



# **Environmental Assessment Guidelines Volume I : Generic**

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**Environmental Assessment Guidelines  
Volume I:  
Generic**

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## **Abbreviations**

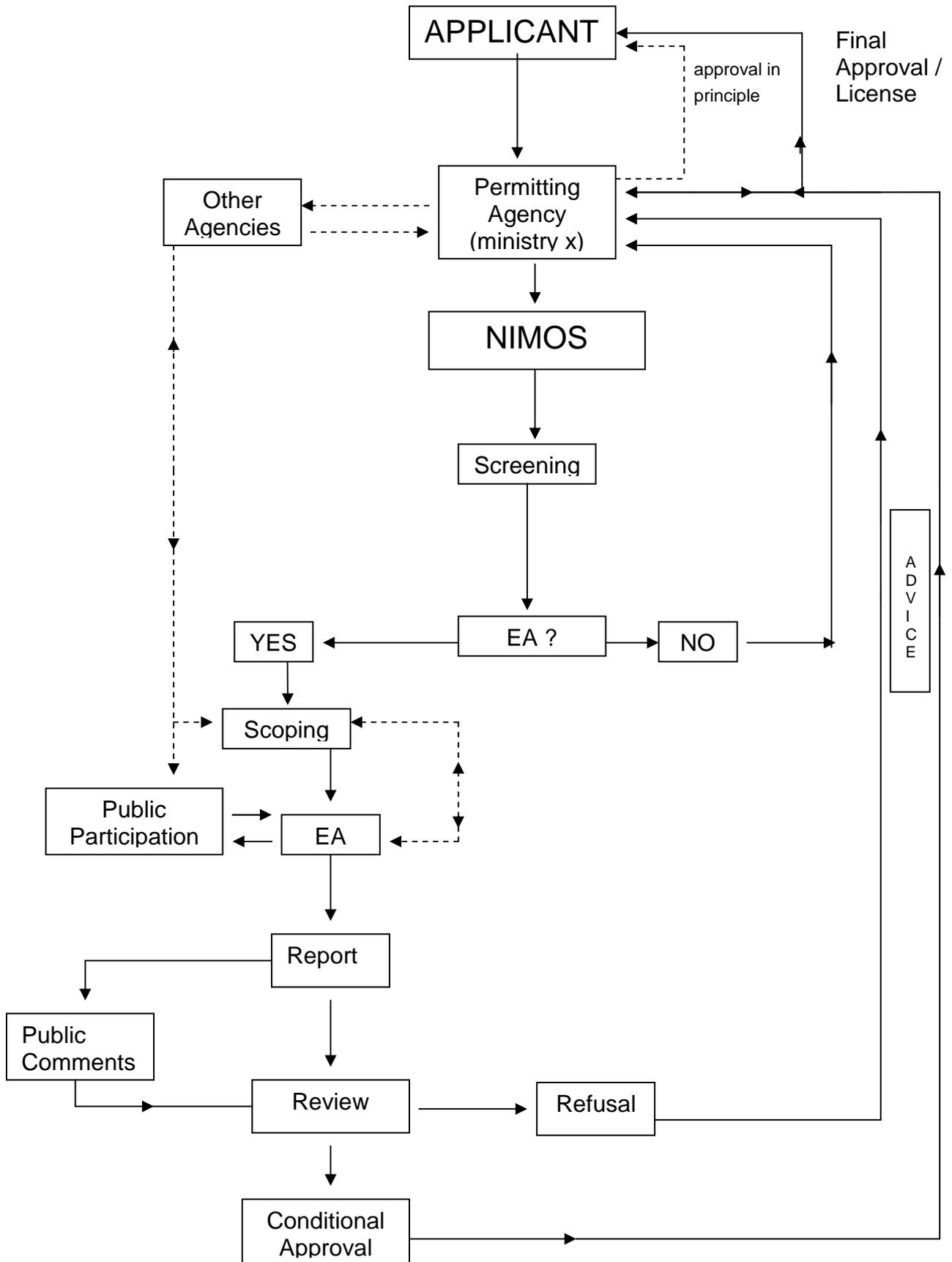
CV	Curriculum Vitae
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental Management System
FIDIC	International Federation of Consulting Engineers
GMD	Geological and Mining Service
ICC	International Chamber of Commerce
ISO	International Organization for Standardization
NCE	National Council for Environment
NIMOS	National Institute for Environment and Development in Suriname
TOR	Terms of Reference
UNEP	United Nations Environmental Program

## **Foreword**

This document is the second edition of the Environmental Assessment Guidelines Volume I: Generic. The first edition was published in March 2005. Regarding the content of the Guidelines adjustments were made to the EA flowdiagram, providing a better explanation to the EA process. The new edition also includes guidelines for Environmental Management Systems and Environmental Management Plans.

Although the legislative framework regarding these Guidelines is not yet in place all stakeholders, both governmental and non-governmental, are strongly urged to use these guidelines as a basis for good environmental management practices.

# Fig 1: EA Flowdiagram



## **1 Introduction**

Most projects are subjected to the administrative system of the government, e.g. mining activities need mining concessions, which can be obtained at the Ministry of Natural Resources with input from the GMD.

Before the permit (any permit) will be issued, NIMOS will receive the application for the permit, and will submit an advice, which will be attached to the permit with or without specific requirements (fig 1). In the case an Environmental Assessment (EA) is needed NIMOS will discuss the procedures for conducting an EA with the applicant. Only after the EA has been approved, NIMOS will react positively on issuance of the permit by the permitting agency and will submit an advice for the permit with the appropriate requirements based on the EA. It should be clear that application of this process does not exempt the applicant from complying with other regulations or standard industry practices.

## 2 Screening phase

Screening is the activity of the EA process that is developed to enable decision on whether an EA is required and determine the nature and extent of the environmental analysis to be carried out. NIMOS has adopted the existing screening methods and procedures as modified from international donor agencies and other national systems applying local context for Suriname. NIMOS will continue to adapt the process to improve its effectiveness in Suriname.

