PROCESS OF ENVIRONMENTAL IMPACT ASSESSMENT & ITS DISADVANTAGES IN INDIA

Rakesh Chaudhary

1. INTRODUCTION

As a consequence of liberalization and rapid socio-economic development in India, opening of various central/state undertakings and bank offices, there has been tremendous growth of economic activities in the urban centres. This has resulted in a spurt of freight and passenger transport activities. Accordingly, GOI has decided to take up the development of various infrastructure projects.

Environmental Impact Assessment (EIA) is an exercise to be carried out before any infrastructure project is undertaken to ensure that it will not in any way harm the environment on a short term or long term basis. At the time of inception of any infrastructure project, its requires not only the analysis of the need of such a project, the monetary costs and benefits involved but most important, it requires a consideration and detailed assessment of the effect of a proposed development on the environment.

The environment impact process was introduced with the purpose of identifying /evaluating the potential beneficial and adverse impacts of development projects on the environment, taking in to account environmental, social, cultural and aesthetic considerations. All of these considerations are critical to determine the viability of a project and to decide if a project should be granted environmental clearance.

An EIA concentrate on problems, conflicts and natural resource constraints which might affect the viability of a project. It also predicts how the project could harm to people, their homeland, their livelihoods, and the other nearby developmental activities. After predicting potential impacts, the EIA identifies measures to minimize the impacts and suggests ways to improve the project viability.

The aim of an EIA is to ensure that potential impacts are identified and addressed at an early stage in the projects planning and design. To achieve this aim, the assessment finding are communicated to all the relevant groups who will make decisions about the proposed projects, the project developers and their investors as well as regulators , planners and the politicians. Having read the conclusions of an environmental impact assessment, project planners and engineers can shape the project so that its benefits can be achieved and sustained without causing adverse impacts.

In recent years, major projects have encountered serious difficulties because insufficient account has been taken of their relationship with the surrounding environment. Some projects have been

found to be unsustainable because of resource depletion. Others have been abandoned because of public opposition, financially encumbered by unforeseen costs, held liable for damages to natural resources and even been
the cause of disastrous accidents. Given this experience, it is very risky to undertake finance, or approved major project without first taking in to account its environmental consequences and then sitting and designing the project so as to minimize adverse impacts.

Due to public pressure on the government to accept accountability for the activities of its agencies the National Environmental Policy Act (NEPA) was formed in USA during 1970. This was the basis for the development of a mechanism which came to be known as Environmental Impact Assessment (EIA).

KEYWORDS- GOI, NEPA, EIA, EMP. MoEF

2. THE EIA PROCESSIN INDIA

The role for EIA was formally recognized at the earth summit held at Rio conference in 1992. Principle17 of the Rio declaration states that –

"*EIA as a national instrument shall be undertaken for the proposed activities that are likely to have significant adverse impact on the environment and are subject to a decision of a competent national authority"*.

In India many of the developmental projects till as recently as the 1980s were implemented with very little or no environmental concerns. The environmental issues began receiving attention when a national committee on environmental planning and coordination was set up under the 4th five year plan (1969-1978). Till 1980, the subjects of environment and forests were the concern of the Dept of Science and Technology and Ministry of Agriculture respectively.

Later, the issues were formally attended by the Dept of Environment which was established in 1980. This was then upgraded to the Ministry of Environment & Forest in 1985. In 1980, clearance of large projects from the environmental angle became an administrative requirement to the extent that the planning commission and the central investment board sought proof of such clearance before according financial sanction.

Five year later, the Dept of Environment and Forests, Government of India has issued guidelines for Environmental Assessment of river valley projects. These guidelines require various studies such as impacts on forests and wild life in the submergence zone, water logging potential, upstream and downstream aquatic ecosystems and fisheries, water related diseases, climatic changes and sesmicity.

A major legislative measures for the purpose of environmental clearance was in 1994 when specific notification was issued under section 3 and rule 5 of the environment protection Act , 1986 called the "Environment impact Assessment Notification 1994".

The first step in seeking environmental clearance for a development project is to determine what statutory legislations apply to the particular project. The MOEF has brought out several notifications restricting the development of industries in specified ecologically sensitive areas. In addition there are also draft rules framed for the sitting of industries.

Environmental clearance for development projects can be obtained either at the state level or at the central level depending on certain criteria concerning the characteristics of the project. However (regardless of where the final environmental clearance is obtained from), for most projects the consent must first be taken from the state pollution control board or pollution control committees in the case of union territories.

3. RESPONSIBILITY OF PREPARATION OF EIA STATEMENT

The project proponent is responsible for the preparation of the EIA statement, with the help of external consultant or institution.

4. THE IMPACT ASSESSEMENT AGENCY

The MOEF is the agency for environmental clearance. If necessary, it may consult a committee of experts with a composition specified in schedule III of notification.

5. TIMING OF EIA

Ideally EIA should provide information to decision makers at early stage of the project planning cycle. It should be initiated as early as possible before the commencement of projects. If the projects secure approval, EIA should include a provision to cover the audit of the project.

6. COST

The amount allocated and spent for preparation of EIA by the project proponents are usually abysmally low compared to the overall project costs (often less than 1% of overall projects).

7. LIST OF PROJECTS REQUIRING ENVIRONMENTAL CLEARANCE FROM THE CENTRALGOVERNMENT

- Nuclear Power and related projects such as Heavy Water Plants, nuclear fuel complex, Rare Earths.
- River Valley projects including hydel power, major Irrigation & their combination including flood control.
- Ports, Harbours, Airports (except minor ports and harbours).

- Petroleum Refineries including crude and product pipelines.
- Chemical Fertilizers (Nitrogenous and Phosphatic other than single superphosphate).
- Pesticides (Technical).
- Petrochemical complexes (Both Olefinic and Aromatic) and Petro-chemical intermediates such asDMT, Caprolactam, LAB etc. and production of basic plastics such as LLDPE, HDPE, PP, PVC.
- Bulk drugs and pharmaceuticals.
- Exploration for oil and gas and their production, transportation and storage.
- Synthetic Rubber.
- Asbestos and Asbestos products.
- Hydrocyanic acid and its derivatives.
  (a) Primary metallurgical industries (such as production of Iron and Steel, Aluminium, Copper, Zinc, Lead and Ferro Alloys).
  (b) Electric arc furnaces (Mini Steel Plants).
- Chlor alkali industry.
- Integrated paint complex including manufacture of resins and basic raw materials required in the manufacture of paints.
- Viscose Staple fibre and filament yarn.
- Storage batteries integrated with manufacture of oxides of lead and lead antimony alloys.
- All tourism projects between 200m—500 metre of High Water Line and at locations with an elevation of more than 1000 metre with investment of more than Rs.5 crores.
- Thermal Power Plants.
- Mining projects *(major minerals)* with leases more than 5 hectares.
- Highway Projects **except projects relating to improvement work including widening and strengthening of roads with marginal land acquisition along the existing alignments provided it does not pass through ecologically sensitive areas such as National Parks, Sanctuaries, Tiger Reserves, Reserve Forests**
- Tarred Roads in the Himalayas and or Forest areas.
- Distilleries.
- Raw Skins and Hides
- Pulp, paper and newsprint.
- Dyes.
- Cement.
- Foundries (individual)
- Electroplating
- Meta amino phenol

8. PROCESS

There are two 'tiers' of assessment which should be applied to the project before proceeding with a fullscale EIA, Screening and preliminary assessment. Where these first tiers of assessment are a regulatory requirement, the developer normally does the work and submits the results to the regulatory agency. The agency may then decide that either there is nothing to be concerned about or the evaluation should proceed to the next tier.

