108TH INAUGURAL LECTURE

University of Nigeria

Humanising Environmental Impact Assessment Practice in Nigeria: A Cultural Anthropological Excursion

An Inaugural Lecture of the University of Nigeria, Nsukka delivered on Thursday, May 12, 2016

Professor Pat Uche Okpoko
Professor of Cultural Tourism and Social Impact Assessment
University of Nigeria
108th Inaugural Lecture

HUMANISING ENVIRONMENTAL IMPACT ASSESSMENT PRACTICE IN NIGERIA: A CULTURAL ANTHROPOLOGICAL EXCURSION

By

Professor Pat Uche Okpoko

LECTURE SUMMARY

Managing the impacts of development projects or programmes is a policy problem. Experience has shown that if a policy problem is not appropriately structured to take into account its various dimensions, such as the human and biophysical, policy failures are likely to result (Liebow, 1990). Attempts to identify and analyse environmental impacts and utilize environmental impact assessment (EIA) outcomes in the development process in Nigeria appear to be skewed in favour of biophysical parameters in spite of the general understanding that development interventions exert tremendous impacts, negative and positive, on the well being of the people. Consequently, the human dimensions to development interventions are either neglected or handled shabbily with a smattering of common sense. EIA represents attempt to predict or anticipate the consequences, negative or positive, of development activities on environmental items, including the human environment; the ultimate aim being to enhance the positive consequences, while eliminating or reducing the negative impacts.

We had argued elsewhere, that EIA along with its constituent social impact assessment (SIA) emerged in response to society's increased concern with environmental degradation and the social implications of technology ((Freudenburg, 1986 in Okpoko, 2001, 2007). It was initiated by the United States Government through her National Environmental Policy Act of 1969, which took effect in 1970. Thus, EIA/SIA practitioners should, first and foremost, endeavour to give prominence to human dimensions in all EIA reports. This entails identifying, assessing and utilising the socio-cultural and economic outcomes of EIA, as enunciated by well qualified social scientists.

Using in-depth interview and semi-structure questionnaire, supplemented by literary sources, we found that human dimensions have received little consideration in terms of funding, use of appropriate personnel and weighting when compared to biophysical parametres in EIA practice. There is, also, no policy guideline for implementing the social dimension, although the EIA Act of 1992 incorporates a number of its elements. The

methodology for social assessment is also not streamlined, making practitioners to adopt all manner of methodology that they individually deem fit. Indeed, both the contents and processes of development appear to negate the human dimension. The resultant effect is the perennial crisis in operational areas, particularly in the Niger Delta, which, in turn, culminates in the destruction of oil installations, work stoppages, abduction and man-handling of oil officials and ultimately low productivity.

It is averred that scholars who appreciate environmental science and have qualifications in anthropology, sociology (particularly for projects located in urban societies), community health, psychology, archaeology and agriculture (especially extension or economics), etc. should be engaged to conduct SIAs (HSE Manual, 1996). Other disciplines may play some roles depending on local needs and circumstances. Indeed, the professional competence of SIA practitioners should be gauged by their appropriate qualifications, experience with activities of interest and knowledge of the region in which a project(s) take(s) place as well as ability to establish relations and interact with the local people. … (HSE Manual, 1996). In actual fact, competent hands should be engaged to conduct individual SIAs, one that covers socio-cultural issues and the other economics. Alternatively, more time and resources could be allocated to allow an extensive and incisive study by a competent consultant(s).

Scholars in the above specialist areas can also be assembled to conduct broad-based studies aimed at producing a comprehensive SIA database or regional socio-cultural and economic profiles that will cover parts of the country. Such a profiling will not only eliminate the unwholesome practices of 'cut and paste' and, therefore, wrong data presentation, but also help to reduce cost and facilitate future SIAs. The profile can be updated every five years to capture new social changes and emerging structural developments. Anthropological contribution is pivotal in this regard. This is because anthropology is all about the study of man; while social or cultural anthropology, its sub-field, studies the social, cultural and economic patterns of society in temporal and spatial contexts; including their individual variations and how these inform human behavior and adaptation to the social changes that are almost always associated with development interventions.

It is hoped that the above recommendations along with those outlined hereafter will help to chart a new course for the conduct of SIAs in the country. This is a sure way to humanise Environmental Impact Assessment practice in Nigeria, while making development interventions more generally acceptable to the host communities.

1. INTRODUCTION

> If …scientists can demonstrate how pollution, environmental degradation, and ecosystem damage affect social groups unevenly, their research may generate much larger interest and may lead to more support for remediation…Furthermore, when affected citizens actively participate in the process to better understand science and inform policy responses, better decisions emerge as a result. This approach to environmental research humanizes the science and can be a galvanizing force, a lightning rod for scholarship and action (Am J Public Health, 2011).

The above statement underscores and aptly captures the main essence of this lecture and why it was conceived. It not only explains the need for environmental research and practice to wear human face, which the lecture canvasses, but also encourages that the people whose domain has been earmarked for development intervention should participate in the process. This approach will not only make the host population have a sense of belonging, but also ownership of project outcomes, which ultimately enhances the sustainability of intervention programmes. Indeed, the past four decades or so have witnessed increasing awareness of the very relevance of impact assessment and social soundness analysis in project planning and implementation. This is informed first, by the successes recorded by projects, which took account of environmental and social investigations in project initiatives, and second by the need to preserve the environment for future generations in line with the demands of National Environmental Policy Act of 1969 enacted by the United States' parliament, United Nations' Conference on Environment and Development and the World Commission on Environment and Development's report of 1987 tagged "Our Common Future", which has been adopted by many national governments.

It is instructive to note that environmental impact assessment (EIA), albeit social impact assessment (SIA), is essentially an attempt to predict or anticipate the likely positive and negative implications of development projects on environmental items, including man with a view to enhancing the beneficial impacts, while reducing or eliminating the adverse effects. EIA is a people-centered programme that can effectively be actualised if social dimensions are appropriately handled, if project proponents consider the sensitivities of the people in whose domain a project is being instituted, and if the study is conducted by those who have the wherewithal to do so. This is where social scientists and other social analysts have the greatest competence. In actual fact, social analysts have, over the decades, studied "social impacts" or "social consequences" of human activities. Freudenburg (1986) has traced

the origin of such studies to the earliest days of sociology, especially with respect to the concerns shown by Toennies and Durkheim to the social consequences of the Industrial Revolution. Retrospective analysis of social impacts has been a major feature of anthropological analysis (Cottrell (1951) and Sharp (1952) in Burdge and Vanclay, 1996). According to Burdge and Vanclay (1996: 63), … "the social impacts of tourism has been a major field of study …, with early anthropological analyses dating back to …1964. Eric Cohen … has been a leading researcher in this area of study".

However, the field we now refer to as social impact assessment (SIA) emerged in response to the United States' National Environmental Policy Act (NEPA) of 1969, which took effect in 1970. This Act was in response to "society's increased concern with environmental degradation and the social implications of technology" (Freudenburg, 1986). Even in this new dispensation, anthropologists have done notable and outstanding SIA researches using ethnographic approaches. Richard Stoffle and his colleagues, Amy Wolfe and her colleagues, Mark Schoepfle and Edward Liebow stand out here (Liebow, 1990). SIAs are generally anticipatory as they predict the likely impacts of project actions; nevertheless, retrospective analysis of projects has featured in many empirical SIAs. Both in its origin and contributions, SIA is thus a hybrid, a field of science and a component of the policy-making process (Freudenburg, 1986). Consequently, in order to achieve a balanced socio-economic development, a compromise must be struck between project actions and the way environmental and socio-cultural resources are exploited and utilised.

It is to achieve this compromise that anthropological contributions become very apparent so as to integrate socio-cultural, economic and environmental concerns into policy, planning and implementation of projects, particularly in rural areas. For it is important for decision-makers and the public to appreciate that people experience various degrees of impact following the exploitation and/or utilisation of environmental resources (Okpoko, 2007). But the success or otherwise of such ventures is critically dependent on the training and experience of the assessor(s). According to Liebow (1990:3), the way impact assessment is conducted can make or mar project outcomes and how they are perceived or received by the people. It can make a conflict-ridden situation worse, but it can reduce the level of conflict if properly handled. This is where ethnographic/anthropological research can be most useful. This is because of the several hallmarks of ethnographic research, including the fact that it is:

> (1) localised, giving explicit attention to specific, local concerns; (2) collaborative, taking care to acknowledge community residents as local experts whose collaboration is essential to the research enterprise; (3) holistic, addressing historical and contemporary issues of economy, polity, and ideology; and (4) … presumed by the researcher that the subject communities have maintained their cultural integrity, unless persuasive evidence to the contrary is available.

Indeed, ethnographic findings have had direct application to mitigation planning, [which SIA employs as a remedial tool]. Furthermore, through collaboration with ethnographic researchers, local community members are empowered and exposed to differing points of view that enable them to respond in a more sophisticated manner to development proposals and outcomes (Liebow, 1990:4).

It must be noted from the onset that anthropology appears to be the only discipline that studies man holistically. It studies the bio-physical, philosophical, social and economic characteristics of man in time and space. It is broadly classified into two sub-disciplines, namely physical anthropology and social/cultural anthropology. The former studies palaeontology and human variation; while the latter focuses on human social life including the origin, history and dynamics. Social/cultural anthropology is grouped into three sub-disciplines and these include archaeology, linguistics and ethnology (Oke, 1984). The main demand of social anthropology is to study the complexity of the modern world, arising mainly from development interventions and change, by critically examining the contexts. It is, therefore, in a vantage to understand the relationship between man and his environment, and how both exist either in symbiosis or conflict or both. This might explain why successive guidelines introduced in the incipient stages of EIA recommended anthropology as a key discipline that is well tailored to conduct EIA, albeit SIA, research.

Despite the vantage position of anthropology and/or the recommendations of the initiators of EIA, the regulator and project proponents in Nigeria appear to ignore this reality to the detriment of the entire process. Although social dimensions are adjudged to be important, they are yet to be fully integrated into EIA process. Given the above scenario, the following questions readily come to mind: (1) What is the place of social dimensions in the scheme? (2) Do the operators insist that SIA consultants have appropriate social science training…? (2) Do they see the need to check the credentials of scholars who undertake SIA? (4) What roles do anthropologists and other social analysts play in the process? This lecture brings to light the social dimensions of environmental impact assessment (EIA), assesses EIA

practice, delineates the roles that should be played by practitioners and shows why anthropological contributions are pertinent if the process must be humanised.

1.1 Theoretical Underpinnings

A good number of models for explaining effects of project actions on the host population are beginning to emerge. A model is "a representation of reality, a simplified and generalised statement of what seems to be the most important characteristics of a real-world situation" (Ofomata, 1985 in Olemeforo, 1987). These models include risk perception shadow (RPS) used by Stoffle *et al.*, (1987, 1988a) used to explain the probable radius within which perceived impacts can be measured and where they begin to diminish or thin out. Another is the concept of linear communities developed by Oak Ridge National laboratories (ORNL) researchers for cases in which hazardous technologies like gas pipelines affect long, narrow geographic area. Others include social organisation model developed by Branch *et al.,* (1984) which sets out a list of variables and appropriate data sources for examining each of the factors in the model; and comparative SIA model developed by Inter-organisational Committee on Guidelines and Principles for Social Impact Assessment (NOAA Tech. Memo, 1994). This model is used to "study the course of events in a community where an environmental change has occurred, and extrapolate from that analysis what is likely to happen in another community where a similar development or policy change is planned" (NOAA Tech. Memo, 1994). There is also the cultural theory which posits that "people's cultural preferences can …produce behaviour that differentially exposes people to potentially dangerous environmental conditions" (Stoffle *et al.*, 1993). Finally, there is the psychological theory, which recognises that cognitive structure, socio-psychological factors, anxiety, experience and intuitive ways of thinking can structure the risk perception of subjects.

It is instructive to note that there are other scientific and/or anthropological models, which predate the enactment of National Environment Policy Act of 1969, that could be used to study organisational impacts on society. Prominent among them are the systems theory and cultural ecological model. The first posits that any organisation… may be studied as a system, in order to examine how its component parts are related and how changes in some components or in their relations produce changes in the overall system (Sharer & Ashmore, 1979). The term "environment", "in a systems approach, refers to all factors that are external to the system and that may cause change in the system or that are affected by the system" (Sharer & Ashmore, 1979). The cultural ecological model, on the other hand, incorporates the

tenets of general systems theory. It points out that "the sum of specific interactions contained within an overall cultural ecological system defines the nature of the society's cultural adaptation" (Sharer & Ashmore, 1979). It stresses that "each society adapts to its environment primarily through its technological system, but also secondarily, through the social and ideological systems" (Sharer & Ashmore, 1979). Some of these models, among others, have been employed in many empirical EIAs in the developed countries.

1.1.1 Risk Perception Shadow

The concept of risk perception shadow (RPS) is used for defining the population that perceives itself to be at risk from a development project whether or not a scientific position has been detected. In this case, issues and concerns raised by the host population are used to delineate the populations at risk. Such project includes those that generally involve potentially dangerous substances or activities (Stoffle et. al, 1993).

An RPS has been defined as a "geocultural area encompassing a generally contiguous human collectivity who calculates themselves to be at risk from a proposed or operating project" (Stoffle et al, 1993). It is argued that perceived risk is greatest immediately adjacent to the … site… and diminishes slowly in all directions away from the central site" (Stoffle et al, 1993). It is opined that "sociocultual impacts occur to the extent that individuals and community respond to their own perceptions of … risk" (Stoffle et al, 1993). Such responses are often reflected in the people's general attitudes to the project and these may be expressed in protests, rallies, media coverage, public enlightenment programmes, etc.

Risk perception shadow employs databased definition in determining the locally affected population. A locally affected population, according to Stoffle et al (1993), "potentially includes racial, cultural, religious and economic group that stands to be specially affected by … a project". In a developing economy like ours, this may include such social categories as farmers, fishermen, women, the elderly, children etc. that are likely to be specially affected by project activities.

Stoffle et al (1993) suggested five main criteria to be considered when seeking a definition of the locally affected population. They are project awareness, directness of impact, significance of impacts, number of impacts, and duration of impacts. For project awareness, it has been demonstrated by scholars (Ridington, 1982; Werner, 1985; Van der Pligt et al, 1986; Edelstein, 1988; Gibbs, 1990 Waller & Mitchell, 1991; Ellis et al, 1993 in Stoffle et al, 1993) that "the awareness and perception of potentially hazardous conditions or

projects provides sufficient impetus for social and psychological impacts to occur …". It is pointed out that "local people will not act to preserve their environment if they are unaware of or perceive no risk to it". Directness of impacts hinges on whether or not the project could directly or indirectly affect the host population. Significance of impacts refers to how the local population perceives and assigns values to the change that affect them. For instance, men seem to focus on employment prospects while women generally focus more on family and health impacts. For number of impacts, it is assumed that the more the number of impacts an individual experiences, the more the magnitude of impact he or she feels. Finally, duration of impacts refers to how persistent the impacts are or will be. For instance, project construction jobs last for short duration; local taxes paid by the project persist throughout the life of the project, while the destruction of non-renewable resources during project actions may last forever (Stoffle et al, 1993).

The concept of risk perception shadow is very relevant to EIA as it affords us the opportunity to select our population by reference to specified criteria. In this way, the specially affected population which may be overlooked by conventional random sampling technique will be identified and studied.

1.1.2 Linear Communities

The concept of linear communities is used "for cases in which technologies such as hazardous waste transportation or gas pipelines and their impacts affect long, narrow geographic areas" (Schweitzer et al, 1993). Such technologies include those that traverse diverse areas and are not confined to compact site. Linear communities are communities of impact whose members are exposed to some form of technology-induced environmental hazards. They are neither functional nor ecological units. Instead, "they are created by a technology and its potential areas of impact…" (Schweitzer *et. al,* 1993).

