Class-12

Basic Concepts for Assessing Environmental Impacts

30th October 2023

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, biological, and social.

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

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

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

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 baseline situation

The baseline situation is not simply a "snapshot."

Describing the baseline situation requires describing both the normal variability ***in environmental components*** *&* *current trends* ***in these components****.*

This chart of groundwater levels shows both variability and a trend over time.

Both are part of the groundwater baseline situation.

Types of impacts & their attributes

The EIA process is concerned with all types of impacts and may describe them in a number of ways

- ***Direct & indirect impacts***
- ***Short-term & long-term impacts***
- ***Adverse & beneficial impacts***
- ***Cumulative impacts***

- **Intensity**
- **Direction**
- **Spatial extent**
- **Duration**
- **Frequency**
- **Reversibility**
- **Probability**

But all impacts are NOT treated equally.

Specifically,

It is ESSENTIAL in EIA to focus on the most significant impacts.

Don't waste effort & time analyzing and discussing impacts that are less important.

What is an activity?

We are discussing the impacts of activities.
What are activities?

✓ **An activity is:**

a desired accomplishment or output

E.g.: a road, seedling production, or river diversion to irrigate land

Accomplishing an activity requires a set of actions

ACTIVITY:	ACTIONS:
market access road rehabilitation	Survey, grading, culvert construction, compaction, etc. . .

A project or program may consist of many activities

The EIA process

Phase I:
Initial inquiries

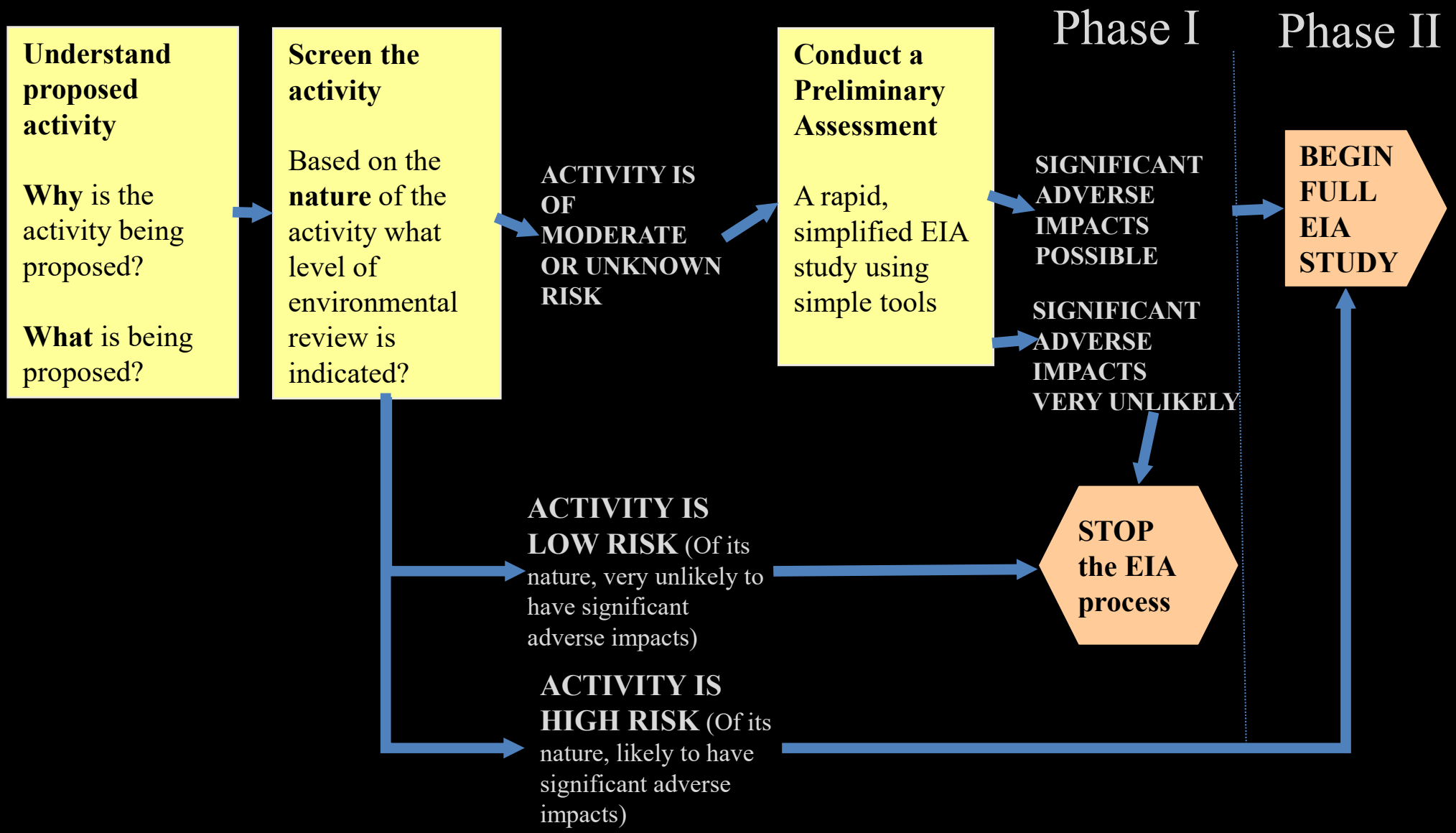
- Understand proposed activities
- Screen
- Conduct preliminary assessment (if needed)