The most important step in the process of obtaining environmental clearance under the EIA notification is for the project proponent to conduct an environmental impact assessment of the project. For this purpose the project proponent engages an environmental consultant to prepare an EIA report. The EIA report must be prepared by incorporation of data during all the four seasons of the year. Such an EIA is termed a "**Comprehensive EIA**". However, there is provision for a single season collection of data, but this should not be done during the monsoon season. Such an EIA reports is termed a "**Rapid EIA**". There are two tiers of assessment which should be applied to the project before proceeding with a full scale EIA – Screening and Preliminary Assessment. Wherever these first tiers of assessment are a regulatory requirement, the developer normally does the work and submits the results to the regulatory agency. The

agency may then decide whether there is anything to be concerned about or whether the evaluation should proceed to the next tier.

9. BEFORE STARTING THE EIASCREENING:

The screening is the first and simplest tier in project evaluation. Screening helps to clear those types of projects, which from past experience are not likely to cause significant environmental problems. The activity may take one of the following several forms:

- Measurements using simple criteria such as size or location.
- Comparing the proposal with list of projects rarely needing an EIA (e.g. schools) or definitely needing one (e.g. coal mines).
- Estimating general impacts (e.g. increased in infrastructure needed) and comparing these impacts against set thresholds.
- Doing complex analyses, but using readily available data.

DISADVANTAGES IN THE INDIAN SYSTEM:

1- Even though some of the industrial set ups do not require EIA as per the statutory norms, they might involve certain technological processes which could be harmful to the environment, as a result of which such enlisted industries could have potential impacts on the environment and on public health.

2- Exempting industries from the EIA requirements based on the investment value of specific projects is not acceptable. There are no specific studies conducted till now which demonstrate that environmental impacts are always inconsequential for projects under a given value. It is a well-established fact that the small scale industries are contributing more pollution with respect to the major industry.

10. PRELIMINARY ASSESSMENT:

If screening does not clear a project, the developer may be required to undertake a preliminary Assessment. This involves sufficient research, review of available data and expert advice in order to **identify the key impacts** of the project on the local environment, **predict the extent of the impacts** and briefly **evaluate their importance** to decision makers. The preliminary assessment can be used to assist early project planning (for instance, to narrow the discussion of possible sites) and it can serve as an early warning to the serious environmental problems that the project may cause. It is in the developer's interest to do a preliminary assessment since, in practice; this step can clear projects of the need for a full EIA.

11. FORMATION OF AN EIA TEAM

If after reviewing a preliminary assessment the competent authority deems that a full EIA is needed, the next step for the project developer is the preparation of the EIA report. This entails

- Commissioning and briefing an independent co-coordinator and expert study team.
- Identifying the key decision makers who will plan, finance, permit and control the proposed project, so as to characterize the audience for the EIA.
- Researching laws and regulations that will affect these decisions.
- Making contact with each of various decision makers.
- Determining how and when the EIAs finding will be communicated.

DISADVANTGES IN THE INDIAN SYSTEM:

It is being found that the team formed for conducting EIA studies is lacking the expertise in various fields such as Anthropologists and Social Scientists (to study the social impact of the project) or even wild life experts.

SCOPING: The first task of the EIA study team is scoping the EIA. The aim of scoping is to ensure that the study address all the issues of importance to the decision makers. First of all the team's outlook is broadened by the discussions (with the project proponents , decision makers, the regulatory agency, scientific institutions , local community representative and others) to include all the possible issues and concerns raises by various groups. Then the study team selects primary impacts for the EIA to focus upon depending on the basis of magnitude, geographical extent, significance to decision makers or because the area is special locally (e.g. soil erosion, the presence of an endangered species, or a nearby historical site) or is an eco-sensitive area.

DISADVANTGES IN THE INDIAN SYSTEM:

- There is a lack of exhaustive ecological and socio-economic indicators for impact assessment.
- Public comments are not taken into account at the early stage, which often leads to conflict at the later stage of project clearance.

MAIN EIA: After "scoping" the main EIA begins. The EIA attempts to answer five questions basically:

- What will happen as a result of the project?
- What will be the extent of the changes?
- Do the changes matter?
- What can be done about them?
- How can decision makers be informed of what needs to be done?

The EIA becomes a cyclic process of asking and further asking the first four questions until decision makers can be offered workable solutions.

IDENTIFICATION: Identification means the answer to the first question, i.e. "what will happen as result of the project?" If a preliminary assessment has been done it will have broadly reviewed the projects effect, also scoping will have focused the study on the most important issues for decision makers. Taking these findings in to account the full EIA study now formally identifies those impacts which should be assessed in detail. This identification phase of the study may use these or other methods

- Compile a list of key impacts (e.g. changes in air quality, noise levels, wild life habitats, species diversity, landscape views, social and cultural systems, settlement patterns and employment levels from other EIA s for similar projects)
- Name all the projects sources of impacts (e.g. smoke emissions, water consumption, construction jobs) using checklists of questionnaires, then list possible receptors in the environment (e.g. crops, communities using same water for drinking, migrant of labour) by surveying the existing environment and consulting with interested parties.
- Identify impacts themselves through the use of checklist, matrices, networks, overlays, models and simulations.

DISADVANTAGES IN THE INDIAN SYSTEM:

- There is always a lack of reliable data sources.
- The secondary data is also not reliable.
- The data collectors do not pay respect to the indigenous knowledge of local people.
- The credibility of the primary data collected by the data collectors is doubtful.

.

PREDICTION: The next step called predictions answers the EIA's second question: "what will be the extent of the changes". As far as is practicable, prediction scientifically characterizes the impacts causes and effects and its secondary and synergetic consequences for the environment and the local community. Prediction follows an impact within a single environmental parameter (e.g. toxic liquid effluents) in to its subsequent effects in many disciplines (e.g. reduced water quality, adverse impacts on fisheries, economic effects on fishing villages, and resulting socio-cultural changes). Prediction draws on physical, biological, socioeconomic and anthropological data techniques .In quantifying impacts, it may employ mathematical models, physical models, socio cultural models, economic models, experiments or expert judgments.

All prediction techniques by their nature involve some degree of uncertainty. So along with each attempt to quantify an impact, the study team should also quantify the predictions uncertainty in terms of probabilities or margins of error.

