*Dr. Anita Prashant

Evaluating the Landscape of Environmental Impact Assessment (EIA)

Abstract

Environmental concerns, sustainability, and more environmentally friendly development management have all seen tremendous increases in popularity in recent years. Alongside this surge in interest, new laws have been introduced by both domestic and foreign organizations (such as the European Commission) that aim to change how development and the environment interact. The Environmental Impact Assessment (EIA) is a significant illustration. EIA stands for environmental impact assessment, prediction, and identification of suggested actions. In development, the EIA is a tool for decision-making. Integrity, usefulness, and sustainability have been defined as the three fundamental principles of EIA studies thus far. A project or activity's environmental impact can be measured using an EIA, which covers both social and physical aspects and offers solutions to reduce those effects.

In actuality, it is a tool for assessing how human health and well-being are affected by company operations, profitable planning, or actions that result in bio-geophysical settings. It also interprets and increases public awareness of these effects. In other words, an EIA focuses on the different issues and challenges that the environment faces, such as the reduction of natural resources or the health hazards that the project would bring to people. It also looks at the effects of an initiative that could negatively impact people, their home country, their means of subsistence, or other local developments. Following problem prediction, an EIA determines ways to reduce the problems and provides the best guidance to set up the project in the intended environment with the least amount of damage.

EIA has been acknowledged as a crucial instrument for determining and reducing the project's viability at a certain location for the past thirty years. Compared to other methods, EIA has a wider scope. Planning regulators, developers, and public interest organizations may use the EIA as a starting point for negotiations.

Keywords: Environmental Impact Assessment (EIA), sustainability, decision-making, public awareness, mitigation strategies

Introduction

Major projects, which have far-reaching and frequently contentious effects, are frequently the subject of environmental impact assessments. Additionally, they include a large number of participants with a wide range of opinions regarding the relative benefits and effects of projects. Since the EIA process

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is essentially a management-intensive process, it is imperative that it be properly managed (Glasson et al., 1994). An first EIA study is part of certain EIA procedures to assess the seriousness of potential environmental impacts. A preliminary investigation, usually a "maybe" or "no," is required to support the statement. The project might be excluded from a complete EIA if the majority of the replies are "no," and if the majority of the "yes" and "maybe" consequences can be avoided (Glasson et al., 1994). To pull everyone together, it's a good idea to set up a working group or schedule meetings with the developer.

Social, monetary, political, and environmental challenges peculiar to the locality, as well as impacts of particular importance to the persons involved, could be additional important issues. Government policies and directives, municipal plans, topic plans, and pertinent structure plans should all be cited. The identification of important issues and impacts, a justification for the non-importance of other issues, and a specified temporal and geographic boundary for measuring each impact should be the results of this information-gathering and negotiation process (Glasson et al., 1994).

EIAs can be seen as promotional materials for developers and are, in a sense, public relations campaigns. A thorough approach to impact analysis, concern for the planet, and a positive outlook on the public may all be communicated through effective presentation. Conversely, poor presentation conveys a lack of concern and perhaps financial assistance. In a similar vein, unambiguous communication of information is facilitated by effective presentation, while even a well-structured EIS might suffer from bad presentation (Glasson et al., 1994).

Management considerations have replaced strictly technical and scientific concerns in EIA monitoring and auditing. Therefore, the quality of the EIS and the precision of impact forecast are important concerns in EIA monitoring and auditing. Testable hypotheses are typically expected in EISs, and compliance is the main focus of monitoring and auditing. However, in more recent times, the emphasis has moved to communication, activity management, mitigation, and project implementation. However, the pre-decision components of the EIA process are more advanced than EIA monitoring and auditing. Since compliance monitoring and permit enforcement are elements of the environmental permit system, this does not imply that post-decision tracking and assessing do not exist in many jurisdictions (Glasson et al., 1994).

