

**LECTURE NOTES ON
UNIT-II
EIA METHODOLOGIES**

Process And Framework Of EIA

The United Nations Conference on Human Environment held at Stockholm in June, 1972 urged developing countries to take appropriate steps for the protection and improvement of human environment. Long term and sustainable development can only be achieved through sound environmental management. Needs methodologies, analytical tools and conceptual frameworks to integrate environmental concerns in development plans, programmes and projects. National and international funding agencies are eager to identify and adopt methodologies to improve project financing making projects more multidisciplinary, less sectoral, and more responsive to ecological constraints and parameters.

Though the bad effects of development activities are identified it may not always be possible to make a quantitative evaluation in terms of money of certain environmental effects or the cost of long term damage.

Environmental Impact Assessment (EIA) is one of the most important tools to assess the viability of any development project from all points of view including cost, environment and sustainable development/. The preparation of EIA is closely related to cost benefit analysis. EIA has to specially deal effectively with the following.

- i. Risk evaluation in terms of long-term consequences, with special reference to events with high negative effects like desertification, rehabilitation, deforestation etc.
- ii. Comparative weighing with the present and future costs and benefits.

DEFINITION AND FRAME WORK OF E I A

Environmental impact analysis (EIA) is a study of the effects of a proposed action on the environment. Environment in this context will include all aspects of the natural and human environment. Environment is made up of both biophysical and socio-economic elements. Thus depending upon the scale of the proposed action, EIA may include studies of air, water, land ecology, sound, weather, flora and fauna, human health, urban migration, economics, resources etc. EIA will seek to establish the condition of physical, biological, social, economic and other parameters before and after a project is undertaken. The type and the number of parameters to be studied in different projects will vary from project to project. Impact means change, either positive or negative from a desirability standpoint. An environmental impact analysis is, therefore, a study of the probable changes in the various socioeconomic and biophysical characteristics of the environment which may result from a proposed or impending action.

For any given project, there can be a number of alternative approaches including a zero option approach, which means not taking up the project at all. Each option will have economic costs and benefits, as well as losses and beneficial environmental impacts. Adverse environmental impacts may be reduced at a higher project cost. Economic benefits to an individual industry may have to be reduced to some environmental cost resulting in social benefit. All feasible alternatives are supposed to be studied in an EIA of any project. EIA should finally determine mix of environmental and economic costs and benefits.

The framework for EIA can thus be summarized as:

1. The study of the effects of a proposed action on the environment.
2. The comparison of various alternatives by which a desired objective may be realized and seeks to identify the one which represents the best combination of economic and environmental costs and benefits.
3. The prediction of changes in environmental quality which would result from the proposed action.

4. An attempt to weigh economic costs and benefits .

5. A decision making tool.

DESCRIPTION OF ENVIRONMENTAL SETTING

Environment in India is made of villages, towns, cities etc; and their surroundings made up of irrigated land, forest land , rivers, hillocks, wastelands, reservoirs etc. In pre-independence days, Indian villages, towns, and cities used to present a peaceful and meaningful life. But with increasing population, industrialization and urbanization, the physical scenario in Indian villages, towns and cities has deteriorated with corruption, improper implementation of rules and regulations and lack of civic sense.

Comfortable housing , sufficient quality of safe drinking water, proper civic amenities like drains, roads, street lights, parks and gardens and other public conveniences have become a rarity. Construction of big dams, and starting of big industries without considering their impact on environment have resulted in rehabilitation of villages, inundation of forests, reduction in flora and fauna, pollution of air, water and land, increase in slums, deforestation, desertification etc. Industrialisation around Bombay and Hyderabad, Bhopal gas tragedy, smog atmosphere in Delhi during winters, load quality of life in Rajasthan and Orissa villages , pollution of Dhal lake in Kashmir are all examples of improper development without caring for the environmental impact.

Before initiating any action like the construction of a dam, or the construction of a long irrigation canal, or a the construction of a big industry, site –specific environmental setting has to be understood properly . In an systematic procedure, information on environmental setting as a quesifiltering mechanism, eliminating consideration of impacts unrelated to the specific site.

