Application of EIA

Where can we apply EIA?

- According to Barrett and Therivel (1991) an ideal EIA system would
  - Apply to all projects that are expected to have a significant environmental impact and address all impacts that are expected to be significant
  - Compare alternatives to a proposed project (including the possibility of not developing the site), management techniques, and mitigation measures
  - Result in a clear EIA report which conveys the importance of the likely impacts and their specific characteristics to non-experts as well as experts in the field

Key Applications of EIA

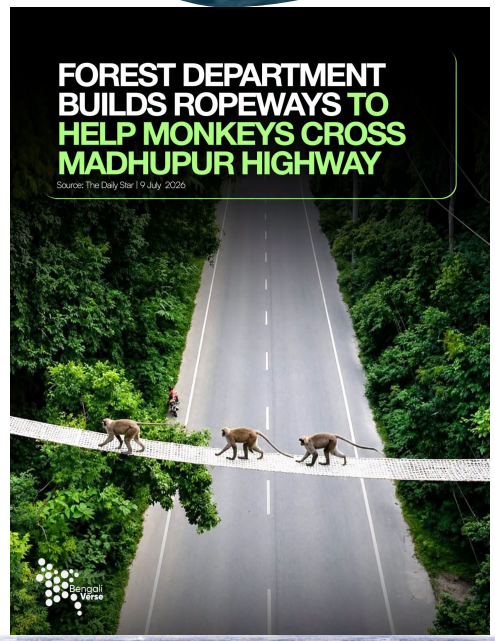
- Infrastructure Projects
- Energy Development
- Mining & Extractive Industries
- Industrial & Manufacturing Facilities
- Urban Development
- Agriculture & Forestry

Applications



1. **Infrastructure and Connectivity**: In large-scale engineering, EIA is applied to manage **physical footprint** and **long-term ecological barriers**.

- Linear Projects (Roads & Railways): Focuses on habitat fragmentation. Application involves designing Eco-ducts/overpass or wildlife underpasses.
- Aviation & Maritime: Application focuses on noise contour mapping for airports and dredging impacts for ports, specifically at marine turbidity and coral reef health.

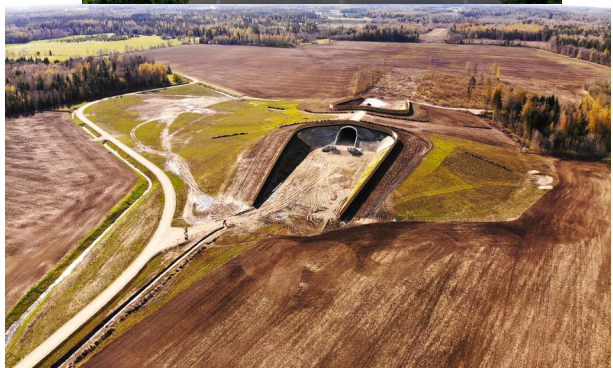


Example:

a. Padma Bridge Project: EIA assessed impacts on river hydrology, fisheries, and resettlement

b. Rail Baltica route through Estonia

c. Madhupur National Park Highway Expansion Project in Tangail



Applications

2. **Energy Sector**: Transition and Extraction: The application differs significantly between "Green" and "Brown" energy.

- Renewable Energy (Wind/Solar): Focuses on visual impact assessments, "flicker" effects of turbines, and the disruption of migratory bird paths.
- Hydroelectric Dams: This is one of the most complex applications. It involves modeling upstream flooding vs. downstream siltation, and the socio-economic application of "resettlement and rehabilitation" (R&R) plans.
- Extractive Industries (Mining/Oil): Focuses on Acid Mine Drainage (AMD) and long-term land reclamation.

Example: Banshkhali Coal Power Plant EIA highlighted risks of air pollution, coastal ecosystem damage, and displacement.