An ideal EIA, according to Barrett and Therivel (1991), applies to all projects that have either direct or indirect environmental implications and offers the best way to lessen those impacts, which makes decision-making easier. Thompson (1990) assessed the ways in which 24 EIA approaches (including matrices and different kinds of checklists) handled determining effect significance. Significant differences were observed, and none of the approaches offered a thorough framework or guidance for assessing the importance of expected outcomes.

Moore (1992) proposed that a number of variables, including (1) improved scoping, (2) improved project design to minimize adverse effects and prevent the need for EISs, (3) the adoption of mitigation measures, and (4) fewer lawsuits, have contributed to the decrease in the number of EISs

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prepared each year. Multidisciplinary teams frequently carry out environmental impact evaluations. It is imperative that the entire process be dominated by interdisciplinary activities rather than multidisciplinary ones. "Multidisciplinary activities" are those in which specialists from different fields collaborate with predetermined, explicit connections. Individual thematic reports are usually used to present the team members' results. According to Van Dusseldorp and Van Staveren (1983), "interdisciplinary activities," on the other hand, are defined by relationships as well as the sharing and integrating of the team members' findings.

Groups of two or more people with specialized education in different fields are known as interdisciplinary teams. They use a variety of techniques, information, terminology, and concepts that are arranged to solve a shared issue through ongoing communication between participants from different fields (Dorney and Dorney, 1989). Usually formed or expressly constituted for the purpose of performing an Environmental Impact Study (EIS) for the project being considered, a specialist interdisciplinary team for a particular impact study is a temporary entity (Cleland & Kerzner, 1986). Every member of the team, consultants, and advisers must have their tasks stated clearly (World Bank, 1991; Burack, 1992).

- 1. A project manager or team leader who organizes, conducts research, or applies engineering expertise to prepare multiple related studies.
- 2. An ecolog or biologist.
- 3. An anthropologist-sociologist.
- 4. A soil scientist, geographer, geologist, or hydrologist.
- 5. A regional or metropolitan planner.

According to the complexity and diversity of the subject, an interdisciplinary team may consist of as few as two people or as many as eight or ten (Canter, 1991).

The first thorough international attempt to examine the relationship between environmental quality, the world's expanding population, and the economic growth required to sustain it was the United Nations Conference on Human Environment, which took place in Stockholm, Sweden, in June 1972. Although people have always tried to make their surroundings more habitable, environmental degradation has escalated in recent decades.

Guha (2000) wrote on environmental organizations in the United States that addressed problems in wilderness and forest regions. Environmental Impact Assessments (EIAs) were required in more than 100 nations by the mid-1990s (Canter, 1996).

Human history underwent a sea change in the 1960s as people began to realize how closely humans and their environment are intertwined. Given the competing demands of unending revenue generation and environmental preservation, this era brought attention to the necessity of evaluating and carefully managing the use of global resources. Environmental consciousness was first raised in the 1960s, and in the 1970s, a demand for action replaced dejection and rage with accountability and

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optimism (Rathore, 1988). Natural resource use has surged in the contemporary industrial period, prompting questions about the sustainability of the environment.

The necessity for proactive environmental protection measures gave rise to the Environmental Impact Assessment (EIA). In 1969, the U.S. established the National Environmental Policy Act (NEPA), creating standards to combine economic expansion with ecological sustainability. NEPA safeguarded non-renewable resources, improved knowledge of ecological systems, and encouraged environmental preservation. EIAs became widely recognized as an essential tool for development project decisionmaking after NEPA (Rathore, 1988).

The environment is a dynamic combination of the hydrosphere, lithosphere, biosphere, and atmosphere. Early in the 1960s, resource misuse and the fast growth of industry, agriculture, urbanization, and modernization became major environmental hazards. Economic expansion can raise living standards, but it can also have negative environmental effects. Therefore, stability is crucial as development progresses, and environmental issues should be given top priority.

