Environmental Impact Assessment

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Need for EIA

- Those which can significantly alter the land use pattern, landscape and local habitation;
- Those which need upstream development activity like assured mineral and forest products supply or downstream industrial processing
- Those involving manufacture, handling and use of hazardous chemicals
- Those which are sited near ecologically sensitive areas, urban centers, hill resorts, places of scientific, historic and religious importance.
- Industrial Estates with constituent units of various types which could cumulatively cause significant environmental damage.
- Those involving developmental activities in (CRZ -II) which can bring significant changes in coastal ecosystem

In India any person who desires to undertake any new project or the expansion or modernization of any existing industry or project should submit a Rapid Environmental Impact Assessment report along with application to the secretary, Ministry of Environment and Forests (MoEF), New Delhi. Basic types of EIA being practiced are given below.

- Rapid Environmental Impact Assessment (REIA)
- Comprehensive Environmental Impact Assessment (CEIA)
- Strategic Environmental Impact Assessment (SEIA)
- Sectoral Environment Impact Assessment
- Regional Environmental Impact Assessment

Rapid EIA

The Rapid EIA is a widely used methodology, which would mainly use available data along with baseline Environmental data collected for one season (preferably winter), for evaluating all possible impacts on the components of Environment.

Winter season is considered as the critical meteorological situations for Air Pollution, when the mean air temperature is too low and average wind speed will also be less, this condition limits the dispersion of gaseous pollutants in atmospheric air thus increasing the Ground level Concentrations (GLC) of pollutants.

Comprehensive EIA (CEIA)

Comprehensive EIA would be required if the assessment area, period and parameters are insufficient for a well-defined decision on the establishment of a project. Meteorological Conditions like Mean Air Temperature, Wind Speed and Wind Direction (for different seasons) also play an important role in ascertaining the impact of pollutants especially when the project discharges huge quantities of Air Pollutants into the atmosphere. A comprehensive EIA would be essential for large projects or for projects with high pollution levels.

Sectoral EIA

Sector EIA's are used for the design of sector investment programes. They are particularly suitable for reviewing (a) sector investment alternatives (b) the effect of sector policy changes (c) institutional capacities and requirements for environmental review implementation and monitoring at the sectoral level and (d) the cumulative impacts of many relatively small, similar investments that do not merit individual project specific EIA's. Sectoral EIA should also have the objective of strengthening the environmental management capability of the several or other relevant agencies. Sectoral EIA's, may overlap with regional EIA's

Strategic EIA

Strategic Environmental Impact Assessment (SEIA) is used to refer to EIA process applied to policies, plans or programmes. Strategic Environmental Assessment (SEA) is an instrument for systematic analysis of environmental, social and economic impacts of a proposed development plan. The use of SEA enables decision-makers to overcome limitations of project-level decision-making which may underestimate cumulative and synergistic impacts of multiple on-going or planned projects.

Regional EIA

Regional EIA is a comprehensive EIA conducted for a particular region to establish the baseline Environmental status and also to assess the assimilative capacity of the region. Regional EIA's may be used where a number of similar but significant development activities with potentially cumulative impact are planned for a reasonably localised area. In such cases, regional EIA are generally more efficient than a series of project specific EIA's.

Environmental Impact Assessment Notification in India

EIA is of comparatively recent origin in India and has become an integral part of Environmental Management by EIA notification of 1994 and its subsequent amendments by Ministry of Environment & Forests (MoEF), Govt. of India. The notification specifies 30 categories of projects with potential risks to degrade the Environment.

In exercise of powers conferred by Environment Protection Act, 1986 and subrule of the Environment Protection Rules 1986, the Central Government directs that on and from the date of publication of this notification in the Official Gazette, expansion or modernization of any activity (if pollution load is to exceed the existing one) or a new project as listed in Schedule 1 to this notification shall not be undertaken in any part of India unless it has been accorded environmental clearance by the Ministry of Environment and Forests in accordance with the procedure specified in the notification.