DISADVANTAGES IN THE INDIAN SYSTEM:

- The detail method used for the prediction and evaluation of the project is not mentioned in the report. Limited explanations are given both to quantitative estimation of magnitude of impact and to the assumptions and judgments used in the evaluation of impacts.
- The limited coverage of scoping is confined mainly to direct impacts.

EVALUATION: The third question addressed by the EIA – do the changes matter is answered in the next step. Evaluation is so called because it evaluates the predicated adverse impacts to determine whether they are significant enough to warrant mitigation. Thus judgment of significance can be based on one or more of the followings.

- Comparison with laws, regulations or accepted standards.
- Consultation with the relevant decision makers.
- Reference to pre-set criteria such as protected sites features of species.
- Acceptability to the local community or the general public.

MITIGATION: In this phase the study team formally analyses mitigation. A wide range of measures are proposed to prevent, reduce, remedy or compensate for each of the adverse impacts evaluated as significant. Possible mitigation measures include:

- Changing project sites, routes, processes, raw materials, operating methods, disposal methods, disposal routes or locations, timing or engineering designs.
- Introducing pollution controls, waste treatment monitoring, phased implementation, landscaping, personal training, special social services or public education.
- Offering (as compensation) restoration of damaged resources, money to affected persons ,concessions on other issues, or off site program to enhance some other aspects of the environment or quality of life for the community.

All mitigation measures cost something and this cost must be quantified too. These various measures are then compared, trade-offs between alternative measures are weighed, and the EIA study team proposes one or more action plans, usually combining a number of measures. The action plan may include technical control measures, an integrated management scheme (for a major project) monitoring, contingency plans,
Operating practices, project scheduling, or even joint management (with affected groups). The study team should explicitly analyze the implications of adopting different alternatives, to help make the choices clearer for the decision makers.

Several analytical techniques are available for this purpose as given below:

- Cost benefit analysis in which all quantifiable factors are converted to monetary values , and actions are assessed for their effect on project costs and benefits
- Explaining what course of action would follow from various broad 'value judgments'(e.g. that social impacts are more important than resources)
- A simple matrix of environmental parameters versus mitigation measures, contain brief description of the effects of each measure.
- Pair wise comparisons, whereby the effects of an action are briefly compared with the effects of each of the alternative actions are briefly compared with the effects of each of the alternative actions, one pair at a time.

DISADVANTAGES IN THE INDIAN SYSTEM:

- Details regarding the effectiveness and implementation of mitigation measures are often not provided.
- Often, and more so for strategic industries such as nuclear energy projected, the EMP s are kept confidential for political and administrative reasons
- Emergency preparedness plans are not discussed in sufficient details and the information not disseminated to the communities.

DOCUMENTATION: The last step in the EIA process, which answers the question – how decision makers be informed of what needs to be done? In documenting an EIA, this means identifying the key decisions makers, perceiving the question they will be asking and providing them with straightforward answers formatted for easy interpretation in relation to their decision making (e.g. tables, graphs, summary, points). Successful EIA documentation is more readily produced if the audience and their needs are established at the start of the EIA, and then made to affect how the research is focused and reported. It is the job of the study team's communications expert to make this happen. An EIA report should contains:

- An executive summary of the EIA findings.
- A description of the proposed development projects.
- The major environmental and natural resource issues that needed clarification and elaboration.
- The projects impacts on the environment (in comparison with a base line were identified and predicated.).
- A discussion of options for mitigating adverse impacts and for shaping the project to suit its proposed environment, and an analysis of the tradeoffs involved in choosing between alternative actions.
- An over view of gaps or uncertainties in the information.
- A summary of the EIA for the general public.

Once the EIA reports has been completed, the project proponent needs to submit 20 copies of thecopy of executive summary of the proposed proposal containing the salient features of the

project, the form XII prescribed under water rules, 1975, form I prescribed under Air rules, 1983 and other information or documents to the SPCB for getting the non-clearance certificate (NOC). On receiving the required documents from the project proponents it is the responsibility of the SPCB to conduct the public hearing. After completion of the public hearing the project proponents has to submit to the secretary of MOEF for the environmental clearance

DISADVATANGES IN THE INDIAN SYSTEM:

One of the biggest concerns with the environmental clearance process is related to the quality of EIA report that are being carried out. The reports are generally incomplete and provided with false data. EIA reports ignore several aspects while carrying out assessments and significant information is found to omit. Many EIA report are based on single season data and are not adequate to determine whether environmental clearance should be granted. All this makes the entire exercise contrary to its very intent. As things stand today, it is the responsibility of the project proponent to commission the preparation of the EIA for its project. The EIA is actually funded by an agency or individual whose primary interest is to procure clearance for the project proposed. There is little chance that the final assessment presented is unbiased, even if the consultant may provide an unbiased assessment that is critical of the proposed project. Sometimes it is found that a consultancy which is working in the project area has no specialization in the concerned subject. For example for the preparation of EIA report of the proposed oil exploration in coast of Orissa by the reliance group has been given to the life science Dept of Berhampur university which hasno expertise on the study of turtles and its life cycle. The EIA document in itself is so bulky and technical, which makes it very difficult to decipher so as to aid in the decision making process. There are so many cases of fraudulent EIA studies where erroneous data has been used, same facts used for two totally different places etc. This is due to the lack of a centralized baseline data bank, where such data can be crosschecked. There is no accreditation of EIA consultants, therefore any such consultant with a track record of fraudulent cases cannot be held liable for discrepancies. It is hard to imagine any consultan tafter being paid lakh of rupees, preparing a report for the project proponents, indicating that the project is not viable. In nearly every case, the consultants try to interpret and tailor the information looking for ways and means to provide their clients with a report that gives them their money's worth.

ENVIRONMENTAL APPRAISAL PROCEDURE

The MOEF is the nodal agency for environmental clearance. The environmental division plays a key role, but the forest and wild life divisions are consulted when projects involve diversion of forestland or the alignment of roads and highways along or within the wild life areas. The project proponents of new projects must submit an application to the secretary, ministry of Environment and Forests, New Delhi in the standard Performa specified in the EIA notification. The application should be accompanied by a feasibility/ project report, including:

- 1 Environmental Appraisal questionnaire developed by MOEF.
- 2 Environment Impact Assessment Report.
- 3 Environment Management Plan and disaster Management plan

- 4 Details of public Hearing as in schedule IV of the notification (where ever necessary)
- 5 Rehabilitation plans (where ever necessary)
- 6 Forest clearance certificate (where ever necessary)
- 7 NOC from the state pollution control board (SPCB)

- The application is evaluated and assessed by the Impact Assessment Agency (IAA). The IAA may consult a committee of experts constituted by it or other body authorized by it in this regard, if necessary. The composition of the expert team is described in the box no-2.
- The committee has full right of entry and inspection of the site or factory premises prior to, during or after the commencement of the project .The IAA prepares a set of recommendations based on technical assessment of documents and data, furnished by the project authorities or collected during visits to sites or factories and details of public hearing.
- The assessment shall be completed within 90 days from receipt of documents and data from the project authorities and completion of public hearing and decision conveyed within 30 days thereafter.
- If granted the clearance shall be valid for a period of five years for commencement of the construction or operation of the project.

