UNIT-2

2.5 Different Methodologies of E.I.A

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Any Environmental impact Analysis methodology should effectively deal with

a.   impact identification, impact measurement, impact interpretation

b.   impact communication to information users

E.I. A, methodologies have not yet been standardized and are not yet well documented. From the available literature, it can be understood that six methods are referred frequently. Based upon the way impacts are identified, the six methods are named as

i.   Ad Hoc method

ii.   Overlays methods

iii.   Checklist method

iv.   Network method

v.   Method of Matrix

vi.   Combination –computer aided method

i. Checklist Method:

A comprehensive listing of environmental parameters which are related to a particulartype of action, is done in checklist method. This is a very popular

method in EIA. Studies. Check list method helps order thought, aids in data gathering and presentation and acts against the omission of possible impacts. Four broad categories of check lists are in vogue, viz.

i..   Simple check lists   ii. Descriptive checklists.

Simple checklists are a simple list of environmental parameters without any reference to as to how environmental parameter data are to be measured and interpreted. Descriptive checklists if\identify environmental parameters and give guidelines on how parameters data are to be measured. But no numerical ranking isuse in evaluating the level of impact. Adkins and Broke
 used scaling checklists, involving the scaling of impacts on a relative basis from minus five to plus five. Scaling –weighting checklists represent scaling checklists with information provides as to subjective evaluation of each parameter with respect to every other parameter. Scaling weighting checklists employ both magnitude and importance factor.

Magnitude is considered to be a measure of the degree or severity of an impact andis assessed after the analysis of the impact . Importance is defined as the baseline level significance of an impact and is used to weight the impact appropriately as determined through the subjective judgment of a scientific team, determine prior toimpact analysis. Table given below gives an examples of scaling –weighting checklists . the lists has to be very comprehensive to include all environmental parameters which will be effected by a project.

TABLE

An example checklist for a proposed industry in a study area Sl.No

Environmental parameter in the Rating or weight Possible score on Environmental descending order of important impact

1	Air pollution	High	10
		Medium	5
		Low	0
2	Water pollution	High	10
		Medium	5
		Low	0
3	Rehabilitation	High	10
		Medium	5
		Low	0

The major feature of the checklist system is that environmental impact is expressedin commensurate units. The steps involved in the development of commensurate units include transformation of parameter estimates into an environmental quality scale, assignment of importance weights to the individual parameter, and ht multiplication of scales value any importance value to obtain environmental impact units. One of the important environmental quality to assess the status of river is the concentration of dissolved oxygen, which may vary from 0 to 9 mg/l. Environmental quality scale can be identified for concentration of settable duct in ambient air, leaching of pollutants into ground water etc. For any given project a panel of engineers can prepare a detailed list of environmental parameters which may be allocated by the project in the project are m, assign environmental quality indices and prepare values function graphs with environmental parameters

like dissolved oxygen In river water, ambient dust fall concentration, concentration of dissolved solids in ground water, level of noise pollution, quality of solids waters etc. on the abscissa and environmental quality scale on the ordinate.

iv. **Networks Method:**

A project is related to its potential impact through a cause –condition-effect network. Through this method is not necessarily a full methodology, it will useful in identifying the impacts. Projects activities are related to first order condition charges, which in turn cause second and third order condition charges, leading finally to effects. Innetwork diagrams , the impact of one environmental factor on other environmental or socio-economic factors and other similar interactions are identified.

Subsequently, network diagrams will acts as a guide for impact identification and presentation of results Odom (5) who wrote a book on Ecology used network diagram to depict the concept of energy flow between different components of oceans, rivers, forests, grasslands etc. Net work methodology was first used to identify potential commercial, residential and transportation use of sea coasts.

V. Method of Matrices:

Matrix method aims at relating projects activities to their environmental impacts. After the identification of project activities and their environmental impacts, their interdisciplinary team of specialists should assess the magnitude an importance. The matrix method is a convent method of visual display of both total project activities and their impacts. The Matrix method comprising

of a series of rows depicting projectactivities and a series of columns depicting environmental impacts, has the ability for factor expansion , depending upon the project analysis.

The methods of assigning weights to the interactions can take various forms including the assignment of three levels of impact viz :major , minor, intermediate, or assignment of negative as well as positive scores to indicate the adverse or beneficial nature of the impact. Scales have also been used to describes the possibilities of impact occurrence as well as the extent of potential impact reversibility.

The most effective way to use the matrix is to check each action which is likely to be involved significantly in the proposed development project. Each of the action thus checked is evaluated in terms of magnitude of effects on environmental characteristics on the vertical axis, and a slash is placed diagonally from upped to lower left across each block represents significant interaction. After all the boxes which represent possible impact have been marked , the most important ones are evaluated individually. Within each is representing a significant interaction place a number 1 to 10 on the upper , left- hand cornet to indicate the relative magnitude of imp[act (1 is the least impact, 10 is the greatest) in the lower right had corner of the box, place a number 1 to 10 to indicate the relative importance of the impacts (again 1 is the least impact, 10 is the greatest). Magnitude is defined as the degree or the extensiveness of scale of the impact, while importance is a weighting of the degree of significance of the impact. The former can be based on fact, while the later is based on judgment.