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- **Composition of expert committee**
  - **Ecosystem management**
  - **Air/water pollution control**
  - **Water resource management**
  - **Flora/fauna conservation and management**
  - **Land use planning**
  - **Social sciences / rehabilitation**
  - **Project appraisal**
  - **Ecology**
  - **Environmental health**
  - **NGO representatives**
  - **Subject area specialist**

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- **Application form contents**
  - **Name, address, location of the project, alternate sites examined**
  - **Objectives of the project**
  - **Land use patterns**
  - **Climate and air quality**
  - **Water balance**
  - **Solid wastes**

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- **Application form contents**
  - **Solid wastes**
  - **Noise & vibrations**
  - **Source & power req**
  - **Peak labour demand**
  - **Risk assessment report, disaster management plan**
  - **EIA, EMP, Feasibility report**
  - **Environment cell**

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- Information with application form
  - EIA/EMP - 20 copies
  - Risk analysis report – 20 copies
  - NOC from SPCB
  - Commitment for water / electricity availability
  - Summary of project report
  - Filled in questionnaire
  - Comprehensive rehabilitation plan, if required

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- No construction work prior to clearance
- Half yearly reports by project authorities to IAA
- Compliance reports publicly available

SCHEDULE - 1

LIST OF PROJECTS REQUIRING ENVIRONMENTAL CLEARANCE FROM THE CENTRAL GOVERNMENT

1. Nuclear Power and related projects such as heavy water plants, nuclear fuel complex, rare earths.
2. River Valley projects including hydel power, major irrigation and their combination including flood control.
3. Ports, Harbours, Airports (except minor ports and harbours).
4. Petroleum Refineries including crude and product pipelines.
5. Chemical Fertilizers (Nitrogenous and Phosphatic other than single superphosphate)
6. Pesticides (Technical)

7. Petrochemical complexes (Both Olefinic and Aromatic) and Petro-chemical intermediates such as DMT, Caprolactam, LAB etc. and production of basic plastics such as LDPE, HDPE, PP, PVC.
8. Bulk drugs and pharmaceuticals
9. Exploration for oil and gas and their production, transportation and storage.
10. Synthetic Rubber
11. Asbestos and Asbestos products
12. Hydrocyanic acid and its derivatives.

13. (a) Primary metallurgical industries (such as production of Iron and Steel, Aluminium, Copper, Zinc, Lead and Ferro Alloys).

    (b) Electric arc furnaces (Mini Steel Plants).

14. Chlor - alkali industry

15. Integrated paint complex including manufacture of resins and basic raw materials required in the manufacture of paints.

16. Viscose Staple fibre and filament yarn.

17. Storage batteries integrated with manufacture of oxides of lead and lead antimony alloy

18. All tourism projects between 200 - 500 meters of High Tide Line or at locations with an elevation of more than 1000 meters with investment of more than Rs.5Crores.

19. Thermal Power plants.
20. Mining projects (major minerals) with leases more than 5 hectares.
21. Highway Projects
22. Tarred Roads in Himalayas and/or Forest areas
23. Distilleries
24. Raw Skins and Hides.
25. Pulp, paper and newsprint
26. Dyes
27. Cement
28. Foundries (individual)
29. Electroplating
30. Meta Amino Phenol

In India, Public Consultation has been made a mandatory component of EIA by an amendment, dated 10th April 1997, of the EIA notification 1994, and the State Pollution Control Boards and the concerned District Collector(s) are responsible for the Public Consultation Process through the duly constituted Public Hearing Panel. The Public Hearing Panel will consist of representatives of State Pollution Control Board, State Government, District Collector, Local Bodies apart from three senior citizens of the area to be nominated by the District Collector.

Environment (Siting for Industrial Projects) Rules, 1999

Environment Siting Rules

Prohibition for setting up of certain industries(Annexure I)

- **Within any municiple areas**
- **25 km belt around cities having population more than 1 million**
- **7 km around periphery of the wetlands (Annexure II)**
- **0.5 km wide strip on both sides of highways & rail lines**

Environment Siting Rules

Establishment of new units with certain conditions

- **Allowed in 7 km to 25 km zone around wetlands only after careful assessment of adverse ecological & environmental impacts**
- **New units(Annexure III) not allowed within 7 km periphery of the important archaeological monuments(Annexure IV)**

EIA Study Objectives:

The objective of an EIA study is to encourage environmentally viable projects and to provide a second opportunity to the project proponent to rethink on:

a) Alternate Production Process with less pollutant discharge.

b) Cleaner production practices.

c) Data Collection for project specific environmental parameters.

d) Assessing the impacts on air, water, soil, biological components, natural and man-made components of the Environment for Technological alternatives wherever possible.

e) Appropriate EMS in a long term approach for industrial sustainability.