The applicant has to submit an application for a permit to the permitting agency. The permitting agency generally approves the applicant's project proposal in principle if the initial conditions of the permitting agency are met. The information on the project will be sent to NIMOS for advice. In order to make a decision whether or not an EA is needed, the applicant will be required to submit along with the application an executive or non-technical summary of the proposed project and its alternatives (alternatives to the project and alternatives to the project process / methods). This summary should include information on:

- Name, address and contact point of the applicant,
- Location, site characteristics, design, size and duration of project,
- A non-technical explanation of the project, including purpose,
- Demonstration of need and justification,
- Detailed site plan, including a map,
- Possible impacts on the environment,
- Other information on request

The application will be screened using the screening guidelines of NIMOS (annex 1).

To enable appropriate screening it is necessary that adequate and complete information be given on the project proposal and its alternatives. To ensure that the appropriate and necessary information is provided, NIMOS will develop sectoral guidelines to be followed by applicants when applying for the Ministry's authorization. These guidelines will be specific for each sector and category of project.

We acknowledge three categories (annex 2):

- **Category A: EA is mandatory**
- **Category B: Either an EA will be required or some other form of environmental document (e.g. I.E.E); some environmental information is required before a decision can be made whether or not an EA is needed.**
- **Category C: no EA is required**

Category A projects likely to have adverse impacts that may be extensive, irreversible, and diverse. The extent and scale of the environmental impacts can only be determined after thorough environmental assessment. Mitigation measures can only be formulated after the results of the assessment are known.

Category B projects whose impact depends on the sensitivity of the location, scale and predictability. Projects in this category must undergo a checklist after which the decision can then be taken whether a standard EA or lesser form is required. The information will be obtained from the environmental information required from the applicant (see below). Three paths (subcategories) are acknowledged (annex

3). The ‘matrix for classification of category B projects’ (annex 4) will be used for screening the projects.

For projects that follow under category B, it is necessary to further assess whether:

- (a) The adverse impacts are likely to be relevant, significant and complex and therefore an EA will be required;
- (b) The adverse impacts are not complex, easy to assess and therefore mitigation measures can be designed without the need for a full EA. Projects that fall under this sub-category will be required to present partial subjects of the recommended structure of a full EA or some other form of environmental statement.

Therefore the different paths (subcategories B, annex 3) for category B are suggested based on these wide ranges of impacts and associated possibilities for mitigation.

Category C projects having no impacts or the impacts are well known, predictable, mitigable and miniscule in scale.

After assessing the information submitted to NIMOS, also based on a checklist (annex 1), NIMOS will decide whether a full EA should be conducted or a less stringent form of environmental review. It can be decided that an EA is not required based on the information supplied by the applicant. In this case the decision will be reached and the permitting agency will receive NIMOS’ advice on issuance of the permit (14 days).

In the case an EA is needed the applicant will publish or announce a notification of intent in the media (7 days or 60 days in case of appeal by the applicant).

The applicant also has the option to apply for exemption from NIMOS based on the following criteria:

- Project required immediately to address issues of human health or safety or to prevent major environmental damage
- Issue of national emergency
- It is a project, for which an EA has already been approved by NIMOS, and the intent of the project has not substantially changed, and there has been sufficient public consultation.

To address public concerns and the need for public participation, the public at large (including the Applicant) has the possibility to provide input during the process and appeal against decisions made by NIMOS regarding EA (annex 5).

Projects falling under category B, in case an EA is not required, will be published or announced in the media with information about the project and the decision not requiring an EA, as the project will not significantly affect the environment (7 days), at NIMOS discretion (in case of significant stakeholder concerns). The public has the possibility to appeal NIMOS’ decision within 30 days. If final decision is not requiring an EA, the permitting agency decides on issuance of permit based on advice from NIMOS and other relevant agencies.

### **3 Scoping Phase**

Scoping is the activity in the EA process that is developed to enable the preparation of the appropriate terms of reference for the EA study of each specific project proposal.

As soon as NIMOS has determined that the proposed project requires an EA, the applicant will prepare a notification of intent. The applicant will publish this notification of intent in order to inform the public of the proposed project. If needed the notification of intent will be accompanied with announcements of public consultations, where the public can make comments on issues/concerns they wish to be considered in the EA.

NIMOS will require the applicant to submit a Terms of References (TOR) for the EA to be conducted for the proposed project. NIMOS' scoping guidelines (annex 6) have been developed to assist the applicant in determining the scope of the project, the scope of the assessment and to assist NIMOS in determining the sufficiency of the TOR. When needed NIMOS will work together with qualified experts, in determining the scope of the EA Report and providing guidelines for the assessment. Annex 8 (recommended structures for Environmental Assessment Reports) outlines the topics to be addressed for category A projects. Depending on the subcategories of Category B and the project description, other TOR's will be recommended per subcategory (paths 1 till 4).

After assessing the TOR, NIMOS will issue project specific guidelines for the content of the Environmental Impact Statement (EIS).

## **4 Assessment Phase**

The applicant will be required to assess both the environmental and social impacts, positive as well as negative and the significance. The assessment should be conducted according to the TOR for the content of the EIS approved by NIMOS. If additional issues need be considered in the EA during this phase then this will be discussed with the applicant.

The applicant will submit to NIMOS upon completion of the assessment, five (5) copies of the EIS, an executive summary of the EIS and a digital version of the EIS.

## 5 Reviewing Phase

The review is the activity in the EA process that enables to assess the technical quality, accuracy and completeness of the Environmental Impact Statement. It ensures that the Environmental Impact Statement presents all the relevant information necessary for an informed decision-making regarding the project appreciation.

The responsibility of the reviewing phase lies with NIMOS. The EA review phase requires a multidisciplinary approach because several aspects of the environment are dealt with. A multidisciplinary team carries out most assessments. Therefore, a multidisciplinary team should also perform the EA review under supervision of the office of ESA. On the other hand, the review process has to be cost-effective and streamlined to avoid delays on approval of the project. When the necessary technical expertise is not available in the review team, NIMOS will use external expertise to assist the EA review team to review the EIS. Advice is also requested from identified government institutes based on the applicability of their mandates in the proposed project. The EA review team will generate a report on its findings.