Determining the range and magnitude of impacts created by a particular technology can delineate linear communities. In this case, an arbitrary line can be drawn around an area encompassing the bulk of impacts that are local in effect. On the other hand, boundaries can be imposed depending upon the impact of interest. Focusing on risk posed to human health and well-being, community boundaries can be delimited in one or more of the following ways:

1. By predicted probabilities of harm of particular magnitudes.
2. By identifying areas of potential perception of risk defined by such probabilities.

3. By delineating areas of public concern about project action, its by-product, emission management and positive and negative impacts to the community (Schweitzer, 1993).

Linear communities are analytical creations. Although they are territorially-based, they are not as clearly distinguishable as politically bounded communities. They may traverse several local political jurisdictions including state and national boundaries. What this means is that such communities are difficult to study by reference to any social networks. Such networks do not revolve around the technology of concern. The concept of linear communities is used here to refer to the people who share common experiences and impacts emanating from a given non-point-source technology or technologies.

1.1.3 Social Organisation Model

The social organisation model was developed by Branch et al (1984) in which they set out a list of variables and appropriate data sources for examining each of the factors in the model. It uses the following categories of social impact assessment variables: community resources; community social organisation; and indicators of individual and community well being for the identification of social impacts. Each of these categories is divided into sub-categories all of which are further sub-divided.

Under community resources, Branch et al (1984) identified the following variables: historical experience with emphasis on community origin, prominent and recurrent and unsolved problems that continue to plague the community, etc; socio-cultural characteristics of the area as reflected in ethnicity, language, religion, livelihood/occupation, property ownership and residential location etc.; demographic characteristics of the community in terms of total population size, age/sex distribution, degree of homogeneity and educational characteristics of resident, etc. Other variables include occupational and labour force characteristics; employment/income characteristics; facilities, services and fiscal resources available; organisational and regulatory structure as well as attitudes toward the proposed actions, etc.

On community social organisation, the following variable are listed: diversity and complexity of community's economic, political and social structure; distribution of resources/power as reflected in equity, power sharing and the basis of obtaining wealth; coordinate and co-operative mechanisms that have been established in the community; and personal interactions as expressed in residential arrangements.

The following are listed under indicators of social well-being: rates of behaviour as reflected in crime, divorce, suicide, infant mortality, family violence and metal health problems, alcohol and drug abuse, public assistance and welfare, school drop-out and student turnover, unemployment (Branch et al 1984). Others include access to resources in areas of income, community services, and environmental resources; community perceptions and individuals well being.

1.1.4 Comparative Social Impact Assessment Model

Comparative SIA model is used to "study the course of events in a community where an environmental change has occurred, and extrapolate from that analysis what is likely to happen in another community where a similar development or policy change is planned" (NOAA Tech, Memo, 1994). This approach is essentially comparative. In other words, "if we wish to know the probable effects of a proposed project in location B, one of the best places to start is to assess the effects of a similar project that has already been completed in location A" (NOAA Technical Memo 1994).

Five categories of variables are listed under the comparative SIA model. They are population characteristics; community and institutional structure; political and social resources; individual and family changes; and community resources. Each of these variables is to be assessed with reference to planning or policy development, implementation or construction, operation or maintenance, and decommissioning or abandonment stages of a project. Population characteristics are used here to refer to present and expected change, ethnic and racial distribution, relocated populations as well as the influxes or outflows of temporary workers and other seasonal residents. Community and institutional structures are used to refer to the size, structure, and level of organization of government including their linkages to larger units. Other variables listed include "historical and present patterns of employment and industrial diversification, the size and level of activity of voluntary associations, religious organizations and interest groups and …how these institution relate to each other" (NOAA Tech. Memo, 1994). The main trusts of political and social resources are power sharing, the interested and affected population, and leadership capability and capacity within the community.

The variables listed under individual and family changes include those that may influence the general life of individuals and families. Among them are attitudes, perceptions,

health and safety arrangements, family characteristics and friendship networks that may be impacted. Others include attitudes toward the project and concerns about social well-being.

The following are listed under community resources: patterns of natural and land use, housing and community services; health, policy and fire protection and sanitary facilities. Others include cultural, historical and archaeological resources as well as religious and sub-cultural groups.

The proponents of the model are of the view that "these variables are suggestive and illustrative and are only intended to provide a beginning point for the assessor" (NOAA Tech. Memo, 1994).

1.2 Definition of commonly used Concepts

It is necessary to clarify in detail some of the concepts used by SIA practitioners, most of which have been used in this lecture. Although scholars may differ in their usage or application of the concepts, especially with reference to details, the ingredients are generally similar and often convey similar messages. The concepts include:

1.2.1 Environmental Inventory or Baseline Condition

Environmental inventory or baseline condition is the complete description of an area prior to project implementation. Such an inventory covers the physical, biological and cultural environment of the area in which a project action is proposed.

The physical environment comprises the geology, topography, surface water, and ground water resources, water quality, air quality and climatology. The biological environment covers the flora and fauna of an area, including such features as species diversity (aquatic and terrestrial) and overall stability of the ecosystem. The cultural environment includes "human population trends and population distribution, historical and archaeological sites, and economic indicators of human welfare" (Canter, 1975).

As Canter (1975) rightly observed, "environmental inventory serves as the basis for evaluating the potential impacts on the environment, both beneficial and adverse, of a proposed action". In some other literature "description of the existing environment" or "description of the environmental setting without the project" is used to refer to environmental inventory or baseline condition.

1.2.2 Environmental Assessment or Environmental Impact Assessment (EA or EIA)

This represents "an attempt to evaluate the consequences of a proposed action on each of the descriptors in the environmental inventory" (Canter, 1975). As succinctly put by Petry & Boeriu (1995), "EIA is the study of the effects of a proposed action on the environment, where in this context, environment is taken to include all physical, biological and socio-economic aspects". It attempts to predict and evaluate, for instance, the anticipated concentration levels of pollutants in the air and water as well as examine the impacts of a project action on flora or fauna including man. In other words, EIA researchers aim to "predict the consequences of proposed projects for the environment (both natural resources and human institutions and practices) in order to allow informed decisions on project design and implementation" (Quinlan, 1993).

Three basic steps are essential for environmental impact assessment:

1. Prediction of the anticipated change.
2. Determination of the magnitude or scale of the particular change.
3. Application of an importance or significance factor to the change (Canter, 1975).

In order to realise the ambitions of the initiators of EIA, prepare an inventory and write an impact statement, conceptually unified studies are generally conducted by experts who are versed in environmental science. The essential aim is to make development projects more "environment-friendly". The initiators believe that "each generation … are trustees of the environment for succeeding generations. In carrying out this trust responsibility, the present generation may seek the widest range of beneficial uses of the environment that can be obtained without degrading the quality of the environment or creating unintentioned, undesirable consequences" (Scovill et al, 1977). This view forms the basis from which many national governments and funding agencies draw their environmental policy guidelines. These guidelines require that environmental impact statement (EIS) must precede any action that is likely to impact the environment. Thus EIA represents the key step in meeting this requirement.

1.2.3 Environmental Impact Statement (EIS)

EIS is a document, which summarises the environmental inventory and the findings of the environmental impact assessment. It is written after an environmental assessment of a proposed action. It, thus, summarises the baseline condition as well as the likely consequences of the action on such conditions. It also provides modifications to the action

where necessary. Sadler Baxter (1997) summarised the main features of environmental impact statement as follows:

(1) The contents of the (project) or programme and its main objectives.

(2) The environmental characteristics of the area likely to be significantly affected by the project or programme.

(3) Any existing environmental problems which are relevant to the project or programme.

(4) The relevant environmental protection objectives, and the way these and other environmental considerations have been taken into account.

(5) The likely significant environmental effects of implementing the project.

(6) Alternative ways of achieving the objectives of the project or programme and the reasons for not adopting these.

(7) The measures envisaged to prevent, reduce and offset any significant diverse effects on the environment.

(8) Any difficulties (such as technical deficiencies) encountered.

Two stages of EIS are usually followed. The first is the draft statement while the second is the final statement. The former is prepared by the agency or organisation proposing an action. Such a draft statement is then sent to experts and supervising agencies for reviews and comments. This is followed by the final statement which takes cognizance of the problems and objections raised by the reviewers (Canter, 1974).

1.2.3 Social Impacts

Social impacts refer to the consequences which a proposed project, policy or programme is likely to have on human populations, communities or individuals. Such impacts may alter the ways in which people live, work, recreate, relate to one another, organise to meet their needs and generally cope as members of a society (NOAA Tech. Memo, 1994). In essence, the project, policy or programme may affect the following features of social life: population, economic conditions, employment, religion, health status, education, social structure and organisation, e.g. relationships and obligations to kins; gender relations, cultural life such as language, rituals and general life-style; rights over and access to resources; political and dispute resolution institutions and process; values, e.g. perceptions

of the quality of life; cultural property, e.g. sites of historical, spiritual or religious value, etc (HSE Manual, 1996).

1.2.4 Social Impact Assessment (SIA)

This is a "process which predicts the significant social consequences of an activity, evaluates alternative sites, techniques and technologies … and proposes the changes and management solutions that will lead to the enhancement of positive effects and a reduction of adverse effects" (HSE Manual, 1996). It is the systematic analysis of the likely consequences of planned actions on the human environment. In essence, SIA represents "efforts to assess or estimate, in advance, the social consequences that are likely to follow from specific policy actions." (NOAA Tech. Memo, 1994).

SIA is a component of EIA and it is required to be conducted from the planning/policy development stages of any action and ending with decommissioning and abandonment if they become necessary. This will help planners respond to new demands and challenges as they arise. As part of EIA, SIA should, therefore, identify: the characteristics of the receiving community or communities; the potential social impacts of an activity and the associated developments; the options to avoid or reduce adverse impacts and to maximise beneficial effects; and alternatives relating to the social effects of an activity or project. SIA should also: provide information to the relevant authorities and the communities; establish communication, trust and involvement with the community; develop an action plan containing mitigation and monitoring requirements; identify measures to be incorporated into the continued management of the project as well as ways for the project to contribute to the community or communities (HSE Manual, 1996).

It suffices to note that description of impacts, as either beneficial or adverse, is relative to the perceptions of different groups and individuals. For what is seen as impact by one group may not be seen as such by another. Even where both of them appreciate that impacts occur, the degree of such impacts may be differentially perceived. This explains why SIA practitioners advocate that a compromise be struck between emic and etic appreciation of impacts.

1.2.5 Social Equity of Impacts

This term is used to refer to the distribution of impacts amongst the social collectivities that constitute the communities of impacts. It takes cognisance of the fact that

some people experience more impacts than others. Thus, while assessing impacts, it is necessary to specify them in line with the different stakeholder categories to enable one understand their individual perception of such impacts. "This will provide an opportunity to identify those that are benefiting from the project, and help ensure that mitigation measures are aimed at those who are likely to experience adverse impacts with the objective of making them net beneficiaries" (HSE Manual, 1996). The following social categories may experience greater social consequences than other members of an impacted community:

(1) Those that are reliant on resources which are affected by project actions.

(2) The elderly or long-term residents who often cling tenaciously to age long ideals and, therefore, less likely to adapt easily to changing situations.

(3) The less privileged that may be less effective in having their concerns addressed.

To effectively address the equity of impacts, it is necessary to ensure that the views and responses of all social collectivities in the impacted region are taken and incorporated in the SIA study. This will enhance our appreciation of the distribution of impacts and ensure that no social categories are marginalised in the SIA process.

1.2.6 Mitigation

Mitigation refers to efforts made to prevent or reduce adverse environmental and social impacts of project actions. According to Petry and Boeriu (1995), "although it is seldom possible to eliminate an adverse environmental impact altogether, it is often feasible to reduce its intensity." Such reduction is what has been generally referred to as mitigation measure.

Mitigation measures can take one or more of the following forms:

(1) **Prevention of impacts:** This requires careful planning of specific aspects of a project that are likely to impact on the people. It may also require an alteration of the design for the project to ensure that areas that may produce harmful environmental and social effects are prevented.

(2) **Reduction of Impacts:** This could be done by adopting specific technology or altering the way in which a project is managed (HSE Manual, 1996). For example, in order to minimise the effects of uncontrolled migration into an energy project sited on the border between Zimbabwe and Zambia, a comprehensive land use plan was developed. Additionally, to reduce the influx of people within the vicinity of a Shell project site,

"water supply was provided at a location approximately two kilometres away from the site" (HSE Manual, 1996).

(3) **Compensation:** This is used mainly in areas where adverse impact cannot be avoided or reduced. This may take the form of monetary compensation or provision of benefits to local population.

It is unadvisable to use monetary compensation where alternative courses of actions to mitigate adverse effects are available. It is essential that the local population is involved in the identification and prioritization of projects or activities aimed at ameliorating the adverse effects of project actions. This entails the designing of mitigation strategy with the community and local institutions so that the people will have a sense of responsibility and ownership.

1.2.7 Monitoring or environmental auditing is done either to identify unanticipated impacts or address the success or otherwise of mitigation measures. It is a continuous process which should be done throughout the life-cycle of a project. The aim is to gather and update information, which will facilitate appropriate adjustment of predictions and mitigation measures (HSE Manual, 1996).

A good monitoring programme is one that ensures the involvement of the affected population. Such a population is made to assume some responsibility in the monitoring process by forming a consultative committee made up of community leaders, representatives or institutions. The committee would then be empowered to discuss the effects of the project with the company and suggest appropriate remedial actions. Monitoring also has the added advantage of providing information required for EIA/SIA of future projects (Petry & Boeriu, 1995, HSE Manual, 1996).

2. Legal and Institutional Arrangements

EIA/SIA is generally guided by institutional arrangements to facilitate its use in decision-making. Such institutions are often entrusted with the responsibility to develop the principles and procedures as well as articulate the legal framework guiding the conduct of EIA/SIA. This subhead is discussed under the following items: policy, administrative arrangement, legislation and public participation.

2.1 Policy

The Federal Environmental Protection Agency (FEPA), which later metamorphosed into the Federal Ministry of Environment (FMEnv) in 1999, is the apex environmental regulatory body in Nigeria. FMEnv is entrusted with the responsibility to protect the Nigerian environment and to initiate policies in areas of environmental research and technology (Umeh & Uchegbu, 1997). A National Policy on the Environment had earlier in 1989 been launched. The primary objective of the policy "is … to restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere" (FGN, 1989 also in JCA, 1993). It also stressed the need to preserve biological diversity and promote optimum sustainable yield in forestry, fishery and wildlife. In essence, the policy provides for the passage of necessary administrative rules and legislations to govern the handling of technological or other activities that are likely to impact the ecosystem, particularly the human environment. It also calls for the provision of "appropriate infrastructure and services for the protection of human health, including the preservation of monuments and other cultural property which promote the quality of life" (FGN, 1989). To ensure the effective implementation of this policy, interim guidelines and standards on environmental control in Nigeria were issued in 1991 (FEPA, 1991 in Umeh & Uchegbu, 1997). The aim is to prevent the indiscriminate injection of hazardous pollutants into the environment.

Although the provisions of environmental policies may differ from country to country (being adapted to the peculiarities of the countries concerned), they aim essentially at a similar objective, namely "to ensure that project planning and decision making … include the integrated consideration of technical, economic, environmental, social, and other factors" (Canter, 1975). In other words, EIA/SIA policies must indicate the constraints within which developers will operate and provide the basis for ensuring that such provisions are consistently followed. Petry and Boeriu (1995) averred that a good national environmental policy should be: (a) achievable and must "acknowledge the trade-offs between development needs and environmental quality and sets realistic goals for both through sound environmental management" (Petry & Boeriu, 1995), (b) specific and must clearly outline areas and activities requiring environmental assessment. The aim is to enable developers plan their projects in harmony with the national programme, (c) flexible and structured in such a manner as to ensure adaptability and the continuous input of ideas and suggestions, and (d) responsible and responsive to the social and cultural traditions of the host country in order to

gain active public support. Such support is required if the objects of environmental programmes are to be achieved.

