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ENVIRONMENTAL APPRAISAL - INDIAN SCENARIO

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ABSTRACT
Environmental Impact Assessment (EIA) Environmental Management Plan (EMP) are widely used as tools of Environmental appraisal in project analysis and plays an effective role in supporting the sustainable development. Poor quality of data or information was the major bottleneck in improving and strengthening the EIA reports. The factors that determine the quality of EIA reports are legislations, quality of consultant groups and their expertise, scoping, extent of land use change coverage of EIA reports, public response and nature of projects. This paper discusses various approaches in addressing the environmental issues and suggestions that have been made for a shift in some of the present day Environmental appraisal practices.

KEYWORDS: Environmental Impact Assessment (EIA), Environmental Management Plan (EMP)

INTRODUCTION

Sustainability is not an option but imperative. The environmental issues are very complex and needs integrated approach to address them. Several countries have initiated programmes and developed schemes to encourage industries to go in a voluntary approach and environmental regulators as facilitators or coordinators without exercising the penal provisions to deal with environmental degradation and pollution. The constitution of India has assigned responsibility to protect the environmental resources and the earth to such an extent that future generations inherits a sustainable environment that is worthy of living. The regulatory mechanism in the country does provide a scope to monitor and control the environmental activities for better environmental performance. The technological revolution in various sectors in recent years has benefited to some extent for an environmentally sound and sustainable development. The technological revolutions that brought about environmental friendly technologies in projects all over the world have helped to adopt the approach of "Environmental Audit and Self disclosures". In this scenario, practices to address environmental management, response of research and development institutions and regulators became very important. The trend of developmental projects in various regions of the country is attained a status that individual approach of environment management does not seem to benefit the environment. This paper discusses various approaches in addressing the environmental issues and suggestions that have been made for a shift in some of the present day practices.

Environmental Impact Assessment (EIA) appraisal:

EIA is being widely used as a tool for project analysis and plays an effective role in supporting the sustainable development. Poor quality of data/information was the major bottleneck in improving and strengthening the EIA reports. The factors that determine the quality of EIA reports are legislations, quality of consultant groups and their expertise, scoping, extent of land use change coverage of EIA reports, public response and nature of projects. In general specialists in EIA in the past have evaluated the benefits of EIAs in terms of quality in planning and design and decision making and overall improvement and cost effectiveness. But in present the modifications suggested for improving the EIA reports were related to flora and fauna, landscape and visual impacts. It was also made out that the availability of sector specific guidelines accounted for improvement in EIA reports. The recommendations given by the experts and public to address the impacts and for improving the EIA reports during review of EI s was also found good tools to review the shortcoming in EIA process. The consultation and public participation had influenced the modifications. During the environmental appraisal process, the experts deliberates on impacts and suggests safeguard measures to the authorities to stipulate for compliance by developmental projects to grant Environmental clearance. In general safeguards stipulated broadly covers the following:

- Action plan for phase wise plantation in the project area.
- Assist in implementation of regional Wild Life Management Plan.
- Blacktopping of roads to reduce the fugitive emissions.
- Creation of environmental Management cell; Develop good monitoring infrastructure
- Discourage planting exotic low ecological value species; encourage fruit-bearing local indigenous species.
- Enforce "Pollution under control" Certificate for the vehicles.
- Ensure use of protective devices by the workers in these areas.
- Impervious concrete pits for safe disposal of sludge.
- Implement time-bound plan for OB dump slope reclamation in mines; proper terracing and benching; check severe gully formations and heavy erosion and loss of good nutrients.

- Installation of the piezometers for ground water level monitoring.
- Monitoring ambient air noise and water quality parameters per norms of Environment (Protection) Rules, 1986 and fugitive dust emission monitoring.
- Plan of Conservation measures for protection of flora and fauna in the core & buffer zone to be drawn up.
- Provision for treatment of oil bearing effluents from the workshop.
- Provisions of in-house laboratory in the project.
- Retaining walls and garland drains in raw material and product storage areas on all sides with settling pond. Check dams to arrest silt flow/erosion.
- Safety area to be taken up for plantation again; Work zone air quality monitoring
- Sewage treatment plant (STP) to and treated water reused/recycled.
- Survey all the natural streams; water quality analysis to be carried out.
- Water harvesting and water conservation measures to be implemented; Suitable conservation measures to augment ground water resources.