In 1870, the U.S. Army Corps of Engineers developed techniques to examine the possible effects of planned projects by introducing the idea of environmental impact assessments. But in 1986, the U.S. Environmental Protection Agency codified the current EIA procedure under the NEPA Act of 1969. Since then, EIA has gained widespread use in both industrialized and developing nations, and it has been the subject of international summits, treaties, and protocols. In 1980, EIAs were made a preproject requirement after the 1992 Earth Summit.

The four primary processes of an EIA in India include screening, scoping, establishing the Terms of Reference (ToR), and gathering baseline environmental data. An Environmental Impact Management Plan (EMP) is made to describe mitigation strategies, and impact projections are based on the activities related to future projects. The EMP details each mitigation measure's costs, responsible staff or department, monitoring schedule, and timeline.

To put it simply, EIA is the process of predicting how planned actions, initiatives, or activities will turn out. It entails evaluating how the physical, ecological, and socioeconomic environments have changed prior to, during, and following development. The EIA compares these impacts and recommends mitigating actions to reduce negative impacts.

Assessing the effects on the environment before to beginning development initiatives, such as those involving agricultural, manufacturing facilities, or building dams, is not a novel concept. Although impact assessment methods were created by the U.S. Army Corps of Engineers in 1980, the U.S. Environmental Protection Agency launched the formal EIA framework under NEPA in 1986. Since then, environmental impact assessments (EIAs) have emerged as a crucial instrument for balancing environmental sustainability and development, especially when it comes to project planning (Canter, 1977, 1996; Holling, 1978; Rosenberg et al., 1981; Beanland and Duniker, 1983; Larkin, 1984).

The process of performing forecasting studies for planned developments, interpreting results, and

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assessing repercussions is the simplest definition of environmental impact assessments (EIA) (Lash et al., 1974). The two components of scientifically based EIAs are (a) a prediction phase that aims to predict effects prior to growth and (b) an evaluation phase that measures and interprets environmental consequences both during and after growth (Rosenberg and Resh, 1981).

India has a long history of valuing nature and incorporating environmental principles into everyday life. However, urbanization has been fueled by modernization, which has resulted in pollution and environmental damage (Chopra et al., 1993). Plans for strategic environmental management were created by Wood (1995).

EIA assesses and emphasizes the beneficial effects of planned initiatives on the environment's chemical, physical, biological, cultural, and socioeconomic elements (Canter, 1996). EIA encourages ecologically sustainable development by incorporating environmental considerations into project planning and decision-making. EIA best practices minimize disputes by addressing negative effects, lower environmental risks, encourage community involvement, and create the groundwork for environmentally sustainable initiatives.

All phases of a project, from planning and exploration to building, operations, and site decommissioning, benefit from an EIA. To guarantee sustainability and lay the groundwork for ecologically conscious development, the EIA process looks at environmental aspects from the project design phase.

Environmental Impact Assessment (EIA) specialty:

- 1. Impact Factor Identification: identifies the environmental components that will be most impacted and acknowledges the sources for environmental impacts resulting from project operations.
- 2. Impact Prediction: Uses qualitative, quantitative, semi-quantitative, or hybrid techniques to estimate likely impacts on recognized environmental components.
- 3. Reduction and Enhancement: Makes recommendations for changes to project layout, capacity, the internet, or location in order to reduce negative effects or increase positive contributions.
- 4. Decision Support: Offers choices for monitoring and mitigation to stakeholders and decisionmakers based on the findings of impact assessments.

India's Environmental Impact Assessment (EIA):

• Historical Context:

In India, EIA was first used for river valley projects in 1976–1977. The attempt to assess these initiatives from an environmental standpoint was spearheaded by the Planning Commission. EIA became a statutory obligation in 1986 when the Environmental Protection Act (EPA) was introduced by the Government of India (GoI).

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• The Role of EPA and MoEF:

The Ministry of Environment and Forests (MoEF) issued EIA notifications under the EPA Act of 1986, which required environmental approval for any new or extended projects specified in Schedule 1. Twelve changes have since been made to the 1994 EIA notification.

• Major Changes in 2006:

MoEF listed numerous initiatives for which environmental authorization was now required, thus expanding the scope of the EIA notification. This change gave state governments the authority to approve projects according to their size or capability.

