EIA GUIDELINES FOR INDUSTRIES

DEPARTMENT OF ENVIRONMENT

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

EIA GUIDELINES FOR INDUSTRIES

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FOREWORDS

One of the most useful analytical tools for fulfilling the objective of sustainable development is the undertaking of Environmental Impact Assessment (EIA) for Development projects. EIA is a formal study process used to predict, foresee and examine environmental consequences of proposed development projects. This involves the study of the probable changes in the physical and biological as well as socio-economic environment which may result from the proposed development activities or projects, and a suitable environmental management plan to minimize adverse effects on the one hand to enhance positive effects on the other.

In Bangladesh, Initial Environmental Examination (IEE) and EIA study has been made regulatory need under certain categories of projects as specified in Environment Conservation Rule, 1997 for obtaining Environmental Clearance Certificate which is mandatory for any industrial and other development projects. Since IEE and EIA are mainly used as decision making tools, they must have to be linked to the project planning process and their findings and measures are integrated throughout entire project cycle –inception, feasibility, technical design, cost estimation, preparation of portfolio and various phases of project implementation. In Bangladesh, it has, in fact, not been the case. There have been gap between IEE and EIA process and project planning. However, this drawback has recently been removed through issuance of government notification that has provided detailed directives in this regard. Now the challenge remains is to create enabling condition and capacity in which good and desired quality EIA studies and professional practices are cultured and flourished in the country. In fulfilling this requirement, the publication of this EIA guidelines obviously put an important milestone.

I wish to express our sincere thanks to all experts and DOE officials who have given their hard effort for this important publication.

Any suggestions from any quarter regarding the guidelines will be appreciated.

Director General
Department of Environment

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BBA	Bangladesh Bridge Authority
BECA	Bangladesh Environment Conservation Act, 1995
BIWTA	Bangladesh Inland Waters Transport Authority
BLA	Bangladesh Labour Act 2006
BWDB	Bangladesh Water Development Board
BWA	Bangladesh Water Act 2013
CZP	Coastal Zone Policy
COSH	Community and Occupational Safety & Health
DG	Director General
DOE	Department of Environment
DPP	Development Project Proposal
DIFE	Department of Inspection for Factories and Establishments
DPHE	Department of Public Health Engineering
EA	Environmental Assessment
ECA	Environment Court Act, 2010
ECAs	Ecologically Critical Areas
ECC	Environmental Clearance Certificate
ECR	Environmental Conservation Rules, 1997
ECNEC	Executive Committee of National Economic Council
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ETP	Effluent Treatment Plant
EU	Environmental Unit
FA	Forestry Act 1927
FAP	Flood Action Plan
GIS	Geographical Information System
GOB	Government of Bangladesh
ICZM	Integrated Coastal Zone Management
IEE	Initial Environmental Examination
ILO	International Labour Organisation
SCC	Site Clearance Certificate
LGED	Local Government Engineering Department
MFA	Marine Fisheries Act 2020
MOEFCC	Ministry of Environment, Forest and Climate Change
MOLE	Ministry of Labour and Employment
MWR	Ministry of Water Resources
NEMAP	National Environmental Management Action Plan
NEP	National Environmental Policy 2018
NFP	National Forestry Policy 2016
NOSH	National Occupational Safety and Health Policy 2013
NGOs	Non-Government Organization
NOC	No Objection Certificate

NWMP	National Water Management Plan
NWP	National Water Policy 1999
NWRC	National Water Resources Council
NWRD	National Water Resources Database
OSH	Occupational Safety and Health
PP	Project Proposal
RHD	Roads and Highways Department
RRD	Roads and Railways Division
TOR	Terms of Reference
WARPO	Water Resources Planning Organization
WB	World Bank

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CHAPTER 1

BACKGROUND

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1.1 INTRODUCTION

The Government of Bangladesh, with a view to providing for conservation and improvement of environmental quality, and controlling and mitigating pollution of the environment, enacted the Bangladesh Environment Conservation Act (BECA), 1995, which became effective from June 1, 1995. Section 12 of this Act stipulates that "No industrial unit or project shall be established or undertaken without obtaining environmental clearance from the Director General, Department of Environment in the manner prescribed by the rules". Section 12 (4) of the Act (as amended in 2010) provides the guidance to adopt detailed rules on, *inter alia*, Environmental Impact Assessment (EIA) Report, Preparation of Environmental Management Plan, Judging of Public Opinion, Public Access to Information, Structure and Function of the Environment Clearance Committee, Minimum Necessary Conditions for Clearance, Appeal, etc. within the context of obtaining the Environmental Clearance Certificate. The Environmental Conservation Rules (ECR), 1997, the main subsidiary legislation of the BECA, provides specific rules and procedures for various categories of projects in relation to their approval prior to construction and operation. For projects and activities listed within the Red category, the ECR requires that an Initial Environmental Evaluation (IEE) be first submitted for approval. This should be accompanied with the terms of reference for an EIA, which is to follow the IEE. The EIA study is to be based on terms of reference that have the prior approval of the DoE. Conducting an EIA study and preparation of an EIA report are the responsibilities of a project proponent who may get this done either through in-house resources or through consultants. Further, the responsibility for carrying out review of the EIA report before according clearance, rests on DOE. Right after promulgation of the ECR, 1997, DoE published the EIA Guidelines for Industries in 1997 outlining simpler procedure to be followed for preparing EIA and their review. Now DoE considers it desirable to revise that book of guidelines by taking into account the present environmental status as well as the need for rapid economic development of Bangladesh. These considerations have essentially been kept in view while revising the handbook of general EIA Guidelines for Industries.

1.2 INTRODUCTION TO ENVIRONMETNAL IMPACT ASSESSMENT (EIA)

An EIA is conducted in response to a project proposal and therefore, the assessment procedure is project-centered. That is, the procedure is molded around the normal project planning process. This concept is called integrated project planning. Integrated project planning requires the project planner to assess and evaluate his planning decisions taking into account the technical, economic, social and environmental factors. It implies that EIA should be a continuous process throughout the course of project planning.

EIAs and environmental management tools effectively compliment other main planning tools such as economic analysis and feasibility studies, as they assist decision makers (regulatory bodies, Project Proponents, etc.) to ensure their project plan is economically and environmentally and socially sound and sustainable. Since project planning and development involves various stages of different scale, it is important to understand the role of each stage in the project planning and development cycle.

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1.3 STEPS IN EIA PROCESS

The EIA process comprises of six key steps:

1.3.1 Screening

The first step in the process, screening helps to decide whether an EIA is required for a project. An appropriately designed screening system can, thus, prove to be an effective tool for preventing the squandering of time and money on assessing projects with insignificant environmental impacts.

1.3.2 Scoping

This step begins after screening has decided on the requirement for an EIA. Scoping is considered the backbone of the EIA process, and is ideally undertaken at the project planning stage. The main objective of the scoping process is to establish the environmental and social priorities and set the boundaries for the study and define the Terms of Reference (ToR) for the impact assessment. Systematic and well-planned scoping forms the basis for an effective and efficient EIA process. It also helps avoid unfocused and voluminous reports.

1.3.3 Baseline data generation:

Baseline data provides a detailed description of the existing status of various environmental and social components in the study area. Both primary and secondary data is collected to describe this status.

1.3.4 Impact assessment

In this step, the characteristics of potential impacts are identified, evaluated and predicted using the baseline information on one hand and the features of the project on the other (cause-effect relationship). Impact predictions are normally done by using common methodologies and models. However, models can be used with care and prudence, as most of them are designed keeping in mind the requirements of the developed world; also, in most developing countries, the quality of data used to design these models is not always adequate.

1.3.5 Mitigation of impacts

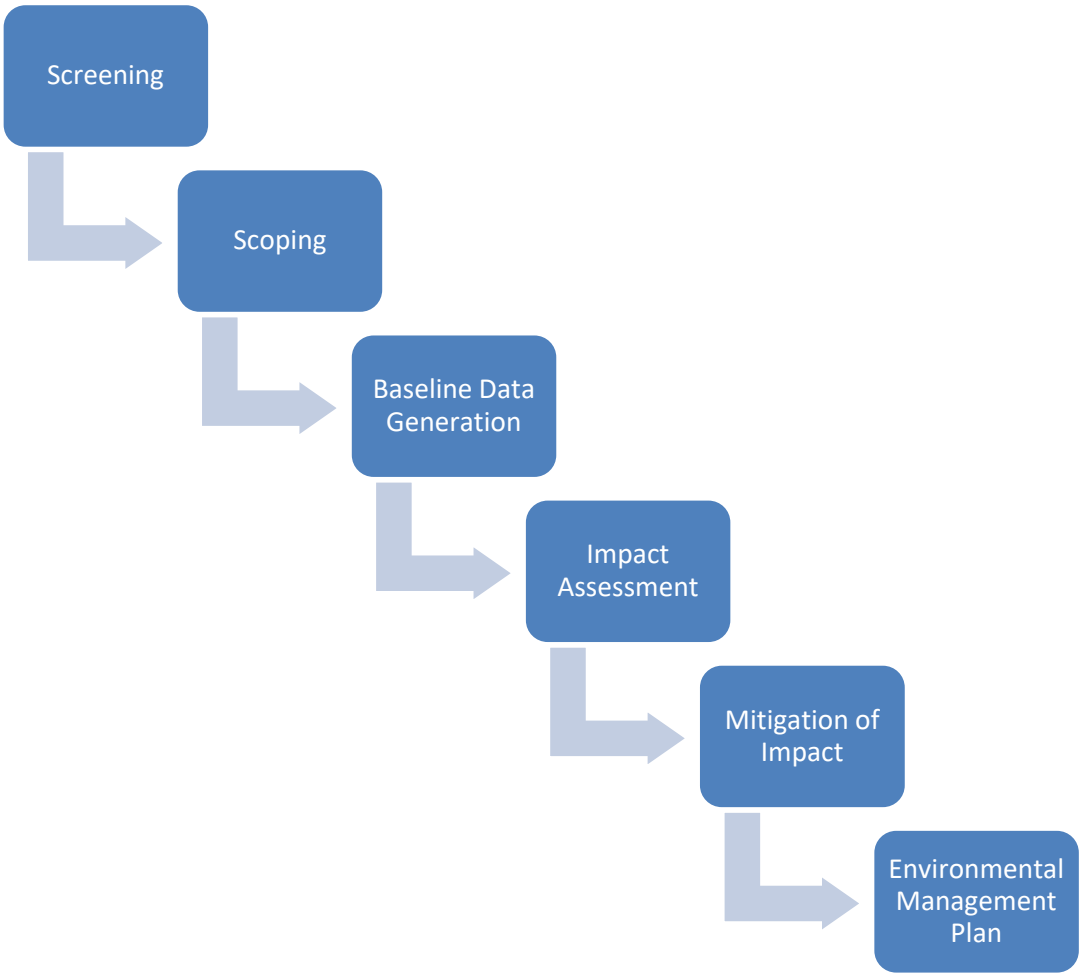
At this stage, the possible preventive, remedial and compensatory measures for each adverse impact are determined and recommended. The application of mitigation hierarchy (avoidance, minimization, mitigation, compensation/ offset) is adopted.

1.3.6 Environmental Management Plan

An environment management plan (EMP), also referred to as an impact management plan, is prepared as part of the EIA reporting process. It translates recommended mitigation and monitoring measures into specific actions that have to be carried out by the proponent. Depending

upon specific requirements, the plan may be included in the EIA report or can be prepared as a separate document.

EIA steps are shown in the flowchart:



1.4 INTEGRATING EIA INTO THE PROJECT CYCLE

In order to integrate the environmental dimension in the project planning or designing process, the timing of submission of the IEE and EIA Report to the DOE for approval is vital. The proper timing of submission is essential so as not to cause any major disruption to the overall project planning cycle. The Project Proponent is mandated by of the Ministry of Environment, Forest and Climate Change through a regulatory order to submit the EIA Report as early as possible at the feasibility study stage to enable recommendations on environmental changes or modifications to the project plan to be incorporated (preferably at feasibility study stage). On the other hand, submission of an EIA Report towards the end of the project planning cycle will reduce the value of an EIA, and possibly increase environmental costs or delay implementation of the project (**Figure 1.1**).

An EIA carried out at the project identification stage will give an opportunity to Project Proponent to exhaust environmental issues and to find solutions to them, prior to project implementation. In

instances where undesirable significant adverse environmental impacts are identified, alternatives which are environmentally acceptable can be found and designed for. This exercise can be repeated until acceptable solutions are found.

Figure 1.1: Classification of EIA Reports by Timing of Submission

Project Planning Stage	Rank	Environmental Issue	Environmental Planning Cycle
Project Identification & Concept, Sourcing for Technology	8	• Is the project environmentally sound? • Is the technology most advanced and clean?	Exploring and screening environmentally sound projects and/or environmentally sound technology
Pre-feasibility/ Siting Decision, Project Options	10	• Is the proposed site environmentally least sensitive?	Baseline study and submission of initial environmental evaluation report (IEE) along with a ToR for an EIA study
Feasibility/ Project Design	9	• Does the project design incorporate all the required pollution control and other environment mitigating measures?	Extended cost benefit analysis and submission of complete or detailed EIA report
Detailed Design	6	• Is the design complying with all the specifications?	Incorporation of pollution control and other environmental mitigating measures into design
Development and Construction	3	• Are project development and construction closely supervised?	Environmental management and monitoring
Commissioning	1	• Does the project meet all set standards and conditions?	Continuation of monitoring and project auditing
Operation and Maintenance	0	• Is the project fully complying with the imposed standards all the time?	Source and environmental/ monitoring
	BEST		INEFFECTIVE
Score	**10**		**0**

1.5 STAKEHOLDER ROLES AND RESPONSIBILITIES

Various individuals and organizations have roles and responsibilities in the process. Each through their area of interest and knowledge can contribute to making the EIA process more effective and contribute to an equitable and fair decision-making process resulting in better outcomes. Consultation with these stakeholders forms an important part of the EIA process as it is a means to reduce conflicts and smoothen project implementation. Some of the stakeholders that are likely to be involved in the EIA process are shown in **Table 1.2**

Table 1.2: List of Stakeholders

Item	Stakeholder	Role and Responsibility
1.	DOE Bangladesh	Administration of IEE and EIA process as per BECA, 1995 (Amended 2010), ECR, 1997 and subsequent amendment in .2002 and 2003. Responsible for issuance of SCC and ECC.
2.	Project Proponent	The initiator and promoter of the project. Responsible for compliance with requirements of the DOE and other authorities, including commissioning of EIA.
3.	EIA Consultant/Assessor	The individual or consortium which undertakes the EIA on behalf of the Project Proponent and prepares the report for submission to the DOE for approval.
4.	Project Approving Authority	The authority responsible for approval of a project usually the concerned sector ministry where the project belongs.
5.	Related Government Agencies	Those government agencies which have indirect interests in the project, have related regulatory functions such as DIFE/MOLE for OSH and MOH for public health. Feedbacks from these agencies are relevant in the mitigation measures and overall project approval. These agencies will also be involved in implementation and monitoring/audit of mitigation measures and/or compliance with regulations and standards.
6.	Affected General Public and Local Population	The public or local population is those individuals or groups who may be directly or indirectly affected by the project and whose interest require to be addressed.
7	Non-government Organizations (NGOs)	The NGOs are groups who could provide relevant inputs relating to issues on special interests

The type of consultation, whom to consult during the EIA, when and how to do so, and who can do it, all vary significantly from project to project. Ideally, stakeholder consultation can start from when the idea of the project is conceived and continue throughout the course of the EIA and project implementation. The five main stages when stakeholder involvement can take place in the EIA process are screening, scoping, impact analysis and mitigation, review of EIA quality, and implementation and follow up. The roles and responsibilities of the stakeholders are elaborated in **Chapter 10** of the guidelines.

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CHAPTER 2

ENVIRONMENTAL POLICES AND LEGISLATION

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2.1 INTRODUCTION

Effective project planning requires not only good technical expertise but also proper understanding of government policies relevant to environmental protection and management. An understanding of these policies is useful to ensure that development projects are undertaken in a manner that does not conflict with stated policies but ideally to complement them. Additionally, the legal and administrative requirements and procedures that affect a project are important considerations, especially during the stage of planning approval.

Various national policies and legislations that are prescribed in the country are of relevance to environmental protection and management. While there are those that are of direct relevance to environmental pollution control, many of the other policies and legislations relate to resource protection and conservation, and these include forest, fisheries, land, mineral resources, community and occupational safety & health, and others. Although these environment and social-related legislations fall within the responsibilities of other agencies and authorities, they nevertheless need to be understood as EIA requires a holistic approach be adopted in order that a comprehensive assessment is achieved.

It is good EIA practice to make it a point to review statutory and non-statutory requirements for a project, as this will provide a clear understanding of how best an EIA can proceed. Clearing the legal and administrative requirements of authorities is as important in project planning as does clearing the technical and financial concerns. A summary of the legal and administrative requirements for the project within an EIA report will assist the Project Proponent and the authorities keep into focus environmental objectives during the EIA review process.

This chapter highlights some of the more important statutory and non-statutory requirements that may directly or indirectly affect the planning and development of a project in the industrial sector. . It is, however, incumbent on the Project Proponent, and the Consultant/ assessor engaged to undertake an EIA, to review these and other legislation and authority requirements each time a project is undertaken, as changes in the form of new legislation or amendments to older ones may be made from time to time.

2.2 NATIONAL ENVIRONMENT POLICY AND LEGISLATION

The National Environment Policy of 1992 and the associated legislation on environmental protection and conservation represent the most important documents that relate to environmental protection and management in Bangladesh. The requirement of EIA for projects is described in these documents.

2.2.1 National Environment Policy

In 1992 the Bangladesh Government developed the National Environmental Policy (NEP) which defines the overall environmental framework and assigns responsibility for regulatory development, administration and enforcement. This responsibility has been given to the Department of Environment (DOE) which is under the Ministry of Environment, Forest and Climate Change.The National Environment Council, with the head of the government as chairperson, provides the overall policy direction.

In 26 years since adoption of Environment Policy, 1992, the nature and level of environment and ecological degradation have been changed. In order to address all those changes and with a view to protect and conserve environment and ecosystem in a rigorous, pragmatic and sustainable manner as well as to bring the climate change to the mainstream of the environment and development, the government has revised the National Environment Policy, 1992 and adopted the revised National Environment Policy, 2018.

Following are the key subject matters covered under the National Environment Policy, 2018:

- Ensuring sustainable development through reducing human pressure on nature and natural resources
- Considering environment protection as integral part of the development programs planned to meet the need of the present and future generation
- Making natural resources extraction, use, environmental conservation etc. to be based on science
- Considering environmental impacts and risks in extracting and using natural resources
- Evaluating economic contribution of ecosystem services simultaneously to that of natural resources
- Giving priority to poor and under privileged group of people in order to ensure their participation, equity, justice, accessibility to the use of natural resources and getting ecosystem services on which, they are dependent
- Taking initiatives to prevent misuse and ensure optimum of water, land, natural gas and other natural resources in the production process as well as day-to-day purposes
- Encouraging sustainable use of new and renewable resources
- Enhancing long term poverty alleviation and food security through conserving biological diversity
- Realizing compensation from persons and institutes those who are liable to environmental pollution through applying polluter pay principle
- Including environmental conservation and preservation in all national policies and ensuring implementation of the environment policy at both government and non-government level
- Giving priority to preventive measures over curative measures in environmental conservation
- Including adaptation and mitigation program in all development projects in order to address adverse impacts of climate change
- Ensure sustainable utilization of ecosystem goods and services

- Implementation of 3R principle in utilization of resources
- Strengthening institutional and legal capacity of institution (Government, local, private and technical) relevant to the enforcing and implementation of rules and regulation relating to environment policy and environment conservation
- Ensuring considerations of climate change and challenges of calamities in all kind of infrastructure projects
- Reducing of all SLCP (Short-Lived climate pollutants) which are harmful to health and environment
- Taking development programs considering sustainable production and consumption as integral part of environmental conservation to meet the need of present and future generation
- Allocating necessary funds to all areas of environmental conservation, preservation and control
- Taking up programs in favor of flourishing environment friendly economy
- Including environmental and ecological conservation particularly to introduce the environment and ecological concept in the environmental academic curriculum and textbooks of schools and colleges

The policy has provided sector wise policy coverage for 24 different sectors along with their plan of implementation, identification of respective implementing agencies, legal and institutional framework and directives on compliances.

2.2.2 List of other National Plans, Policies Guidelines that confirm, compliment and support the National Environmental Policy:

- National Bio-safety Strategy & Action Plan 1995
- National Biodiversity Strategy & Action Plan of Bangladesh 2016-2021
- A Roadmap for Clean Fuels and Vehicles in Bangladesh, 2011
- National Action Programme on Desertification, Land Degradation and Drought (DLDD) 2016-2024
- Ecologically Critical Area Management Rules, 2016.
- Medical Waste (Management and Processing) Rules, 2008
- Hazardous Waste and Ship Breaking Waste Management Rules, 2011
- Bangladesh Biosafety Rules, 2012
- Bangladesh Biological Diversity Act 2017
- Natural Water Reservoir Conservation Act, 2000
- National Forestry Policy 2016
- National Conservation Strategy 1998 and Draft Update 2013
- National 3R (Reduce, Reuse & Recycle) Strategy 2010
- Bangladesh Climate Change Strategy & Action Plan (BCCSAP) 2009
- Bangladesh Delta Plan 2100
- National Disaster Management Plan 2010.
- Nationally Determined Contributions (NDCs)
- Five Year Plan
- Sustainable Development Goals (SDGs)
- National Adaptation Program of Action (NAPA) 2005 and Update 2009

- Other Sectoral Policies/Strategies like Industry, Agriculture, Energy, Water, Health, etc.
- National Bio-safety Framework and Guidelines
- Guidelines on Environmental Management, Waste Treatment and Workers' Occupational Health and Safety for Ship Breaking Yard in Bangladesh
- Establishing National Landuse and Land Degradation Profile 2018 (proposed)

2.2.2 The Bangladesh Environment Conservation Act, 1995 (as amended in 2000, 2002 & 2010)

The Bangladesh Environmental Conservation Act (BECA), 1995 is the main legislation for conservation of the environment, improvement of environmental standards, and control and mitigation of environmental pollution. The enabling powers of the BECA are wide ranging. Wide-ranging powers (Section 4) are given to the DG to take various actions or measures to enforce the BECA (**Table 2.1**).

Table 2.1: Provisions of the BECA, 1995

Section	Provision Under Section
Section 4	Powers of the DG to enforce various provisions of the Act including setting rules and regulations for environmental conservation and protection.
Section 4A	Powers given to the DG to seek the assistance of other enforcement authority (or authorities) in its enforcement. Done indirectly by way of disconnecting power, gas, or water supply to the user.
Section 7	Allows the DG to seek compensation in cases of damage to the ecosystem or injury to person(s), whether directly or indirectly caused by a person or persons. He may also require that corrective or remedial action be taken to mitigate or ameliorate the situation.
Section 8	Allows any person affected or likely to be affected as a result of pollution or degradation of the environment to apply to the DG for remedy of the damage or apprehended damage.
Section 9	DG can require person responsible and the person in charge of the place of occurrence of an accidental pollution take measures to control or mitigate the environmental pollution.
Section 12	Requires that an Environmental Clearance Certificate be obtained before an industrial unit or project can be established or undertaken.
Section 13	Formulate and publish environmental guidelines relating to the control and mitigation of environmental pollution, conservation and improvement of the environment.
Section 14	Allows appeal against grievances to the Appellate Authority. [Note: The Appellate Authority was constituted by MoEFCC by a notification dated 03/11/1997].
Section 15	Allows the imposition of penalties for various offences.
Section 20	Power to make rules for various purposes including the setting of EIA procedures.

Section 12, requiring an Environmental Clearance Certificate, is effectively enforced by way of The Environmental Conservation Rules, 1997, which is made pursuant to the powers provided under Section 20 of the BECA.

2.2.3 The Environment Conservation Rules, 1997(as amended in 2002 & 2003)

The Environment Conservation Rules (ECR), 1997 is the main subsidiary legislation of the BECA which outlines various procedures or measures that need to be taken for compliance with the related provisions of the BECA (3.2).

The ECR provides specific rules and procedures for various categories of projects in relation to their approval prior to construction and operation. For projects and activities listed within the Red category, the ECR requires that an Initial Environmental Evaluation (IEE) be first submitted for approval and this can be accompanied with the terms of reference (TOR) for an EIA, which is to follow the IEE. However, this stage may be opted out by an application to directly submit an Environmental Impact Assessment (EIA) report to the DOE for its review and approval prior to the issuance of an Environmental Clearance Certificate (ECC). The EIA is to be based on a TOR that has the prior approval of the DOE.

Table 2.2: Principal Provisions of the ECR, 1997

Rule	Provision Under Rule
Rule 3	Outlines factors (such as human habitat, archaeological site, ancient monument, national park, mangrove, etc) that the Government will take into account to declare an area as Ecologically Critical Area (ECA) and specify the activities or processes that cannot be continued or initiated in an ECA.
Rule 5	Outlines procedures for any person affected or likely to be affected as a result of pollution or degradation of the environment to apply to the DG for remedy of the damage or apprehended damage.
Rule 7	Outlines procedures for obtaining an Environmental Clearance Certificate (ECC).
Rule 7(1)	Classification of industrial units and projects for purpose of issuance of into four categories:- (a) Green; (b) Orange – A; (c) Orange – B; and (d) Red.
Rule 7(4)	For Orange-A, Orange-B, and Red categories, require a Site Clearance Certificate (SCC) and thereafter an ECC to be obtained.
Rule 7(5)	Prescribed form for application of SCC or ECC.
Rule 7(6)	Outlines documents for various categories of industrial units and projects.Those within Orange-B and Red categories require submission of an Initial

Rule	Provision Under Rule
	Environmental Evaluation (IEE), while an Environmental Impact Assessment (EIA) report is required for the latter category.
Rule 7(9)	Specifies type of activities that may be undertaken with approval of SCC.
Rule 8	Indicates period of validity of ECC for Green projects (3 year), and for others (5 year). Renewal is to be made at least 30 days before expiry of certificate.
Rule 9	Sets procedures for appeal against any notice, order or directive to the Appellate Authority.
Rule 12 & 13	Prescribed emission and environmental standards to be complied with are outlined in various schedules.
Rule 14	Schedule 13 - prescribes fees for issuance or renewal of ECC.
Rule 16	Outline of procedures for payment of fees.
Rule 17	Require any accident that poses serious threat to the environment to be informed to the DG.

