

Environment Impact Assessment: Significance, Process And Problems

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ABSTRACT : India is the seventh largest country in the world by geographical area. The huge population burden also brings with it a whole spectrum of social issues that have environmental implications. Any developmental endeavour requires not only the analysis of the need of such a project, the monetary costs and benefits involved but most important, it requires a consideration and detailed assessment of the effect of a proposed development on the environment. Environmental Impact Assessment (EIA) Studies are inevitably undertaken to evaluate potential negative impacts as well as to formulate Environmental Management Plans to overcome the identified impacts. This research review paper focus on Environmental Impact Assessment (EIA) significance, process and impact assessment problems. The environment impact assessment significance reveals that, EIA should be made with the purpose for determining the current status of the environment and identifying impact of critical activities on environmental parameters. The results also reveal that EIA process concentrate on problems, conflicts and natural resource constraints which might affect the viability of a developmental activities. It also predicts how the project could harm to people, their homeland and their livelihoods. The results also state that, improper screening and unable to address the right issues are major drawback of the impact assessment process, where everyone has to consider it for decision making process. Hence, The EIA is a proven management tool used extensively by governments and NGO's for project planning and approval. The Government bodies should look into the EIA significance and provide guidelines and checklist for understating an EIA for all the activities which deteriorate the environmental quality in general, to be more specific the projects and location of mining, landfills etc.

KEYWORDS: Environmental Impact, Assessment, significance, Impact Process, Environmental Economics

I. Introduction

Environment Impact assessment (EIA) refers to the evaluation of the effects of a major project on man-made natural environment. It is the basic tool for the sound assessment of development proposals. The increasing scale, complexity, uncertainties and risks of the major developments have culminated in the use of environment impact assessment; this outcome is element of public awareness of and activism against environment effects of mega projects. In India many of the developmental projects till as recently as the 1980s were implemented with very little or no environmental concerns. The environmental issues began receiving attention when a national committee on environmental planning and coordination was set up under the 4th five year plan (1969-1978). Till 1980, the subjects of environment and forests were the concern of the Dept of Science and Technology and Ministry of Agriculture respectively.

The aim of an EIA is to ensure that potential impacts are identified and addressed at an early stage in the projects planning and design. To achieve this aim, the assessment finding are communicated to all the relevant groups who will make decisions about the proposed projects, the project developers and their investors as well as regulators , planners and the politicians. Further, policy makers of an environmental impact assessment, project planners and also engineers can shape the project so that its benefits can be achieved and sustained without causing adverse impacts.

In recent years, major projects have encountered serious difficulties because insufficient account has been taken of their relationship with the surrounding environment. Some projects have been found to be unsustainable because of resource depletion. Others have been abandoned because of public opposition, financially encumbered by unforeseen costs, held liable for damages to natural resources and even been the cause of disastrous accidents. Given this experience, it is very risky to undertake finance, or approve a major project without first taking in to account its environmental consequences and designing the project so as to minimize adverse impacts.

A major legislative measure for the purpose of environmental clearance was in 1994 when specific notification was issued under section 3 and rule 5 of the Environment Protection Act, 1986 called the "Environment Impact Assessment Notification 1994". The first step in seeking environmental clearance for a development project is to determine what statutory legislations apply to the particular project. Environmental clearance for development projects can be obtained either at the state level or at the central level depending on certain criteria concerning the characteristics of the project. However, for most projects the consent must first be taken from the state pollution control board or pollution control committees in the case of union territories.

II. The EIA Process In India

The role for EIA was formally recognized at the Earth Summit held at Rio Conference in 1992. Principle 17 of the Rio Declaration states that –

"EIA as a national instrument shall be undertaken for the proposed activities that are likely to have significant adverse impact on the environment and are subject to a decision of a competent national authority".