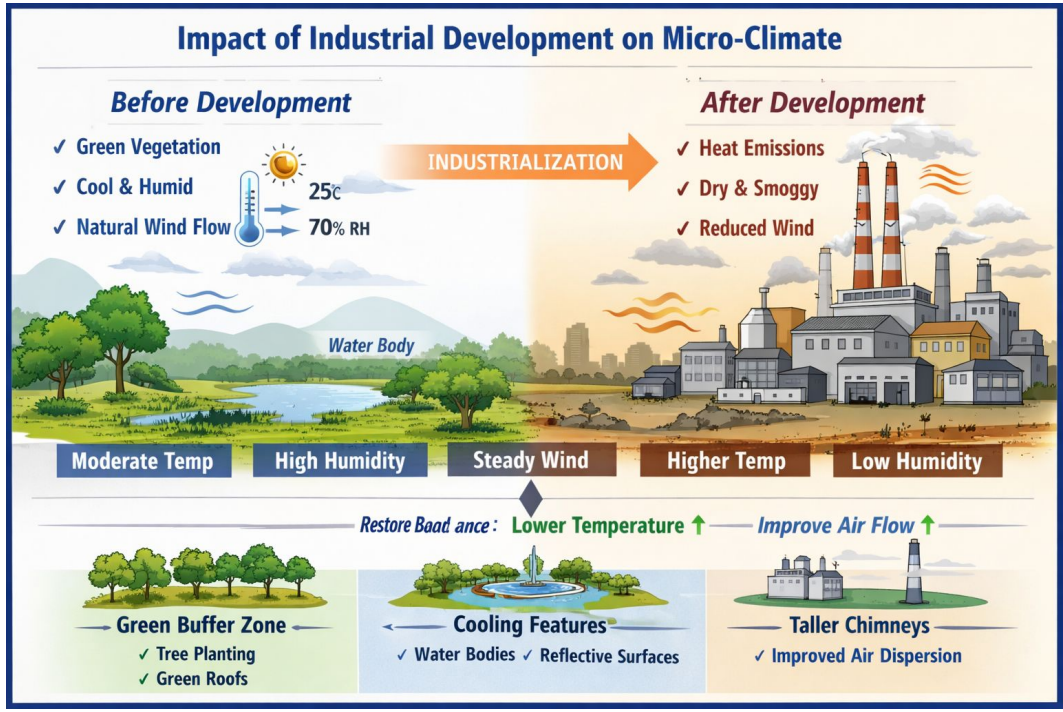


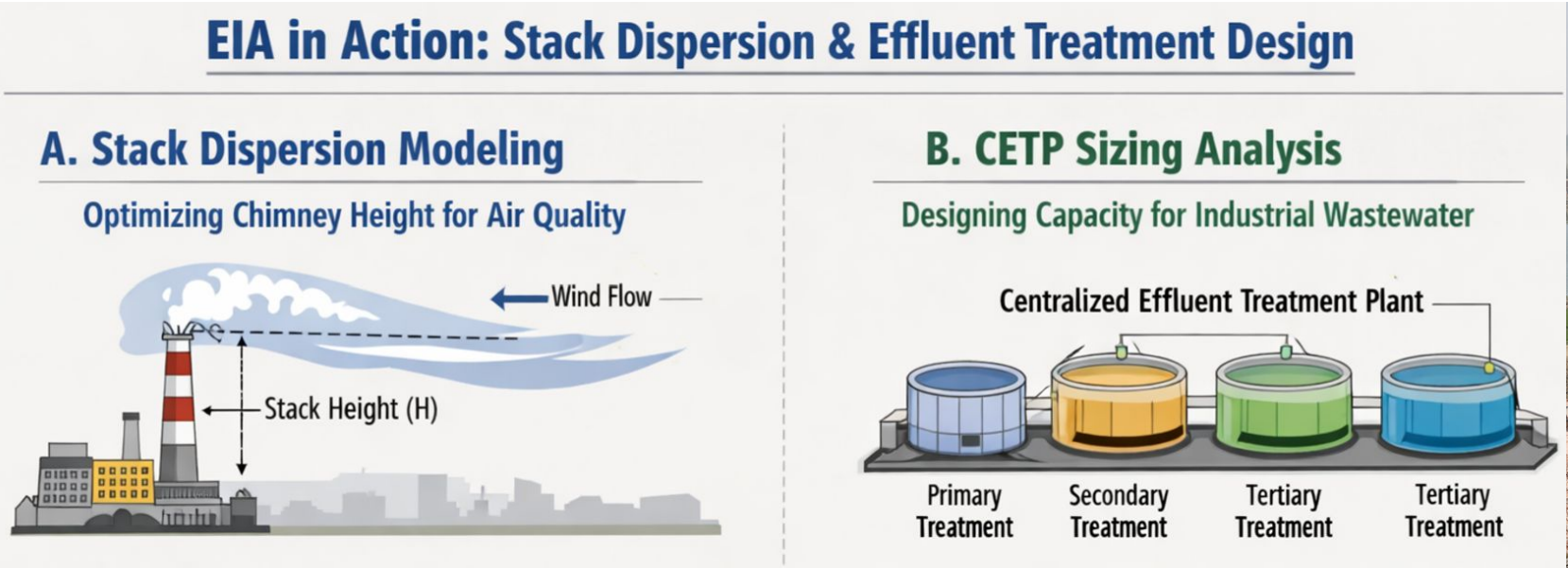


3. **Industrial & Urban Applications**:

- Manufacturing Clusters: Application shifts towards Point Source Pollution. EIA is used to determine the height of stacks (chimneys) and the capacity of Centralized Effluent Treatment Plants.
- Urban Mega-projects: Applied to high-rise developments or "Smart Cities." The focus is on Micro-climate changes, traffic load modeling, and integrated waste management systems.

Example: Brick Field: Konabari brick field area is the source of air pollution.







4. **Transboundary Applications**: EIA is applied internationally when a project in one country affects another.

- River Systems: If a country builds a dam on an international river (e.g., the Nile or Mekong), EIA is used as a diplomatic tool to assess downstream water security.
- Transboundary Pollution: Applied in regions like the EU to manage air pollution that crosses borders (acid rain).

