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Paper: DSE-B, Sem-6 (Hons.)

Introduction to Environmental Impact Assessment:

On 27 January 1994, the Union Ministry of Environment and Forests (MEF), Government of India, under the Environmental (Protection) Act 1986, promulgated an EIA notification making Environmental Clearance (EC) mandatory for expansion or modernisation of any activity or for setting up of new projects.

The MoEF notified new EIA legislation in September 2006. The notification makes it mandatory for various projects such as mining, thermal power plants, river valley, infrastructure (road, highway, ports, harbours and airports) and industries including very small electroplating or foundry units to get environment clearance. However, unlike the EIA Notification of 1994, the new legislation has put the onus of clearing projects on the state government depending on the size/capacity of the project.

Certain activities permissible under the Coastal Regulation Zone Act, 1991 also require similar clearance. Additionally, Funding agencies operating in India like the World Bank have a different set of requirements for giving environmental clearance to projects that are funded by them.

Definitions of EIA:

Environmental Impact Assessment is defined as an activity designed to identify the impact of proposed projects on the environment, human health and welfare.

Objective of EIA:

- To foresee the future potential environmental impact of any development project.
- To get surety about the incorporation and address of environmental consideration in development decision-making process.
- To avoid or reduce the adverse biophysical, social or other relevant impacts to be generated from development project.
- To optimize carrying capacity of natural systems and also to sustain ecological processes.
- To promote sustainable development having optimized management opportunities.

Factors behind the EIA Process in Sequence of Application:

1. Stakeholder's Involvement:

Stakeholders' involvement occurs in various stages of EIA to ensure quality, efficiency and effectiveness.

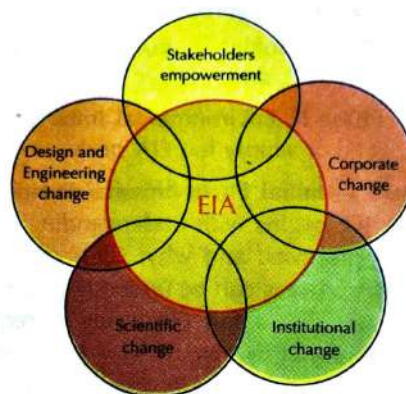


Fig. 4.9.1: Relationship between conception of EIA and sustainable development goals and society (Cashmore et al. 2004)

2. Project Screening and Scoping:

- (i) Determine necessity for EIA requirement.
- (ii) Describe various screening criteria.
- (iii) Scoping determines coverage or scope of EIA.

3. Project Design and Construction:

- (i) Type of project under consideration.
- (ii) Physical dimensions of the area being considered.
- (iii) Whether the resources will be used optimally?
- (iv) Whether there is an irretrievable commitment of land?
- (v) Whether the project is a critical phase of a larger development?
- (vi) Whether there will be serious environmental disruptions during construction?
- (vii) What are the long-term plans of the proponent?

4. Project Operation:

- (i) What provisions have been made to check the safety equipment regularly?
- (ii) How will the hazardous waste products be handled?
- (iii) What are the contingency plans developed to cope up with the possible accidents?
- (iv) What provisions have been made for training the employees for environmental protection?
- (v) What plans have been made for environmental monitoring?

5. Site Characteristics:

- (i) Whether the site is susceptible to floods, earthquakes and other natural disasters?
- (ii) Whether the terrain is creating problems in predicting ground water characteristics and air pollution etc.?
- (iii) Whether the local environment is conducive for the success of the project?
- (iv) How many people are likely to be displaced because of the project?
- (v) What are the main attributes (e.g., protein content, calorie content, weed or pest status, carnivorousness, rarity of species, etc.) of the local fauna and flora?
- (vi) Whether the project will interfere with the movements of fish population and important migratory animals?
- (vii) Whether historic sites are likely to be endangered because of the project?

6. Possible Environmental Impacts:

- (i) What are the possible short-term and long-term environmental impacts from the projects during construction and after construction?
- (ii) Who would be effected because of these impacts?

