**EIA PROCEDURES**

The EIA process makes sure that environmental issues are raised when a project or plan is first discussed and that all concerns are addressed as a project gains momentum through to implementation. Recommendations made by the EIA may necessitate the redesign of some project components, require further studies, and suggest changes which alter the economic viability of the project or cause a delay in project implementation. To be of most benefit it is essential that an environmental assessment is carried out to determine significant impacts early in the project cycle so that recommendations can be built into the design and cost-benefit analysis without causing major delays or increased design costs. To be effective once implementation has commenced, the EIA should lead to a mechanism whereby adequate monitoring is undertaken to realize environmental management. An important output from the EIA process should be the delineation of enabling mechanisms for such effective management. EIA is considered as a project management tool for collecting and analyzing information on the environmental effects of a project. As such, it is used to:

* Identify potential environmental impacts,
* Examine the significance of environmental implications,
* Assess whether impacts can be mitigated,
* Recommend preventive and corrective mitigating measures,
* Inform decision makers and concerned parties about the environmental implications, and
* Advise whether development should go ahead.

**EIA PROCESS**

In EIA process there are sequence of activities implemented in project in a logical sequence and are termed as EIA process.

1. consideration of alternatives
2. Screening
3. scoping
4. prediction and mitigation
5. management and monitoring
6. auditing
7. public participation
   * **CONSIDERATION OF ALTERNATIVES**

All the alternatives should be taken under consideration as the first step of the EIA process e.g.

* Changing location of the project
* Changing procedure of working that is causing problem
* Dividing a lager project to be placed on one area into small branches that can be constructed on different locations within the same city.
* **SCREENING**

Screening is the process of deciding on whether an EIA is required. This may be determined by size (e. g. greater than a predetermined surface area of irrigated land that would be affected, more than a certain percentage or flow to be diverted or more than a certain capital expenditure). Alternatively it may be based on site-specific information. For example, the repair of a recently destroyed diversion structure is unlikely to require an EIA whilst a major new headwork structure may. Guidelines for whether or not an EIA is required will be country specific depending on the laws or norms in operation. Legislation often specifies the criteria for screening and full EIA. All major donors screen projects presented for financing to decide whether an EIA is required. The output from the screening process is often a document called an Initial Environmental Examination or Evaluation (IEE). The main conclusion will be a classification of the project according to its likely environmental sensitivity. This will determine whether an EIA is needed and if so to what detail.

Screening criteria for projects requiring EIA

To further assist in the initial screening decision, development projects can be divided into two broad categories.

|  |  |
| --- | --- |
| **Threshold criteria** | **Impact criteria** |
| * **Size** * **Location** * **Output** * [**Cost/finance\***](http://www.unescap.org/drpad/vc/orientation/M8_14.htm#1) * **Environmental effects** | * **Significant but easily** * **identifiable impacts** * **Significant impacts** * **Sensitive area** |

* **THRESHOLD CRITERIA**

This method of screening establishes the thresholds for key features of a project, or an environmental parameter which exceeded the thresholds, would require an EIA. Such thresholds can range from environmental factors such as the size of agricultural land used for a development project, location, cost, outputs, infrastructure demands, and national standards for air, water and noise.

* **IMPACT CRITERIA**

These impacts are divided into three broad categories, reflecting various degrees of potential impact on the environment, determined on the basis of past experience with similar forms of development.

* + Proposal likely to have significant but easily identifiable adverse impacts on the environment and for which mitigation measures can be readily prescribed. Such project requires [Initial Environmental Examination (IEE)](http://www.unescap.org/drpad/vc/orientation/M8_lnk_1.htm) report.
  + Proposals which are likely to have significant adverse impact on the environment requires an environmental impact assessment report to be prepared
  + Proposals of projects which are proposed to be located within or near environmentally sensitive areas, are required to have an environmental impact assessment report
* **SCOPING**

Scoping is a critical, early step in the preparation of an EIA. The scoping process identifies the issues that are likely to be of most importance during the EIA and eliminates those that are of little concern. Typically, this process concludes with the establishment of Terms of Reference for the preparation of an EIA. In this way, scoping ensures that EIA studies are focused on the significant effects and time and money are not wasted on unnecessary investigations.