DISADVANTES IN THE INDIAN SYSTEM:

There are several concerns with reference to the granting of environmental clearance of projects.

Firstly, for projects that require site clearance it is often assumed by project proponents that once site clearance is granted, environmental clearance will follow. As a result, many project proponents begin construction of the project components (like housing colonies, roads), even before the environmental clearance is granted. This is despite the fact that it has been specified in the EIA notification that this should not be done.

At another level, when environmental clearance is granted despite public objection / rejection , the reasons for the same are not conveyed to all those who have sent in written objections and/or attended the public hearing. There are very few ways to get information regarding project clearances. For those with access to the internet, the MOEF website seems to be of some help. However, very often the information on the website is updated much after the decision is taken.

For citizens and communities who do not have access to the internet, this information is not available. The availability of this information immediately after a decision on the clearance is taken is of crucial importance, in case it needs to be challenged before the National Environment Appellate Authority.

The environmental clearance process after the public hearing appears to be a closed door secretive process as far as the public is concerned. In cases of environmental clearance being granted, the

public have no access to the rationale behind which the clearance was given. All that emits from the ministry are the conditions and recommendations based on which clearance is granted which often does not address the whole gamut of concerns and issues raised during public hearing.

PUBLIC HEARING PROCESS IN INDIA

A fully informed public participation has been recognized as an essential element in EIA. However, it was noted that public participation was a difficult exercise particularly if it led to a conflict between government policies and the public. Public hearing is not just an administrative exercise wherein a hearing is conducted to meet the requirements of the legislations. It is a measure to disclose all the relevant information regarding a developmental project to various sections of society, which are either affected by its implementation or have interests in project. In India public hearing of development

projects have been made mandatory for environmental clearance by **the Amendment to the EIA Notification of April 10, 1997** (Box no-3). The salient features of the public hearings notification areas follows:

- **Notice for public hearing:** The SPCB must issue notice for environmental public hearing by publishing it in at least two newspapers circulated in the region around the project. One of the publications must be in the vernacular language of the locality concerned. The date, time and place of public hearing should be mentioned in the newspaper article. The notice must be given at least30 days prior to the public hearing.
- **Involvement of the public:** Written suggestions, views, comments and objection by the public can be handed over to the SPCB within 30 days from the date of publication of the notice. Oral /written suggestions can be made to the SPCB during the public hearing.
- **Who can participate?** The entire affected person, including residents residing in and around the project site or the site of displacement or site of alleged adverse environmental impact. It also includes environmental groups and any association of persons whether incorporated or not, likely to be affected by the project and/or functioning in the field of environment. Persons who own orhave control over the project can also participate.
- **Access to the documents:** The public are entitled to have access to the executive summary containing the salient features of the project, both in English as well as the local language. They are also entitled to the Environmental Impact Assessment Report. These documents can be obtained from the following places:

    - Office of the district collector,
    - District industry Centre.
    - Office of the zila parisad CEO of municipal corporation commissioner /local body.
    - SPCB head office and its concerned regional office.
    - State government department dealing with environment.
    - Public hearing panel and its members: The following persons may include in the

- **panel for the public hearing and Its members:** The followings persons may include in the panel for the public hearing:

  - SPCB representative.
  - District collector/ nominee.
  - State government representative dealing with the project.
  - Representative of concerned department of the state government.
  - Not more than 3 representative of the local bodies like panchayat/ municipality.
  - Not more than 3 senior citizens of the area nominated by the district collector.

Note: According to a Gujarat high court judgment 15 the quorum for a public hearing should be at least half of the member specified i.e. three members. Also, at least the following members should present viz.

  - The officer from the pollution control board.
  - The officer from the Department of Environment and Forest of the state government.
  - One of three citizens nominated by the collector.

Projects exempted from public hearing

Public hearing is not required for the following projects:

  - Small scale industrial undertakings located in

a) Notified or designed industrial areas/ industrial estates.
b) Areas marked for industries under the jurisdiction of industrial development authorities.

  - Widening and strengthening of highways
  - Mining projects (major minerals) with lease areas up to 25 hectare.
  - Units located in export processing zones and special economic zones and
  - Modernization of existing irrigation projects.

Note: off sore exploration activities beyond 10 km from the nearest inhabited village boundaries, Gothans, and ecologically sensitive areas, such as mangroves (minimum of 1000sq.m.), corals, coral reefs , national parks, marine parks, sanctuaries, reserve forests and breeding and spawning grounds offish and other marine life have been proposed by the MOEF to be exempted from the public hearing).

DISADVANTAGES IN THE INDIAN SYSTEM:

A number of projects with significant environmental and social impacts have been excluded from the mandatory public hearing process. There are also concerns on how much value is given to

opinions expressed during the public hearing. Most projects are located in the resource rich tribal and rural areas. Due to the inherent social conditions in such areas, such as lack of literacy and the simple nature of Tribals, people are easily convinced and lured by the prospect of money and jobs. The local environmental and social groups face an uphill task educating the people about the true nature and impacts of the project and getting them to forcefully raise objections and issues of concern. Similarly the affected peoples are informed just few days before the stipulated date of public hearing. In many cases it is found out that the owners of the project employs antisocial peoples to suppress the voices of people during the public hearing. The local administration also supports the projects owner. The SPCB which are responsible for conducting the public hearings are not equipped in terms of manpower or infrastructure. The notification does not prescribe clear and well defined guidelines for conducting the public hearing. The bearing of the expenses involved in conducting the public hearing are not dealt with by the notification. This is another problem with no clear answers. The documents which the public are entitled to are seldom available on time. The notification prescribes a number of places where one can access these documents , but does not stipulated who is responsible for ensuring that the documents are made available at these locations. The mentioned websites are not updated.

The result is that one seldom finds the documents available at the designed locations. In many cases minutes of public hearing or recommendations of the public hearing panels do not reflect the actual proceedings and objections raised. Further the recommendations of the public hearing panel are only advisory and it is not mandatory for the impact assessment agency to even consider these while granting environmental clearance to projects.

SOME OTHER DISADVANTAGES IN THE INDIAN SYSTEM

A-APPLICABILITY OF THE EIA NOTIFICATION:

As it stands today, there are several projects with significant environmental impacts that are exempted from the notification either because they are not listed in schedule1, or their investments are less than what is provided for in the notification. Importantly, several projects located in zones covered by other notifications such as CRZ notification are exempted from the provisions of the EIA notification. Other projects such as defence-related road construction and railway projects are explicitly exempted from the EIA notification altogether. The amendment in EIA notification, 1994 made on 4th July 2005 in gazetteno.s.o.942(E) has provision that any expansion or modernization project of item 1,2,3,19,20,- nuclear, river valley, ports and harbours, thermal power plant and mining projects may obtain temporary working permission of max two years till it gets environmental condition. Box no-4 shows the details of the 12amendments that has been brought up in last 11 years to dilute the EIA notification.