In this phase the public will be able to comment on the findings of the EA. Mechanisms that will be used in this phase include:

- Disclosure of the executive summary of the EIS to the general public;
- The applicant will forward copies of the executive summary to the "affected" people, the local government authorities, and other relevant governmental agencies and civil society organizations;
- Disclosing information regarding the deadlines and the mechanisms to incorporate the public's view, comments and recommendations regarding the EIS.

The EIS and the review criteria and guidelines, should be disclosed to the members of the EA review team in advance and prior to the review meeting. Two to three meetings would be sufficient to reach agreement on the review team regarding the EIS, the need for complementary studies/information, and the recommendations to be included in the sectoral authorization.

Annex 8 is a step-by-step approach for NIMOS to consider every aspect of the review phase. The compliance checklist for review (annex 9) can assist the review of the EIS.

The adequacy, accuracy and completeness of the EIS are assessed through a number of criteria compiled through questions into a review checklist (annex 10). Suggested guidelines on how to evaluate each question, corresponding to a specific component of the EIS, are presented in Annex 11.

The EA review team reports to NIMOS the results of the review of the EIS, using the guidelines (Annex 9) and review checklist (Annex 10), in a Review Report with as a minimum the following contents:

### 1. Introduction

- Background (why this review?)
- Aim of the Review
- Status of Environmental Assessment Report reviewed
- Method/procedure followed in reviewing the EIS
- Project Synopsis

- Identification of the proposal (name and address of applicant, proposed activity and location, name of environmental manager (or equivalent) at the activity).
- Project description, including major and most important characteristics necessary for the decision-makers to issue the permit.

2. Review Checklist (Annex 10)

3. Results

- Description of the most important characteristics and quality of the environment in the area of influence.
- Description of the most relevant positive and negative impacts on the biophysical and socio-economic components of the environment, with its corresponding magnitude, duration, extent and importance.
- Description of the proposed mitigation measures, residual impacts, significance and monitoring plan, including compensation measures for irreversible impacts and maximization measures for positive impacts.
- Project impact management summary table (this is a valuable tool for decision-makers and the public in general). The suggested contents of the table is presented bellow:

**PROJECT IMPACT MANAGEMENT SUMMARY TABLE**

Project Actions	Potential Impacts	Proposed Mitigation measures	Proposed monitoring plan	Additional recommendation

4. Conclusion

- Brief description of compliance with legal requirements (or non-compliance, when applicable).
- Conclusion regarding recommendations for approval or denial of the sectoral Permit (including the technical justification for the recommended action).
- Proposed conditions for the authorization, including the mitigation measures, the environmental management implementation plan (schedule, deadlines and environmental manager responsible for it), and the monitoring plan.

## **6 Decision & Monitoring Phase**

This stage of the EA system enables NIMOS and the permitting agency to make a decision on the outcome of the EA process as well as a post-decision evaluation of the proposed project.

Apart from the information on the quality, accuracy and completeness of the EA study it is suggested that the EA review team responsible for the review, also reports on the justification of the approval (or denial) of the project. The binding advice from NIMOS is based on the Review Report and compiled into a letter for the decision-maker or the permitting agency

### *Obligations of the Applicant*

- The Applicant is obligated to implement the Environmental Management Plan (EMP, guidelines NIMOS), which was included in the proposed project. This EMP will include the proposed mitigation measures for direct and cumulative impacts as well as for impacts which remain after mitigation measures have been taken, the so called residual impacts.
- The applicant is obliged to conduct mandatory monitoring if required by the EA, taking into account the implementation of the EMP.

### *Obligations of Permitting Agency and NIMOS*

- The justification of the approval or denial of the project will be reported to the decision-maker.
- After the Review Committee has recommended approval, the permitting agency is responsible for issuing a permit for the process of the proposed project
- Permitting agency and NIMOS will review the monitoring results and post-decision evaluation every calendar year, taking into account the implementation of the EMP. On the basis of the monitoring results, the permitting agency and NIMOS may require additional mitigation measures and/or requirements to the permit
- Considering the potential consequences of the results of the evaluation, permitting agency and NIMOS will make the decision whether or not the project should proceed in its current state or condition.

## **7 Public Consultation and Participation**

NIMOS understands and recognizes the importance of public consultation/participation throughout the EA process. Moreover, NIMOS will adopt procedures to ensure full public consultation/participation at the early stage in the EA process, and particularly at the scoping and reviewing phase.

In order to ensure timely and meaningful public consultation/participation NIMOS will use different communication and public participation mechanisms, as follows:

- (a) A summary of the EA study, in non-technical language, will be required; this summary report will be accessible at various easy-to-access locations, in the region where the project is proposed to be developed;
- (b) During the review process, information regarding the major positive and negative impacts of the project, and the proposed mitigation measures will be disclosed in the media, via radio, newspapers and television by the proponent; full (complete) EA available at NIMOS;
- (c) NIMOS will receive public comments and concerns regarding the project and forward them to be addressed by the applicant or by the EA team;
- (d) Optional: Prior to formal Public Hearings, smaller community-based meetings will be held at which local residents and other interested parties will be given the opportunity to discuss their concerns in the presence of NIMOS and representatives of the applicant (including the study team). Also in attendance will be spokespersons for government agencies and research establishments who also make representations to the EA if needed;
- (e) The Public Hearing will be publicized in the media with a minimum of 15 business days in advance;
- (f) To ensure that the affected people are able to participate in the hearing, the Public Hearing will take place in the most accessible location in the region where the project is going to be implemented;
- (g) The Applicant will record and include minutes of the Public Hearing in the project files;
- (h) NIMOS will develop, with the assistance of international consultants, detailed regulations regarding the administrative procedures of the EA process, including public participation mechanisms and procedures.

## Annex 1: Screening guidelines

Screening is the activity of the EA process that is developed to enable decision on whether an EA is required and the nature and extent of the environmental analysis to be carried out.

The following is a step-by-step chronological outline of activities needed for an informed decision by both NIMOS and the permitting agencies for screening of the development activities in need of some form of Environmental Assessment.