There has been significant achievement in bringing out legislations in India concerning environmental conservation, environmental pollution, forest and wild life protection. Before environmental clearance is accorded, the authorities like Central Government or State Environmental Impact Assessment Authority (SEIAA) as applicable stipulates for carrying out EIA studies by suggesting 'Terms of Reference' to broadly ensure that impact study covers aspects of the natural significance of the proposed area in terms of diversity, endemicity and status of the flora and fauna of the area, importance of the ecosystem and socio economic impact.

The rules framed under Environmental (Protection) Act 1986, specify standard of Air, Water and noise parameter for the mining projects to comply. The Environmental Impact Assessment (EIA) Notification 1994 (MoEF, 1994) made it mandatory to a few categories of projects to carry out study of Environmental Impact Assessment (EIA) and make Environmental Management Plan (EMP) to address the adverse impacts.The EIA Notification 2006 (MoEF, 2006) includes only eight categories of projects (Table – 1) to prepare EIA and EMP reports and get Environmental clearance from concerning authority. The public consultation has also been made mandatory for projects attracting provisions of EIA Notification, 2006 to help the projects to know the views of the apprehensive citizens regarding socio economic and environment impact of the project.

Table – 1 Categories of projects attracting provisions of EIA Notification 2006

Category	Description	Sub-activities	Major projects
1	Mining, extraction of natural resources and power generation	5	Major minerals, oil and gas, river valley, thermal power and nuclear projects
2	Primary processing	2	Coal washeries, mineral beneficiation
3	Material production	2	Primary and secondary metallurgical units, sponge iron and cement plants
4	Material processing	6	Petroleum refining, coke oven, asbestos, leather processing,, soda ash
5	Manufacturing and fabrication	11	Fertilizers, pesticides, dyes and intermediates, drugs, distilleries, paint, paper and pulp, sugar, furnaces, furnaces
6	Service sectors	2	Oil and gas transportation, isolated storages
7	Physical infrastructure and environmental services	9	Air ports, ship breaking, industrial estates, TSDF, ports and harbor, roads, CETPS, municipal waste treatment plants, etc
8	Construction	2	Residential, commercial and townships

An Environmental Appraisal method developed by Lee and Colley (1992) to find out the quality of EIA report in European countries was illustrated as a good example for EIA appraisal. EIA evaluation reports for EIAs made before 1991 and after 1991 up to 1996 indicated proportion of satisfactory EIA reports increased from 50 to 70%. The recommendation suggested by Lee and Colley (1992) were presented table -2.

Table-2. Recommendations suggested by Lee and Colley (1992)

Recommendations	Outcome expected
Institutional strengthening	To increase the influence of EIA and hence the number of modifications to projects
Strengthening the treatment of alternatives	To ensure early consideration of modifications
Strengthening screening	To ensure that all significant projects are assessed
Ensuring scoping exercise	To encourage early recognition of the need for

	modifications
Strengthening the quality of EIA reports	To ensure that mitigation is fully considered and that modifications ensured
Adoption of formal EIA report quality control mechanism	To strengthen the quality of EIA report
Accreditation of EIA consultants	To strengthen the quality of EIA report
Strengthening provisions for consultation	To strengthen the quality of EIA report
Strengthening provisions for consultation and public participation	To increase the number of proposed modifications
Integration of EIA into other procedures including legislations	To enhance cooperation between authorities and to increase the effect of EIA on decisions
Greater use of EIA report in decision making	To mitigate negative impact
Post EIA monitoring	To ensure that modifications are implemented
Developing EIA guidelines	To strengthen the EIA process
Training in EIA	To ensure that awareness of the need for modifications exist
Provision of national EIA report and environmental information databases	To defuse good EIA practice and increase the accuracy of prediction
Introduction of strategic environmental assessment	To ensure that environmental impacts are considered very early in the planning process
Research into various aspects of EIA	To improve the effectiveness of EIA