Scoping refers to the early, open and interactive process of determining the major issues and impacts that will be important in decision-making on the proposal, and need to be addressed in an EIA. The requirements and procedures established for this purpose differ from country to country. In many EIA systems, the involvement of the public, as well as the competent authority and other responsible government agencies, is an integral part of the scoping process. Public input helps to ensure that important issues are not overlooked when preparing Terms of Reference and/or initiating the EIA study. The purpose of scoping is to identify:

* + The important issues to be considered in an EIA;
  + The appropriate time and space boundaries of the EIA study;
  + The information necessary for decision-making; and
  + The significant effects and factors to be studied in detail.

Key objectives of scoping are to:

* inform the public about the proposal;
* identify the main stakeholders and their concerns and values;
* define the reasonable and practical alternatives to the proposal;
* focus the important issues and significant impacts to be addressed by an EIA;
* define the boundaries for an EIA in time, space and subject matter;
* set requirements for the collection of baseline and other information; and
* establish the Terms of Reference for an EIA study
* **PREDICTION AND MITIGATION**

Once the scoping exercise is complete and the major impacts to be studied have been identified, prediction work can start. This stage forms the central part of an EIA. Several major options are likely to have been proposed either at the scoping stage or before and each option may require separate prediction studies. Realistic and affordable mitigating measures cannot be proposed without first estimating the scope of the impacts, which should be in monetary terms wherever possible. It then becomes important to quantify the impact of the suggested improvements by further prediction work. Clearly, options need to be discarded as soon as their unsuitability can be proved or alternatives shown to be superior in environmental or economic terms, or both. It is also important to test the "without project" scenario.

An important outcome of this stage will be recommendations for mitigating measures. This would be contained in the Environmental Impact Statement. Clearly the aim will be to introduce measures which minimize any identified adverse impacts and enhance positive impacts. Formal and informal communication links need to be established with teams carrying out feasibility studies so that their work can take proposals into account. Similarly, feasibility studies may indicate that some options are technically or economically unacceptable and thus environmental prediction work for these options will not be required.

Many mitigating measures do not define physical changes but require management or institutional changes or additional investment, such as for health services. Mitigating measures may also be procedural changes, for example, the introduction of, or increase in, irrigation service fees to promote efficiency and water conservation. By the time prediction and mitigation are undertaken, the project preparation will be advanced and a decision will most likely have been made to proceed with the project. Considerable expenditure may have already been made and budgets allocated for the implementation of the project. Major changes could be disruptive to project processing and only accepted if prediction shows that impacts will be considerably worse than originally identified at the scoping stage. For example, an acceptable measure might be to alter the mode of operation of a reservoir to protect downstream fisheries, but a measure proposing an alternative to dam construction could be highly contentious at this stage. To avoid conflict it is important that the EIA process commences early in the project cycle. This phase of an EIA will require good management of a wide range of technical specialists with particular emphasis on:

* Prediction methods;
* Interpretation of predictions, with and without mitigating measures;
* Assessment of comparisons.

It is important to assess the required level of accuracy of predictions. *Mathematical modeling* is a valuable technique, but care must be taken to choose models that suit the available data. Because of the level of available knowledge and the complexity of the systems, physical systems are modeled more successfully than ecological systems which in turn are more successfully modeled than social systems. Social studies (including institutional capacity studies) will probably produce output in non-numerical terms. *Expert advice*, particularly from experts familiar with the locality, can provide quantification of impacts that cannot be modeled. Various techniques are available to remove the bias of individual opinion.

*Checklists, matrices, networks diagrams, graphical comparisons* and *overlays*, are all techniques developed to help carry out an EIA and present the results of an EIA in a format useful for comparing options. The main quantifiable methods of comparing options are by applying *weightings*, to environmental impacts or using economic cost-benefit analysis or a combination of the two. Numerical values, or weightings, can be applied to different environmental impacts to (subjectively) define their relative importance. Assigning economic values to all environmental impacts is not recommended as the issues are obscured by the single, final answer. However, *economic techniques* can provide insight into comparative importance where different environmental impacts are to be compared, such as either losing more wetlands or resettling a greater number of people.