2.2 Administrative Arrangement

The environmental policy of any country is best achieved if there is appropriate machinery for its implementation. Owing to the complex nature of scientific data as well as the need for cross-sectional co-ordination of EIA, the machinery should have appropriate number of qualified staff to handle different problems facing a country's environment.

As noted earlier, FMEnv succeeded FEPA as the environmental regulatory organ for Nigeria. There are also other federal agencies along with state and local governments' environmental protection bodies established for the purpose of maintaining good environmental quality. FMEnv is empowered to approve or overrule the establishment of a project after an assessment of the EIA report submitted by the proponent, the review or mediation panel. A mediation panel is constituted if it is ascertained that the parties "who have direct interest in the project or are affected by it have been identified and are willing to participate in the mediation through their representatives …" (Umeh &Uchegbu, 1997). The panel session is to help the participants to reach a consensus on the likely environmental effects of the project; the measures, which would mitigate any significant adverse environmental effects; and an appropriate follow-up programme (EIA Decree, 1992). At the end of its sitting, it is expected to prepare a report of its findings, which would be submitted to FMEnv and the FMEnv council which oversees the implementation of EIA Decree of 1992. Where the result of the mediation is not likely to satisfy the parties involved, the project is referred to a review panel. The review panel is required to hold hearing in a manner that offers the public an opportunity to participate in the assessment; prepare a report setting out its conclusions and recommendations on the environmental effects of the project. It is also required to develop mitigation measures or follow-up programmes where applicable; and produce a summary of comments received from the public (Decree, 1992 also in Umeh & Uchegbu, 1997).

After studying the EIA report submitted by a proposing agency, mediation or review panel, FMEnv could take one of the following decisions:

(1) The project or activity is permitted to be undertaken because it does not have significant adverse environmental effects.

(2) The project is permitted to be undertaken because the identified environmental effects can be mitigated or justified in the circumstances. In this regard, the proponent is required to utilise measures which would prevent or mitigate such effects.

(3) The project or activity cannot be permitted because the anticipated environmental effects are considered to be significant and cannot be mitigated.

FMEnv is also entrusted with the enormous responsibility to develop environmental standards; issue and update guidelines and codes of practice. It is also to establish advisory bodies; commission researches, co-ordinate, consult and exchange information with the states and other bodies; and carry out other aspects of the general monitoring and supervision of EIAs (Umeh & Uchegbu, 1997).

Another regulatory body established to ensure that Nigerian environment is safe, is the Directorate of Petroleum Resources (DPR). By virtue of the NNPC Act of 1979, which derived its mandatory instrument from the Petroleum Decree of 1969, the DPR is charged with the responsibility to ensure that the oil industry does not degrade the environment in their operational areas; that the clean up and restorative exercises are diligently carried whenever oil spill occurs; and that new projects that may adversely affect the environment are effectively controlled. It is this directorate that issues concessional licenses/permits, establishes guidelines, standards and procedures for environmental control as stipulated in the Petroleum Decree of 1969. The directorate also adopts EIA as an additional environmental control measure. This provision "is reinforced in the revised Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) of 2002" (SPDC, 2003).

There is also the National Environmental Standards and Regulation Enforcement Agency (NESRA) established in 2007 to ensure the enforcement of environmental policies and laws in Nigeria. Finally, there are state environmental protection agencies, which also have powers to make laws and initiate policies on environmental issues. In collaboration with FMEnv, they are expected to ensure that private and public activities, which are likely to impact on the environment, benefit from EIA. The state agencies also initiate dialogue with local government chairmen to induce them to manage their solid wastes effectively.

2.3 Legislative

Since the inception of EIA, many countries have adopted EIA-related laws to suit the process. The main features of such laws include a statement showing the types of projects which require EIA and those, which do not; the main content of EIA; who reviews and who

arbitrates in the process; and the sanctions for non-compliance. The essential aim is to ensure a "legally binding set of procedures which seek to safeguard the environment while permitting development" (Petry & Boeriu, 1995).

The laws pertaining to environmental protection in Nigeria have been divided into three - general, petroleum-related and non-petroleum related. These include such laws that ensure against environmental damage. Among them are: National Environmental Protection (Effluent Limitation) Regulations (1991); National Environmental Protection (Pollution Abatement in Industries and Facilities Producing Wastes) Regulations (1991), and National Environmental Protection (Management Procedure on Environmental Impact Assessment) Regulations (1992), popularly known as Decree 86 of December, 1992 (ERML 1997). This Decree is now an Act following the re-introduction of democratic governance in 1999.

FMEnv is required to issue standards for water, land and air quality and atmospheric protection (ERML, 1997). To discharge this mandate, the Federal Environmental Protection Agency, which preceded FMEnv, issued the 1991 regulations to prohibit the indiscriminate discharge of hazardous wastes into the environment. They also set acceptable discharge standards for different pollutants. In setting the discharge criteria, the regulations, which adopted WHO limits, accept that there will be times when discharges may exceed the threshold. They, therefore, set the highest desirable and maximum permissible limits for every contaminant.

Table 1: Nigerian Ambient Air Quality Standard

POLLUTANT	TIME OF AVERAGE	LIMIT
Particulate	Daily average of hourly values 1 hour	250 $\mu g/m^3$
Sulphur oxide	Daily average of hourly values 1 hour	250 $\mu g/m^3$ * 600 $\mu g/m^3$
Non-Methane Hydrocarbon	Daily average of 3 hourly values	0.01 ppm (26 $\mu g/m^3$) 0.1 ppm (260 $\mu g/m^3$)
Carbon monoxide	Daily average of hourly values 8 hourly average	160 $\mu g/m^3$
Nitrogen oxide (Nitrogen dioxide)	Daily average hourly values (range)	0.04 ppm (11.4 $\mu g/m^3$)

		20 ppm
		(22.8 μg/m^3)
Petrochemical oxidant	Hourly values	0.06 ppm

*** Concentration not to be exceeded for more than once a year**

Source FEPA, 1991

What this means is that with appropriate permit, discharges up to given limits are allowed. In order to actualise the provision of these regulations, the federal government institutionalised the process of environmental impact assessment through Decree No. 86 of 1992. This decree requires that Environmental Impact Statement (EIS), for any major actions that may impact on the environment, be filed with FEPA, now FMEnv. After review, FEPA (FMEnv) will decide whether or not to permit that such action be undertaken.

The next category of laws concerns the petroleum industry. The prominent laws in this area are the Oil in Navigable Waters Act No. 34 of 1968; the Petroleum Decree No. 51 of 1969; the Petroleum Refining regulation Act of 1974; the Associated Gas Re-injection Act of 1979; the Petroleum (Drilling and Production) Regulation of 1981; the Petroleum Production and Distribution (Anti-sabotage) Decree of 1975 and the Oil Pipeline Act of 1990. These laws are currently being reviewed by the National Assembly with a view to harmonising, updating and integrating them into a package called the Petroleum Industry Bill.

The Oil in Navigable Waters Act of 1968 was enacted to prevent the pollution of sea by oil. In actual fact, the discharge of crude oil and heavy diesel oil into our territorial waters, including inland waters is an offence punishable under this Act (ERML, 1997). The Petroleum Decree No. 51 of 1969 regulates against the pollution of watercourses and atmosphere. This was actualised in the petroleum (Drilling and Production) Regulation of 1969 that requires petroleum companies to adopt all practical precautions to ensure that inland waters are not polluted. If and where this occurs, prompt action is required to control, and if possible, end the pollution (Ikporukpo, 1985; Shyllon, 1989 in ERML, 1997).

The Petroleum Refining Regulation of 1974 was meant to control the disposal of wastes and oil spills from refineries while the Associated Gas Act of 1979 was enacted to stop gas flaring. The Oil Pipeline Act of 1990 calls for caution in the handling of land, crops and economic trees when laying oil pipelines. It also provides for compensation where damages are unavoidable. The Petroleum Production and Distribution (Anti-sabotage) Decree of 1975 is specifically directed at persons whose activities may lead to oil spills. The decree

outlaws the willful destruction, damage or unauthorised removal of oil pipelines or installations. In general, interference with any aspect of oil production activities is treated as an offence. The penalty for any such offence was fine under the 1975 Decree, but this was amended in 1984 to death sentence. This was subsequently reverted to life imprisonment in 1986, following public outcry (Ikporukpo, 1995 in ERML, 1997)

The laws, which effect environmental control in sectors other than petroleum, are many and varied. Such laws are increasingly being enacted. Today, every tier of government in Nigeria has sanitation laws or by-laws governing the activities of the people. The Water Ordinance of 1913 and the Federal Public Health Ordinance of 1958 are amongst the earliest of such legislations. Both of them prohibit the pollution of water. The Endangered Species (Control of International Trade and Traffic) Decree of 1985 pertains to nature conservation. The aim is to guide against unguarded exploitation of the biota.

2.4 Public Participation or Involvement

Public participation or involvement is an essential component of EIA/SIA process. The term "public" is used here to refer to people who are directly affected by a proposed project, as well as those concerned about the project. It has been argued that project actions have better chances of succeeding if the views of the affected peoples are recognised early in their preparation process; if appropriate policy framework exists to protect their rights; and if development activities respect their cultures, languages and beliefs (Davis & Soeftestad, 1995). In other words, public participation aims to ensure that the views and interests of the affected people as well as those of concerned parties are taken into consideration in project planning, design and implementation (Umeh & Uchegbu, 1997). Public participation is a continuous process and it "requires identifying and working with all … affected groups starting at the very beginning of planning for the proposed action" (NOAA Tech. Memo, 1994). The aim is to ensure that potential social impacts are addressed (HSE Manual, 1996).

The identified public for a proposed or ongoing project may include one or more of the following:

(1) Those who are directly affected by the project, particularly those who live in the vicinity or immediately adjacent to the operational areas.

(2) Active environmental conservationists who are deeply concerned with environmental protection whether or not they are directly affected by the project.

(3) Interested individuals or groups or business and industrial developers who may benefit from project activities.

(4) Educational institutions.

(5) Professional associations who are concerned with environmental matter (Umeh & Uchegbu, 1997).

Once the public has been identified, appropriate procedures should be developed to elicit their inputs. This could take the form of consultation, comments, dialogue or meetings. Dialogue, group interviews or workshops are particularly encouraged for directly affected people. Apart from being resource efficient, they have the advantage of getting individuals stimulated by others' ideas. Effort must be made to ensure that it is the true representatives of the people that are being consulted. In the rural setting, this may include village council and elders or elected representatives of the people. The consultation procedure should take into account the cultural sensitivities of the people. It must not be ill-timed neither should it ignore the very relevance of traditional environmental knowledge. This explains why inputs from knowledgeable social scientists are invaluable in the process. On the other hand, comments could be used to elicit information from concerned public.

In Nigeria, Decree No. 86 of 1992 provides the legal basis for public participation in environmental impact assessment. Sections 7 and 22 (3) of the decree stipulate that "government agencies, members of the public, experts in any relevant discipline and interest groups should be given opportunity to examine and comment on the EIA of an activity ... before ... FEPA (FMEnv) takes a decision on the activity" (Umeh & Uchegbu, 1997).

For mandatory study activities, FEPA, now FMEnv, is required to publish a notice indicating the date and place reports shall be made available as well as the deadline for reacting to the issues and conclusions reached on the activities. The decree stipulates that the reports be referred to a mediation or review panel, if the public comments require further assessment. The mediation panel consists of people who are directly affected by project activities as well as those who have direct interests in the activities. Sections 31 and 34 of the decree require the panel "to reach a consensus on the environmental effects of [a project] and prepare a report on the recommendations of participants" (Umeh & Uchegbu, 1997). The review panel, on the other hand, is particularly constituted for projects that are likely to have transboundary environmental effects. Section 37 of the decree calls upon the panel to make available to the public any information required for assessment, hold hearing in any manner that encourages good public participation and incorporate a summary of their comments in its

final reports. This section empowers FEPA (FMEnv) to make available to the public any report submitted by a review or meditation panel in a manner that it deems appropriate

In order to actualise the above objectives, the decree provides for the establishment and operation of a public registry for any project that requires EIA. It recommends that all records and information produced, collected or submitted in respect of EIA of project be contained in such a registry (Umeh & Uchegbu, 1994).

3. ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

As pointed out earlier, impact assessment is preceded by baseline study or environmental inventory. In some instances, scholars rely on existing background information while assessing impact. Howbeit, the aim is generally to acquire sufficient and/or extensive information on the project environment (bio-physical, social, health, economic etc) prior to project implementation.

The following steps are usually taken during impact assessment process:

(1) Stakeholder identification and analysis
(2) Scoping or impact identification
(3) Identification of project's hazards
(4) Sensitivity analysis of the natural and socio-economic environment
(5) Analysis of Interaction between project activity and the environment
(6) Impact assessment and rating
(7) Mitigation and enhancement
(8) Environmental Management Plan (EIA LNG Seven Plus, 2008).

3.1 Stakeholder Identification and Analysis

Stakeholder analysis is a key component of EIA. This is because projects are for people. Therefore, the need to identify all the people and groups that are likely to be affected by project actions or those who have genuine or legitimate interest in the project becomes a prime concern in EIA. Stakeholders are delimited into two categories – the primary and secondary. Primary stakeholders are those that are directly affected by a project. SPDC (2004:9) defines primary stakeholders as "individuals and groups who are likely to be directly affected by, or for some reason interested in, the proposed project". Among them are the host community, persons who depend on local resources for their livelihood (hunters, fishermen, farmers, and gatherers), local businesses and labourers, local and regional

authorities, and project proponents, etc. Secondary stakeholders are individuals or groups who have an influence on or interest in a project. They also have the expertise to offer advice on project activities, but are not likely to be directly affected by such activities. Included in this category are the regulators, NGOs, funding agencies, media, contractors and suppliers and shareholders (SPDC, 2004:9).

Thus, stakeholder identification is a significant issue for consideration in EIA process. The prime concern in stakeholder identification is to understand all the stakeholders involved in one's project so as to reduce or minimise misunderstandings or misjudgments that are often associated with project actions.

Having identified the relevant stakeholders, the next step that naturally follows is to select the technique for engaging them meaningfully in the EIA process. This may take the form of dialogue, meetings or workshops based on the desired level of involvement. The first level is information dissemination, followed by consultation level, and finally the participation level.

Information dissemination level is a prelude to the remaining two levels of involvement, and it involves a one-way flow of information from project proponents to the desired public. Some of the techniques used in this process of early engagement of stakeholders are informal field visits, brief factual presentation of project intents and ramifications to communities, distribution of written pamphlets or fact sheets, media announcements, etc. Although it is not considered adequate, it is, however, complementary in the engagement process. The consultation process may be done through one or more of the following ways: interviews with key informants, focus group discussions, public fora, question and answer sessions and workshops. It has been defined as a two-way flow of information between the project proponents and the stakeholders. This stage provides the stakeholders the opportunity to express their concerns and raise issues that may affect them. The participation level builds on the issues and concerns raised during the consultation level. It can take the form of Participatory Rural Appraisal, Community Advisory meetings and Joint Management Boards (SPDC, 2004). This entails involving stakeholders in the additional processes of analysis and decision-making with a view to developing the action plans, forming new local institutions or strengthening existing ones, and making them assume ownership or control over local decisions (SPDC, 2004).

