

## 2.0 Institutional Aspects of Environmental Impact Assessment in Asia

The performance of environmental impact assessment (EIA) in developing countries in Asia over the past 25 years can hardly be considered satisfactory, in spite of the considerable effort devoted to improving cost effective EIA methods and techniques (Ebisemiju, 1993). Considering the severe limitations on EIA implementation present in Asia, significant achievements have nonetheless been made. To evaluate progress toward more effective EIA processes in developing countries in Asia, basic institutional aspects that contribute to the effectiveness of an EIA process must be understood. This chapter examines:

1. the legal mandate for EIA;
2. the steps in the EIA process;
3. the roles and responsibilities of various groups in the EIA process;
4. human resource requirements for EIA;
5. financial requirements for EIA;
6. public participation in EIA;
7. the role of environmental standards in EIA;
8. the need for guidelines and procedures in EIA;
9. the special EIA requirements of International Financial Institutions (IFIs); and
10. constraints to the implementation of EIA in developing Asia.

### 2.1 Legal Mandate

The strength of the legal mandate for EIA institutions is a measure of the level of a country's commitment to an effective EIA system. Most developing countries in Asia have an established framework for environmental protection and environmental management (Asian Development Bank, 1992). The laws, regulations, policies, and agencies that define each country's institutional framework are designed to contribute to the conservation and protection of the environment. Many institutions are concerned with pollution prevention and the protection of air and water quality. Others are concerned with conservation, protected areas, and the protection of biodiversity. Still others, including EIA institutions, regulate, enforce, and coordinate resource use and development activities (Asian Development Bank, 1992).

A number of high-level environmental agencies have been established in Asian developing countries. For example, in the Republic of Korea, the Environmental Administration is a central agency dealing with environmental matters in general and with pollution in particular. It has statutory authority to implement government policy through local government, and is responsible for improving environmental quality in general and setting specific environmental quality standards for development projects. In India, the environmental agency reports directly to the Prime Minister. Singapore has a separate ministry which deals with environmental matters, while Indonesia, Laos, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, and Viet Nam each have a ministry that deals with environmental matters in connection with other related issues such as population (Nepal), transport (Sri Lanka), science and technology (Lao People's Democratic Republic, Malaysia, Thailand, Viet Nam), and natural resources (Philippines, Bangladesh). The Cook Islands has a Directorate of Conservation and Papua New Guinea has a Ministry for Environment and Conservation.

Most Asian developing countries have some form of environmental legislation. Invariably, it includes a statement on policy, goals, objectives, and priorities. In some cases, it covers several aspects of environment; in

others it merely establishes the enabling acts and defines the scope and functions of the central environmental agency, or provides for a statutory environmental review procedure. The various types of legislation may be classified as follows (Asian Development Bank, 1992):

1. environmental problems covered by comprehensive environmental legislation, as in the Republic of Korea, Pakistan, Philippines, and Viet Nam (see Box 2-1);
2. environmental problems covered by comprehensive environmental legislation and supplemented by legislation in sectoral areas, as in the People's Republic of China (PRC), Indonesia, Malaysia, Sri Lanka, and Thailand;
3. sectoral legislation dealing with specific environmental problems, as in Bangladesh; Fiji; PRC; Hong Kong, China; India; Papua New Guinea; and Singapore;
4. limited sectoral legislation, as in Nepal and some South Pacific developing countries; and
5. legislation extremely limited, as in Bhutan, Maldives, and some South Pacific developing countries.

Traditional areas of environmental concern, like air and water quality, forestry, wildlife, land use, and sociocultural needs, are generally well covered by existing legislation. More recent areas of concern, including the disposal, recycling and reuse of domestic wastes, threats to coastal environments, the use of hazardous chemicals, and mining, are usually lacking coverage (Asian Development Bank, 1992).

In some cases, IFIs provide countries with assistance in strengthening environmental management legislation and capabilities. One such example is an ongoing Asian Development Bank (ADB) Technical Assistance (TA No. 2531-BHU) which is helping Bhutan to strengthen its EIA capabilities and to prepare environmental and sectoral EIA guidelines.

### 2.1.1 Enforcement of Environmental Legislation

Environmental law and the practice of environmental protection in developing countries is often described as rule-oriented and poorly implemented and enforced. The reasons for this include fragmentation of the legal basis for action, lack of coordination between environmental and sectoral government agencies, and deficiencies in personnel skills and material requirements. Improvement of these conditions lies not only in better legislation, but also in education, planning, budgeting, and reordering of national priorities.

Although legislation often plays a major role in environmental improvement, nothing guarantees that the intent of the legislators will be implemented in practice. Environmental legislation is often not expressed in regulations, enforcement, control, and decrees or guidelines for implementation. Effective implementation of the law requires:

- promulgation of executory regulations;
- organization of new institutions where necessary;
- effective operation of management and enforcement;
- definition of appropriate conditions for the issuance of licences;
- setting of environmental quality standards;
- recruitment and training of personnel;
- provision of material means and equipment; and
- allocation of appropriate budgets.

**Box 2-1: Environmental legislation in Viet Nam.**

The legal framework for environmental management in Viet Nam is based on the National Environmental Protection Law (NEPL) approved by the National Assembly on December 27, 1993. The NEPL is enabling legislation intended to establish the basic tenets of environmental management by setting the course for environmental policy and regulatory development. It lays down a framework intended to improve national, provincial and local organizational efficiency, and to raise environmental awareness in all levels of society to safeguard human and environmental health and to promote sustainable development. The NEPL designates the Ministry of Science, Technology and Environment (MOSTE) as the institution responsible for implementation of the NEPL at the national level; the Departments of Science, Technology and Environment assume this responsibility at the provincial level. This legislative mandate is crucial for two reasons. First, it is legislated, that is, it derives from an enactment of the National Assembly, the most important political institution in the country. Second, the NEPL belongs to the new generation of Vietnamese laws that are more comprehensive and precise than their predecessors.

The National Environment Agency (NEA) within MOSTE has overall responsibility for state environmental management, including:

1. promulgating and organizing the execution of legal documents on environmental protection, and promulgating a system of environmental standards;
2. formulating and directing the implementation of an environmental strategy and policies on environmental protection, and plans for preventing environmental degradation, deterioration, pollution, and accidents;
3. establishing and managing facilities for environmental protection and facilities relating to environmental protection;
4. organizing, developing and managing systems for environmental monitoring, including periodically evaluating the actual state of the environment, and forecasting environmental changes;
5. evaluation of reports on environmental impacts resulting from new projects and existing facilities;
6. issuing and revoking certificates based on compliance with environmental standards;
7. inspecting, controlling and supervising the observance of the NEPL, presiding over disputes and complaints relating to environmental protection, and dealing with breaches of the NEPL;
8. training of personnel in environmental science and management, and educating, popularizing and disseminating knowledge on environmental protection and the NEPL;
9. organizing research and development activities and the application of scientific technological advances in the field of environmental protection; and
10. developing international relations in the field of environmental protection.

The framework for environmental assessment is laid out in:

- Government Decree No. 175/CP- Providing Guidance for the Implementation of the Law on Environmental Protection (October 1993);
- MOSTE Instruction No: 715/QD-MTg- Guidance on Setting Up and Appraising the Report of Environmental Impact Assessment for Foreign Investment Project (April 3, 1995);
- MOSTE Instruction No. 1420/QD-MTg- Guidance on Environmental Impact Assessment For Operating Units (December 26, 1994);
- MOSTE Decision No. 1806/QD-Ttg- Promulgation of the Regulations and Organization of Appraisal Council on Environmental Impact Assessment and Issuing Environmental License (December 31, 1994); and
- MOSTE Decision No. 1807/QD/MTg- Regulations on Organization of Appraisal Council on Environmental Impact Assessment and Issuing Environmental License (December 31, 1994).

These decrees and instructions outline the contents and formats for EIA reports and define the procedures for their subsequent review and appraisal.

Human resource development should encompass training in environmental planning and management; training in enforcement procedures; and the provision of monitoring equipment and support in its use, maintenance, and repair. Without these measures, the intent of the environmental legislation will remain largely ineffective.

To date, the priority of decision makers in developing countries has been short term economic sustainability (Ludwig, 1993). Short term economic sustainability does not take account of the environmental consequences of economic development. Until decision makers are able to reorient their priorities towards long-term economic sustainability, which depends on a sustainable flow of resources for the environment, commitments to protect and enhance the environment will remain insufficient. The ADB's Klang Valley Environmental Improvement Project (Asian Development Bank, 1987a) provides one example of an estimate of the degree of enforcement of environmental legislation. This study compiled all existing environmental legislation and regulations for Malaysia. The study estimated that the overall average level of enforcement was about 20%, a figure considered to be relatively high for an Asian developing country.

### **2.1.2 Environmental Impact Assessment: Legislative Versus Administrative Arrangements**

Two approaches, legislative and administrative, have been used to introduce EIA into the development planning process. Legislation is used to create a clear and unambiguous mandate to ensure and enforce consideration of environmental matters in development decision making. Legislation regarding the use of EIA varies from countries which have specific EIA legislation to those which have no specific EIA legislation (see Table 2-1). The latter countries rely instead on general environmental protection legislation to help mitigate adverse environmental impacts.

Administrative approaches usually take the form of executive orders, policy statements, national conservation strategies, or environmental action plans. Effective administrative procedures for EIA force project proponents to comply with procedures in a meaningful way. Project proponents generally resist taking EIA seriously because it may increase project cost, it reduces their autonomy and it provides information to potential project opponents. EIA procedures that do not have sanctions for noncompliance are often met with token compliance or less. In many countries, the EIA requirements are rigorous but unenforceable.