Also specified in the ECR are ambient environmental standards as well as standards for control of emissions or discharges that are required to be met. While these standards are intended to assist project planners in determining measures to be taken to comply with these requirements, it is the ultimate responsibility of the Project Proponent to ensure that the environmental impacts arising from their projects are minimal or within acceptable levels that will protect the environment. An EIA provides the means to determine if this will be so and it is recommended for adoption by Project Proponents for all major projects irrespective of whether or not it is a requirement of the DOE. Environmental stewardship demands that corporate governance includes taking responsibility for protection of the environment.

The pathway for compliance with rules and procedures for IEE and EIA are outlined within the ECR. More detailed discussions of the procedures for undertaking an IEE or an EIA are presented in later sections of this chapter.

2.2.4 Noise Pollution (control) Rules, 2006

This rule has been promulgated under the provision of clause 20 of BECA, 1995. The rules provide for standard limits of noise level of vehicles and designated areas. According to the Rules, motor honking within a 100 meter radius of a hospital, school and office is prohibited. The rules also do not allow use of brick crushers and cement mixers within 500 meter radius of a residential

area. Besides, prior permission is mandatory for using loudspeakers or megaphones. The rules stipulate safety and precautionary measures in work places, designated authorities for allowing noise generating appliances.

2.3 RESOURCES PROTECTION AND CONSERVATION POLICIES AND LEGISLATION

Besides the main environmental protection laws mentioned above, various other national policies and legislations need to be considered because of their relevance to environmental protection and conservation. These are mostly those that relate to natural resources protection and conservation, and include matters such as forest, fisheries, wild flora and fauna, water, and coastal zone protection and management.

2.3.1 Forestry Protection

The National Forestry Policy (NFP) provides the framework for the protection of the remaining forests in the country and the restoration of about 20% of the country's land under the afforestation programs by year 2015. The priority protection areas are the habitats which encompass representative flora and fauna in the core area of national parks, wildlife sanctuaries and game reserves. Multiple-use of forest, water and fish of the Sundarbans through sustained management will be ensured, keeping the bio-environment of the area intact.

The Forest Act (FA) of 1927**,** (amended in 1989) is the main legislation for forestry protection and management. The FA grants the government several basic powers, largely for conservation and protection of forests. Regulations have also been promulgated for specific categories of forests, such as the Prohibition and Rules affecting Protected Forests in Sundarbans Division (1959); Rules for the Preservation of Trees and Timbers belonging to the Government in the District of Chittagong; the Sylhet Forest (Protection from Fire) Rules, 1954; and Chittagong and Chittagong Hill Tracts Reserved Forests Fire Protection Rules, 1958.

2.3.2 Fisheries Protection and Conservation

The coastal wetlands and estuarine rivers of the Bay of Bengal southwest of Bangladesh are rich in biodiversity and highly productive ecosystems for many marine species, especially fish and shrimps. These resources have been identified as the principal source of animal protein for the people of Bangladesh and future dependency on this protein source requires strong action to protect these resources.

The National Fisheries Policy provides the framework for the conservation and management of fisheries resources to ensure supply and enhance production. All the water bodies suitable for fisheries production and their fisheries resources conservation, development and management are addressed under this policy. These include rivers and canals, *haor* and *baor*, floodplains, open and coastal water systems.

Matters related to marine fisheries are governed by the Marine Fisheries Ordinance (MFO), 1983, which was amended in 1992. The legislation provides for the Director responsible to take measures for the management, conservation, supervision and development of marine fisheries resources, and for implementation of actions to achieve the objectives of the legislation. Various powers for enforcement, mainly through licensing, are provided in the legislation.

2.3.3 Wildlife Conservation

Although there is no established wildlife conservation policy, the Bangladesh National Conservation Strategy has identified critical terrestrial and aquatic ecosystems for protection and conservation. These include mangroves, coral reefs, tidal wetlands sea grass beds, barrier islands, estuaries and closed water bodies.

The Bangladesh Wildlife (Conservation and Security) Act 2012, has been promulgated for the conservation and protection of wildlife. The legislation is within the purview of the Forestry Department.

2.3.4 Water Resources Protection and Conservation

The National Water Policy (NWP) provides the framework for the management of water resources of the country in a comprehensive, integrated and equitable manner. The NWP recognizes that water is essential for human survival, socio-economic development of the country and preservation of its natural environment. It is vital that the continued development and management of the nation's water resources should include the protection, restoration, and preservation of the environment and its bio-diversity.

The Bangladesh Water Act (BWA), 2008, gives effect to the National Water Policy. The overall purpose of the BWA is to consolidate and supplement existing laws for water resources in the country to regulate water resources in order to ensure integrated, equitable and sustainable management, development, and utilization of water resources and their conservation.

2.3.5 Coastal Zone Protection

The Coastal Zone Policy (CZP) 2005 aims to ensure that a participatory and integrated approach is taken in the management and development of the coastal zone to reduce conflicts in the utilization of coastal resources and to optimize exploitation of opportunities. This is in view of the complexity of the coastal zone which encompasses both the terrestrial and aquatic environment and transcends a wide variety of human activities.

2.3.6 Open Space Protection

The Urban Open-fields, Garden and Natural Water Bodies Protection Act (Jaladhar Ayne) 2000 is intended to preserve areas of open space from encroachment or conversion to other uses. With proper implementation of the law, the respective authorities can protect the open spaces natural water bodies including the flood plains of the urban areas from filing up for the sake of urbanization and development.

2.4 COMMUNITY AND OCCUPATIONAL SAFETY & HEALTH LEGISLATION

2.4.1 The Occupational Safety and Health (OSH) Legislation

Within Bangladesh OSH policy and regulatory frameworks, there are three broad areas of occupational safety and health related issue: (i) occupational accidents, hazards and diseases; (ii) safety equipment, tools and facilities, and (iii) workplace environment. The key provisions of each area include:

- Occupational Accidents, Hazards and Diseases

- ❖ Accident prevention regulations
- ❖ Prevention from workplace hazards
- ❖ Disease prevention and safeguards
- ❖ Record keeping and planning
- ❖ Rehabilitation and awareness building

- Safety Equipment, Tools and Facilities
  - ❖ Fire-fighting apparatus and emergency fire exit
  - ❖ Personal Protective Equipment
  - ❖ Safety of buildings and machineries
- Workplace Environment
  - ❖ Health services and medical care
  - ❖ Workplace safety

Through the legal provisions on OSH related issues, Bangladesh established tripartite National Industrial Health and Safety Council in 2009. The Council has formulated a National Occupational Safety and Health Policy in 2013 and working towards implementation of the policy in every industrial sector.

The Labour Act 2006 (as amended in 2013)

The Labour Act is the most comprehensive labour and workplace related legislation of the country, consolidating the provisions of 25 separate acts into single labour code in 2006. Among others, it sets occupational safety and health standards, compensation for injury and accidents in the workplace, maternity benefits, factory inspectorate and restrictions in child labour. The responsibility of enforcing workplace safety such as fire safety, and welfare of workers has been given to the Department of Inspection for Factory and Establishments (DIFE), which is under the Ministry of Labour and Employment.

The law applies to all "establishments" which are defined widely to include, shops, hotels, restaurants, factories (though these must employ more than five laborers), plantations, docks, transport services, construction sites, and "*any premises in which laborers are employed for the purposes of carrying on any industry*." It does not apply to the agricultural sector – though it does apply to tea plantations, and certain obligations apply to tea gardens. The agencies mandated to implement the law include the Department of Labor/Labor Directorate (DOL) and the Department of Inspection for Factories and Establishments (DIFE) of the Ministry of Labor and Employment (MOLE) and the Labor Appeal Tribunal/Labor Court. The DoL is mainly responsible for facilitation of effective labour management relations, collective bargaining and negotiations and ensures prompt and efficient settlement of labour disputes in the industrial sectors of Bangladesh while the DIFE is responsible for ensuring workplace safety including fire safety, structural integrity of workplace buildings and welfare of workers. It conducts inspections of factories, shops, industries and commercial establishments, tea gardens, railway, internal water transport and road transport. The labor courts deal with both industrial disputes and individual grievances

National Occupational Health and Safety Policy, 2013

The National Occupational Health and Safety Policy, 2013 addresses national commitment as per Constitution for continual improvement of occupational health and safety management system

of the establishment to prevent or reduce workplace fatalities and work-related diseases. The policy specified the obligations of all relevant stakeholders and organizations. With the objectives, the various roles and responsibilities of relevant stakeholders including government, factory/business owners, trade union, employers and workers are clearly identified and established. The ministry of labor and employment (MoLE) is mainly responsible implementation and development of national action plan under the policy coordinating with all stakeholders. The key provisions include occupational accidents, hazards and diseases relate to accident prevention regulations, prevention from workplace hazards, disease prevention and safeguards, record keeping and planning, rehabilitation and awareness building. The National OSH Policy also ensures safety in transportation, maintenance and use of chemicals used in the production process.

Public Procurement Rule (PPR) 2008

This rule applies to the Procurement of Goods, Works or Services by any government, semi-government or any statutory body established under any law. The Public Procurement Rule 2008 requires contractors to take all reasonable steps to: (i) safeguard the health and safety of all workers working on site and other persons authorized to be in it; (ii) to keep the site in an orderly state; and (iii) to protect the environment on and off the site; to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of the Contractors methods of operation.

Table 2.4.1 Legislations and policy issuances related to safety in the workplace

Legislations and Issuances	Key Provisions
National Occupational Health and Safety Policy, 2013	Specifies the obligations of all relevant stakeholders and organizations in promoting and enforcing occupational health and safety
Labour Act 2006 as amended, 2013 Labour Rules (2015)	Imposes obligations on the part of the employer on the conditions of service and employment including wages and payment, employment of young people, maternity benefits, working hours and leave; trade unions and industrial relations; and, occupational health, safety, hygiene, and welfare of workers, and compensation for injury.
National Building Code 2006	Provides for standards for structural integrity; adequate, accessible and discernible means of exit/escape in Buildings; fire extinguishing system.
Public Procurement Rule (PPR) 2008	Requires contractors to provide for adequate measures regarding the “Safety, Security and Protection of the Environment’ in the construction works.
National Child Labour Elimination Policy 2010	Sets a policy to eliminate child labour exploitation through enactment of pragmatic laws, implementation of plans and programs, etc.
Fire Prevention and Extinction Act 2003 Fire Prevention and Extinction Rules 2014	Requires the owner of a building to apply for Occupancy Certificate to ensure compliance with the relevant provisions of the Building Code

2.4.2. Community Safety and Health (CSH) Legislations

There is no specific legislative framework for community health and safety aspect of industry or projects but under the government of Bangladesh there are specific laws and acts enacted by various ministries. The project proponent conducting the EIA may consult ongoing community-based programs and policies of the Ministry of Health to help improve assessment and mitigation planning on community health and safety impacts and risks. Table 2.4.2_below provides some of the relevant legislations and policy issuances that have relevant provisions on community health and safety of industry projects.

National Health Policy, 2011

The National Health Policy aims to ensure accessibility of primary health care and emergency care for all by, among others, providing quality and easily accessible care, irrespective of an urban and rural community, mainly focusing on the poor and disadvantaged population; and, ensuring coordination between different healthcare-related departments, ministry of GoB, and MOHFW, in addition to coordination between the Government of Bangladesh and NGOs. It also aims to ensure adequate epidemiological tracking of disease patterns and impacts of climate change on health.

Table 2.4.2 Legislations and policy issuances related to community health and safety

Policy Issuances/Legislations	Relevant Provisions
National Health Policy, 2011	Promotes coordination of various agencies in pursuing a more accessible and equitable quality health care for the communities. Focuses programs on the poor and disadvantaged sector of the population. It also aims to ensure adequate epidemiological tracking of disease patterns and impacts of climate change on health.
National Policy for Safe Water Supply and Sanitation, 1998	Aims to improve the standard of public health and to ensure improved environment, particularly by facilitating access of all citizens to basic level of services in water supply and sanitation
Disaster Management Act, 2012	Provides the legal basis for coordinating activities for disaster management. Establishes the Department of Disaster Management under the Ministry Disaster Management and Relief

National Policy for Safe Water Supply & Sanitation (NPSWSS) 1998

This policy was promulgated to improve the standard of public health and to ensure improved environment, particularly by facilitating access of all citizens to basic level of services in water supply and sanitation, bringing about behavioral changes regarding use of water and sanitation; reducing incidence of water borne diseases; building capacity in local governments and communities to be effectively with problems relating to water supply and sanitation; promoting sustainable water and sanitation services; ensuring proper storage, management and use of surface water and preventing its contamination, among others. The Department of Public Health Engineering is the national lead agency responsible exclusively for water supply and sanitation facilities along with advisory service to GoB in framing policy and action plans. The Department has a Water Quality Monitoring and Surveillance Circle.

Disaster Management Act, 2012

This Act is the legal basis for coordinating activities about disaster management, setting policies and formulation of rules and to build up infrastructure of effective disaster management to fight all types of disaster. It also described the national disaster management principles and planning by reducing the overall vulnerability from different impacts of disaster through risk reduction activities; conduct of humanitarian assistance programs efficiently to enhance the capacity of poor and disadvantaged as well as strengthening and coordinating programs undertaken by various government and NGOs related to disaster risk reduction and emergency response. The Department of Disaster Management (DDM) is responsible for the Disaster Management Act and to mandate the implement of the objectives.

Road Transport Act, 2018

The Road Transport Act 2018 set-forth requirements for road/traffic safety and prevention of motor vehicle accidents. The Bangladesh Road Transport Authority (BRTA) is a regulatory body to control, manage and ensure discipline in the road transport sector, as well as to maintain road safety. It works under the Ministry of Communication to carry out the purposes set out for it under the Motor Vehicle Ordinance.

Other industry-specific laws and regulations

There are other industry-specific legislations which the proponent may also consult when relevant depending on the types and nature of the project, such as the Nuclear Safety and Radiation Control Act 1993, the Formalin Control Act, 2015, and, the Ship Breaking and Recycling Act, 2018.

2.5 LEGISLATION ON ENVIRONMENTAL APPROVAL PROCESSES AND PROCEDURES

Under Rule 7 of the ECR 1997, environmental clearance is required for all industries and projects listed in Schedule 1 of the ECR 1997. The process to obtain approval is conducted in tiers as follows:

1. Screening
2. Initial Environmental Examination (IEE), and
3. Environment Impact Assessment (EIA).

Each tier is defined with the level of details required to appraise a project for a decision to be made. Schedule 1 of the ECR 1997 lists the different types of industrial projects into four categories namely, Green, Orange A, Orange B, or Red, based on severity of its potential environmental impacts. Environmental clearance can be granted at various tiers depending on the category of project to which an industrial activity belongs. Industry activities posing “less” environmental impacts (such as those by Green category project), can be granted clearance at the Screening stage, while those for Orange A and/or Orange B categories at the IEE stage. Red category projects require both IEE and EIA to be carried out and Screening is not compulsory.

2.5.1 Screening

Screening is generally undertaken as the first stage of an environmental assessment for a project.

It is intended to provide the first level of information for a key decision to be made as to whether further assessment of the project is required. In general, the screening process can result in one of four outcomes, these being:

- no further level of assessment is required;
- further study is necessary to determine the level of EIA required (often called an initial environmental evaluation or examination [IEE]);
- a more limited EIA is required (often called preliminary or initial EIA); or
- a full and comprehensive EIA is required.

However, in the context of the ECR 1997, screening would be in reference to determining the category in which the project or activity falls under (Schedule 1 of the Regulations). Upon determination as to which category the project or activity falls into, the process of environmental assessment and approval will follow that which is prescribed in the Regulations.

2.5.2 Initial Environmental Examination (IEE)

An IEE is typically a preliminary EIA study that is normally carried out at the early stage of project planning and is used to identify and estimate the potential environmental impacts from the project activities. IEE is normally done within a short time duration based on preliminary information that is readily available through environmental reconnaissance. In the context of the ECR 1997, an IEE is required to be submitted for obtaining location clearance from the DOE.

The general objective of an IEE is to examine all environmental parameters that are likely to be affected by the identified project activities, and to determine the degree of the adverse impacts that are likely to affect them (the environmental parameters). IEE is intended to provide first-hand information about the environmental parameters likely to be influenced by the project activities and the magnitude of the adverse impact in order to allow decision makers to ascertain whether a detailed EIA is needed. IEE will not make detailed evaluation of the environmental parameters but instead provide a basis for need to undertake detailed evaluation.

The IEE report can be used as a scoping document when a proposal is referred to a full EIA. TOR for a detailed EIA study is normally required to be submitted with the IEE. The TOR outlines the basis for an EIA study that will be undertaken. An IEE is essentially an initial EIA study that:

- describes the proposal and the environmental setting;
- considers alternatives to improve the environmental benefits;
- addresses the concerns of the local community;
- identifies the potential environmental effects;
- identifies possible measures to mitigate adverse impacts; and
- describes (as necessary) the environmental monitoring and management plans.

2.5.3 Environmental Impact Assessment (EIA)

EIA is an extension of the IEE process in which it serves to provide a detailed assessment of likely adverse impacts that have been identified. As a planning tool, EIA is an integral component during development planning and feasibility study process to ensure that the planning is economically optimal and environmentally sound.

The aims and objectives of EIA can be divided into two categories. The immediate aim of EIA is to inform the process of decision-making (both Project Proponents and authorities), by identifying the potentially significant environmental effects and risks of development proposals. In brief, the immediate objectives of EIA are to:

- improve the environmental design of the proposal;
- ensure that resources are used appropriately and efficiently;
- identify appropriate measures for mitigating the potential impacts of the proposal; and
- facilitate informed decision-making, including setting the environmental terms and conditions for implementing the proposal.

The ultimate (long term) aim of EIA is to promote sustainable development by ensuring that development proposals do not undermine critical resource and ecological functions or the well being, lifestyle and livelihood of the communities and peoples who depend on them. In brief, the long term objectives of EIA are to:

- protect human health and safety;
- avoid irreversible changes and serious damage to the environment;
- safeguard valued resources, natural areas and ecosystem components; and
- enhance the social aspects of the proposal.

The findings of the EIA are important in providing guidance to the DOE as to acceptability of the environmental impacts due to the project. Where it is determined that the impacts are within acceptable levels, environmental clearance can be given to the Project Proponent to proceed with the project.

2.5.4 Application for Environmental Clearance

Section 12 of the BECA 1995 clearly states that no industrial unit or project shall be established or undertaken without obtaining, in the manner prescribed by rules, an Environmental Clearance Certificate (ECC) from the Director General of the DOE. Application for ECC is undertaken in stages which includes submission of IEE and EIA where;

a. Approval of the IEE will grant the Project Proponent a location clearance for commencing preliminary land and site investigation.

b. Upon receipt of the Location Clearance Certificate, the Project Proponent shall submit the EIA Report for approval of the DOE and proceed to apply for environmental clearance. Only after receipt of environmental clearance will physical site work be allowed to commence.

The procedure requires various actions and requirements to be undertaken for approval to be granted by the DOE in respect of the issuance of an SCC or an ECC. Review and processing time duration for each application stage depends on timely receipt and completeness of submission package. Under the ECR 1997, the SCC is to be granted within 30 working days for Red category projects, provided that information relevant for the application is complete and meets DOE's requirements. Failure to submit a complete submission package may cause rejection and/or resubmission in which will restart the review process from beginning.

Hence, it is important that applicants should have full understanding of the requirements for the application before making the submission. It is advisable to have prior consultation with the authorities before submitting such applications.

Application for an ECC is to be submitted in the prescribed Form 3 of the ECR 1997, and this is to be accompanied with appropriate processing fees (Schedule 13 and 14 of ECR 1997). The Environmental Clearance Certificate is valid for one (1) year from date of issuance. Each Environmental Clearance Certificate shall have to be renewed at least thirty (30) days before expiry of its validity period.

2.5.5 Appeal

An application to the DOE for site or environmental clearance may not necessarily be approved. Where the person is aggrieved by such a decision, an appeal, as provided under Section 14 of the BECA, may be made to the Appellate Authority which is constituted by the Government.

In making an appeal, the following matters will need to be followed:

a. The appeal is to be made within 30 days from the date of issuance of the notice, order or direction;
b. The grounds of the appeal is to be clearly stated and is to be accompanied with a certified copy of the notice, order or direction against which the appeal is filed;
c. A copy of the environmental clearance certificate (if any);
d. A Treasury Chalan showing proof of deposit of the appeal fee of Taka One Thousand; and
e. Any other documents and papers that is relevant to the appeal.

It is to be noted that the decision of the Appellate Authority shall be final and shall not be called into question in any court.

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CHAPTER 3

EIA PROCESS

CHAPTER 3
KEY TASKS IN EIA

3.1 INTRODUCTION

A full-scale EIA generally involves several key tasks and steps and it starts with **screening** and **scoping**. These tasks are intended to help focus the EIA on those key environmental aspects that have potential to adversely affect the environment, and which may have implications on the project design. In addition, these concerns, and the measures to mitigate them, are of importance to authorities who are involved in decision making as to whether a project may proceed or not. Screening and scoping are means to bring into focus the key environmental issues, and avoids unnecessary effort on matters that have little value for decision making.

The specific objectives and scope of these tasks are discussed in following section of the guidelines.

3.2 SCREENING FOR AN EIA

The present law in Bangladesh determines the need for an EIA or not, by way of Schedule 1 of the ECR, 1997.

Screening is carried out in the initial stage to determine if the proposed downstream activities falls under the definition stipulated in Schedule 1 of the ECR 1997 and poses significant impacts on the environment or have potential public concerns. Screening in this context will be conducted as an internal exercise by the Project Proponent and output from screening usually forms the basis for preparation of an IEE report and/or the conduct of Scoping.

3.2.1 Site Selection

Various criteria are applied for site suitability selection and these may be applied in the screening process. **Table 3.1** provides guidance as to the types of criteria that may be considered in the screening assessment.

Table 3.1 : Criteria for Site Suitability

Buffers	Presence of adequate buffer to sensitive area and populated areas for activities with potential to give rise to air, water, and noise pollution, waste management issues, etc. Extensive control problems may be expected in many cases/activities. Presence and/or provision of bushes, trees, banks, etc. can provide barriers to the sensitive areas and improve aesthetics.
Air pollution	Avoid siting in a degraded or degrading air quality environment and in areas where the air pollution from emission of an activity can potentially seriously affect local communities. Locate to minimize air

	pollution and odour impact from point and fugitive sources. Where emissions are potentially carcinogenic or mutagenic, potential health risks should be accounted for.
Proximity	Activities should be at adequate distance from potential sensitive receptors of impacts such as schools, places of worships, institutions, hospitals, etc.
Water Pollution	Siting a facility along of a watercourse that has critical beneficial uses downstream such as, public water supply intake, fisheries (fishing, aquaculture, etc.) or basic riverine livelihood, is to be avoided where the potential for, or risk of, pollution from the facility is significant.
Geology/ Hydrology	Siting of activities should have due regard for their potential to contaminate groundwater resources which are important source of water supply or other beneficial use.
Risk to Toxic Clouds, Fire and Explosion	Site should consider the outer hazard distance and avoid within buffer and human settlements.
Waste Disposal/Raw Materials	Ensure within distance of waste disposal facilities and ease of access for raw materials. Avoid populated areas for transportation of materials, products, wastes, and others.
Social/Cultural	Avoid densely populated areas, parks and tourism areas, and other sensitive areas, where public interest is important. Public participation and local interest group consultation is recommended for gaining local acceptance and support.
Access	Consider clear and non-conflicting access to site with less congestion, and infrastructure is designed for purpose (be they land based such as road and rail, or deep sea and river access).
Noise	Secluded site is preferred and away from populated area. If not, consider provision of suitable buffers and/or noise barriers.
Land value	Consider that sites that affect other land uses affect their value and future use.
Ecology	Avoid unique habitat areas. Sites near or within ecologically and environmentally critical areas and habitats can cause irreversible damage and permanent loss of flora and fauna, and ecosystems.The establishment of any industries/projects that pollute water, air, soil and noise are prohibited within the Ecologically Critical Area.
Sanctuary	No person, organization or company may setup any industrial plant, or brick kiln within 2km of the declared sanctuary boundary.
Forbidden Mouzas	Establishment of any building, mills, small and cottage industries, agriculture, dairy and fish farms on government or private owned land in 8 Mouzas of Bhawal National Park are forbidden.

3.3 SCOPING FOR AN EIA

Scoping exercise begins after the completion of the screening process. While screening establishes the basis for scoping, this subsequent task identifies the key impacts to be studied and lead to formulation of the Terms of Reference (TOR) for an EIA. Essentially, scoping has three main tasks, namely:

a. identify boundaries of an EIA study,

b. identify the information necessary for decision-making, and

c. determine the key issues and significant impacts and risks to be considered.

3.3.1 Setting Boundaries for Study

The purpose of setting boundaries is to define the work area for the EIA. Scoping exercise allows definition of boundaries for an EIA in aspects of time, space and subject matter. Identifying the study boundary also effectively leads to efficient baseline data collection on relevant physical, ecological, economic, social, cultural and demographic conditions within those boundaries. Overextending the study boundaries is likely to incur additional cost that may not add to the value of an EIA report. The assessment may also be too difficult to manage and incomprehensible.

The following are considerations for determining study boundaries:

a. What is the likely extent of the impact zone due to the project? – The study boundary includes the area which is potentially affected by the impact: Example, an accident resulting in fire and explosion may result in a fireball and the heat radiation has potential to cause damage and death, the extent of which can be established by a risk assessment;

b. Who or what are the receptors that will be affected by the impacts? – The receptors within and adjacent to the impact zone represent matters of concern and need to be included in the study. Example: The extent of dependency on livelihood, employment, food source and income determines to a large extent the communities which should be included in the study; and

c. The nature and characteristic of the environment that is affected by the project? - The receiving environment may be characterized by the impacts affecting for example, a watershed, an air zone, a river system, a groundwater aquifer, a coastal bay, etc. The system in its entirety should be considered in the assessment.

In establishing the boundaries and focus of the assessment, the project proponent and DOE shall determine which specific elements in the environment components (See Checklist of Environmental Components in Annex A) are relevant to the proposed project and hence should be included in the EIA study. The scoping shall consider all activities in all phases of the project development cycle, viz.:

- Construction Phase. This includes preparatory activities such as survey and acquisition of sites, the actual construction of the industrial facility, and upon completion construction, the clearing of construction site; pull out of equipment; clearing of construction debris, dismantling of temporary construction facilities and restoration of sites.

- Operation Phase. This pertains to the operation and maintenance of the facility, including raw material sourcing and handling activities.