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Later, the issues were formally attended by the Department of Environment which was established in 1980. This was then upgraded to the Ministry of Environment & Forest in 1985. In 1980, clearance of large projects from the environmental angle became an administrative requirement to the extent that the Planning Commission and the Central Investment Board sought proof of such clearance before acceding financial sanction. Five years later, the Department of Environment and Forests, Government of India, issued guidelines for Environmental Assessment of river valley projects. These guidelines require various studies such as impacts on forests and wild life in the submergence zone, waterlogging potential, upstream and downstream aquatic ecosystems and fisheries, water related diseases, climatic changes and seismicity.

A major legislative measure for the purpose of environmental clearance was in 1994 when specific notification was issued under section 3 and rule 5 of the Environment Protection Act, 1986 called the "Environment Impact Assessment Notification 1994". The first step in seeking environmental clearance for a development project is to determine what statutory legislations apply to the particular project. The MOEF has brought out several notifications restricting the development of industries in specified ecologically sensitive areas. In addition there are also draft rules framed for the setting up of industries.

Environmental clearance for development projects can be obtained either at the state level or at the central level depending on certain criteria concerning the characteristics of the project. However (regardless of where the final environmental clearance is obtained from), for most projects the consent must first be taken from the state pollution control board or pollution control committees in the case of union territories.

Objectives of the Study:

1. To study the significance of Environment Impact Assessment.
2. To know the process of Environment Impact assessment (EIA) and
3. To study the Problems arising during the Environment Impact assessment.

III. Results and Discussion:

Significance of Environment Impact Assessment (EIA)

The importance of EIA is a means to a larger end—the protection and improvement of environment quality. EIA is an interdisciplinary approach, it is an integral part of project planning and not just an appendage. EIA does not make decisions but its findings should be considered in policy and decision making. The EIA findings will all help in identifying major environmental and natural resources as well as issues that need specific attention along with the action plan and as description of the proposed development project. Thus EIA tells us the decision makers all they need to know about the project, its impact and what can be done about the impacts. The decision maker's decision depends on others' needs and realities and on people's perception. The decision makers then arrange for review of the EIA report or take action directly based on the EIA report.

EIA PROCESS:

However not all development projects require a detail EIA, it is required for those where a detailed EIA is not warranted, the resources may be utilized elsewhere. There are two ‘tiers’ of assessment which should be applied to the project before proceeding with a full scale EIA, Screening and preliminary assessment. Where these first tiers of assessment are a regulatory requirement, the developer normally does the work and submits the results to the regulatory agency. The agency may then decide that either there is nothing to be concerned about or the evaluation should proceed to the next tier. Hence the project is at conceptual level, screening is done to clear a project, comparing it with similar projects in the past. If screening does not automatically clear a project, a preliminary assessment is done to assist project planning, which identifies the impact and predicts the magnitude of impacts and evaluates their importance to decision makers and helps to clear the project of a full EIA.

The most important step in the process of obtaining environmental clearance under the EIA notification is for the project proponent to conduct an environmental impact assessment of the project. For this purpose the project proponent engages an environmental consultant to prepare an EIA report. The EIA report must be prepared by incorporation of data during all the four seasons of the year. Such an EIA is termed a “comprehensive EIA”. However, there is provision for a single season collection of data, but this should not be done during the monsoon season. Such an EIA reports is termed a “Rapid EIA”. There are two tiers of assessment which should be applied to the project before proceeding with a full scale EIA –Screening and Preliminary Assessment. Wherever these first tiers of assessment are a regulatory requirement, the developer normally does the work and submits the results to the regulatory agency. The agency may then decide whether there is anything to be concerned about or whether the evaluation should proceed to the next tier.

IV. Before Starting The Eia

SCREENING: The screening is the first and simplest tier in project evaluation. Screening helps to clear those types of projects, which from past experience are not likely to cause significant environmental problems. The activity may take one of the following several forms:

- 1- Measurements using simple criteria such as size or location.
- 2- Comparing the proposal with list of projects rarely needing an EIA (e.g. schools) or definitely needing one (e.g. coal mines).
- 3- Estimating general impacts (e.g. increased in infrastructure needed) and comparing these impacts against set thresholds.
- 4- Doing complex analyses, but using readily available data.