3.1.1 Stakeholder Mapping

Stakeholder mapping, also referred to as stakeholder power/influence and interest grid or matrix, is used to demarcate stakeholders into categories so as to know their influence/power and interest on the proposed project and subsequently determine the desired level of involvement and/or engagement.

- Stakeholders whose influence/interest is high are fully engaged and effort is made to manage them closely.
- Those whose influence is high, but show less interest are kept satisfied. However, they should not be bored with irrelevant messages.
- Stakeholders with low influence base, but who show high interest in the project(s) are adequately informed to ensure that no major issue(s) arises.
- Stakeholders with low influence/interest base are monitored, but not to the extent of boring them with excessive communication.

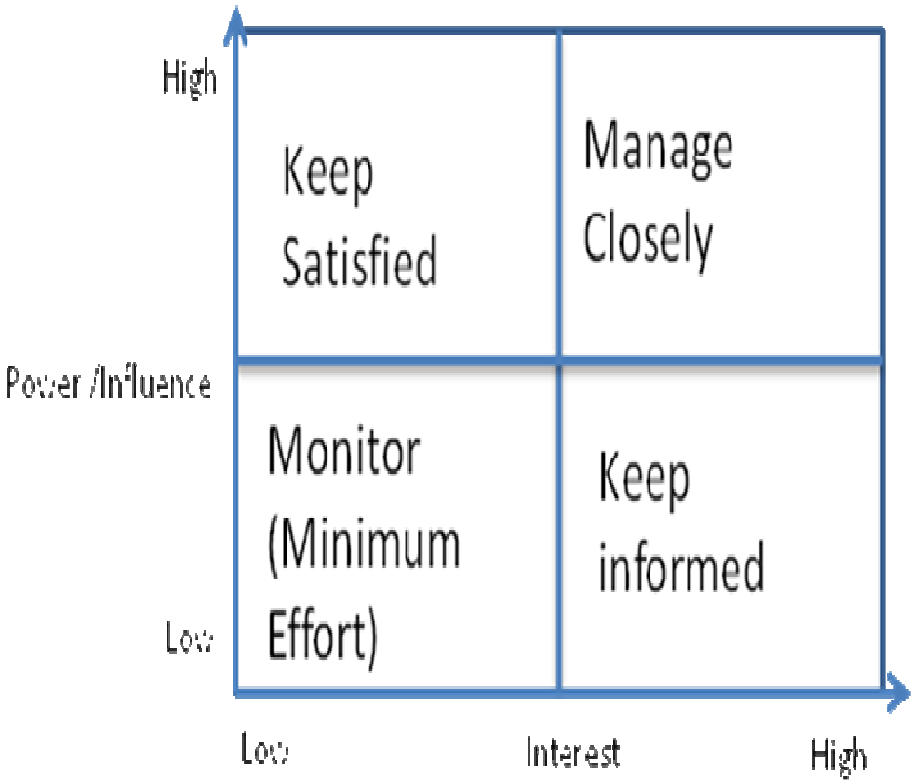

Figure 1: Stakeholder Power/influence Grid

3.2 Impact Identification (Scoping)

Scoping is done at an early stage of EIA. It is an attempt to identify the potential impacts of an activity and to select from these the key area for study (HSE Manual, 1996). According to Petry and Boeriu (1995), "an exhaustive list of impacts, severe as well as trivial, is drawn up" from which "a manageable number of important impacts are selected for study". In identifying impacts, the viewpoints of the agency proposing the project and those of the affected groups or communities are taken into consideration. Scoping social impacts should be undertaken as part of the scoping for environmental assessment (HSE Manual, 1996). It suffices to say that scoping is a continuous process, as additional information are required, where uncertainty exists, to determine whether or not impacts can be considered significant. According to Petry and Boeriu (1995:3), there are three major ways through which impacts can be identified:

(1) By using checklist or guidelines provided by competent authorities. The values of checklist and their uses in EIA have been discussed earlier.

(2) By using ad-hoc approach in which case professionals or specifically formed working groups (including concerned parties) identify the impacts to be assessed

(3) Through a combination of the above two approaches.

HSE Manual (1996) outlines more comprehensive methods for scoping as follows:

(a) Reviews of existing literature.

(b) Consultation and public involvement.

(c) Reliance on past experience and professional judgment.

(d) Use of country profiles to identify the location and status of any partially sensitive resources or social grouping.

(e) Use of checklists which outline and identify significant social impacts to ensure that no vital social effects are glossed over (HSE Manual, 1996 NOAA, Tech. Memo, 1994).

The criteria for selecting significant social impacts are as follows:

(1) Probability of an event occurring.

(2) Number of people including indigenous population that may be affected.

(3) Duration of impacts (long-term and short-term).

(4) Value or benefits and costs to impacted groups (intensity of impacts).

(5) Extent to which impact is reversible or can be mitigated.

(6) Likelihood of causing subsequent impacts.

(7) Relevance to present and future policy decisions.

(8) Uncertainty over possible effects.

(9) Presence of a controversy over the issue (NOAA Tec. Memo, 1994).

3.3 Identification of project's hazard

This is the basis for impact assessment. Here attempt is made to identify the elements, activities, operations and processes of a project in order to appreciate those that have the potential to cause harm on the environmental, social and health conditions of the project area. It is instructive to note that a project's effects depend on the magnitude, frequency and intensity of project activities as well as the sensitivity of the receiving environment.

Project activities are always delimited into a number of phases each of which has the potential to induce or cause hazards. They are planning/policy development, construction, comprising site preparation, construction and commissioning, operation/implementation, which entail managing and maintaining required facilities, vehicles and so on, and decommissioning/abandonment if it becomes necessary.

According to EIA NLNG Seven Plus (2008), "inputs to the project such as the project's use of natural (water, materials, power, etc) and human resources; (and) outputs from the project, such as emission of gases, generation of waste materials … are some issues that can cause hazards in the project environment. Accordingly, a clear specification of the dimension and limitations of a project area and a proper identification of the associated hazards are vital for demarcating the scope of the EIA and grounding potential impacts to reflect the actual situation.

3.4 Sensitivity Analysis

It is very vital in EIA process to identify and analyse key items or aspects of the receiving physical, natural and social environment that are most sensitive to project activities. Sensitivities can simply be defined as the products and services of the natural or social environment that react to and/or are influenced either directly or indirectly by project actions. In other words, they can be seen as aspects of the natural or social environment that support and sustain people and nature; whose disruption could lead to a disturbance of the stability or integrity of the environmental system (EIA NLNG Seven Plus, 2008).

In order to identify the sensitivities for project actions, it is necessary to delineate the functions and services provided by the host environment. These can be derived from information provided by the environmental and social baseline studies supplemented by existing reports or literary sources in the study area. Apart from the above sources, the issues and concerns raised by stakeholders, that may require attention and proper management, are also considered when addressing project sensitivities.

EIA NLNG Seven Plus (2008) delineates the services that require sensitivity analysis as follows: (1) provisioning services, including (a) biotic products such as food, meat, timber, medicines, (b) abiotic products such as water, mineral, energy, fuel, oxygen, and (c) space and suitable substrate for infrastructure, habitation, nature protection, recreation, etc. (2) regulating services, namely (a) storage and recycling of nutrients, minerals, and (b) regulation of chemical composition of air, water, soil, climate as well as contamination/wastes. (3) social/cultural services such as: (a) social and economic processes, (b) representations of aesthetic, educational, scientific values, (c) storage of historic, spiritual, religious information.

3.5 Analysis of Interaction between Project Activity and the Environment

After identifying projects' hazards and delineating their sensitivities, the next step that requires serious consideration is the estimation of the nature, likelihood and significance of the actual impacts. Impacts are identified as a consequence of an interaction between a project hazard and sensitivity and/or an issue of concern to stakeholders.

The guiding principle in this process is to determine the possibility or thinkability of a hazard resulting in an effect on sensitivity. Put in a simple way, is it likely that a hazard could affect any of the environmental receptors or items following project activities? Or as EIA NLNG Seven Plus (2008) puts it, "Is it possible/thinkable that a hazard could result in an effect on sensitivity? This approach ensures that no vital potential impact is overlooked or glossed over.

It is vital to distinguish between two different types of interactions that could result due to project activities:

(1) Interaction with a direct relation between a hazard and a receptor, and

(2) Interactions leading to a 'chain of effects' and thus also leading to indirect relations between hazards and receptors further down the chain of effects (EIA, NLNG Seven Plus, 2008:72).

Howbeit, an interaction matrix is usually developed in every EIA to establish such relationship. In such a matrix, the project hazards are delineated on the Y-axis, while the sensitivities and issues are outlined on the X-axis. Thereafter, all interactions between project activities and environmental receptors are marked.

Furthermore, the concerns and issues raised by stakeholders during the process are also outlined and addressed. The potential impacts identified are thereafter grouped to reduce them to manageable quantity. Hazards with corresponding range of functions/services or chains of effects can be grouped together. For instance, a project's hazard can be articulated as emission and this may be in the form of carbon monoxide, carbon dioxide, sulphur oxide and nitrogen oxide. All these have effects on the receptors, namely people, plant and atmosphere resulting in a primary effect such as bronchial disease, enhanced primary production and green house effect respectively. The secondary effects may manifest in the loss of job and income, supply of food and climate change. Similarly, one can start from sensitivities by looking at corresponding project activities that have the potential to affect an environmental receptor or sensitivity. The grouped interactions are then represented on an impact table (see appendices 1 and 2).

3.6 Impact Assessment and Rating

A five stage sequential process is followed in ascribing/describing the final significance rating of each identified impact. This includes impact description, impact qualification (likelihood and consequence), development of impact assessment matrix, construction of impact assessment matrix, production of impacts framework and impacts text.

In the impact description stage, each identified impact is described in terms of the following characteristics: implications (beneficial or adverse), direction (direct or indirect), duration (long or short term), magnitude (major, moderate or minor), spread effect (local or widespread) and reversibility (reversible or irreversible). Impacts are described as adverse if they negatively affect the environmental components, and beneficial if they have positive effects and, therefore, can enhance the quality of the environment. Direct impact results as a direct consequence of an activity, while indirect impact is remotely related to it. Major impacts are extensive in scale and/or of high magnitude; but moderate and minor impacts refer to effects of intermediate and low magnitude, respectively. Impacts that are widespread affecting large areas in terms of space/land are described as large scaled, while localised impacts affect the immediate environment that is, small area. Short term impact is likely to

last for less than three months, but long term is used to refer to any impact that is likely to last beyond three months. Reversible impact indicates the potential for the environment to revert to previous condition after the project, while for irreversible impact, the environment is likely to remain as impacted even after the project has been decommissioned or abandoned.

The second stage, referred to as impact qualification, is delimited into two namely, the likelihood of occurrence and potential consequences. The first tries to assess the probability of an effect occurring as a result of a project action, while the second assesses the actual result and scale of effect that an impact will have if it eventually occurs. Each of these categories is rated in terms of probable intensity or severity. Thus, if the probability of occurrence is rated high, it is adjudged that impacts are very likely and very frequent. Medium probability produces a likely and frequent impact, while medium low probability results in an unlikely or rare impact. On the other hand, if the consequences are adjudged extreme, the impacts are rated massive, great consequences are adjudged to have big impacts, while considerable consequences are said to produce substantial impacts and so on. However, positive impacts are not qualified further but are simply rated as positive. Tables 2 and 3 show the two qualifications respectively.

Table 2: Impact rating or terms used to explain the likelihood of occurrence

High probability	A very likely impact	Very frequent impacts
Medium high probability	A likely impact	Frequent impacts
Medium probability	A possible impact	Occasional impacts
Medium low probability	An unlikely impact	Rare impacts
	As far as one-time events or slowly developing effects are concerned (e.g. impacts on lifestyle).	As far as possibly recurring impacts are concerned, such as road accidents.

Source: NLNG SEVENPLUS, Vol. 1 2008:72.

Table 3: Impact rating or terms used to explain potential consequences

Extreme consequences	Massive effect
Great consequences	Big effect
Considerable consequences	Substantial effect
Little consequences	Slight effect
Hardly any consequences	Trivial effect

Source: NLNG SEVENPLUS, Vol. 1 2008:72.

Two main factors are used to determine and classify the potential consequences of a project. These are hazard magnitude and receptor sensitivity. The former relates to the size, scale, intensity and duration, etc. of a project's hazard, while the latter addresses the stability and resilience or otherwise of the receiving environment to changes caused by project hazards (NLNG SEVENPLUS, 2008:72). If both the receptor sensitivity and intrinsic magnitude are low, the effects are rated trivial. But low receptor sensitivity with correspondent medium intrinsic magnitude produces slight effect, while low receptor sensitivity and high intrinsic magnitude produce substantial effects. On the other hand, high receptor sensitivity with a low intrinsic magnitude produces slight effect, if it corresponds with medium and high magnitudes; the resultant effects are rated big and massive respectively and so on. Table 4 shows the classification and rating of potential consequences.

Table 4: Matrix for classifying potential consequences

	Intrinsic magnitude of the hazard		
Receptor sensitivity	**Low**	**Medium**	**High**
Low receptor sensitivity	Trivial effect	Slight effect	Substantial effect
Medium receptor sensitivity	Slight effect	Substantial effect	Big effect
High receptor sensitivity	Substantial effect	Big effect	Massive effect

Source: NLNG SEVENPLUS, Vol. 1 2008:72.

The next stage is the development of impact assessment matrix. It is at this stage that the degree of significance of each impact is produced by comparing the likelihood of occurrence of each impact with its potential consequence. The resultant interaction produces the degree of significance, which in turn determines whether mitigation is needed or not. Impacts assessed to be major or moderate often require mitigation to eliminate or reduce them to minor, while minor or negligible impacts do not require any such mitigation. Instead they are handled through normal management protocols including policy modifications, guidelines and extra resources, etc. (NLNG SEVENPLUS, 2008).

Table 5: Development of Impact Matrix

	Potential Consequences			
Likelihood	**Positive**	**Little**	**Considerable**	**Great**
High	Positive	Moderate	Major	Major

Medium high	Positive	Moderate	Moderate	Major
Medium	Positive	Minor	Moderate	Moderate
Medium low	Positive	Minor	Minor	Moderate
Low	Positive	Negligible	Minor	Minor

Impact can be rated by assessing the relative frequency of occurrence (F), importance of affected environmental components (I), and public interest/perception (P). The frequency of occurrence of each impact is usually determined through historical records, while consultation and consensus of opinions are used to determine the importance of affected environmental components, and the way in which the host communities and the general public perceive each potential impact and its effects is determined through consultation with the host communities and consensus of opinions of environmental professionals (SPDC Capacity Building Workshop, 2006).

Using Delphi's technique, a panel of experts is usually constituted to give an independent ranking (on a scale of 1 – 10) of impacts of various project actions on selected environmental receptors. After being made aware of the aggregate score, each expert is allowed to review an initial score. The level of significance is determined by the sum of F+I+P, the maximum possible point being 15. Thus, impacts whose sum of F+I+P is less than 5 are rated as low, those whose sum of F+I+P is between 5 and 10 are rated as having medium significance, while those whose sum of F+I+P is between 10 and 15 are of high significance (SPDC Capacity Building Workshop, 2006).

After the impact assessment matrix, an impact table is drawn depicting the hazard-inducing activities and the associated phases, identified impacts and their ratings. In other words, each impact is described in terms of the likelihood and potential consequence while attributing the final impact rating (NLNG SEVENPLUS, 2008). In the final stage, all impacts are explained in prose or text. The text attempts to explain the impacts as depicted on the tables, showing their significance rating and why they have been so classified. In the usual impact texts, each identified impact is written in line with the project phase(s) in which it occurs. This approach sometimes results in undue repetition as given impacts, say safety hazards, may cut across different phases. It may be advisable to articulate the text by associated impacts and reflect under a single sub-head the various phases in which they occur. It is also important to specify the communities and sites that may be affected by

project actions, outlining them in order of proximity to the project area, while indicating those that are likely to be more adversely affected.