- Decommissioning and Abandonment Phase, if relevant to the project. This would include the phasing out of operations, dismantling of facilities, site restoration and site remediation activities.

3.4 SCOPING PROCEDURE

3.4.1 Information for Scoping

The types of information needed for scoping must be useful and helpful in order to achieve its purpose. While screening only provides the main subject matter, what is needed for scoping is sufficient detail to allow a reasonable plan to be drawn up.

Specific studies may not be necessary to be conducted at this stage, but it would be helpful to determine the extent of the significant impacts of the project. These might involve data collection and analysis, field studies and consultations.

It is important to note that the scoping exercise is meaningful if the Project Proponent has some reasonable information at this project stage to work on. Gaps and uncertainties need to be identified and taken into account.

Following are some of the information that would be required:

Types of organisations to be included in these three groups are listed in **Table 3.1**

Government Organizations	• land use control, spatial planning and zoning authorities such as the Capital Development Authority (RAJUK) • Department of Inspection for Factories and Establishments (DIFE) for workplace safety and health • Department of Labour for labour management relations, collective bargaining and negotiations • Department of Public Health Engineering for water supply and sanitation facilities • Department of Disaster Management for national disasters • Department of Fire Service and Civil Defense for fire prevention and management • authorities responsible for pollution control including water, waste, soil, noise and air pollution for example, DOE • authorities responsible for protection of nature, cultural heritage and the landscape *e.g.* Ministry of Cultural Affairs • authorities in neighbouring countries where transfrontier impacts may be an issue

	• Bangladesh Water Development Board (BWDB) • Department of Agricultural Extension • Department of Fisheries • Ministry of Land *e.g.* AC (Land) • Local Government Engineering Department • Bangladesh Inland Water Transport Corporation • Bangladesh Agricultural Development Corporation • Bangladesh Forest Department • Bangladesh Inland Water Transport Authority (BIWTA) • Public Works Department. • Water Resources Planning Organization • city corporations
Non-Government Organizations	• local, national (and international) environmental and social interest groups such as CARE, Bangladesh Environmental Lawyers Association (BELA), Bangladesh Rural Advancement Committee (BRAC), ASHA, Grameen Motsha Foundation, International Labour Organization (ILO)
Academia/Research Organizations	• research institutes, universities and other centres of expertise such as Dhaka University, River Research Institute
Private Organizations	• local employers' and business associations such as Chambers of Commerce, trade associations, etc • employees' organisations such as Bangladesh Free Trade Union Congress •
General Public	• groups representing users of the environment, eg farmers, fishermen, walkers, anglers, tourists • landowners and residents • general members of the local and wider public • elected representatives and community figures such as religious leaders or teachers; • local community groups, residents groups, etc.

3.4.2 Project Components/Activities and Resources

The first step for scoping starts off with preparation of the scope profile which identifies and lists of all the activities throughout the project lifetime, namely during construction/development, operation and abandonment/decommissioning of the industrial project/facility Following this, is the identification of of resources that will be used and/or affected under each project stages.

The list of project activities and resources provide the basis for appraising the potential impacts. Impact appraisal can be conducted as informal consultations and if need be, the consultation process continues iteratively until final scoping is achieved. This step of scoping is normally completed by experienced environmental professionals and/or by group brainstorming sessions.

Information on the project should be complemented by study of similar projects elsewhere and their EIAs. Visiting the site at this stage will add value to the scoping exercise.

3.4.3 Grouping of Issues (Impacts and Risks) and Priority Setting

Subsequent to the identification of activities and the associated concerns, a short list of environmental and social issues can be prepared which involves:

- Categorising and grouping of effects under particular affected environmental components such as air quality, water quality, terrestrial ecology, and the social environment including community and occupational safety and health, etc. (Refer to Annex A)

- Priority setting - Determine the key issues or concerns based on their importance, usually based on the significance of the environmental impacts that may result from activities and sub-activities. Identify also issues that can be excluded from further assessment (no significant impacts expected) and document reasons/justification, and list issues that need resolution but consideration is beyond the EIA scope.

An indicative list of issues commonly encountered in industry projects is provided for guidance in Annex B.

3.4.4 Scoping Consultation

Consultation helps to ensure that all the impacts, issues, concerns, alternatives and mitigation which interested parties believe should be considered in the EIA are addressed, provided it is carried out systematically and project information are sufficient and transparent enough for their assessment. There are three main groups of organisations and individuals who may be appropriate to consult during scoping. These are the (i) statutory authorities (e.g. DOE, local authorities), (ii) other non-statutory but related organizations (technical agencies, etc.), and (iii) the project communities and general public.

Types of organisations to be included in these three groups are listed in **Table 3.1**

Table 3.1 Type of organisations to be included for scoping consultation

Environmental Authorities	• regional and local authorities • authorities responsible for pollution control including water, waste, soil, noise and air pollution • authorities responsible for protection of nature, cultural heritage and the landscape • health and safety authorities • land use control, spatial planning and zoning authorities • authorities in neighbouring countries where transfrontier impacts may be an issue
Other Interested Parties	• local, national (and international) environmental and social interest groups • • sectoral government departments responsible for labour, community health, agriculture, energy, forestry, fisheries, etc whose interests may be affected • international and transfrontier agencies whose interests may be affected e.g. cross-border river basin commissions • local employers' and business associations such as Chambers of Commerce, trade associations, etc • employees' organisations such as trades unions • groups representing users of the environment, e.g. farmers, fishermen, walkers, anglers, tourists, local wildlife groups • research institutes, universities and other centres of expertise
Project Communities and General public	• landowners and residents • general members of the local and wider public • elected representatives and community figures such as religious leaders or teachers; • local community groups, residents groups, etc.

3.5 SCOPING TOOLS

Scoping exercise for a project is to answer three key questions.

- What effects could this project have on the environment and social including community safety and health, and project labour workforce?
- Which of these effects are likely to be significant and therefore need particular attention in the environmental studies?

- Which alternatives and mitigating measures ought to be considered in developing the proposals for the project?

Many different techniques have been developed to help with scoping but checklist or matrices are some of the basic tools that are commonly used in providing a systematic way of thinking and presenting the potential interaction between the project and the affected environment (human or natural). The checklist mainly describes the impact significant for each activity by means of asking questions and provides to some extent their mitigation while matrices give an idea of the likely significance of the first order effects of a project.

Checklists that can be used includes ones that have details describing the project characteristics which could give rise to significant effects on the environment and workplace and community safety & health, together with details of project environments characteristics of which could be susceptible to significant adverse effects. It can also be in the form of series of questions in deciding whether or not an impact is likely to be significant. In this form of checklist it is more useful to provide as much information as possible on why the effect is considered likely to be significant rather than a simple "yes/no" answer. Most time it is often difficult to define what is "significant" at this stage. A useful simple check is to ask whether the effect is one that ought to be considered and to have an influence on the development consent decision.

3.5.1 Identifying Significant Impacts

The first section of a scoping checklist normally provides a list of possible project activities which has the potential to cause impact to the environment. This is then follows with series of questions which prompts for the following answers:

If the activity is likely to occur	– Yes
if the activity is not expected to occur	– No
If it is uncertain whether the activity will occur or not	– Maybe or no answer

When undertaking scoping, the assessor must consider which characteristics of the surrounding environment could be affected by that activity. The assessor should also take consideration of the following:

1. ***Source of Impacts***: Types or components that have potential to lead to significant impacts.
    - Type of activity - nature of the proposed activity.

    - Project inputs - construction (land requirement, machinery, materials, labour force, etc.) or operation (gas treatment facilities, raw materials, machineries and equipment, waste streams – air borne, liquid, effluent, solid, toxic/hazardous, labour force)

    - Project activities - site selection, construction, operation/ manufacturing processes, transport and handling, waste treatment, waste disposal, and maintenance.

- Project Outputs – product from the operation/ manufacturing, waste from construction and operation, treated wastes and effluent (solid waste), odour and noise.

2. ***Impact Receptors***: The nature of receiving environment, workplace and local communities. Certain environments need special attention because of their ecologically or social-economically sensitive

3. ***Environmental Impacts***: Those that are potentially significant to the human environment (due to degradation of air quality, water quality, risk to life, socio economics) or natural environment (soil, water groundwater, marine life, terrestrial ecosystem)
4. ***Significance of Impacts***: The contrast of predicted magnitude or impact against established environmental and social standards of Bangladesh or acceptable and recognized international standards, and environmental priorities and preferences of the affected population.
5. ***Degree of mitigating impacts***: At various project stage, from planning, design, construction and operation

3.6 TERMS OF REFERENCE FOR AN EIA STUDY

The Terms of Reference (TOR) is essentially the product from the scoping process in which sets out what the EIA is to cover, the type of information to be submitted, and the depth of analysis that is required. It provides guidance to the Project Proponent on how the study should be conducted and managed. TOR should be a flexible document with provision for adjustment and feedback when further information becomes available, and new issues emerge or others are reduced in importance during the EIA process. TOR revision should be made as and when necessary only.

3.6.1 Contents of TOR

The Terms of Reference for an EIA may comprise some or all of the following items:

- purpose and application of the Terms of Reference;
- statement of need for and objectives of the proposal;
- brief project background and description of activities to be undertaken;
- overall project schedule;
- indication of extent of study area or impact zone(s) (e.g. the affected environment and community);
- applicable policy and institutional considerations;
- EIA requirements and decision-making particulars;
- provisions for public involvement;
- alternatives and options to be examined;
- the impacts and issues to be studied;
- the criteria and standards to be applied for the assessment;

- the studies to be carried out, including baseline studies for existing environmental quality, socio-economic surveys, and others (indicating approach, time & space boundaries);
- the requirements for mitigation and monitoring;
- the format of the EIA report and the information and data to be included in the report;
- the timeframe for completion of the EIA study and report;
- the means for making changes to the TOR if necessary; and
- the particulars, activities, responsibilities, and expected outputs of the study team.

As part of the environmental clearance submission procedure, the Proponent is required to prepare and submit the TOR with the IEE submission to the DOE for approval prior to commencement of the EIA study.

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CHAPTER 4

PROJECT DESCRIPTION AND PROJECT OPTIONS

CHAPTER 5

PROJECT DESCRIPTION AND PROJECT OPTIONS

CHAPTER 4
PROJECT DESCRIPTION AND PROJECT OPTIONS

4.1 INTRODUCTION

Two key components of the EIA are a comprehensive description of the proposed project and an overview of the alternatives and options that were applied at the planning stage to arrive at the project design or proposal that is to be implemented. These two components provide key information about the project, its activities, the environmental issues that are likely to result from its construction and operation, and the considerations given to minimize impacts to the environment and social aspects.

Information relating to the two aspects is normally reported in the early part of an EIA report. A clear understanding of the project is important in providing a proper understanding of the EIA report. The following section provides guidance in the preparation of the above information.

4.2 DESCRIBING THE PROJECT

The project description should present a clear concise description of aspects of the project that will provide an understanding of what the project is about and how it is to be undertaken. The key aspects that are required to be described and reported in an EIA report include:

a. A brief description of the project
b. A Need Statement outlining the objective(s) of the project;
c. A detailed description of the project and the activities associated with it;
d. The project options and alternative considered; and
e. A schedule for implementation of the project.

4.2.1 Need Statement

The statement of need spells out the project objective(s). In essence, it should establish a social and/or economic need for the project and should conclude with a definite statement of the aim of the project and what it will achieve. This statement should be clear and transparent as acceptability of the project is often influenced by what the public is able to understand and perceive. This reaction is often measured by how the project will affect them and if the project meets the needs of society, the region or the nation.

It is crucial that reference is made, where appropriate, to the various national policies and plans to demonstrate how the proposed project fits in with the nation’s aspirations. The statement of need may make reference to the country’s National Industrial Policy, the agenda for social improvement, the economic developmental needs of the country, and other relevant policies and

plans. The statement of need must also focus on the core purpose of the project and not on the attendant benefits.

Justification for the project may involve consideration of the following factors:

- Existing situation regarding supply and demand of the product or service to be provided by the project,
- Projection on the demand of industrial product or service over the project lifetime,
- Current available sources and other similar project throughout the country,
- Benefits of the projects, and
- National priorities.

Up to-date information relating to production, its consumption and utilization at the project formulation time and projections are some key data used to support the need for the project. Information pertaining to the country's economic and social growth is used provide support for assessing the contribution of the project.

4.2.2 Brief Description of Project

The brief description of the project in the beginning of the EIA report is intended to provide the reader with a quick overview of:

a. What the project is about?
b. Who the proponent is?
c. Where it is located?
d. What it is intended for?
e. What is involved in the development of the project? and
f. When will it start and how long will the construction be?

The description should be in the form of a précis that is concise and to the point. Reading this should give a reader a grasp of what the project is about within a short time and this will be supplemented with more detailed description in the later sections of the EIA report.

4.2.3 Description of Project and its Activities

Understanding what the project is about provides a means to understand the implications that it will have on the environment. The amount of information provided must correspond to the likely nature of the key environmental and social issues. For example, if the main environmental issues from of the project is air or water pollution during the operation of the facility, then the design and operational aspects would need to be discussed in depth compared to the construction phase of the facilities.

As a general rule the project should be described in terms of its basic activities, location, layout, operational conduct, and schedule in terms of the project life cycle. This typically comprise of the following aspects:

Project Location and Area

- The location of the project (supported by location map)
- The layout plan with cartographic representation of utilities, machinery, storage yards, infrastructure, transport routes and other structures in the project site.
- Contour maps (at 2 or 3 m intervals) along with site plans

Project Description

- Site layout
- Details of manufacturing or operating process with flow chart
- Installed capacity of the plant and types of products along with the quantities produced
- Descriptions of technology to be used for manufacturing/operating , raw material / product handling and technology to be used for pollution control and abatement
- Description of utilities and services (such as boilers, DM plant cooling plant, etc), and their capacities, resource consumption and pollution potential.

Project Activities and Schedules

- A listing of the main project activities undertaken during site investigation, site clearing and construction, operation of plant, and associated developments like development of housing colony, transport infrastructure, social infrastructure, etc
- Phases and schedules for development of the project

Resource and Utility Demand

- Utility-wise energy requirement
- Fuel, oil and electricity requirements
- List of required raw materials, the quantity needed and their sourcing, including any hazardous materials
- Water requirement and water sourcing patterns
- Infrastructure for handling and storage of raw materials and products
- Other supporting infrastructure, utility and service requirements
- Employment potential and types of employment during construction and operation stages
- Water balance of the entire plant with daily water consumption in kl/day under different utility heads

Pollution and Health and Safety Hazard Potential

- Types of air pollutants likely to be emitted from the plant/facility
- Potential point and non-point emissions and effluents likely to be generated from the process, utilities and raw material and product handling
- Proposed pollution control equipment including local exhaust systems, personal protective equipment and their technical specifications and cost

- Compliance status of pollution control equipment with respect to standards set for the industry
- Quality and quantity of wastewater likely to be generated from different sections of the plant
- Capacity of the effluent treatment plant (ETP) with design criteria, and characteristics of the influent and the final treated effluent
- Details of the sewage treatment plant (STP), including its capacity and method of treatment
- Quality and quantity of solid and hazardous wastes to be generated, including its management (storage and disposal)
- Identification of noise-prone areas or operations that could generate noise. This is crucial from the occupational health point of view. The best way to collect this information is to ask the equipment manufacturers to provide noise limits for the equipment and machines.
- Noise levels expected during various stages of production due to various utilities, transport and loading/unloading
- Identification of hazardous operations and equipment that could injure or cause illness to workers during construction and operation

Regardless of the type or nature, project descriptions should be supported by maps, plans and appropriate diagrams (material flow, etc.). Schematic representations of the project components such as flow diagrams are useful as they provide a clear picture of the project operation. For new technologies, examples of similar use and pictorial presentation will give extra merit to the description provided.

Description of measures considered for the project to meet environmental standards, environmental operating conditions, and health and safety risk requirements, emphasis the good operational management aspects incorporated into the project. The prefeasibility study for the project would normally have considered these aspects as environment, health and safety risks are important project selection and decision criterion. Inclusion of the likely operation management into the EIA will indicate that the project has been thoroughly thought out.

4.2.4 Project Options

Consideration of alternatives or options in the project design is an integral part of project planning. It is one of the main key features of the EIA assessment as project and technology selection will largely determine the type and magnitude of environmental impacts that will result. Improper selection of process or technology can lead to significant environmental, community and occupational safety and health risks and/or socio-economic impacts that can lead to rejection of the project approval.

A comparison of alternatives/options will help to determine the best method of achieving project objectives while minimising environmental impacts or, more creatively, indicate the most environmentally friendly or best practicable environmental option. If possible, all the alternatives that were considered and evaluated for the project must be described in the EIA report. This demonstrates to the reader that the project has been planned adequately, taking into consideration various options.

The principle features of each option should be explained and the economic, technical and environmental advantage and disadvantages of each should be discussed and evaluated as far as possible. Discussion on alternatives should include all project options that were considered by the Project Proponent – even those that were considered in the early stage of project planning or before the EIA Consultant was engaged.

The consideration of project alternatives/options is likely to be most useful when the EIA is undertaken early in the project cycle, i.e. during the stage of screening or scoping. Some of the project alternatives to be examined for the projects may include but not limited to the following:

- Site options
- Construction methods/development approaches
- Production method options
- Layout options
- Transportation options
- No project option

At minimum, the EIA should address at least two alternatives (with and without the project); they can include multiple alternatives (usually limited to three to five alternatives). Not all projects will require the elaboration of all types of options.

One of the methods to present the comparison between the various options is in a matrix format. The Consultant must be aware that the project options section of the EIA provides him an opportunity to highlight the economic and environmental advantages of the chosen project option. The elaboration of the project options should be, where appropriate, supported by maps and diagrams.

The development of feasible alternatives or options, to meet the overall objectives of the proposal requires for certain types of information and knowledge. During this process, for example, reference may be made to: available technology, alternative materials (e.g. substitute hazardous materials for non-hazardous) policy objectives, social attitudes, environmental and site constraints and project economics. It is important to make sure that the alternatives chosen for comparison with a proposal can be implemented cost-effectively.

For the EIA, the preferred alternative will be the most closely examined, and may be the only alternative to be considered in detail. However, it is not uncommon for several alternatives investigated to be at the same level of detail during the impact analysis and evaluation phases, prior to selecting from among them.

4.2.5 Development Schedule

The EIA should be accompanied with a schedule indicating the project lifetime. Implementation schedule of the project will show the planned key activities discussed and organized against its timeframe for efficient implementation.

Components of the implementation schedule will include the various project phase – pre-feasibility, feasibility, construction, operation and abandonment/decommissioning. The EIA undertaken and its approval stage are normally incorporated into the project schedule as it presents one of the critical paths for the later activities. This is usually followed with approval stages for other mandatory project approval processes that are required before the project can proceed.

Presenting the project implementation schedule also assists the EIA report review process to ensure it does not exceed the review timeframe indicated. It also provides the public an idea of how long the project will affect them, if this is at all relevant.

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CHAPTER 5

ENVIRONMENTAL BASELINE DATA

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5.1 INTRODUCTION

Environmental baseline information is pre-requisite for undertaking IEE and EIA as output from both assessments are dependent on the understanding of the cause-effect relationship and the status of changes to the physical, chemical, biological and human characteristics of the environment.

Baseline data collection should commence from the very beginning of the environmental assessment process. Consideration of data needs and types should be carried out at the early. stage of project planning, such as the pre-feasibility study or during the screening process. Comprehensiveness of the data available at that time will influence on the decisions made during the scoping exercise, preparation of the TOR, and the input towards the IEE. It is crucial to clearly define the data needs, types and source at very early project stage to avoid redundancy and time wastage

5.2 DETERMINING SOURCES OF INFORMATION

Prior to collecting data, it is important to firstly define the study area and clearly identify all sensitive receptors within this area. Defining area affected by the project will give a clear delineation of the study area and ensures data collection is comprehensively covered and in relation to the concerns identified. The area to study must be large enough to include all valued environmental resources that might be significantly affected by the project.

5.2.1 Defining Study Area

As a general rule of thumb, the area affected (also known as the “zone of impact”), is determined based on the type of project activity and the extent to which its consequences are significant. For example, air-borne pollutant releases are likely to spread over wide and long distances from its source and this is influenced by the nature and type of pollutant released and the wind conditions that prevail. The area of impact includes the area of spread of the pollutant up to the point where it is significant enough to cause an effect.

On the other hand, pollutants discharged into a river are carried downstream by the flow of water and spread of the pollutant is linearly along the river. Hence, downstream activities that may be affected are those that utilize water from the river such as irrigation, water supply, aquaculture fisheries, and aquatic life in the river.

It is normal for the study area to be in the range of 3-5km from the project site boundary, but final study area size depends on the nature of activities that will be taking place.

Two types of boundary that are usually considered in EIA:

a. geographical or 'spatial' boundary; and
b. temporal or 'time frame' boundary.

Geographical Boundaries	***Temporal boundaries***
Physically define the study area of a project by: • the nature of the project; • the nature of the impacts; • sensitivity of the receiving environment; • availability of data; and • natural boundaries.	Setting time frames allowing inclusion of past and future developments that could lead to indirect or cumulative impacts or impact interactions. Depends on: • historical use of the area, e.g. former industrial activities or landfill; • the local, or national planning horizons for future development; • lifetime of the project from construction to decommissioning.

5.2.2 Identify Sensitive Receptors

In the context of an EIA, sensitive receptors refer to those human and natural living resources which are likely to react adversely to an effect caused by an activity. Correctly identifying sensitive receptors is an important task in any EIA as incorrect identification of the receptors may render the impact assessment exercise futile.

Prior to identifying the sensitive receptors, one must have understanding of the likely environmental impacts arising from the proposed project. For example, if the main impact is likely to be air pollution, the sensitive receptors downwind of the project site need to be identified. If the main impact is likely to be effluent discharge, the receptors downstream of the site need to be identified.

Sensitive receptors need not necessarily be near the project site. For some major effluent discharging projects, the sensitive receptors could be many kilometers downstream. Sometimes it may not be possible to correctly identify all sensitive receptors at the onset of the EIA – which is quite normal. As the EIA progresses and the findings of the various studies and analyses become available, the Consultant should re-examine the initial list of sensitive receptors and update them accordingly.

For human health and safety hazards, sensitive receptors include the host communities and certain groups that are likely to be exposed to the hazards. Workers and local residents will be exposed to construction-related safety hazards at construction sites and routes. School children will be particularly exposed to construction traffic accident hazards. Migrant workers will be exposed to local diseases which they are not immune to, resulting in disease outbreaks. They also may bring in new diseases into the community or increase the spread of some existing diseases such as STDs and HIV/AIDS. During operations, local residents will be exposed long term health issues from emissions and effluents.

5.2.3 Identify Ecologically Critical Area

The EIA study should clearly identify and map all ecologically critical areas within the zone of impact. In identifying sensitive areas within, adjacent or within the “impact zone” of the proposed project, the Consultant should make reference to established Local Plans for the district where the project is located and identify declared or designated conservation areas, natural habitat, forest, wetlands, and other ecologically critical areas. . These areas must be documented in the Existing Environment chapter and must be showed clearly in the map with respect to proposed location of the project facilities and areas where construction activities will occur.

5.3 ESTABLISHING DATA NEEDS

The most important consideration in documenting the “existing environment” is to provide the reader with sufficient appropriate information in relation to the key environmental issues. The Consultant should therefore have a good understanding about the key environmental issues of the Project before commencing on documenting the existing environment. The Scoping should have already initially identified the elements in each environmental component that are relevant to the project (See Annex A). Typically the baseline data needs will include the following:

- Physical components: Includes landforms, drainage, land use patterns, hydrology, meteorological data, air quality, water quality, noise, physical infrastructure, other polluting sources, etc.
- Biological components: Includes biodiversity of the site, aquatic and terrestrial habitats, species and population, ecosystem products and services, etc.
- Social and economic components: Includes data on demographics, livelihood, economic activities and occupational patterns, dependence on natural resources, social profile, land acquisition and displacement of population,
- .

5.3.1 Data on physical environment

Land and land use patterns

An industrial project may require considerable amount of land for its main production facility, including access road, space for storage and handling of raw materials and products. This will bring about changes to the overall landscape. The impact on land and land use is more pronounced if a plant is proposed in a densely populated area. Therefore, information on land and land use patterns in and around the project site is very critical. Some of the information could be in the following form:

- Location map
- Topographic map (1:25,000 or 1:50,000 scale)

- Map of the study area indicating features such as land use patterns, locations of human settlements, major constructions including railways, roads, major industries and other polluting sources
- Types of industries present in the study area and their distances from the project site
- Contour map (for example, at 2 or 3 m interval) along with site plan layout
- Population agglomeration around the project site (in a radius of 2 km from project site)
- Existing land use patterns of the acquired land and in the surrounding region with explanatory notes
- Location of the project – whether it is in a notified industrial area (applicable for grinding unit)
- Flood plain characteristics of the project site

Hydrology and water pollution

Managing water pollution is not a difficult task in a cement plant, as the effluents discharged from the plant are not as contaminated as in the case of pharmaceutical or textile sectors. The effluents released from a cement plant are relatively cleaner and can be reused after providing adequate conventional treatment. Similarly, the impact on local hydrology is not significant. However, impacts could be high if a cement plant is proposed in a densely populated area and draws groundwater. The following information is crucial for baseline data generation on water and hydrology:

Map of the drainage pattern of the project site and adjoining area

- Source of abstraction of water (surface and sub-surface) and its quantity
- Map indicating surface water bodies like ponds, lakes, reservoirs, rivers, streams, etc. in the study areas
- Groundwater levels (pre- and post-monsoon) and its characteristics in the study area
- Average rainfall in the study area
- Availability and utilization patterns of surface water and groundwater resources in the study area (if the project draws groundwater and is located in a populated area)
- Aquifer characteristics, including the groundwater movement in the study area
- Physio-chemical (including heavy metals), biological and bacteriological characterization of surface and groundwater resources in the study area. (*Note:* Parameters for which water quality assessment are to be done include pH, temperature, turbidity, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), chloride, fluoride, sulphate, sodium, potassium, nitrate, total phosphates, Dissolved Oxygen (DO), heavy metals, total coliforms and *Ecoli*.
- Number of sampling stations to be decided on the basis of the number of water bodies, human settlements and drainage patterns in the study area

- Grab sampling method to be used; water quality analysis to be done based on the *Methods for Examination of Water and Wastewater* published by the American Public Health Association
- Information on groundwater movement in the study area

Meteorology and air quality

Meteorology

- Meteorological data for one season, including data on temperature, rainfall, wind speed and direction, humidity, cloud cover, stability class, mixing height, solar radiation, etc.
- Wind rose diagram for the project site
- Existing sources of air pollutants in the study area, including other industrial plants

Air environment

Ideally, the EIA study should aim at monitoring ambient air environment at all sensitive locations, including the project site. Given that the direction of the wind plays an important role in deciding the impact of air pollutants, monitoring stations must be located downwind of the most prevalent wind directions. The monitoring should be able to generate data on:

■ Ambient air quality – data on SPM, RSPM and gaseous pollutants such as SO2 and NOx

Note:

- *Air quality monitoring should be conducted for one more season other than the rainy season (preferably winter).*
- *A minimum of six sampling stations should be established. Selection of sampling stations should be done by considering factors like predominant wind direction, location of human habitations and other sensitive sites, location of industries, etc.*
- *Samples should be collected on a 24-hourly basis, twice a week.*
- *Ambient air quality should be represented as maximum, minimum, average and 98 percentile concentration.*

Noise level

A noise level meter can directly monitor ambient and occupational noise levels. Noise monitoring stations should be sited / selected on the basis of potential risks to sensitive receptors (such as human settlements, workers at workplace, etc.). The key information required is on:

■ Ambient noise levels collected near residential areas, commercial areas and silent zones. If there are no commercial areas or silent zones inside the study area, then the residential areas located close to the plant must be considered.

