

Guidelines for preparation of Environment Impact Assessment Report & Environment Management Plan:

When it is decided that a formal EIA is required, the next stage is to define the issues that need to be addressed, that is, those impacts that have a significant effect on the environment.

A. Environmental and Social Assessment: Besides other, following points be given due consideration for the environmental and social assessment.

- i. An environmental assessment report should focus on the significant environmental issues of a project. The report's scope and level of detail should commensurate with the project's potential impacts. Social and environmental Assessment should consider potential social and environmental (including labour, health and safety) risks and impacts of the infrastructure facility. The assessment process should be based on current information, including accurate project/infrastructure description and appropriate social and environmental data baseline. All relevant social and environmental risks and impacts including the issue identified and those who will be affected by such risks and impacts of the Project should be considered. Besides that, applicable laws and regulations of the jurisdiction in which the project operates that pertains to social and environmental matters, including implementing host countries obligations under international law, will also be taken into account.
- ii. Risks and impacts are to be analyzed in the context of the project's area of influence. This area of influence encompasses, as appropriate: (i) the primary project site(s) and related facilities that the client (including its contractors) develops or controls, such as power transmission corridors, pipelines, canals, tunnels, relocation and access roads, borrow and disposal areas, construction camps; (ii) associated facilities that are not funded as part of the project and whose viability and existence depend exclusively on the project and whose goods or services are essential for the successful operation of the project; (iii) areas potentially impacted by cumulative impacts from further planned development of the project, any existing project or condition, and other project-related developments that are realistically defined at the time when the Social and Environmental Assessment is undertaken; and (iv) areas potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a different location. The area of influence does not include potential impacts that would occur without the project or independently of the project.
- iii. Risks and impacts need to be analyzed for the key stages of the project cycle, including pre-construction, construction, operations, and decommissioning or closure. The impacts associated with supply chains will be considered where the resource utilized by the project is ecologically sensitive, or in cases where low labour cost is a factor in the competitiveness of the item supplied. The Assessment will also consider potential transboundary effects, such as pollution of air, or use or pollution of international waterways, as well as global impacts, such as the emission of greenhouse gasses.
- iv. The Assessment should be an adequate, accurate and objective evaluation and presentation of the issues, prepared by qualified and experienced persons. In projects with significant adverse impacts or where technically complex issues are involved, clients may be required to retain external experts to assist in the Assessment process.

- v. Depending on the type of project and the nature and magnitude of its risks and impacts, the assessment may comprise a full-scale social and environmental impact assessment, a limited or focused environmental or social assessment, or straightforward application of environmental siting, pollution standards, design criteria, or construction standards. When the project involves existing business activities, social and/or environmental audits may need to be performed to determine any areas of concern. The types of issues, risks and impacts to be assessed and the scope of the community engagement can also vary considerably, depending on the nature of the project, and its size, location, and stage of development.
- vi. Projects with potential significant adverse impacts that are diverse, irreversible, or unprecedented will have comprehensive social and environmental impact assessments. This assessment will include an examination of technically and financially feasible alternatives to the source of such impacts, and documentation of the rationale for selecting the particular course of action proposed. In exceptional circumstances, a regional, sectoral or strategic assessment may be required.
- vii. Narrower scopes of Assessments may be conducted for projects with limited impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.

B. The EIA report should include the following items (not necessarily in the order given as under):

- a) **Executive summary:** Concisely discusses significant findings and recommended actions.
- b) **Policy, legal, and administrative framework:** Discusses the policy, legal and administrative framework within which the EA is carried out. Elaborates environmental requirements of any co-financiers. Identifies relevant international environmental agreements to which the country is a party.
- c) **Project description:** Concisely describes the proposed project and its geographic, ecological, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power plants, water supply, housing, and raw material and product storage facilities). Indicates the need for any resettlement plan or indigenous people development plan. Normally includes a map showing the project site and the project's area of influence. Other factors are:
 - i. Land requirements: Description of land ownership, land required for the project and any associated services clearly shown on an appropriately scaled map, re-instatement after use of temporary land, local, regional and national plans.
 - ii. Project description: Project components are described, including e.g. a process flow sheet, water balance, suitable diagrams and layout plans, life cycle analysis, technologies described comply with BATNEEC and BEO principles. Social issues related to the project are described e.g. number of employees, percent from local community, transportation, accommodation, support services, recreation facilities, employment structures, skills breakdown, training, skills transfer etc.