• Fixed Timeframe for Clearance:

An organized timeline for seeking environmental clearance was established by the official EIA notification, which was published on January 27, 1994. In 1997, a significant modification established the public hearing procedure.

- The Environmental Management Plan (EMP): To help developers execute environmental changes, mitigation plans are created for affected areas and included in an EMP (Sworup, 2002).
- Kinds of EIA Reports:

Two EIA report kinds were introduced by the 1994 MoEF notification: Comprehensive EIA, which typically takes a year to produce and needs data from four seasons, and Rapid EIA, which is based on limited time data. For projects with minimal or insignificant adverse environmental effects, the Impact Assessment Authority (IAA) may waive the EIA standards as long as the project developer can present a valid reason for the exemption (MoEF, 1994).

• Appraisal Process:

Following submission, the EIA is evaluated by a multidisciplinary, 15-member expert group. The committee is chaired by an impartial expert and meets as needed prior to final approval.

Notification of Environmental Impact Assessment, 2006

As previously said, India is rapidly developing. Rapid industrial growth and a rise in the number of projects being carried out nationwide frequently result in social and environmental costs, which are especially felt by those who live close to project sites. Since the Environmental Clearance (EC) system affects everyone, whether directly or indirectly, it is evident that everyone has a stake in it, from powerful individuals to locals in isolated regions of the nation. In light of this, the Planning Commission's strategy in the eleventh five-year plan made it abundantly evident that the nation's environmental clearance laws and policies were rapidly in need of reform and were starting to resemble an antiquated "clearance permit raj." The government's concern for resolving this important issue in recent years was expressed in this remark.

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The range of projects needing environmental approval was increased by the new regulations implemented as a result of this notification. A list of projects that needed previous environmental clearance was created, with a focus on classifying different programs and projects that needed an EIA. In contrast to earlier rules, project expense is no longer the basis for this classification. Rather, under the updated announcement, whether a project is to be evaluated by state or central authorities depends on its size or capacity.

Many people thought the prior notification was laborious and time-consuming. The Ministry of Environment and Forests (MoEF) carried out a thorough examination of the procedure as part of the Environmental Management Capacity Building Project in 2001 in order to eliminate inefficiencies in the 1994 EIA Notification. This analysis made clear how urgently reforms are needed. A committee under the Cabinet Secretariat was then formed by Shri V. Govindarajan to review the existing processes for project execution and expenditure clearances and suggest ways to streamline and speed up the process for all kinds of projects. The committee observed that the environmental clearance procedure was the main source of project delays and that it needed to be streamlined immediately.

Modification to the 1994 EIA Notification

The EIA Notification of 1994, which underwent eleven years of twelve amendments, was originally intended to be substantially overhauled. While some of these modifications improved the environmental approval process, the majority were condemned for weakening it. Reducing the amount of time needed for environmental approval has been the main goal of the current notification. In the past, the Rapid EIA procedure took few months, whereas the Comprehensive EIA process took 21 to 28 months. The new notification mandates that Category A projects be finished in 10.5 to 12 months. This short schedule is intended to support quick development, possibly at the price of the environmental clearance process's effectiveness and transparency.

The History and Prospects of EIA in India

Along with ethical and cultural norms that promote environmental protection, India has some of the most robust legal frameworks for environmental conservation. The EIA process will continue to advance significantly because to these causes. Realizing that advancement shouldn't come at the price of environmental damage, India's developmental strategies are progressively embracing sustainable development. Promoting only environmentally friendly and carefully thought-out developments is made possible by the 2006 EIA notification and its follow-up modifications. Even if the latest notification has several shortcomings, these will probably be fixed in later revisions.

India is currently on a developmental trajectory that bolsters and advances the nation's economic expansion. There will always be new development projects, and EIA is a crucial instrument for evaluating their effects on the environment and resolving associated issues. However, in order to

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identify environmental hazards early in the planning stages, there is an increasing need to shift the focus from specific to the project assessments to policy-level assessments.