- Monitoring should be done for 24 hours (15 minutes an hour), and data for one month should be collected.
- Data to be represented as hourly equivalent noise levels (Leq) for day and night.

5.3.2. Data on biodiversity and natural habitat

The impact of an industrial facility on biodiversity primarily depends on its location. For example, the impact is significant if a project is coming up next to a sensitive area or involves diversion of forest land.

The following are critical biodiversity information that are useful in EIA of industry projects: :

- Location and distance of project site from national parks, sanctuaries, biosphere reserves, reserve forests, or protected forests in the study area.
- Inventory of flora and fauna found in the study area and their importance.
- Presence of any nesting / breeding grounds of animals, if any.
- Presence of any endangered or threatened species of plants and animals, if any.
- Presence of plants or animal species of economic importance, or presence of any restricted habitats of flora or fauna in the study area.

5.3.3 Baseline social and economic data

The impact of an integrated cement plant is directly proportional to the acquired land and population density. The magnitude of social impact increases manifold in case the project and study area is heavily occupied by human settlement. Some of the major social challenges are involuntary displacement and continuous exposure to air pollution. Socio-economic data serves a dual objective in the EIA. On one hand, it provides a current socio-economic profile of the area and on the other, it assists the project developers in identifying priority areas for their socio-economic development programmes. The following details can be sought for generating baseline socio-economic data for a cement project:

- Demographic characteristics
- Information on the presence of existing infrastructure such as educational facilities, healthcare centres, roads, water supply, etc. (Note: These data would help the project developer to identify priority areas for community development).
- Population density in the study area, and estimates of the population living close to the plant site.
- Livelihood patterns and income levels.
- Literacy rate.
- Displacement and loss of livelihood due to the project, if any.
- Compensation and rehabilitation, if any.

- Presence of religious places and structures of archaeological importance in the area.

5.3.4 Others baseline data and information

- Traffic survey and load on existing road infrastructure.

- Support infrastructure and utilities (existing or planned)
  - Transport system such road system, rail, canals, etc.
  - Identify points of access and transportation routes.
  - Identify sources of essential infrastructure, e.g. water supply intake points, drinking wells, power, telecommunications, etc
  - Physical communication infrastructure within the project site
  - Public amenities

- Occupational Safety and Health (OSH)profile of the industry and region
  - Prevalent OSH issues in the industry/similar projects
  - Related OSH incidents in the host region (data on workplace accidents, injuries and illnesses)
  - Fire and explosion incidents in establishments in the host regions
  - Enforcement of OSH laws and regulations, including capacities of authorities
  - OSH systems, processes, practices and safety culture
  - OSH regulators, professionals, consultants, professional organisations, etc.

- Community safety and health profile and related information of the project area
  - Prevailing health issues in the project area
  - Prevailing communicable diseases in the project area (e.g., STD, HIV/AIDs, coronavirus, etc.)
  - Prevailing or endemic vector-borne diseases (e.g., malaria, schistosomaisis, dengue, etc.) including source and cohort infections, history of outbreak
  - Current traffic/ road safety issues
  - Local health services and capacities
  - Existing government health programs
  - Existing emergency response system
  - Health and safety habits of the local population.
  - Traffic and road accidents/incidents
  - etc.

The above issues are considered as inter-related issues. Construction and operation of database should be in line with this knowledge and address those that were earlier identified during scoping.

Some of the key areas for baseline activities are outlined below. The following are indicative and its relevance should be reviewed according to the site, project activity and need for the EIA study. It is also important to note that when secondary data is used, the source of the information should always be stated. All the raw data collected for the EIA should be included in an Appendix.

5.4 CONSIDERATIONS IN DATA COLLECTION

It is quite common that people rush out to do their baseline data collection at the onset of the EIA without fully understanding the likely impacts or likely pollutants. This usually results in the Consultant having to redo the baseline measurements at a later stage when the main issues come to light – and this will cause delays and cost over-runs.

Some of the common mistakes in baseline data collection in EIA include:

- Tendency to provide equal coverage on all aspects of the existing environment which is not necessary. The extent of coverage must commensurate with the importance of the subject matter for a particular project. *For example, there is no need to carry out extensive baseline air quality data if air pollution is not likely to be an issue*.

- The spatial extent of data collection does not commensurate with the spatial extent of the predicted impacts. *For example, the water quality modeling may state that the impacts will persist 20 km downstream but the sensitive receptors such as water intakes are only identified within a 5 km radius.*

- The parameters measured do not correspond with the pollutants predicted.

  Example, air quality may be measured in terms of only TSP, NO_X and SO_X, but the proposed activity could be releasing cyanide which is not measured.

- The locations of field measurements do not reflect sensitive receptors. *One of the key tasks in the EIA is to examine the impacts on sensitive receptors. Therefore, the baseline data at the location of the sensitive receptor is important. If there is a water intake 10 km downstream of an effluent-discharge, water quality at that intake must be known. For COSH, the sensitive receptors are people, i.e. workers for OSH and community members for CSH. The EIA should examine the impacts of the project on the people that will be affected directly and indirectly.*

- Data is collected for parameters or components that are not used in the analysis of impacts. *Lots of data may be collected making the "existing environment" chapter very bulky but little of these data is used in the impact assessment. Example, many reports tend to provide extensive climatological data which is often not used in any of the subsequent analysis. Just because the data is available or can be easily collected, does not mean it must be used in the EIA.*

- Old data is used. *Sometimes the field data used in the EIA is more than 2 years old. This could happen when, for example the Project Proponent decides to make major changes to the Project design or unable to temporarily proceed with the project planning. The field data that is collected in the initial stages of the EIA could become outdated. It is the responsibility of the EIA Consultant to carry out additional sampling to ensure that the data is current.*

  There are other aspects of field data collection that need to be considered. For projects wherein models are used (e.g. water quality or air quality models), field data is also needed for model calibration. The locations of the data for model calibration may be different than those needed for assessing impacts or establishing baseline conditions. Careful consideration

should be given to data needs required for environmental modelling and these should be specific for the model that is used.

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CHAPTER 6

PREDICTION AND EVALUATION OF IMPACTS

CHAPTER 6
PREDICTION AND EVALUATION OF IMPACTS

6.1 INTRODUCTION

The prediction and evaluation of impacts is an integral part of an EIA process. The exercise is to forecast the nature and magnitude of the identified environmental impacts. Impact assessment is to provide a comparison of the existing environment that has been identified earlier against alterations or changes to these conditions resulting from implementation of the proposed projects/activities and provides an estimate the likelihood of occurrence for those impacts. For this, appropriate assessment methodology must be applied to verify its conclusion whether it will be positive or negative. Knowledge of the predicted beneficial effects and negative impacts is used to present an overall balance view of the proposed project for a decision to be made as to whether it can proceed or not.

Impact assessment for an EIA will involve three main phases as follows:

- *identifying* more specifically and in detail the impacts under investigation associated with each phase of the project and the activities undertaken;
- *predicting* the characteristics of the main impacts in terms its nature, magnitude, extent and duration; and
- *evaluating* the significance of the residual impacts that cannot be mitigated.

There are many assessment methodologies that can be adopted for prediction of the likely impact, thus the process of selecting suitable models needs careful evaluation. The purpose of this Guideline is not to recommend a single method for assessing the impacts, but to recommend various approaches in which an assessor can adopt and combine to suit the particular project. Selection of a suitable methodology should take into account the nature, magnitude and the complexity of the potential impacts that will be assessed, which will be further explained in this chapter.

Therefore, this chapter will provide:

- Recommendation of appropriate methodologies that can be used to evaluate the scale and extent of environmental impacts on the key environment components
- Identify established Bangladesh standards against which the severity of predicted impacts can be evaluated. Where there is no national or local standards, internationally recognized, relevant and acceptable standards will be recommended. Additionally, where quantified standards are not available, an indication on how to assess the significance is given.

6.2 IDENTIFICATION OF IMPACTS

Industry potentially poses a variety of impacts on the environment. The likely impacts is influenced by many factors such as of the project stage, the size and complexity of the project, the nature

and sensitivity of the surrounding environment and the effectiveness of planning, pollution prevention, and proposed mitigation and control techniques.

Assessment of impacts typically proceeds after the purpose and need of the proposed project, project alternatives, and description of the environmental setting have been identified and established. At this stage, scoping for the project is presumably completed and ready for the IEE application with the TOR for the EIA.

Impact assessment is usually undertaken against environmental and social baselines. In assessing potential impacts, it is important to consider the geographic scale over which these impacts might occur. This can be global, regional or local. While the main focus of the assessment is on the natural or biophysical environment such as effects on air and water quality, flora and fauna, noise levels, climate and hydrological systems; consideration should also be given to social, health and economic impacts as well as exposure of workers and host communities to health and safety hazards. In essence, impact assessment should cover the broader “definition” of the affected environment as follows:

- human health and safety, particularly community and occupation health & safety (COSH)
- flora, fauna, ecosystems (terrestrial and marine) and biological diversity;
- soil, water, air, climate and landscape;
- use of land, natural resources and raw materials;
- protected areas and designated sites of scientific, historical and cultural significance;
- heritage, recreation and amenity assets; and
- livelihood, lifestyle and well being.

For effective impact identification, a simple logical and systematic approach is recommended. All the important environmental/project impacts and interactions must be taken into account. At the same time, ensure that indirect and cumulative effects which may be potentially significant are not inadvertently omitted. Some or all of impacts identified may require detailed analysis and evaluation. However, there is no need to address every issue identified with the same level of details. The levels of details should be appropriate to the scale, sensitivity and complexity of the issue. Choice of chosen methodologies should reflect these criteria.

6.3 PREDICTION METHODOLOGY

6.3.1 Methodologies

Impact assessment can be facilitated using a range of prediction tools available. Below is a list of common formal qualitative and semi-quantitative prediction tools that are commonly used in the impact assessment.

- Expert Opinion
- Consultations and Questionnaires
- Checklists

- Spatial Analysis
- Network and Systems Analysis
- Risk Matrices
- Carrying Capacity Analysis

In practice, relatively simple methodologies are recommended and preferred, rather than more complex, data-demanding ones. When undertaking the assessment, it is important to remember that the assessment which will be carried out is project specific and site specific. It is appropriate to know if methodology selected is appropriate for use having considered the local conditions around the site. For example, local meteorological conditions may not allow the use of data that is measured at locations far from the site. In this case, treatment of the data may be needed and the limitations of the method and the results will have to be highlighted accordingly.

6.3.2 Modelling Tools

The ability to predict impacts quantitatively makes comparison among alternatives and baseline conditions easier and facilitates impact monitoring and auditing later in the EIA process. These can be done with the aid of various mathematical and statistical models. **Table 6.1** below presents a list of sample methodologies that may be applied for the assessment of impacts due to various concerns.

Table 6.1: Various mathematical and statistical modelling tools

Impacts	Method of Assessments
Soil Erosion	Soil loss models such as Revised Universal Soil Loss Equation (RUSLE)
Sedimentation, Water Quality and Pollution (in rivers, flood plains, irrigation canals, reservoirs and other inland water bodies)	• Sediment transport model such as MIKE11, HSCTM2D • Mixing zone model such as CORMIX • Water quality simulation model such as QUAL-II E, MIKE11, • ATV, AQUASIM, AquaDyn • Streeter-Phelps technique (one dimensional, two-dimensional, modified for estuarine analysis) such as WASP5, DYNHYD5
Marine Quality	• Hydrodynamic/ Sediment transport models • Chemical/ geochemical models • Biological/ benthic model
Flood	Peak flow hydrographs for rainfall-runoff events in large river basins or small urban watersheds such as: □ HEC-HMS, □ FLO-2D, □ TUFLOW
Groundwater and Hydrogeology	Groundwater flow models and contaminant transport model such as MODFLOW, GMS, Aqua3D, HSSM (Hydrocarbon Spill Screening Model)
Air quality	Air dispersion models: Box model, Gaussian model, Lagrangian model, Eulerian model, Dense gas model etc
Noise	Techniques prescribed in: □ ISO 9613 Part 1 and 2,

	British Standard 5228 (construction sites) Modelling software such as SoundPlan, CadNa,
Vibration	Techniques prescribed in: • ISO 2613 Part 1,2 and 3 • British Standard 6472
Land Use	Map overlay techniques Comparative valuation against structure and/or local plans
Transportation	Traffic generation and flow models Marine traffic generation and flow models
Risk to Life	Risk Assessment (not necessary full/detailed assessment)
Occupational Health	Comparative evaluation against guidelines
Occupational Safety and Health (OSH)	Hazard Identification and Risk Assessment in: • ISO 45001 Occupational Health and Safety Management Systems • International Labour Organisation (ILO) Guidelines and Training • World Bank Group Environmental, Health and Safety (EHS) Guidelines: Occupational Health and Safety
Socio- economic	• Cost benefit analysis • Extrapolative methods • Normative methods
Ecology	• Ecological models • Comparative evaluation of conservation value • Expert opinion
Biodiversity	• Spatial model such as GLOBIO3
Visual Aesthetic	• Paper-based matrices for systematic comparison • 2-D Viewshed Analysis (GIS layer) • 3-D Viewshed Analysis (ArcGIS)
Waste management	• Comparative evaluation against guidelines

There are a number of factors which will influence the approach adopted for the assessment of indirect and cumulative impacts and impact interactions for a particular project. The method should be practical and suitable for the project given the data, time and financial resources available. It should also be able to provide a meaningful conclusion from which it would be possible to develop, where necessary, mitigation measures and monitoring. Key points to consider when choosing the method(s) include:

- the nature of the impact(s),
- the availability and quality of data,
- the availability of resources (time, finance and staff).

The method chosen should aim at presenting the results in a way that can be easily understood by the Project Proponent, decision maker and the public. Moreover, all significant positive or negative changes need to be described conclusively with appropriate assessment methodology applied to verify its conclusion. Each method has its limitations and the accuracy of the findings differs. Hence it is required to indicate the reason for its selection and to highlight what the limitations are for the method and the results that are generated by it.

6.3.3 Hazard Analysis and Risk Assessment

Hazard is defined as a property or situation that in particular circumstances could lead to harm, while risk is a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence. Activities associated with the handling, transportation, processing and transmission of natural gas are generally classified as hazardous and pose risks to property and population due to fire and explosion. In view of this gas related projects are designed, built and operated with safety as a priority.

The principal risks associated with gas related projects are due to operational failures and accidental events leading to such failures. Such failures may lead to the release of hazardous gases with the potential for fire and explosions to occur. The consequence of fire and explosion can be significant and have potential to affect on-site employees and population and property located in the near vicinity of the project. Understanding the risks posed by such projects is an important element within an EIA study as it provides an assurance that the project will not endanger employees and the general population around the project. The electronics equipment are used in a project also to be considered as hazardous.

Assessment of the risks posed by fire and explosion as well as the release of hazardous gases is thus important for gas related projects. The objectives of a risk assessment study are:

- To evaluate the compatibility of the project with the surrounding development;
- To decide on the extent of buffer zone required between the project and the nearest populated areas;
- To formulate risk management procedures that are to be implemented;
- To formulate emergency respond procedures that are to be implemented; and
- To formulated procedures to communicate the risk posed by the project to workers and the surrounding population.

As general requirement, EIA should identify the hazard, evaluate the risk and address how the risk will be managed. At the minimum risk assessment process/matrix should be used.. A full quantified risk assessment is not necessary but, at minimum a summary of key risks and its findings should be presented. Comparison with internationally acceptable trigger level (the level beyond which is of concern) will be able to give both the assessor and reviewer a good indication as to the significance of the risk to the public. If these trigger levels are not exceeded, then qualitative risk assessment methodologies (e.g. HAZOP, etc.) aimed at demonstrating safe practices, would be more appropriate.

6.3.4 OSH Risk Assessment

For general industries, OSH hazard identification and risk assessment are key principles of risk management. Hazard identification is the process of recognizing that a hazard exists and defining its characteristics. OHS risk is a combination of the likelihood of a work-related hazardous

event(s) or exposure(s), and the severity of injury or ill health that can be caused by the event or exposure. The following group of hazards must be considered during hazard identification and risk assessment:

- Mechanical hazards emerging from using tools
- Hazards related to characteristics of the workplace
- Hazards related to use of electrical power
- Hazards related to use of hazardous materials
- Biological hazards
- Physical hazards
- Chemical hazards
- Ergonomic hazards
- Hazards related to physical exhaustion
- Hazards emerging during work
- Hazards related to work organization
- Other hazards emerging in the workplace

Risk assessment is the process of evaluating the risk(s) arising from a hazard and deciding whether or not the risk(s) is acceptable. The application of prevention and control measures to hazards should be based on the hazard analyses. The results of these analyses should be prioritized as part of an action plan.
Use a risk assessment matrix (RAM) table to perform OHS risk analysis and to prioritize mitigation/ action plan. Conduct a risk analysis of each hazard by applying the risk assessment matrix to determine the risk ranking and the level of control required to manage the risk.

Table 6.2 OHS Risk Matrix Table and Level of Action Plan

Likelihood	Consequences				
	Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
A. Almost certain	L	M	H	H	H
B. Likely	L	M	S	H	H
C. Moderate	L	M	S	H	H
D. Unlikely	L	L	M	S	H
E. Rare	L	L	M	S	S

Level of Action/Mitigation Plan

H: High risk; full quantitative risk assessment; immediate mitigation measure(s) to eliminate or reduce risk
S: Substantial risk; required OHS management plan to eliminate/reduce/mitigate risk
M: Moderate risk; implement measures to reduce risk to "As low as reasonably practicable (ALARP)"
L: Low risk; continuous improvement through OSH systems and procedures and continuous improvement

Source: IFC EHS Guidelines: OHS

6.4 ASSESSMENT OF SIGNIFICANCE CRITERIA

Alterations or changes to existing conditions resulting from implementation of the proposed projects/activities provide an estimate of the likelihood of occurrence for those impacts. To evaluate severity of impacts, the adverse impacts predicted are judged as to their significance and this is applied to determine the mitigation measures that will be necessary to reduce the adverse impacts to acceptable levels. This judgment can be based on one or more of the following considerations, depending on the environmental factors being evaluated:

- Comparison with laws, regulations or accepted national and local standards; or international standards in the event that national/local standards and limits are not available or adequate;
- Reference to pre-set criteria such as, conservation or protected status of a site, features or species;
- Consistency with government policy objectives (for example the National Energy Policy);
- Comparison with best practices;
- Acceptability to local communities or the general public; and
- Consultation with expert opinion and acceptability with the relevant decision makers.

The DOE has established standards and limits for compliance which are stipulated in the ECR, 1997. The standards and limits proposed are generally applicable to all activities prescribed in Schedule 1,. In the event there are no national or local standards, the assessor (upon agreement

with the Project Proponent) should recommend the standards or limits in which he feels should be adopted and relevant to the activity. These recommendations can be developed/ adopted from internationally recognized and accepted standards and limits, or it could also be based on the design criteria imposed by the technical standards of the Project Proponent. Adapted criteria and measures must be relevant to local circumstances and the type of activities.

It is to be noted that while compliance with these criteria or standards provides a demonstration of acceptability, it may not necessarily indicate that environmental impacts are not significant.

Table 6.3 Criteria and Standards for Environmental Parameters

Impacts	Evaluation Criteria
Water Quality and Pollution Control	Standards for wastewater from industrial units or project waste, Schedule 10, ECR, 1997 Standards for sewage discharge, Schedule 9, ECR, 1997 Standards for inland surface water, Schedule 3 (A), ECR, 1997 National Water Management Plan (NWMP) Integrated Water Resources Management (IWRM)
Groundwater and hydrogeology	Standards for Drinking Water, Schedule 3 (B), Environment Conservation Rules, 1997
Air quality	Standards for Air, ECR, 1997 Ambient Standards as per Notification SRO 220-Law/2005
Odour	Standards for Odour, Schedule 8, ECR, 1997
Noise	Standards for sound, Schedule 4, ECR, 1997 Noise Pollution (Control) Rules 2006 World Health Organisation (WHO) guidelines
Vibration	The Explosions Act 1884 ISO 2631-1:1997 BS 6472: 1992 Levels adopted by United States Bureau of Mines (USBM)
Land Use	Land use plan of the local government (e.g. Chittagong Metropolitan Master Plan (1995-2015)) Integrated Coastal Zone Management Plan Coastal Zone Development Strategy
Transportation	Acceptable level of service for highway affecting traffic and traffic flow
Risk to Life, Public Safety	Criteria for individual and societal risk The Explosive Act 1884 The Explosive Substance Act 1908
Public Health	Public Health (Emergency Provision) Ordinance 1994
Socio- economic	Cost Benefit Analysis, Historical Value, Cultural Value
Ecology (Land & Marine)	Protected areas as defined under Wildlife (Conservation and Security) Act, 2012 National Fisheries Policy 1998 Marine Fisheries Act 2020 The Protection and Conservation of Fish Act 1950 Integrated Coastal Zone Management Plan
Biodiversity & Conservation of Natural Resources	Protected areas as defined under Wildlife (Conservation and Security) Act, 2012 Forestry Act 1927
Visual Aesthetic	Public perception of acceptability
Waste management	Urban Solid Management Handling Rules of Bangladesh
Occupational Safety Health (OSH)	• Bangladesh Labour Act, 2006 • Bangladesh Labour Law Amendments, 2013 • Factory Act, 1965

- Factory Rule, 1979
- Bangladesh Labour Law, 2006
- National Child Labour Elimination Policy, 2010
- National Occupational Safety and Health Policy, 2013
- Domestic Workers Protection and Welfare Policy, 2015
- Labour Rules, 2015
- Bangladesh Industrial Policy, 2016
- ISO 45001 Occupational Health and Safety Management Systems Standard
- International Labour Organisation (ILO) Labour Standards
- The World Bank Environmental and Social Framework Standards
- World Bank Group Environmental, Health and Safety (EHS) Guidelines: Occupational Health and Safety (OHS)
- Common Good International Industry Practice for Construction
- ANSI Z10 Occupational Health & Safety Management Systems
- UK HSE The Construction (Design and Management) Regulations 2015
- US OSHA 29 CFR 1926 - Safety and Health Regulations for Construction and 29 CFR 1910 – General Industry
- Safe Work Australia Construction Work Code of Practice
- ANSI/ASSP A10 - Construction & Demolition (US)

6.5 EVALUATION IMPACT

Characteristics of environmental impacts vary depending on the activities proposed. There are six factors that must be taken into account when assessing the significance of environmental impacts arising from a project activity (**Table 6.4**). The factors are interrelated and must not be considered in isolation. For a particular impact some factors may carry more weight than others but it is the combination of all the factors that determine significance.

Table 6.4 Characteristics of environmental impacts

Magnitude	This is defined as the probable severity of each potential impact. Typically, it is expressed in terms of relative severity, such as major, moderate or low. It estimates the magnitude of the impact is of primary importance. Will the impact be irreversible? If reversible, what will be the rate of recovery or adaptability of an impact area? Will the activity preclude the use of the impact area for other purpose?
Prevalence	This is defined as the likely eventual extend of the impact as for example, the cumulative effects(s) of a number of effluent discharges. Each one taken separately might represent a localized impact of small importance and magnitude but a number of such discharges could result in a widespread effect. Coupled with the determination of cumulative effects is the remoteness of an effect from the activity causing it. The cumulative effluent discharge could cause a deterioration of water quality resulting in decline in fish population many miles away
Duration and Frequency	The significance of duration or frequency is reflected in the following questions. Will the activity be long-term or short-term? If the activity is intermittent, will it allow for recovery during inactive period?

Risk	This is defined as the probability of serious environmental effects. To accurately assess the risk, both the project activity and the area of the environment impact must be well known and understood.
Importance	This is defined as the value that is attached to an environmental component in its present state. For example, a local community may value a short stretch of river for water supply or for fishing. Alternatively, the impacted component may be of regional, provincial or even national importance, such as effects on the Sundarbans.
Mitigation	Are solutions to problems available and how effective are the measures? Is the solution adopted the best practical or best available? The significance of the residual impacts determines the effectiveness and hence acceptability of the mitigation proposed

6.5.1 Describing Impacts

The possible assessment decisions using the above criteria may fall into the following categories:

1. NO IMPACT

(a) It should be very obvious when a project activity is unlikely to have an impact on an environmental component. For example, if a project site is in an area lacking surface water of any description, environmental components such as those listed under surface water, aquatic life and water quality will be identified as “no-impact”, unless the operation is expected to cause the production of wastewater.

(b) Potential adverse environmental impacts are known but are not considered significant. It is however incumbent on the assessor to seek an environmentally acceptable design solution.

2. SIGNIFICANT IMPACTS AND RISKS

Activities and their environmental impacts are judged to be significant if they create, or have the potential to create concern and controversy. Since assessment decisions involve elements of individual values, assessors should consider the value which the community (general public and scientific), attach to various environmental factors. A good test of significance is for the assessor to put himself “in the shoes” of the people in the community suffering the impact. An understanding of community values will develop also through public participation in the assessment process (this is where the public perception survey can be useful).

To determine whether a given impact is significant the following criteria may be used:

i. spatial scale of the impact (whether local, regional, or national/international);
ii. time horizon of the impact (short, medium, or long term);
iii. magnitude of the change in the environmental parameter brought about by the project activities (small, moderate, large);

iv. importance to local human populations (for example, fish for consumption, drinking water, income); or
v. national or international profile (for example, national treasure, and any rare or endangered species).