B-MONITORING, COMPLIANCE AND INSTITUTIONAL ARRANGEMENTS

Projects are granted clearances based on certain conditions, which the project authorities need to complywith. These are both related to the construction phase and post construction phase of a project. Forinstance, conditions may be imposed on muck disposal of effluent discharge to be

confined to certain areas and within specified limits. The regional offices of the MOEF are to monitor the compliance of these conditions and prepare the reports. However the local population does not even know of these conditions and are not a part of its monitoring. It is not known if project authorities reflect the true status of compliance in their reports to the MOEF. Access to these compliance reports is only subject to public interest. The lack of access to compliance reports has severe repercussions on the rights of people who were opposed to the project and for whose benefits some conditions may have been laid out for the project to follow. While monitoring compliance with conditions imposed for environmental clearance, it is found that pollution control boards have their own standards, whereas the standards under the EPA, which the MOEF and the regional offices follow, are quite different. Another problem in monitoring is the location of the regional offices and their large jurisdictions, which make it difficult for them to discharge their functions effectively. While the increased threat to the environment is matched by the enactment of an increasing amount of legislation, the responsibilities and capacities of the various agencies, including the regional offices of the MOEF, to monitor compliance has not been appropriately defined and strengthened.

C-CAPACITY BUILDING:

There is an urgent need to build capacities of government agencies, communities, NGOs and the judiciary with regard to the implementation of the existing EIA notification. Even in the instances where the provisions allow for peoples participation or monitoring, the lack of information and capacity are great hindrances in implementation. For instances, the public hearing panel often has no clue on the scope of17their role in environmental clearance process. Judiciary, which is involved in the redressal, is comprised of judges who may not be clued into the environmental issues and their interface with laws. No matter how good the provisions of the law are, their implementation hinges on the capacities of official who are meant to do it.

D-REDRESSAL:

The present redressal mechanism meant exclusively for the challenging environmental clearance is extremely weak and limited in its scope. The National Environmental Appellate Authority has heard only15 cases in the last eight years. The process of seeking redressal from courts requires a fair amount of energy and financial allocation. It is not possible for all those with grievances to take on legal battles against large and powerful project proponents.

RECOMMENDATIONS

- **Independent EIA Authority:** Civil society groups have suggested the need for an independent Environmental Impact Assessment authority headed by a judicial officer and comprising of representatives from communities, peoples group, scientists, sociologists and environmentalists. Such body would be independent of the ministry of environment and forests. The decision of this authority would be binding on the MOEF.

- **Sector wide EIA s needed:** There is a need to conduct policy-level and sector-wide EIAs in the form of strategic impact assessments (for various sectors including mining, power and so on).This is critical to judge the impacts of macro- economic, developmental and other policies, schemes and programmes.
- **Conduct options Assessment:** EIA s should follow only after an options assessment and a least cost plan for a project is done by the state or central government. For this the following steps are of relevance for both public and private sector projects:

a) In case of projects proposed by PSU s and the state/central governments, the options assessment preceding the EIA should provide information on the best strategies to meet the need of the region, be it power, irrigation, employment or some other stated benefit.

b) In case of private sector projects, the project proponent's project justification statement should be accompanied by a mandatory project justification report prepared by the state or central governments. This project justification report would provide information assessing the need for the project and the benefits accruing from it for the state / nation and the people of the area.

c) The options Assessment or project justification reports should also state how the proposed project fixes in to the existing developmental plans of the state or the state or the region.

d) The information should be included in a computation of environmental and social costs, apart from the other projects costs such as technical and financial costs. Based on this, a set of options should be put forth from which the least expensive and least damaging option is selected.

e) The EIA for the projects should follow only after this option is decided.

- **Creation of an information desk:** An information dissemination desk may be assigned within the MOEF which anyone can write to regarding the status of clearance of projects. This desk should be mandated to respond within a maximum of ten days by post/ courier and a maximum of two days by email, to the contact information that has been furnished by the person seeking the information. Since all meetings and discussion are documented as electronic data, the officers should furnish this information regarding the status of clearance, with a record of the discussions in the Expert committee on the projects.

- **Environmental Risk Assessment:** New approaches such as Environmental Risk Assessment which enable more flexible and dynamic assessments of direct and indirect impacts must be explored. As part of this process, recognized Safety and Environmental Auditors must compulsorily meet local populations and submit a detailed report of potential risks due to the project.

- **Issue a complete notification:** The MOEF must issue and maintain on its website at all times a consolidated notification incorporating all the amendments till date. As of now what is available on the MOEF website is the notification updated up to 2003 and copies of subsequent amendments, which are not incorporated within the main text of the

notification. In the absence of this critical document, it is difficult for implementing agencies and stakeholders in general to understand the position of the law.

Following is a set of recommendations towards ensuring applicability of the environmental clearance process to all categories of projects. It can be described in different chapter wise as follows:

Applicability of EIA notification:

- The provisions of the EIA notification, including public hearings should be applicable to all hitherto exempt categories of projects (including large scale agriculture/ monoculture plantation projects) which have environmental impacts.

- As an immediate measure, it needs to be ensured that all those projects where there is likely to be a significant alternation of ecosystems like rivers, lakes, wetlands, forests, grasslands, coastal and marine ecosystems, need to go through the process of environmental clearance, without exception. This should apply if they are likely to reduce the biodiversity of the region(both wild and cultivated), if they are likely to affect regions that have not been studied adequately for flora, fauna, or socially/ culturally fragile human communities, of if they are likely to displace people or disrupt live hoods, temporarily or permanently.

- No industrial or large scale developmental activity should be permitted in ecologically sensitive areas. Only developmental activities / processes which do not alter the basic ecological characteristics of such an area or do not cause destruction of the fragile ecosystems should be allowed. Separate and specific notifications issued for each of these clearly listing would help in effective implementation of this clause.

Quality of EIA reports: preparation and content

- The focus of EIA needs to shift from utilization and exploitation of natural resources to conservation of natural resources. Many EIA reports tend to justify the need for the project, shifting the focus of the EIA from a process that provides insights in to the viability and desirability of the project, to one that finds justification for the projects and on rare occasions one that offers simplistic solutions on minimizing impacts of projects already declared important.
- At present EIA reports are extremely weak when it comes to assessment of biological diversity of a project area and the consequent impacts on it. This is particularly so when it comes to domesticated (both live- stock and agricultural) biodiversity, aquatic biodiversity other than commercial fish lesser or non-endangered plants and animals (i.e. those other than mega fauna like tigers and elephant of charismatic plants like orchid species), ecosystem benefits and services (including supporting live hood needs of communities,

essential hydrological functions, soil conservation etc), and flora- fauna inter relationships. This gap needs to be plugged through a specific guidelines and if necessary through amendments to the EIA notification.

- The checklist needs to include impacts on agricultural biodiversity, biodiversity related traditional knowledge and live hoods .Further, cumulative impacts of projects that are technically linked or located in the same ecological region, and impacts of the eventual closure of the project or components of the project should also be incorporated in to the checklist. Finally the list should contain details on a full exploration of alternatives, especially decentralized alternatives, to mega projects .the checklist also needs to cover various kinds of impacts resulting from a particular activity.

