

Q2 Environmental Impact Assessment (EIA)

Environmental Impact Assessment (EIA) is a systematic process used to evaluate potential environmental, and socio-economic impacts of the project before it is undertaken. EIA reduces environmental damage, promotes sustainability, ensures public health protection, ensures regulatory compliance and improves project efficiency. EIA is different from IEE in terms of scope, purpose, outcome and level of details.

1. History and Evolution of EIA

In 1970s, US formalized EIA through National Environmental Protection Act (NEPA). In the late 1970s and early 1980s, EIA guidelines became more formalized and developing countries started adopting EIA. In mid 1980s, World Bank reshaped EIA guidelines and there was proliferation of EIA guidelines in developing countries. In

1990s, (EIA) developing countries formally adopted EIA and there was rapid growth in EIA training in developing countries.

2. Initiation of EIA during Project Cycle

The project cycle comprises of following stages : Feasibility stage , Planning phase , Project Approval , Implementation and execution , Monitoring and Controlling , and Closure stage .

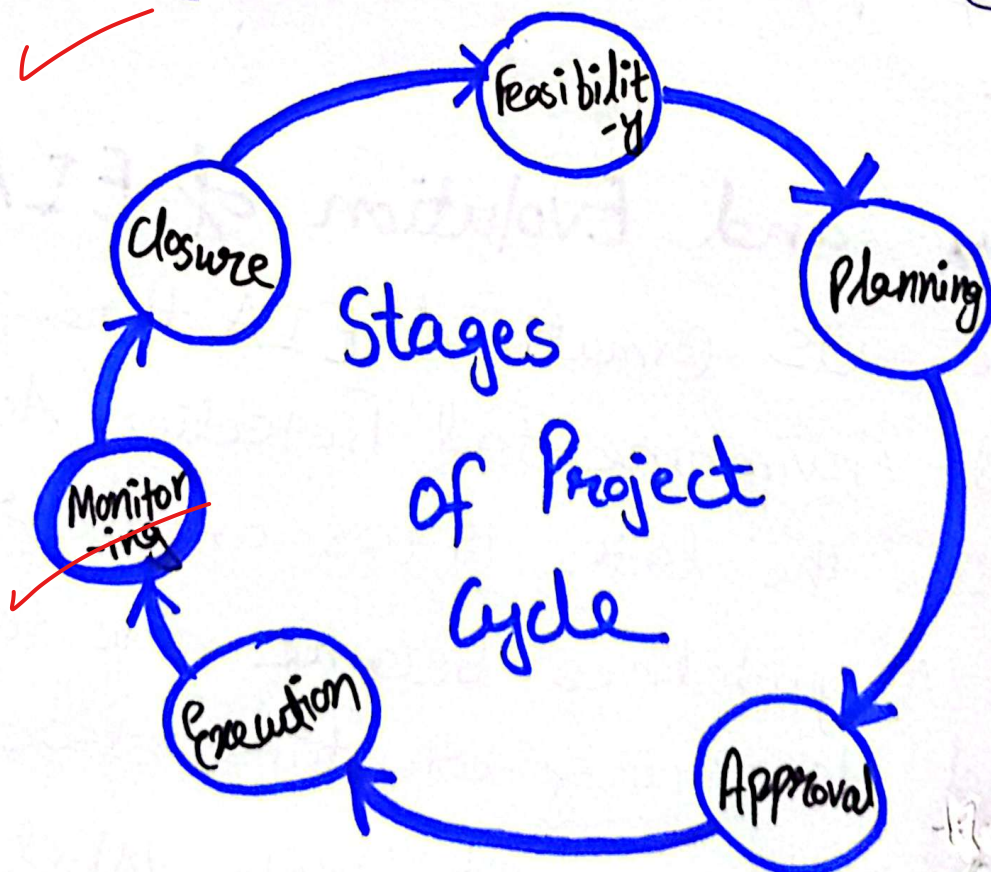


Fig:- Stages of Project Cycle

Environmental Impact Assessment (EIA) should be initiated at the early stages of project cycle specifically **during pre-feasibility stages**. Because during pre-feasibility stages project alternatives are still open so environmental concerns can be integrated into Project design, site selection and technology choice. When EIA is delayed until project approval and execution stage, this assessment becomes quite ineffective because key decisions about project have ^{already} been locked in.