Indian principles, culture, and history are deeply rooted in environmental conservation, preservation, and protection. The Indian Constitution, one of the earliest in the world to acknowledge the significance of environmental preservation, is enshrined in these ideals. The state is required under the Constitution to take action to preserve forests and wildlife as well as to conserve and enhance the environment. In order to maintain ecological equilibrium, it also declares that every citizen has a fundamental obligation to save the environment, which includes woods, lakes, rivers, and wildlife.

India's great biodiversity is reflected in its cultural diversity. The necessity of rigorous EIA processes when evaluating new projects in distant locations with abundant biodiversity, environmental resources, and mineral richness is highlighted by the fact that many of the nation's poorest citizens reside there. Such projects' direct effects on these communities underscore the necessity of EIA, which, like any impact assessment procedure, must take these essential features into account to guarantee that development stays equitable and sustainable.

The formation of an interdisciplinary team

An "interdisciplinary team" is a collection of two or more people with varying backgrounds who work together to solve a common issue by bringing different ideas, approaches, information, and terminology to the table. Participants from different disciplines are able to communicate continuously because to this team formation (Dorney & Dorney, 1989). An interdisciplinary team is essentially made up of professionals from many disciplines who collaborate to produce a coordinated Environmental Impact Assessment (EIA) report.

This strategy is very different from a "multidisciplinary approach," in which specialists focus on different areas of study without necessarily coming to a consensus about the project's overall impact. An EIA report that includes multiple specialized studies with little cross-referencing is frequently the consequence of specialists working together in a team that is multidisciplinary without clear, established linkages. The integration of these divergent data is therefore primarily the duty of the EIA Project Manager.

EIA reports may not be cohesive and may not be able to consolidate the many data into a coherent document if an interdisciplinary approach is not used. Therefore, the achievement of an Impact Assessment depends on interdisciplinary activities rather than multidisciplinary ones. According to Van Dusseldorp and Van Staveren (1983) and Cleland and Kerzner (1986), interdisciplinary activities place a strong emphasis on connections between team members as well as the sharing and integrating of knowledge.

An effective interdisciplinary EIA team member should possess:

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- 1. Social abilities
- 2. Originality
- 3. Flexibility
- 4. Strong communication abilities both in writing and speaking
- 5. Capability of the organization
- The capacity to listen and absorb information 7. A sense of humor and patience 8. Depending 6. on the size and extent of the study, a multidisciplinary team may consist of as few as two people or as many as eight or ten people. World Bank, 1991.



Main Environmental Clearance Procedure for Category A Activities (Source: MoEF, New Delhi) **Outcome and Conclusion**

EIA's primary goal is to determine and assess the possible positive and negative effects that

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development initiatives may have on the environment, including the social system. This aids in planning environmental protections and choosing environmentally friendly locations. EIA's goal is to guarantee that development continues with the least amount of environmental harm possible. When developing a project, an environment impact assessment must be done first. The following goals ought to be included in the environmental impact assessment:

- 1. To guarantee that every environmental factor is properly taken into account and integrated into the decision-making process;
- 2. Including mitigating steps to reduce those negative effects while taking into account all relevant aspects and perspectives.
- 3. Preservation of ecosystems' functional and structural elements.
- 4. Contributing to resource optimization and sustainable development.

Estimate how a project will affect the environment: i. Make recommendations for actions to lessen effects.

ii. Adapt the project to the local context.

iii. Present decision-makers with the predictive implications and their mitigating actions.

Developmental projects must create an environmental impact statement (EIS) that covers the following topics in order to determine the effects of various projects on society as well as on land, water, air, flora, and fauna, among other things:

- 1. Land-related effects, such as subsistence and land degradation;
- 2. Deforestation and compensatory afforestation;
- 3. Groundwater and air pollution;
- 4. Noise pollution and vibration;
- 5. Loss of biological variety and flora and wildlife;
- 6. Socioeconomic effects, including as health issues, cultural loss, and people displacement;
- 7. Risk assessment and catastrophe management,
- 8. Recycling and waste minimization,
- 9. Input efficiency.