3. INSIGNIFICANT IMPACTS

Insignificant Impact: If an impact occurs but does not meet the criteria for significance.

4. UNKNOWN IMPACTS

The potential impact of a project activity will be assessed as being unknown if:

i. the nature and location of the project activity is uncertain;
ii. the occurrence of the environmental parameter within the study area is uncertain;
iii. the time scale of the effect is unknown;
iv. the spatial scale over which the effect may occur is unknown; or
v. the magnitude of the effect cannot be predicted.

5. MITIGATED IMPACTS

The potential impact of a project activity on an environmental parameter is said to be mitigated, if:

i. there is potential for a significant impact; and the proposed mitigation measure will prevent the impact or reduce the impact to acceptable levels.

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CHAPTER 7

MITIGATION AND MEASURES

CHAPTER 7
MITIGATION MEASURES

7.1 INTRODUCTION

Mitigation of impacts is a process in the EIA which determines the possible preventive, remedial or compensatory measures for the adverse impacts which have been evaluated as significant. It aims to prevent adverse impacts from occurring and to keep residual impacts (impacts which remain after considering mitigation) within an acceptable level. Mitigation hierarchy of avoidance, minimization, mitigation, compensation and offset is applied.

The overall objectives of mitigation are to:

a. avoid and find better alternatives and ways of doing things;
b. minimise or remedy the adverse impacts through adoption of mitigating measures;
c. enhance the environmental and social benefits of a proposal; and
d. ensure that residual adverse impacts are kept within acceptable levels and compensated.

The nominated or selected mitigation measures should be described clearly in the EIA report in terms of:

- the impact it is designed to mitigate;
- the expected effectiveness in terms of reducing or preventing impacts;
- the alternative measure(s) that is next best;
- its cost (as needed) and appropriateness for adoption; and
- the implementation plan for putting the measure into practice.

7.2 DETERMINING NEED FOR MITIGATION

If a significant impact is apparent, the basic rules that may be applied in designing mitigation measures are:

(i) The extent of mitigation measure must correspond to the significance of predicted impacts. This means that if a particular issue is predicted to be significant (for example, chemical spill affecting river water quality), the mitigation measures for that particular issue must be elaborated in detail. Where the issue is minor, simple measures need be highlighted (for example, noise during piling works).
(ii) The mitigation measures should, as far as possible, be specific and directly related to the impacts issues for example, the use of acoustic barriers to control noise transmission).
(iii) Recommended measures may include what is possible to be implemented conceptually for the project (for example, a physical-chemical wastewater treatment system). While

some generic measures cannot be avoided, at least the key mitigation measures must be project specific (for example, wastewater treatment for high strength organic waste).

(iv) The mitigation measures should, as far as possible, be illustrated by diagrams, drawings, pictorial representations or maps (such as for location of silt traps and flood retention ponds). Narrative descriptions are to be minimized. General specifications of the measures, where appropriate, should be indicated (for example, the estimated capacity of the pollution control system proposed).

Documenting the proposed mitigation measures must demonstrate the linkages between project activities and impacts. To clearly identify effects that are mitigated, there should be a list of effects of a project activity against the activity and specific measures designed to mitigate the effects.

Mitigation of impacts is an iterative process and should be considered at all stages of project planning. Discussions between the Consultant and the Project Proponent should be maintained at all times during the EIA as the type of measure to be adopted should be evaluated for all options of mitigation that provides the best solution, is practical, and at affordable cost.

The assessor preparing the proposal for mitigation measures must discuss with the Project Proponent as to their ability to adopt, and the applicability and reasonable practicability of the measures to the project. Furthermore, the effects of mitigation must be measurable so that compliance can be demonstrated via monitoring and auditing. These measures should be captured within a plan framework such as the Environmental Management Plan or EMP (refer to discussion in the next chapter).

7.3 APPROPRIATE MITIGATION MEASURES

Environmental impact and risk mitigation should not be viewed as being an end-of-pipe solution. Consideration should be given to determine other measures that can avoid the need for such solutions. The elements of mitigation can be organised into a hierarchy of actions as shown below:

First – avoid adverse impacts and risks as far as possible by use of preventative measures;

Second – minimise or reduce adverse impacts and risks to 'as low as practicable' levels; and

Third – mitigate, remedy or compensate for adverse residual impacts, which are unavoidable and cannot be reduced further

This is illustrated figuratively in **Figure 7.1** below:

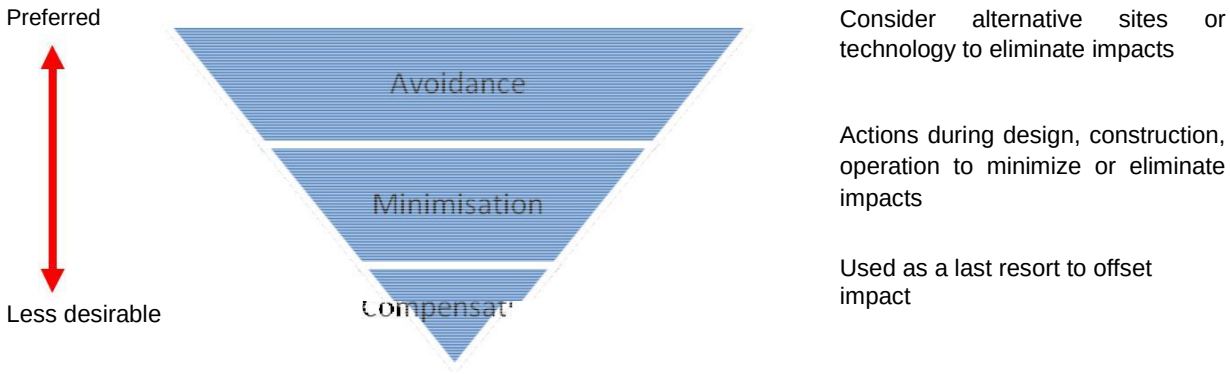

Fig 7.1 Hierarchy of mitigation measures

7.3.1 Avoidance

The first principle for the application of mitigation is to give preference to avoid and prevent measures. This can be most effective when applied at an early stage of project planning, i.e. during the prefeasibility and feasibility stage and can be achieved by:

- not undertaking certain projects or elements that could result in adverse impacts (for example, setting a gas production facility in ecologically sensitive areas);
- avoiding areas that are environmentally sensitive (for example, rerouting of pipelines to avoid sensitive areas);
- putting in place preventative measures to stop adverse impacts from occurring (for example, release of water from a reservoir to maintain minimum flow for fisheries); and
- avoiding the use of certain technologies that are known to cause significant impacts (for example, the use of open trenching as opposed to tunneling method).

7.3.2 Minimisation

In minimizing impacts through the adoption of mitigation measures one has to ensure that the measure identified must able to limit or reduce the degree, extent, magnitude, or duration of adverse impacts. It can be achieved by scaling down the project, relocating or reorientation of facilities, redesigning elements of the project, phasing construction and operation, adoption of end-of-pipe control technologies, landscaping, monitoring and auditing, etc.

Mitigation can be carried out by:

- *structural measures,* such as design or location changes, engineering modifications and landscape or site treatment; and

- *non-structural measures,* such as economic incentives, legal, institutional and policy instruments, provision of community services and training and capacity building.

Choosing a mitigation measure for the adverse impact may affect layout, design, programme, raw material selection, methods of transporting raw materials and products, processing techniques, waste treatment techniques, waste disposal, and other aspects. These changes need to be kept in focus to ensure that the measures proposed do not give rise to other issues that might affect the final project plan.

When a measure is considered impractical, feasible alternatives to the proposal should be evaluated and the best practicable environmental option for the project should be identified. For a measure that is identified and agreed upon to mitigate an adverse impact, the measure chosen should be customized to minimize each of the main impacts in terms its appropriateness while at the same time is cost effective and environmentally sound.

7.3.3 Hierarchy of control for OSH Hazards l

For occupational safety and health, the application of hierarchy of control should be applied to mitigate OSH risks. Controlling exposures to occupational hazards is the fundamental method of protecting workers. Traditionally, a hierarchy of controls has been used as a means of determining how to implement feasible and effective control solutions.

OSH Hierarchy of Control is described in **Figure 7.2** below:

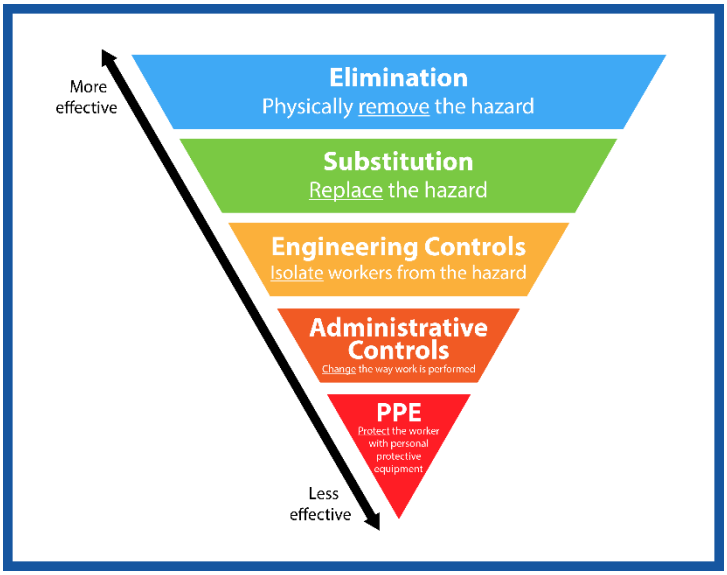

Fig 7.2 OSH Hierarchy of Control

The idea behind this hierarchy is that the control methods at the top (i.e., Elimination) are potentially more effective and protective than those at the bottom (Personal Protective Equipment - PPE). Following this hierarchy normally leads to the implementation of inherently safer systems, where the risk of illness or injury has been substantially reduced.

The following priority should be established in application of mitigation controls:

- Elimination – Eliminate the hazard by making changes in workplace (design for minimum hazard and introduce equipment that will decrease the risk level). This is the preferred

option but also tend to be the most difficult to implement in an existing process. If the process is still at the design or development stage, eliminating the hazards may be inexpensive and simple to implement.

- Substitution – Substitution or replacement of toxic materials with less hazardous substances, or decrease of energy in the system (temperature, pressure, etc.).
- Engineering controls – Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. Examples include local exhaust, ventilation, equipment maintenance, etc.
- Administrative controls – Administrative controls are frequently used with existing processes where hazards are not particularly well controlled. Examples include training, safety signs, labeling hazardous areas, photo-luminescent signs, access control, working permits, and/or safety procedures and instructions.
- Personal protection equipment (PPE) – PPE is considered the least effective than other measures as it requires significant effort by the affected workers. This is the least-desired option because the hazards are not particularly well controlled. Examples include hard hats, safety glasses, gloves, protective clothes, steel-capped safety shoes, etc.

Use a combination of control options when no single method fully protects exposed workers from the hazards.

7.4 RESIDUAL IMPACTS AND RISKS

Residual impacts can be considered as those that remain of significant concern even after the application of mitigation measures, although they are likely to have been reduced in magnitude as a result of the mitigation measure implemented. Of most concern are those effects that do not show up over the short term but have potential to be significant in the long term. These include:

- those that affect human health (such as, air pollutants for which exposure can increase the rate of cancer cases, or noise affecting hearing);
- those that affect the health of natural ecosystems (such as, deposits of sediment on coral reefs);
- those that can affect primary productivity, animal breeding, nesting or feeding (such as, suspended sediment on primary production);
- those that have impacts on productivity of crops (such as, acid emissions that can cause acid rain which affects soil characteristics);
- those that have effects on groundwater (such as, chemical contaminants that leach into the ground);
- those that affect local customs and culture (such as, an influx of foreign labor on local population); and
- others.

Residual impacts and risks should be identified and discussed in the EIA as they represent the most important information from an EIA study and an assessment. Their acceptability often determines whether a project may be approved or not. Where the assurance that the residual impacts are not likely to be acceptable, the decision of the DOE will likely be not to approve the EIA and hence the project.

Often, residual issues may not be predicted with certainty and may only be ascertained from completion of the project and when it is operating. In this case the risk for giving an approval has to be established. Where the risk is likely to be acceptable, a decision can be made to approve the EIA and the project can proceed. In this regards, post-EIA monitoring is mandatory. Monitoring will provide feedback to the Project Proponent and the regulatory bodies on the outcome of the project and to determine if mitigation measures proposed were effective and if there is a need to review the project.

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CHAPTER 8

ENVIRONMENTAL MANAGEMENT

CHAPTER 8
ENVIRONMENTAL MANAGEMENT

8 .1 INTRODUCTION

An EIA report is a document that contains the results of an investigation into the environmental and social impacts due to a project proposal and recommendations for their mitigation and management. The report is essentially a planning document that is used to aid project planning (by the Project Proponent) and for decision-making (by the environmental authority). When the environmental authority makes a decision to approve the EIA it is guided by the assurance that the measures for mitigation and management will protect the environment from any significant adverse impacts that will arise from the project. This assurance requires to be translated into an action or management plan which is referred to as an "Environmental Management Plan" or EMP. An EMP forms an essential part of the EIA as it translates recommended mitigation and monitoring measures into specific actions that will be carried out by the Project Proponent.

Within current environmental legislation in Bangladesh, there is no legal requirement for an EMP to be submitted and approved. Nevertheless, it may be made a requirement by way of an administrative directive or as a condition of an EIA approval.

A well-structured EMP usually covers all phases of the project, from preconstruction right through to decommissioning, as well as requirement for monitoring & auditing. Depending upon particular requirements, the plan may be included in, or appended to, the EIA report or may be a separate document. The EMP will need to be adjusted to ensure that the terms and conditions specified in any project approval are addressed. It will then form the basis for impact management during project construction and operation.

The EMP contains commitments that are binding on the Project Proponent. It can be translated into project documentation and provide the basis for a legal contract that sets out the responsibilities of the Project Proponent. In turn, the Project Proponent can use the EMP to establish environmental performance standards and requirements for those carrying out works or providing supplies in accordance with the specifications in the EMP. An EMP can also be used to prepare an environmental management system for the operational phase of the project.

8.2 EMP DOCUMENTATION

The EMP is put into effect during the implementation of a project (including construction, operation, maintenance, and ultimate abandonment of a facility). This plan must include mitigation measures to reduce the environmental impacts that are generated throughout implementation. Environmental monitoring must be designed to provide information on the activity's actual impacts, compliance with environmental operating conditions, and the effectiveness of environmental mitigation measures. The evaluation of monitoring results is necessary to ensure

that environmental objectives are achieved — and, if necessary, that project modifications or remedial measures are undertaken to address unforeseen impacts.
A well-structured environmental management plan usually covers all phases of the project from pre-construction to decommissioning. It addresses all major environmental issues and impacts identified during the EIA process. The plan outlines environmental protection and other measures that would be undertaken to ensure compliance with the environmental rules and regulations so as to reduce or eliminate adverse impacts. The plan defines:

- the technical work program to carry out this plan, including details of the required tasks and reports, and the necessary staff skills, supplies, and equipment;
- a detailed accounting of the estimated costs to implement the plan; and
- the planned operation for the implementation of the plan, including a staffing chart and proposed schedules of participation by the various members of the project team, and an outline of activities and inputs from various governmental agencies.

Although there is no standard format for an EMP it is expected that a complete document contain the following:

a. A summary of the Project Proponents environmental policy and objectives;
b. A brief of the project, its implementation, and operational aspects;
c. A summary of the potential impacts of the project including community and occupational safety & health;
d. Description of the recommended mitigation measures;
e. Statement of their compliance with relevant standards;
f. Allocation of resources and responsibilities for plan implementation;
g. Schedule of the actions to be taken;
h. Programme for surveillance, monitoring and auditing; and
i. Contingency plan when impacts are greater than expected.

8.2.1 Suggested Contents and Format for Environmental Management Plan

Introduction – provide a brief on the purpose and objective of the document

Project Description – provide brief description about the project including the following:

- Location, area and purpose of the project,
- Project design and main layout,
- Project implementation plan and schedule, and
- Other elements about the project that is useful to know.

Company's Environmental and OSH Policy – provide a brief of company policy and objectives and commitment with regards to environmental/ OSHprotection and management.

Environmental Compliance Requirements – provide an overview of the environmental **and occupational safety and health** compliance requirements for the project including:

- Legal standards to be complied (e.g. Bangladesh Labour Act),
- Conditions of EIA approval,
- Relevant environmental and OSH conditions set by other authorities (e.g. DIFE),
- Objectives and criteria to be met,
- Policies to be adhered to, and
- Best practices to be applied (The World Bank Environmental and Social Framework Standards, IFC EHS Guidelines: OHS, ANSI A10, UK HSE Construction Code of Practice, US OSHA 1926, AU/NZL OHS Standards).

Environmental Impacts and Mitigation – provide a more detailed description of the following:

- Detailed listing of project activities and environmental impacts of significance,
- Pollution control measures to be adopted,
- Conservation measures to be taken to protect natural resources, ecosystems, sites, features or species,
- Measures for handling social and public issues (including cultural and religious matters), and
- Details of plans that have been or will be submitted for approval of the relevant authorities.
- Measures for managing occupational health and safety during construction and during operation of industrial facility
- Measures for managing community health and safety during construction and during operation of industrial facility

Environmental Surveillance, Monitoring and Auditing – provide relevant information relating to the following:

- Outline of surveillance and monitoring programme to be undertaken to ensure that the mitigation measures proposed are carried out effectively,
- Outline the procedures and methods to be adopted for environmental and community and occupational safety and health monitoring,
- Describe the frequency of surveillance and monitoring,
- Compliance audit programme proposed to verify compliance to environmental and COSH conditions and requirements, and
- Data to be collected and reports to be prepared to inform authorities and (where needed) the public.

Contingency Planning – provide information relating to the following:

- Plan of action to be taken in the event of abandonment of the project;
- Response plan to manage abnormal and emergency situations, such as operational failures, fires, gas leaks, hazardous substances spills, failure of pollution control equipment, injured worker(s) and others.
- The emergency preparedness and response plan is to contain the following:

o Procedures and measures to be taken during emergencies including evacuations,

o Protection measures to be taken (especially for workers and the general public),
o Authorities to be communicated and informed during emergencies, and
o Public safety awareness and educational programmes to be carried out.

Organisation Responsibilities and Capacity Assessment and Capacity Building – provide more details on the following:

- Assessment of existing capacities for EMP implementation (experience and available expertise of project proponent, including COSH)
- Organisational set up describing the staff assigned to oversee implementation of the EMP and related matters dealing with the authorities and the public,
- Staff responsibilities and work procedures to be adopted to enhance efficiency and effectiveness,
- Reporting hierarchy within organization and liaison with the authorities,
- Staff contacts during normal hours and during emergencies,
- Support required from external parties and the areas of responsibilities (such as laboratories and contractors for monitoring), and
- Training programmes required, including COSH if required

Budget and Implementation Programme – provide indication of following in this section:

- Implementation programme for EMP, and
- Budget allocation which is to include the following: o for implementing mitigation measures,

  o for surveillance, monitoring and audit, and o for training and emergency response.

[Note:

1. *This format of the EMP may be varied to suit particular needs. However, the main contents of the EMP must be retained.*
2. *The EMP is a "living" document and should be updated from time to time to take into consideration changes to the project design and the environmental impacts that are expected.]*

8.3 RISK REDUCTION AND MANAGEMENT

Each environmental problem poses some possibility of harm to human health, the ecology, the economic system, or the quality of human life. That is, each problem poses some environmental risk. Minimising such risks represents the most effective means to reduce impacts to the environment and to ensure project viability. Effective assessment of the risks (in which the form, dimension, and characteristics of that risk is estimated) and management of this risk (to reduce the risk level) are important consideration within the EMP.

An Environmental Management System (EMS) is a systematic method for assessing mission activities, determining the environmental impacts of those activities, prioritizing improvements, and measuring results. The most widely accepted international standard for an EMS is the

International Organization for Standardization (ISO 14001:2004 standard). This is one tool that can help foster the development of an integrated and targeted approach to ensure that the EMP is systematically reviewed and improved and effective steps are taken to minimise impacts to the environment.

For occupational health and safety management systems, the international standard for OHSMS is the ISO 45001:2018 Occupational Health and Safety Management Systems. ISO 45001 specifies requirements for an OHSMS and gives guidance for its use, to enable organisations to provide safe and healthy workplaces by preventing work-related injury and illness, and to proactively improve OHS performance.

8.4 EMERGENCY RESPONSE PLANNING

Emergencies can happen, including fires, explosions, chemical spills, toxic gas releases, disease outbreak, epidemic or pandemic, and other events that may occur during project implementation and operation. In addition the project may also be affected by natural disasters such as storms, cyclones, landslides, tsunamis, earthquakes and floods. Anticipating emergencies and planning your response can greatly lessen the extent of injuries, illnesses and limit equipment, material and property damage.

While it is not possible to plan and be ready for all emergencies, preparedness for emergencies is a means to reduce risks to the project and to the environment. Some example includes fire and explosion due to gas leak caused by an accidental event such as pipe failure or a natural event such as an earthquake. Emergency Response Plan(s) or ERP(s) are intended to provide appropriate guidance on what to do in an emergency.

Emergencies response plan should provide for any disease outbreak especially in pandemic situations that may endanger workers and project communities. With the mobility of workers, the Project Proponent needs to consider the overlap between the regional impact of a pandemic disease and the overlap with their workers and local communities where the project/operation is located. The project/operation should include a pandemic preparedness plan within the ERP when the risk has been identified.

This guideline is not intended to deal in detail how ERPs are to be formulated. This is best left to the Project Proponent working in tandem with the relevant authorities, such as the police, fire department and other emergency services. Nevertheless, ERPs should outline the basic preparedness steps needed to handle the anticipated emergencies and should provide appropriate guidance on what to do during an emergency. A sound response plan should include:

- Clear, written policies that designate a chain of command, listing names and job titles of the people (or departments) who are responsible for making decisions, monitoring response actions and recovering back to normal operations;
- Names of those who are responsible for assessing the degree of risk to life and property and who should be notified for various types of emergencies.
- Specific instructions for shutting down equipment and production processes and stopping business activities;
- Facility evacuation procedures, including a designated meeting site outside the facility and a process to account for all employees after an evacuation;
- Procedures for employees who are responsible for shutting down critical operations before they evacuate the facility;
- Procedures for evacuation of surrounding population who are at risk;
- Specific training and practice schedules and equipment requirements for employees who are responsible rescue operations, medical duties, hazardous responses, fire fighting and other responses specific to your work site;
- Medical capabilities/facilities both internally and externally to diagnose and treat the injured/ill workers; and
- The preferred means of reporting fires and other emergencies.

8.5 POST-EIA ENVIRONMENTAL MONITORING AND REPORTING

The environmental monitoring program is an important part of the EMP. The program outlines the monitoring objectives; the specific information to be collected; the data collection program (including sampling design); and the management of the monitoring program. Environmental monitoring involves the systematic collection of data to:

- measure the impacts that occur during project construction and operation;
- check their compliance with agreed conditions and standards or with regulatory standards;
- facilitate impact management, e.g. by warning of unanticipated impacts;
- provide database of short and long environmental effects associated with the project activities; and
- determine the accuracy of impact predictions and the effectiveness of mitigation measures

The information generated by monitoring programs provides the feedback necessary for effective evaluation of the environmental protection measures to achieve an environmentally sound project. Without monitoring, actual performance of the project or mitigation measures implemented cannot be properly analysed.

The general approach to effect monitoring is to compare the pre- and post-project situation, measuring relevant environmental impacts against baseline conditions. A sound baseline is a critical reference point for the conduct of effects monitoring. In turn, effects monitoring establishes the basis for corrective action when actual impacts are unanticipated or worse than predicted.

8.5.1 Monitoring Programme

Each environmental component has specific requirements for monitoring and the method for monitoring and data collection is tuned to meet this purpose. The development of a monitoring programme takes into account several factors and these include:

a. The nature of the effect that is required to be monitored (whether chemical, physical, social, biological or ecological, human health, etc.); and

b. The extent to which the effect has to be monitored (for example, pollutant in the atmosphere, river, sea, land, food chain, and others).

Generally, monitoring to detect chemical and physical changes is more straightforward than for biological effects or ecological relationships. Socio-economic impacts present a special challenge of measuring changes in human behaviour and response. Nevertheless, the monitoring programme has to be tailored to match the environmental effects that are identified as being of concern in the EIA.

The parameters to be selected should be determined on the basis of relevance to the study of the effect. However, it is acknowledged that selection is sometimes limited by the difficulty in sampling, storage, analysis, and cost that may be prohibitive. In some cases surrogate parameters may be used instead. The following areas may be covered in a monitoring program:

Table 8.1 Areas for Monitoring Programme

Environmental Effect	Monitoring Parameters
Air Pollutants/ Air Quality	Fugitive air pollutants such as dust are of concern during construction stage. During operation, types of contaminants include dust and hydrocarbons. Noxious Odour
Water Pollutants/ Water Quality	Monitoring is dependent on the type of contaminants expected from the project. heavy metals radioactivity organic compounds and hydrocarbons particles change of pH-value and hazardous)
Waste Management (solid and hazardous)	Monitoring should include aspects of: □□Waste inventory (covering type, identification, categorization and quantification) □□Waste quantity and rates of generation, recycle, treatment and storage □□Waste transportation and disposal (final disposal)
Soil and Groundwater	Pollution may be caused by substances that are spilled or discharged or fed into soil, directly or indirectly such as via the atmosphere. The selection of parameters is often

Environmental Effect	Monitoring Parameters
	determined by knowledge of the contaminants (from the project) that affect soil and groundwater.
Social and Human	Monitoring changes in human and social characteristics of a population is less straightforward compared to physical and chemical changes. The monitoring programme is likely to be done in the form of dialogues, surveys, and public discussions to determine: □□changes in occupation □ changes in crop production □□shifts in population □ changes in income distribution □□lifestyle changes
Occupational Health and Safety	Monitoring should include aspects of: • Workplace accident, incident, injury, illness, first aid and near-miss • Legal compliance including new policies, acts, etc. • Regulatory violations, citations, inspections, investigations, visits, etc. • Training and competency requirements • Occupational hygiene exposure monitoring and exceedances to legal exposure or emission standards should be recorded, reported and investigated • Grievances, complaints, suggestions, etc. from workers • Safety work permits, risk assessments, job hazard analysis (JHA), etc. • Maintenance, service and inspection records of operation control safety equipment and protection • Internal and external audits including closure of findings • Health and medical surveillance for workers • Hazardous materials and waste
Public/Community Health and Safety	Monitoring should include aspects of: • Facilities/building design structure including fire safety and natural disasters (earthquakes, floods) • Respiratory distress from dust, fumes, vapours and noxious odours • Hazardous waste and land contamination • Wastewater discharges • Road/ traffic safety and accidents • Noise pollution • Communicable diseases (HIV/AIDS, STDs, vector-borne, etc.) • Grievances and complaints from community members • Security and crime
Ecological and Biological	Monitoring changes in human and social characteristics of a population is less straight forward compared to physical and chemical changes. The monitoring programme is likely to be done in the form of dialogues, surveys, and public discussions to determine: □□changes in occupation □□changes in crop production

Environmental Effect	Monitoring Parameters
	□□shifts in population □□changes in income distribution □□lifestyle changes

Monitoring for compliance of the OSH standards and CSH management measures shall be undertaken through periodic audit using an Audit Checklist to be developed as part of the EMP. A COSH audit checklist template is provided in Annex C of this Guidelines.8.5.2 Monitoring Procedures

A procedure is an established and defined method of performing a specific task. Each procedure presents a description of the reason for and the scope of an activity, what is to be done, by whom, where, when and how it is to be carried out, what equipment is needed and how the activity is to be controlled and recorded. Defining the procedure is an important step in the formulation of a monitoring programme. This is to ensure that sampling procedures are unbiased and the results are reliable and useful for the assessment of changes that take place.