Our focus!

Phase II:
Full EIA study
(if needed)

- *Scope*
- *Evaluate baseline situation*
- *Identify & choose alternatives*
- *Identify and characterize potential impacts of proposed activity and each alternative*
- *Develop mitigation and monitoring*
- *Communicate and document*

Phase 1 of the EIA Process



Phase 1 of the EIA process:

Understand the proposed activity

Understand the proposed activities

Why is the activity being proposed?

What is being proposed?

ALL EIA processes begin with understanding WHAT is being proposed, and WHY.

The question
"WHY IS THE ACTIVITY BEING PROPOSED?
Is answered with the development objective (D.O.).

"buildi[illegible] a road" **Not a D.O.!**

"increasing access to markets" **Is a D.O.**

"If we don't understand it, we can't assess it!"

We must understand the <u>Development Objective</u> to identify environmentally sound alternatives

Phase 1 of the EIA process:

Understand the proposed activity

Understand the proposed activities

Why is the activity being proposed?

What is being proposed?

Once we understand the development objective, we must fully understand WHAT is being proposed.

This includes associated actions!

PRIMARY ACTIVITY:
construction of diversion dam & irrigation canal

ASSOCIATED ACTIONS:

- ***Survey***
- ***negotiate land tenure***
- ***construct borrow pit***
- ***establish construction camp***
- ***construct temporary diversion structure***
- ***dispose of soil, debris***

"Oops. I forgot about the borrow pit."

Phase 1 of the EIA process:

Screen the activity

Screen each activity

Based on the **nature** of the activity, what level of environmental analysis is indicated?

SCREENING is the process of asking a very basic set of questions about the nature of activity.

These questions:

- **do NOT require analysis.**
- **do NOT require detailed knowledge about the proposed sites, techniques or methods**

Example screening questions:

Does the activity involve:

- *Penetration road building?*
- *Large-scale irrigation?*
- *Introduction of non-native crop or agroforestry species?*

Phase 1 of the EIA process:

Screen the activity

Screen each activity

Based on the **nature** of the activity, what level of environmental analysis is indicated?

screening classifies the activity into a RISK CATEGORY:

- **VERY LOW RISK** → **EIA process ends**
- **VERY HIGH RISK** → **Do full EIA study**
- **MODERATE OR UNKNOWN RISK** → **Do preliminary assessment**

The outcome of the screening process determines the next step in the EIA process

Phase 1 of the EIA process:

The Preliminary Assessment

Conduct a Preliminary Assessment

A rapid, simplified EIA study using simple tools

The purpose of a preliminary assessment is to provide documentation and analysis that:

- ***Allows the preparer to determine <u>whether or not</u> <u>significant adverse impacts are likely</u>***
- ***Allows the reviewer to agree or disagree with the preparer's determinations***
- ***Sets out mitigation and monitoring for adverse impacts***

! Screening determines whether the preliminary assessment is necessary

Phase 1 of the EIA process:

The Preliminary Assessment

Typical Preliminary Assessment outline

1. Background (Development objective, list of activities)
2. Description of the baseline situation
3. Evaluation of potential environmental impacts
4. **Mitigation & monitoring**
5. **Recommended Findings**

For each activity it covers, a preliminary assessment has 3 possible findings:

- *The project is very unlikely to have significant adverse impacts. (EIA process ends)*
- *With specified mitigation and monitoring, the project is unlikely to have significant adverse impacts*
- *The project is likely to have significant adverse impacts (full EIA study is required)*

To arrive at findings: Identify, Predict and Judge

Arriving at the FINDINGS in a preliminary assessment requires 3 steps:

1. **Identify potential impacts** → **Many resources describe the potential impacts of typical small-scale activities.**
2. **Predict potential impacts** → **Determine which potential impacts are likely to become actual, and quantify these impacts to the extent possible.**
3. **Judge the significance of potential impacts** → **Determine whether the predicted impacts are indeed significant!**
THIS WILL OFTEN DEPEND ON HOW EFFECTIVE THE PROPOSED MITIGATION MEASURES ARE!

We only proceed to Phase II of the EIA process

if

Phase I indicates that a FULL EIA STUDY is required

Most small-scale activities do not require a full EIA study!

Phase 2 of the EIA process:

The Full EIA study

The full EIA study has very similar objectives and structure to a preliminary assessment.

However, the full EIA study differs in important ways:

- A formal scoping process precedes the study to identify issues to be addressed
- Analysis of environmental impacts is much more detailed
- Alternatives* must be formally defined. The impacts of each alternative must be identified & evaluated, and the results compared.
- **Public participation is usually required**.
- A professional EIA team is usually required.

Phase 2 of the EIA process:

The Full EIA study

With a few additions, the basic outline of the preliminary assessment is the template for the steps involved in a full EIA study:

1. **Background (Development objective, list of activities)**
2. **Description of the baseline situation**
3. **Evaluation of potential environmental impacts**
4. **Mitigation & monitoring**
5. **Recommended Findings**

Basic steps of the full EIA study

- **Scope**
- **Evaluate baseline situation**
- **Identify & choose alternatives**
- **Identify and characterize potential impacts of proposed activity and each alternative**
- **Compare alternatives**
- **Develop mitigation and monitoring**

Communicate & Document throughout

Phase 2 of the EIA process:

The Full EIA study

✓ In summary,

The full EIA study is a far more significant effort than the preliminary assessment.

It is reserved for activities for which screening or the preliminary assessment shows that significant impacts are likely.

Who is involved in EIA?

Sponsor of the activity
(usually commissions/conducts the EIA)

Regulatory agencies/
Review authorities

Broad-based public

Communities (men & women)
Civil society
Private Sector

Public consultation is usually only REQUIRED for full EIA studies.

However, it is good practice for preliminary assessments because:

- Predicting impacts is FACILITATED by broad-based public consultation; Judging significance is very difficult without it.
- Transparency and accessibility require disclosure to stakeholders

Making EIA effective

To be an effective tool for ESD, EIA must

- **a integral part of the project development cycle.**
  - **EIA is undertaken early enough to affect project design**
  - **Mitigation and monitoring developed in the EIA process is implemented.**
- **Honest**
  - **The full EIA study must consider real alternatives**
  - **Impacts must be assessed honestly.**
- **Transparent & accessible**
  - **The EIA products must be clear and accessible to key actors.**

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.*

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 sub rule 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 or a new project as to this notification shall not be undertaken in any part of India unless it has been accorded environmental clearance by the MoEFin accordance with the procedure specified in the notification.

THE ENVIRONMENTAL IMPACT ASSESSMENT NOTIFICATION 1994

- *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*

THE ENVIRONMENTAL IMPACT ASSESSMENT NOTIFICATION 1994

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

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*

Environment Siting Rules

Prohibition for setting up of certain industries(Annexure I)

- *Within any municipal 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)*

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 existence of an Environment friendly project.*

https://www.drishtiias.com/to-the-points/paper3/environmental-impact-assessment-eia-draft-2020

https://www.youtube.com/watch?v=dJa8LMGS8cs