3.7 Mitigation and Enhancement

We had earlier discussed the meaning of mitigation and reasons for mitigating negative impacts, while enhancing beneficial impacts. We also outlined the three types of mitigation measures, namely prevention, reduction and compensation. It must be reiterated that mitigation strategy is generally designed for the benefits of the people and this is done after impact classification and rating. Impacts adjudged to be major or moderate are expected to be mitigated, while positive impacts require enhancement.

Since mitigation measures are for the benefits of the people, they can only be successful if the host community perceives them as such. This explains why the views and concerns raised by stakeholders are critical in the process. In other words, mitigation strategies must be designed in conjunction with the local community and institutions if they are to achieve the desired results. A table (see appendix) is usually drawn to describe the measure(s) adopted to mitigate each identified impact. During this process, the identified impact is re-assessed to determine its current magnitude, usually called residual impact. In essence, the mitigation table contains sub-heads such as impact, rating before mitigation, description of mitigation or enhancement measures and residual impact. If the residual impact is still major, without a possibility of further mitigation, the project could be considered intolerable, inappropriate and, therefore, rejected completely. Where the residual impact remains moderate, further measures in the forms of funding, change in technology, time schedules and policy may be employed.

Measures for enhancement are adopted if impacts are assessed to be positive or negligible. Here, opportunities to improve the benefits to society or environment are sought and utilised. These usually take the form of community assistance projects. It is important to ensure that the funds required to finance such projects are available when devising a mitigation strategy. It is also necessary to adopt projects that can be sustained by the community after their initial installation by the company. When a host village required a new generator from an oil company operating in the Yemen Republic, for instance, the company bought the generator, “but persuaded the community to form a cooperative. Charges were made by the cooperative for the power generated which enabled the cost of the generator to be paid back to the company, and provided for the maintenance and future replacement of the

generator" (HSE Manual, 1996:30). This approach gave them a sense of responsibility and built their capacity to manage and sustain the project. Community affairs units are usually established by companies to collaborate with communities in determining intervention projects.

3.8 Environmental Management Plan (EMP)

EMP provides reasons for and a description of the mitigation measures, assigns responsibilities and outlines schedules of implementation and reporting. EMPs aim to ensure that mitigation measures are implemented. There are two basic elements in environmental management plans: (1) The EMP proper in which the potential impact, action to be taken, action party, timing, monitoring and monitoring party and reporting schedules, (see appendix 4), are delineated; and (2) the monitoring plan, which indicates the monitoring action, action party, purpose of monitoring, parameters to be monitored (limits and frequency where applicable), and comments/detail. Thus, EMP guides engineers and project executors on the items that require attention and, at the same time, helps the stakeholders to know the action parties and timelines for executing remedial actions.

4. HUMANISING THE CONTENTS AND PROCESSES OF DEVELOPMENT

In his work titled "Resources, Development, and Human Values", Berger (1983:129) described the world we live in as a "world conceived by science and built by technology…" Although he quickly pointed out that there was need for a rethink, such an expression portrays the kind of attitude about the values of social initiatives in development interventions exhibited by technically-minded professionals who, more often than not, commission such intervention projects. Some scientists still share this expression. To them, social analyses are a mere waste of valuable time because they cannot add much to project development. They believe that social dynamics cannot easily be quantified and measured, and, therefore, cannot be managed (de Rijke, 2013). While this may sound somehow plausible from managerial stand point, we need to note that social issues should not be reduced to mere statistics if we want to capture the dynamic social processes that induce change, and if we want to capture the emotional and psychological stress as well as conflicts that may emanate as a result. What we must realize is that science is not a magical talisman that has the panacea for every social problem, while humanistic inquiry and other forms of

inquiry are treated as nonscientific and, therefore, must be disenfranchised (de Rijke, 2013). As Berger (1983: 129) aptly puts it:

> … We used to think that the change wrought by science and technology would be altogether benign. But in recent years another view has begun to take hold: that the advance of science and technology – especially large scale technology – may entail social, economic, and environmental costs which must be reckoned with.

It is widely acknowledged that human activities are transforming the natural environment at an increasing rate. Some of the globally recognised consequences are ozone depletion, tropical deforestation, acid deposition, and increased atmospheric concentration of gases that trap the heat and cause global warming (D' Antonio *et al*, 1994). Indeed, it is recognised that: (a) humans are having an increasingly negative impact on the physical environment, (b) these impacts are occurring at ever-larger geographical scales; (c) the resulting degradation of the environment poses major threats to the health and welfare of human beings (EPA Advisory Board, 1990 in D' Antonio *et al*, 1994:21). Since human-induced alterations of the natural environment will have significant impacts on human societies, it is necessary to examine societal-environmental interactions, or the effects of human activities on the environment and the impacts of resulting environmental changes on human societies (D' Antonio *et al*, 1994). I had argued elsewhere and in one of my memos to a leading corporate organisation in Nigeria that EIA emerged in response to society's increased concern with environmental degradation and the social implications of technology… Consequently, we should give prominence to social and economic issues in all EIA reports.

EIA must not be a patchwork; it must be holistic, conceptually unified and conducted by experienced and a versed team of interdisciplinary scholars (Stuart, 1977). Today, the public "is not always satisfied with a simple conclusion of "no unacceptable environmental consequences" [are expected to occur] in the EIA report. Instead, they inquire into the basic assumptions, methodologies and approaches, scientific basis, international practice, interpretation of the legal provisions or even the details of mathematical models adopted" (Leung, *et al,* 2013:3). We, therefore, need to have a rethink in the way and manner we conduct EIA. As Dunlap and Calton Jr. (1994) in D'Antonio, *et al* (1994:23) puts it:

> The awareness that humanity is an intrinsic part of the earth system is causing a shift in the way science is pursued. No longer is it sufficient to explore only the physical dynamics of the earth system. This effort, daunting in itself, may be dwarfed by the effort to decipher the confounding behavior of *Homo sapiens*, the planet's

> most powerful inhabitant… So potent is the human impact on the earth system that knowledge of the physical processes ruling terrestrial or atmospheric change will be incomplete until scientists better understand the human dimensions of that change (also see Silver with DeFries 1990: 46-47).

It, therefore, behooves social scientists to take up this challenge seriously and not leave the study of "human dimensions" of environmental change to the natural scientists (Newby, 1991 in D'Antonio *et al*, 1994). This is the only way to handle, and appropriately too, the emerging and nagging social issues that impede development interventions in these parts.

Berger (1983) painted a graphic picture of the very relevance of social engineering to development interventions, using a proposed Mackenzie Valley pipeline project in Canada. According to him, after holding 21 months of hearing with the host communities and other relevant stakeholders as well as those living along the proposed technology corridors, it was recommended that the project should commence 10 years later. This was to enable government put in place effective mechanisms that will enhance the traditional livelihood systems, including fishing, logging, hunting and trapping, so as to make them attractive and competitive. They recommended inter alia: the strengthening of the traditional hunting and trapping economy, the development of local logging sawmilling operations …, the development of the fishing industry, the development of recreation and conservation, and an orderly programme of petroleum exploration. … The primary aim was to ensure first, that the people did not abandon their local trades in pursuit of oil-induced employment; and second, that oil exploitation, when finally instituted, did not constitute the only source of employment for the local people, particularly when they saw oil project as transient and, therefore, will diminish with time. Accordingly, Berger (1983:136) noted that if government neglects the human dimensions and social realities while instituting the pipeline project, untoward consequences will ultimately result. As he succinctly puts it:

> If the neglected sector of the economy represents a preferred or culturally important way of life, if it is a means of self-identification and a source of self-respect, then the devaluation of that way of life can have widespread and dismaying consequences. These consequences are exacerbated if the industrialised economy offers rewards that are only short-term.

Berger (1983:144) pointed out that their judgments ... about these questions were not merely scientific and technical; but were at the end of the day value judgments. He noted that "it is impossible and indeed undesirable to lift scientific and technological decisions out of their social and environmental contexts, to disentangle them from the web of moral and ethical

considerations which provide the means of truly understanding the impact they will have." Other notable examples where social impacts informed the stoppage of projects were the proposed mine at Coronation Hill in the Northern Territory, and a High Temperature Incinerator for intractable waste in Corowa in rural NSW, both in Australia (Burdge and Vanclay, 1996).

A team of environmental assessors may include physical scientists, engineers, biologists, economists, geographers, archaeologists, sociologists, anthropologists, etc. as the case may be. These scholars are often expected to make inputs on aspects of EIA in which they are particularly knowledgeable and competent. For instance and as thoughtfully argued by Stuart (1977):

> "The geologist, hydrologist, paleontologist, zoologist, botanist, and general ecologist set the stage for … anthropological survey with their methods and data. The archaeologist picks up the thread, documenting general pattern of human exploitation and evaluating probable project impacts on archaeological resources. The ethno-historian focuses even more acutely on social and economic patterns, lending more precision to the identification of developing exploitative patterns. The ethnologist … focuses on the fundamental economic, social and ideological attributes of contemporary population and evaluates the probable changes a given project will induce…".

The results from this broad research approach will help to lessen the severity of such problem as "paucity of research results, unrealistic contract specifications, poor information flow, and inflexible organisational structures" (Stuart, 1977). Their inputs would, however, be more meaningful if and when they realise the very nature of the contributions their disciplines could make in the process.

Anthropologists are particularly concerned with social impact assessment (SIA) which we had earlier described as a component of EIA. Like EIA, SIA is a predictive business or exercise. Branch (1984) identified six rationale for conducting SIA:

(1) To fulfil, or comply with legal requirements…
(2) To define problems, clarify issues.
(3) To predict the ability of a community (population) to adapt to changing conditions.
(4) To anticipate, and assess, the likely impacts of planned actions on the quality of life.
(5) To illuminate the meaning (subjective) and impacts (objective) of planned changes.
(6) To identify needs and strategies for mitigating negative impacts.

To realise the objective of SIA, therefore, it must be conducted by scholars who appreciate environmental science and have qualifications in a social science discipline such as:

(1) Anthropology – the study of the biological and cultural development of humans and the principles guiding human relations in all societies.

(2) Sociology and social anthropology – the sociological study of human values, rules and conducts in different types of society (HSE Manual, 1996).

Other disciplines may have roles to play depending on local circumstances and need, e.g. community health, psychology, archaeology and agricultural development.

It must be stressed here that the field of SIA grew out of the need to apply the knowledge of social sciences while predicting the social effects of environmental alterations that are likely to emanate from development projects. Social scientists also developed most of the early SIA procedures, using social science labels (Burdge and Vanclay, 1996: 63). U.S. "assessors opted for models that required such data as the number and types of new workers as an input to predict quantitative social changes in the geo-political area of impact (Leistritz, Murdock, 1981 in Burdge and Vanclay, 1996: 63). The Canadian assessors focused more on a social action model, with emphasis on helping the impacted population adjust to the impending change" (Bowles, 1981, 1982 in Burdge and Vanclay, 1996: 63).

SIA is conducted throughout the entire life-cycle of a project. It starts from the planning or policy development stages of the project and moves through implementation or construction, operation or maintenance and ends with decommissioning or abandonment, if it becomes necessary. This will help planners to respond to new demands and challenges as they arise. It is generally believed that communities of impact should be involved at all stages of impact assessment. This is because they are in the best position to say how they are affected and what their priorities are. These can then be matched with scientific positions on the issues. In essence, a compromise must be struck between the subjectivity of value judgments and the objectivity of scientific approach. This background information is very relevant for it will enable us establish the role of anthropologists in social impact assessment; discuss how EIA can be humanised in Nigeria, and the way forward.

4.1 The Role of Anthropologists

It is necessary to start this section by appreciating the set of assumptions that influence the way anthropologists think, the kind of data they collect and how they interpret

them. This approach will enable us understand how they view development issues and the role they play in the process. The assumptions according to Oke (1984: 56-57) are as follows: (1) a set of assumptions about culture as the major concept in terms of which human behavior is broadly explainable, (2) a set of assumptions about the relative homogeneity of human culture (applicable mainly in community-based studies or studies involving particular ethnic groups or sub-cultures), (3) a set of assumptions about the main aspects of human behavior such as ways of obtaining food, family and kinship structures, economic organisations, political organisations and belief systems… and (4) a set of assumptions concerning the interrelationship between various aspects of culture. … These assumptions mirror the kind of issues that anthropologists focus on and these fall broadly into two: (a) why do people behave the way they do? (b) What causes human diversity and social change?

Traditionally, anthropologists gave no thought to active intervention in the lives of people they studied; nevertheless they have long embraced this reality. They accept and practise pragmatic intervention strategy as enunciated by Art Gallaher Jr. (1973 in Oke 1984). This strategy "is concerned with creating a climate conducive to gaining the acceptance of an innovation, … based on the notion that people will readily accept changes that they can understand and perceive as relevant and in which they have had a hand in planning" (Oke, 1984:75). Any intervention programme, which entails planning for people rather than with them, is viewed by anthropologists as utopic and manipulative (Oke, 1984) and, therefore, should be discouraged. But like other social analysts, anthropologists had over the decades been marginalised in the policy formulation and development planning programmes of most African and, indeed, Third World nations. This attitude emanated, first, from the non-utilitarian views held by these governments and sometimes, by anthropologists themselves of the discipline. Either due to ignorance, training or intellectual inclinations, these people tended to see anthropology as a sterile intellectual discipline. Yet, they have generally acknowledged the very significance of social investigation in project planning.

Several reasons have been given to explain this stance. The first is the technocratic nature of earlier development programmes which were generally "dominated by economists, engineers, agriculturalists, and others who base their success on the attainment of quantitative targets…" (Hall,1987). Even when they acknowledged the need for community participation, they showed little interest in "the social or welfare ramifications and the ethical questions associated with promoting socio-economic change" (Hall, 1987). Worse still, some of these technocrats generally pretended that they had the skills required to handle the social

dimensions of development projects, instead of employing the services of expert anthropologists or sociologists. The second explanation is the legacy of academic tradition among early anthropologists and other social researchers which they handed down to their successors. This tradition "stresses non-involvement with practical issues and (maintained) the persistent belief in a value-free or "objective" study of society, leading to the rejection of any activity which involves social engineering toward predetermined ends" (Hall, 1987). This tradition has permeated the thinking of many African anthropologists. According to Andah (1988), various departments and faculties in African universities "prefer to tread the easy path of imitating European universities, while ignoring the more difficult tasks of breaking new grounds…". Similarly, early sociological tradition saw the physical environment as unimportant in determining the human wellbeing. Consequently, many "sociologists have totally ignored the biophysical environment, as if human societies somehow no longer depend on it for their physical existence and for the means of pursuing the goals they value … [Hence, they] were not in the forefront of scientific inquiry concerning environmental problems when these issues began to receive considerable attention in the 1960s and 1970s" (Dunlap and Catton in D'Antonio *et al,* 1994:17). This attitude has changed considerably. Another reason, which is linked to the above, is the lack of integration among various disciplines at the university level where each discipline has regrettably maintained an unhealthy state of aloofness and, hence, unable to undertake interdisciplinary cooperative research. This attitude has made it extremely difficult for anthropologists and other social researchers to develop programmes with full range of skills required for devising short-term solutions to development programmes (Almy, 1979).