7. Mitigation Measures:

- (i) Design system to avoid, reduce and minimize adverse impacts.
- (ii) Enhance beneficial outcomes.

8. Monitoring and auditing measures:

- (i) Identify impacts that require monitoring and auditing.

9. Socio-Economic Factors:

- (i) Who are the expected gainers and losers by the projects?
- (ii) Where are the expected trade-offs?

- (iii) Will the project interfere (blend, increase or reduce) with the existing inequalities between occupational, ethnic and age groups?
- (iv) Will it effect the patterns of local/regional/national culture?

10. Availability of Information and Resources:

- (i) Whether local and outside experts are available to consult specific impacts of the project?
- (ii) Whether the relevant guidelines, technical information and other publications are available to identify the possible impacts of similar projects?
- (iii) Whether relevant environmental standards, by-laws etc. are considered?
- (iv) Whether the sources of relevant environmental data are identified and whether they are accessible?
- (v) Whether the views of the specialist groups and general public regarding the project have been considered?
- (vi) Whether the competent technical manpower is available to handle the project?

11. EIA Report and Review:

Complete information in report including non-technical summary, methodologies used, results, interpretation and conclusions. Review assesses adequacy of issues and facilitate decision making process.

12. Decision Making:

The project may be accepted, accepted with alterations or rejected.

