Environmental Impact Assessment (EIA): Overview

Dr. Sanjay Mathur
Head, Center for Energy & Environment
Civil Engineering Department
Malaviya National Institute of Technology Jaipur
Agenda

- Defining EIA
- EIA & its evolution
- EIA principles
- EIA process
- Benefits of EIA
Environmental Impact Assessment is

A formal process for identifying:

• likely effects of activities or projects on the ENVIRONMENT, and on human health and welfare.
• means and measures to mitigate & monitor these impacts

Environment is broadly interpreted:
Physical: Water, Air, Soil.
Biological: flora, fauna, ecosystem
Social: human health and welfare, culture, religion, and local values

In EIA, the term “impacts” is used instead of “effects of activities.”

What is an impact?
What is an impact?

The impact of an activity is a deviation (a change) from the baseline situation that is caused by the activity.

To measure an impact, you must know what the baseline situation is.

The baseline situation is the existing environmental situation or condition in the absence of the activity.

The baseline situation is a key concept in EIA.
The baseline situation

In characterizing the baseline situation, many environmental components MAY be of interest.

- **Water**: Quantity, quality, reliability, accessibility
- **Soils**: Erosion, crop productivity, fallow periods, salinity, nutrient concentrations
- **Fauna**: Populations, habitat
- **Env Health**: Disease vectors, pathogens
- **Flora**: Composition and density of natural vegetation, productivity, key species
- **Special ecosystems**: Key species

The components of interest are those that are likely to be affected by your activity—or upon which your activity depends for its success.
Defining Impact Assessment

Environmental impact assessment is, in its simplest form, a planning tool that is now generally regarded as an integral component of sound decision making…….

…….As a planning tool it has both an information gathering and decision making component which provides the decision maker with an objective basis for granting or denying approval for a proposed development.

Justice La Forest, (1991)
Defining Impact Assessment

Environmental Impact Assessment (EIA) may be defined as a formal process used to predict the environmental consequences of any development project. EIA thus ensures that the potential problems are foreseen and addressed at an early stage in the projects planning and design.

Manu and Anshu
Evolution of EIA

- Early 1970s - initial development
- 1970s to 1980s - trend to integration
- Mid to late 1980s - cumulative effects and policy integration
- Mid 1990s - towards sustainability (SEA - strategic environmental assessment, biodiversity)
WHY DO WE NEED EIA?
EIA is essentially a planning tool for preventing environmental problems due to an action.

It seeks to avoid costly mistake in project implementation,

- either because of environmental damages that are likely to arise during project implementation
- or
- because of modifications that are required subsequently in order to make the action environmentally acceptable to government and community.
EIAs have two roles - legal and educational.

The legal one is quite straightforward: to ensure that development projects have a minimal impact on the environment in its entire 'lifecycle'.

The educational one is equally important and probably a forerunner to the legal role - to educate everyone one involved - professionals and users included.
Think!

- a large section of society possibly see EIA processes as a 'hindrance' to development as environment is not yet a priority!

- We need to look at all our daily actions as eventually and cumulatively affecting the environment. This includes our daily choices, where a delicate balance between financial and environmental considerations need to be made automatically - *without thinking!*
Purposes of EIA

- modify and improve design
- ensure efficient resource use
- enhance social aspects
- identify measures for monitoring & managing impacts
- informed decision-making
- provide justification for a proposal
Integration within EIA

The EIA process addresses the following environmental effects:

- biophysical & resource use
- social & cultural
- health & safety
- economic
EIA — guiding principles

The EIA process should be:

- purposive – meeting its aims and objectives
- focused – concentrating on effects that matter
- adaptive – responding to issues and realities
- participative – fully involving the public
- transparent – clear and easily understood
- rigorous – employing ‘best practicable’ methodology
- credible – carried out with objectivity and professionalism
- efficient – imposing least cost burden on proponents

Source: Sadler, 1996; IAIA/IEMA 1999
The EIA Process

- Screening
- Scoping
- Assessing
- Mitigation
- Reporting
- Decision Making
- Monitoring
- Public Involvement
Classification of EIA Activities

- Identification –
  - Identification of environmental components and effects; presence or absence

- Prediction –
  - Forecasting change in the environment; estimation of probability of occurrence

- Evaluation –
  - Evaluation of importance, consequence and significance; also comparison of trade-offs among various alternatives
When should the EIA be undertaken?
Site Selection, Environmental Screening, Scoping

- Detail assessment of impacts, Identification of mitigation needs, Input to cost benefit analysis

Project Concept ➔ Pre Feasibility ➔ Feasibility Study

- Implementation of mitigation measures

Lessons for future projects

Monitoring and Evaluation ➔ Implementation ➔ Design and Engineering

Implementation of mitigation measures

Design and Engineering ➔ Implementation ➔ Monitoring and Evaluation

Lessons for future projects
Who is involved in the EIA process?
EIA is generally the responsibility of the project proponent.