Today, however, there is an increasing realisation of the relevance of social investigation in project development. This realisation is informed by the successes recorded by project actions which took account of social soundness analysis. After examining 68 World Bank schemes, Kottak (1985 in Hall, 1987: 370) concluded that "those which did take account of social issues enjoyed higher economic returns". Failure to consider the social and cultural contexts of a project invites inappropriate project design and ultimately leads to projects that are ineffective and undesirable to the supposed beneficiaries (Cernea, 1985). The positive attitude towards anthropology, even though not generally felt, has influenced a number of international aid agencies like USAID, WHO, UNESCO, etc. to engage the services of anthropologists in social engineering. Some national governments are also toeing this line by employing notable anthropologists in their development schemes. I remember

vividly that UNICEF engaged the services of some anthropologists in 1998, including this author, to conduct "Focused Ethnographic Study of Five Major Illnesses" in Imo and Kano states. The findings of that research were not only insightful, but also rewarding with respect to policy change. During the said period also, WHO and the Federal Ministry of Health engaged anthropologists to develop the policy framework for understanding health seeking behavior in these parts. Even though the number is still minute, it is a step in the right direction. The anthropologists employed to conduct EIA are expected to make social inputs in such development schemes as residential development, road, rail and airport development, tourism and leisure development, agricultural extension, land settlement, mineral processing and exploitation, refugee resettlement, organization of irrigation for farmers, water supplies, health, etc. This development calls for a change of attitude among anthropologists to enable them exploit the growing opportunities for overall benefit. They must now embrace issues with practical orientation and development prospects.

It is instructive to note that anthropologists have generally approached social dynamics and social processes from two standpoints – emic (insider) and etic (analytical or outsider). Their training equips them with the tools that can be sharpened to conduct EIA, with emphasis on the social environment. When coupled with quantitative analyses, these approaches can produce comprehensive and acceptable research outcomes. It is, therefore, unacceptable to do otherwise. Anthropologists are well versed in studies concerning community life. Consequently, they are in the vantage position to describe the baseline social context of any action; document through longitudinal studies, any change resulting from such action; and predict social impacts. Their focus in this regard is essentially two-fold. The first is to identify the nature of relationships between project action and the affected communities. They analyse development projects with reference to socio-cultural variables and the relationships between such variables and the change resulting from project actions. The second is to explain how this relationship can be enhanced by recommending strategies that promote equity as well as ensure sustainability while exploiting the opportunities for economic benefits. It must be stressed that training in anthropology *per se* does not fully qualify one to become a good environmental assessor. Such training only equips one with the fundamentals and tools with which to conduct SIA. Therefore, necessary training or capacity building in environmental or ecological anthropology, with emphasis on SIA is invaluable in this regard. The success of anthropologists in this regard is, however, dependent on their

ability to develop appropriate guidelines, strategies and plan of action. Hence, further development in findings, theory and techniques are necessary to harness their inputs.

4.2 EIA and SIA in Nigeria: Good in Principle, Poor in Practice

I became particularly worried when I noticed the turn of events in a number of EIA challenge/review sessions organised by both project proponents and regulatory agencies, which I attended. I was also astounded when I noticed that the consultants invited along with me to review SIA process had nothing to do with the process if things were to be done rightly. I also became worried when I realised that neither the operators nor regulators provided streamlined methods of data collection and analysis for SIA, and the concerns almost always raised by stakeholders about the socioeconomic contributions of ongoing projects have continued to be nothing but positive. Given the above scenario, I decided to find out how EIA is conducted in the country, the scholars that handle the social dimensions and their specialisations, the attention given to socio-economic and health impacts and how successful the results have been.

A major strength of Nigeria in her EIA practice is the institution of environmental policy, legislative and administrative frameworks to guide the process. Apart from being one of the first countries in Africa to introduce EIA, it modeled its procedural provisions along those of the US, a country that initiated the process. Prior to the EIA Decree, Nigeria had in 1989 launched a national policy on environment. The policy provides a fairly adequate framework for the smooth handling of environmental matters. It tries to ensure optimum use of environmental resources as well as care in the application of technological initiatives. It does this based on the understanding that the present generation holds the environment in trust for succeeding generations of Nigerians and, therefore, must not do anything to jeopardise their chances of using it. The extent to which this policy is properly implemented, will be examined as we proceed. The administrative provision with which to manage EIA in Nigeria is also encouraging. Starting from Federal Environmental Protection Agency (FEPA) instituted to manage the process at inception, it metamorphosed into the Federal Ministry of Environment in 1999, with a department constituted for the purpose. Suffice it to say here that in 1992, FEPA issued interim guidelines and standards on environmental control, with the object of preventing the indiscriminate injection of hazardous pollutants into Nigeria's environment. The establishment of DPR and NESRA, among others, to enforce specific provisions of the policy and laws is also very welcome. Furthermore, the laws governing

environmental management, as outlined in the preceding pages, provide the basis for good environmental protection and assessment as they individually and/or collectively made provisions for integrated environmental management in Nigeria. Much as the law contains the provisions adequate to aid environmental protection, their enforcement has always been found wanting.

Like the policy and legislative frameworks, the provision for public participation in development process in Nigeria is fairly adequate. Apart from generally delimiting the required publics, there are also provisions for ensuring that their comments and/or contributions are realised. All these provisions had earlier been outlined. The above instruments are necessary because they provide the basis for EIA of project activities. They also enable us determine whether or not such activities are executed with the required mandate as well as within the stipulated standards.

Another plus to EIA process in Nigeria is the effort by some corporate organizations to give prominence to social issues in their operational guidelines and principles, while making EIA wear human face. One of such companies is Shell Petroleum Development Company of Nigeria Limited (SPDC). In spite of its shortcomings in this regard, SPDC was the first to widen the scope of EIA so as to give equal weight to all the elements that constitute the process. It, therefore, transformed from EIA to Environmental, Social and Health Impact Assessment (ESHIA). This is in addition to the separate departments, namely Health, Safety and Environment, Social Investment and Local Contents, it established to manage the various elements. The question that might be asked is whether the officials that manage these processes are majorly social analysts or experts. A further question might revolve around the specialisations of the various consultants they engage.

One thing is to make legal and institutional arrangements for development purposes; another is to judiciously implement them. Nigeria is not known to have a good record in this regard and EIA is not an exception. According to Ogunba (2004 in Eyisi, 2014:76), “EIA has not yet evolved into substantial public participation, particularly in the rural areas, where most of the populace are not educated and, therefore, unaware of their rights of objection to environmentally unfriendly prospective projects in the 21-day public displays of draft EIAs” [as stipulated by the Act]. The joint and community oriented strategy, which would foster harmonious relations between the companies and the communities, is clearly missing in Nigeria (Zint & Mai, 1997). This explains why “the degree of bitterness on the part of the communities is enormous” (Zint & Mai, 1997).

Other factors that bedevil the practice include: (1) Apathy and nonchalance, resulting from the poor educative build-up and sensitisation while initiating the process. Consequently, many people do not know the inherent value of EIA, but rather see it as a ploy to waste valuable time and stagnate business development. (2) Bureaucratic bottle neck, as many developers see the various stages of EIA, starting from submission of project proposal through screening and scoping to execution of EIA and submission of draft and final reports, as not only cumbersome and time-consuming, but also anti-development. Indeed, they believe that the eight months timeline for the initiation and implementation of an average EIA research is not worthwhile. (3) Use of unspecified methodologies for data processing or predictive modeling while anticipating impact and recommending remedial actions as is the case in the United States of America and Canada, whose relative emphasis on quantitative and qualitative approaches respectively had earlier been echoed. (4) Irregular EIA audit, as the three years schedule for environmental auditing is hardly adhered to. As Abutu (2012 in Eyisi, 2014) argued … "the regulator and the operators often engage in pretense game at the expense of the local communities." (5) Use of unqualified consultants in research execution and review both by the proponents and FMEnv. In a country where people claim to be what they are not, quacks often take the centre-stage in procedural issues to the detriment of society.

At a time, I chided a civil engineer who told me that he was an expert in community relations and environmental assessment simply because he was appointed by a leading corporate organization in the country as community liaison officer.Today technically-minded professionals and economists dominate the conduct of researches, reviews and execution of SIA. In actual fact, it is assumed that anyone can determine the social consequences of development (Burdge and Vanclay 1996). As a result, all manner of scholars now parade themselves as or carry the tag EIA nay SIA specialists because of the seeming benefits the venture attracts, thereby throwing quality to the winds. Even physical scientists now pride themselves as the doyen of SIA, forgetting soon enough the issues that necessitated the engagement of anthropologists and other social scientists in development interventions since the past four decades.

Experience has shown that between 71 and 75% of the consultants engaged by both the project proponents and the regulatory agency to conduct EIA and participate in the review sessions come from either the physical or biological sciences. One of the startling results is that professors of chemistry and geology as well as holders of HND certificates in

engineering have been engaged to conduct SIA research or act as socioeconomic consultants in Nigeria. This attitude is a resultant outcome of the priority position given to science by many scholars and project proponents. The regulator also appears not to take specialization of consultants into consideration before engaging reviewers for the socioeconomic components of EIA, at best FMEnv employs the services of majorly economists even for projects located in rural communities. Indeed, two categories of practitioners have emerged as a result, namely: (a) the professionally-trained, and (b) the ad-hoc or cut and paste. The first is apparently in the minority and this has been the bane of SIA practice in Nigeria, culminating in their inability to address the nagging social problems and/or impacts in operational areas of many companies, particularly in the Niger Delta.

Furthermore, social issues are not given equal weight with other elements of EIA, despite their sensitive nature. In almost all the panel sessions or public fora organised by the regulator or operators, close to 70% of all the questions asked revolve around socio-cultural and health issues. Information collected from FMEnv and project proponents show that the number of pages allocated to every EIA report approved between 2014 and 2015 is skewed in favour of biophysical parameters (18.8%) compared to social dimensions (2.26%), while health issues (0.75%) distantly follow. The remaining pages are allocated to project description, impact tables, mitigation measures and environmental management plan all of which traverse the various environmental items. A further concern about SIA practice in Nigeria is the limited funding allocated to it in EIA reports. It is arguable that the funds allocated to social dimensions amount to less than 10% of the total expenses on EIA researches conducted by project proponents, when calculated against the number of personnel, laboratory analysis and time allocated to biophysical parameters. There is also no specific principles or regulatory documents that guide FMEnv in the process, even though some items related to social dimensions appear in the EIA Act of 1992. Thus, the attention received by socio-cultural parameters when compared to biophysical elements leaves one in doubt about the genuine intention of the proponents or the regulator as the case may be.

What appears to matter most to a great majority of the project proponents is how to secure operational licence, the impacts of their projects on the host communities notwithstanding. As Esteves (2012 in de Rijke, 2013:12 and 35-37) puts it, SIA is seen as … "a little more than a feeble attempt at project legitimisation". Accordingly, they averred that:

> Compared to the extent of analysis and resources devoted to biophysical issues, SIA usually has a minor role. …The limited

> capacity of the regulators and the limited resources devoted to quality control have a significant impact on the standard of SIAs, with a tendency for the proponents to produce assessments that only just pass the minimum expectations of the regulators. … Many lack adequate details about the methods, sources and assumptions. The quality of analysis is another area of variability. Assessments are sometimes little more than social and economic profile of impacted communities compiled from secondary sources. Analysis lacks identification of the spatial, temporal and stakeholder distribution of impacts and benefits. Integration with environmental, health and cultural heritage can be superficial. The adequacy of public participation continues to be an issue. SIAs do not often meet public expectations of being a deliberative process to determine the acceptability of a project. …

A sector-wide analysis of EIA reports in Nigeria reveals that EIA received the highest number of patronage from oil and gas at its incipient stages. But when telecommunication came on board in 1999, it took the lead up until 2013, followed by oil and gas, power and manufacturing industries (in descending order), when mining became a force to be reckoned with following the current effort to diversify the economy. Thus, between 2014 and 2015, the mining industry (27.71%) patronised EIA more than any other industry. It was distantly followed by telecommunication (18.44%), infrastructural development (17.78%), power (10.98%) and oil and gas (4.86%). This current trend, not only portrays the widespread nature of some of these activities vis-à-vis oil and gas, but also the emerging trends in the efforts to diversify Nigeria's economy and make it less dependent on oil and gas.

The tourism industry takes the rear. This is in spite of the numerous tourism projects, four/five star hotels that are currently springing up in Abuja and Lagos and other state capitals, and the new airport development projects in parts of the country. It is instructive to note that coastal resort facilities, national parks, and hotels that have upwards of 80 rooms as well as airport with an airstrip of 2,500 metres or more, among others, are mandatorily required to submit EIA reports to FMEnv for approval before their commencement. Hotels and airports have, for instance, been implicated for inducing impacts in and around their operational areas or along the technology corridor as the case may be. For example, in addition to other associated social impacts, one five star hotel consumes as much water as five villages put together, with attendant consequences on water supply and waste disposal; while residential properties located in the vicinity of an airport may attract lower prices/rents than similar properties located in more serene environment. This argument becomes plausible

when compared against the noise pollution and volume of traffic and consequent accidents associated with airport landings and take-offs (Wall and Mathieson, 2006).

Other items in the mandatory study list as enumerated in the EIA Act include agricultural development programmes of not less than 500 hectres or one necessitating the relocation of 100 families or more; drainage and irrigation schemes covering 5,000 hectres or more… ; land reclamation involving an area of 50 hectres or more; construction of fishing harbours, harbour expansion and land-based aquaculture; and forestry development. Others are major housing projects, petrochemicals of all sizes, ports construction, quarries, railways and transportation, waste treatment and disposal and water supply of above 4,500 cubic metres per day (EIA Decree, 1992).

5. Way Forward for EIA/SIA

It could be seen from the above discussion that anthropologists possess the wherewithal to conduct, and effectively too, such researches that will help in realising the objectives of SIA in Africa. Nevertheless, in any of such researches, a compromise must be struck between detailed anthropological studies and cursory studies which lack the depth required of an SIA (HSE Manual, 1996). The aim is to ensure timely and efficient delivery of reports, which corporate realities demand. For us to humanise EIA in Nigeria, therefore, we must redefine our priorities, re-examine the contents and processes of EIA and redesign our methods and procedures in line with the socio-cultural, economic and environmental sensitivities of the receiving domain. Indeed, some aspects of the underlying scientific enterprise that serve as a basis for environmental decision-making at the FMEnv and proposing agencies need to change. Furthermore, the manner in which the FMEnv conducts its science-related activities must change as well (Am J Public Health, 2011).

Consequently, this lecture proposes as follows:

(1) That social issues be properly defined, articulated and given equal weight with other parameters in the EIA process. This entails a review of the policy and legal frameworks for conducting EIA in Nigeria. Such frameworks, which must be implemented through genuine public participation, should be subject to regular review to incorporate emerging social changes.

(2) That well fashioned educative and sensitisation programme be used to keep people informed about their rights and limitations in the process so as to garner their full support and make them active participants in the development process.

(3) That anthropologists and other collaborating scientists who have training in or full appreciation of environmental science be engaged to handle the socioeconomic dimensions of SIA, particularly in rural communities where most development projects in these parts take place.

(4) That SIA researches should give attention to distributional equity, and vulnerability of socio-cultural traits as well as processes that may produce disparities in risks and health outcomes in development interventions.

(5) That holistic and participatory studies detailing the socio-cultural and environmental profiles of parts of Nigeria be commissioned and executed to provide the benchmark for assessing impacts in specified locations, while providing a guide for further studies. These types of study, which are generally multidisciplinary in nature, should incorporate both qualitative and quantitative approaches.

(6) That capacity building for the regulators, agency professionals and community members, using well qualified social scientists, be the hallmark of future practice.

It is hoped that this approach would give room for a better conduct and appraisal of SIA researches and ultimately provide an effective decision-making process while enhancing company-community relations and humanising EIA practice.