### ***Step 0 (responsible: Permitting Agency)***

- Is the information by the applicant sufficient for further analyses?
  1. Name, address and contact point of Applicant
  2. Location, site characteristics, design, size and duration of development activity
  3. A non-technical explanation, including purpose of development activity
  4. Demonstration of need and justification
  5. Detailed site plan, including a map
  6. Possible impacts on the environment
  7. Other information needed

### ***Step 1 (responsible: Permitting Agency)***

- Check NIMOS project lists for projects in need for further screening by NIMOS; these fall within the category A and B projects:
  1. Power plants (regardless of source of energy used) above 5 Mw
  2. Large-scale Hydro electric dam projects
  3. Transmission projects in remote areas
  4. Biomass projects
  5. Small-scale Micro hydropower generation projects
  6. Wind generation projects
  7. Petroleum refineries (both new and expansion of existing facilities)
  8. Pipelines for oil or/and gas

9. Metallic mining exploitation
10. Non-metallic mining (e.g. construction materials)
11. Solid waste landfills/incinerators/plants (urban and/or industrial), including expansions
12. Highway and road projects, including rehabilitation
13. Dams for irrigation, water supply, energy supply or multiple purposes
14. Commercial ports and harbors, including rehabilitation and expansion
15. Marinas with a capacity above 20 boats
16. Industrial facilities (handling, storage and processing)
17. Opening of new canals and streams/ and ditches
18. Dredging of canals for irrigation, water supply or any other purpose
19. Forest concession for timber harvesting above 5,000 hectares
20. Sawmills
21. Plantation development /reforestation
22. Animal feedlots / livestock projects
23. Slaughterhouses
24. Agricultural / aquaculture projects above 1 hectare
25. Flood protection measures
26. Ecotourism / tourism development
27. Hotels and resorts above 10 rooms
28. Residential developments/housing schemes above 10 units and/or 1 hectare
29. Recycling Industries
30. All other projects not listed

- *If projects fall within the list above, the permitting agency will request advice from NIMOS including the details on the project according to step 0*

***Step 2 (responsible: Permitting Agency)***

- *For projects not falling into any mandatory list, consult NIMOS on the need for an EA*

### ***Step 3 (responsible: NIMOS)***

- *If a screening decision cannot be made on the basis on the information provided by the project developer, a third step may be to request information below from the developer and examine this to assess the likelihood of adverse impacts arising from the project.*

The following info may be useful for an informed decision:

- Identification of other permits required for the project;
- Relationship of the project to other existing or planned activities;
- Other activities which may be required or may occur as a consequence of the project (e.g. extraction of minerals, new water supply, generation or transmission of power, road construction, housing, economic development);
- Planned future developments on or around the site;
- Additional demand for services such as sewage treatment or waste collection and disposal generated by the project;
- Photographs of the site and its surroundings;
- Alternative sites, processes or environmental mitigation measures considered by the developer;
- Map with communities living at or near the impact area of the project.

### ***Step 4 Checklist of Screening Questions (responsible: NIMOS)***

Having considered the information provided in Step 3 it may be fairly clear that there are or are not likely to be adverse impacts arising from the projects. But if it is still not clear it may be helpful to review in more details the characteristics of the project and its environment, the types of impact which might occur, and other factors which could influence the screening decision.

- *Consider the checklist of screening questions below as an aid to assessing the likelihood of adverse impacts and other factors which might influence the decision to require EA*

***Step 5 Record of Screening Decision (responsible: NIMOS)***

- *The final step in screening is to record the conclusion and the reasons for it and to advise the Applicant and Permitting Agency and other required parties on whether EA is required*

***Other Activities***

- Dialogue between the Applicant and NIMOS over potential issues and concerns;
- Consultation with other agencies with responsibilities for the environment – pollution control, countryside and heritage, major hazards, water, waste, local environment protection;
- Providing an opportunity for other interested organizations and the public to comment on screening in order to gauge the type and degree of concern that might arise in relation to the project;
- Seeking expert advice from academic sources, research institutes or consultants;
- Reviewing EA's from other projects of the same type or in the same area.

## Checklist of screening Questions

Question	Relevant (Y/N)	Comments
<b>Project related factors consider each factor in relation to construction and operation.</b>		
<b>General</b>		
Will the project involve widespread land disturbance site clearance or extensive earthworks or underground workings?		
Will the project involve significant land use changes?		
Will the project involve the storage, handling, use or production of toxic or hazardous substances?		
Will the project require the construction of ancillary utilities to bring power, fuel and water to the project?		
Will the project require the construction of new roads or tracks or the use of off-road vehicles in an undeveloped area?		
Will construction or operation of the project generate large volumes of traffic?		
Will the project involve blasting, piling or similar activities?		
Will the project have significant energy, aggregate or other resource requirements?		
Will the project be decommissioned after a finite lifetime?		
<b>Atmospheric Environment</b>		
Will the project generate emissions to air from fuel combustion, production processes, materials handling, construction activities or other sources?		
Will the project involve disposal of waste through burning in the		

Question	Relevant (Y/N)	Comments
open air (for example slash material and construction debris)?		
<b>Aquatic Environment</b>		
Will the project require large volumes of water, or disposal of large volumes of sewage or industrial effluent?		
Will the project involve disturbance of drainage patterns (including construction of dams, the relocation of watercourses, or increased flood potential)?		
Will the project require channel dredging or straightening or crossing of streams?		
Will the project require the construction of piers or seawalls?		
Will the project require the construction of offshore structures?		
Will the project result in removal / interference with fish habitat?		
<b>Waste Generation</b>		
Will the project require disposal of spoil, overburden or mine process wastes?		
Will the project require disposal of large volumes of municipal or industrial wastes?		
Will the project have the potential to contaminate soil and groundwater?		
Noise etc		
Will the project release notable noise, vibration, light, heat or other radiation into the environment above ambient conditions?		