NEED OF ENVIRONMENTAL IMPACT ANALYSIS

Development through use of technologies is necessary to improve the standard of living. In view of the fact that development projects are interfering too much with the environment, before any development project can be taken up there should be an analysis of the necessary for the development by comparing the monetary costs and monetary benefits. Of recent, society has become aware of the need for assessing the effect on the environment or it is ecological cost and benefit. Environmental impact analysis involves a combination of the ecological and monetary benefits and coast.

The evaluation of the impact of any development project is a part of many steps to be followed by any development project. Steps to be followed in a project are listed below:

- i. Prepare a statement of the major objectives of the proposed project.
- ii. Analysis the technologic possibilities of achieving the objectives.
- iii. Identify actions to achieve the stated objectives. Alternative plans for achieving the set objectives have to be identified.
- iv. Prepare a report on the condition of the existing environment before the proposed action.
- v. Finalize about principal engineering proposals with analysis of monetary benefit and costs.
- vi. Prepare Environmental impacts analysis of the magnitudes (degree, extensive and importance of impact). The pertinence of each action is reflects by numerical values of magnitude and importance.
- vii. Assess the impacts of the separate actions which comprise the project upon the different environmental factors.

- viii. Summarize and give recommendations including a discussion on the relative merits and rationales of the action plan.

For maintaining clean and healthy environment, the state and central government have a responsibility to protect the environment. Through the department of Environment, Government of India has to formulate and recommend national policies for the improvement of the quality of the environment. Through gathering information, reviewing programme, conducting investigations and by preparing Environmental impact Assessment for different projects the departmental of Environment will keep informs the central Government about environmental status around the country. Environmental Impact Analysis is thud mandatory for all big projects like constructions of major dams. Major industries, mining activity, development of townships etc. The environmental impact statement should include a description of the environmental impact of the proposed action, unavoidable adverse impacts which would result should action take place, possible alternatives and discussion on short term versus long-term advantages of the proposal . It is obligatory to circulate the Environmental impact analysis publicly and consider both the analysis made by experts and publicly response to it when making it is final decision on the proposal. The specific purpose of Environmental impact Assessment , is to influence the decisions to be made for maintaining the environment and its values, for sustainable development. Through the world has gained by industrialization, we are now facing many environmental problems like holes in the ozone layer , global warming , green house effect, acid rains, deforestation etc. Poverty and environmental degradation are the two sides of the same coin and a good approach to development through proper environmental impact analysis will result in better things to happen.

The need for Environmental Impact Analysis can be summarized as:

- i. To identify all environmental factors in the project area which will be influenced by all the activities of the project under consideration.
- ii. To identify alternative approaches including no action plan, their levels of impacts and economic considerations.
- iii. To describe the environmental setting, to collect data and the factors associated with the proposed action. Methods for impact analysis can aid in identifying data needs and planning field studies.
- iv. To identify the tools and methodologies to be adopted in the Environmental impact Analysis.
- v. To evaluate control measures.
- vi. To provide information and encourage public participation in evaluating the impact of the proposed project

CRITERIA FOR CHOOSING A METODOLOGY:

There are number of methodologies evolved by different people. For preparing Environmental Impact Analysis. Depending upon the specific needs of the user and the type of project being undertaken, one particular methodology may be more useful than the other. To select the most appropriate methodology, the following criteria have to be considered.

- i. What is the objective of the proposed E.I.A?

Is the analysis primarily a decision or an information document?. A decision document is impartment for determining the best course of action , and required emphasis on identification of key issues, quantification and direct comparison

of alternative. On the other hand, an information document primarily. On the other hand, an information document primarily revolves implications of the selected choices and required a more comprehensive analysis and concentrations on interpreting the significance of a broad spectrum of possible impacts.

- ii. What are the available resources like money, time, skill, data and computer facilities? Comprehensive E.I.A. require more of everything.
- iii. Is the person in charge of preparing E.I.A. familiar with the type of action contemplated and the area in which the project has to come up? Grated familiarity will improve the quality of E.I.A.
- iv. How big are the issues being dealt with? All other things being equal, the bigger the issue, the greater the need to be explicit, to quantify and to identify key issues. Arbitrary comparison of one type of impact, say for example on environment, with another type of impact, say like economic, and become less appropriate.