6. GOING DOWN THE MEMORY LANE

My interest in this area of endeavour started in 1996 when I read a three-page report written by Edward Liebow (1990) titled: "Social Impact Assessment," in which he reviewed his scholarly contributions to SIA entitled, "Perceptions of Hazardous Waste Incineration Risks…" in the Agricultural Area of Eastern Washington. He used focus group discussion to x-ray the perceptions of the local residents on the safety of foods produced in their neighbourhood and found that: (1) "there are few foods that people associate with particular locale, (2) even among people who have an above-average interest in the safety of their food, there is wide ranging diversity in the specific threats to food safety about which they choose to be especially vigilant". Taking a cue from the report, I felt the need to examine, from anthropological perspective, the implications of oil exploitation in the Niger Delta. Consequently, I registered for a Ph.D Degree in the Department of Sociology and Anthropology of this great University, but later moved to Archaeology and Tourism. The title of my thesis is Social Impact Assessment of Oil Exploitation in the Niger Delta. In the thesis, which was the first Special Monograph to be published by West African Journal of

Archaeology under the title, The Socio-economic Impacts of Oil Exploitation in the Western Delta, Nigeria I addressed, from holistic perspective, the socio-economic and cultural issues affecting oil exploitation in three Urhobo communities. I proposed that, in addition to the judicious implementation of sound environmental safety measures and the encouragement of part ownership of oil projects by the people, the ultimate solution to the problems of oil exploitation, lie in sincere dialogue between the people and the companies on one hand, and government on another (Okpoko, 2001, 2007).

In my attempt to give EIA the conceptual and methodological focus it deserves from African anthropological perspective, I wrote a proposal titled: The "Necessity for Anthropological Forum on Environmental Impact Assessment", which culminated in a World Bank co-sponsored capacity building workshop in Yaounde, Cameroon under the aegis of Pan African Association of Anthropologists. The other partner is Avenir Des Peuples De La Foret Tropicale (A.P.F.T). The proposal expressed the need to brainstorm and develop appropriate theories and methodologies that would guide anthropological contributions to EIA practice in Africa. The published version of this proposal form a part of the materials used in this lecture. The paper proposed three main kinds of dialogue that will enable scholars develop a conceptually unified approach to SIA in Africa: (1) inventorisation of relevant social and cultural variables that will be used to develop a checklist for SIA in Africa; (2) a critical study of SIA methodologies with a view to arriving at a generally accepted methodology for Africa; (3) the conceptual integration of such disciplines as anthropology, agricultural extension, rural sociology, community development, statistics, archaeology, etc. that will be useful in realising the objectives of SIA in Africa. This approach was aimed at providing a launching pad for the development of properly articulated SIA programme for Africa. A major outcome of the workshop was the establishment of Anthropological Network on Environmental Assessment in Africa, which became moribund soon after. It, nevertheless, enhanced the capacity and competencies of the participants and created a platform for international collaboration, albeit personalised, among them.

Since then, I have tried to preach the gospel of people-centred development interventions. My next contribution is titled Environmental Impact Assessment and Development Decision-making… This was followed by Socio-cultural Issues in Urban Environmental Management, Encouraging Public Participation in Environmental Assessment of Tourism Development in Nigeria, Environmental Impacts of Technology Intrusion in Parts of Nigeria, Environmental Impact Assessment of Nigerian Cement Company, Nkalagu (co-

authored), Integrating Community Perceptions and Cultural Diversity in Social Impact Assessment (co-authored), and Ethnic Minorities and Development…etc. All these publications, in addition to my numerous reviews for corporate organisations and Federal Ministry of Environment, are geared towards ensuring that development interventions consider the humanistic perspective.

Environmental Assessment and Development Decision-making in Nigeria…is an advocacy paper that examined both the policy and practical application of environmental impact assessment (EIA) in Nigeria. It used the oil industry as an example and noted that although Nigeria adopted the US model in her conception of EIA, she has failed to achieve the objectives for which it was initiated. The paper identified the initial composition of FEPA and the concentration of powers at the centre, shortage of funds and inadequate manpower to manage the process as some of the deficiencies in EIA practice in Nigeria. It, nevertheless, recommended the proper delineation/devolution of powers, which allows state and local jurisdictions on surface mining, definition of discharge standards for each contaminant in every major industry located in their domains, and delineation of industry-by-industry standard on EIA as some environmental management practices and sustainable development strategies that will make our development projects more environment-friendly. However, EIAs of major projects should be scrutinised at the centre before they are finally accepted or rejected. *Socio-cultural Issues in Urban Environmental Management* examined the socio-cultural dimensions of urban environmental management in Nigeria. It noted that many towns and cities in Nigeria originated and grew to fame as religious, commercial and/or secular towns/cities and have continued to maintain the peculiarities of the culture area from where they originated. The paper discussed the socio-cultural bases of urban centres, urban environmental profile before delineating the core issues of concern. Among them are resource use patterns, ethnic variation, beliefs and value systems, habits about waste disposal etc. It is an attempt at appreciating the cultural dimensions of development in Nigeria. *Encouraging Public Participation in Environmental Assessment of Tourism Development in Nigeria* reviewed a number of cases in Nigeria and averred that despite the indispensable role of public participation in environmental assessment of tourism, real public participation did not happen at all in many of the efforts to develop sustainable tourism in Nigeria. The paper proposed the strategy for effective public participation using community-based structures and capacity building, etc.

Environmental Impacts of Technology Intrusion in Nigeria discussed the negative and positive impacts of fixed-site and linear technologies on the socio-cultural life of people in the vicinity of operational areas and along the technology corridors respectively. The former included industrial plants and hazardous waste facilities that are located within a defined area, while the latter referred to gas pipelines, hazardous waste transportation and air emission that traverse a given geographical area. Using the theory of folk-urban continuum developed by Tonnies, I argued that many of the technologies exert more negative effects on the rural people who depend mainly on land for sustenance than their urban counterpart who have other sources of livelihood. I suggested that preventive rather than corrective measures be instituted to address environmental problems in Nigeria. *Environmental Impact Assessment of Nigerian Cement Company, Nkalagu* is a product of field research. It examined the impacts of cement production on Igboasa people, the host communities. The paper traced the cultural history of the people and noted that the cement company provided both direct and indirect employment opportunities for the hosts. However, the activities of the company resulted in the relocation/displacement of the local people with attendant loss of access to their sacred areas and other cultural assets, which they cherish. They also lost the social ties and cleavages as well as opportunities for filial economic assistance with which the culture area is notable. The blasting of limestone also causes heavy cracks on residential houses while the associated dust settles on roof tops. The paper recommended some mitigation measures including compensation, to ameliorate the negative impacts. *Integrating Community Perceptions and Cultural Diversity in Social Impact Assessment* used participatory methods to study 11 communities in Imo and Rivers states and to determine the level of compliance to EIA requirements and sustainable development initiatives. We found that the region has continued to face multiple sustainability challenges, including increased loss of natural resources and cultural heritage and the attendant loss of traditional livelihood opportunities and valued heritage. These result first, from the palpable neglect of community perception and cultural diversity in SIA process and second, the consequent alienation of the people in the decision-making process. The study argued that integrating community perception and cultural diversity in development intervention will secure not only the license to operate, but also build positive corporate-community relations with trickle down effects on conflict prevention and sustainability of development. *Culture, Environment and sustainable Development: An Integrated Model course* was commissioned by Pan African Association of Anthropologists that developed a model course for African Itinerant College for Culture and

Development under the aegis of UNESCO. The course is targeted at policy makers and development practitioners with a view to inculcating in them, the need to consider and integrate cultural variables into the development process. I borrowed a leaf from Japan where development programmes are rooted in the traditional Japanese culture called Shintoism. Using the terms of reference, I outlined the objectives of the course, its structure, resource materials (which interestingly included replicas of antiquities), the course description and an extensive reading list for students. *Ethnic Minorities and Development …* is a critical evaluation of development issues in the Niger Delta, particularly oil pollution and other problems associated with oil exploitation. I x-rayed the community assistance programmes and development projects put in place by both the government and oil companies to assuage the continued environmental pollution and attendant loss of traditional sources of livelihood by the people and argued that they were grossly inadequate and misdirected. I suggested that, in addition to the effective implementation of the community development initiatives and environmental safety measures, the communities should be sensitised to embrace income diversifying activities particularly in the non-farm sector. This suggestion is predicated on the fact that much of their farmland and fishing zones have been impacted by oil operation. In all, bottom-up approach to development was advocated.

7. Conclusion

What has been done in the foregoing is to highlight the issues underlining the need to humanise EIA practice. It is argued that development interventions have failed to place people first in the scheme of things in spite of the fact that developments are for people. If developments are for people, it is only natural that the people whose domain has been earmarked for development should play a participatory role starting from project initiation to its implementation. As I argued elsewhere, the social angle should be incorporated from the earliest phases of a project to enable it have a decisive influence on design. In doing this effort must be made to utilise those specialists whose areas of competencies are geared towards the human dimension of development. Furthermore, there is need to properly delineate the socio-cultural parameters that are sensitive to development projects so as to address them. Unfortunately, this appears not to be the case as biophysical scientists and economists not only hijacked the process from inception, but also still dominate the EIA landscape both in Nigeria and elsewhere. The obvious consequence is the perennial crises and agitations in many projects areas, emanating majorly from none adherence to social issues.

Social analysis has a valuable role to play in assuaging social problems and it has its own technical skills which are as valid as those of the economists, physical scientists and the engineers. Indeed, social scientists and other collaborating social analysts should be left alone to do the business they know how to do best. The lecture, therefore, recommends that both the contents and processes of EIA be revisited and the approach streamlined to give credence to human dimensions. It is argued that an interdisciplinary approach where every discipline concerned with EIA plays its designated role is the best thing that can happen to the practice and help to humanise it.

8. ACKNOWLEDGEMENTS

I wish to acknowledge, in a special way, the Almighty God for His numerous blessings upon me and my family and for making this day a reality. I am also indebted to all those who contributed to the success of this event. I am especially grateful to Dr. F.N. Anozie, of blessed memory who supervised my Ph.D in Social Impact Assessment and whose scholarly advice, criticisms and encouragement contributed in broadening my thoughts on human dimensions to development interventions. Thanks also to my elder brother, Professor A.I. Okpoko and his late wife Josephine, and Mr. and Mrs. Jerome Nwankwo, for their contributions and support. I also wish to acknowledge with gratitude the University administration, Senate Ceremonial Committee and my committee of friends for their uncommon disposition and support all through the preparation for this great event.

I am forever indebted to the following scholars who provided the materials, which form the bulk of my literature review. They are: Dr Edward Liebow of the University of Washington Seattle, U.S.A., Dr. John Patterson of Impact Assessment Incorporation, U.S.A, Dr. Tim Quinlan of the University of Durban-Westville, South Africa, Urs Thurneysen of Riehen, Switzerland, and Professor (Dr) Ulrich Braukamper of Gottingen University, Germany; others are Professor Paul Nkwi of the University of Yaounde, Cameroon. Thanks once more to Professor Ulrich Braukamper and Dr Tim Quinlan for reading through my preliminary proposal on social assessment and making useful and encouraging remarks.

I owe special thanks to my darling wife, Chinwe, for her uncommon love, care and continuing encouragement and support. To my children, Chioma, Ogochukwu, Chukwuebuka, Somtochukwu and Uchechukwu, I say thank you and may our ever living God continue to guide and protect you. I am sincerely grateful to my younger brother, Barrister Emeka Okpoko and my other siblings for the love we share and for always being

beside me. Thanks also to Mrs. Oby Madubunyi, Professor E.E. Okafor and Drs A. M. Ibeanu, L.C. Ekechukwu, E.E. Okonkwo, (Mrs.) P. I. Eze-Uzomaka, E.I. Itanyi, Elochukwu Nwankwo and Mrs. Chidinma Oguamanan, Afam Eyisi, Maureen Ukaegbu, Mrs. Uche Obieluem, C.S. Agu and other staff of the Department of Archaeology and Tourism for their moral support and concern. To my friends, Professors Fidelis Uzochukwu Okafor, Fab Okafor, Emma Ezeani, Okoro Ijoma, O.N.Njoku, Law Ezeanyika, Romanus Ezeokonkwo, Chinyere Igbo, Charles Igwe, Sam Onuigbo and Tom Okonkwo as well as Drs Paul Omeje and Paul Obi-Ani, Chijioke Onuora, Emeka Okpara, M.N. Okoro, V.E. Ali, B.M. Mbah, P- J Ezeh and Mr Leo Awogu, I say thank you. I am also sincerely grateful to Mrs Stella Okoye-Ugwu, Mr Fidelis Okoro, F.O. Elomba, T.N. Odikpo and Dr Evelyn Mbah, my Associate Dean for always being by me. I wish to thank all the members of staff, teaching and none-teaching, of the Faculty of Arts for their unwavering support and cooperation all these while that I serve as Dean. I also salute all members of Awka Area Association (AAA) and Agulu People's Union, Nsukka branch, here present for their uncommon solidarity and support. May God bless you all.

Thank you.

REFERENCES

Almy, S. (1979): Anthropologists and Development Agencies: *American Anthropologists*, Vol.79.

Am J Public Health (2011): Humanizing Science at the US Environmental Protection Agency, *American Journal of Public Health* vol. 101(suppl1), December 2011. http://www.ncbi.nlm.nih.gov/pmc/articles/PM Accessed at 11.55am on November 21, 2015.

Andah, B.W. (1988): African Anthropology. Shaneson C.I.Ltd., Ibadan.

Berger T.M. (1983): Resources, Development and Human Values. *Impact Assessment,* 2:2, 129-147

Branch, K., Hooper, D. A., Thompson, J. and Creighton, J. (1984): *Guide to Social Assessment: A Framework for Assessing Social Change*. Boulder, Colorado, Westview Press.

Burdge, R.J. and Vanclay, F. (1996): Social Impact Assessment: A Contribution to the State of the Art Series. *Impact Assessment,* Volume 14, March.

Canter, L. W. (1975): Environmental Impact Assessment. McGraw-Hill, New York.

Cernea, M. (ed.) 1985: Putting People First: Sociological Variables in Development Project. Oxford University Press, Oxford.

Davis, S. H. and Soeftestad, L. T. (1995): Participation and Indigenous People. Social Policy and Resettlement Division, The world Bank, Washington D. C.

De Rijke, Kim (2013): Coal Seam Gas and Social Impact Assessment: An Anthropological Contribution to Current Debates and Practices. *Journal of Economic and Social Policy*, Volume 15, Issue 3.

D'Antonio, W.D., M. Sasaki and Y. Yonebayashi (1994): Ecology, Society and Quality of Life. Transaction Publishers, New Brunswick, New Jersey 0803.

EIA Decree, 1992 Federal Environmental Protection Agency (1992): Environmental Impact Assessment Decree (No. 86). Supplement to Critical Gazette Extraordinary No. 73, Vol.79, Lagos.

ERML Report (1997): Niger Delta Environmental Survey: Preliminary Report Phase 1 (Environmental and Socio-Economic Characteristics). Lagos, Nigeria.

Eyisi, A.P. (2014): A Trend Analysis of Environmental Impact Assessment Practice in Nigeria, and its Implications to Tourism Development. An Unpublished M.A. Dissertation, Department of Archaeology and Tourism, University of Nigeria, Nsukka.

FEPA, 1991 Federal Environmental Protection Agency (1991): Guidelines and Standards for the Environmental Control in Nigeria, Lagos.

FGN, (1989): Federal Environmental protection Agency National Policy on the Environment.

Freudenburg, W. R. (1986): Social Impact Assessment. *Annual Review of Sociology* Vol. 12.

Hall, A. (1987): Social Analysis in Official Foreign Aid. *Human Organization*, Vol. 46, No. 4.

HSE Manual (1996): Social Impact Assessment Guidelines. Institute of Environmental Assessment, Lincolnshire, UK.

JCA, 1993 JICA (Japan International Cooperation Agency 1993): The Study of the National Water Resources Master Plan (NWRM) in the Federal Republic of Nigeria. Progress Report.