Development programs or projects with potentially significant environmental impacts are often reviewed by government departments responsible for environmental matters such as natural resources management and conservation. Because many departments do not possess any statutory guidelines or mandated power, such review procedures are often ineffective. Review processes are therefore being transferred to specific interdepartmental committees and, in some instances, to environmental ministries or other statutory agencies/boards.

**Table 2-1:** Institutional arrangements and environmental agencies for EIA in selected Asia-Pacific developing countries (*source:* adapted from Smith and van der Wansem, 1995).

Country	Main Oversight Agency	Legislative and Administrative Documents	Date of Enactment
Bangladesh	Department of Environment within the Ministry of Environment and Forests	• Constitutional Provision for Conservation	1972
		• Guidelines for Private Appraisal in Water Sector	1991
		• Guidelines for EIA in Water Sector	
		• National Environment Policy and Action Plan	1992
		• Guidelines for People's Participation in Water Sector	1992
		• National Environmental Guidelines for Industries	1993
		• No specific EIA legislation, however there was a Declaration that Environmental Impact Assessments should be carried out for all major development projects	pending
		• Environment Protection Act	1995
		• National Environmental Management Action Plan	1995
Cambodia	Ministry of Environment	• Law on Environment Protection and Natural Resource Management	1996
People's Republic of China	National Environmental Protection Agency at various levels (no committee review)	• Constitutional Provision: Article 11	1978
		• Environmental Protection Law (Articles 6, 7)	1979
		• Marine Environmental Protection Law	1982
		• Management Guidelines on Environmental Protection of Construction Projects of the P.R.C.	1986
		• Regulations for Engineer Design on Environmental Protection Construction Projects	1987
		• Management Procedure for Environmental Protection of Construction Projects	1990
		• Constitutional Provision: Articles 9, 10, 22, 26	1993
		• Management Guidelines on Strengthening Loan Projects for EIA	1993-95
India	Department of Environment within the Ministry of Environment*	• Administrative Instructions Established	1973
		• Constitutional Provision: Articles 48A and 51A(g)	1977
		• Department of Environment (Protection) Act No. 29	1986
		• Specific legislation is planned	
Indonesia	BAPEDAL (Environmental Impact Management Agency) within the Ministry of the Environment (uses two EIA review commissions)	• Constitutional provision: Article 33(3)	1945, 1973
		• Articulation of a National Environmental Policy, as part of the general Guidelines of the State Policy (GBHN)	1978
		• Creation of the State Ministry of Population and Environment (KLH)	1982
		• Act No. 4 Basic Provisions for the Management of the Living Environment (Article 16)	1986
		• Government Regulation No. 29: required implementation, as of 5 June 1987, of an AMDAL (EIA) System	1987
		• Ministerial Decrees Nos. 49-53: General AMDAL guidelines promulgated by KLH	1990
		• Presidential Decree No. 23, creating new agency BAPEDAL	
• Government Regulation No. 51, repealing Nos. 29 and 49-53, only addresses applicability parameters	1993		
Lao PDR	Science, Technology and Environment Office	• No EIS legislation to date	
Malaysia	Department of Environment (DOE) within the Ministry of Science, Technology and	• Implicit reference in Constitution	
		• Environmental Quality Act	1974
		• Environmental Quality Act Amendment	1985

Country	Main Oversight Agency	Legislative and Administrative Documents	Date of Enactment
	Environment **	<ul style="list-style-type: none"> <li>• Environmental Quality (Prescribed Activity) (EIA) Order</li> <li>• Environmental Quality Act Amendment</li> </ul>	1987 1996
Nepal	Environmental Impact Study Project (EISP), Department of Soil and Watershed Management, Ministry of Population and Environment	No formal procedure for EIA of selected projects	
Philippines	Environmental Management Bureau of Department of Environment and Natural Resources	<ul style="list-style-type: none"> <li>• Presidential Decree (PD) 1151 Philippine Environment Policy</li> <li>• PD 1586 Establishing the Environmental Impact Statement (EIS) System</li> <li>• Rules and Regulations to Implement the EIS System</li> </ul>	1977 1978 1985
Sri Lanka	Central Environmental Authority within the Ministry of Transport, Environment and Women's Affairs	<ul style="list-style-type: none"> <li>• National Environmental Act</li> <li>• Coast Conservation Act</li> <li>• Government Notification 772/72</li> <li>• Government Notification 859/14</li> <li>• EIA Guidelines</li> <li>• Provincial Statutes; e.g., Northwestern Province Environmental Statute No. 12 of 1990</li> </ul>	1980 1981 1993 1995 1993/95
Thailand	Ministry of Science, Technology and Environment***	• Environmental Quality Act	1992
Viet Nam	National Environment Agency in the Ministry of Science, Technology and Environment	• Environmental Protection Law	1994

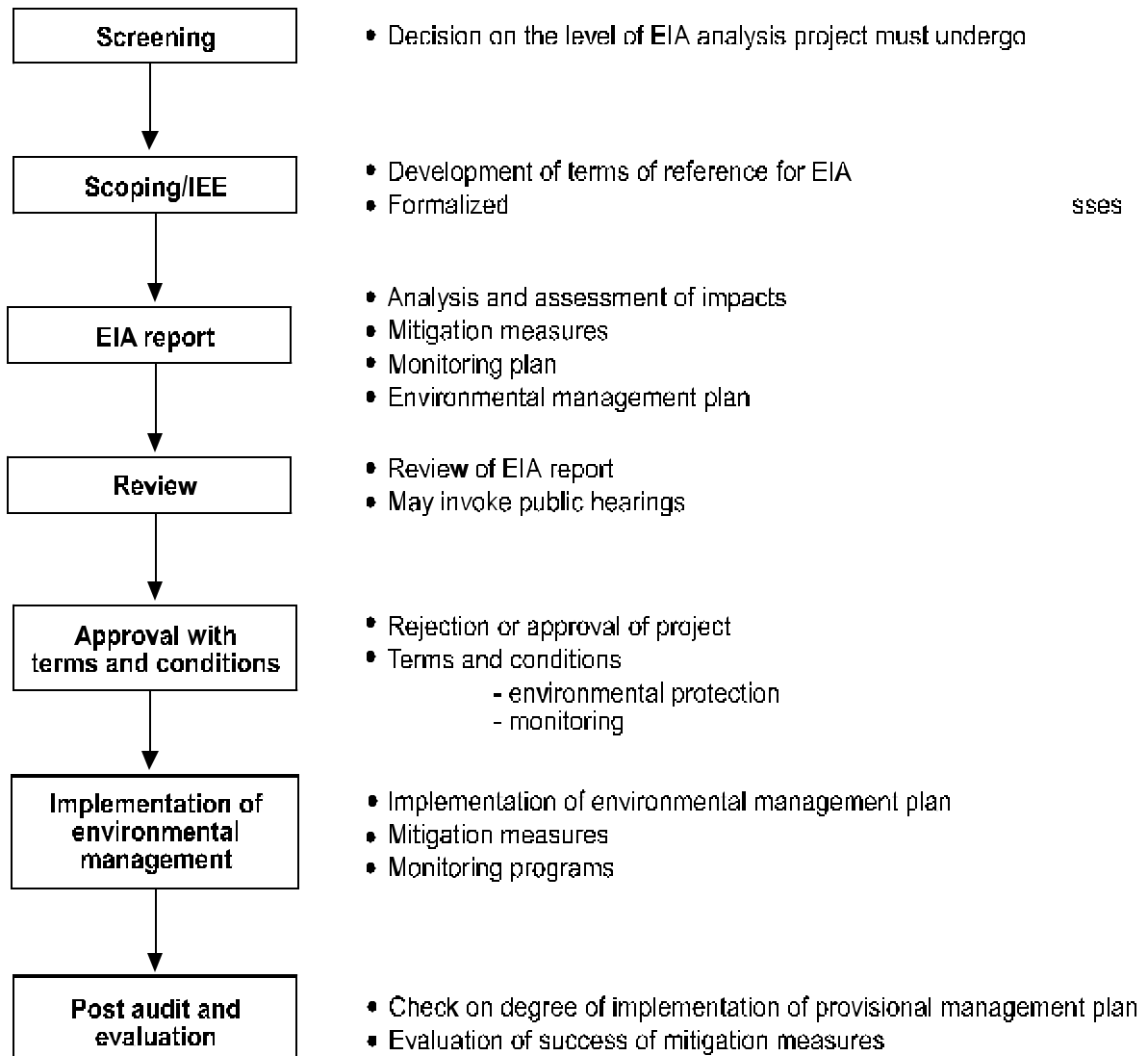
\* uses an environmental appraisal committee

\*\* EIA Review Committee within DOE for preliminary EIAs and an EIA ad hoc panel for detailed EIAs

\*\*\* with three departments on environment (Office of Policy and Planning, Pollution Control Department, Department of Environmental Quality Promotion)

## 2.2 Environmental Impact Assessment Process in the Asian Context

From a procedural perspective, EIA is a multi-step process by which a wide range of issues are taken into account to determine whether and/or under which environmental constraints a project should be undertaken. The effectiveness of the EIA system is dependent on the specific steps involved in reviewing project proposals. In general, the major steps in the EIA process (Figure 2-1) are: 1) screening; 2) scoping or preparation of an Initial Environmental Examination (IEE) report; 3) preparation of an EIA report; 4) review of the EIA report; 5) approval of the EIA report with terms and conditions; and 6) environmental management. In some jurisdictions there is an additional step called post audit and evaluation. Post audit is usually undertaken sometime after the project is operational.