The authenticity of an EIA study will depend on the following factors:

- Elaborate mass balance for each of the process reactions involved in the manufacturing of the products.
- Identifies alternate manufacturing routes (if possible) with less pollutant discharges.
- This will help to identify the sources for salvaging Chemicals from waste.
- Ascertains the scope of water conservation.
- Quantifies the waste (Solid, Liquid & Gaseous) generation from each source.
- Characterizes the waste from each source and helps to decide on appropriate treatment methodologies for selected streams (or) combined stream either for by-product recovery or for Decontamination.

Location of the project site

1. Helps to evaluate the environmental feasibility of the project depending the quality of environment and prevailing carrying capacity of the region.

2. Helps to identify the waste disposal routes and appropriate technologies for meeting the statutory standards for disposal of decontaminated waste.

3. Topography and local climatology will greatly change the ground level concentration of pollutants and at times may totally mislead the impact prediction process.

Base line Environmental Quality

1. Helps to ascertain the quality of air, water, soil, flora, fauna, etc., existing at the proposed project region and identifies critical parameters before commencement of the project.

2. Indicates the carrying capacity of the region and judges the feasibility of the project with respect to Environmental conditions, at the initial stages of the study.

3. Identifies the flora and fauna at risk for planning appropriate remediation /protective measures to be considered at a later stage.

Prediction of Impacts on Biotic & Abiotic components of the Environment

1. Helps to quantify the type of pollutant and its load on a specific receiving body, like atmosphere, land or any water body.

2. Helps to identify the synergistic consequences of the pollutants on the natural and artificial resources of the Environment, classifying the damage as either manageable or critical.

3. Helps to understand the advantage of an environmental management system in terms of magnitude of impact with and without appropriate Pollution control technologies.

Assessment of Impacts on Environment

1. Helps to understand the change in environmental quality from the existing conditions, for quantifying the feasibility of the project, based on professional knowledge, information from case studies etc.,
2. Demarks the critical zone and necessitates the need for Environmental upgradation in such zones, during emergency situations, depending on the activity in the region (e.g. Commercial, Industrial, Residential, Agricultural, Sensitive etc.,)

Mitigation measures or Environmental Management System

1. Identifies rational technologies for pollution control, based on statutory requirements, status of down stream receiving bodies and long term action plan for sustainable development.

2. Environmental Management Plan is a concluding part of an EIA study which defines the scope for feasibility of a project depending on the adverse effects and techno-economical mitigation measures available to the project proponent.

Documentation of an EIA study

Simple and effective communication of the facts to the concerned agencies in enquired format, will enable the authorities to rapidly decide on the environmental clearance of the project.

Advantages of EIA

Though EIA is considered as a mandatory procedure for meeting the statutory requirements, it has many inbuilt advantages to the project proponent and to the society. Few of the advantages are:

- More environmental sustainable design.
- Better compliance with statutory standards.
- Savings in capital and operating costs.
- Reduced time and costs for obtaining clearances.
- Avoid later plant adaptations.
- Reduced health cost.
- Increased project acceptance.

Benefits to the Industry

- Specifies the type of pollutants, quantity and quality of pollutants.
- Enables to select appropriate technologies to combat pollution and to meet the tatutory standards.
- Enables to understand the viability of resource recovery in terms of salvaging from waste, recovery and recycle etc.,
- Provides scope for cleaner production practices or alternate manufacturing methods.

- A better Environmental Management Plan can be designed by understanding the impacts of project specific pollutants on the environment.

Benefits to the Society

- Can understand the details of the project and its possible impacts on their environment.

- It enables public to visualize possible accidents, also to overcome the same with effective remediation measures.

- Can understand the economic development as against the natural resources depletion, and decide on project acceptance in their area well before project execution.

Conclusions

- EIA study is a valuable tool for identifying the potential impacts on Environment and to source appropriate technologies for mitigating the impacts to tolerable levels.
- The effort put in by professionals in collecting as much technical details as possible about the project, the Baseline Data, Meteorological Data etc., will be of great use in defining a problem with better clarity for a realistic solution.
- EIA is a legal document and any attempt to provide wrong facts or down playing of relevant information is an offence.
- Many project proponents consider investment for an EIA study as a burden and settle for economical rates and ultimately end up with inordinate delays for want of factual data by the authorities.
- EIA Study is a protective weapon against vested interest groups and will defend scientifically and legally the right for