It is often prepared with the help of external consultants or institutions, i.e., the EIA practitioners.

The EIA study should be carried out by a multidisciplinary team comprising civil engineers, water supply and sanitation engineers, planners, chemists, life scientists, and socio-economists.

The agency responsible for receiving the impact assessment report and taking any subsequent action will usually indicate how the study is to be carried out and how the results should be used in the decision-making process.
Apart from all these agencies, the general public is also involved in the process of EIA.

Ideally public opinion should be solicited through public hearings arranged for the purpose of discussing the impacts of the project.

Public participation as a component of EIA is practiced as a requirement in only a few countries, including INDIA.
## EIA Costs for Multipurpose Projects

<table>
<thead>
<tr>
<th>Name of project</th>
<th>Project cost (million baht)</th>
<th>EIA cost (million baht)</th>
<th>EIA cost as percentage of total project cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattani</td>
<td>2737.10</td>
<td>3.1</td>
<td>0.11</td>
</tr>
<tr>
<td>Que Noi (Khao Laem)</td>
<td>9110.00</td>
<td>0.7</td>
<td>0.01</td>
</tr>
<tr>
<td>Chiew Larn</td>
<td>7035.10</td>
<td>3.7</td>
<td>0.05</td>
</tr>
<tr>
<td>Upper Quae Yai</td>
<td>10953.00</td>
<td>4.5</td>
<td>0.04</td>
</tr>
<tr>
<td>Nam San, Nam Man, Nam Loei</td>
<td>7612.00</td>
<td>5.3</td>
<td>0.07</td>
</tr>
<tr>
<td>Kud</td>
<td>8092.00</td>
<td>5.0</td>
<td>0.06</td>
</tr>
<tr>
<td>Lang Suan</td>
<td>6248.00</td>
<td>2.4</td>
<td>0.04</td>
</tr>
<tr>
<td>Ma Pong</td>
<td>60000.00</td>
<td>18.0</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Source: UN ESCAP (1990)
Delays are caused during EIA when:

- EIA is commenced too late in the project cycle
- TORs are poorly drafted
- EIA is not managed to a schedule
- EIA report is inadequate and needs to be upgraded
- Lack of technical data
Benefits of EIA include:

- more environmentally sustainable design
- better compliance with standards
- savings in capital and operating costs
- reduced time and costs for approvals
- avoids later plant adaptations
- reduced health costs
- increased project acceptance
To ensure that opportunities of future generations are not limited, we must all use our valuable natural resources more efficiently.

This can be best achieved through combining best technology as well as management practices.

Thanks
Environmental Impact Assessment in INDIA

Dr. Sanjay Mathur
Head, Center for Energy & Environment
Civil Engineering Department
Malaviya National Institute of Technology Jaipur
Agenda

- EIA process in India
- SWOT analysis
EIA Notification 2006

- Published in the Gazette of India,
- Under sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986,
- on 14 September 2006.
Eligible candidates for EC

- All new projects or activities listed in the Schedule to EIA notification 2006

- Projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization.

- Any change in product-mix in an existing manufacturing unit included in Schedule beyond the specified range.
Competent Authority

- Ministry of Environment and Forests for matters falling under Category ‘A’ in the Schedule
- State Environment Impact Assessment Authority (SEIAA) for matters falling under Category ‘B’ in the Schedule
Competent Authority

- All projects and activities are broadly categorized in Category A and Category B, based on the *spatial extent of potential impacts* and *potential impacts* on human health and natural and man made resources.

- The EACs at the Central Government and SEACs at the State or the Union territory level shall *screen, scope and appraise projects* or activities in Category ‘A’ and Category ‘B’ respectively.
Stages in the EC Process

- Stage (1) Screening
  (Only for Category ‘B’ projects/activities)
- Stage (2) Scoping
- Stage (3) Public Consultation
- Stage (4) Appraisal
Stage (1) Screening

- Category ‘B’ projects/ activities
- Screening for further level of EIA
- Category B1/ B2
- EIA is required for all projects in category B1 except Item 8 of the Schedule (Construction/Township/Commercial Complexes /Housing)
Stage (2)  Scoping

“Scoping”: refers to the process by which EAC/ SEAC
determine detailed and comprehensive Terms of Reference addressing all relevant environmental concerns for the preparation of an EIA Report.

Decision making shall be on the basis of the information furnished in the prescribed application Form1/Form 1A including ToR proposed by the applicant.
Stage (2) Scoping

- All projects/activities listed as Category ‘B’ in Item 8 of the Schedule shall not require Scoping and will be appraised on the basis of Form 1/ Form 1A and the conceptual plan.