**Figure 2-1:** Major steps in the EIA process.

### 2.2.1 Screening

*Screening* is the process undertaken to decide which level of environmental review a project requires. In some countries, it is simply a decision as to whether an EIA is required or not using prescribed lists or criteria. For the most part, the screening criteria for determining the level of review required are relatively well defined. In some cases there is considerable discretion in determining whether or not an EIA should be carried out. For example, in the Philippines, projects considered environmentally critical or proposed for an environmentally critical area must undergo an EIA (Box 2-2). The ADB uses a threefold categorization: an EIA, an IEE, and no EIA (Box 2-3). The World Bank has a similar system.

**Box 2-2: Screening criteria for the Philippines.**

Philippine regulations require the preparation of an Environmental Impact Statement (EIS) for environmentally critical projects and a Project Description (PD) for projects which impact environmentally critical areas. In 1979, the EIS system was institutionalized by virtue of the Presidential Decree 1586.

Environmentally critical projects under Philippine regulations include:

- heavy industries;
- resource extraction; and
- infrastructure projects.

Environmentally critical areas under Philippine regulations include:

- national parks, watershed reserves, wildlife reserves and sanctuaries;
- areas set aside as aesthetically potential tourist spots;
- habitats of endangered or threatened species of indigenous Philippine wildlife;
- areas of unique archaeological or scientific interest;
- areas frequently visited and/or hard hit by natural calamities including: typhoons, tsunamis, earthquakes, storm surges, and floods;
- areas with critical slopes;
- areas defined as prime agricultural land;
- aquifers;
- water bodies;
- mangrove swamps; and
- coral reefs.

**Box 2-3: Screening in multilateral lending agencies.****Asian Development Bank Project Categories**

The ADB categorizes projects into three groups, each of which requires a different level of environmental review. For projects that are being considered for funding by the ADB, every effort should be made to adhere to ADB procedure from the earliest project development stages. The categorization procedure is explained in Section 21 of the ADB's Operations Manual entitled "Environmental Considerations in Bank Operations" (also in Asian Development Bank, 1993b).

**Project Category A:** Projects in this category typically require an EIA. The project type, scale, and location determine this designation. The potentially significant environmental issues for these projects may lead to changes in land use, as well as changes to the social, physical, and biological environment. The ADB suggests that an environmental specialist's advice be sought to determine the scope of the EIA necessary for compliance with the ADB's environmental policies. Bank personnel are involved in this category of project from early field reconnaissance through EIA review.

**Project Category B:** This category is for projects that require an IEE, but not an EIA. Often the only difference between projects in this category and those in category A is the scale. Large power plant projects fall under category A; medium-sized power plant projects are in category B. The environmental impacts from these projects are generally less severe than those of projects in category A, and these projects are not located in environmentally sensitive areas. Mitigation measures for these projects are more easily prescribed. The Bank suggests that an environmental specialist will be required to assist in formulating the Terms of Reference for the IEE so that the IEE report will comply with Bank policies.

**Project Category C:** This category is for projects that typically do not require an environmental assessment. These projects are unlikely to have adverse environmental impacts.

**World Bank Project Categories**

The categorization procedure in use at the World Bank is explained in the World Bank's Operational Manual under Operational Directive 4.01 (original OD 4.00 is reproduced in Volume 1 of World Bank, 1991 and updated to OD 4.01 in World Bank, 1993). The World Bank's categorization procedure differs from that of the ADB in that the IEE is part of the project screening step, so although Category B projects require an environmental assessment reduced in scale from that of an EIA, an IEE is not mentioned. The categories are defined below.

**Project Category A:** Projects in this category typically require an EIA. The potential significant environmental issues for these projects may lead to significant changes in land use, as well as changes to the social, physical, and biological environment. This category is identical to Category A of the ADB.

**Project Category B:** This category is for projects that usually require an environmental review but at a level of effort less than that of an EIA study. This category is basically the same as the ADB's Category B.

**Project Category C:** This category is for projects that typically do not require an environmental assessment. These projects are unlikely to have adverse environmental impacts. This is the same as the ADB's Category C.

**2.2.2 Scoping to Determine the Terms of Reference for EIA**

*Scoping* is the process of determining the issues to be addressed, the information to be collected, and the analysis required to assess the environmental impacts of a project. The primary output of scoping is the terms of reference (TOR) required to conduct an EIA and to prepare the EIA report. Most EIA administrative agencies in Asia approve the TOR for the EIA, but few agencies prepare them. The task of preparation is left to the proponent who normally contracts a team of EIA practitioners (EIA Team) to prepare the TOR. These are then submitted to the review agency. For example, in the PRC, the local Environmental Protection Bureau (EPB) is responsible for scoping but often does not have the capacity to develop TOR for EIAs; they rely heavily on EIA practitioners to do this. The TOR developed by the EIA team are then reviewed by the EPBs with the help of outside experts. Without sectoral guidelines, the EIA team has much latitude in the development of the TOR. In the absence of

public participation, the scope and quality of the EIA are dependent on the interplay of experts hired by the review agency and the EIA team. The EIA team must work within the proponent's budget. The work proposed by the EIA team is always influenced by the training and capabilities of its members. For example, a group of engineers and physical scientists is less likely to recommend comprehensive biological surveys than a group of biologists. Sectoral guidelines developed by an independent group of experts are needed to counter these tendencies.

In some developing countries, the TOR are developed from general guidelines. These guidelines often require baseline data that has little relevance to the situation at hand. This leads to an EIA report with extensive superfluous baseline information, little analysis of impacts, and a standard set of mitigation measures. In the absence of clear guidelines, the TOR for a study are developed by the EIA practitioners undertaking the work. These practitioners must negotiate the TOR with the review agency in each case.

### **Initial Environmental Examination**

In some EIA processes, scoping is conducted in the context of an *initial environmental examination*. After a project has been screened and found to have potentially significant environmental impacts, an IEE is undertaken to determine the probable environmental impacts associated with the project and ascertain whether a full-scale EIA is required. The IEE is usually conducted with a limited budget, and is based on existing information and the professional judgment of people who are knowledgeable about impacts from similar projects. The three primary objectives of the IEE are to:

1. identify the nature and severity of specific, significant environmental issues associated with the project;
2. identify easily implementable mitigative or offsetting measures for the significant environmental issues. If the IEE shows there are no significant environmental issues which need further study, then the IEE serves as the final EIA Report; and
3. develop the TOR for the full-scale EIA study should more detailed assessment be needed, or any special topic reports which may be required instead of, or in addition to, the full-scale EIA.

The IEE process involves identifying potentially significant environmental issues, and resolving those issues which are easily mitigated. Conducting an IEE ensures a focused TOR for a full-scale EIA because it identifies the issues requiring resolution and provides background information on them. The objectives of the IEE may be met without extensive financial and human resources, thereby increasing efficiency. The most crucial requirements for IEE execution are excellent judgment and appropriate experience, since evaluations and decisions are based on limited information. Competent EIA practitioners need to be involved in the IEE phase because the decisions made at this stage affect the composition and scope of the EIA performed on a project. A poor IEE report could result in failure to recognize significant environmental impacts, but a good report can result in efficient resolution of significant environmental issues.

### **2.2.3 Full-Scale EIA**

A project must undergo a *full scale EIA* if it is explicitly prescribed by law (or regulation) or if the IEE results indicate that an EIA is required. A full-scale EIA normally involves a rigorous study whereby new environmental information is collected. A number of environmental experts are generally required. A full-scale EIA may also undergo or involve elaborate review procedures and requirements for public consultation. A detailed EIA report is required as part of a full-scale EIA. EIA reports are generally prepared by EIA practitioners. Depending on their capability, the available budget, and the time frame, they produce reports of varying quality. In most cases, consultants follow the guidelines developed by the review agency and/or the international assistance agency (IAA) (if any). These guidelines specify what is to be included in the EIA report. Because the scope of the TOR is often too broad for the available time and money, EIA reports do not always provide an in-depth analysis of the critical issues.

## The Ideal Terms of Reference

The Project on Coherence of Environmental Assessment in International Bilateral Aid (OECD, 1994) developed procedural guidelines that include a framework TOR for environmental assessment of development assistance projects (Table 2-2). The guidelines were prepared for use by desk officers and environmental specialists of bilateral aid agencies, other operational staff of in-country units (embassies, posts, or missions), and implementing agencies within developing countries. The framework TOR are, however, also applicable to the environmental assessment requirements of multilateral institutions (for example, the ADB and the World Bank). These TOR are a useful standard. They illustrate the importance of clear, detailed TOR for EIAs prepared in developing countries in Asia. They represent the ideal — it is very doubtful that any EIA prepared to date has ever included all information listed in the framework TOR.

The framework TOR outline the requirements for two qualitatively different types of information: 1) detailed project justification; and 2) detailed environmental assessment information.

Detailed project justification includes information on:

- the problem or development goal;
- the proposed solution;
- cooperation amongst donors, lenders, and the developing country;
- the objectives of the assessment;
- legal and policy considerations;
- the institutional capacity;
- alternatives to the project and within the project;
- institutional cooperation; and
- public involvement.