In India there are identified 88 industrial clusters and have assessed the environmental impacts in terms of Comprehensive Environmental Pollution Index (CEPI). There are 43 areas where environmental degradation has reached now to the level that immediate intervention is needed. and now developmental process have been halted for want of an Regional Environmental management Plan. In such areas, it was needed to stress upon 'Cumulative impacts' rather than 'Individual Project Impacts'.

Cumulative Impacts

For understanding the signs of cumulative changes in environment, United States National Research Council and Canadian Environmental Assessment Research Council (CEARC) convened workshops, and addressed administrative and policy environment for management of cumulative impacts, which could otherwise not be addressed during individual projects EIAs. Three main elements were indicated:

- The causes of change in the environment, wherein some accounts have differentiated between single and multiple sources of disturbance.
- Pathways of accumulation, or the processes by which change takes place; and
- The nature of the cumulative effects.

Smaller projects which are excluded from carrying out EIAs may collectively exert significant impacts. Extent of modification and expansion of old projects not subjected earlier to EIA may have environmentally significant impacts. Individual EIAs can not address the impacts created by Ancillary industries. Smaller projects which are excluded from carrying out EIAs may collectively exert significant impacts.The impacts generated by these units sometime may exceed those of main projects. It also does not address or assess the cumulative impacts due to diverse and multiple developments in a geographical area.

Trans-boundary Impacts

A convention on EIA in a Trans-boundary context was held under United Nation's Economic Commission for Europe (ECE, 1994), which elaborated the procedures for management of trans boundary environmental impacts and impact caused due to proposed activity or due to major changes in existing activity was elaborated. Following this convention, most of the countries have started modifying EIA laws to include various provisions in trans- boundary context as per convention guidelines (Wood Lee Huges Jon. 1994).

Regional and Sectoral Environmental Assessments

EIA procedures may be applied to address the impacts generated by all development activities in a particular region other than specific projects. EIA can be carried out at Regional or sectoral scales to assess impacts of sector-wide programs, multiple projects, or development policies and plans. A regional or sectoral EIA have details on all or most of the activities and can reduce the time and effort required for project-specific EIAs in the same region or sector. Identifying issues, initiating baseline data collection, and assembling existing data in advance, or in certain cases, by eliminating the need for the project-specific EIA altogether, are the significant positive factors for advocating the regional/sectoral EIAs. Regional Environmental Impact Assessment (REIA) may be considered when a number of development activities are planned or proposed for a relatively localized geographic area, such as several projects in one watershed. The purpose of the REIA is to identify the effects of generic unit actions and the cumulative impacts of development projects in a particular area over a time period and to assist in decision making and approval. The study also investigates the alternative means of undertaking each project/and determining the environmental impacts due to each project and use these as the basis of the cumulative impacts analysis. The cumulative impacts are function of the different projects/activities occurring together at various sites in the region at one time. REIAs can also be used as a means to establish limits for future development in the region. Thus, REIAs serve as planning tools, assisting in the identification of environmentally sound projects; contribute to implementation strategies which take into account the combined impacts of a set of projects already being pursued; and assist in project preparation by supporting plans and designs which are sensitive to

cumulative impacts, synergisms, interactions, and competition for natural and socio-economic resources. REIAs contribute to the efficiency of project preparation by reducing the time and effort spent on project-specific Environmental Appraisals.