- iii. Waste and emissions: Sources, types and quantities of waste generated during different scenarios for construction and operation be estimated e.g. air emissions, process effluent, runoff, noise and vibrations, odour, liquid and solid waste. Predictions in the report be scientifically calculated, with the results clearly presented for different scenarios, risk assessment be performed, including the identification of exposure pathways, probability and consequences. ESIA report discuss ways in which the wastes can be reduced, recycled or re-used, ways in which wastes will be stored, handled or treated prior to disposal has been explained.
 - iv. Project inputs: Nature and quantities of materials needed during construction and operation, clearly indicated e.g. water, power, lubricants, raw materials, ore, structural components, fill, etc. Where these materials will be sourced is identified and assessed in terms of impacts, impacts of transportation of all materials, personnel and visitors to the project site during construction and operation is assessed. At the same time means of transporting materials, products, workers and visitors to and from the site during construction and operation, been explained. Project timetable been clearly set out for each project phase: construction, operation, decommissioning and closure.
- d) **Methodology:** Methodology should set out the assumptions and limitations of the study, clearly explain, public participation process, indicate what data are inadequate or absent, include genuine stakeholder consultation, general public and/or affected communities included in the consultation, capacity building of stakeholders and include lists of interested and affected parties consulted.
- e) **Baseline data:** Assesses the dimensions of the study area and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. Also takes into account current and proposed development activities within the project area but not directly connected to the project. Data should be relevant to decisions about project location, design, operation, or migratory measures. This section must indicate the accuracy, reliability, and sources of the data.

Description of Baseline Environment: Areas expected to be significantly affected by the various aspects of the intervention need to be indicated with the aid of suitable map, land uses on the project site(s) and in the surrounding areas is described and its use and non-use values are adequately assessed, biophysical components of the environment likely to be affected by the intervention be identified and described sufficiently for the prediction of impacts, climate (wind, precipitation, temperature, evaporation etc., geology (rock type, structure, geochemistry etc.) and geomorphology, soils (agricultural and rehabilitation potential), topography (slopes, screening effects), surface hydrology (flood lines, runoff, flows, supply, users, wetlands, dams, lakes), groundwater (aquifers, yields, permeability, users, gradients etc.), hydrochemistry (organic, inorganic, physical), air quality (ambient and seasonal), terrestrial and aquatic ecology (vegetation and animal types, diversity, endemism, rarity value, alien and invasive species) and other ecological characteristics of the area.

In addition to this, social component likely to be affected by the intervention be identified and described sufficiently for the prediction of impacts, social structure of local community, demographics, skills, employment, community facilities and services, amenities, settlement patterns, aesthetics (visual, noise, odour, sense of place, air quality, quality of life etc.), health (including HIV/AIDS) and crime & community safety. The cultural components of the

environment likely to be affected by the proposed intervention is identified and described sufficiently for the prediction of impacts on sites of spiritual and/or religious, cultural, historic, archaeological significance. The economic components of the environment likely to be affected by the project be identified and described sufficiently for the prediction of impacts on local, regional and national economic indicators, forward and backward linkages, local spending, sectoral strengthening, import and export potential, tax base and revenue generation, resource economics and cost-benefit analysis. Latest literature and/or unpublished reports and/or data relevant to the study and cited their sources be consulted.

- f) **Social and Environmental impacts:** Predicts and assesses the project's likely positive and negative impacts, in quantitative terms to the extent possible. Identifies mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for environmental enhancement. Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention. Evaluates impacts and risks from associated facilities and other third party activities.

Description of Impacts:

- i. **Impact Identification:** Identification of direct and indirect/ secondary effects of constructing, operating and, where relevant, after use or decommissioning of the intervention are clearly explained (including both positive and negative effects). Impacts are investigated in so far as they affect the air quality, surface water resources (flow and quality), ground water, soil, noise and vibration, topography and geomorphology, vegetation, terrestrial ecology and biodiversity, aquatic ecology, historic and cultural heritage, land use, people and communities, health, sense of place, transportation and traffic, local, regional and national economic indicators, crime and community safety. Investigation of each type of impact appropriate to its importance for the decision, avoiding unnecessary information and concentrating mainly on the key issues. Cumulative impacts and consideration is given on impacts which might arise from non-standard operating conditions, (i.e. equipment failure or unusual environmental conditions such as flooding), accidents and emergencies i.e. risk assessment.
- ii. **Magnitude of Impacts:** These are impacts described in terms of the nature and magnitude of the change occurring and the nature (location, number, value, sensitivity) of the affected receptors. Timescale over which the effects will occur be predicted such that it is clear whether impacts are short, medium or long term, temporary or permanent, reversible or irreversible. Where possible, predictions of impacts be expressed with quantitative and qualitative descriptions.
- iii. **Data and Method:** Methods to predict the nature, size and scale of impacts be described with justification. Impacts of the environment on the construction and operation should also be taken into account.
- v. **Evaluation of Impact Significance:** ESIA give should give clear indication of which impacts may be significant or non-significant. Significance of effects should be discussed taking account of appropriate national and international standards or norms, wherever, these are applicable. Where there are no generally accepted standards or criteria for the evaluation of significance, a clear distinction has to be made between fact, assumption and

professional judgement. Magnitude, location and duration of the impacts be discussed in the context of the value, sensitivity and rarity of the resource or environment.