- Applications for EC may be rejected by the EAC/SEAC at this stage itself.
  - Such decision together with reasons for the same shall be communicated to the applicant in sixty days.
Stage (3)   Public Consultation

- The process by which the concerns of local affected persons and others who have plausible stake in the environmental impacts of the project or activity are ascertained.

- All Category ‘A’ and Category B1 projects/activities shall undertake Public Consultation.

- After completion of the public consultation, the applicant shall address all the material environmental concerns expressed during this process, and make appropriate changes in the draft EIA and EMP.
Stage (3)  Public Consultation

- **Exceptions**
  - modernization of irrigation projects
  - all projects or activities located within industrial estates or parks approved by the concerned authorities, and which are not disallowed in such approvals.
  - expansion of Roads and Highways which do not involve any further acquisition of land.
  - all Building /Construction projects/Area Development projects and Townships
  - all Category ‘B2’ projects and activities.
  - all projects or activities concerning national defense and security
Stage (4)   Appraisal

- Appraisal means the detailed scrutiny by the EAC/ SEAC of
  - the application
  - the Final EIA report
  - outcome of the public consultations including public hearing proceedings,
  - applications by the applicant to the different regulatory authorities for permissions.
Stage (4) Appraisal

- The appraisal of all projects/activities which are
  - not required to undergo public consultation,
  - or submit an Environment Impact Assessment report,
- The appraisal shall be carried out on the basis of
  - the prescribed application Form 1 and Form 1A as applicable, any other relevant validated information available and
  - the site visit wherever the same is considered as necessary
Stage (4) Appraisal

Outcome:

- Appraisal Committee concerned shall make categorical recommendations to the regulatory authority concerned
  - either for grant of prior environmental clearance on *stipulated terms and conditions*,
  - or rejection of the application for prior environmental clearance, together with reasons for the same.
Grant or Rejection of Prior Environmental Clearance (EC)

- The regulatory authority shall consider the recommendations of the EAC or SEAC concerned and convey its decision to the applicant within forty-five days of the receipt of the recommendations.

- In cases where it disagrees with the recommendations of the EAC/SEAC concerned, the regulatory authority shall request reconsideration.
Validity of Environmental Clearance (EC)

The prior environmental clearance granted for a project or activity shall be valid:

- for a period of ten years in the case of River Valley projects
- project life as estimated by EAC/SEAC subject to a maximum of thirty years for mining projects and five years in the case of all other projects and activities.

However, in the case of item 8(b), the validity period shall be limited only to such activities as may be the responsibility of the applicant as a developer.
Post Environmental Clearance Monitoring

- It shall be mandatory for the project management to submit half-yearly compliance reports in respect of the stipulated prior environmental clearance terms and conditions.

- All such compliance reports submitted by the project management shall be public documents.
Transferability of Environmental Clearance (EC)

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period.
EIA in India: SWOT Analysis
EIA in India: Strengths

- Well-defined legal structure
- Well-knitted regulatory structure for proper execution of EIA:
  - CPCB/ MoEF/ State DoE/ SPCB
- Transparent Decision Making Process
  - Report kept on MoEF site for one month.
EIA in India: Strengths

  - Contribute transparency in process
- Accreditation and endorsement of consultant.
  - Aims to bring in professionals
- Public Hearing.
EIA in India: Weaknesses

- Screening and scoping exercises are not well defined
  - Allows proponent to split project
- Insufficient baseline data,
  - Leading to inadequate/unnecessary information
- Improper monitoring and implementation
  - No provision for third party evaluation
- Poor quality EIA reports and non-accountability of EIA professionals
EIA in India: Weaknesses

- **Effluent Standard**
  - Total pollution load/carrying capacity not considered
  - Infeasible treatment
  - No well defined standards, eg for reuse of treated wastewater

- **Inconsistent application of evaluation and predictive tools**
  - Lack of knowledge
  - Missing guidelines for use of tools
EIA in India: Weaknesses

- Inadequate public participation
  - one time process
  - out of reach for many of the affected individuals/communities
  - influenced by project proponent
  - even orchestrated.
Opportunities

- Increasing public awareness
  - Information in public domain increases transparency and accountability
  - The demand for better environment is forcing a policy shift

- Growing consciousness through Non Governmental Organizations
Opportunities

- Self-regulation in industrial sector
  - CSR activities
  - Public image
  - Economic benefits to industry
- Funding agency criteria
  - Forcing proponents to take measures
- International convention
  - Amendments in the Acts
Threats

- Political Influence.
- Poor Governance & Corruption.
- Conflict of Interest.
- Possibilities of biased public hearing.
- Globalization of tools for impact prediction.
- Preference of Economic Development over environment protection.
My Submission

- To address the critical issues of environmental sustainability, urgent action is required.
  - political commitment
  - public participation
  - Improved effective coordination among government agency,
  - integrated decision-making
  - Adequate training to various stakeholders
Thank you very much for patient hearing