The provision of this information is normally the responsibility of the bilateral or multilateral agency and the implementing agency in the developing country. In the case of a bilateral development project or a multilateral bank loan, this information is to be collected during the early stages of project formulation prior to the conduct of the feasibility study. In the case of a project being undertaken without international assistance, this information will be produced by the national economic planning agency.

Detailed environmental assessment information includes:

- a project description;
- a description of the environment;
- information quality;
- positive impacts;
- negative impacts on
  - natural resources
  - human resources
  - resettlement and compensation
  - cumulative impacts
  - trans-boundary impacts
  - impact significance;

- mitigation measures;
- an environmental management plan; and
- an environmental monitoring program/plan.

Most of this information is to be provided by the project proponent or the EIA practitioners who are responsible for the environmental assessment. It is the basic information that is required to prepare an EIA report. At a minimum, an EIA report should have the following contents:

Executive Summary

1. Introduction
2. Description of the Project
3. Description of the Environment
4. Anticipated Environmental Impacts and Mitigation Measures
5. Alternatives
6. Environmental Monitoring
7. Additional Studies
8. Environmental Management Plan and Environmental Management Office
9. Summary and Conclusions
10. Annexes

A detailed presentation of the contents of the EIA report is presented in Chapter 11.

**Table 2-2:** Framework terms of reference for environmental assessment of a development project (*source:* adapted from OECD, 1994).

Information	Basic Requirement	Responsibility
A. Introduction		
1. Background	Introduce the project and most critical environmental issues involved	- all
B. Context		
2. The Problem	Summarize the basic development issues or problem being addressed by the proposed activity (e.g., pollution, flooding, drought, erosion, energy shortage, poor health, inadequate infrastructure)	- bilateral agency - multi-lateral agency - country project implementing agency
3. The Proposed Solution	Summarize the way in which the proposed activity is expected to resolve the issues, or solve or alleviate the problem with the emphasis on sustainability	- bilateral agency - multi-lateral agency - country project implementing agency
4. Cooperation Amongst Jurisdictions	Summarize agreement or arrangements between the donor(s) or lenders and the recipient country under which the EIA is being conducted	- bilateral agency - multi-lateral agency - country project implementing agency
5. Objectives of the Assessment	State clearly the objectives of the assessment and the relationship of the results to project planning, design, implementation, and follow-up.	- bilateral agency - multi-lateral agency - country project implementing agency
C. Institutional Setting		
6. Legal/Policy Base	Summarize the legal, policy and procedural basis for the EIA in the recipient country and the donor country	- bilateral agency - multi-lateral agency - country project implementing agency
7. Institutional Capacity	Summarize and provide an appraisal of the strengths and limitations of the recipient country in the various fields of environmental protection and management	- bilateral agency - multi-lateral agency - country project implementing agency
D. Alternatives		
8. Alternative to the Project		
8a. Policy Interventions	Assess the potential for achieving the basic developmental objective at the policy level	- bilateral agency - multi-lateral agency - country project implementing agency
8b. Other Projects	Assess the potential for achieving the basic development objective by implementing other projects which are substantially different than the one proposed.	- bilateral agency - multi-lateral agency - country project implementing agency
9. Alternatives within the Project	Evaluate potential alternatives for key aspects of the proposed project (e.g., options for siting, waste management, energy conservation, and pollution control technology).	- bilateral agency - multi-lateral agency - country project implementing agency
E. Institutional and Public Involvement		
10. Institutional Cooperation	Show clearly how the proposed project conforms with the overall development strategy and the priorities of the recipient country.	- bilateral agency - multi-lateral agency - country project implementing agency
11. Public Involvement	Show how affected groups and non-governmental organizations in the recipient country, and the interested publics in the recipient country, will be given the opportunity to participate in the assessment process.	- bilateral agency - multi-lateral agency - country project implementing agency

Information	Basic Requirement	Responsibility
F. Required Information and Data		
12. Description of the Project	Describe the project (design, location, layout, size, capacity, activities); inputs (land, raw materials, energy) and outputs (products, by-products, wastes).	- project proponent or EIA consultants responsible for EIA Report Preparation
13. Description of Environment	Identify study boundaries and provide baseline data on relevant (as determined from scoping results) physical, ecological, social, economic, cultural, and demographic conditions within those boundaries.	- project proponent or EIA consultants responsible for EIA Report Preparation
14. Information Quality	Assess the quality of all information, identify data gaps, and summarize limitations placed on the assessment from such deficiencies.	- project proponent or EIA consultants responsible for EIA Report Preparation
G. Analysis of Impacts		
15. Positive Impacts	Predict how the lives of affected people will be improved and any enhancement of natural systems resulting from project implementation.	- project proponent or EIA consultants responsible for EIA Report Preparation
16. Negative Impacts		
16a Natural Resources	Predict any significant reduction in the quality of air, water and soil and loss of biodiversity.	- project proponent or EIA consultants responsible for EIA Report Preparation
16b Human Resources	Evaluate the risk of significant deterioration in the health or well-being of the affected people.	- project proponent or EIA consultants responsible for EIA Report Preparation
16c Relocation and Compensation	Evaluate plans for involuntary resettlement and describe measures taken to minimize the need for relocation.	- project proponent or EIA consultants responsible for EIA Report Preparation
16d Cumulative Impacts	Evaluate the incremental contribution to long term degradation of local natural and systems.	- project proponent or EIA consultants responsible for EIA Report Preparation
16e Trans-Boundary Impacts	Evaluate the potential for impact on neighboring countries and the potential effects on the global commons.	- project proponent or EIA consultants responsible for EIA Report Preparation
16f Impact Significance	Define the meaning of "significant" and assess the "significance" of the expected impacts.	- project proponent or EIA consultants responsible for EIA Report Preparation
H. Mitigation and Monitoring		
17. Environmental Management Plan	Provide a detailed plan covering mitigation of predicted impacts, management of residual impacts, resettlement and compensation schemes, decommissioning, and training programs.	- project proponent or EIA consultants responsible for EIA Report Preparation
18. Environmental Monitoring Program/Plan	Provide a comprehensive and detailed plan covering the environmental and social variables to be monitored, the location and timing of sampling and the use to be made of the monitoring data.	- project proponent or EIA consultants responsible for EIA Report Preparation
I. Conclusions and Recommendations		
19. Project Decisions	Indicate the extent to which the proposed project conforms with the general principles of sustainable development.	- bilateral agency - multi-lateral agency - country project implementing agency - project proponent or EIA consultants responsible for EIA Report Preparation
20. Technical Matters	Summarize the design and operational changes considered critical to improving the environmental acceptability of the project.	- project proponent or EIA consultants responsible for EIA Report Preparation
21. Non-Technical (Executive) Summary	Summarize in non-technical terms, the key findings and recommendations of the assessment, including the main economic benefits, significant environmental effects and proposed mitigation measures.	- project proponent or EIA consultants responsible for EIA Report Preparation

Information	Basic Requirement	Responsibility
J. Additional Information		
22. Organization	Provide information on the assessment team, the overall approach, the organization of component studies, the schedule, the budget and the independent review.	- project proponent or EIA consultants responsible for EIA Report Preparation
23. Additional Studies	Provide information on the results of additional studies done to support the EIA (e.g., environmental risk assessment, environmental economic analyses)	

#### 2.2.4 Review Process

Different jurisdictions use different arrangements for the review of projects (Table 2-3). Often EIA reports are reviewed by a review agency or by a special “Standing Committee” or “Commission” established to review projects in a given sector. In most cases, a technical evaluation of the EIA report is made by specialists. This technical evaluation provides the basis for the review. The output of the review is either a rejection of the project, or an approval report outlining terms and conditions under which the project may proceed. These terms and conditions are attached to any licence, permit, or certificate issued by the approval authority. IAAs like the ADB and the World Bank also use experts for the review and evaluation of EIA reports submitted to them as part of their environmental assessment requirements.

**Table 2-3:** Example institutional arrangements for review of project proposals (*source:* Smith and van der Wansem, 1995).

Country	Main Oversight Agency	EIA Preparer	Public Participation	Coordination with Local Authority	Penalty for Violation
Bangladesh	Ministry of Environment and Forests	Project Proponent	No	No	No
People's Republic of China	National Environmental Protection Agency	Project Proponent	Yes, but no public hearings	Yes	Yes
India	Department of Environment within the Ministry of Environment	Project Proponent	Limited	Yes	No
Indonesia	BAPEDAL Environmental Impact Management Agency within the Ministry of the Environment	Project Proponent	Limited	Yes	No
Lao PDR	If EIS conducted, Ministry of Agriculture and Forestry				
Malaysia	Department of Environment within the Ministry of Science, Technology and Environment	Project Proponent	Yes	Yes	Yes
Philippines	Environmental Management Bureau of Department of Environment and Natural Resources	Project Proponent	Yes	Yes	
Thailand	Ministry of Science, Technology and Environment	Project Proponent	Yes	Yes	

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Viet Nam	National Environment Agency within the Ministry of Science, Technology and Environment	Project Proponent	No	Yes	No
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### 2.2.5 Approval Process - Attaching Terms and Conditions

In most cases, the results of an EIA review are provided to the agency that is responsible for ultimately approving the proposed project. In many jurisdictions, project approval also depends on approval from the EIA agency. One output of the EIA review process is the terms and conditions that are attached to approvals. These terms and conditions define the environmental protection measures that must be integrated into a project. The terms and conditions may also specify environmental monitoring that must be undertaken in conjunction with the project. For example, in the PRC, EPB (National Environmental Protection Agency for large projects) staff must inspect construction projects to ensure that the environmental protection measures are installed and operable prior to giving final clearance to the project.