g) **Analysis of alternatives:** Systematically compares feasible alternatives to the proposed project site, technology, design, and operation--including the "without project" situation--in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each of the alternatives, quantifies the environmental impacts to the extent possible, and attaches economic values where feasible. States the basis for selecting the particular project design proposed and justifies recommended emission levels and approaches to pollution prevention and abatement.

h) **Environmental management plan (EMP):** Covers mitigation measures, monitoring, and institutional strengthening and management measures to be taken during implementation of the project to avoid, reduce, mitigate, or compensate for adverse social and environmental impacts, in the order of priority, and their timelines. May include multiple policies, procedures, practices, and management plans and actions. Describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets or acceptance criteria that can be tracked over defined time periods, and indicates the resources, including budget, and responsibilities required for implementation. Where the client identifies measures and actions necessary for the project to comply with applicable laws and regulations and to meet the Performance Standards, the management program will include an Action Plan, which is subject to disclosure to the affected communities and ongoing reporting and updating.

i) *Appendixes*

- List of ESIA report preparers--individuals and organizations.
- References--written materials both published and unpublished, used in study preparation.
- Record of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local nongovernmental organizations (NGOs). The record specifies any means other than consultations (e.g., surveys) that were used to obtain the views of affected groups and local NGOs.
- Tables presenting the relevant data referred to or summarized in the main text.
- List of associated reports (e.g., resettlement plan or indigenous people's development plan).

C. Contents of Environment & Social Management Plan:

Environmental & social management plan (ESMP) consists of the set of mitigation, monitoring and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The plan also includes the actions needed to implement these measures. Management plans are essential elements of EA reports for Category A projects; for many Category B projects, the EA results in a management plan only. To prepare a management plan, the borrower and its EA design team (a) identify the set of responses to potentially adverse impacts; (b) determine requirements for ensuring that those responses are made effectively and in a timely manner; and (c) describe the means for meeting those requirements. More specifically, the EMP includes the following components.

1. Mitigation

The ESMP should identify feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels. The plan includes compensatory measures if mitigation measures are not feasible, cost-effective, or sufficient. ESMP should:

- (a) identify and summarize all anticipated significant adverse environmental impacts (including those involving indigenous people or involuntary resettlement);
- (b) describe technical details of each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions and operating procedures, as appropriate;
- (c) estimates any potential environmental impacts of these measures; and
- (d) provide linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project. Mitigation measures should focus on the following:
 - i. Description of mitigation measures (in ESIA): Mitigation of negative impacts be considered and where feasible, specific measures be proposed to address each impact. Where mitigating measures are proposed, significance of any impact remaining after mitigation be described. Where appropriate, mitigation methods be considered to include in the modification of intervention design, construction and operation, the replacement of facilities/ resources, and the creation of new resources. It is clarified to what extent the mitigation methods are likely to be effective. ESIA report clearly explain what is the likely costs of mitigation and compare these with the benefits.
 - ii. Commitment to Mitigation: Details about the mitigation implemented and function over the time span for which they are necessary are presented. in an Environmental Management Plan.
 - ii. Monitoring Proposals: ESIA should propose practical monitoring arrangements to check the environmental impacts resulting from the implementation of the intervention and their conformity with the predictions made and limits of acceptable change that the developer can use to track impacts and trigger management intervention. Scale of any proposed monitoring arrangements should be related to the potential scale and significance of deviations from expected impacts.

- iv. Environmental Effects of Mitigation: Adverse environmental effects of mitigation measures be investigated and described. Potential for conflict between the benefits of mitigating measures and their adverse impacts should be considered.

2. **Monitoring**

Environmental monitoring during project implementation provides information about key environmental aspects of the project, particularly the environmental impacts of the project and the effectiveness of mitigation measures. Such information enables the borrower and the Bank to evaluate the success of mitigation as part of project supervision, and allows corrective action to be taken when needed. Therefore, the EMP identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the EA report and the mitigation measures described in the EMP. Specifically, the monitoring section of the EMP provides (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

3. **Capacity Development and Training**

To support timely and effective implementation of environmental project components and mitigation measures, the EMP draws on the EA's assessment of the existence, role, and capability of environmental units on site or at the agency and ministry level. If necessary, the EMP recommends the establishment or expansion of such units, and the training of staff, to allow implementation of EA recommendations. Specifically, the EMP provides a specific description of institutional arrangements—who is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, most EMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.