Sectoral Environmental Assessments have also been advocated by governments and international funding agencies for faster assessment and appraisal of similar kind of projects which may or may not be located in a particular geographical region. Generally impacts created by projects in a particular sector will be same. Thus it may not warrant EIAs individually. Like REIAs, Sectoral EIA can be used to examine the cumulative impacts of multiple projects planned in the same sector which are useful to address the impacts by mixture of projects proposed like several coal based power plants, run of river hydroelectric projects, canal projects, etc., located at different locations. Sectoral EIAs have same advantages as REIAs and have a comparable relationship to project-specific EAs and they can, in some cases, substitute for project-specific EAs, by producing guidelines and criteria for the design and implementation of projects in a particular sector. Project-specific EIA addresses the impacts on ambient air quality around the project but the sectoral EIA will address the cumulative impacts like acid rain or other problems resulting from proposed industrial developments in terms of their regional, national or even trans-national impacts. This method is suitable for analysis of institutional, legal and regulatory aspects related to the sector, and for making comprehensive and realistic recommendations to develop environmental standards, guidelines, law enforcement, and training, thus reducing the need for similar analysis in each project locations.

These exercises are also beneficial to consider cumulative impacts of multiple ongoing and planned projects within a particular sector, as well as impacts from existing policies and policy changes and are valuable for collecting and organizing environmental data in the process, identifying data gaps for outlining methods, schedules and responsibilities for data collection and management during project implementation and also suggest for comprehensive planning of region-wise and sector-wise mitigation, management, and monitoring measures, and for identifying broad institutional, resource and technological needs at an early stage.

Ecological Restoration of degraded areas

Principles of ecological restoration is not known to managers which attempts to restoring all soil, plants and hydrology of the area including animals, symbiotic fungi and bacteria. The environmental degradation and consequent loss of natural resources has become a real problem especially in industrial cluster areas due to both increase in human population and developmental activities. The impact of such disturbances on the environment in such areas is cumulative and complex which also lead to agricultural land degradation, lowered water tables, etc. The damaged and degraded mined out and other areas need to be restored and environmentalists must carry out research for conservation and apply them into practice for restoration of the original species and communities. Sustainable development can be achieved once all parameters of economic, social and environment are integrated in environmental management plans. We need to develop discipline of restoration ecology in the country as interdisciplinary field of science.

Gaps in biodiversity inventory in EIA

EIAs in India largely use secondary data (for describing ecosystem details, impacts and services) which are outdated and old. One of the major thrusts of EIA study is to document the existing flora and fauna of the proposed area being diverted for industrial use and assess the impact. The biological diversity assessment has so far been done by documenting largely the higher forms of plants and animals in EIA exercises in India. The existence of these higher life forms is many ways depend closely with sustained existence and diversity of lower life forms especially the insects and microbes. Most of these lower forms of life in fact act as indicator of ecosystem health. There is need for collecting data on these life forms mandatorily for investigation during EIA study to find out the impact on ecosystem due to loss of these components. The EIA must highlight the importance of all resources in ecosystem functioning and emphasize on the need to conserve them. EIA manual and sector specific guidelines issued by the Ministry, aim at improving the quality of EIA reports and environmental management plans.

CONCLUSION

India had been losing most of the rich and luxurious natural resources during the 20th century as an escalating developing country. Now it is time to properly analyze the consequence of the resource use patterns in relation to the subsistence economy of the population. The agriculture land has been shrinking at the cost of development. It is apparent that the establishment of developmental projects will cause conspicuous reduction in the agriculture land required for cultivation and overall biodiversity. Today India is facing the problems of declining the forest cover and the problems originating from the collapse of ecosystems are also endangering the wild life supporting systems. The question of long-term sustainability of natural resources must be addressed by the planners of the country. Strategies for formulating better resource use pattern as on date is of limited nature and exploitations have far exceeded the carrying capacities of the ecosystems. The issues of the environmental growth and economic growths are inseparable. The policies of environmental conservation should not simply be treated as “add-on” to economic policies. The tools as described in this paper may assist in developing better strategies for a sustainable development. An integrated approach as defined by National Environmental Policy, 2006 (MoEF, 2006) should be adopted by all developmental sectors in India.

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