3. Difference between EIA and IEE

Initial Environmental Examination (IEE)

✓ ^{ce} Initial Environmental Examination (IEE) is a preliminary assessment carried out at the early stage of project to determine environmental impacts of the project and decide either these impacts are minor and manageable or a more detailed EIA is required. ”

Expounding the difference between EIA and IEE

i- Purpose of EIA and IEE

The main purpose of IEE is to assess whether the project is likely to have significant environmental impacts. On the other hand, EIA is carried out only when the project is likely to have adverse impacts. Its main purpose is to evaluate potential environmental and socio-economic impacts of the project while integrating mitigation strategies to reduce environmental damage and ensure public health protection.

ii- Scope of EIA and IEE

The scope of IEE is limited because it is a pre-liminary assessment that covers projects with limited environmental impacts. On the other hand, EIA covers projects with wide-ranging environmental impacts.

iii- level of details covered by IEE and EIA

IEE provides limited details of the project because it is merely an initial ~~assessment~~ used for projects with ~~minor~~ impacts. On the other hand, EIA includes complex, comprehensive and in-depth details of the project ^{conditions} such as baseline environmental ~~considerations~~, mitigation strategies and monitoring plans.

iv- Outcome of IEE and EIA

IEE either directly approves the project or ~~recommends~~ EIA when impacts of project are significant. On the other hand, the outcome of EIA is environmental impact assessment report or environmental impact assessment statement which guides the decision-makers on project approval, modification or rejection.