Question	Relevant (Y/N)	Comments
<b>Hazards</b>		
Will construction of project involve the storage, handling or transport of hazardous substances (flammable, explosive, toxic, radioactive, carcinogenic or mutagenic)?		
Will operation of the project involve the generation of electromagnetic or other radiation, which may affect human health, or nearby electronic equipment?		
Will the project involve regular use of chemicals for pest or weed control?		
Could the project experience an operational failure beyond the limits of normal environmental protection measures?		
<b>Social</b>		
Will the project involve employment of large numbers of workers?		
Will the workforce have adequate access to housing and other facilities?		
Will the project make significant demands on facilities and services?		
Will the project result in significant expenditure in the local economy?		
Will the project result in changes in health conditions?		
Will the project displace local communities / residents?		
<b>Location related factors</b>		
<b>Legislative protection</b>		
Is the project located or near areas designated or protected under Legislation?		

Question	Relevant (Y/N)	Comments
Is the project located in an area in which environmental quality standards specified in Legislation are exceeded?		
<b>General Characteristics</b>		
Is the project located in an area with unique natural features?		
Will the regenerative capacity of natural areas such as coastal zones, mountain and forest areas be adversely affected by the project?		
Does the area experience high level of pollution or other environmental damage?		
Is the project located in an area where soils and /or groundwater may have already been contaminated by past land uses?		
<b>Aquatic features</b>		
Will the project be located in or close to wetlands, mangroves or any watercourse or water body		
Will the project be located in the vicinity of important groundwater sources?		
<b>Landscape and Visual Characteristics</b>		
Will the project be located in an area of high landscape quality and/or sensitivity?		
<b>Atmospheric conditions</b>		
Will the project be located in an area subject to adverse atmospheric conditions [temperature inversions, fogs, extreme		

Question	Relevant (Y/N)	Comments
wind]?		
<b>Historic and cultural features?</b>		
Will the project be located in the vicinity of important or valuable historic or cultural resources?		
<b>Stability</b>		
Will the project be located in an area liable to subsidence from natural or man-made causes?		
Will the project be located in an area of steep topography, which might be susceptible to land slip, erosion etc.?		
Will the project be located on or near a coastline susceptible to erosion?		
<b>Ecology</b>		
Will the project be located in the vicinity of important or valuable habitats?		
Are there rare or endangered species in the area?		
Could the site prove to be resistant to natural or planned re-vegetation?		
<b>Land use</b>		
Will the project conflict with present zoning or land-use policy?		
Will the project be located in a densely populated area or in the vicinity of residential property or other sensitive land uses [e g hospitals, schools, places of worship, community facilities]?		
Will the project be located on land of high agricultural value?		

Question	Relevant (Y/N)	Comments
Will the project be located in an area of recreational /tourist importance?		
<b>Impact related factors</b>		
<b>Land and property</b>		
Will the project cause disturbance or loss of important land uses?		
Will the project result in widespread disturbance of the land surface?		
Is there a risk that underground works could result in subsidence?		
Will the project result in demolition of structures or occupation of property [homes, gardens, businesses]?		
<b>Erosion</b>		
Is the project likely to cause erosion?		
Could the use of erosion controls result in other adverse impacts?		
<b>Aquatic environment</b>		
Will use of water affect the availability of existing local supplies?		
Will the project adversely affect the quality, flow or volume of surface or groundwater by siltation, hydrological changes or discharges to water?		
Will the alteration of a natural watercourse have a detrimental effect on natural habitats [for example water flow speeds and fish breeding] or other uses of water [fishing, navigation bathing]?		
Will the project cause significant changes in wave action, sediment movement, erosion accretion or water circulation patterns?		
Will the project result in dune erosion, littoral drift or adverse		

Question	Relevant (Y/N)	Comments
changes in coastal systems?		
Will the project limit use of waters for recreation, angling, fisheries, navigation, research, conservation or scientific purposes?		
<b>Air Quality</b>		
Could emissions from the project adversely effect human health or welfare, fauna, or flora, materials or other resources?		
Is it possible that naturally occurring atmospheric conditions could trap air borne pollutants for prolonged periods?		
<b>Atmospheric Conditions</b>		
Will the project involve changes in the physical environment that could affect microclimatic conditions [turbulence, increased humidity, fogs etc]?		
<b>Noise etc.</b>		
Will the project cause impacts on people, structures or other sensitive receptors /features from noise, vibration, light, heat or other radiation?		
<b>Ecology</b>		
Will the project result in loss or disturbance of valuable habitats, or ecosystems, or habitats for rare or endangered species?		
Will the project cause disturbance or impair the reproductive capacity of species or adversely affect migration or feeding, breeding, nursery or resting areas, or create significant barriers to movement?		
Will noise, vibration, light or heat impacts arising from the project		

Question	Relevant (Y/N)	Comments
disrupt birds or other animals?		
Will the project result in reduced genetic diversity?		
Will the project impair essential ecological processes or life support systems?		
Will the project cause the introduction of noxious weeds, vermin or disease, or exacerbate the spread of known pathogens or pest /exotic organism problem species?		
Will the project involve extensive use of pesticides, herbicides or fertilizers or other chemicals, which may build up residues in the terrestrial or aquatic environment?		
Will the project significantly increase the risk of fire?		
Will siltation due to project cause adverse impacts on aquatic life through diminished light availability?		
<b>Landscape and Visual</b>		
Will the project adversely affect an area of attractive landscape or one where the landscape is of historic or other cultural significance?		
Will the project intrude into the views from locations where numbers of people will see the site?		
<b>Traffic Related Impacts</b>		
Will the project lead to significant changes in traffic (road or other) with consequent impacts on conditions for other road users, noise, air quality, amenity, etc, and impact for other receptors?		
Will changes in accessibility resulting from the project lead to increased potential for development in the area?		

Question	Relevant (Y/N)	Comments
<b>Social and Health</b>		
Will the project significantly affect the labour or property market in the area?		
Will the project lead to a shortage of social infrastructure to cope with any temporary or permanent increase in population or economic activity?		
Will the project significantly affect the demographic characteristics of the area?		
Will there be an effect on the character or perception of an area?		
Will the project significantly affect health conditions?		
<b>Other</b>		
Will the project result in particularly complex impacts in the environment?		
Will impacts be irreversible?		
Will impacts be cumulative with other projects?		
Will impacts be synergistic?		
<b>Wider considerations</b>		
Will the project cause public controversy? Has there been substantial concern about the project?		
Are there cross border or transboundary impacts, which need to be considered?		
Will the project commit future generations to irreversible or unavoidable impacts?		
Will the project result in conflict with existing international, national or local policies or legislation?		