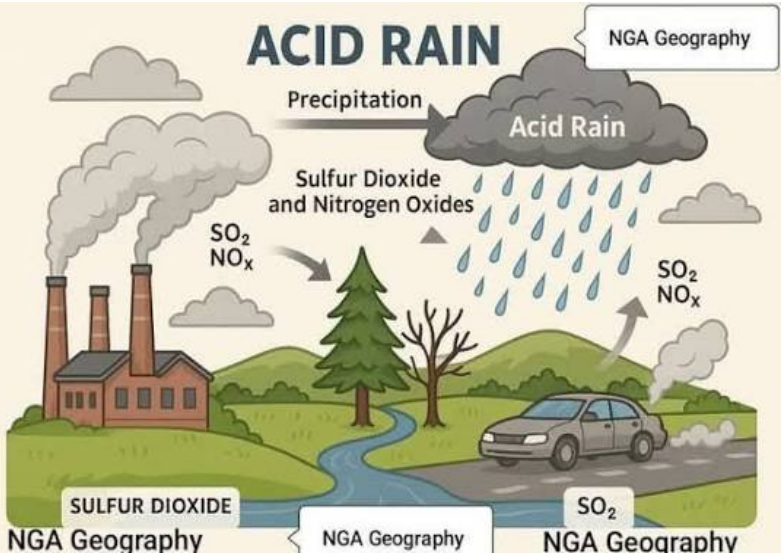
Example: Tipaimukh Dam: Bangladesh raised concerns via EIA reviews about flooding, agriculture loss, and fishery decline.



Grand Ethiopian Renaissance Dam



Tipaimukh Dam



5. **The "No-Go" Decision**: The ultimate application of an EIA is the Alternatives Analysis.

- The "Zero Option": The EIA is applied to see what happens if the project is not built.
- Site Selection: Applying EIA to compare Site A vs. Site B. If Site A contains a "Critical Habitat" the application of EIA results in a mandatory relocation of the project site.

Example: Rampal Coal Power Plant near Sundarbans: ???



Example: Application in Wildlife Management: Elephant Corridors



The rail line passes through three protected forest areas (Chunati, Fasiakhali,) which are active Asian Elephant corridors.

Exercise: Find out the application area of EIA