIA is a public policy making tool that is open and responsive to both public opinion and stakeholder rights and interest. EIA process is the most structured and visible, in which participants can contribute both information and opinion in a wide range of matters. It has formal procedures, including public hearings, for obtaining and adjudicating information and opinion. These procedures are not strictly judicial, as audience is neither led nor cross-examined by legal counsel, and panels have some discretion in setting and applying their procedures. EIA panels are accountable for how they gather and use information, and their recommendations must be based transparently on that information. Panel reviews are always subject to public scrutiny and may also be subject to legal challenge if they violate the principles of administrative fairness.

vi) Decision-making

Decision-making is a process of balancing economic, social and environmental factors. Decision-makers are advised to adopt more open and participatory approaches. To buttress this, Annuziata *et al* (1955) opined that traditionally, indigenous people make all decisions related to land use within their territories and have established laws that govern the use and protection of the environment. Most nation's laws require that relevant ministries and agencies of the federal government engage in meaningful consultation with indigenous people when a project, subject to an EIA, has the potential to infringe upon or adversely affect the indigenous rights.

However, given that under current law in Nigeria, indigenous people do not have veto powers, the next best process at the decision-making stage of an EIA involves consensus decision-making. This involves government and indigenous people working together to identify ways and mechanisms to avoid and/or minimize infringement on the laws and/or indigenous rights through changes in project design and/or operation and/or mitigation measures.

vii) Monitoring and Follow-up

Finally, is the monitoring and follow-up stage if the project is approved and proceeds. A follow-up programme serves to verify the accuracy of the EIA and to determine the effectiveness of mitigating measures. The involvement of indigenous people should be comprehensive, including participation in the initial design, ongoing implementation, and analysis of the results of follow-up and monitoring programmes. The scope of follow-up and monitoring programmes should address the efficacy of mitigation measures and the accuracy of predicted environmental impacts. On the other hand, IEK can be used for monitoring impacts on VECs and for testing impact hypotheses and predictions in a follow-up programme (Stevenson 1996).

CONCLUSION AND RECOMMENDATION

Indigenous people have a special relationship to the land, its resources and the environments that support and make their livelihoods sustainable. They equally express the view that IEK can contribute substantially to the quality of EIA by providing relevant biophysical and historical information, identifying potential environmental impacts, improvement of project design, strengthening of mitigation measures, and above all, building of enhanced long-term relationships between proponents, aboriginal groups, and/or responsible authority. This paper has shown that IEK must be integrated into EIA process if

indigenous people are to have faith in the process at all. They have a vested interest in ensuring that projects that are situated within their territories are subject to the highest quality of EIA possible. To ensure the realization of this, it is recommended that IEK should be properly documented for incorporation, as well as the integration of the indigenous communities into the entire EIA process and backed up by law, to achieve sustainable project development.

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