Question	Relevant (Y/N)	Comments
Will the project require a change in existing environmental policy?		
Are there alternative procedures such as pollution control legislation, which will ensure satisfactory consideration of the environmental impacts of the projects?		
Will the project be of more than local importance?		
Will the project involve possible impacts, which are highly uncertain or which involve unique or unknown risks?		
Will the project establish a precedent for future actions, which individually or cumulatively could have significant impacts?		
Will the project provide facilities, which could simulate further (induced) development for example by providing service infrastructure? (e.g. urbanization, industrial development, transportation requirements)?		
Will the project result in a significant demand for a resource, which is likely to become in short supply?		
Other relevant factors:		

## Annex 2: Screening List

<b>Project type</b>	<b>Category A</b>	<b>Category B</b>	<b>Category C</b>
<i>Power plants (regardless of source of energy used)</i>	Above 10 Mw	Between 5 and 10 Mw	Below 5 Mw
<i>Large-scale Hydro electric dam projects</i>	All		
<i>Biomass energy projects</i>	All		
<i>Transmission projects</i>		Remote areas	Settled areas
<i>Petroleum refineries (both new and expansion of existing facilities)</i>	All		
<i>Pipelines for oil or/and gas</i>	All		
<i>Small-scale micro hydropower generation projects</i>		All	
<i>Wind generation projects</i>		All	
<i>Solar projects</i>			All
<i>Metallic mining exploitation</i>	Exploitation above 10,000 ha	Exploitation up to 10,000 ha	
<i>Non-metallic mining (e.g. construction materials)</i>	Above 20 ha	Up to 20 ha	
<i>Solid waste landfills/incinerators/plants (urban and/or industrial)</i>	All	Expansion	
<i>Highway and road projects</i>	All new roads in undeveloped areas	Roads in developed areas; Rehabilitation of existing roads; urban streets; rural roads	Rehabilitation involving no expansion of capacity, repair and maintenance.
<i>Dams for irrigation, water supply, energy supply or multiple purposes</i>	All		
<i>Commercial ports and harbors</i>	All new	Rehabilitation and expansion	
<i>Marinas</i>	Above 100 boats	Between 20 and 100 boats	Less than 20 boats or using less than 2000 m <sup>2</sup> of water surface

Annex 2: Screening List

<b>Project type</b>	<b>Category A</b>	<b>Category B</b>	<b>Category C</b>
<i>Industrial facilities – If undeveloped (handling, storage and processing)</i>	Processing	Handling and storage	
<i>Industrial facilities – If developed (handling, storage and processing)</i>		Processing	Handling and Storage
<i>Opening of new canals and streams/ and ditches</i>		All	Maintenance, diversion, realignment and canalization affecting less than 150m of water course and less than 15 m <sup>2</sup> drainage area
<i>Dredging of canals for irrigation, water supply or any other purpose</i>		All new	Maintenance
<i>Forest concession for timber harvesting</i>	Large Projects above 50,000 ha for 10-20 years	Medium Projects up to 50,000 ha for 5-10 years	Incidental cutting licenses for specified areas and volumes
<i>Sawmills</i>		Stationary	Portable
<i>Plantation development /reforestation</i>		All	
<i>Animal feedlots / livestock projects</i>	All above 100 animals	Above 10 and below 100 animals and expansions	Below 10 animals.
<i>Slaughterhouses</i>		All	
<i>Agricultural / aquaculture projects</i>	All above 10 ha	All below 10 ha	
<i>Flood protection measures</i>		All	
<i>Ecotourism / tourism development</i>		All	
<i>Hotels and resorts</i>	Above 100 rooms	Between 10 and 100 rooms	Below 10 rooms
<i>Residential developments/housing schemes</i>	Above 100 units or larger than 10 ha	Between 100 and 10 units; between 10 and 1 ha	Below 10 units Below 1 ha
<i>Recycling Industries</i>		All	
<i>All other projects not listed?</i>		All	

## **Annex 3: Subcategories for Category B projects**

### Path 1

Form to be filled out (standard conditions)

### Path 2

EMP/Social Impact Assessment/Waste Management Plans/Environmental Impact Statement/Ecological Impact Study, etc.

### Path 3

Full EA

## Annex 4: MATRIX for CLASSIFICATION of CATEGORY B PROJECTS

	High	Low
Scale		
Sensitivity		

If either **scale** and **sensitivity** are **high** -----→ **Path 3**

If either **scale** or **sensitivity** are **low** -----→ **Path 2**

If both **scale** and **sensitivity** are **low** -----→ **Path 1**

## Annex 5: Appeal

For avoiding significant stakeholder concerns in the decision-making and the need for public participation, the public at large has the possibility to appeal against decisions made by NIMOS regarding EA.

### Appeal against decisions on:

Screening

EA approval

### Who can appeal?

- Applicant
- Government agencies
- Public affected and the public at large

### Procedure

- Address appeal letter to the Minister in charge of Environment stating the portion of the decision they are appealing as well as the reason why they are appealing.
- The Minister in charge Environment asks the NCE for advice
- If the period for appeal has expired, 30 days after publication, the NCE notifies the appellants, the applicant and NIMOS the date fixed for the hearing, within 15 days.
- The chair of the NCE can appoint an expert panel to review the EA procedures or EA report results if he/she feels that the decision made is sufficiently controversial/uncertain:
  1. It is uncertain that the project is likely to cause adverse environmental impacts (in the case the EA has been disapproved); or
  2. The project is likely to cause significant adverse environmental effects and it is uncertain whether these effects are justified in the circumstances (in the case the EA has been approved); or
  3. Public concerns warrant it.