The procedure that is adopted for a specific work is normally one that is defined and recognized by an authority or an organization. This recognition may be from a national agency, ministry or an international body or organization such as the International Standards Organisation (ISO), the World Bank Environmental and Social Framework Standards and the International Finance Corporation (IFC) Environmental, Health and Safety (EHS) Guidelines. However, other standards that are appropriate may be also adopted such as, British Standards, American Public Health Standards, and others.

Sampling procedures for chemical and biological parameters should be given special attention in collection, pretreatment, and storage. This is because changes to sample characteristics take place in the absence of precautions (such as preservations) as specified in the procedures. Discussions with the certified or registered analytical laboratory are recommended to ensure that proper sampling procedures are adopted if this is to be undertaken internally. Similarly, precautions need to be in place when carrying analysis.

8.6 ENVIRONMENTAL AUDIT

Environmental auditing is applied as a post-EIA evaluation process to determine the effectiveness and performance of the proposed mitigation measures. Emphasis is given on interpretation, focusing on the factors of performance with the objective to identify how the aspects, processes or systems under review can be improved. This process can be undertaken during and/ or after project construction, and requires review of surveillance reports and monitoring data.

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CHAPTER 9

STAKEHOLDER PARTICIPATION IN THE EIA PROCESS

CHAPTER 9
STAKEHOLDER PARTICIPATION IN THE EIA PROCESS

9.1 INTRODUCTION

Various stakeholders and the public are directly or indirectly involved in an EIA process. In the past, some of these stakeholders are looked upon as obstacles to a project and many argue that it is quicker and more cost-effective to exclude consultation with them. However, recent events have shown that this is not necessarily the case as alienating them sometimes result in contentious, legalistic actions which can be time-consuming and expensive for the Project Proponent. Recognising these stakeholders and acknowledging their role often provides positive results as often there is much information and guidance that these stakeholders can provide.

Stakeholder involvement in the EIA process can be in the form of consultation (or dialogue) or participation (which is a more interactive and intensive process of stakeholder engagement). Most often, stakeholder involvement is in the form of consultation rather than participation, where the expression of concerns of the particular stakeholder are presented and taken into account in the EIA study. Except for the approving authority, actual participation of stakeholders may be limited and this will be more in the form of advice such as, measures to be adopted or compensation to be given to affected communities.

Consultation helps allay the concerns of stakeholders, particularly the affected public, while reducing inaccurate information in the EIA report. Overall, stakeholder consultation in the EIA process enables the Project Proponent to:

- Inform the stakeholders on the proposed project, its needs and benefits, and how it fits within the overall national or state or regional development;

- Inform stakeholders the anticipated environmental and social impacts due to the project and what steps will be taken to minimize adverse impacts; and

- Obtain feedback from stakeholders with regards to their concerns about the project, ways to improve the project and ways to overcome some of the potentially adverse effects.

- Measure and promote acceptance of the project and avoid costly modifications or abandonment of the project at a later stage.

The ultimate objective is to ensure that the project can be implemented smoothly with maximum benefits to the stakeholders. This includes gaining goodwill and understanding by the stakeholders and ensuring a successful project that is acceptable by all stakeholders.

9.2 IDENTIFYING STAKEHOLDERS

The range of stakeholders involved in an EIA typically includes:

a. the Project Proponent and related project beneficiaries;
b. the government agencies – those that have interest and/or authority for approval of the project;
c. affected general public – individuals, groups and host communities – who are affected by the project implementation; and
d. other interest groups including NGOs and the private sector.

A general indication of the role and responsibility of the stakeholders is summarized in the following.

(a) Project Proponent / Initiator

The Project Proponent or project initiator is the individual or organization proposing and implementing the proposed Project. He may be from the public or the private sector and a Consultant may represent him. In the normal course of project development, he is responsible for the planning of his project and must bear a cost. Similarly he is responsible for the environmental planning of his project and must bear the cost. He may delegate the task of impact assessment to a Consultant but he remains responsible for the content of any environmental impact assessment report for his project.

(b) EIA Consultant / Assessor

The Consultant or the assessor is the individual or organization who conducts the environmental impact assessment and prepares the EIA report. He may be the leader or a member of a team and is employed by and is responsible to the Project Proponent. However, he has responsibility to ensure that professional ethics or principles are not compromised to the extent that affects the quality of the assessment or the EIA report. The success of a multi-functional activity like an EIA primarily depends on constitution of a right team at the right time in order to assess the significant impacts (direct, indirect as well as cumulative impacts). The professional team identified for a specific EIA study should consist of qualified and experienced professionals from various disciplines in order to address the critical aspects identified for the specific project. Based on the nature and environmental setting, the following professional may be identified for EIA studies:

- Environmental Management Specialist/Environmental Regulator/Environmental Planner
- Air & Noise Quality Expert
- Occupational Health Expert
- Geology/Geo-hydrology Specialist
- Ecologist
- Transportation specialist

- Safety and Health specialist
- Social Scientist
- Organic Chemistry specialist
- Agronomy specialist
- Mineral exploration and beneficiation expert
- Chemical Engineer
- Marine engineer
- Metallurgical engineer
- Civil engineer etc.

(c) Department of Environment (DOE)

The DOE is the main agency to administer the IEE and EIA process by virtue of powers granted to it under Section 3 of the Bangladesh Environment Conservation Act 1995 (Act No 1 of 1995). The DOE was given mandate to review and give the final decision on approving the IEE and EIA report. In addition to reviewing and approving/ rejecting EIA reports, the DOE also is responsible for the administrative procedures such as formulating EIA guidelines and guidance documents. A committee formed of officers of the DOE undertakes review of EIA reports. However, on a need basis, assistance may be sought from other authorities or experts to assist in the review.

(e) The Related Government Agencies

Related government agencies are those that have an indirect interest in the impacts due to the project. The feedback provided by these agencies form the additional information that is used in the decision making process. Where needed, the DOE calls upon the assistance of related government agencies to review an EIA report or in providing inputs on environmental effects and impacts. Such agencies may also be called upon to assist the DOE in enforcement as provided for in Section 4A of the BECA 1995. For environmental impacts such as the community and occupational safety & health (COSH), the Department of Inspection for Factories and Establishments, the Department of Public Health Engineering and the Fire Service and Civil Defense Department (FSCD) may provide information and feedback in the decision making process.

(f) The Host Communities and General Public

The affected general public includes those individuals or groups who may be directly or indirectly affected by the project. The affected public will want to know what is proposed; what the likely impacts are; and how their concerns will be understood and taken into account. They will want assurances that their views will be carefully listened to and considered on their merits. They will want Project Proponents to address their concerns. They will also have knowledge of the local environment and community that can be tapped and incorporated into baseline data.

(g) Other Interest Groups

Comments from NGOs can provide a useful perspective on a proposal though such comments cannot substitute for or replace views, which should be solicited directly from the affected public. However, this surrogate approach should be considered as exceptional where the affected public is not able to present their concerns effectively. Other interested groups include those who are experts in particular fields and can make a significant contribution to the EIA study.

The above list is not exhaustive and the Project proponent or the Consultant should clearly identify all the likely stakeholders. It is appropriate that early identification of the stakeholders and consultation with them be started in the early stage of project planning. This is to allow sufficient time for consultation and conflict resolution, where this occurs, and to reach compromises that can be worked into the project design. When dealing with local population who might be affected by the project, public participation should include both sides i.e. parties likely to be adversely affected by the project as well as people who are likely to benefit from the project.

9.3 STAKEHOLDER CONSULTATION PROCESS

The stakeholder consultation process requires that various actions and procedures be taken consistent with the integrated project planning process that aims to reduce delays and improve project implementation.

9.3.1 When Should Consultation Start?

Stakeholder consultation should start from when the idea of the project is conceived and continue throughout the course of the EIA. The five main stages when stakeholder involvement can take place in the EIA process are screening, scoping, impact analysis and mitigation, review of EIA report, and implementation and follow up. Often, the later that stakeholder participation occurs in the EIA process, the less likely that the responses and comments will be able to influence the project design.

An additional aspect that concerns stakeholder consultation is the often limited scope of involvement in time and in scale. Often consultation and participation is usually a discrete event or series of events in EIA and these generally end before project implementation. However, project planning and implementation are not discrete events as they continue and evolve over time due to changing conditions. Ideally, consultation should not be restricted to the project planning stage but also after project implementation.

9.3.2 Type of Consultation

The type of consultation, whom to consult during EIA activities, when and how to do so, and who should do it, all vary significantly from project to project. This depends on the needs of the project. An indication as to the stakeholder, type of consultation and when this is best done is proposed in **Table 9.1** below.

Focus of any consultation should be directed to particular concerns of each of the stakeholders in respect of the project that is proposed. Besides, opportunity should be taken to obtain inputs for the EIA from local information that may not be available from official or secondary published sources.

Table 9.1 Stakeholder Consultation – Who With, Type and When

Item	Stakeholder	Type of Consultation	When Required
1.	DOE Bangladesh	c. Preparation of IEE and TOR. d. Review of the EIA TOR and scope of EIA study.	c. Initial stage of project planning. d. Stage of IEE submission.
2.	Project Approving Authority	a. Approval procedures and requirements to be fulfilled.	a. Initial stage of project planning.
3.	Related Government Agencies	a. Agency concerns and requirements to be fulfilled.	a. Initial stage of project planning.
4.	Affected Public and Local Population	a. Public perception and concerns. b. Public inputs and local information. c. Public acceptability of project. d. Public interest on project compliance with environmental protection plans.	a. Stage of screening and scoping. b. Stage of EIA study. c. Stage of EIA report presentation & review. d. Stage of construction and operation.
5.	Other Interest and Expert Groups	a. Concerns and inputs on project.	a. Stage of screening and scoping.

9.4 PUBLIC CONSULTATION AND PARTICIPATION

Public involvement in EIA is not specifically stated as a requirement under present environmental laws. The question then is why do we need to involve the public in EIA? The simple reason is that taking care of public interest is an important objective within various national policies that have been adopted by the Government of Bangladesh. For example, the National Forestry Policy, the National Water Policy and others highlight the need to protect and enhance the needs of the local population in the carrying out of developmental projects. Public consultation and participation in project planning provides a means to ensure that public interest is given due consideration.

Public participation is the responsibility of the Project Proponent and there are several principle reasons for public involvement in the EIA process. These include:

a. First, public participation is regarded as fair approach for inclusion of public opinion in public decision-making activities;
b. Second, public participation is widely accepted as a way to ensure that projects meet citizens' needs and do not infringe on their rights;
c. Third, the project carries more legitimacy, and less hostility, if potentially affected parties contribute to influence the decision-making process; and
d. Fourthly, the final decision is seen as more acceptable when local knowledge and values are included into the project plan.

The principles of public involvement are based on the following tenets:

- Inclusive – covers all stakeholders;
- Open and transparent – steps and activities are clear and not ambiguous and well understood
- Relevant – focused on the issues that matter
- Fair – conducted impartially and without bias toward any stakeholder
- Responsive – to stakeholder requirements and inputs
- Credible – builds confidence and trust

Various aspects need to be examined when drawing up a scoping programme and these include:

a. Identification of the members of the public who are likely to be affected by the proposed project and how will these stakeholders be notified?
b. What methods are to be used to inform them of the project proposal and solicit their comments?

c. At what stage of the assessment process will opportunities be provided for public participation and inputs.

9.4.1 Identification of Members of Public

The identification of members of the public whose participation in the EIA process is recommended to include those who are likely to be adversely impacted by the project, such as:

a. Those directly affected by the project as a result of acquisition of their land or property;
b. Those directly and indirectly affected as a result of the effects of the project, such as air, water, and noise pollution (often defined as those population living within the zone of significant negative impact);
c. Those that are exposed to risk due to potential for fire and explosion, or to toxic emissions which can affect human health and safety; and

d. Those whose livelihood and way of life are likely to be adversely affected by the impacts due to the project. These include, the loss of income (such as due to loss of catch or crop), loss of job or job opportunities, increased cost (such as longer travel distances), and others.

Baseline information with regards to land use, distribution of population, settlements, and economic activities is a prerequisite to identifying the population that is at risk and to be included in the groups to be consulted. As for the zone of significant negative impact this is to be established from modeling studies as explained in the earlier chapters of these guidelines.

9.4.2 Methods for Public Consultation

There are many methods for public consultation and their applicability may vary depending on the nature of the project and the characteristics of the stakeholders. Often it is best to seek the advice of local authorities and village leaders to determine the most appropriate method to be adopted. While the DOE will not be involved in any of the public participation events during the course of an EIA study, except possibly as observers, the Project Proponent and/or the Consultant should nevertheless inform the DOE as to when and where these events will be held.

Following is a discussion as to the methods that may be adopted for public consultation.

i. <u>Public Briefings</u>

Public briefings are useful because large groups of people can be briefed in a single session. For such briefings, it is useful to give handouts about the project, its design/concept, and the environmental aspects of the project. This can be complemented by a presentation on a screen. A clear explanation of the project and its implications often shows that you are not hiding anything. Technical jargon should be avoided as far as possible. Communicate in a manner (preferably in the local language or dialect) that would enable all to understand what one wants to say.

A shortcoming with public briefing is it is often too formal and prevents many people for voicing their opinion. Hence, it is best to keep public briefing informal to enable a freer expression of ideas and thoughts. It is recommended that a person nominated by the local participants be the chairperson for the briefing to avoid the issue of biasness.

Public briefings tend to attract a very heterogeneous group of people which may make it difficult to disseminate information. Where needed, separate briefings may be undertaken for different villages, or different groups for example, farmers separate from fishermen, to obtain better results.

A possible problem is that a highly vocal minority can overturn a general acceptance of the project by the majority. In order to avoid such a situation opportunity should be given for everyone present to express their opinion.

ii. Focused Group Dialogues

Focused group dialogue (FGD) is where the Project Proponent meets with stakeholders of different interest groups. This is an effective way of providing appropriate information to the stakeholders as their information needs will be different. For example, scientific NGOs may want very detailed information about how the project may affect certain ecosystems whereas the general public may only be interested in how a particular road will cause congestion in their neighbourhood.

Having separating dialogues for different groups also helps to minimize confusion and boredom. It also helps to elicit specific information that may be useful for the EIA study and for verification purposes. As in the case of public briefings, it is useful to give handouts about the project and its environmental aspects during these meetings.

iii. Project Information Kit

As time is the essence in many projects, information about the proposed project can be provided very early in the planning stage and continued throughout the project planning, design and implementation stages. The Project Proponent needs to be proactive and act early in the project planning stage. Reacting after a project has already attracted objections is not helpful to the project.

- Information contained in the project information kits could include:Basic information about the project such as location, size and how it looks like;
- Information about the Project Proponent and Consultant and the name of contact persons;
- The likely benefits from the project; and

The anticipated impacts and the mitigation measures that will be taken.The information in the kit should be written in simple language, free of technical jargon, to enable the wide spectrum of the society to understand it.

iv. Questionnaire Surveys

Questionnaire surveys are useful for obtaining standardized information from a large group of stakeholders in a systematic way. On the downside, this method may sometimes not capture useful information if carried out by inexperienced enumerators. Sending such questionnaires to population who are largely uneducated or have low level of reading and writing skills will generally also not be useful.

A means to enhance the value of such surveys is to have public briefings prior to the carrying out of the surveys. For most rural population, such surveys are best done in a structured way through household interviews and filling of the questionnaire forms by enumerators.

The design of the questionnaire is particularly important to ensure that relevant information is captured. Surveys that tend to ask too many questions and the data is not used for any purpose is to be avoided. As a general rule, the questionnaire survey should ask questions such as:

does the respondent know about the project,

how does the respondent think the project might affect him, how does the respondent think the project might benefit him,

how could the project (design, location, construction method, etc) be modified to minimize the impacts.

The size and characteristics of the respondents sampled should be documented and compared against the characteristics of population in the area. This is to demonstrate that the results from the survey are representative of the general population in the area. A listing exercise should be done to determine the number and distribution of households within the area of study (as defined in Section 11.4.1 of the guidelines).

v. <u>One-to-one unstructured interviews</u>

One-to-one unstructured interviews (a.k.a coffee shop talk) are very useful in obtaining detailed knowledge from affected respondents and will often yield information that may never be obtained in a public hearing or questionnaire survey. However, these personal interviews are time consuming and require the interviewer to have very good communication skills. Such interviews, especially when conducted in an informal setting, may yield specific information useful for the EIA study.

The method of public involvement will depend on the nature of the affected population and the type of environmental impacts due to the project. In any project, one or more of the above methods can be used.

9.5 DOCUMENTING PUBLIC PARTICIPATION

The public participation process should be adequately documented in the EIA report. At minimum, the information to be included are :

i. List of Public Briefing/Perception Survey/Stakeholder Dialogues held stating the venue, date and programme
ii. Survey Form
iii. Findings of the survey/briefing/dialogues - this may include the main issues discussed and key questions asked
iv. List of attendees/participants

The records of stakeholder engagement in are to be included in the Appendix. Only the gist of the findings should be discussed in the main report.

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CHAPTER 10

EIA REPORTING

CHAPTER 10
EIA REPORTING

10.1 INTRODUCTION

The EIA report is a primary document for communication and decision making. It organises the information obtained from an EIA study and synthesis the results of the investigations and consultations undertaken. The audience for an EIA report includes the authorising agencies, other interested authorities and parties and the affected public. Because of its importance as a communications tool, the EIA report needs to be well organised and clearly written. Being able to carry out a good study but not in presenting the results in an organized and effective manner in a report is equivalent to not doing the study at all.

The adequacy and completeness of information required for informed decision-making by the relevant approving authority should be given emphasis when preparing the EIA document. A full yet concise account should be given of the likely environmental impacts of a proposal, the recommended measures for mitigating and managing them and the significance of any residual effects. A poorly organized report is likely to hinder decision making which may result in delays to project approval or even rejection. What then constitutes a good and effective report?

The guidelines in this Chapter are intended to assist Project Proponents and the Consultant in understanding and preparing an EIA report that is appropriate for submission to the authorities for approval and relevant to the public and other interested parties for their information.

10.2 EIA REPORT STRUCTURE

An EIA report should be complete, easily understood, objective, factual and internally consistent. Being a document of importance for decision making by the technical agencies and for communication to the public and other interested parties, it should consist of both a technical and a non-technical component.

The recommended EIA report should typically include many or all of the following headings and items, possibly in the order indicated:

- Executive Summary (with key findings, the rationale and reasons why DoE should award environmental clearance)
- Introduction.
- Description of the Project.
- Description of the existing Background Environment in and around the Project Site (generally this should cover an area of at least 1km radius).
- Potential Significant Impacts and Risks (both during construction and operational phases).
- Mitigative and Abatement Measures.
- Residual Impacts/Risks, if any (these may have to be studied at the detailed assessment stage).

- Analysis of alternatives
- Environmental monitoring & management plan.
- Summary and conclusions.

For EIA reports, more detail is needed, including an Environmental Management Plan (EMP). These details are noted below (Table 10.1), for an industrial type project.

Table 10.1: Content of an EIA Report

Content	Description
Executive Summary of EIA Report	● Description of project, with all key facts and findings including its environmental and social impacts and mitigation measures and the environment management and monitoring plan. • Justification for favour of acceptance of the project • Alternatives
Terms of Reference	• Compliance status of approved Term of Reference (ToRs). • Stakeholder consultation and inclusion of issues raised by them
Introduction	● General background of the project. ● Developer's background and past experience. ● Consultant's background and experts involved in the EIA. ● Project justification and cost of the project. ● Applicable legislation and their status. ● Type of EIA, period of study and methodology adopted. ● Scopes & limitation
Project Description	● Project fact sheet ● Location, size or capacity of the project. ● Description of site and surroundings. ● Description of site accessibility in terms of roads, rail and other infrastructure etc. ● Project schedule and its life. ● Process details, product and by-product. ● Utility consumption & sources. ● Technology description. ● Mass balance and emissions potential, if applicable. ● Description of utility and services including consumption of raw materials and potential impacts. ● Description of hazardous chemicals or fuels to be used in process, utility and services their characteristic, daily consumption and storage methods, if applicable. ● Characteristics and quantity of solid/hazardous wastes, if applicable. ● Air pollutants, characteristics, potential sources and quantity of emissions, if applicable. ● Sources of water pollution, quantity and its characteristic, if applicable. ● Noise potential (including operational, allied activities and traffic noise). • Occupational Health and Safety Hazards • Community Health and Safety Hazards
Resource Requirement	● Land requirement for project and allied activities. ● Type of raw materials and its quantities, wherever applicable. ● Raw materials sourcing, transportation, handling and consumption, if applicable. ● Power sourcing and requirement. ● Energy/ thermal/steam balance, wherever applicable.

Content	Description
	● Workforce potential during construction and operational stage.
Present Environmental Scenario	● Existing level of pollution or industrial stress in the study area, if applicable. ● Geology / geomorphology of the area, if applicable. ● Topography, soil characteristics, hydrology and drainage pattern, if applicable. ● Land use pattern of project site and study areas. ● Background ambient air quality/ meteorology of the study area, wherever applicable. ● Groundwater and surface water potential, including dependency, if applicable. ● Surface and subsurface water characteristic, if applicable. ● Biological diversity, flora, fauna and their distribution. ● Demographic characteristics. ● Description of sensitive receptors, if applicable. ● Flood plain boundary and flood ability of the area, if applicable. ● Background noise level and traffic density, if applicable. ● Socio-economic profile. • Health profile of host communities (diseases, healthcare systems, population demographics, etc.) • Prevailing OSH issues in the region/type of industry
Environmental Impact Assessment (identification/ stage prediction/ evaluation)	● Impact of project on air, water and land during the project construction. ● Impacts during construction ● Impact of project operation on land and land use pattern, if applicable. ● Impact on sensitive receptors, if applicable. ● Impact of project and allied activities, including traffic on ambient air quality and human health, if applicable. ● Impact of waste water on land and ground water ● Impact of technology on energy and pollution reduction, if applicable. ● Impact on natural resources ● Impact on water availability and quality, if applicable. ● Impact of wastewater on water bodies and assimilative capacity, if applicable. ● Impact of storage/handling of chemicals/wastes on land, water and surrounding human settlement, if applicable. ● Impact of erosion, accretion, channel flow and diversion ● Impact of noise on workers and local community, if applicable. ● Impact on local biodiversity. ● Impact of the project on the socio-economic environment. ● Emergency plan (onsite/offsite emergency), if applicable. ● Beneficial impacts of the project. • Exposure of Workers to Occupational Health and Safety Hazards • Exposure of Communities to Health and Safety Hazards Note: Wherever applicable, qualitative and quantitative assessment of cause and effect relationships, while assessing the impacts on physical and biological environment.
Mitigation	● Measures in terms of process change/raw materials change, technical changes etc. ● Rehabilitation and resettlement plan, if any. ● A plan for socio-economic development of the area.

Content	Description
	● Measures in terms of technology change ● Mitigation plan for the control of air and water pollution. ● Resource/energy conservation measures. ● Noise abatement and control. ● Use of low and non-waste technology. ● Solid/hazardous wastes management plan. • Risk assessment and management plan ● Mitigation plan for hazardous chemicals and wastes, if applicable. ● Measures to ensure safety, health and hygiene at the workplace, if applicable. ● 3R application ● Waste and energy audit ● A plan for green belt development. ● Groundwater augmentation plan, if applicable ● Flood management plan, if applicable. ● A healthcare plan for workers and the communities. ● A plan for the provision of canteen, rest rooms and other amenities for employees, if applicable. ● Mitigation plans for traffic mobility and associated items such as parking and road safety, if applicable. • Health and Safety Measures at Construction • Health and Safety Measures during Operations • Community Health and Safety Surveillance ● Emergency preparedness, if applicable. ● Plan to compensate residual/unavoidable impacts. • Public consultation • Decommissioning
Environment Management Plan and Post-Monitoring Actions	● Summary of all potential impacts and mitigation measures against each potential impact, roles and responsibilities, implementation cost, and the schedule for completion. ● Organizational set-up for ensuring environmental, health and safety management and compliance. ● Monitoring schedules, parameters and reporting format for air, water, noise and wastes. ● Application of GIS based system ● Monitoring schedules, parameters and reporting formats for socio-economic development of an area, if applicable. ● Monitoring plan in terms &location, timing, parameters, meteorological data etc. ● Monitoring schedules, parameters and reporting formats for a workers' and communities' health and safety, if applicable. ● A monitoring plan for green belt development. ● Annual budgetary provisions for environmental management and community development. ● Annual budgetary provisions for ensuring plant safety. • Community and Occupational Health and Safety Audit Checklists/Protocols • Community Health Surveillance Protocol (if EIA results require)
Analysis of Alternatives	● Site alternatives ● Design alternatives. . ● Technology alternatives.