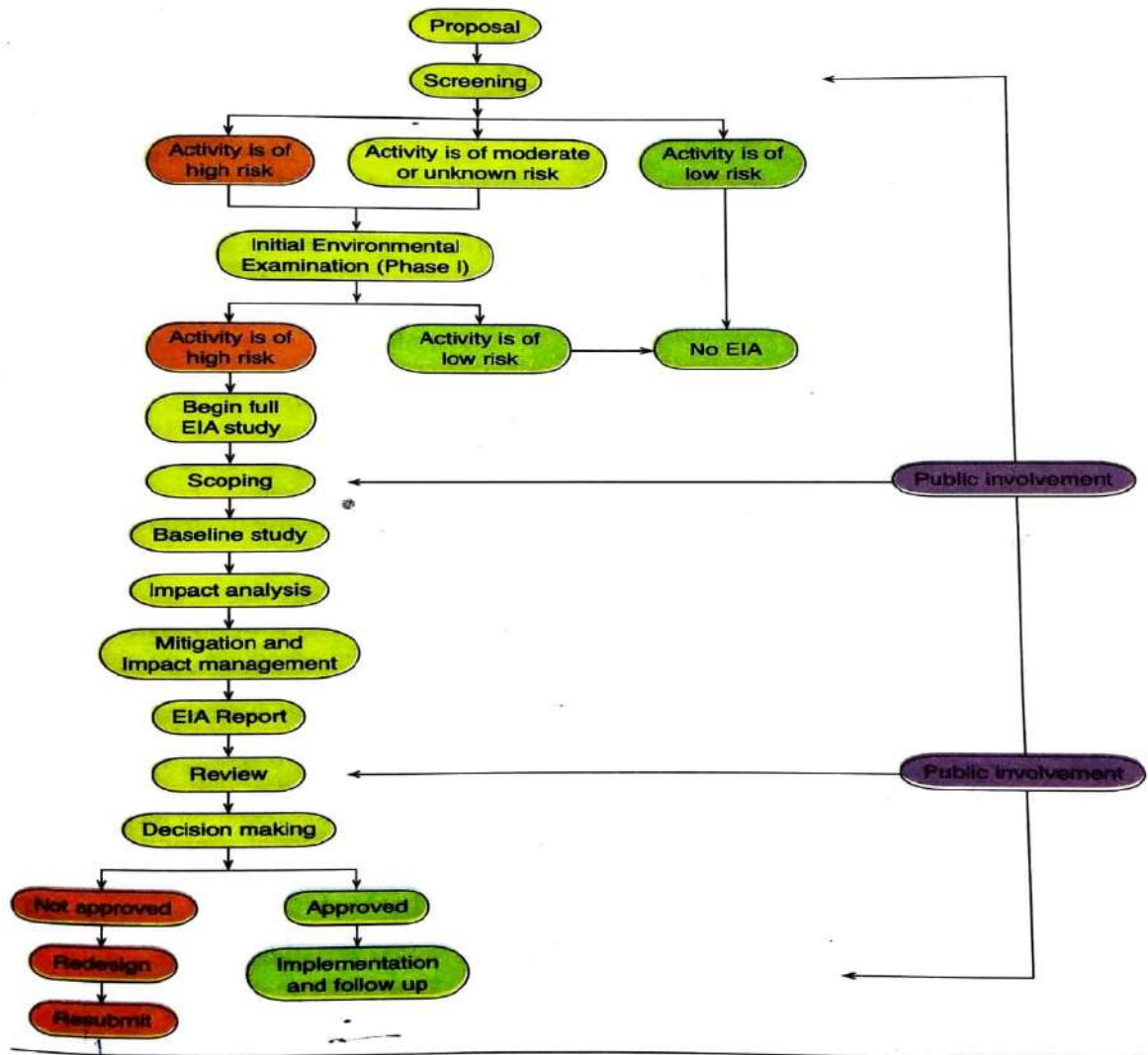


Fig. 4.9.2: Generalised EIA process

The EIA Cycle and Procedures:

The EIA process in India is made up of the following phases:

1. Screening
2. Scoping and consideration of alternatives
3. Baseline data collection
4. Impact prediction
5. Assessment of alternatives, delineation of mitigation measures and environmental impact statement
6. Environment Management Plan
7. Public hearing
8. Decision making and consultation
9. Monitoring the clearance conditions
10. Summary and conclusions

1. Screening:

Screening is done to see whether a project requires environmental clearance as per the statutory notifications.

Screening Criteria are based upon:

- (i) Scales of investment;

- (ii) Type of development; and,
- (iii) Location of development.

A Project requires statutory environmental clearance only if the provisions of EIA notification and/or one or more statutory notification is mentioned.

2. Scoping and consideration of alternatives :

It is not feasible to carry out extensive studies of EIA for all the projects, hence scoping is done to save both time and money. Actually, the Scoping is used to identify the key issues and environmental impacts of the project at an early stage in the planning process.

The Ministry of Environment and Forests has published guidelines for different sectors, which outline the significant issues to be addressed in the EIA studies Quantifiable impacts are to be assessed on the basis of magnitude, prevalence, frequency and duration and non-quantifiable impacts (such as aesthetic or recreational value), significance is commonly determined through the socio-economic criteria.

After the areas, where the project could have significant impact, are identified, the baseline status of these should be monitored and then the likely changes in these on account of the construction and operation of the proposed project should be predicted. Recent years, scoping was determined by "Term of reference" (TOR) clearance by MOEF.

3. Baseline Data collection :

Describes relevant physical, biological and socioeconomic conditions, including all changes anticipated before the project commences, within an area around the project site.

Under current regulations in India this is a radius of 10 or 25km of the site, depending on whether the site is in the vicinity of sensitive areas such as National Parks, sanctuaries, or archaeological monuments.

Additionally takes into account current and proposed development activities within the project area but not directly connected to the project.

4. Impact Prediction:

Predicts and assesses the project's likely positive and negative impacts in quantitative terms to the extent possible. Identifies mitigation measures and any negative environmental impact that cannot be mitigated. Explores opportunities for environmental enhancement

Environmental impact can never be predicted with absolute certainty and this is all the more reason to consider all possible factors and take all possible precautions for reducing the degree of uncertainty.

The Following Impacts of the Project should be Assessed:

Air: Changes in ambient levels and ground level concentrations due to total emissions from point, line and area sources effects on soils, materials, vegetation, and human health.

Noise: Changes in ambient levels due to noise generated from equipment and movement of vehicles effect fauna and human health.

Water: (i) Availability to competing users, Changes in quality.

(ii) Sediment transport and Ingress of saline water.

Land: (i) Changes in land use and drainage pattern.

(ii) Changes in land quality including.