- Comprehensive EIA s needs to be undertaken for industries and operations working in clusters such as in zones identified for chemical industries or export oriented units. For instance, the present EIA notification states that assessments do not need to be conducted for mining up to 5 hectares, and do not need to hold public hearings for mining up to 25hectares. However , it is recognized that many mining activities take place in clusters(several leases for small mining projects allowed in close proximity to each other in one geographical area) and that EIA s need to assess their cumulative impacts on the environment and biodiversity.

- All EIA reports should clearly state "what are the adverse impacts that a proposed projects will have". This should be a separate chapter and not hidden within technical details. Based upon this the EMP plan should be also be drawn which should integrate a specific set of measures, which are to identified to mitigate these impacts with costs and time frame included .

- **EIA should contain details of the assessment process as annexure such as**

1. Full information regarding all the parties involved in assessments including sub-consultants so that there is no scope for anonymity and parties can be held accountable for their findings and recommendations.
2. The terms of reference of every group/ individual involved in any aspect of the assessment process.
3. Full reference of all information sourced from secondary sources so that they can be independently verified by anyone interested in doing so.
4. Details of the time spent and activities, number of days spent in each area, names of villages, name of interviewers should be mentioned.
5. Details of expenses incurred for various activities for preparing the EIA report, including who was paid and for what activities.

- The sub components or subsidiary reports of EIA reports (e.g. Assessments of Biodiversity impacts done by a sub consultant) should be made publicly accessible as standalone reports with the EIA. This should be available on the websites of the MOEF.

- EIA s should be based on full studies carried out over at least one year. Single season data on environmental parameters like biodiversity, as is being done for several rapid assessments are not adequate to gain understanding of the full impact of the proposed project.

- It is critical that the preparation of an EIA is completely independent of the project proponent. One option for this could be the creation of a central fund for the EIA's which contains fees deposited by project proponents while seeking that an EIA be done for their proposed project.

- State and central governments should maintain a list of credible, independent and competent agencies that can carry out EIA s. similarly the EIA consultant those are making false reports should be black listed.

- A national level accreditation to environment consultancy should be adopted.

Public hearings:

- The public hearing should be held for all projects which are likely to have environmental and social impacts. This should be strictly implemented.

- The scope of the public hearings needs to be widened to at least those projects which require forest clearance under the forest conservation act, 1980.

- Public hearing should be done in at least three phases or stages.

1. The preliminary hearing may be required to explain the process of conducting the assessment so that the scope of the assessment is decided with the participation of the public.

The local level NGO can also participate in this.

2. The second can be with a purpose of presenting and discussing all aspects of the assessments findings, with the help of booklets presentation in local languages. Some of the aspects can also include environmental impacts, costs and benefit of the project, displacement and rehabilitation aspects.
3. The third hearing can be held after a week but no later than a month following the second meetings. This period being intended to give people a chance to analyze the information

and points they have at the earlier hearing. This can be primarily to record the views and objections of the people.

- It needs to be ensured that full information related to the EIA is provided to all the concerned citizens. For this it is critical to provide translation of the EIA and relevant documents in the local languages, to conduct the hearing process in local language and to proactively advertise the public hearing to as many people as possible. The gram panchayat office can be used for these purposes.

- A video recording of the proceedings could be made mandatory and the local activist should be allowed for video recording.

- Accountability should be built in to the public hearing procedure. The minutes of the public hearing should be compulsorily available at designed places to be specified in schedule 1 of the EIA notification. The project proponents should be asked to explain during and after the hearing as to how they propose to deal with the concerns raised at the public hearings.
- It should be ensured that the three representatives of the local people should have demonstrated commitment towards social and environmental concerns. The local communities, NGOs and civil society groups must be allowed a chance to place their opinions and concerns directly to the expert committee and the MOEF. Although this is partly possible since anyone is allowed to write to the MOEF after the public hearing is announced, an opportunity to make a presentation before the MOEF and the expert committee should be given to these constituencies just as it is given to project proponents and consultants. This would also help the MOEF and expert committees to understand the concerns directly from these parties rather than indirectly from the minutes of a public hearing or from a letter.

- MOEF should incorporate the above points and any others in to asset of guidelines on conducting public hearings to be issued to all state governments, district collectors, and other relevant agencies.

Grant of clearance:

- The notification needs to make it clear that the provision for site clearance does not imply any commitment on the part of the impact Assessment agency to grant full environmental clearance.
- The prior informed consent of local communities and urban wards or residents association needs to be made mandatory before the grant of environmental clearance.

- The consent should be from the full general body, not from the Sarpanch or the head.

- Minutes of the experts committees meeting and other related documents indicating the rationale for grant of clearance must be made available on request to civil society, at the concerned district headquarters and at the concerned sub divisional headquarters.

- The language used for specifying conditions of clearance must be clear and specific.

Composition of expert committees:

- The present executive committees should be replaced by experts people from various takeholder groups, who are reputed in environmental and other relevant fields.

- The process of selection of those committees should be open and transparent, the minutesof the committee meetings, decisions and advice by these committee should be open topublic.

Monitoring, compliance and institutional arrangements:

- The EIA notification needs to build within it an automatic withdrawal of clearance if the conditions of clearance are being violated, and introduce more stringent punishment for noncompliance. At present the EIA notification limits itself to the stage when environmental clearance is granted.

- The MOEF should set up more regional offices, each with smaller areas of jurisdiction, to effectively monitor the compliance of clearance conditions.

- It would be useful to have advisory Expert committees at the MOEF regional offices, comprising of ecologists, sociologists, local community members, government officials and representative of local institutions to help with the clearance of projects at the regional levels and monitoring of compliance of conditions.

- A robust monitoring mechanism should be established by the state department where the central projects involving forest clearance is given out. Such a monitoring body should be given powers to address compliance of both sets of clearance conditions together and to take punitive action against the project proponent in case of non- compliance of any of the conditions.

- Local communities should be brought in to the formal monitoring and reporting process of the compliance of conditions presently done by the regional offices of the MOEF. This would help the regional office as well since the geographical areas and number of project that comes under each office is vast which affects the efficiency and regularity of the monitoring process.

Redressal:

- The scope of the National Environment Appellate Authority (NEAA) needs to be expanded to deal with more than just challenging environmental clearance of projects. Citizen should be able to access the authority for redressal of all violation of the EIA notification as well as issues relating to non-compliance.

- The composition of the NEAA needs to be changed to include more NGO and civil society representatives as well as professionals from the field of environment. It may thus be necessary to increase the number of representatives that is presently allowed for the authority. The duration of the authority can be three years, after which it can be reconstituted.

Capacity building:

NGO s, civil society groups and local communities need to build their capacities to use the EIA notification towards better decision making on projects that can impact their local environments and live hoods. Capacities can be built to proactively and effectively use the notification rather than respond in a manner that is seen as negative or unproductive.