Implementation Schedule and Cost Estimates.

4. For all three aspects viz. mitigation, monitoring, and capacity development, the EMP provides (a) an implementation schedule for measures that must be carried out as a part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the EMP. These figures are also integrated into the total project cost tables.

5. **Integration of ESMP with Project**

Client decision to proceed with an intervention, and the Bank's decision to support it, are predicated in part on the expectation that the ESMP will be executed effectively. Consequently, the Bank expects the plan to be specific in its description of the individual mitigation and monitoring measures and its assignment of institutional responsibilities, and it must be integrated into the project's overall planning, design, budget, and implementation. Such integration is achieved by establishing the EMP within the project so that the plan will receive funding and supervision along with the other components.

6. **Some of the Environmental management requirements are summarized as under:**

Introduction Contents: Aims, structure, useful contacts, applicable legislation, permit requirements, international obligations and environmental and project background information.

Ensure that applicable standards, guidelines, limits of acceptable changes are identified, issues & concerns of stakeholders are included and ESMP is sent to the stakeholders for the comments. It should find mention the HSE Policy of the developer, organizational structure which clearly identifies the roles and responsibilities of the personnel involved in the construction of the project and shows the reporting mechanisms for environmental management during construction. Procedure should be set out for incorporating ESMP in the contractor's tender documents, system for environmental adjudication of the environmental components of the tenders and form the part of a larger environmental management system e.g. ISO14001, NOSA etc.

Environmental Management Plan – layout

For each impact identified in the EIA, the ESMP must provide a management objective; the management action; the target, standard or guideline to be achieved; the indicator of achievement; the responsible person; the frequency of such action (if repeated) or the date for completion (in the case of a one-off action). Separate ESMPs must be formulated for construction, commissioning, operational phase and decommissioning and closure phases. The ESMP should have separate sections for discrete components of the project interventions.

Generally, there should be a code of conduct and induction programme for all contractors and visitors to site, environmental awareness and training programme, specified ESMP compliance auditing programme, including site checklists, provision for periodic review and update for projects with a construction period of over 6 months and detailed standard operational procedures. There should be a set timetable for ESMP reporting, document distribution and document control, incentives and penalties clearly set out for site establishment and programming, including the siting and establishment of camps, laydown areas, access roads, fuel depots, concrete batch plants, fencing and security etc. Besides, issues relating to civil works be addressed (i.e. bulk earthworks, foundations, drainage systems etc.). It should contain management plans for workshops, vehicle and equipment maintenance, including field servicing, repairs and management plans for construction personnel (i.e. Employment procedures, housing, transportation, recreation facilities etc.) and management plan for the closure of all construction sites, including camps, waste disposal sites, access roads, temporary water supply infrastructure etc.

Specific plans and strategies

It should have detailed plans or strategies in place to address vegetation clearance; topsoil management; spoil management; erosion control and slope stabilization; rehabilitation of disturbed areas; species protection; noise management; air quality, particularly dust, gas and odour; water quality; storm water control and runoff; effluent management; hazardous waste management (including transportation, storage, handling and disposal); non-hazardous solid waste management (including transportation, storage, handling and disposal); non-hazardous liquid waste management (including transportation, storage, handling and disposal); sanitation; land management; archaeological, heritage and cultural resources; visual impact management; traffic management; tracks and access roads; disruption of essential services and public conveniences; risk management, including emergency plans

and on-site remediation; public consultation and disclosure plan; communications and complaints procedures; vibration and blasting management, recruitment of labour; work hour plan; borrow pits; and any other aspects identified in the EIA requiring management.

Resettlement plan, compensation plan for loss of residences, amenity, agricultural land, property, and livelihood options forms an integral component of ESMP. Besides that, HIV/AIDS awareness programme, health and safety awareness programmes for the stake holders and emergency procedures should be in place for disasters such as spills, fires, explosions, floods, accidents, dam failures.

Monitoring programmes of ESMP contain what has to be monitored, where it has to be monitored, by whom, how often, the monitoring/sampling protocols to be followed, the collection, labelling, storage and transportation of samples and the sampling laboratories to be used (including an indication of whether the laboratory is certified or not) for soil; surface water; ground water; dust; gases; noise; vegetation; terrestrial fauna (indicator species); aquatic biota; radiation; rehabilitated areas; presence of invasive species; erosion; visual impact; Local spending; Clinic use; School development; Crop production; Economic development in the villages; Health monitoring; and any other impact identified in the EA that needs to be monitored. Procedure be set out for detailing the contents of the monitoring reports and the format required for the presentation of monitoring data.
