

Why EIA is the backbone of sustainability development & the process for preparing EIA report

Introduction

An EIA is a formal process for evaluating the likely environmental, socioeconomic, cultural and other impacts of a proposed project. It makes a scientific estimate of the likely impacts of a project, such as a mine, irrigation dam, industrial unit or waste treatment plant. It is a process whereby people's views are taken into consideration for granting final approval to any developmental project or activity. It is basically, a decision-making tool to decide whether the project should be approved or not.

In India, Environment Impact Assessment is statutorily backed by **the Environment Protection Act, 1986** which contains various provisions on EIA methodology and process.

The Ministry of Environment, Forests and Climate Change (MoEFCC) notified **new EIA legislation in September 2006**.

- The notification makes it mandatory for various projects such as mining, thermal power plants, river valley, infrastructure (road, highway, ports, harbours and airports) and industries including very small electroplating or foundry units to get environment clearance.
- However, unlike the EIA Notification of 1994, the new legislation has put the onus of clearing projects on the state government depending on the size/capacity of the project.

Importance of EIA

Because of the complex relationship between the natural and human environments, it is very important to try to predict the environmental and social impacts of programs, projects and planned developments that may alter the quality of the environment and impact well-being. As the human population continues to increase and natural resources become more limited, the importance of improving the sustainability of development and identifying mitigation measures—and thus the importance of creating high-quality EIAs—becomes greater.

- EIA links environment with development for environmentally safe and sustainable development.
- EIA provides a cost effective method to eliminate or minimize the adverse impact of developmental projects.
- EIA enables the decision makers to analyse the effect of developmental activities on the environment well before the developmental project is implemented.
- EIA encourages the adaptation of mitigation strategies in the developmental plan.
- EIA makes sure that the developmental plan is environmentally sound and within the limits of the capacity of assimilation and regeneration of the ecosystem.