Decision makers and other stakeholders are presented with the EIA's significant findings regarding impact identification, forecast, and mitigation strategies and measures. The EIA process has several

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common goals, despite variations in individual EIA systems around the world:

- 1. To give decision-makers a study of the entire environment so that choices can be made using the most accurate, balanced, and virtually full information feasible,
- 2. To evaluate and illustrate intangible/unquantifiable impacts that are not sufficiently covered by technical studies and cost/benefit analyses,
- 3. To notify the general public about a proposition,
- 4. In order to select the least environmentally damaging method of accomplishing the specified goal, it is necessary to formally evaluate the alternatives to a proposal under consideration.
- 5. Apply mitigation and avoidance strategies to enhance the design of new innovations and environmental safety measures.

Assessment of the Environmental Impact Planning procedures encourage sustainable growth. Therefore, maximizing environmental benefits and minimizing or eliminating consequences during the development's building, operation, and decommissioning stages are its primary objectives. UNEP (2002)

Discussion

- The Environmental Impact Assessment (EIA) is a series of techniques that provide for an understanding of the anticipated environmental effects of human economic growth activities (Fisher, 1974).
- The purpose of an EIA is to assess the impact of a proposed action on each of the environmental inventory's descriptions (Canter, 1977).
- EIA involves setting numerical values for specific parameters that show the state of the environment prior to, during, and following the action (Heer & Hagerty, 1977).
- Environmental Impact Assessment (EIA) is the study of likely changes in the different biophysical and socioeconomic aspects of the environment that could arise from a proposed impacting action (Jain et al., 1977).
- According to Battelle (1997), an EIA evaluates all pertinent environmental and ensuing socioeconomic implications that a project may have.
- According to Fuggle (1979), an EIA is the "administrative procedure through which the environmental effects of a project are determined." According to Munn (1979), "EIA is a way of determining and foreseeing the impact of proposals for legislation, laws, initiatives, projects, and operational processes on the environment and upon man's health and well-being."
- An EIA is a procedure used to determine and forecast the advantages and disadvantages of the development being considered. For the assessment to be effective, it must be presented in a way

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that the community and decision-makers can comprehend; the advantages and disadvantages must be determined using standards pertinent to the impacted areas (UNEP, 1980).

- According to Beanland and Duniker (1983), an EIA is a procedure or group of actions intended to support relevant environmental intervention to safeguard decision-making.
- Environmental Impact Assessment (EIA) is the methodical review of environmental consequences of plans, programs, policies, and projects. Its primary goal is to inform decision-makers about the consequences of different options before they make a choice (Clark, 1984).
- Environmental Impact Assessment (EIA) is a systematic study process that finds solutions to decrease unwanted consequences, shapes the project to fit the local environment, and predicts the environmental penalty of the planned developmental project. These findings and options are then presented to decision-makers (UNEP, 1988).
- According to the Department of Environment in London (1989), "environmental assessment refers to a method and a procedure whereby particular information regarding the environmental effects of a project is specifically taken into consideration, both by the property owner and from specific additional sources, and taken into particular account by the planning department in forming its opinions on whether the construction should go ahead."
- "The reproducible, methodical, and multidisciplinary assessment of the possible impacts of the suggested action and its feasible alternative on the natural, biological, social, and socio-economic characteristics of a specific geographic area is known as an Environmental Impact Assessment (EIA)."
- In 2002, the United Nations Environment Programme (UNEP) established some objectives and guidelines for EIA as a crucial instrument for identifying and evaluating any environmental effects that the proposed project is likely to have in the future. The Rio Declaration emphasizes the importance of environmental impact assessments (EIAs), which are required for future projects that could have both positive and negative environmental effects.

*B.B.D. Government College Chimanpura, Shahpura, (Raj.)

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