When comparing a range of proposals or a variety of mitigation or enhancement activities, a number of characteristics of different impacts need to be highlighted. The relative importance of impacts needs agreeing, usually following a method of reaching a consensus but including economic considerations. The uncertainty in predicting the impact should be clearly noted. Finally, the time frame in which the impact will occur should be indicated, including whether or not the impact is irreversible

* **MANAGEMENT AND MONITORING**

The part of the EIS covering monitoring and management is often referred to as the Environmental Action Plan or Environmental Management Plan. This section not only sets out the mitigation measures needed for environmental management, both in the short and long term, but also the institutional requirements for implementation. The term 'institutional' is used here in its broadest context to encompass relationships:

* Established by law between individuals and government;
* Between individuals and groups involved in economic transactions;
* Developed to articulate legal, financial and administrative links among public agencies;
* Motivated by socio-psychological stimuli among groups and individuals

The above list highlights the breadth of options available for environmental management, namely: changes in law; changes in prices; changes in governmental institutions; and, changes in culture which may be influenced by education and information dissemination. All the management proposals need to be clearly defined and costed. One of the more straightforward and effective changes is to set-up a monitoring programme with clear definition as to which agencies are responsible for data collection, collation, interpretation and implementation of management measures. The purpose of monitoring is to compare predicted and actual impacts, particularly if the impacts are either very important or the scale of the impact cannot be very accurately predicted. The results of monitoring can be used to manage the environment, particularly to highlight problems early so that action can be taken. The range of parameters requiring monitoring may be broad or narrow and will be dictated by the 'prediction and mitigation' stage of the EIA. Typical areas of concern where monitoring is weak are: water quality, both inflow and outflow; stress in sensitive ecosystems; soil fertility, particularly salinization problems; water related health hazards; equity of water distributions; groundwater levels.

The use of satellite imagery to monitor changes in land use and the 'health' of the land and sea is becoming more common and can prove a cost-effective tool, particularly in areas with poor access. Remotely sensed data have the advantage of not being constrained by political and administrative boundaries. They can be used as one particular overlay in a GIS. However, authorization is needed for their use, which may be linked to national security issues, and may thus be hampered by reluctant governments. Monitoring should not be seen as an open-ended commitment to collect data. If the need for monitoring ceases, data collection should cease. Conversely, monitoring may reveal the need for more intensive study and the institutional infrastructure must be sufficiently flexible to adapt to changing demands. The information obtained from monitoring and management can be extremely useful for future EIAs, making them both more accurate and more efficient.

The Environmental Management Plan needs to not only include clear recommendations for action and the procedures for their implementation but must also define a programme and costs. It must be quite clear exactly how management and mitigation methods are phased with project implementation and when costs will be incurred. Mitigation and management measures will not be adopted unless they can be shown to be practicable and good value for money. The plan should also stipulate that if, during project implementation, major changes are introduced, or if the project is aborted, the EIA procedures will be re-started to evaluate the effect of such actions.

* **AUDITING**

In order to capitalize on the experience and knowledge gained, the last stage of an EIA is to carry out an Environmental Auditsome time after completion of the project or implementation of a programme. It will therefore usually be done by a separate team of specialists to that working on the bulk of the EIA. The audit should include an analysis of the technical, procedural and decision-making aspects of the EIA. Technical aspects include: the adequacy of the baseline studies, the accuracy of predictions and the suitability of mitigation measures. Procedural aspects include: the efficiency of the procedure, the fairness of the public involvement measures and the degree of coordination of roles and responsibilities. Decision-making aspects include: the utility of the process for decision making and the implications for development. The audit will determine whether recommendations and requirements made by the earlier EIA steps were incorporated successfully into project implementation. Lessons learnt and formally described in an audit can greatly assist in future EIAs and build up the expertise and efficiency of the concerned institutions.

**TYPES OF AUDIT**

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| Decision Point Audit | examines the effectiveness of EIA as a decision-making tool |
| Implementation Audit | ensures that approved conditions have been met |
| Performance Audit | examines the responses of agencies concerned with project management |
| Project Impact Audit | examines environmental changes arising from project implementation |
| Predictive Technique Audit | examines the accuracy and utility of predictive techniques by comparing actual against predicted environmental effects |
| EIA Procedures Audit | critically examines the methods and approach adopted during the EIA study |