### Decision of appeal

- The Minister of the Environment has the final say after receiving advice from the NCE.
- The panel only has the power to recommend to the chair of the NCE.
- Decision will be publicized within 30 days either confirming or setting aside the decision made by NIMOS.
- The Minister of the Environment shall set out the reasons for its decision, which will be a public document

### Procedure for the hearing

- At the hearing the appellant will make written or oral presentations on the reasons why the decision made by NIMOS is wrong.
- NIMOS shall have the right to reply and justify its decision.
- The NCE may ask the applicant for clarification of the project.

## Annex 6: Scoping Guidelines

Scoping is the activity in the EA process that is developed to enable the preparation of the appropriate terms of reference for the EIS of each specific project proposal. Sectoral guidelines will form the basis of the terms of reference.

The scope (terms of reference) for the EA must be flexible to allow it to respond to new issues and new information, because the applicant may identify possible changes to the project, which mean new alternatives and impacts have to be investigated that offer new opportunities for mitigation.

The applicant must provide an opportunity for agencies and authorities, interest groups, local communities and the general public to express their concerns and reflecting them in the scope of the EA. By involving them at an early stage scoping can increase the acceptability and credibility of the EA and the decision-making process and reduce the risk of opposition emerging late in the day causing delays and costs.

In particular a clear timetable needs to be set for consultation during scoping to avoid introducing unnecessary delays into the procedure. This means that when stakeholders are asked for their views a deadline must be set for their response.

Scoping is a formal stage in the EA process that is embedded in the environmental act. In the environmental act the environmental authority shall have the power to issue regulations laying down the procedures to be followed to establish the area of investigation in which the EA will have to be performed as well as the minimum requirements the EIS will have to meet as far as its content is concerned. The applicant will need an approved ToR from Environmental Authority to carry out the study.

A recommended structure of Environmental Impact Statement (EIS) is annexed. This is a framework for the content of the EIS. Especially on the chapters dealing with identifying the impacts, the potential alternatives and the significance of the impacts the Environmental Authority will need details from the applicant.

The following is guidance on scoping for the preparation of the scope or terms of reference of the EA study. This guidance focuses on identifying the impacts, the potential alternatives and the significance of the impacts to be considered in the EA study. Moreover, guidance on public participation at this stage is given.

### Step 0 Acquire Documentation

- Acquire Necessary Documentation at the Environmental Authority:
  - Scoping guidelines (this document), including the framework recommended structure of Environmental Impact Statement (annex)
  - Public Participation guidelines
  - Other guidelines from the Environmental Authority
  - Sectoral guidelines (if applicable)

### **Step 1 Identification of Potential Impacts**

- Draw up a list of all the project components and activities during each phase of its implementation.
- Identify if all project components are covered based on the annexed checklist (annex 6.1A)
- List all the possible aspects of the environment that might be influenced by the project  
Annex 6.1B (checklist of environmental components) can be used as an aid in listing all possible aspects of the environment
- Other activities:
  - Visit the site
  - Hold discussions with experts
  - Review other projects of a similar type or other developments in the same area and possibly visit them

### **Step 2 Review of alternatives**

- Identify the types of alternatives which may need to be considered in EA study  
Use the checklist (annex 6.2) as an aid in identifying the alternatives to be considered in the assessment.

### **Step 3 Obtaining the views of stakeholders**

- Request input from stakeholders in determining the scope of the assessment using suitable mechanisms (annex 6.3)  
The scoping team must provide stakeholders with information about the project and its environment so that they can comment on potential impacts and possible alternatives. Give stakeholders feedback from the process, e.g. by publishing the EA scope and by publicizing the progress of the assessment.

### **Step 4 Criteria for evaluating the possible significance of impact**

- Use annex 6.4 for evaluating the possible significance of impact

<b>ANNEX 6.1 Identifying Potential Aspects</b>	
A useful way of identifying many of the potential impacts of a project is to consider all the aspects of the project and its receiving environment and systematically to identify the potential for interactions between them. The first step is to draw up a list of all the project components and activities during each phase of its implementation. A checklist such as that given below can help in identifying all the possible components of a project that could lead to environmental impacts.	
<b>Annex 6.1A Checklist of projects components</b>	
<b>Location and physical works</b>	<b>Operations phase</b>
Occupation of site area and boundary	Operations of production or other process
Demolition or occupation of property	Supply of materials, power, water
Underground structures –tunnels, excavations, drainage works	Combustion of fuels in stationery and mobile equipment
Aboveground structures –buildings, earthworks, fences, other structures	Storage handling or transport of hazardous materials
Offshore structures	Release of residues to air, water, soils, sewerage system
Changes in land use	Release of light, heat, noise, vibration, other radiation
Access routes	Generation and disposal of wastes –process waste, mining wastes, redundant equipment, surplus materials, hazardous wastes
Closure, diversion or relocation of existing roads, utilities, water bodies, etc	Use hazardous materials e.g. pesticides in maintenance, de-icing
<b>Constructions phase</b>	Accidents –explosions, releases, spills, fire etc
Surveys and tests	Vehicle movements on and off site
Site clearance and preparation	Operation of ancillary facilities
Earthworks including cut and fill, tunneling and excavations	Permanent employment
Dams impoundments, piers, seawalls revetments, dredging	Housing and facilities for workforce
Stream crossing, diversion, culverting, etc	<b>Decommissioning and reinstatement of the site</b>
Supply of materials, power, water	Dismantling and demolition
Plant operation, movement of men and materials, piling, blasting, drilling	Disposal of materials
Waste disposal –spoil, debris, domestic and hazardous waste, surplus materials	Clean up of site-ground and groundwater