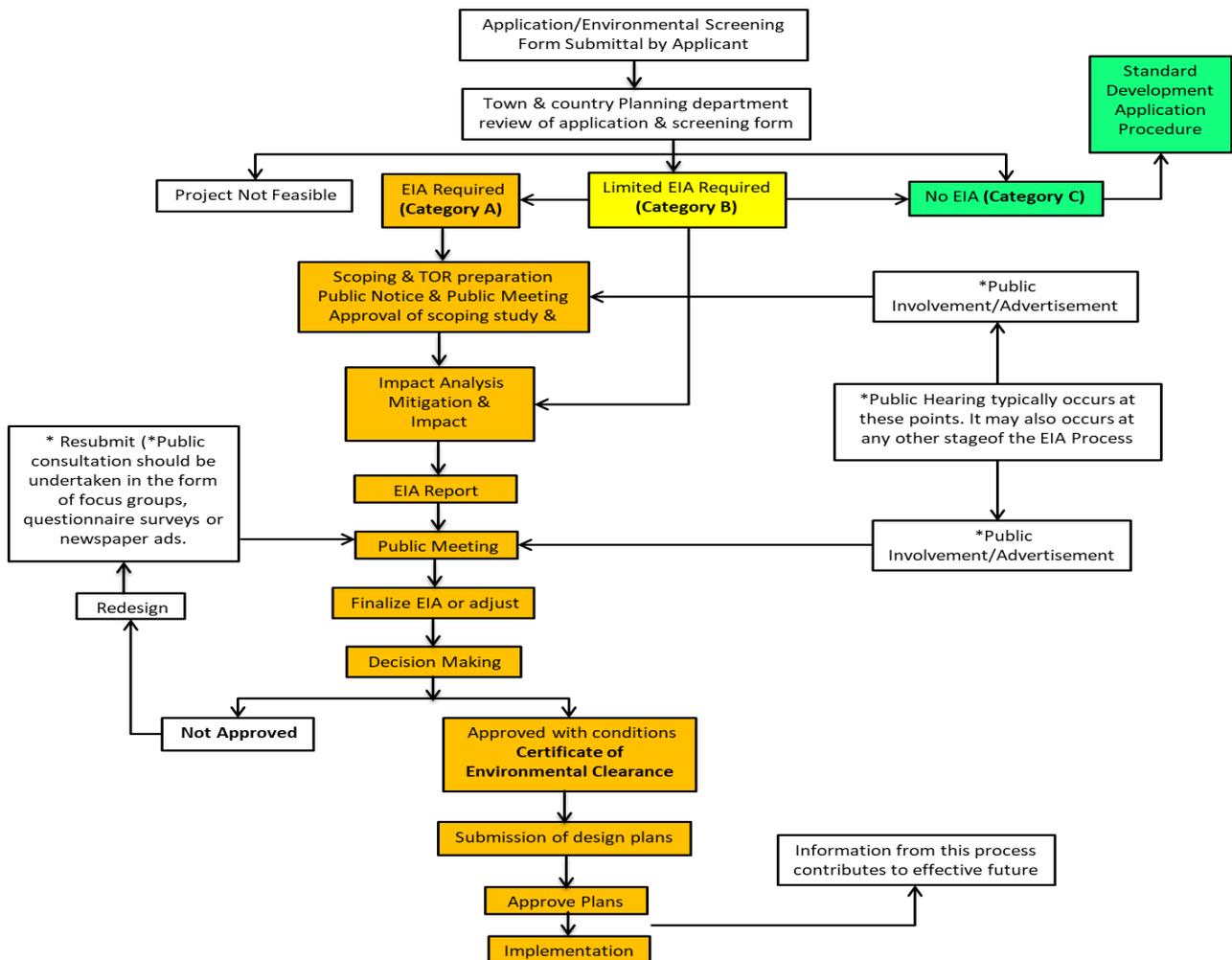
EIA Process

EIA involves the steps mentioned below. However, the EIA process is cyclical with interaction between the various steps.

- ✓ **Screening:** The project plan is screened for scale of investment, location and type of development and if the project needs statutory clearance.
- ✓ **Scoping:** The project's potential impacts, zone of impacts, mitigation possibilities and need for monitoring.
- ✓ **Collection of baseline data:** Baseline data is the environmental status of study area.

- ✓ **Impact prediction:** Positive and negative, reversible and irreversible and temporary and permanent impacts need to be predicted which presupposes a good understanding of the project by the assessment agency.
- ✓ **Mitigation measures and EIA report:** The EIA report should include the actions and steps for preventing, minimizing or by passing the impacts or else the level of compensation for probable environmental damage or loss.
- ✓ **Public hearing:** On completion of the EIA report, public and environmental groups living close to project site may be informed and consulted.
- ✓ **Decision making:** Impact Assessment Authority along with the experts consult the project-in-charge along with consultant to take the final decision, keeping in mind EIA and EMP (Environment Management Plan).
- ✓ **Monitoring and implementation of environmental management plan:** The various phases of implementation of the project are monitored.
- ✓ **Assessment of Alternatives, Delineation of Mitigation Measures and Environmental Impact Assessment Report:** For every project, possible alternatives should be identified, and environmental attributes compared. Alternatives should cover both project location and process technologies.
 - Once alternatives have been reviewed, a mitigation plan should be drawn up for the selected option and is supplemented with an Environmental Management Plan (EMP) to guide the proponent towards environmental improvements.
- ✓ **Risk assessment:** Inventory analysis and hazard probability and index also form part of EIA procedures.

Generalized EIA Process Flowchart



Scope of EIA Study

The scope of the EIA study includes detailed characterization of the existing status of the land, water, air, biological and socio-economic environment in the project study area and catchment area for three seasons i.e. Pre-monsoon, Post-monsoon and Winter. It also includes identification of the potential environmental impacts of the project and formulation of an effective Environmental Management Plan (EMP) to prevent, control & mitigate the adverse environmental impacts acknowledging the rules and regulations being laid down by the State and Central governing bodies and help maintain good environmental conditions.

The report has been organized in seven chapters as below:

Chapter 1: Introduction - provides a background of the project, the project proponent and the process of environmental impact assessment.

Chapter 2: The Project Description - describes the characteristics of the barrage, tunnel, other underground structures like surge shaft, pressure shaft and power house and operations associated with construction, and after commissioning of project.

Chapter 3: The Existing Environment - describes the background environmental characteristics and the other economic activities in the area.

Chapter 4: Assessment of Impacts - identifies the potential impacts from the project.

Chapter 5: Environmental Management Plan - the environmental management plan provides a set of measures for amelioration of anticipated adverse impacts likely to accrue as a result of the proposed project. The approach for formulation of an EMP is to maximize the positive environmental effects and minimize the negatives ones.