Kottak, C. (1985): When People Don't Come First: Some Sociological Lessons from Completed Projects. Publ. in *Putting People First: Sociological Variables in Development Project*. Oxford University Press, Oxford.

Liebow, E. (1990): Social Impact Assessment. Federal Archaeology Report, Vol. 3 No 3. US Department of the Interior.

NOAA Technical Memo (1994): Guidelines and Principles for Social Impact assessment. Prepared by Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, USA.

Nzeadibe, C.N. … Okpoko, P.U…. (2015): Integrating Community Perceptions and Cultural Diversity in Social Impact Assessment. *Environmental Impact Assessment Review* 55, pp.74-83.

Ofomata, G. E. K. (1985): Soil Erosion in Nigeria: The View of a Geomorphologist. University of Nigeria Press, Nsukka.

Oke, E.A. (1984): An Introduction to Social Anthropology. Macmillan International College Editions, London and Basingstoke.

Okpoko, P.U. & Anyanwu, C.U. (1997): Environmental Impact Assessment of Nigerian Cement Company, Nkalagu. *West African Journal of Archaeology, vol. 27, No. 2, pp. 100 – 117.*

Okpoko, P.U. (1998): Environmental Impacts of Technology Intrusion in Nigeria. *Nsukka Journal of the Humanities, No. 9, pp. 58 – 69.*

Okpoko, P.U. (1999): The Necessity for Anthropological Forum on Environmental Impact Assessment. Published in *Nsukka Journal of Humanities*, Number 10, *pp. 175 –185*

Okpoko, P. U. (2001): Social Impact Assessment of Oil Exploitation in the Niger Delta. An unpublished Ph.D Dissertation submitted to the Department of Archaeology and Tourism, University of Nigeria, Nsukka.

Okpoko, P.U. (2001): Sociocultural Issues in Urban Environmental Management. *Issues in Urbanisation and Urban Administration in Nigeria* edited by E.E. Ezeani and N.N. Elekwa, Jamoe Enterprises Ltd, Enugu pp.88 – 100.

Okpoko, P.U. (2003): Encouraging Public Participation in Environmental Assessment of Tourism Development in Nigeria*. Nigerian Journal of Social Sciences. Vol.2 No.2.*

Okpoko P.U. (2004): Environmental Assessment and Development Decision-making in Nigeria: Lessons from the United States. In *African Journal of American Studies*, *vol.1 No.1 pp. 91- 109*.

Okpoko, P.U. (2005): Ethic Minorities and Development in the Niger Delta: An Anthropological Perspective. Unpublished Research Proposal submitted to Shell Development Company of Nigeria, 2005.

Okpoko, P. U. (2007): The Socio-Economic Impacts of Oil Operation in the Western Delta, Nigeria. West African Journal of Archaeology vol. 37. No (1&2) , Monograph 1.

Olemeforo, 1987 Olemeforo, P. N. (1994): Assessment of Environmental Impact of Petroleum Activities in Port Harcourt and Environs. An Unpublished M.Sc. Thesis, Department of Geography, University of Nigeria, Nsukka.

Petry, B. & Boeriu, P. (1995): Environmental Impact Assessment, HH 102/95/1, International Institute for Infrastructural, Hydraulic and Environmental Engineering, The Netherlands.

Quinlan, T. (1993): Environmental Impact Assessment in South Africa: Good in Principle, Poor in Practice? *South African Journal of Science* Vol. 89.

Schweitzer, M., Wolfe, A. K., & Braid, R. B. (1993): Studying Technology Intrusion in Linear Communities: The case of Air Force Low-Altitude Training Route. Published in *The Environmental Professionals*, Vol. 15 No. 3.

Scovill et al, 1977 Scovill, D.H., Gordon, G.J. and Anderson, K.M.: (1977): Guidelines for the Preparation of Statements of Environmental Impact on Archaeological Resources. Academic Press, New York, San Francisco, London.

Shell Brief (1995): The Environment. Published by Shell Development Company of Nigeria Ltd; Lagos.

Sherer, R. J. & Ashmore, W. (1979): Fundamentals of Archaeology. The Benjamin/Cummings Pub. Co. Inc. California.

SPDC (2003): Environmental Impact Assessment (EIA) Process: Stakeholders' Guide. Shell Development Petroleum Company of Nigeria Limited.

Stoffle, R. W., Stone, J. V. & Heeringa, S. G. (1993): Mapping Risk Perception Shadows: Defining the Locally Affected Population for a Low-level Radioactive Waste Facility in Michigan. Published in *The Environmental Professional*, Vol. 15 No. 3.

Stoffle, R. W., Traugott, M. W., Harshbarger, C. L., Jensen, F. V., Evans, M. J. & Drury, P. (1988a): The Superconducting Super Collider at the Stockbridge, Michigan site: Community Support and land Acquisition. Institute for Social Research, University of Michigan.

Sadler, Baxter (1997): Environmental Impact Assessment and Development Policy Making. In *Environmental Impact Assessment and Development* edited by Robert Goodland and Valerie Edmondson. The World Bank, Washington DC.

EIA NLNG Seven Plus Vol.1. (2008): Environmental Impact Assessment for the Nigeria LNG Seven Plus Project. NLNG Seven Plus Environmental Impact Assessment, Vol.1.

SPDC (2004): Accompanying Guide for SPDC Environmental Impact Assessment Process: Stakeholder Identification and Involvement, vol. 1

SPDC (2006): Capacity Building Workshop Organized by Shell Petroleum Development Company of Nigeria Limited, Port Harcourt.

Stuart, D.E. (1977): An Ethnologist's Perspective on Cultural Resource Management. In Conservation Archaeology: A Guide for Cultural Resource Management Studies, edited by Schiffer, M.B. and Gumerman, G.J., Academic Press, N.Y.,San Fransisco, London

LEUNG, H., Clara U., TSANG T. and SHI, X (2013): Shift Towards A Public Expectation Oriented EIA. IAIA Conference Proceedings, 13-16 May, Calgary, Alberta, Canada.

Umeh, L. C. and Uchegbu, S. N. (1997): Principles and Procedures of Environmental Impact Assessment, Computer Edge Publishers, Lagos.

Wall, G. and Mathieson, A. (2006): Tourism: Change, Impacts and Opportunities. Pearson Prentice Hall, Harlow, England, London… .

World Bank (1991): Environmental Assessment Source Book, Vol. 1., Policies, Procedures and Cross Sectoral Issues. Environment Division, The World bank, Washington D. C.

Zint, M. and Mai, W. (1997): Observation after a Visit to the Oil Producing Areas of Nigeria. Unpublished reports by Visiting members of two development Organizations in Germany.

APPENDIX 1

Table 1: Impacts table - CONSTRUCTION phase

Description			Assessment			
Description of Hazard/Activities	**Group Code**	**Description of Impact**	**Description**	**Likelihood**	**Consequence**	**Rating**
Resources – Space						
1. Expansion of existing roads between the site and the camps is needed.	C1-1	Reduces the possibilities for other functions and prevents that this land be returned to its original owner.	Adverse, Direct Permanent, Irreversible, Local	Medium high	Considerable	Moderate
Resources – Environment						
2. Water is required for industrial purposes and as a source of potable water.	C2-1	Water extraction can result in qualitative/quantit ative changes in deep, shallow and surface water layers.	Adverse, Direct/Indirect, Temporary, Reversible, Regional	Low	Hardly any	Negligible
Resource – People						
3. Creation of temporary employment through the engagement and consequent influx of Nigerian and Third Country National construction workers, and expatriate staff.	C3-1	Temporary increased demand for water and food during construction.				
Discharges – Emissions						
4. Incineration of construction waste produces emissions to air.	C4-1	Environmental quality (of air, water and soil) will be impacted and this may affect plants, animals and human health and contribute to climate change.	Adverse, Direct, Temporary, Reversible, Local/regional	High	Considerate	Major
Discharges – Effluents						
5.	-	-	-	-	-	-
Discharges – Wastes						
6.Site preparation activities will result in land areas being	C6-1	Tipping of topsoil and bush in area will result in	Adverse, Direct, Permanent,	Medium	Hardly any	Minor

cleared, including topsoil and bush.		destruction of the natural system at the disposal site.	Irreversible, Local			
Discharges – Noise						
7. Intermittent noise from traffic, construction and flaring.	C7-1	This will chase away animals and may have consequences for food resources and biodiversity in the project area.	Adverse, Direct/Indirect, Permanent, Irreversible, Local	Low	Little	Negligible
Discharges – Light						
8. Light at roads and at the project site.	C8-1	Animal behavior can be disturbed by light.	Adverse, Direct, Temporary, Reversible, Local	Medium low	Hardly any	Negligible
Discharges – Heat						
Flaring will lead to heat radiation around the flare.	C9-1	Birds and insects may be attracted by the flare light and may be killed by the flame.	Adverse, Direct/Indirect, Medium term, Reversible, Local	Medium	Hardly any	Negligible
Incidents						
10. Construction related spills of diesel, chemicals, hydraulic oil etc, can occur on- and off-site.	C10-1	Environmental quality (soil, ground- and surface water) will be affected by incidental spills; and the resultant chain of effects on man, plants, and animals.	Adverse, Direct, Temporary, Reversible, Local/regional	Medium low	Extreme	Moderate

Adapted from EIA of NLNG Seven Plus, 2008

APPENDIX 2

Table 2: Impacts table – OPERATIONS phase

Description			Assessment			
Description of Hazard/Activities	**Group Code**	**Description of Impact**	**Description**	**Likelihood**	**Consequence**	**Rating**
Resources – Space						
1. Permanent use of space for plant and safety zones.	O1-1	Reduces the possibilities for other functions and	Adverse, Direct, Long-term,	High	Considerable	Major

		prevents this land being returned to its original state or another purpose….	Irreversible,Local.			
Resources – Environment						
2. Water is required for industrial and domestic purposes.	O2-1	This can result in qualitative/quantitative changes in deep, shallow and surface waters layers, which may adversely affect human health.	Adverse, Indirect, Long-term Irreversible, Regional	Low	Considerable	Minor
Resources – People						
3. Decreases employment opportunities, when compared to the construction. Engagement of other skills and consequent influx of Nigerian and expatriate staff is foreseen.	O3-1	The presence of a smaller operational work force reduces the quantum of food and consumables.				See 02-1 See 02-4
Discharges – Emissions						
4. Emissions by power and process stacks. Emissions from tanks, valves, etc. will be vented.	O4-1	Impacts the ambient air quality and may lead to effects on plants, animals and human health, and climate change.	Adverse, Direct, Permanent/temporary, (ir)reversible, Local/regional/global	NO_z emissions: High SO_z emissions: Medium Tank emissions Low …	NO_z emissions: Great SO_zemissions: Considerable Tank emissions: Considerable…	NO emissions: Major SO_z emissions: Moderate Tank emissions: Minor
Discharges –						

Effluents						
5. Waste water and sewage systems discharges	O5-1	Environmental quality, surface water, and interconnected shallow groundwater and human health may be affected.	Adverse, Direct, Temporary, Reversible, Local	Medium	Considerable	Moderate
Discharges – Waste						
6. -	O6-1	-	-	-	-	-
Discharges – Noise						
7a-b:Traffic and plant operation noise will be produced.	O7-1	Animals will be repelled by traffic noise …loss of food resources and biodiversity in the project area.	Adverse, Direct, Permanent, Irreversible, Local	Medium low	Hardly any	Negligible
Discharges – Light						
8.-	O8-1	-	-	-	-	-
Discharges – Heat						
9. Heat radiation will be produced by the cooling fans and the flare.	O9-1	People's well-being and health may be affected. Birds and insects may be killed by the flare.	Adverse, Direct, Temporary, Reversible, Local	Low	Little	Negligible
Incidents						
10. Incidental spills may occur...	O10-1	Environmental quality (soil, groundwater and surface water), and subsequently…plants, animals and people will be affected.	Adverse, Direct/Indirect, Temporary, Reversible, Local/regional	Medium	Extreme	Major

Adapted from EIA of NLNG Seven Plus, 2008

APPENDIX 3

Table 3: Mitigation and Enhancement – CONSTRUCTION phase

	Impact	Rating before mitigation		Description of mitigation/enhancement	Residual impact
C1-1	The proposed expansion of the road reduces the possibilities for other functions and prevents this land from being returned to its original owner.	Moderate	C1-1A	Execute the widening of new … road …project, at the western side of the road only.	Minor
C2-1	Water extraction, possibly resulting in qualitative and quantitative changes in deep, shallow and surface water layers.	Negligible			Negligible
C3-1	Temporary increased demand for water and food during construction.				
C3-2	Influx of people from other regions and/countries may introduce contagious diseases to the project area.	Moderate	C3-2A	Support for existing health care infrastructure to give it an additional capacity. Increase in the financial budget for healthcare support by 20% during this period.	Minor
C4-1	Air, water and soil will be impacted by incinerator emissions, leading to untoward effects on plants, animals and man, and ultimately, climate change.	Major	C4-1A C4-1B	Company shall ensure that the construction incinerator complies with EU Directive 2000/76/EC. The incinerator shall be fit to deal with medical waste. Company shall ensure that monitoring of incinerator emissions is carried out starting from the construction	Minor

				phase.	
C5-1	-	-	-	-	-
C6-1	-	-	C6-1A	-	-
C7-1	Noise produced during construction activities will chase away animals, leading to loss of food resources and biodiversity in the project area.	Negligible			Negligible
C7-2	People living close to the sources of construction (impulse) can become irritated by noise and this can affect their health.	Moderate	C7-2A	Temporary noise screens shall be installed to ensure that cumulative noise levels (averaged over 1 hour) does not exceed 55 dB(A) during daytime or 45 dB(A) during night time. Company shall investigate possibilities to reduce noise from piling, if required, or prohibit night time piling activity.	Negligible
C8-1	Animal behaviour can be disturbed by light.	Negligible			Negligible
C8-2	Light may influence the scenic value at night and may pose a nuisance to people in the project area.	Minor	C8-2A	Company shall inform local communities timely (1 week) on the reason, timing and duration of flaring during commissioning.	Negligible
C9-1	Birds and insects may be attracted by the flare light and may be killed by the flame.	Negligible			Negligible
C9-2	People's well-being and health may be affected if exposed to heat radiation.	Negligible			Negligible
C10-1	-	-	-	-	-

Adapted from EIA of NLNG Seven Plus, 2008

APPENDIX 4

Table 4: Environmental Management Plan

Reference	Potential Impact	Action Item	Action	Action Party	Timing	Monitoring	Monitoring Party	Reporting
C1-1		C1-1A C1-1B C1-1C C1-1D						
C1-2		C1-2A						
C1-4 O1-2		C1-4A O1-2A C1-4B						
C1-5		C1-5A C1-5B C1-5C						
C1-7		C1-7A						
C1-8		C1-8A						
C2-2 C1-6		C2-2A						
C2-3		C2-3A						
C2-4		C2-4A C2-4B C2-4C C2-4D C2-E C2-4F						
C2-6		C2-6A C2-6B						
C3-2		C3-2A						

		C3-2B C3-2C						
C3-3		C3-3A C3-3B						
C4-1		C4-1A C4-1B						
C4-2 C5-1		C4-2A C4-2B						
C4-3		C4-3A C4-3B						
C4-4		C4-4A						
C4-5		C4-5A						
C4-6 C8-2		C4-6A C8-2A						
C5-2		C5-2A C5-2B						
C5-3 O5-3		C5-3A O5-3A C5-3B C5-3C						
C5-4		C5-4A						
C5-5		C5-5A						
C6-1		C6-1A						
C6-3		C6-3A						
C7-2		C7-2A						
C10-1		C10-1A C10-1B						
C10-3		C10-3A C10-3B						

Adapted from EIA of NLNG Seven Plus, 2008