Draw back in the Indian system:

Even though some of the industrial set ups do not require EIA as per the statutory norms, they might involve certain technological processes which could be harmful to the environment, as a result of which such enlisted industries could have potential impacts on the environment and on public health.

Exempting industries from the EIA requirements based on the investment value of specific projects is not acceptable. There are no specific studies conducted till now which demonstrate that environmental impacts are always inconsequential for projects under a given value. It is a well established fact that the small scale industries are contributing more pollution with respect to the major industry.

V. Preliminary assessment:

If screening does not clear a project, the developer may be required to undertake a preliminary Assessment. This involves sufficient research, review of available data and expert advice in order to identify the key impacts of the project on the local environment, predict the extent of the impacts and briefly evaluate their importance to decision makers. The preliminary assessment can be used to assist early project planning (for instance, to narrow the discussion of possible sites) and it can serve as an early warning to the serious environmental problems that the project may cause. It is in the developer’s interest to do a preliminary assessment since, in practice, this step can clear projects of the need for a full EIA.

FORMATION OF AN EIA TEAM:

If after reviewing a preliminary assessment the competent authority deems that a full EIA is needed, the next step for the project developer is the preparation of the EIA report. This entails

- 1- Commissioning and briefing an independent co-coordinator and expert study team.
- 2- Identifying the key decision makers who will plan, finance, permit and control the proposed project, so as to characterize the audience for the EIA.

- 3- Researching laws and regulations that will affect these decisions.
- 4- Making contact with each of various decision makers.
- 5- Determining how and when the EIAs finding will be communicated.

Draw back in the Indian system:

It is being found that the team formed for conducting EIA studies is lacking the expertise in various fields such as Anthropologists and Social Scientists (to study the social impact of the project) or even wild life experts.

SCOPING:

The first task of the EIA study team is scoping the EIA. The aim of scoping is to ensure that the study address all the issues of importance to the decision makers. First of all the team's outlook is broadened by the discussions (with the project proponents , decision makers, the regulatory agency, scientific institutions , local community representative and others) to include all the possible issues and concerns raises by various groups. Then the study team selects primary impacts for the EIA to focus upon depending on the basis of magnitude, geographical extent, significance to decision makers or because the area is special locally (e.g. soil erosion, the presence of an endangered species or nearby historical sites) or is an eco-sensitive area.

Draw back in the Indian system:

- 1- There is a lack of exhaustive ecological and socio-economic indicators for impact assessment.
- 2- Public comments are not taken into account at the early stage, which often leads to conflict at the later stage of project clearance.

MAIN EIA: After “scoping” the main EIA begins. The EIA attempts to answer five questions basically:

- 1- What will happen as a result of the project?
- 2- What will be the extent of the changes?
- 3- Do the changes matter?
- 4- What can be done about them?
- 5- How can decision makers be informed of what needs to be done?

The EIA becomes a cyclic process of asking and further asking the first four questions until decision makers can be offered workable solutions.

IDENTIFICATION:

Identification means the answer to the first question, i.e. “what will happen as result of the project?” If a preliminary assessment has been done it will have broadly reviewed the projects effect, also scoping will have focused the study on the most important issues for decision makers. Taking these findings in to account the full EIA study now formally identifies those impacts which should be assessed in detail. This identification phase of the study may use these or other methods.

- 1- Compile a list of key impacts (e.g. changes in air quality, noise levels, wild life habitats, species diversity, landscape views, social and cultural systems, settlement patterns and employment levels from other EIA s for similar projects)
- 2- Name all the projects sources of impacts (e.g. smoke emissions, water consumption, construction jobs) using checklists of questionnaires, then list possible receptors in the environment (e.g. crops, communities using same water for drinking, migrant of labour) by surveying the existing environment and consulting with interested parties.
- 3- Identify impacts themselves through the use of checklist, matrices, networks, overlays, models and simulations.