Content	Description
	● Construction techniques. ● No project alternative.
Maps and Flow Diagrams	● Country and district maps specifying the location of the project. ● Study area map indicating features such as the land use patterns, drainage patterns, locations of human settlements, presence of other air and water polluting sources within the study area. ● A map specifying the project site or adjoining areas vulnerable to floods, if applicable. ● A map showing the locations of various monitoring stations. ● A map marking the sensitive zones in the study area, if applicable. ● Flow diagram of manufacturing process or mine lease, mine management plant, if applicable. ● The layout map of the project (i.e., map showing the manufacturing process, warehouses of raw materials and products, wastes storage, colony, administrative buildings, proposed green belt, roads, parking spaces etc.). ● Contour map of project site and study area. ● Satellite imagery of the study area with explanatory notes, if applicable. ● Map specifying the erosion and subsidence area, if applicable. ● Diagrammatic sketch and layout of the effluent treatment plant and the sewage treatment plants, if applicable. ● A sketch map showing the wastewater discharge points,if applicable.

10.3 THE QUALITIES OF A GOOD EIA DOCUMENT

The EIA process defines the actual content and sequence of information in the EIA document (or Environment Statement). The main purpose of the report is to convey information in an accurate, detailed, clear, and objective manner, but remember that the proponent will likely promote the project and downplay the possible impacts (understandably).Use of scientific information (as much empirical data as possible), rigorous analysis, and clear understanding and responsiveness to public concerns should be the hallmarks of a good EIA report.

It is important to ensure that conclusions are defensible, and the presentation of results can be readily interpreted and are usable by decision-makers. Provided the assessment meets all legislated requirements, is technically and scientifically sound, addresses the key issues related to the action under review, and meets the minimum requirements expected of any EIA, it is of little importance which type of impact prediction and analysis is used. There is not one comprehensive method by which any EIA may be performed; practitioners must select an appropriate method from a "toolbox" of approaches .

Environmental assessments are fundamentally the gathering of information, their analysis and presentation of the results. As EIAs may deal with relatively complex issues, the practitioner's challenge is to ensure that the methodological approach and assessment of results can be readily interpreted and weighed by decision-makers (e.g., practitioners often use visualization tools such as maps and network diagrams to distill order from apparent chaos and to communicate results to decision-makers).

Decision-makers require sufficient information to allow them to make justifiable and confident decisions as they weigh the environmental effects against social and economic benefits and costs. Decision-makers often must make decisions on project approval based on issues other than those dealt with in an environmental assessment. One example, with cumulative effects implications, is that the development of a project may foreclose the opportunity for future projects (of the same or different types) to occur in the vicinity of that proposed project (e.g., a pulp mill is approved on condition that it has guaranteed harvesting access to a large forested area surrounding the mill). In deliberating on the approval of such a project, the value of projects prevented from occurring, or occurring at a reduced level, may be considered. As a result, regulatory bodies may push for more stringent mitigation measures or intensive monitoring of project operations. Environmental assessment practitioners must clearly communicate the results of the assessment to decision-makers so as to best facilitate their deliberation on project approval. Repetitive use of tables of numbers and maps (especially if inadequately explained) are no substitute for a concise and readily defensible conclusions based on the data and analysis applied in the assessment.

One of the most important responsibilities of decision-makers is to determine whether the proposed project ought to be allowed to proceed and, if so, under what conditions. To facilitate this decision, it is essential that the EIA should contain, explicitly, a summary of management options and their consequences. These would include matters such as the mitigation measures to be employed, any compensation programs and follow-up studies (monitoring and management programs) to be conducted. Moreover, it is also important to explain why each of these management features is proposed, by whom it would be carried out and the level of commitment to each task by those responsible.

To effectively communicate the results of the EIA, the practitioner should consider use of the following techniques:

Discussion: The discussion should be a description of the analysis and interpretation of the results. Discussion based on professional judgment should be clearly distinguished from that based on a specific form of analysis and data. Assumptions, limitations and degree of confidence (i.e., certainty) placed on the data and analysis should be explained. Full scientific references should be provided for literature and personal communications.

Decision Record: A decision record (this is not to be confused with the Decision Report, issued by regulatory agencies, that explains the decision reached regarding a project application) should be included in the assessment, usually as an Appendix, to provide further clarification and expand on specific points of discussion.

Tables: Tables should be used to organize data and summarize the results of calculations.

Matrices: A matrix (a table in which the table entries are rankings) can be used to summarize the scale of effects. These rankings can take three different forms: 1) qualitative (e.g., low and high), 2) quantitative (i.e., numbers that correspond to an absolute physical quantity), or 3) indices (i.e., non-dimensional numbers that provide a point of relative comparison).

Images: Figures should be used as extensively as possible to illustrate the information. Maps, especially those derived from a GIS, are powerful tools for portraying disturbance and environmental conditions over a wide region. Photographs, photomontages and video also help to provide a visual orientation.

The main justification for the proponent's apparent acceptance of the project, the design and location, and the environmental and social impacts (that they hope the regulator will agree with) is the mitigation plan, the monitoring, and the Environmental Management Plan. With these in place, the residual impacts are isolated and clear. It is assumed that these residual impacts are acceptable. It is then the task of the decision- makers to accept this conclusion or not.

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CHAPTER 11

EIA REPORT REVIEW

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11.1 INTRODUCTION

The product of an EIA study is a report that contains the findings of the investigation. Within the EIA system in Bangladesh, the report is subject to review by the DOE (being the authority responsible for EIA), and a decision is made at the end of the review to approve or reject the report. This decision is then transmitted to the relevant project approving authority for approval or not of the project prior to its implementation. For gas sector projects, the project approving authority is the Ministry of Energy and Mineral Resources..

The purpose of review is to assure the completeness and quality of the information presented in an EIA. It represents a formal step for a final check on the quality of the EIA report submitted prior to authorisation for the project to proceed. The key objectives of EIA review are to:

- assess the adequacy and quality of an EIA report (i.e. meets the scope of the EIA study);
- determine if the information is sufficient for a final decision to be made; and
- identify as necessary, the deficiencies that must be addressed before the report can be approved and the project allowed to proceed.

The following guidelines are intended to assist those responsible for review of an EIA report and for making a decision as to whether a report is acceptable or not.

11.2 THE REVIEW PROCESS

The Department of Environment is the formal authority to review and approve an EIA report. Review is done internally by the Environmental Clearance Unit within the Technical Division of the DOE. A period of 30 days is allowed for the review and a decision is to be made within this timeframe to approve or the EIA. However, where a decision cannot be made due to of lack of information or that additional information or clarification is required, the period of review is extended a further 30 days from the date of submission of the additional information or clarification.

It is presently required that one (1) copy of the EIA report be submitted to the DOE and this report is reviewed by the appointed officer in the Environmental Clearance Unit. The findings of the review are summarised and presented to the Review Committee, which consists of officers of the Technical Division of the DOE, for review and decision.

On certain occasions, assistance from other technical departments or universities is requested where it is established that such specialised expertise is required to assist in the review. The

Project Proponent may also be called upon to make a presentation to the Review Committee for purposes of providing clarification.

11.3 OVERARCHING EIA PROCESS AND DOCUMENT QUALITIES

EIA Attribute	Possible Responses
Clarity of statements, conclusions, and apparent decisions in the document, with appropriate evidence; assumptions are clearly stated.	**well-addressed**: All statements, conclusions, and decisions in the document are clear and defensible, with evidence from the project design, project site, and primary and secondary data that logically make the case for each; there is relevant supporting evidence and intuitively, all statements appear to be sound. **deficient**: The statements, conclusions, and decisions are illogical, or self-serving, or just do not sit right, lacking supporting evidence; assumptions are perhaps stated as facts or promises.
Proposed project design is truly enhanced by good consideration of sustainable development options.	**well-addressed**: Sustainable development options pertinent to the project are researched, reviewed, and used to enhance project design, which precludes many environmental impacts; project design may be relatively benign with regard to environmental impacts; innovations are included. **deficient**: Project design does not consider at all the options for sustainable development (such as use of renewable energy, landscaping, recycling of water, etc.).
The EIA document is written in clear, understandable language, with technical issues presented in a manner that allows novices to understand.	**well-addressed**: All aspects of the EIA document are properly articulated, with explanation and clarifications where needed; the EIA document is generally understandable and logical. **deficient**: The EIA document lacks clarity, logical ordering, and technical aspects are vaguely described; perhaps not convincing.
Concepts of Corporate Social Responsibility (CSR) are introduced wherever opportunities present themselves in the proposed project.	**well-addressed**: The EIA document describes CSR proposals in the design, construction, and operation phases of the proposed project, with benefits to local communities clarified, and implementation mechanisms described. **deficient**: The EIA document neglects to articulate benefits to local communities during different phases of the project.
Adequate time, financial resources, and human resources have been invested in the EIA process.	**well-addressed**: The time frame for the EIA process is documented and clearly properly paced to produce a sound document, with all sections reflecting appropriate technical expertise; the EIA document has been prepared with the required EIA team in the allowable timeframe.

EIA Attribute	Possible Responses
	deficient: The EIA is deficient in other respects, reflecting an inadequate EIA team and insufficient time.
Clear annotation and understanding of all stakeholders.	**well-addressed**: All stakeholders who may be affected by the project are noted, have been consulted, and are addressed in some manner in the report (negative impacts are mitigated; opportunities for benefits are enhanced). **deficient**: Stakeholder concerns are not fully addressed; some stakeholders are neglected altogether.
The EIA document properly reflects a logical and analytical process to determine impacts and develop mitigation measures.	**well-addressed**: All impact predictions and proposed mitigation measures are founded on scientific and technical empirical data, that have been used properly; the predicted impacts and proposed mitigation measures make sense, with full development of the scientific and technical arguments in their favour. **deficient**: Some impacts are missing; some are not properly supported with primary and secondary data; mitigation measures are not adequately researched.
The EIA process has been comprehensive, covering all possible interactions, but with due focus on valued ecosystem and social components.	**well-addressed**: There has been a proper focus on important environmental and social parameters, and all possible interactions between these and the proposed project are described and addressed; clear priorities in terms of mitigation measures. **deficient**: Some project-environment-social interactions are missing, or not properly addressed; some trivial parameters are given too much attention.
Latest, most appropriate proven technologies are incorporated into the project mitigation measures.	**well-addressed**: Clear evidence of research into most suitable mitigation technologies, and these are incorporated into the project design and EMP; proposed mitigation measures have a technical grounding and have been used in other projects. **deficient**: Proposed mitigation technologies are not described, or they are not appropriate.
Cumulative impacts and climate change have been properly considered and addressed.	**well-addressed**: There has been a rigorous process to understand and address cumulative impacts, as they relate to the proposed project; climate change predictions for the project location have been examined and project design and operations have addressed any associated risks. **deficient**: Cumulative impacts have not been addressed (beyond the immediate spatial and temporal boundaries of the proposed project); climate change risks in the future are poorly documented and addressed.

11.4 THE EIA METHODOLOGY

11.4.1 Steps in Data Collection and Analysis

EIA Attribute	Possible Responses
There has been adequate screening and scoping of the proposed project, based on detailed project description, anticipation of impacts, and use of good primary and secondary data.	**well-addressed**: Screening has led to the appropriate EIA process, whether IEE or EIA, and scoping of environmental and social issues is based on sound primary and secondary data; the proposed project has followed the appropriate IEE or EIA track. **deficient**: Screening and scoping have missed some important environmental and social impacts; lack of primary data; inappropriate use of secondary data.
Proposed project is adequately and accurately described.	**well-addressed**: All aspects of the proposed project have been properly and accurately described in the location context and it is relatively easy to understand the possible impactors in the project. **deficient**: There are gaps in the project description and it does not fit properly into the location context; possible impacts are not easily anticipated on the basis of the project description.
Scoping correctly identifies the most important environmental and social parameters to be addressed in the impact prediction phase (the VECs and important social components).	**well-addressed**: All important environmental and social parameters are correctly identified and used to guide data collection and the impact prediction process; the logic for selecting VECs and social parameters is presented. **deficient**: There is inadequate priority setting in terms of environmental and social parameters, and some are trivial to the process.
Spatial and temporal boundaries for the proposed project are accurately set, including future conditions.	**well-addressed**: The proposed spatial and temporal boundaries correctly anticipate future conditions (with the project, with climate change, and with future development in the vicinity); this informs impact mitigation measures; spatial and temporal boundaries guide the impact prediction process. **deficient**: There is inadequate or incorrect definition of spatial and temporal boundaries; usually too confined and not anticipating future conditions or cumulative impacts.

11.4.2 Data Sources

EIA Attribute	Possible Responses
There is correct and adequate information and technical data to properly describe the proposed project.	**well-addressed**: All details on the proposed project are accurate and easily understood, based on the latest technical information for the sector of the proposed project; this information includes the latest information on environmental and social impacts associated with the sector. The Feasibility Study (prepared by the proponent prior to implementation of the EIA) provides a solid foundation of technical data on the proposed project. **deficient**: There is inadequate description of the technical aspects of the proposed project (perhaps the Feasibility Study has been deficient), and lack of understanding of the possible social and environmental impacts; no clear sense of the project, and perhaps too sanguine a statement about lack of impacts.
Information about the receiving environment is comprehensive and accurate and is based on appropriate primary and secondary data.	**well-addressed**: The specific location has been properly surveyed and appropriate primary data have been collected, supported with a review of the secondary literature; the locational context for the project and possible sensitivities are clear. All sources of information are properly cited in footnotes. **deficient**: Gaps in the knowledge and understanding of the location for the proposed project (inadequate data collection and too many assumptions); lack of articulation of the possible environmental and social vulnerabilities that are created by the proposed project. Poor attribution of information to specific sources.
Information on possible impacts correctly links the project to the location and local sensitivities, and is informed by the scientific literature on environmental and social impacts for the sector under consideration.	**well-addressed**: There has been detailed review of the scientific literature and other EIA reports that correctly informs the prediction of impacts, very specific to the sector and the location proposed for the project. All pertinent information sources are less than ten years old; especially the latest maps, demographic statistics, and environmental quality data are used appropriately. Any conditional use of older data is properly explained. **deficient**: Inadequate review of the scientific literature; it may be borrowed from other EIA reports and perhaps is inappropriate for the sector and the location; too many assumptions about impactors and impacts in the sector in which the proposed project sits; incorrect linkage between data collected and the possible impacts associated with the proposed project. There may be inordinate use of old information.

11.4.3 The Need for Relevance in Data Collection

EIA Attribute	Possible Responses
The information in the EIA document is relevant and focused, and addresses the environmental, social, and economic factors and attributes of most concern, based on the nature of the project and the location specifics.	**well-addressed**: VECs and important social parameters have been correctly identified and are specific to both the location and the impactors of the proposed project; the data collection and descriptions are properly weighted to the importance of the component or parameter, and justification for their selection is clear and logical; ecological principles are clearly in evidence. **deficient**: There is no weighting of the importance of the environmental and social components, and project linkages and impact predictions are spurious; trivial biological and physical/chemical and economic data are presented as evidence of "work", but serve as a distraction from the real issues.

11.5 DESCRIPTION OF THE PROPOSED PROJECT

11.5.1 Legislative Regulatory Framework

EIA Attribute	Possible Responses
All required legislation and regulations are identified and the evidence of compliance is presented and clear.	**well-addressed**: All Bangladesh regulations and rules that pertain to the project and the location are identified, including OSH and Community Health, and clear timelines and evidence for project compliance are noted (status of approvals needs to be included). **deficient**: The EIA document lists the required compliance, and possibly indicates that compliance will be forthcoming, but evidence is scanty; some regulations and rules relevant to EIA and the sector may be missing.

11.5.2 Identification of Project Proponent

EIA Attribute	Possible Responses
The specific details of the proponent are listed, including ownership, involvement in the sector (previous projects and locations).	**well-addressed**: There is full disclosure of all details of the proponent, including previous EIA reports and clearances received, as well as the status of any actions by DoE. **deficient**: Business ownership and previous engagement in the sector in Bangladesh remain obscure; previous EIA reports are not listed.

11.5.3 Objective and Goals of the Project

EIA Attribute	Possible Responses
The economic, social, and environmental objectives (as appropriate) are clearly noted in the EIA document.	**well-addressed**: The EIA document gives due attention to the main objective of the project (whatever the sector goals may be), as well as the spin-off social and environmental objectives, as they suit the specific project and the sector. **deficient**: The project goals are limited to the economic gains of the proponent; opportunities for social and environmental enhancements are not expressed.

11.5.4 Project Implementation Status

EIA Attribute	Possible Responses
The status of the proposed project is clearly described, in terms of any no-objection certificates, location clearances, local consultations and surveys, etc. that may have been issued or undertaken.	**well-addressed**: There is full disclosure of all activities, discussions, approvals and such in the EIA document, with dates of each provided. **deficient**: Actual status of the project, at the time of EIA documentation, remains obscure.

11.5.5 Project Description: Location and Phases

a) The Study Area

EIA Attribute	Possible Responses
The project study area includes the possible zone of influence of the proposed project, with clear maps and figures, which address all phases of the project.	**well-addressed**: The project "footprint" is clear and set in the context of the larger area that includes all zones of influence for all phases of the project; there is good use of up-to-date maps and images to clarify all site details; the location within Bangladesh is also noted. **deficient**: The study area does not correctly include all possible zones of influence of the project, and/or there is inadequate use of maps and figures.

b) Description of Site and Surroundings

EIA Attribute	Possible Responses
Full details (narrative and graphics) indicate the physical geography of the site, vegetation cover, special features (vulnerabilities and	**well-addressed**: All required site details and the surrounding environment are clearly described in narrative form and in graphics (with photographs); proximity to vulnerable or sensitive areas is clearly indicated. **deficient**: Details on the project site and surrounding area are vague or disorganized; there is lack of use of up-to-date

EIA Attribute	Possible Responses
sensitivities), land use, and the built environment.	maps and graphics; the potential vulnerabilities of the site remain unclear.

c) The Proposal

EIA Attribute	Possible Responses
All elements of the proposed project that may have a bearing on environment and social parameters (community and occupational safety & health)in and near the project site are clearly described, with effective use of maps and graphics.	**well-addressed**: All aspects of the project, in all phases, as they may impact environmental and social parameters, are clearly defined, with effective use of maps and graphics; this is shown in a clear tabular format, so that all components can be drawn into the impact matrix. **deficient**: The specific project features that may impact on environmental and social parameters in the surrounding area remain obscure – incomplete in details; there is poor use of maps and graphics.

d) Examination of Project Alternatives

EIA Attribute	Possible Responses
Reasonable project alternatives, either design features or locations, are fully examined and the best alternative is presented in a convincing manner, taking into account technology, environmental, and social parameters.	**well-addressed**: The range of reasonable options for locations and project designs is fully presented, with maps/graphics; there is a logical analysis and discounting of sites and designs, such that the most feasible project alternative is arguably the best option, taking into account potential environmental, occupational safety and health and social issues. **deficient**: The full range of reasonable alternatives (project design and location) is not presented in a convincing manner; the analysis may be skewed to just the most economical option for the proponent (often with an emphasis on net benefits in the way of jobs, as a diversion from negative impacts).

e) Pre-Construction and Construction Activities

EIA Attribute	Possible Responses
All activities related to pre-construction and construction are itemized according to their phase, with identification of sources of impacts; locations,	**well-addressed**: All the activities expected of a specific sector project are clearly noted, with impact sources, locations, sequences (use of Gantt chart), and durations noted; these details feed directly into the impact matrices, so that all interactions are properly considered.

EIA Attribute	Possible Responses
sequences, and duration of activities are clearly noted.	**deficient**: The list of activities is incomplete, or details on locations, sequences, and durations are missing; sources of potential impacts are not properly documented; the impact matrix cannot be properly developed; the technical literature on the specific sector being examined is not used effectively.

f) Operation Phase

EIA Attribute	Possible Responses
All activities related to operation of the project are itemized, with identification of sources of impacts and accepted mitigation technologies; locations, sequences, and duration of activities are clearly noted.	**well-addressed**: All the activities expected of a specific sector project are clearly noted, with impact sources and usual industry-standard mitigation technologies, locations, sequences (Gantt chart), and durations noted; these details feed directly into the impact matrices, so that all interactions are properly considered. **deficient**: The list of activities is incomplete, or details on standard mitigation technologies, locations, sequences, and durations are missing; sources of potential impacts are not properly documented; the impact matrix cannot be properly developed; the technical literature on the specific sector being examined is not used effectively.

g) Decommissioning

EIA Attribute	Possible Responses
All activities related to decommissioning of the project are itemized, with identification of sources of impacts and accepted mitigation technologies; locations, sequences, and duration of activities are clearly noted.	**well-addressed**: Plant closure, site remediation or rehabilitation, eventual public access, and any other features related to the closure of the project are clearly identified and addressed as environmental and social enhancements; responsibility for the decommissioning activities is clearly assigned to the proponent or some kind of trust. **deficient**: Decommissioning activities are poorly defined, with site hazards and opportunities for environmental and social enhancements vaguely addressed; responsibility for decommissioning activities is unclear.

11.6 DESCRIPTION OF THE EXISTING ENVIRONMENT – BASELINE STUDIES

11.6.1 Concept of a Baseline, for Environmental Impact Prediction

EIA Attribute	Possible Responses
All existing environmental and social parameters at the project location are clearly defined, based on appropriate primary data and review of secondary data.	**well-addressed**: All important social and environmental components (VECs) within the possible zones of influence of the proposed project are defined on the basis of primary and secondary data; allowing adequate prediction of impacts and monitoring of change during and after the project; notions of

EIA Attribute	Possible Responses
	scale or percentages of important habitats taken up by the project footprint are presented. **deficient**: There are gaps in the baseline descriptions of environmental and social parameters; either in key details or in locations around the project site; inadequate collection of primary data; poor use of secondary data, or too many assumptions made about the receiving environment; cannot be used for effects monitoring.

11.6.2 Setting Boundaries

EIA Attribute	Possible Responses
Spatial and temporal boundaries for the project and the impact assessment are properly defined and cover the possible zones of influence of the project, as well as all phases of the project through to decommissioning.	**well-addressed**: The spatial and temporal boundaries for the project impact assessment cover all possible impacts and timeframes for the project, such that no vulnerable environmental and social parameters are neglected in the analysis; data collection occurs within the project boundaries; the boundaries accommodate assessment of cumulative impacts. **deficient**: There is lack of clarity regarding the spatial boundaries, such that the zones of influence and possible impacts from the proposed project do not match up; the timeframe of the project and duration of impacts is not accurate; cumulative impacts are not factored into the boundaries.

11.6.3 Physical Environment

EIA Attribute	Possible Responses
All important physical (and associated chemical) parameters in the project area are described in an accurate manner, based on collection of primary data and review of secondary data, sufficient to support modeling.	**well-addressed**: Accurate physical and chemical data are shown in tabular and graphic format for air quality, water quality, and soil condition in the various zones of influence of the proposed project, including dynamic state, volumes, and recent trends; this based on site-specific data collection; these data support the required modeling to predict impacts. **deficient**: There are gaps in the physical and chemical data (either parameters or locations); primary data collection has been deficient; review of secondary data has been based on other locations; too many assumptions about physical and chemical parameters in the project location.

11.6.4 Biological Environment

EIA Attribute	Possible Responses
The biological environment in the zones of influence of the proposed project is described in detail for all vulnerable and sensitive features of	**well-addressed**: All important habitats, endangered species, and VECs within the zones of influence of the proposed project are described in detail, based on appropriate collection of primary data and review of relevant (location-specific) secondary data; good use of graphics and maps to

EIA Attribute	Possible Responses
importance (VECs), based on primary data collection and review of secondary data, properly linked to the physical and chemical parameters upon which they depend.	show proximities to the project activities and features; proper linking of the biological environment to the physical/chemical environment, to help explain project linkages and possible impacts; recent and current trends in the biological environment are accurately described. **deficient**: There are gaps in descriptions of the biological environment (locational gaps, or some features missing); no prioritization of VECs; trivial biological data are included in the descriptions; inadequate linking of the biological environment to the physical/chemical environment; most important vulnerabilities and sensitivities are not prominent.

11.6.5 Human Environment (Social, Economic, and Cultural Parameters)

EIA Attribute	Possible Responses
All important aspects of the local communities which may be affected by the project are accurately described, including population characteristics, social parameters, culture, livelihoods, public health and safety and economics, with highlighting of features most vulnerable to change, due to the project.	**well-addressed**: Local communities within the zones of influence of the proposed project have been adequately surveyed for all social, cultural, and economic features that might be affected by the project; linkages to the natural resource base that might be affected by the project are clearly defined; good use of maps and graphics; evidence for local surveys included; marginalized communities are properly recognized; resettlement issues are flagged; perceived net benefits to the local community are described. **deficient**: There are gaps in the details of local communities; assumptions have been made regarding their social, cultural, and economic parameters, such that links to the project and possible impacts cannot be confidently made; inadequate use of maps and graphics; inadequate survey of local communities; assumptions have been made about the benefits of the project outweighing the possible negative impacts.

11.7 PREDICTION, EVALUATION AND ASSESSMENT OF IMPACTS

11.7.1 Impact Prediction Through Appropriate Modeling Applications

EIA Attribute	Possible Responses
Modeling is used appropriately to predict impacts due to the proposed project, with all assumptions stated, development from a conceptual model (Venn or linkage diagram), then input of adequate primary data (baseline) from the project site.	**well-addressed**: The models are appropriate to the tasks, with good input of location-specific physical and chemical data, clear statement of assumptions, sensitivity analysis, and clear presentation of results that inform the impact predictions, indicating location, frequency, and duration of impacts under different conditions. **deficient**: An inappropriate model has been used; assumptions are incorrect for the model and the local conditions; lack of primary data as input to the model;

EIA Attribute	Possible Responses
	incorrect interpretation of model results; poor graphic presentation of model results.
Appropriate primary data collection at the project site.	**well-addressed**: Data are truly representative of the project location, with data collection not too close to big emission sources, no obstacles disturbing flow of air or water, addressing representative time periods, using accepted sampling methods with QC/QA, normal and extreme conditions properly logged, impacts from existing sources are catalogued, and data are properly entered into a database for future monitoring. **deficient**: There are deficiencies in the some of the data collection requirements listed immediately above, which compromise the utility of the model.
Mean and extreme situations/ conditions in the project location are modeled, to address the full range of conditions under which the project may operate.	**well-addressed**: The model addresses average conditions, on an 8-hour, daily, seasonal, or annual basis, as appropriate for the proposed project and location; extreme conditions are addressed separately, rather than being averaged out. **deficient**: The model does not accurately address mean conditions or express extreme conditions as a percentile of all time periods.
The model results are correctly overlain on the receiving environment (for sensitive environmental and social parameters), to accurately define the impacts from the project.	**well-addressed**: The models results are correctly interpreted with regard to the environmental and social parameters of concern during the impact assessment, and reflect the "with" and "without" project scenarios. **deficient**: The model results are not correctly interpreted, perhaps reflect lack of understanding of the changes in physical and chemical parameters caused by the proposed project as they show up in environmental and social parameters.