Box No – 1

Acts, Rules and Notifications referred while granting clearance

Water

- The water (prevention and control of pollution) Act,1974,
- The water (prevention and control of pollution) Rules,1975

Air

- The Air (prevention and control of pollution) act 1981
- The Air (prevention and control of pollution) Rules,1982
- The Air (prevention and control of pollution) (union territories) Rules, 1983

Environmental protection

- The Environment (protection) Act,1986,
- The Environment (protection) Rules,1986,
- Environment (siting for industrial projects) Rules,1999

Coastal stretches

- Declaration of coastal stretches as coastal Regulation zone (CRZ)

Hazardous process and organisms

- The rules for the manufacture, use, import, export and storage of Hazardous microorganisms genetically engineered organisms or cells1989.
- The manufacture, storage and import of Hazardous chemical rules, 1989.
- The Hazardous wastes (management and handling) rules, 1989.
- Dumping and disposal of fly ash discharged from coal of lignite based thermal power plants on land, 1999.

Noise pollution

- The noise pollution (Regulation and control) (Amendment) Rules,
- Noise pollution (Regulation and control) Rules,2000

Wild life and forests

- The Indian wildlife (protection) acts,1972
- The wildlife(protection) rules,1995
- Forest (conservation),acts,1980
- The Indian forest act,1927
- Guidelines for diversion of forests lands for non-forest purposes under the forest(conservation) act,1980

Ecologically sensitive zones:

- Prohibiting industries in Murud- Janjra area of Raigadh district of Maharashtra, 1989.
- Restricting location of industries, mining and other activities in Doon valley, and 1989.
- Dhaanu Taluka , district Thane to declare as ecologically fragile area, amended 1999
- Restricting certain activities causing environmental degradation at Aravallli Range, 1992.
- No development zone at Numalilgarh , East of Kaziranga,1996
- Order constituting the Taj Trapezium zone pollution(prevention and control) authority1998
- Pachmarhi Region as an eco- sensitive zone, 1998
- Mahabaleswar panchgani region as an ecological sensitive region.2001
- Matheran and surrounding region as an eco- sensitive zone,2003

Box No – 2

COMPOSITION OF THE EXPERT COMMITTEES FOR ENVIRONMENTAL IMPACT ASSESSMENT

1. *The Committees will consist of experts in the following disciplines:*

(i) Eco-system Management
(ii) Air/Water Pollution Control
(iii) Water Resource Management
(iv) Flora/Fauna conservation and management
(v) Land Use Planning
(vi) Social Sciences/Rehabilitation

(vii) Project Appraisal
(viii) Ecology
(ix) Environmental Health
(x) Subject Area Specialists
(xi) Representatives of NGOs/persons concerned with environmental issues.

2. The Chairman will be an outstanding and experienced ecologist or environmentalist or technical professional with wide managerial experience in the relevant development sector.

3. The representative of Impact Assessment Agency will act as a Member-Secretary.

4. Chairman and Members will serve in their individual capacities except those specifically nominated as representatives.

5. The Membership of a Committee shall not exceed 15.

Box No – 3

PROCEDURE FOR PUBLIC HEARING SCHEDULE-IV

(1) Process of Public Hearing:- Whoever apply for environmental clearance of projects, shall submit to the concerned State Pollution Control Board twenty sets of the following documents namely: -

(i) An executive summary containing the salient features of the project both in English as well as local language.
(ii) Form XIII prescribed under Water (Prevention and Control of Pollution) Rules, 1975 where discharge of sewage, trade effluents, treatment of water in any form, is required.
(iii) Form I prescribed under Air (Prevention and Control of Pollution) Under Territory Rules, 1983where discharge of emissions are involved in any process, operation or industry.
(iv) Any other information or document, which is necessary in the opinion of the Board for their final disposal of the application.

(2) Notice of Public Hearing:-

(i) The State Pollution Control Board shall cause a notice for environmental public hearing which shall be published in at least two newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned. State Pollution Control Board shall mention the date, time and place of public hearing. Suggestions, views, comments and objections of the public shall be invited within thirty days from the date of publication of the notification.
(ii) All persons including bona fide residents, environmental groups and others located at the project site/sites of displacement/sites likely to be affected can participate in the public hearing. They can also make oral/written suggestions to the State Pollution Control Board.

Explanation:-For the purpose of the paragraph person means: -

(a) Any person who is likely to be affected by the grant of environmental clearance;

(b) Any person who owns or has control over the project with respect to which an application has been submitted for environmental clearance;

(c) Any association of persons whether incorporated or not like to be affected by the project and/or functioning in the field of environment;

(d) Any local authority within any part of whose local limits is within the neighbourhood, wherein the project is proposed to be located.

(3) Composition of public hearing panel:- The composition of Public Hearing Panel may consist of the following, namely:-

(i) Representative of State Pollution Control Board;

(ii) District Collector or his nominee;

(iii) Representative of State Government dealing with the subject;

(iv) Representative of Department of the State Government dealing with Environment;

(v) Not more than three representatives of the local bodies such as Municipalities or panchayats;

(vi) Not more than three senior citizens of the area nominated by the District Collector.

(4) Access to the Executive Summary:- The concerned persons shall be provided access to the Executive Summary of the project at the following places, namely:-

(i) District Collector Office;

(ii) District Industry Centre;

(iii) In the Office of the Chief Executive Officers of Zila Praishad or Commissioner of the Municipal Corporation/Local body as the case may be;

(iv) In the head office of the concerned State Pollution Control Board and its concerned Regional Office.

(v) In the concerned Department of the State Government dealing with the subject of environment.

Box no- 4

Amendments to the EIA notification, between January 1994 and January 2005

Date of amendment	Key features
May 4,1994	- Site clearance for prospecting of only major minerals. - Expert committees to be consulted only if deemed necessary - Compliance reports to be made available subject to public interest. - EIA notification not applicable to : ports, harbours , airports, (except minor ports and harbours), all tourism projects between 200m-500 meters of high tide line, if they are in Dhanua Ecologically fragile area declared by MOEF.