Draw back in the Indian system:

- 1- There is always a lack of reliable data sources.
- 2- The secondary data is also not reliable.
- 3- The data collectors do not pay respect to the indigenous knowledge of local people.
- 4- The credibility of the primary data collected by the data collectors is doubtful.

PREDICTION:

The next step called predictions answers the EIA's second question: "what will be the extent of the changes". As far as is practicable, prediction scientifically characterizes the impacts causes and effects and its secondary and synergistic consequences for the environment and the local community. Prediction follows an impact within a single environmental parameter (e.g. toxic liquid effluents) in to its subsequent effects in many disciplines (e.g. reduced water quality, adverse impacts on fisheries, economic effects on fishing villages, and resulting socio-cultural changes). Prediction draws on physical, biological, socioeconomic and anthropological data techniques .In quantifying impacts, it may employ mathematical models, physical models, socio cultural models, economic models, experiments or expert judgments.

All prediction techniques by their nature involve some degree of uncertainty. So along with each attempt to quantify an impact, the study team should also quantify the predictions uncertainty in terms of probabilities or margins of error.

Draw back in the Indian system:

- 1- The detail method used for the prediction and evaluation of the project is not mentioned in the report. Limited explanations are given both to quantitative estimation of magnitude of impact and to the assumptions and judgments used in the evaluation of impacts.
- 2- The limited coverage of scoping is confined mainly to direct impacts.

EVALUATION:

The third question addressed by the EIA – do the changes matter is answered in the next step. Evaluation is so called because it evaluates the predicated adverse impacts to determine whether they are significant enough to warrant mitigation. Thus judgment of significance can be based on one or more of the followings.

- 1- Comparison with laws, regulations or accepted standards.
- 2- Consultation with the relevant decision makers.
- 3- Reference to pre set criteria such as protected sites features of species.
- 4- Acceptability to the local community or the general public.

MITIGATION:

In this phase the study team formally analyses mitigation. A wide range of measures are proposed to prevent, reduce, remedy or compensate for each of the adverse impacts evaluated as significant. Possible mitigation measures include:

- 1- Changing project sites, routes, processes, raw materials, operating methods, disposal methods, disposal routes or locations, timing or engineering designs.
- 2- Introducing pollution controls, waste treatment monitoring, phased implementation, landscaping, personal training, special social services or public education.
- 3- Offering (as compensation) restoration of damaged resources, money to affected persons , concessions on other issues, or off site programmes to enhance some other aspects of the environment or quality of life for the community.

All mitigation measures cost something and this cost must be quantified too. These various measures are then compared, trade-offs between alternative measures are weighed, and the EIA study team proposes one or more action plans, usually combining a number of measures. The action plan may include technical control measures, an integrated management scheme (for a major project) monitoring, contingency plans, operating practices, project scheduling, or even joint management (with affected groups). The study team should explicitly analyze the implications of adopting different alternatives, to help make the choices clearer for the decision makers.

Several analytical techniques are available for this purpose as given below:

- 1- Cost benefit analysis in which all quantifiable factors are converted to monetary values , and actions are assessed for their effect on project costs and benefits
- 2- Explaining what course of action would follow from various broad 'value judgments'(e.g. that social impacts are more important than resources)
- 3- A simple matrix of environmental parameters versus mitigation measures, contain brief description of the effects of each measure.

Draw back in the Indian system:

- 1- Details regarding the effectiveness and implementation of mitigation measures are often not provided.

- 2- Often, and more so for strategic industries such as nuclear energy projected, the EMP s are kept confidential for political and administrative reasons
- 3- Emergency preparedness plans are not discussed in sufficient details and the information not disseminated to the communities.