### 2.2.6 Environmental Management and Monitoring

*Environmental management* is that part of project management that is responsible for implementation of mitigation measures and environmental monitoring. The *environmental management plan* (see Section 1.4.2) outlines the mitigations and other measures that will be undertaken to ensure compliance with environmental laws and regulations, to reduce or eliminate adverse impacts, and to promote feasible environmental enhancement measures. The *environmental monitoring plan* (see Section 1.4.3) outlines the objectives of the monitoring; the specific information to be collected; the data collection program, including sampling design; and monitoring program management. Environmental management includes assigning institutional responsibility, reporting requirements, enforcement capability, and ensuring that adequate resources are provided in terms of funds, skilled staff, equipment, and supplementary training.

The details of preparing environmental management plans are presented in Chapter 10. The details of preparing an environmental monitoring program are discussed in Chapter 9.

### 2.2.7 Post-Audit and Evaluation

Most EIA processes recognize the need for follow-up and evaluation. Follow-up is required to determine whether the environmental protection measures and monitoring programs that were conditions of project approval have been undertaken as required. Further follow-up is required to determine if the environmental protection measures were successful and if the monitoring data have been analyzed and acted upon. Box 2-4 illustrates the ADB's approach to EIA follow-up and evaluation.

**Box 2-4: Post evaluation procedures of the Asian Development Bank.**

A review mission is dispatched periodically to undertake discussions with concerned executing agencies to determine the degree to which environmental mitigation measures earlier agreed upon by both the borrower and the Bank have been implemented. It is the task of the review mission to verify that environmental safeguards built into the project design are satisfactorily implemented by the borrower/executing agency during the construction and operation of the project. For example, industrial project problems may occur during operations due to insufficient maintenance or non-use of pollution control devices and facilities. For infrastructure projects, such as roads, railways, and ports, the critical stage is often during construction. Independent third party monitoring of environmental aspects may be considered as part of the overall project plan.

The ADB's post-evaluation reports and project performance audit reports include a final assessment of the degree to which the projects satisfied the proposed environmental requirements, the effectiveness of mitigatory measures and institutional development, and whether any unanticipated effects occurred as a result of project activities. The Environment Division of the ADB prepares an annual report, *Post-Project Appraisal: Projects Requiring Environmental Analysis*. The report reviews and assesses, for each project, the: 1) beneficial and detrimental environmental impacts of the project; 2) location and design/operational alternatives considered and reasons for final choice; 3) environmental protection measures adopted and the effect of such measures upon project costs and on the economic evaluation of the project; and 4) environmental aspects of the project in relation to overall cost-benefit analysis.

### 2.3 Roles and Responsibilities of Groups Involved in the EIA System

There are many actors in the EIA process. Each has an important role to play (Table 2-4). An effective EIA system gives each actor ample opportunity for participation.

**Table 2-4:** Roles and responsibilities by EIA process stage.

EIA Process Stage	Actor				
	EIA Administrative Agency	Proponent	EIA Practitioners	Other Government Agencies	Public and Interest Groups
<b>Screening</b>	Screen project	Provide necessary information	Assist proponent and review agency by providing technical information and advice	Raise issues and concerns Provide review comments	
<b>Scoping/IEE</b>	Approve TOR Review IEE	Provide TOR Provide IEE	Prepare TOR Review TOR Prepare IEE Review IEE	Raise issues and concerns Provide review comments	Participate in consultative process
<b>Full Scale EIA</b>	Approve TOR	Provide EIA	Prepare EIA	Raise issues and concerns Provide review comments	Participate in consultative process
<b>Review</b>	Review EIA		Review EIA	Provide review comments	
<b>Approval</b>	Approve EIA Attach terms and conditions		Advise review agency on appropriate terms and conditions	Approve project	
<b>Environmental Management</b>		Implement environmental protection measures and monitoring	Conduct monitoring	Implement monitoring	
<b>Post Audit and Evaluation</b>	Evaluate project	Provide necessary information			

### 2.3.1 EIA Administrative Agency

The *EIA administrative agency* has responsibility for efficient operation of the EIA process. This encompasses a number of tasks, including screening of projects and provision of general procedural advice to the project proponents throughout the EIA process. In cases where an IEE or full-scale EIA is required, the EIA agency will approve the TOR for the EIA report. The EIA agency manages the review of the EIA report and is responsible for any approvals or recommendations associated with the EIA. In most jurisdictions, the EIA agency is responsible for verifying that environmental protection measures are properly implemented.

In addition to their responsibilities for day-to-day operation of the review process, the administrative agency must provide formal procedural guidance to proponents and EIA practitioners who will be participating in the EIA process. Procedural guidelines outline the basic requirements of compliance with the EIA rules and regulations. Many EIA agencies have recognized the need for such technical guidance. Sectoral guidelines outlining environmental issues, potential environmental impacts, and suggestions for mitigation are often developed by these agencies.

### 2.3.2 Project Proponent

The *project proponent* is the entity with overall responsibility for the project. The proponent may be a private sector developer, a government agency, a joint venture, or some combination of these. The proponent is responsible for providing the scientific and technical information necessary at all stages of the EIA process. Proponents usually contract outside experts skilled in EIA to assist them in this task. The proponent is also responsible for providing access to information about the project activities and the environmental setting of those activities. The level of detail required varies with the type of report. Initial project screening requires the least detailed information. A scoping/IEE report requires a higher level of detail, and a full EIA will generally require field work to gather sufficient data for an adequate assessment of the potentially significant environmental impacts of the project. During a full-scale EIA, the proponent normally commissions a study to gather the required information. As the EIA will be conducted as an integral part of the feasibility study, much of EIA team's data needs may be provided by other members of the project team.

In the review process, the proponent must be available to answer questions about the project, its potential impacts, and the proposed environmental protection measures. The proponent is responsible for the implementation of mitigation measures and may be required to conduct environmental monitoring.

### 2.3.3 Environmental Practitioners

*Environmental practitioners* act for the proponent, the EIA agency, and governmental project implementing agencies. Environmental practitioners can be drawn from private consultancy practices, project proponent personnel, government utilities and infrastructure development agencies, scientific and technical institutes, and academia. They have considerable influence on the scientific and technical aspects of the EIA review process. Over time, practitioners have accumulated considerable procedural knowledge. This knowledge is applied to help proponents satisfy the requirement of the EIA process and develop guidelines for impact assessment.

In many jurisdictions, EIA practitioners provide advice to the EIA agency throughout the process. Few EIA agencies have the necessary technical and scientific expertise on staff to deal with the broad range of environmental issues they face. Where possible, they supplement their staff by hiring outside practitioners to help with project screening, reviewing TOR, and reviewing EIAs. The sectoral standing committees and commissions set up as review bodies may also be supported by independent practitioners.

Proponents rely heavily on practitioners to prepare TORs; conduct environmental studies; design mitigation measures; and prepare EIA reports, environmental management plans, and environmental monitoring programs.

#### **2.3.4 Other Government Agencies**

EIA is usually conducted in conjunction with the project approval process. Responsibility for granting final project approval may lie with a planning agency or an economic development agency. This agency normally is involved throughout the EIA process. At the beginning of the project approval process, the agency ensures that the project proponent is aware of the requirements of the EIA process, and may refer the proponent to the EIA administrative agency. In most provinces of the PRC, for example, once the Planning Commission registers a project, it notifies the relevant EPB. In some cases representatives from the EPB attend a meeting convened by the Planning Commission at the beginning of the fiscal year to discuss proposed projects for the year. In Hainan province, the Planning Commission will not register a project until it receives notice from the Department of Environment and Resources that the project is undergoing an environmental assessment.

The planning or economic development agency is also involved in environmental management and monitoring planning. It can play an important role in ensuring the appropriate environmental protection measures are incorporated into the feasibility study.

Once the EIA administrative agency has completed its review, the agency responsible for approval takes the decision or recommendations of the EIA administrative agency into account in its decision making process. The degree of cooperation and interaction between the two agencies determines the degree to which potential environmental impacts are taken into account in the final project approval.

Other government agencies are often charged with management and/or protection of environmental resources, social development, public health, and economic development. If a project will have an impact on one or more of these sectors, the agencies responsible should have an opportunity to raise issues and provide input into the EIA process. These agencies are often contacted by the EIA team during the preparation of the EIA report, and should be represented in the EIA review panel/committee.

#### **2.3.5 The Public**

Most development projects affect a wide range of people with varied interests. Public participation is required to allow the affected people to identify significant environmental and social issues. An effective EIA process takes issues raised by the public into account in the project design, or addresses the issues through appropriate environmental protection measures. Many development projects have failed because their designs did not address local needs or were not appropriate to the socioeconomic context of the locality. Although most developing countries have no formal requirements for public participation, communities are sometimes consulted by the EIA team during its preparation of the EIA report. While this practice of community consultation is relatively new, it is assuming increasing importance and is thus becoming more prevalent.

### 2.3.6 International Assistance Agencies

Most projects funded by loans from IAAs must undergo an EIA. All IAAs operate on the principle that responsibility for the preparation and review of the EIA rests with the recipient country. In some cases, however, the IAAs will provide technical assistance for the EIA pursuant to local EIA laws and regulations. Such help may include screening the project; conducting the IEE; preparing the TOR; retaining a consultant to conduct the EIA studies and prepare the EIA report; reviewing the EIA report; and attaching terms and conditions to the approval. In other cases, the IAA will leave the recipient country to do the EIA, but will require that the completed EIA meet its requirements. The IAA then reviews the EIA report, approves or rejects the funding proposal, and attaches terms and conditions if approved. After the project is in operation, the IAA may conduct a post project evaluation.