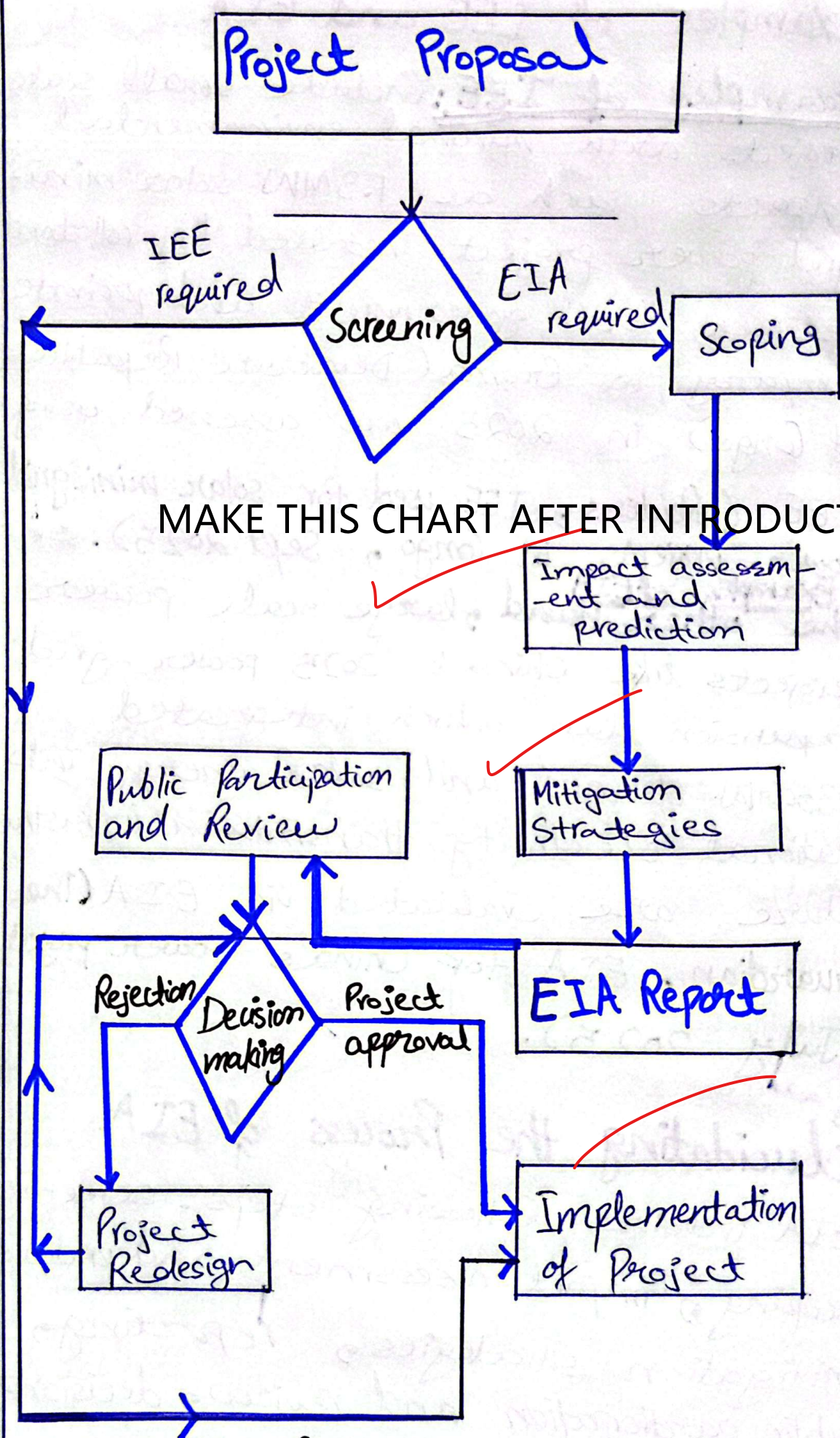
Examples of IEE and EIA

a. Examples of IEE: include small scale projects with minimal environmental impacts such as 1.3MW solar mini-grid power project installed by collaboration between local government and private company in Goma (Democratic Republic of Congo) in 2025 was assessed using IEE (Reuters, IEE used for solar mini-grid power projects in Congo, Sept 2025).

b. Examples of EIA
On the other hand, large scale power projects like China's 2025 power-grid expansion plan which integrated 1350GW of wind and solar energy into national electricity transmission infrastructure are evaluated via EIA (The Guardian, EIA for China's power project, July 2025).

4. Elucidating the Process of EIA

EIA involves following steps: screening, scoping, impact assessment and prediction, mitigation strategies, reporting, public participation and review, decision-making, and monitoring and compliance.



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Fig:- EIA Process

Screening

The main purpose of EIA is to determine whether the project requires IEE or EIA. Small-scale projects with limited environmental impacts require IEE. Whereas large-scale projects with significant impacts require EIA. For instance, a brick earth quarry in Maharashtra occupying 3 hectares ^{land} is evaluated via IEE. On the other, Lloyd's Metals' Surjagarh Iron Ore mine is evaluated via EIA (BBC, EIA for projects of India, March 2025).

ii- Scoping

This step identifies key environmental impacts of the project that are to be evaluated in detail. It determines the extent of the (project) assessment. It sets the boundaries for assessment (geographic, temporal, sectoral). For instance, ^{in UK} during the EIA process of High-speed rail project HS2 (ongoing since 2020) the scoping step involved consultation with local councils and environmental NGOs and local residents.

for identifying key impacts of the project like noise pollution, biodiversity loss and community displacement.

iii. Impact Assessment and Prediction

This step involves evaluating and predicting the potential direct, indirect and cumulative impacts of the project. It includes:

a- **Baseline study:** It collects data on existing environmental conditions of the (pro) location where project is to be implemented such as biodiversity, soil, water and air quality.

b- **Impact identification:**

It is defined as identifying all the potential impacts of the project.

c- **Impact Prediction:**

It refers to predicting the magnitude, extent and duration of the identified impacts.

iv. Mitigation Measures

This step involves implementing mitigation strategies for alleviating the impacts of the project such as installing waste-

water treatment plants and eco-friendly technologies. For instance, in US, a pharmaceutical based plant installed membrane bioreactor in 2024 following an EIA that flagged hazardous active pharmaceutical ingredients (APIs) in its effluents. Its installation reduced contaminants by 85%. (The Bloomberg, Installing Membrane Bioreactor in Pharmaceutical Plants of US, Dec 2024).

v. Reporting

The findings of EIA are compiled in a report known as Environmental Impact Assessment report or environmental impact statement. It is a formalized document summarizing project details, baseline environmental conditions, predicted impacts, mitigation measures and EMP (Environmental Management Plan). EMP (environmental management plan) is a detailed action plan required to implement mitigation strategies.

vi. Public Participation and Review

This step ensures transparency by

allowing affected communities and stakeholders to give their review on the project. For instance, in Kenya local farmers were consulted before approving Alungo Irrigation Scheme (Foreign Policy, EIA of Alungo Irrigation scheme, Jan 2026).

vi. Decision-making

On the basis of EIA report and public input, the competent authority decides whether to approve the project, approve the project with conditions or reject the project.

vii. Monitoring and Compliance

After project approval, constant monitoring of project is required to ensure mitigation strategies are effectively implemented, such as regular water and air quality tests near an industrial zone.

Conclusion

EIA is an organized process used to evaluate potential environment and

socio-economic impacts of the project before it is undertaken. It reduces environmental damage and improves project efficiency. IEE is a preliminary assessment used for small-scale projects with limited environmental impacts. The screening step of EIA decides whether IEE is required or EIA is required. The process of EIA ensures transparency and public health protection.

DEAR STUDENT YOU HAVE WRITTEN THE WHOLE CHAPTER IN A QUESTION CONCLUDE THE ANSWER ON 8TH PAGE MAX WRITE ONLY WHAT IS ASKED IN THE QUESTION ONLY IN THAT ASKED DIMENSION NOT EVERYTHING WRITTEN IN BOOK 8/20