CITATIONS:

The last step in the EIA process, which answers the question – how decision makers be informed of what needs to be done? In documenting an EIA, this means identifying the key decisions makers, perceiving the question they will be asking and providing them with straight forward answers formatted for easy interpretation in relation to their decision making (e.g. tables, graphs, summary, points). Successful EIA documentation is more readily produced if the audience and their needs are established at the start of the EIA, and then made to affect how the research is focused and reported. It is the job of the study team's communications expert to make this happen. An EIA report should contains:

- 1- An executive summary of the EIA findings.
- 2- A description of the proposed development projects.
- 3- The major environmental and natural resource issues that needed clarification and elaboration.
- 4- The projects impacts on the environment (in comparison with a base line were identified and predicated.).
- 5- A discussion of options for mitigating adverse impacts and for shaping the project to suit its proposed environment, and an analysis of the trade offs involved in choosing between alternative actions.
- 6- An over view of gaps or uncertainties in the information.
- 7- A summary of the EIA for the general public.

Once the EIA reports has been completed, the project proponent needs to submit 20 copies of the copy of executive summary of the proposed proposal containing the salient features of the project, the form XII prescribed under water rules, 1975, form I prescribed under Air rules,1983 and other information or documents to the SPCB for getting the non clearance certificate(NOC). On receiving the required documents from the project proponents it is the responsibility of the SPCB to conduct the public hearing. After completion of the public hearing the project proponents has to submit to the secretary of MOEF for the environmental clearance.

Draw back in the Indian system:

One of the biggest concerns with the environmental clearance process is related to the quality of EIA report that are being carried out. The reports are generally incomplete and provided with false data. EIA reports ignore several aspects while carrying out assessments and significant information is found to omitted. Many EIA report are based on single season data and are not adequate to determine whether environmental clearance should be granted. All this makes the entire exercise contrary to its very intent.

As things stand today, it is the responsibility of the project proponent to commission the preparation of the EIA for its project. The EIA is actually funded by an agency or individual whose primary interest is to procure clearance for the project proposed. There is little chance that the final assessment presented is un biased, even if the consultant may provide an unbiased assessment that is critical of the proposed project. Sometimes it is found that a consultancy which is working in the project area has no specialization in the concerned subject.

For example for the preparation of EIA report of the proposed oil exploration in coast of Orissa by the reliance group has been given to the life science Dept of Berhampur university which has no expertise on the study of turtles and its life cycle. The EIA document in itself is so bulky and technical, which makes it very difficult to decipher so as to aid in the decision making process. There are so many cases of fraudulent EIA studies where erroneous data has been used, same facts used for two totally different places etc. This is due to the lack of a centralized baseline data bank, where such data can be crosschecked. There is no accreditation of EIA consultants, therefore any such consultant with a track record of fraudulent cases cannot be held liable for discrepancies. It is hard to imagine any consultant after being paid lakh of rupees, preparing a report for the project proponents, indicating that the project is not viable. In nearly every case, the consultants try to interpret and tailor the information looking for ways and means to provide their clients with a report that gives them their money worth.

Impose restriction developmental activities to evade detrimental effect on the environment:

- The program of EIA, in vogue in the Ministry for the last two decades was initiated with the appraisal of River Valley Projects. The scope of appraisal was subsequently enlarged to cover other sectors like industrial projects, thermal power plants, mining schemes and infrastructure projects. To give legislative status to the procedure of impact assessment, EIA was made mandatory since January 1994 for thirty categories of development activities.
- The Ecologically Sensitive areas are notified under the Environment (Protection) Act, 1986. The main objective of these notifications is to impose restriction on the industries, operations, process and other developmental activities in the region that have detrimental effect on the environment, to provide for restoration of denuded areas, management of catchment areas, watershed management etc., for a planned development. It is also intended to ensure sustainable lively-hood for the local community and stakeholders. A High Level Monitoring Committee is constituted to ensure compliance with the notification and take action against any violations.