In general, the IAAs tend to require higher standards for EIA than do many developing countries. The IAA standards for EIA are often useful goals for the evolving EIA processes in developing countries. An important aspect of the EIA team's work is to find a balance between the standards of the IAA and the standards of the developing country.

### 2.3.7 Academic Institutions

Universities and other academic organizations can assume several roles in the EIA process. They may assemble teams to perform EIAs because they have access to different disciplines on their faculties. The same advantage gives them a role in reviewing EIA drafts; more importantly, they usually have an independence from the project that is difficult to find in other sources of reviewers. Universities should be the main source of training for EIA practitioners. They should also bring new analytical methods, such as GIS and computer-assisted risk assessment, into practice.

## 2.4 Human Resource Requirements

The capabilities of the people involved influence the effectiveness of the EIA. Trained and experienced people are necessary to make the EIA process work effectively. Training programs have not kept pace with the rapid development of new procedures and practices for EIA. The number of skilled EIA professionals in Asia is severely limited, and human resource development is the top priority.

Senior officials responsible for the overall direction of the process need to develop an understanding of: a) the functions of an EIA process; b) the essential skills needed for EIA practitioners; c) the level of procedural and technical guidance required for efficient operation of the process; d) the appropriate quality standard for EIA reports; e) the importance of ensuring monitoring and compliance after acceptance of the EIA; and f) the role of EIA in development planning.

EIA agency staff need skills in project screening; reviewing IEEs; developing EIA TOR; reviewing EIA reports; reviewing project compliance with environmental management plans; and designing environmental monitoring programs. It is desirable that agency staff collectively have expertise in physical sciences, environmental engineering, ecological sciences, and social sciences.

The EIA practitioner deals primarily with the provision of scientific and technical information. It is important to have a broad range of scientific training represented on teams of EIA practitioners. Because most approaches to the assessment of environmental impacts are interdisciplinary by nature, team members must also have the ability to look beyond their own discipline. Practitioners must develop a good understanding of the EIA process and its goals. It is important for them to understand how their information is used within the EIA process. Practitioners must know how to critique their own EIA reports, develop environmental management plans, and design environmental monitoring programs.

To effectively advise the EIA administrative agency on aspects of the EIA process, EIA practitioners must be able to:

- develop clear TOR;
- review TORs prepared by other EIA practitioners;
- guide the EIA team to develop a TOR that is relevant to the environmental issues that must be addressed;
- judge the quality of EIA analyses and reports prepared by other practitioners when acting as technical reviewers of EIA reports; and
- judge the environmental soundness of a given project when acting as EIA Committee members.

## 2.5 Financial Resource Requirements

While skilled people are a crucial part of an effective EIA process, the quality of EIA studies and reports is also highly influenced by the resources available to the EIA practitioner. An effective EIA process forces proponents to provide sufficient financial resources to ensure the production of an EIA report that meets quality standards.

EIAs require time and money. EIA studies vary in scope, quality, and levels of expertise used in their preparation. The cost of the studies depends on the quality of the advice provided to decision makers through individual assessments and their intended use in project design, implementation, and management. While the costs of preparing an EIA report sometimes appear high, they are actually small when compared with the overall project costs. Generally, EIA budgets range from 0.1% to 1% of the overall project cost. These funds would produce a “minimum adequate product” for most developing countries. For example, in Thailand, the costs have ranged from US\$ 1,000 for IEE-level studies to over US\$ 800,000 for detailed EIAs. The expenditures in Thailand for water resources development project EIAs range between 0.01% to 0.16% of the total project cost. Similar figures for industrial development projects range from 0.048% to 0.14% of the total cost.

In the Philippines, the Forest Management Bureau estimates that mitigation measures required for timber concessions are about 1% of the total investments. The Department of Public Works and Highways reports that EIA level studies for urban highway projects require about 10% of the cost of the feasibility studies (or 0.001% of total project costs, excluding costs associated with acquiring land for the right of way), with the total cost for EIA studies ranging between US\$10,000 and US\$60,000.

Most IEEs in Thailand have taken a few months to prepare. The time spent on preparation depends on the type of project and the analyst’s qualifications and experience. While checklists and matrices seem to be the most suitable methods because of their low resource demand, expert judgement is often required in choosing the appropriate method. In the Philippines, the Forest Management Board has completed 72 IEE-level studies, requiring about one person month each. This level of effort is typical for most sectors in the Philippines.

## 2.6 Participatory Development and Public Participation

### 2.6.1 Participatory Development

*Participatory development* is a process through which stakeholders influence and share control over development initiatives and the decisions and resources that affect them (Asian Development Bank, 1996). Participatory development processes (World Bank, 1996):

- identify strengths and weaknesses of existing policies and service and support systems; that is, the stakeholders jointly conduct the analysis and diagnosis;
- decide and articulate what is needed; that is, the stakeholders jointly set objectives;
- decide in pragmatic terms, directions, priorities, and institutional responsibilities; that is the stakeholders jointly create a strategy; and
- develop and oversee development of project policies, specifications, blueprints, budgets, and technologies needed to move from the present to the future; that is, the stakeholders jointly formulate project tactics.

Participatory development processes are relatively new. These are being used by bilateral and multi-lateral agencies to increase the sustainability of the development projects. Participatory development processes strive to increase the “sense of ownership” in the projects’ beneficiaries by increasing the participation of a large number and a wide range of stakeholders in project planning and implementation. In the past, EIA processes were often the only forum for affected peoples to participate in project planning phases. Today they offer a vehicle for participatory development. Chapter 7 provides more detail about the participatory development process.

### 2.6.2 Public Participation

In the EIA context, *public participation* is defined as a two-way communication between the project EIA team and the targeted and/or affected peoples. The goals of public participation are to promote public understanding and acceptance by minimizing perceived impacts of the project through education and open discussion. In return, public feedback can be used as constructive input into improving the project design. This definition stresses the importance of communication to both the community and the project itself.

Public participation has become a mandatory component of EIAs for most projects supported by multilateral development banks. This is largely the result of pressure from citizens groups that have complained that community resources were being affected by projects, without public notice or consultation. It is for this same reason that many countries routinely incorporate public participation into their EIA procedures, even if multilateral institutions are not involved (see Table 2-3).

Educating the public about a project is an essential first step for all public participation programs. An uninformed public cannot make educated decisions about a project. Basic data on the type, size, and location of the project should be publicized. Additional data and analysis regarding the expected significant socioeconomic and environmental issues related to the project should be made readily available to interested parties who are affected by the project.

It is important for project proponents to realize the benefits of public participation are not one-sided. The objectives of public participation encompass benefits to the community as well as to the project. The primary result of a public participation program is that the concerns of the community are acknowledged and addressed. Such open involvement tends to increase public acceptance of a project, and increase the likelihood of a project’s sustainability over the long term. A major component of public participation is educating people about the project and its likely effects on their lives. If uninformed, the public will often react negatively towards a project. Good

ways to avoid confrontation are to keep people fully informed and to seek their help in resolving contentious matters which concern them. Projects pushed ahead in spite of public opposition often fail, at considerable cost to all parties involved. Public participation also may be used to help quantify the value of non-market resources, such as religious or historic sites, scenic and recreational areas, endangered species, etc.

Project proponents are sometimes reluctant to communicate openly regarding significant socioeconomic and environmental issues. They may fear that public awareness of a project's potential negative impacts will increase opposition to the project. In fact, the opposite is often the case. Lack of clear communication between those implementing a project and those affected by it creates feelings of alienation in the community and heightens public concern. The demonstration of good faith by the project proponents in representing all aspects of the project through a public information programme can actually help reduce public opposition.

The specific concerns of the public regarding a project should be addressed in detail in every EIA. Since certain topics are not openly discussed in some societies, it may require some effort to ascertain exactly what the root issues are. If the trust of the community representatives and open dialogue is to be established, it is critical that the approach taken by project spokespersons toward community representatives be cooperative, and not condescending or dictatorial.

Public participation goes beyond simply defining the public's concerns. Solutions to the major issues should be developed through joint efforts so that they will be acceptable to both the project proponents and the public. Community representatives may suggest measures to mitigate disruptive socioeconomic effects from the project, and may also assist in the development of appropriate environmental protection measures.

Fifteen years of EIA experience in the Philippines has shown that many problems associated with the EIA process are traceable to lack of adequate communication and understanding, as well as an inadequate appreciation of the social, cultural and political factors that affect EIA implementation. Environmental impact assessment can only be effectively carried out with the participation of the key players or stakeholders. Lessons learned in the Philippines (Guerrero et al., 1994) include the following:

- Consultation must occur early in the process. Potentially affected parties must be informed and involved at the inception of a project. The best time to involve the public is at the planning stage.
- Public meetings must be conducted to find out local views and concerns so that these can be incorporated into the project plan. It is inadvisable to delay public meetings or wait until complaints or negative feelings have been aired, as this causes hearings to become confrontational, and conflict resolution becomes more difficult.
- Sensitivity to the needs of local people is needed.
- Dialogue is important. Decision makers should listen to the public, be open-minded about their suggestions, and be sensitive to feedback from those whose perspectives, values and experience differ from theirs.
- Indigenous peoples' beliefs and values must be respected and efforts made to preserve their cultural integrity.