Chapter 6: Environmental Monitoring Program - describes the mechanism to address the adverse environmental impacts during different phases of the project (construction and operational phases).

Chapter 7: Catchment Area Treatment Plan - The CAT plan is based as per the prioritization of sub-watersheds using the Silt Yield Index (SYI) as per AISLUS methodology.

The structure of executive summary is set out under the following sub-headings:

- a. Introduction
- b. Salient Feature
- c. Project Location
- d. Project Description
- e. Baseline Environmental Status
- f. Impact Assessment and Environmental Management Plan
- g. Environmental Monitoring Plan
- h. Environmental Management Budget

The essential core part of the EIA report is briefly described below:-

Baseline Environmental Status

A baseline study is essential in order to be able to determine the level of impact expected and to enable the monitoring of impacts after the development has occurred. In some cases, baseline information will need to be gathered in the field, and in others it will already be available and need only be collated. Where a project has a number of alternative sites, each of the sites should undergo a baseline study so that the relative severity of the impacts for each alternative can be assessed.

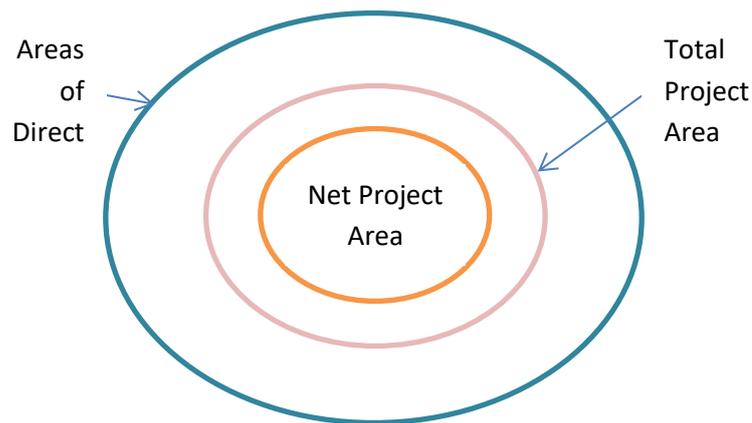
Impact prediction

Impact prediction can be carried out by a variety of means. For example, models, quantitative measurements or professional judgment based on experience and research can be used. Frequently, the impact predictions may reveal that the environmental effects are not as great as imagined and may not be significant, hence the process can loop back to the scoping phase to amend the EIA accordingly.

Impact prediction is an area where there are many techniques available to help us. Impact prediction should look not only for **direct impacts**, but also **indirect impacts** and the interactions between them. This is the only way of building up a full picture of the environmental system under study so that the effects can be understood.

Areas of Influence

The area of the land on which the project corresponds is called the “net project area,” which is part of the “total project area.” The total project area is likely to be affected by impacts generated by the project e.g., during construction by the negative environmental impacts (such as noise, emissions, vibrations, visual effects, etc.). The “area of influence” is defined as the project environment that located outside the area of the overall project and extends from its boundaries to a distance of 500 metres.



Impact assessment

In an EIA, Impact assessment is the core part where a detailed assessment of the planned project and selected alternatives compared to the baseline conditions is performed. This is done by using both qualitative descriptions, such as high, medium and low impacts, and by quantitative descriptions, such as indicating the cubic metres of water withdrawn, sewage produced, and pollutants released. This is done for the planned project and the identified alternatives allowing the comparison of these alternatives for their impacts on the local and regional environmental, and socioeconomic and cultural characteristics. Once the detailed assessment is completed, mitigation measures to reduce impacts are identified.

Mitigation

Mitigation actions are a critical part of the EIA process, as these actions aim to prevent adverse impacts from the planned project on the environment and people, making sure that those that are unavoidable are maintained within acceptable levels. At this step, the focus is on incorporating mitigation measures into the project design (and the alternatives) as well as on providing guidance for the monitoring of the impacts during the whole duration of the project.

The key contributions of impact assessment and mitigation to a good EIA:

- Provides a clear and itemized list of relevant impacts on the environment and people, including cumulative effects, social impacts, and health risks.
- Outlines any cumulative effects, bringing together identified impacts on environment, society and health.
- Based on the results of the impact assessment, it lists the adverse effects of proposed actions; a detailed list of mitigation actions is identified.

Reference

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