(iii) Effects of waste disposal.

(iv) Changes in shoreline/river-bank and their stability.

- Biological:** (i) Deforestation/tree-cutting and shrinkage of animal habitat.
(ii) Impact on fauna and flora (including aquatic species if any) due to contaminants/pollutants.
(iii) Impact on rare and endangered species, endemic species, and migratory path/route of animals.
(iv) Impact on breeding and nesting grounds.
- Socio-Economic:** (i) Impact on the local community including demographic changes .
(ii) Impact on economic status and human health.
(iii) Impact of increased traffic.

5. Assessment of Alternatives and Mitigation Measure and Environmental Impact Assessment Report:

For every project, possible alternatives should be identified and environmental attributes compared. Alternatives should cover both project location and process technologies. Alternatives should consider 'no project' option also. Alternatives should then be ranked for selection of the best environmental option for optimum economic benefits to the community at large.

6. Environment Management Plan

Once alternatives have been reviewed, a mitigation plan should be drawn up for the selected option and is supplemented with an Environmental Management Plan (EMP) to guide the proponent towards environmental improvements. The EMP is a crucial input to monitoring the clearance conditions and therefore details of monitoring should be included in the EMP. An EIA report should provide clear information to the decision-maker on the different environmental scenarios without the project, with the project and with project alternatives. Uncertainties should be clearly reflected in the EIA report.

7. Public Hearing:

Law requires that the public must be informed and consulted on a proposed development after the completion of EIA report. Any one likely to be affected by the proposed project is entitled to have access to the Executive Summary of the EIA.

The affected persons may include:

- (i) Bonafide local residents
- (ii) Local associations,
- (iii) Environmental groups: active in the area
- (iv) Any other person located at the project site/ sites of displacement

They are to be given an opportunity to make oral/written suggestions to the State Pollution Control Board as per Schedule IV of Annex I.

8. Decision Making:

Decision making process involve consultation between the project proponent (assisted by a consultant) and the impact assessment authority (assisted by an expert group if necessary). The decision on environmental clearance is arrived at through a number of steps including evaluation of EIA and EMP.

9. Monitoring the Clearance Conditions:

Monitoring should be done during both construction and operation phases of a project. This is not only to ensure that the commitments made are complied with but also to observe where the predictions made in the EIA reports were correct or not.