Many local and international nongovernment organizations (NGOs) have become interested and active in environmental issues over the past several decades. They help educate the public regarding environmental issues, lobby for more stringent environmental laws and regulations, and conduct campaigns against projects which they deem environmentally dangerous. This has given them an adversarial image in many cases. NGOs, however, can be called upon in some instances to assist with a variety of efforts, including environmental training, the development of appropriate ambient and discharge standards, and even monitoring projects for compliance with standards. The opportunities to work with, and receive assistance from NGOs should not be overlooked,

especially in developing countries where appropriate environmental technology, funds, and trained personnel are often in short supply.

## 2.7 Environmental Standards

Predicting changes in environmental conditions is one thing, evaluating the significance of the changes is quite another. Environmental standards are necessary to provide a scale against which the environmental changes (positive or negative) associated with a project may be measured. The EIA process is more objective where the assessment of the significance of impacts may be defined by comparing the expected changes in environmental parameters with the desired environmental quality standards. The effectiveness of the EIA process in protecting the environment is, of course, highly dependent on the degree of environmental protection offered by the standard.

*Ambient environmental standards* generally define the prescribed limits to which levels of environmental resources may be permitted to fall, or the upper limits to which pollutants may be allowed to reach in the environment. Ambient standards may define the degree of environmental quality which must be maintained in an environmental resource to support its continued beneficial human use (see Box 2-5 on water quality standards in Indonesia). While often set to protect human health, ambient standards may also be set to ensure long-term sustainability of an environmental resource. For example, minimum quality standards may be set for ecologically sensitive areas (ADB, 1989).

**Box 2-5: Water quality standards in Indonesia (source: Taylor and Sukarsono, 1991).**

Water quality standards in Indonesia are divided into two categories:

1. National Water Quality Standards (NWQS), and
2. Local Water Quality Standards (LWQS).

*National Water Quality Standards*

National Water Quality Standards represent the numerical concentration or narrative statement recommended to support and maintain a designated water use. These national standards are derived using the information found in the water quality criteria. The standards give the concentration of chemicals which, if present in water at that concentration, will not harm fish or plant crops or humans drinking the water. If the chemicals are present in concentrations above those given in the standards, they will have detrimental effects such as slowing down the growth rate, stopping reproduction or possibly killing the organism. The standard can also be a narrative statement. National Water Quality Standards do not take local water quality into consideration.

*Local Water Quality Standards*

Local Water Quality Standards are the numerical concentration or narrative statement which have been established to support and protect the designated uses of water at a specified area. These Local Water Quality Standards are developed for a specific part of a river, lake, or river basin. Local standards include the information which is present in the National Water Quality Standards, the local water quality conditions — for example, whether the water is hard or soft, to what purpose it is used — the socioeconomic conditions, and the needs and characteristics of the region (such as whether it is heavily industrialized or if the land is forested or used for agriculture). A Local Water Quality Standard for a particular parameter may be different from the National Water Quality Standard for that same parameter. The concentration may be either higher or lower, depending on local conditions. If the water body has a number of uses, the Local Water Quality Standards applied to it are for the most sensitive use.

*Discharge standards* for emissions and effluents from projects define the maximum acceptable quantity of pollutants which may be discharged into the ecosystem, area or region. Discharge standards are set for specific pollutants, and often are stated as concentrations, or as discharge rates to incorporate the time dimension. They are usually specific to an area or ecological zone, and may be set for specific industries. Box 2-6 provides the effluent quality standards for existing sugar industry operations in Indonesia.

Project specific discharge standards should be based on the amount of a pollutant that may be discharged without causing violation of ambient standards for environmental resources. For this to be done, the receiving environment for the pollutant must be characterized in terms of existing levels. Predicted changes in concentrations resulting from the additional discharge should be compared against ambient standards. Chapter 4 presents methods and procedures for predicting changes in environmental quality.

**Box 2-6:** Effluent quality standard for the Indonesian sugar industry (*source:* BAPEDAL, 1991).

Maximum Effluent Flow of 40 m <sup>3</sup> per ton of sugar product		
Parameter	Maximum Concentration	Maximum Pollution Load
BOD <sub>5</sub>	100 mg/l	4.0 kg/ton
COD	250 mg/l	10.0 kg/ton
TSS	175 mg/l	7.0 kg/ton
Sulfide (as H <sub>2</sub> S)	1.0 mg/l	0.04 kg/ton
pH	6-9	—

Notes:

1. Except pH, maximum concentration of each parameter in the aforementioned table shall be stated in milligram per liter of waste water.
2. Maximum pollution load of each parameter in the aforementioned table is stated in kg parameter per ton of sugar product.

All environmental standards should be considered as tentative. Standards are set based on current knowledge, environmental conditions, living standards and technologies. As these conditions change, it may become necessary to revise the standards. A specific case of changing standards occurs where development already has resulted in excessive degradation of the environment and standards are introduced to reverse the effects. Often, it is neither practical nor possible to introduce and enforce standards which would immediately rectify the situation, as doing so could force many projects to cease operation. Instead, progressive standards may be introduced with a specified timetable for implementation so that polluters have time to plan and prepare for the gradual modification of their operations to reduce effluent without severe economic hardship.

Where neither ambient nor discharge standards exist, there is the risk of uncontrolled ecological disruption and environmental degradation — which in turn will reduce the quality of life for all inhabitants of the affected area. At the least, temporary minimum standards should be set by the EIA team and then modified as appropriate. One alternative is to begin with a minimum standard of environmental protection measures for all projects regardless of their type, size or location. As they are developed, subsequent ambient and discharge standards may supersede the standard environmental protection measures.

### 2.7.1 Meeting the Standards with an Environmental Management Plan

Discharge standards define the conditions under which a project may or may not discharge effluent into the environment, and thus the type and amount of treatment required for the effluent. For a project to meet the appropriate discharge standards, an environmental management plan is prepared as part of the full-scale EIA. The EIA itself should include a review of existing standards and recommend needed changes. The environmental management plan provides detailed design criteria for specific mitigation measures to be implemented. The *environmental management office* will track the effectiveness of the mitigation measures at meeting the discharge standards.

The cost of installing and operating treatment facilities can be a very significant item in the total project budget, and must not be overlooked in the project's financial feasibility study. The choice of a project location can also be influenced heavily by environmental standards. Choosing a site to minimize the investment requirements for effluent treatment can reduce overall project costs. Industrial projects are often grouped together to take advantage of cost-reducing centralized effluent treatment and disposal facilities. Where there has been considerable development prior to the introduction of environmental standards, retrofitting projects to meet the standards can be even more costly than incorporating treatment facilities into new projects.

## 2.8 Guidelines and Procedures

To increase the effectiveness of the EIA process, EIA agencies must provide formal procedural and technical guidance to proponents and EIA practitioners. *Procedural guidelines* outline the basic requirements and steps required for compliance with the EIA process rules and regulations. They usually provide information on the contents and format of EIA reports. Many advanced EIA agencies have recognized the need to provide technical guidance. *Sectoral guidelines* outlining environmental issues, potential environmental impacts, and suggested mitigations have been developed by these agencies (Asian Development Bank, 1987b; 1988; 1993a; 1993b). Section 3.1 provides a more detailed discussion of sectoral guidelines.

The sectoral guidelines aim to assist project developers, government agencies, and consultants concerned with environmental protection in developing countries to plan and carry out EIAs for development projects. They are designed for the limited budget and technical skills typical of developing countries. The guidelines furnish information which can help national environmental protection agencies convince government decision makers of the importance of environmental parameters in development planning. Sectoral guidelines also suggest means for making this possible by providing appropriate TOR. Sectoral guidelines usually do not refer to specific details; they cover only aspects of general interest to EIA practitioners (for example, environmental impacts associated with the project type, methods of assessment, etc.).

## 2.9 Special Considerations for International Assistance Agencies

International assistance agencies, and especially multilateral development banks, play a key role in supporting many development initiatives in developing countries. Recently, these agencies have come under intense pressure from a variety of sources to require that every project they support be environmentally sound. In order to meet the resultant preconditions for project assistance, it is incumbent upon developing country governments to continue to develop their environmental protection policies, procedures, and technical and enforcement capabilities.

### 2.9.1 International Lending Agency IEE Procedures

#### Asian Development Bank

The ADB has a formal IEE process for projects prepared by its staff. IEEs are conducted for projects which have passed through the Bank's initial project screening phase (ADB, 1993b). The Bank has prepared sector-specific guidelines which assist its staff in preparation of the IEE (Asian Development Bank, 1987b; 1988; 1993a). The three general sectors are industry and power, infrastructure, and agricultural and natural resource development. These sectoral guidelines are further supplemented by other guidelines dealing with special aspects of EIA (for example, environmental risk assessment, health risk assessment, economic evaluation of environmental impacts). The ADB also provides guidelines for the incorporation of social dimensions into projects.

The general purpose of the guidelines is to facilitate the work of the ADB staff in the incorporation of environmental considerations into the project preparation process. These guidelines have been widely distributed and are used by EIA practitioners in many Asian developing countries. As a result, Bank staff are in a better position to: 1) prepare the Bank's project covenants on necessary environmental constraints; 2) strengthen the overall project context through improvement of aspects relating to environment, including public health, control of pollution emissions, preserving valuable ecosystems, and improving quality of life; and 3) include and estimate the cost of mitigation measures, monitoring programs, and the environmental management plan.