	Highway projects with investment up to 50 crores.
April 10,1997	- Schedule IV on public hearing added. - highway projects relating to improvement work including widening and strengthening of roads with marginalised land acquisition, exempted from EIA notification (except if they pass through ecologically sensitive areas like national parks etc) - Thermal power plants (with specific operation/power generation /site)to be granted environmental clearance by state governments.
January 27,2000	No public hearings for: - Small scale industrial units(as defined in the industrial policy), - widening and strengthening of highways - Mining of major minerals with lease area up to 25 hectares. - Modernization of existing irrigation projects.
December 13,2000	No environmental clearance for defence related road construction in border areas.
August 1,2001	No public hearing for: - Small scale industrial undertakings located in industrial areas/ estates designated or under the jurisdiction of industrial development authorities. - Widening and strengthening of highways - Mining of major projects with lease up to 25 hectares - Units in export processing zones, special economic zones. - Modernising of existing irrigation projects.
November 21,2001	-EIA notification not applicable to bulk drugs and pharmaceuticals if covered by rules for the manufacture, use, imports, exports and storage of hazardous micro- organisms. Genetically engineered organisms of cells,1989 - Time period for the completion of the public hearing specified as 60 Days.
June 13,2002	- EIA report to be made available prior to a public hearing - No EIA report for pipeline projects - public hearings for pipeline and highways projects in each district through which they pass. - No environmental clearance for 16 projects including nuclear power projects, river valley projects, if investment less than 100 crores. - Modernization projects in irrigation sector with less than 10,000hectares command area cost less than Rs 100 crores, excluded from theEIA notification.
February 28, 2003	- No exemption to mining projects up to 5 hectares if covered by ecologically sensitive area notifications, (including Mudud-Janjira,

	Doonvalleys , Dhanua Taluka, Aravalli range)
May 7, 2003	No environmental clearance for river valley , major irrigation , flood control projects relating to improvement work including widening and strengthening of existing canals with land acquisition up to a maximum of 20 meters, (on both sides put together)along the alignments. This is provided such canals do not pass through ecologically sensitive areas such as national parks etc.
August 4,2003	- Thermal power projects in critically polluted area, within a radius of 15kms of reserved forests, ecologically sensitive areas or any state, require environmental clearance from the central government.
September 22,2003	- No public hearing for off shore exploration activities, beyond 10kilometres from the nearest habituated village boundary, gaothans and ecologically sensitive areas like mangroves(minimum area of 1000sq.km) , coral reefs etc. - Site clearance required for Greenfield airports, petrochemical, Complexes and refineries.
July 7,2004	- Two new categories added to schedule1 □ New construction projects □ New industrial estates. - Description on what in the notification will be applicable to these

LIST OF REFERENCES

Kohli, K, Menn,M,2005. Eleven years of the environmental impact assessment notification, 1994, How effective has inbeen?, kalpavrikswa environmental action group.

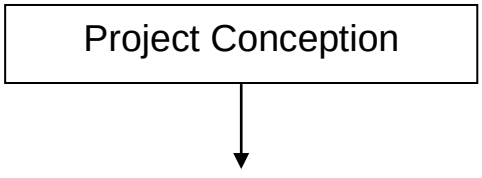
Dubey,s,newness,D,2003. Green democracy peoples participation in environmental decision making, environmental justice initiative.

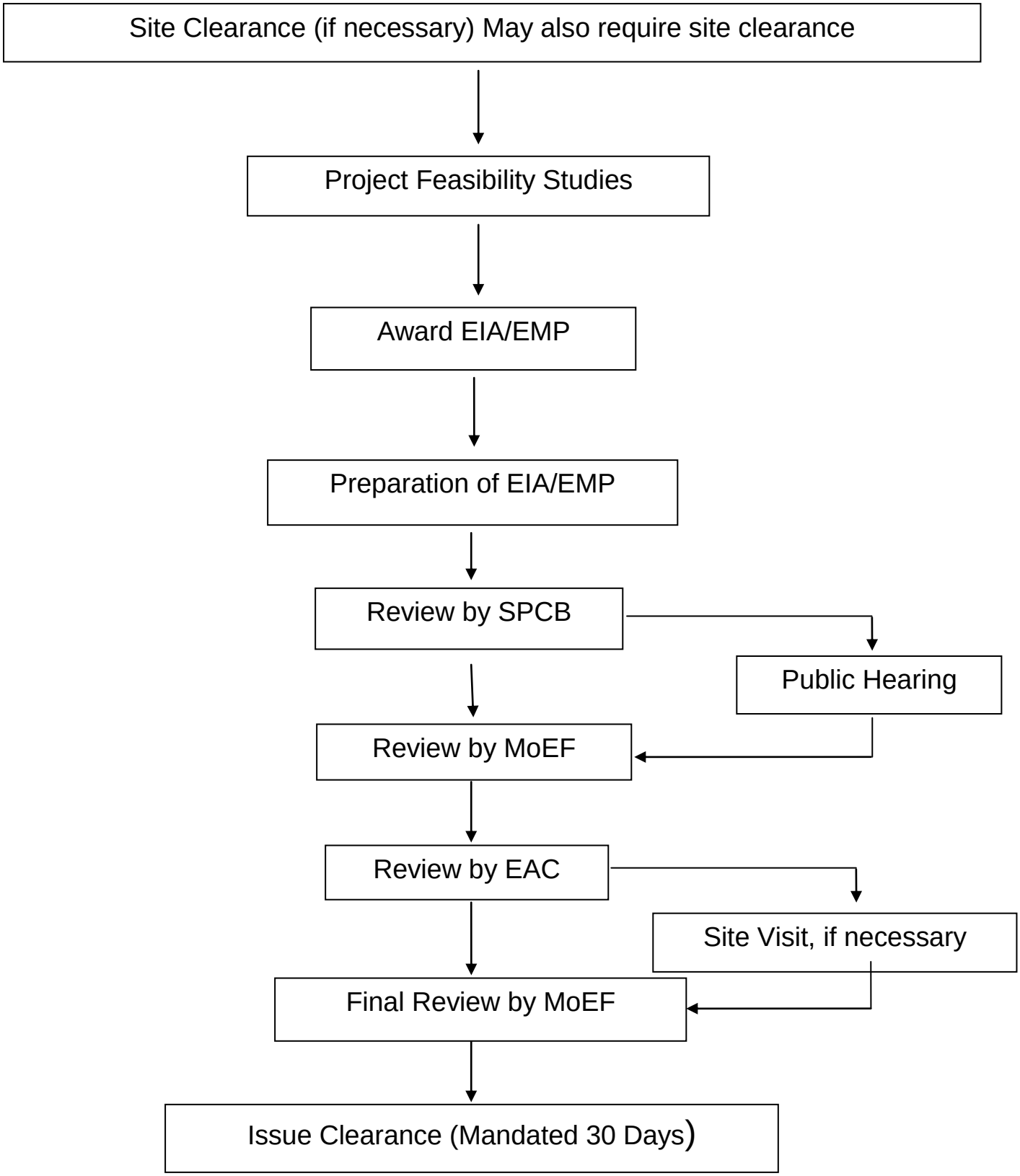
Clark, B.D, Gilard,A, Bisset, R. and Tomlinson, R. 1984. Perspectives on environmental impact assessment. Reidel publishing company, Holland.

The Hindu Survey of the environment,2005pg 91-97

Anjaeyulu, Y. Environment impact assessment methodologies, B.S. P.B.S publication, 2002

Deshpande V.A.&Goyal, S.K. Environment impact evaluation in EIA studies: A new approach, IJEP 18 (11): 824-829




Site Clearance (if necessary) May also require site clearance
Project Feasibility Studies
Award EIA/EMP
Preparation of EIA/EMP
Review by SPCB
Public Hearing
Review by MoEF
Review by EAC
Site Visit, if necessary
Final Review by MoEF
Issue Clearance (Mandated 30 Days)