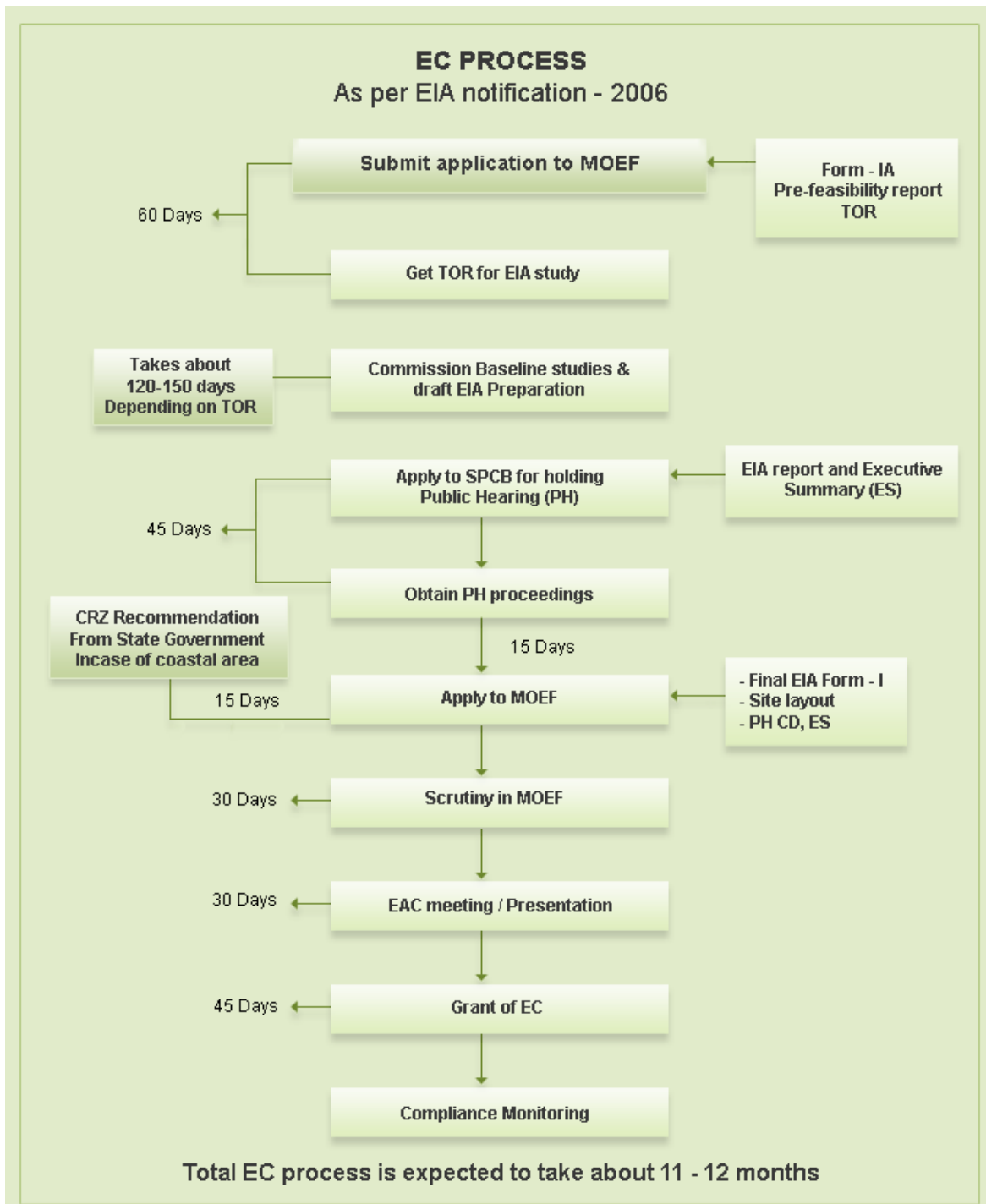
Where the impacts exceed the predicted levels, corrective action should be taken. Monitoring will enable the regulatory agency to review the validity of predictions and the conditions of implementation of the Environmental Management Plan (EMP).

10. Summary and conclusions: covering the justification for the project and the approach to mitigating adverse affects

Importance of EIA:

1. EIA is potentially a useful component of good environmental management.
2. It is the Government policy that any industrial project has to obtain EIA clearance from the Ministry of Environment before approval by the planning commission.

Stages in the Environmental Clearance (EC) Process As per 2006 EIA Notification



TOR (Terms of Reference), CRZ (Coastal Regulation Zone), SPCB (State Pollution Control Board), EAC (Environmental Appraisal Committee), EC (Environmental Clearance), CD (compact disc)

Environmental Clearance

The process and requirements for Environmental Clearance, including definitions of whether projects are required to get clearance at the Central or State level, are covered in the Ministry of Environment and Forests' (MoEF) [EIA Notification](#). Further information is available from the Ministry's [EIA Manual](#).

The main features of the EIA Notification are summarised below.

Categorization of projects and activities

The Notification broadly categorises all projects and activities as either Category A or Category B. This categorisation depends on the size of the project and the degree of potential impacts on human health and natural and man made resources. The specific thresholds for categorising projects are provided in the Schedule to the Notification. All Category A projects require a '**Prior Environmental Clearance**' (EC) from MoEF.

Category A projects include all physical infrastructure whose size and cost is greater than certain minimum levels as defined in the Schedule. Environmental Clearances for these projects are granted at the Central level. Physical infrastructure includes projects in the ports, highways, water and sanitation, urban transport, and solid waste management sectors.

All new National Highways are classified as Category A. In addition, expansion of National Highways greater than 30 KM, involving additional Right of Way (ROW) greater than 20m, involving land acquisition and passing through more than one State are categorized as Category A.