The guidelines use the checklist approach. A checklist covers the typical impacts which could be caused by the project, on an item-by-item basis, based on experience with previous projects. IEE guidelines have been prepared for three different sectors, covering 20 different types of projects. The project classifications are as follows:

- Infrastructure:** Airports, Highways and Roads, Ports and Harbors, Sewerage and Excreta Disposal, and Urban Development;
- Agriculture:** Irrigation, Fisheries and Aquaculture, Watershed Natural Development, Forestry, Land Clearing, Coastal Resources Zone Management; and
- Industry:** Industries, Cement Manufacturing, Fertilizers, Power Mining, Thermal Power, Hydropower, Power Transmission Lines, and Oil and Gas Pipelines.

In addition, every IEE Sector Guideline volume contains a section entitled “Guideline Annexes For All Types of Projects.” This section provides general policy for all types of projects and should be used in conjunction with the project-specific guidelines. Topics covered are the following:

1. Environmental Constraints for Major Development Projects;
2. Resettlement;
3. Post-Construction Environmental Monitoring Program;
4. Control of Pollution Emissions and of Hazardous Materials;
5. Encroachment into Forests and Swamplands;
6. Effects and Abatement of Noise and Vibrations;
7. Dams and Reservoirs;
8. Environmental Standards;
9. Operation and Maintenance Problems; and
10. Critical Parameters for Overall Project Review.

The guidelines available for special aspects of EIA, and for the incorporation of social dimensions into projects include:

- Economic Analysis of Environmental Impacts;
- Environmental Evaluation of Coastal Zone Projects;
- Environmental Risk Assessment;
- Guidelines for Integrated Regional Economic -cum-Environment Development Planning;
- Health Impact Assessment of Development Projects;
- Handbook for Incorporation of Social Dimensions in Projects; and
- Mainstreaming Participatory Development Processes.

These guidelines may be helpful for any IEE team, and are especially useful for projects to be funded by the ADB.

### **World Bank**

The World Bank combines project screening and the IEE into what is called the World Bank Screening Stage. The first step is to categorize a project according to its potential environmental impacts. The next step is the environmental screening phase which identifies the key environmental issues, the type of environmental analysis recommended, and a preliminary schedule for conducting the analysis. The information is incorporated into an initial executive project summary and reviewed. After the review, decisions are made concerning the type, timing, and major issues for environmental review.

The World Bank has incorporated its guidelines for the production of environmental assessments into a three-volume set entitled, "*The Environmental Assessment Sourcebook*" (World Bank, 1991). The guidelines are organized into three sectors:

1. agricultural and rural development sector;
2. infrastructure sector; and
3. energy and industry sector.

The guidelines begin with general considerations pertaining to EIAs in the sector covered and discussions of particularly relevant topics. The balance of each chapter covers specific types of projects, chosen primarily because they have potentially significant environmental issues. For each type, the project is briefly described, potential impacts are summarized, and special issues that should be considered in an EIA are noted. Possible alternatives to the project are outlined, management and training needs are discussed, and monitoring requirements are described. Each review concludes with a table of potential impacts and the measures which can be used to mitigate them. Sample TOR for the various project types are collected in one section in each chapter.

The guidelines note that not all projects will require an EIA. Alternative approaches that focus on a narrower range of issues are acceptable for many types of projects, especially those of smaller scale and those not located in environmentally sensitive areas. These projects may have environmental issues that can be resolved in environmental assessment studies of a reduced scope, similar to that of an IEE. Project types that may follow this alternative approach include:

1. integrated pest management programs for many agricultural projects which do not involve major irrigation or land development;
2. specific environmental design criteria and pollution standards for small or medium scale industrial plants; and
3. specific environmental design criteria and construction supervision programs for small scale rural works projects.

The World Bank guidelines, like those of the ADB, are valuable tools in assessing the environmental impacts of projects at many stages of the review process. Projects being funded by the World Bank, especially, will benefit from implementation of the approaches to review suggested steps in the guidelines.

## 2.10 Constraints to Implementing Environmental Assessment Procedures in Developing Countries

The legal, administrative, institutional, and procedural frameworks for EIA often constrain the implementation of EIA in developing countries. Many EIA agencies are subsidiary units of an environmental ministry or agency. In the Philippines, for example, the EIA Division is part of the Environmental Management Bureau of the Department of Environment and Natural Resources. In Sichuan province of the PRC, EIA is the responsibility of the Environmental Management of Exploitation and Construction Division of the provincial Environmental Protection Bureau in the Sichuan Construction Commission. The relatively low status of these agencies in the bureaucracy makes it difficult for them to have sufficient influence to ensure effective implementation of the EIA process.

Highly trained technically competent people are required to operate and manage an EIA process. Even ideal institutional arrangements will be ineffective if human resources are inadequate. Many people are trained in physical and engineering sciences, however, few of these people have any training in environmental protection. Consequently, there is a shortage of qualified environmental engineers, ecologists and socioeconomists in many parts of PRC. EIA practitioners in the PRC have identified the lack of people trained in ecological and socioeconomic impact assessment as major weaknesses in impact assessment. For example, many people involved in EIA in the PRC are trained in the physical sciences or engineering. Most of the institutes in the PRC that prepare EIAs have only one or two staff with an environmental science background and no staff with ecological or social science training.

EIA teams charged with the preparation of an EIA require expertise in project management and environmental engineering. The project manager must be an expert in EIA methodology and have an understanding of all the environmental aspects involved. The project manager must also be capable of producing a work plan designed to integrate activities and work products of the numerous EIA specialists. An environmental engineer is needed to ensure environmental protection measures are incorporated into the project design to make it environmentally sound. It takes an engineer to understand how to modify the design to reach the environmental goals. Many EIA teams in developing countries lack critical expertise in both of these disciplines — creating a large barrier to the implementation of an effective EIA process.

In some countries, however, the quality and quantity of environmental professionals is relatively high. In Thailand, the Environmental Impact Evaluation Division of the Office of Environmental Policy and Planning (OEPP) has well educated and trained staff. The Division is required to prepare a preliminary review of Final EIA reports within 30 days of their receipt, and acts as the Secretariat to five Technical Review Committees (organized by sector) which have another 15 days to review the EIA once received from the OEPP. Failure to review the EIA within the defined timeframe is treated as a *de facto* authorization to the permitting agency to issue a permit. The tight time schedules apply to all private sector projects regardless of project size or complexity. The time pressures are regarded by the private sector as an important safeguard against project delays. However, the OEPP regards the time frame as unrealistic for complex projects. The pressure on the EIA Division to quickly review the detailed EIA reports means that only one team member has time to conduct a thorough review. The quality of the review thus depends on the experience and expertise of the OEPP reviewer.

In making general observations about EIA in the Philippines, Ross (1994) stated: 1) the EIA process is seen as a bureaucratic requirement needed to obtain project approval; 2) political interference determines the outcomes of some environmental reviews; 3) questionable practices by public servants serve to discredit the process; and 4) the treatment of projects in environmentally critical areas is less than satisfactory. All four of these are common to many developing countries. The view that EIA is simply another bureaucratic requirement to obtain project approval is widespread. In many countries, there is a process for environmental review of project proposals, but the people responsible often lack the necessary skills to effectively carry out the reviews. Unfortunately, the goals of the EIA process are not always well understood by decision makers, project

proponents, and in some cases, the EIA administrative agency staff. This leads to political interference and indiscretion on the part of EIA agency staff.

Ludwig and Castro (1995) found the Philippine National Power Corporation's new policy and program a notable exception. The basic concept behind the new policy is that the host communities, whose resources are used by the project, are entitled to a fair share of the benefits. This means that the project is expanded to include additional components to fill "critical community environmental gaps." Filling of these gaps is necessary to: 1) furnish host communities affected by the project with immediate improvements towards a minimum acceptable quality of life, and 2) furnish other improvements to help host communities maintain long term social and economic sustainability. Environmental Impact Assessment is seen as being of great importance in implementing the new policy. In addition to delineating the environmental protection measures, the EIA includes a socioeconomic study which serves to identify the critical community environmental gaps. Project components for filling these gaps can then be formulated.

Except for the limited amount in Thailand and the Philippines, public participation is largely absent from the practice of EIA in most developing countries. There are many political, institutional, and economic reasons that prevent the development of public participation programs that are characteristic of the EIA process in developed countries. In some countries the government is unwilling to have any form of public debate or scrutiny of its development policy. In other countries, while there are no formal prohibitions, there are no mandatory requirements for public participation. In most countries, affected interest groups do not have sufficient resources to participate effectively in the EIA process. Restricting the ranges of issues and interests reinforces the tendency for EIA to remain a bureaucratic requirement.

The quality of EIA reports is highly variable. Similarly, the scientific and technical information upon which environmental assessment decisions are being made is often inadequate. In a recent review of EIAs submitted to the ADB, EIAs were evaluated for both their compliance to the Bank's prescribed format and the substance of the information provided. The results revealed that EIAs were generally weak in: 1) assessment of ecological impacts; 2) analysis of alternatives; 3) economic analysis of environmental impacts; and 4) public participation. Finally, the environmental management plans proposed for implementation of the recommendations of the EIA report were usually inadequate both in terms of the institutional arrangements proposed and the funding allocated.

There are very real constraints on the availability of environmental information to be used in an EIA report. Time and budgets often do not allow for extensive new data collection and there is considerable reliance on existing and secondary data. In spite of this, most EIAs provide considerable background information on the environment. The problem is that they often provide little else. Where they are most obviously lacking is in the assessment or prediction of impacts and in the provision of details of appropriate mitigation measures.

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