11.7.2 Other Prediction Methodologies

EIA Attribute	Possible Responses
There has been good use of other impact prediction methodologies, such as checklists, impact matrices, GIS, and collective expert judgment, in support of the modeling, such that all possible impacts from the project are defined.	**well-addressed**: The rationale for use of different impact prediction methodologies, underlying assumptions, and limitations are all clearly presented, and the various methodologies are mutually supportive in clarifying all possible impacts due to the project; these identify impacts, locations, and the scale of change. **deficient**: Inadequate use of available prediction methodologies, without clear statement of assumptions and interpretation of prediction results; some possible impacts ignored or not properly defined.
Correct use of checklists and impact matrices.	**well-addressed**: All project activities in all phases are listed in the checklist/matrix, with unique boxes for each element of the receiving environment and social conditions, with annotation of the scale of the impact in each box. **deficient**: Some project activities are missing, or some environmental and social parameters do not make it into the

EIA Attribute	Possible Responses
	matrix; methodology for annotation of the scale of impact noted in the matrix is not properly explained.
Correct use of impact networks to scope out possible cumulative impacts.	**well-addressed**: Linkages along each interaction between the project and the receiving environment and social conditions are properly explored and rationale for expected changes due to the project is logically explained. **deficient**: Impact network is not used, or is incomplete, or assumptions regarding possible linkages are weak or incorrect; possible cumulative impacts are not properly defined.
Good use of overlay maps and GIS.	**well-addressed**: A project GIS has been developed, using recent satellite imagery and site-specific primary data; all key features of the receiving environment and social parameters are clearly shown, with the project "footprint" clearly noted; project overlaps and ratio analysis have been done properly on the basis of the GIS and maps. **deficient**: Lack of use of GIS and overlay maps, such that the proximity of the project and the receiving environment remains unclear; possible impacts are difficult to interpret due to lack of clear graphics.
Collective expert judgment is used to determine the nature and scope of impacts due to the proposed project.	**well-addressed**: For impacts that are difficult to determine through modeling and other more exact methodologies, the process for using collective expert judgment is explained, with clear statements of assumptions, and comparative results are tabulated. **deficient**: Statements are made about the nature and scale of impacts, that are neither grounded in the scientific literature nor based on logical analysis and collective reasoning of experts with appropriate experience; lack of confidence in the statements made in the EIA document.

11.7.3 Impact Evaluation (Assessment of Significance)

EIA Attribute	Possible Responses
The probability of possible impacts is defined (within reason) and the significance of those impacts, in the event that they occur, is noted, along with the assumptions and definition of "significance" in a globally accepted manner.	**well-addressed**: The probability of possible impacts is defined, along with the rationale for this from the EIA and scientific literature (ideally based on monitoring of other projects); significance of impacts is defined on the basis of accepted "norms" for significance, which reflect sensitivity to change, duration of change, ability to recover, and the dependence of other elements of the ecosystem that is affected by the project; definitions of significance are clearly presented; cumulative impacts are duly addressed in the evaluation of significance, even though they are more difficult to assess. **deficient**: There may be few or no definitions of "significance", which puts the whole EIA into question; statements of impact significance may be based on poor assumptions or just statements of faith, with little scientific grounding.

EIA Attribute	Possible Responses
Assessment of impacts is conservative, in the sense that if they are not very well-defined, they are considered to be possibly worse than they might be ("precautionary" principle).	**well-addressed**: Impacts that are poorly defined (for whatever reason) are assumed to be possibly "significant", so that appropriate mitigation measures can be designed in. **deficient**: Impact statements are too sanguine, downplaying the significance of impacts due to the project; incorrect assumptions are used in this process, to facilitate project approval.

11.7.4 Cumulative Impacts

EIA Attribute	Possible Responses
There is a well-defined process for determining cumulative impacts due to the "knock-on" effects of the project.	**well-addressed**: Other projects, future activities in the project area, and climate change are factored into the assessment of impacts, with logical linkages made between all project activities, the conditions they create, and the receiving environment and social parameters that change as a result of cumulative impacts. **deficient**: Cumulative impacts are poorly defined (many may be left out) and the reasoning for ongoing linkages between the project and changing conditions is inadequately described; poor use of the scientific literature on environmental change.

11.8 RANGE OF MITIGATION MEASURES AND DEVELOPING THE ENVIRONMENTAL MANAGEMENT PLAN

11.8.1 Overview of the Implications of Project Phases and Fit Within EIA

EIA Attribute	Possible Responses
Mitigation measures are defined for all mitigatable impacts in all project phases (pre-construction, construction, operation, and decommissioning).	**well-addressed**: Well-conceived project location and design effectively address most possible impacts; good use of industry best practices is made for the pre-construction and construction phases; operation phase impacts are handled by the best available technology; decommissioning is properly addressed, rather than left vague; mitigation measures are well-informed by modeling results. **deficient**: The proponent has avoided the costs that may be associated with mitigation of impacts; many assumptions are made about how impacts can be reduced, without due attention to details; most statements regarding mitigation are statements of intent, without significant confidence expressed that impacts can actually be reduced by using appropriate technology.

11.8.2 Definitions and Requisite Mitigation Strategies

EIA Attribute	Possible Responses
The mitigation strategy goes through the hierarchy of "avoid", "minimize", "restore on-site", and "offset", and makes best use of changing locations, project design, and managing risks of accidents.	**well-addressed**: All possible impacts are identified and each one has a logical mitigation strategy that goes through the hierarchy of avoidance to offsetting, with best use of available technology; good references to the EIA and scientific literature; all impacts are reduced as much as possible; clear definition of residual impacts; due attention to mitigation of social and economic impacts, as well. **deficient**: There is no overall strategy or coherence to the mitigation approach; too many assumptions are made about how impacts can be managed, without enough discussion of the availability and effectiveness of various technologies.

11.8.3 Mitigation Measures for Typical Construction Phase Impacts

EIA Attribute	Possible Responses
All aspects of land clearing, management of adjacent water bodies, noise, air quality, and disturbance of local communities are considered and addressed with industry best practice approaches and technologies.	**well-addressed**: All construction phase impacts are clearly tabulated and have appropriate mitigation measures assigned to them, based on site-specific data; sediment and erosion controls are well-defined and mapped out; site rehabilitation after construction is defined in detail; construction waste management is defined, including separation and recycling; dust control measures are in place; hazardous materials are properly labeled and confined; noise is managed; worker safety and health measures are in place; construction mitigation measures are to be specified as contract covenants . **deficient**: There are gaps in the construction mitigation measure strategy, either with some activities not addressed or inappropriate measures for others; too many assumptions made about the effectiveness of mitigation measures (not enough reference to the sector or industry literature); mitigation measures are not defined in contract covenants.

11.8.4 Mitigation Measures for Typical Operation Phase Impacts

EIA Attribute	Possible Responses
Operation phase impacts are clearly defined and all have some activity or waste-specific mitigation measure described, based on sector or industry best practice.	**well-addressed**: All operation phase activities and waste streams are defined and characterized in order to prescribe the most appropriate mitigation measure; these are well-founded in the sector and industry literature regarding best available technologies; good use of modeling results to inform specific mitigation measures; and worker safety and health measures are in place. **deficient**: Poor degree of research into the most appropriate mitigation measures for operations specific to the proposed project; lack of definition of mitigation measures and lack of commitment to installation and operation of measures; too many assumptions made about the lack of significance of

EIA Attribute	Possible Responses
	operation phase impacts, reducing the perceived need for mitigation.

11.8.5 Mitigation Measures for Socioeconomic Impacts

EIA Attribute	Possible Responses
Mitigation measures for possible social and economic impacts are based on detailed local surveys, and address all options for design changes, location changes, and payment of compensation, so that there no net losses for the local community and all options for enhancements are considered.	**well-addressed**: All people who may be impacted, in each phase of the project, are addressed by some form of mitigation, whether by resettlement or compensation (all this identified in an inventory); mitigation measures address disadvantaged groups; proper surveys and consultation are used to inform the mitigation measures; there is public acceptance and Government approval of the mitigation measures proposed for socioeconomic impacts. **deficient**: Lack of surveys in the project area; inadequate public consultation with affected local communities; proposed mitigation measures are too general to form a negotiated contract with local people; commitment to protection of local communities is not apparent; too many assumptions about the local benefits of the proposed project.

11.8.6 Emergency Response Plans

EIA Attribute	Possible Responses
All risks associated with project activities in all phases are identified and a realistic emergency response plan is tailored to each one, based on industry best practices.	**well-addressed**: Probability of occurrence of accidents and emergencies such as pandemic disease outbreaks, natural disasters, etc. is calculated for each risk (based on sector and industry literature); clear actions and responsibilities are defined in the event of an accident; the training and practice plan for each emergency response (or contingency) plan is noted; measures are in place to reduce the risk of accidents and other emergencies, according to industry best practices, including warning systems. **deficient**: Risks of accidents are played down; too many assumptions are made about risks and risk management; inadequate detail in the proposed emergency response plan.

11.8.7 The Environmental Management Plan

EIA Attribute	Possible Responses
The EMP provides a working document for mitigation of all possible impacts, monitoring of residual impacts, and management of risks.	**well-addressed**: The EMP includes a summary of all potential impacts associated with the project, listing of mitigation measures, stated compliance with regulations, allocation of resources and responsibilities for implementation of the EMP, schedule of actions, proposed surveillance and monitoring, and a plan to manage risks (including required training); the EMP can serve as a stand-alone document, that can be clipped as covenants to various construction and operation contracts.

EIA Attribute	Possible Responses
	deficient: The EMP is not orderly and obviously addressing all opportunities for mitigation (possibly reflecting inadequate mitigation measures; see above).
There is clear planning and commitment in the EMP (it is taken seriously, as an investment in impact management).	**well-addressed**: The EMP includes specific comments on the commitment of the proponent to reduce and manage impacts (and comply with the law), as well as monitor and report on compliance and environmental and social effects of the project (maintaining transparency); monitoring parameters and frequency are clearly specified. **deficient**: The EMP does not reflect an honest commitment from the proponent; there are no statements reflecting the integrity of the proponent in managing possible impacts and being accountable for the EMP.

11.9 PROJECT MONITORING

11.9.1 Monitoring for Environmental/Socioeconomic Effects

EIA Attribute	Possible Responses
A monitoring program for possible environmental and social impacts is defined, practical, and addresses the main concerns with VECs and important social parameters, consistent with the baseline parameters noted in the EIA document.	**well-addressed**: The impact assessment and the EMP provide a platform for an effects monitoring program, to confirm whether effects, as a result of the project, are occurring or not; key monitoring parameters are defined, sampling frequency and replication are clear, and reporting procedures are described, including obligations to act if effects are detected that need mitigation; QC/QA procedures are defined, with proper spatial and temporal controls. **deficient**: The proposed monitoring program is deficient, possibly neglecting some important impacts; methodology may be inadequate; monitoring reporting system and follow-up actions may be lacking.

11.9.2 Compliance Monitoring

EIA Attribute	Possible Responses
The obligations in the EMP (the proposed mitigation plan) are listed and a compliance monitoring program is defined for each environmental quality obligation.	**well-addressed**: Each environmental management obligation in the EMP has a dedicated compliance monitoring program defined, with methodologies and responsibilities clear; this might include air quality, noise management, water body management; sediment and erosion controls, OSH and public/community health and safety, for example. **deficient**: Compliance monitoring is poorly defined, with gaps in monitoring parameters, lack of detail on methodology, frequency of sampling, and responsibilities; lack of clarity about reporting and follow-up.

11.10 PUBLIC CONSULTATION

11.10.1 Introduction

EIA Attribute	Possible Responses
The general public and local communities have been informed about the proposed project from the beginning, with recording of public concerns and a reasonable project response to those provided.	**well-addressed**: All representative stakeholders have been consulted and their specific concerns associated with the proposed project have been logged and addressed in some fashion; project design, location, and compensatory actions reflect the type and severity of public concerns; feedback is provided to the public throughout the EIA process. **deficient**: Local communities remain uninformed about the project and their concerns are not documented and adequately addressed; assumptions are made about their concerns and the possible benefits of the proposed project.

11.10.2 Approaches for Conducting Public Consultation

EIA Attribute	Possible Responses
The proponent has tailored the public consultation program to the needs, accessibility, and potential for understanding of the local communities, with a commitment to two-way communication and accountability for responses to public concerns.	**well-addressed**: The proponent provides project information to local communities as soon as it is available, and engages in a range of public consultation approaches and methodologies that suit the local communities, including use of printed materials, displays and exhibits, on-line information, questionnaires and response sheets, surveys, public hearings, workshops, and expert advisory committees (as needed); these are well-documented, including logging public concerns and showing tangible responses to them. **deficient**: There is lack of public consultation; assumptions regarding public concerns are made, rather than logging and responding to specific concerns of local communities; possible negative effects of the project are played down and possible benefits are played up; communication with local communities is "one-way" (just informing them about the proposed project).

11.10.3 Information Disclosure and Public Access to EIA Documents

EIA Attribute	Possible Responses
There is full public disclosure of the EIA process, public consultation results, proponent responses, and EIA decisions, with key documents available in libraries, Government offices, and online.	**well-addressed**: All stages of the EIA process are documented and these documents are easily accessible to any member of the public; especially the responses to public concerns and the EIA decisions are widely disseminated. **deficient**: Details about the EIA process, public consultation results, and the EIA decisions remain obscure; the general public does not know how or where to access documents.

11.11 THE QUALITIES OF A GOOD EIA DOCUMENT

EIA Attribute	Possible Responses
The EIA documents are accurate, detailed, clear, and objective (as much as possible), with a basis in science, using rigorous analytical approaches, and clearly stating assumptions where they are required.	**well-addressed**: There is clarity in presentation (good use of tables and graphics) and all conclusions are backed up with good science, logic, and effective use of primary data and the scientific and technical literature; key conclusions are emphasized, facilitating appropriate decision-making; in particular, residual impacts, upon which the EIA decision hangs, are very clearly defined. **deficient**: The EIA document is disorganized and reflects inconsistent thinking throughout; the assumptions, analysis, and logic are poorly described; arguments for minimal impacts are not defensible; the document makes it difficult for decision-makers to properly consider all elements and make a sound decision.

11.12 THE IDEAL QUALITIES OF AN EIA TEAM

EIA Attribute	Possible Responses
The EIA document clearly reflects the competencies of the team, with sound science going into the analysis and impact conclusions, and all important parameters being addressed in the EIA process.	**well-addressed**: The skills and experience of the EIA team are documented and all the EIA outputs reflect the required competencies; no part of the EIA process or documents is lagging; the EIA practitioners all have experience in conducting EIAs in Bangladesh. **deficient**: There is inconsistency in the level of detail and quality of the EIA documents; EIA team member skills and experience may be omitted from the EIA document; EIA team members may lack requisite skills and experience, evident in their work.

ANNEXURES

ANNEX A. CHECKLISTS OF ENVIRONMENTAL COMPONENTS (SCOPING CHECKLIST)

A. Physico-Chemical

1. Land

- Landforms
- Soil Profile
- Soil Composition
- Slope Stability
- Subsidence and Compaction
- Seismicity
- Floodplains/swamps
- Landuse
- Engineering and mineral resources
- Buffer zones

2. Surface Water

- Shoreline
- Bottom interface
- Flow variation
- Water Quality
- Drainage Pattern
- Water Balance
- Flooding
- Existing Use

3. Groundwater

- Water table
- Flow regime
- Water quality
- Recharge
- Aquifer characteristics

- Existing use

4. Atmosphere

- Air quality
- Air flow
- Climate Changes
- Visibility

5. Noise
- Intensity
- Duration
- Frequency

B. Biological

1. Species and Populations
- Terrestrial Vegetation
- Terrestrial Wildlife
- Other Terrestrial Fauna
- Aquatic/marine flora
- Fish
- Other aquatic/marine fauna

2. Habitats and Communities
- Terrestrial habitats
- Terrestrial communities
- Aquatic habitats
- Aquatic communities
- Estuarine habitats
- Marine habitats
- Marine communities

C. Human

1. Community and Occupational Health and Safety

- Physical safety

- Psychological well-being
- Parasitic disease
- Communicable disease
- Psychological disease
- Disease vectors

2. Social and Economic

- Employment
- Housing
- Education
- Utilities
- Amenities

3. Aesthetic and Cultural Land Forms

- Biota
- Wilderness
- Water quality
- Atmospheric quality
- Climate
- Tranquility
- Sense of community
- Historic Places or structures
- Religions places or structures
- Landscapes
- Compositions

ANNEX B. CHECKLIST OF ISSUES COMMONLY ENCOUNTERED IN INDUSTRY PROJECTS

- Labor and employment issues
  - worker's rights
  - child labor
  - gender discrimination
  - workplace violence
  - etc.
- Occupational Health and Safety
  -general working conditions
  -OSH issues during construction
  -hazardous tasks during operations

-fire safety
-workplace air pollution
-etc.

- Community Health and Safety Issues
  - spread of diseases due to influx of migrant labor
  - health hazards of pollution
  - residents exposure to construction site hazards
  - construction traffic, other physical hazards, etc.)
- Water quality impacts (surface water quality, groundwater quality impacts)
- Ambient air quality impacts
- Noise and vibration
- Efficiency in the use of resources (water use, power, fuel)
- Land acquisition, property damage, displacement of homes and livelihood
- Indigenous people rights and/or minority rights issues
- Impacts on other vulnerable communities
- Impact on cultural heritage sites
- Others impact categories (Specify)

_____
_____

ANNEX C. COMMUNITY AND OCCUPATIONAL HEALTH AND SAFETY AUDIT CHECKLIST TEMPLATE

Requirement	Yes	No	Uncertain	Responsible Parties
Section 1: Legal Compliance				
Identify and review Bangladesh laws, acts, policies, and international best practices/guidelines (e.g. ILO Standards, World Bank Environmental and Social Standards, IFC EHS Guidelines, etc.) applicable to occupational safety and health (OSH) and community health and safety.				
Implement a process for maintaining the most current information relating to legal and other requirements to keep abreast of new or changing obligations.				
Process to ensure the project is in compliance with relevant OSH and community health & safety regulatory requirements (e.g. operational control activities).				
Project has a legal register and other requirements assigning accountabilities and responsibilities, timeframes for actions, and periodic review.				
Access to legal register should be limited to those personnel who have been identified as having a key role in ensuring compliance or conformance (e.g., managers and supervisors).				
The register may be made available either online				

Requirement	Yes	No	Uncertain	Responsible Parties
(through local intranet or portal access) or as a hard copy, or both.				
Project legal register should be monitored/ audited as part of the assurance process (e.g. internal and external monitoring/ auditing).				
Legal register is linked to operational activities and risks so that compliance and conformance can be achieved.				
Section 2: Hazards Identification and Risk Assessment				
All identified hazards are characterized with respect to the severity of potential outcomes, likelihood of an event or exposure, and number of workers who might be exposed. This information is identified in project risk assessment, construction and operating procedures.				
Interim mitigation controls are adopted while permanent controls are being determined.				
All serious and recognized hazards are addressed immediately, while prioritizing remaining hazards for further control.				
Written materials such as injury/illness logs, Safety Data Sheets, medical reports, workplace inspection results, incident investigation reports, and manufacturers' literature are reviewed to help identify hazards.				
The workplace is inspected regularly to identify conditions that pose or could				

Requirement	Yes	No	Uncertain	Responsible Parties
pose a safety or health concern. Inspections cover all areas and activities and include plant and transportation vehicles.				
Before making changes to operations, workflow, physical plant, equipment, or materials, workers and managers conduct a review to identify any safety or health issues.				
The workplace is evaluated to identify worker exposure to health hazards.				
Trends in injury and illness data, reports of hazards, incidents, etc. are analysed to identify common hazards.				
Incidents (including close calls/near misses) and employee complaints are investigated to identify any hazards previously unrecognized or inadequately controlled. Investigations focus on identifying the root cause(s) of each incident.				
Hazards associated with emergencies and non-routine operations are identified in the emergency action plan and operating procedures, respectively.				
Emergency Response Plan (ERP) includes natural disasters, pandemic/epidemic disease outbreaks, political unrest, public demonstrations, etc. ERP should also include recovery/ resilient planning.				
Section 3: Hazard Prevention and Control				
Options for controlling hazards are identified using sources such as DIFE,				

Requirement	Yes	No	Uncertain	Responsible Parties
DPHE, MOLE, industry best practices, IFC EHS Guidelines, ILO Standards, and input from workers.				
Controls are selected according to the “hierarchy of controls,” emphasizing (in order of priority) elimination, substitution, engineering controls, administrative controls, and PPE.				
A hazard control plan is used to plan and prioritize controls.				
Controls are installed as soon as a hazard is identified.				
Interim controls are used when permanent controls cannot be immediately implemented.				
Workers are involved in selecting controls.				
Controls are in place to protect workers during emergencies and nonroutine operations.				
Once installed, controls are monitored to ensure that workers understand their use and application and to verify that they are effective.				
Implementation of controls is tracked to completion. Controls are inspected and maintained.				
Section 4: Management Leadership				
Management implements and communicates a written, signed policy supporting the safety and health program.				
Management routinely demonstrates visible commitment to the program.				
Management defines specific goals and expectations for the				

Requirement	Yes	No	Uncertain	Responsible Parties
program, along with plans for achieving the goals.				
Management allocates appropriate resources (funds and time) to accomplish goals and manage the program.				
Management assigns responsibility and accountability for implementing and maintaining the program.				
Management encourages, recognizes, and rewards worker contributions to workplace safety and health.				
Section 5: Worker Participation				
Workers are encouraged to participate in the program, have the means to participate, and feel comfortable participating and giving input on safety and health issues.				
Workers are trained on how to report an injury, illness, hazard, or concern, including good catches/near misses.				
Workers report injuries, illnesses, hazards, and concerns without fear of reprisal.				
Reports of injuries, illnesses, hazards, or other concerns are acknowledged promptly.				
Reports of injuries, illnesses, hazards, or other concerns are resolved promptly, after worker input is sought, and are tracked to completion.				
Workers have access to information they need to understand safety and health hazards and hazard control measures in the workplace.				

Requirement	Yes	No	Uncertain	Responsible Parties
Workers are assigned roles in or are otherwise involved in all aspects of the program.				
Workers can participate without encountering language, skill, or education barriers; restrictions on participating during work time; or fear of retaliation or discrimination.				
Workers have authority to initiate or request a temporary suspension or shutdown of any work activity or operation they believe to be unsafe.				
Section 6: Communication and Training				
Managers, supervisors, and workers understand the elements of the safety and health program and how to participate in it.				
Workers understand the employers' responsibilities under the OSH program.				
Each worker understands his or her own role in the OSH program.				
Workers know whom to contact with concerns or questions, and understand the procedures for reporting injuries, incidents, hazards, and concerns.				
Workers know that they have a right to participate in the program and report injuries and illnesses without fear of retaliation or discrimination.				
Workers with assigned roles under OSH receive training in how to carry out their roles.				
Workers are trained to understand how to recognize hazards and effective techniques for their control.				

Requirement	Yes	No	Uncertain	Responsible Parties
Workers can ask questions, receive answers, and provide feedback during and after training.				
Employers, managers, and supervisors understand their responsibilities under the Bangladesh legislation particularly the Labour Act; procedures for responding to workers' reports of injury, illness, or concern; techniques for identifying and controlling hazards; and fundamentals of incident investigation.				
Workers receive supplemental training when a change in the workplace could introduce new or increased hazards.				
Workers receive training in a language and at a literacy level that all of them can understand.				
Section 7: Program Evaluation and Improvement				
Performance indicators are used to track progress toward program goals.				
Performance is tracked using both lagging and leading indicators.				
Performance data are analysed and shared with workers.				
Management does an initial review (and subsequent annual reviews) to evaluate the program and ensure that it is fully implemented and functioning as planned.				
Workers are involved in all OSH program review activities.				
Program reviews examine key processes to ensure that				

Requirement	Yes	No	Uncertain	Responsible Parties
they are operating as intended.				
The OSH program is modified as needed to correct shortcomings.				
Section 8: Community Health and Safety				
Review legislative/regulatory requirements and any relevant changes to the process.				
Hazards identification and risk assessment conducted for community health and safety impacts.				
Baseline data of the community population demographics, endemic diseases, nutrition, health risks, poverty, crime, etc.				
Does the project or plan affect vulnerable groups (e.g. children, older people, and people with low incomes)?				
Identify, avoid and minimize, through changes to the project design and implementation, the unintended negative community health, safety and wellbeing impacts that can arise.				
Hazardous material/waste/effluent: Impacts from project/operation hazardous material/waste/effluent on local communities have been identified and assessed with mitigation plans in place including the transport of hazardous materials on public roads.				
HIV control: Contents of contract and HIV monitoring of workers and local health agencies monitoring of local				

Requirement	Yes	No	Uncertain	Responsible Parties
Community.				
Water quality: Impact to domestic water and pollution control.				
Air quality/ emissions: Does the plan or project area include industries that disproportionately contribute pollutants (e.g. manufacturing, petroleum refineries, etc.)?				
Traffic/ Road Safety: Does the plan or project adequately account for safe circulation patterns for all modes such as employing traffic calming measures, using separate facilities for non-motorized modes, or ensuring adequate lighting and sight lines.				
Impact on food supply and price inflation due to project/operation in the community.				
Identify existing community health problems (e.g. healthcare), which could amplify the impact of a proposed project/operation and affect its viability.				
Provide an equitable, transparent and evidence-based approach to planning and funding community health infrastructure and development activities to protect and enhance sustainable local livelihoods.				
Provide a process through which the project can work in partnership with local health, social care, and welfare services to jointly alleviate these health problems.				

Requirement	Yes	No	Uncertain	Responsible Parties
Security and crime due assessed and mitigation plan addressed due to influx of transient workforce during project construction and increase migration during operation.				

ANNEX D: STAKEHOLDER CONSULTATION REPORTING TEMPLATE

1. Introduction
2. Stakeholder Identification
3. Consultation Strategy
4. Community Consultation
5. Community and Stakeholder Communication Protocols
6. Consultation Outcomes
   6.1 Community and Stakeholder representatives
   6.2 Key Issues Raised
7. Future Consultation
   7.1 Public Review Period
   7.2 Ongoing Consultation

APPENDIX A: Stakeholder Consultation Plan

Table 6.1: Stakeholders and community representatives consultation to date

Category	Stakeholders	Events and Dates

Table 6.2: Key issues raised during Stage 1 and Proponent's response

Element/Factor	Issues Raised	Proponents Response

ANNEX E: General Stages of Cumulative Impact Assessment (CIA)