Category B covers projects with lesser size or capacity, and smaller impacts than Category A. Environmental Clearances for Category B projects are granted at the State level. Each State has a dedicated department or Board as, required by law, which would grant the Clearance. The actual size definitions depend on the sector or project type. For example in the case of ports, projects with handling capacity of more than 5 MTPA come under Category A, while those with less than 5 MTPA are Category B.

Projects can be new works, the expansion and modernisation of existing projects, and changes in the product mix of existing projects.

Note, all Railway Projects, with no exception, are totally exempted from seeking Environmental Clearance under Government regulations. It should be noted however that some external funding agencies, such as JBIC, may require an EIA as part of the feasibility study or DPR.

EC process for new projects

The environmental clearance process for new projects consists of four stages, some of which may not be required for all projects. These four stages in sequential order are:

Stage (1) Screening (Only for Category 'B' projects and activities)

Stage (2) Scoping

Stage (3) Public Consultation

Stage (4) Appraisal

Each of these is briefly described below.

1. Screening stage

At the screening stage, which only applies for Category B projects, the State level Expert Appraisal Committee (SEAC) reviews the application (Form 1) to determine whether the project requires further environmental studies for preparation of an EIA report. This

decision also depends on the nature and location of the project. Projects are then further categorised according to whether they require an EIA (Category B1) or not (Category B2).

2. Scoping stage

At the scoping stage, detailed and comprehensive Terms of Reference (TOR) addressing all relevant environmental concerns for the preparation of an EIA report are determined. This is carried out by the Expert Appraisal Committee (EAC) for Category A projects and by the State-level Expert Appraisal Committee (SEAC) for Category B1 projects. Scoping is not required for B2 projects.

3. Public Consultation stage

This stage involves consultation with project affected persons on the effects of the project. Public consultation is required for all Category A and Category B1 projects, with some exceptions including projects involving the expansion of Roads and Highways (see item 7 (f) of the Schedule) which do not involve any further acquisition of land.

The concerns heard during the public consultation process must be addressed in the EIA report and in the Environmental Management Plan.

4. Appraisal stage

This stage sees the overall and detailed scrutiny of the final EIA report, which will have been presented to EAC or SEAC. The EAC or SEAC considers the environmental aspects of the project and makes a recommendation to the Regulatory Authority on whether prior EC should be granted or not.

Applying for Environmental Clearance

An application seeking an EC must be made in the [prescribed Form 1](#) which is provided in the Notification. This must be made before commencing any construction activity, or preparation of land, at the site by the applicant. The applicant must include a copy of the [pre-feasibility report](#) with the application.

In view of the above **it can take up to a year (12 months)** to get an EC for an infrastructure project. Project sponsors should plan to allow this much time in the PPP project cycle.

In addition to the EC, some permits like ‘Consents under Water and Air Acts’ for the projects have to be obtained from the concerned State Governments where the projects are located. This can be pursued in a parallel process, and will usually take less time than the EC process itself.

Form 1 requires information in each of the areas indicated in the checklist below.

No	Information required in Form 1	Collected? (yes, no)
1	Basic project information (name, location etc)	
2	Details of activity related to the project:	
2a	Actions causing physical changes in the locality	
2b	The project’s use of natural resources	

2c	Associated substances or materials that could be hazardous or harmful	
2d	Production of solid wastes	
2e	Release of pollutants into the air, ground and waterways	
2f	Generation of noise and vibration, and emissions of light and heat	
2g	Risk of accidents	
2h	Factors that could lead to cumulative impacts or consequential effects	
3	Details of environmentally sensitive areas within a certain distance of the project site	
4	Proposed TOR for the EIA study	

The application for EC is made to the concerned regulatory authority.

The application must include the following:

- Final EIA Report
- A copy of the video tape or CD of the public hearing proceedings (where public consultations are mandatory – see process requirements below)
- A copy of the final layout plan
- A copy of the project feasibility report

For most projects the EC remains valid for five years. The exceptions to this are river valley projects (10 years) and mining projects (30 years).