Course Code: CE 447
Course Title: Climate change and sustainable development
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LECTURE: 11

Lecture plan

- Impacts in energy sector
- EIA methods
- Checklist for EIA
- Matrices, flowchart of EIA

Impacts in Energy Sector

- Non renewable
  - Coal
  - Natural Gas
  - Nuclear Power
  - Oil
- Renewable
  - Wind
  - Solar
  - Biomass
  - Hydropower
  - Tidal
  - Geothermal
  - Biofuel
  - Waste

Nuclear

- Mining hazard of radioactive material
- Accidental release of radioactive materials
- Dose not emit SO_X, NO_X, CO_X
- Nuclear waste disposal

EIA Methods

What is mean by EIA Methods?

- Approached developed to identify, predict and value changes of an action
- Mechanisms by which information is collected and organized , evaluated and presented
- Concerned with predicting the future states of environmental parameters and may involve mathematical modeling

EIA Methods

Why do we need EIA methods?

- The administrative procedures of EIA Varies from country to country
- Provides uniform standard
-EIA methodologies ensure that the best possible information from EIA procedures is available to decision makers and the public i.e.
- Identify the main environmental issues and aspects
- Identify significant positive and negative impacts
- Evaluate the overall environmental impact of the scheme to enable comparison between alternative proposals

EIA methods

Write some Methods of EIA?

- **Some common methods**
- Checklists
- EES
- Matrices
- Network
- Cost Benefit Analysis
- SMW
- Overlays/GIS

Checklists

Write short note on checklist method of EIA?

- Standard lists of the types of impacts associated with a particular type of project
- Primarily organizing information or ensuring that no potential impact is overlooked.
- Should enable identification of impacts on
  - Soil
  - Water
  - Air
  - Flora
  - Fauna
  - Resources
  - Recreation
  - cultural

Checklists

- Types of checklists
  - **Simple checklists:** a list of environmental parameters with no guidelines on how they are to be measured and interpreted
  - **Descriptive checklist:** includes an identification of environmental parameters and guidelines on how to measure data on particular parameters.
  - **Scaling checklist:** similar to a descriptive checklist, but with additional information on subjective scaling of the parameters
  - **Questionnaire:** three types of answer, 'ye's, 'no', 'may be'

Checklists

What are the advantages and disadvantages of checklist method of EIA?

- **Advantages**
  - can structure initial stages of assessment
  - help to ensure that vital factors are not neglected
  - are easy to apply, particularly by non-experts

- **Disadvantages**
  - They are too general or incomplete;
  - They do not illustrate interactions between effects;
  - The identification of effects is qualitative and subjective
  - pose danger of **"tunnel vision"**

Matrices

- Matrix methods **identify interactions** between various project actions and environmental parameters and components
- Allow for the identification **of cause-effect relationships**
- Can address impact **severity and significance**
- **Qualitative or quantitative** estimates can be used
- A matrix of potential interactions is produced by combining these two lists (placing one on the vertical axis and the other on the horizontal axis)

Environmental components	Project Activities							
	Plant Construction	Pesticide and Fertilizer Use	Raw materials transport	Water Intake	Solid Waste	Effluent Discharge	Emissions	Employment
Surface Water Quality		X			X	X		X
Surface Water Hydrology				X				
Air Quality			X				X	
Fisheries		X				X		
Terrestrial Wildlife Habitat	X							
Terrestrial Wildlife	X							
Land Use Pattern								
Highways/Railways			X					
Water Supply						X		
Agriculture		X				X		X
Housing								
Health					X	X	X	
Socioeconomic								X

Networks/Flowcharts

Flowcharts and impacts trees, including network diagrams-

- Enable the analysis of the inter-relationship between causes and effects
- Enables the analysis of indirect and cumulative impacts.