Problems in the Indian system:

❖ APPLICABILITY OF THE EIA NOTIFICATION:

As it stands today, there are several projects with significant environmental impacts that are exempted from the notification either because they are not listed in schedule1, or their investments are less than what is provided for in the notification. Importantly, several projects located in zones covered by other notifications such as CRZ notification are exempted from the provisions of the EIA notification. Other projects such as defence-related road construction and railway projects are explicitly exempted from the EIA notification altogether. The amendment in EIA notification, 1994 made on 4th July 2005 in gazette no.s.o.942(E) has provision that any expansion or modernization project of item 1,2,3,19,20,- nuclear, river valley, ports and harbours, thermal power plant and mining projects may obtain temporary working permission of max two years till it gets environmental condition. Box no-4 shows the details of the 12 amendments that has been brought up in last 11 years to dilute the EIA notification.

❖ MONITORING, COMPLIANCE AND INSTITUTIONAL ARRANGEMENTS.

Projects are granted clearances based on certain conditions, which the project authorities need to comply with. These are both related to the construction phase and post construction phase of a project. For instance, conditions may be imposed on muck disposal of effluent discharge to be confined to certain areas and within specified limits. The regional offices of the MOEF are to monitor the compliance of these conditions and prepare the reports. However the local population does not even know of these conditions and are not a part of its monitoring. It is not known if project authorities reflect the true status of compliance in their reports to the MOEF. Access to these compliance reports is only subject to public interest. The lack of access to compliance reports has severe repercussions on the rights of people who were opposed to the project and for whose benefits some conditions may have been laid out for the project to follow. While monitoring compliance with conditions imposed for environmental clearance, it is found that pollution control boards have their own standards, whereas the standards under the EPA, which the MOEF and the regional offices follow, are quite different. Another problem in monitoring is the location of the regional offices and their large jurisdictions, which make it difficult for them to discharge their functions effectively. While the increased threat to the environment is matched by the enactment of an increasing amount of legislation, the responsibilities and capacities of the various agencies, including the regional offices of the MOEF, to monitor compliance has not been appropriately defined and strengthened.

❖ CAPACITY BUILDING:

There is an urgent need to build capacities of government agencies, communities, NGOs and the judiciary with regard to the implementation of the existing EIA notification. Even in the instances where the provisions allow for peoples participation or monitoring, the lack of information and capacity are great hindrances in implementation. For instances, the public hearing panel often has no clue on the scope of their role in environmental clearance process. Judiciary, which is involved in the redressal , is comprised of judges who may not be clued into the environmental issues and their interface with laws. No matter how good the provisions of the law are, their implementation hinges on the capacities of official who are meant to do it.

❖ REDRESSAL

The present redressal mechanism meant exclusively for the challenging environmental clearance is extremely weak and limited in its scope. The National Environmental Appellate Authority has heard only 15

cases in the last eight years. The process of seeking redressal from courts requires a fair amount of energy and financial allocation. It is not possible for all those with grievances to take on legal battles against large and powerful project proponents.

VI. Conclusion

The success of an EIA depends on the availability of resources which includes both financial and physical resources. Technical guidelines for carrying various phases of EIA, especially screening, scoping, prediction, evaluation and information about environment should be freely available. Keeping in view the current developments in the field of the environmental impact assessment for prediction and analysis, the Questionnaires for EIA should be updated and published for various sectors. Further, for facilitating preparation of quality EIA reports, a Manual on EIA has to be prepared which is also useful to apprising agencies and decision makers, both at Central and State levels. Ministry has initiated a number of activities to streamline the appraisal process in terms of simplification of procedures, involvement of stakeholders through public hearing, regular meetings of Expert Committees etc. This has resulted in expeditious decision on development projects. Some amendments have been made in the EIA and Coastal Regulation Zone (CRZ) Notifications based on consultations with all the stakeholders. Hence, The EIA is a proven management tool used extensively by governments and NGO's for project planning and approval. The Government of India should also look into the EIA significance and provide guidelines and checklist for understating an EIA for all the activities which deteriorate the environmental quality in general and to be more specific the projects and location of harbor, mining, landfills etc.

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