Disposal of site effluents and run off	Clearance and reinstatement of site
Emissions to air from plant and vehicles	After use of site
Release of light, heat, noise, other radiation	Long term monitoring and mitigation measures
Dust generation	
Use of hazardous materials	
Temporary occupation of and access to worksites	
Temporary storage	
On site and off site vehicle movements	
Construction employment	
Housing and facilities for workforce	
<p>The next step is then to list all the possible aspects of the environment that might be influenced by the project. Again a checklist such as the one presented below, can help in identifying those aspects relevant to the particular location. It may cover both features of the environment [e.g. habitats, settlements, historic sites], aspects of environmental quality [e.g. air quality, water quality], physical conditions [soil stability, hydrology] and use of the environment [e.g. agriculture, recreation, fishing].</p>	
<p><b>6.1B Checklist of environmental components</b></p>	
<p><b>Physical</b></p> <p><b>People</b></p> <p>Geology and ground conditions          Visibility / views</p> <p>Soils –quality, quantity, stability          Noise and vibration</p> <p>Minerals and energy resources          Human and environmental hazards</p> <p>Surface water resources –quality, quantity          Human health, welfare, amenity, personal security</p> <p>Groundwater resources –quality, quantity</p>	

Community cohesions and identity

Seas and oceans including coastal waters & estuaries

Traffic conditions

Climate, microclimate

Business –farms, commerce industry

Fisheries, angling, navigation, water abstraction, recreation uses [bathing]

Social conditions –employment, demography, housing conditions, local economy

Air quality

Special concerns –minority rights, cultural associations, social institutions

**Land and land use**

**Heritage**

Land uses –residential, commercial, recreation, agriculture, open space, community

Archaeological, historic and cultural (e g architectural) resources – features, sites, landscapes

Homes, gardens and other property

Landscape resources

Land tenure

Planned developments and changes in land use

**Natural resources**

**Infrastructure**

Habitats and species

Infrastructure capacity – waste disposal, sewage collection and treatment, roads, power, water, telecommunications

Biodiversity, genetic diversity, productivity, nutrient supply

Public utilities – water supply, power lines, gas pipelines etc

Insects, exotic organisms, diseases

Facilities susceptible to interference e.g. electrical disturbance

**Policies and plans**

Plans, policies and programs of other agencies

The checklists of project components and environment components can then be used to identify potential interactions between them that could give rise to environmental impacts. These may be either adverse or beneficial impacts; both should be considered in the EA. A matrix of project vs. environment components can be a useful way of identifying direct, first order interactions between the project and its environment, but it must be remembered that those direct impacts may have consequential impacts on further components of the environment and these must also be considered. The EA should consider the potential for interactions between environment components and the indirect and secondary impacts of development on the environment.

The Directive also requires EA to consider the induced impacts on development. Induced impacts have been defined in various ways but one definition that may be appropriate (depending on the terms of member state legislation) is the impacts of further development that may occur as a consequence of the proposed activity. So for example a major new tourist development may induce the need for new roads, sewage treatment, hotel, etc and the environmental impacts of these developments may need to be considered in the EIA for the initial project

<b>Annex 6.2 Identifying potential alternatives</b>	
The following checklist may be helpful in identifying the types of alternatives that may be relevant for a particular type of project.	
Demand management/ conservation alternatives	Size
Approaches to meeting demand	Responsibilities for implementation
Locations/ routes	Pollution controls
Processes/ technologies	Waste disposal arrangements/ recycling/ recovery/ reuse
Working methods	Access arrangements
Site plans and layouts	Ancillary facilities
Design of structures	Management methods and systems
Types and sources of raw materials	Environmental management responsibilities and procedures
Product specifications	Employment and staff training
Timing	Monitoring and contingency plans
Program for implementation	Decommissioning arrangements and site restoration and after use

<b>Annex 6.3 Obtaining the views of stakeholders</b>
It is important consultation methods are chosen to suit the circumstances of the particular project and resources available for scoping. Some points to consider are noted below.
<ul style="list-style-type: none"> <li>• If there is considerable public controversy it may be appropriate to hold an open public meeting to present the proposals, answer question and receive any comments. Effective advance publicity for public meetings will be important in ensuring that a good cross-section of people attends.</li> <li>• Using an independent chairman for meetings may encourage participants to contribute where the project is controversial or where there are conflicting views on the issues.</li> <li>• If the issues are complex and there are several groups interested in the proposals it may be useful to organize a structured scoping workshop.</li> <li>• Questionnaires can be useful where the number of potentially interested people is large.</li> <li>• In some circumstances, for example where project planning is at an early stage and the significance of issues is unclear, it may be appropriate to set up a scoping advisory group that will continue meeting during the EA studies.</li> <li>• Occasionally it may be appropriate to set up an advisory group or an expert panel that might be independent of the developer and</li> </ul>

competent authority.

<b>Annex 6.4 Criteria for evaluating the possible significance of impact</b>	
A number of different factors should be considered in deciding on the level of investigation needed for each impact identified in scoping. The first question must be how important the issue is for decision-making. But some issues, which are very important, can be very quickly and easily addressed. It is therefore also important to consider the level of study needed to provide a SUFFICIENT description of impacts where there is uncertainty about their magnitude or significance. The checklist below identifies a range of factors to be considered.	
<b>Impacts</b>	<b>Legal and policy aspects</b>
Is the impact of:	Are environmental standards likely to be infringed?
Long duration?	Is there likely to be conflict with land use /spatial planning policy?
Irreversible?	Is there likely to be conflict with environmental policy?
Large magnitude?	
Will mitigation be impossible or difficult?	<b>Public awareness</b>
Is a large area affected?	Is there a high level of public concern?
Is a large number of people affected?	Is there a high level of political concern?
Is there a high probability of occurrence	
Is there a likelihood of trans boundary impacts?	<b>Uncertainty</b>
<b>Affected environment</b>	Is the magnitude or significance of impacts uncertain because of lack of knowledge?
Is the affected area valuable?	Are methods available to predict and evaluate uncertain impacts?
Is the affected area sensitive to impact?	Can appropriate methods be developed?
Are the affected people sensitive to impact?	
Is there a high level of existing impact?	
The scope of the EA will focus studies on those impacts, which are considered to be of greatest significance [i.e. which are of most importance for decision-making] and of those about which there is most uncertainty. The EA terms of reference should, however, be kept under review as the studies cover new issues and respond to new information as they emerge.	

## Annex 7: Recommended Structure for Environmental Assessment Reports

1. *Executive Summary*

A concise summary describing the scope relevant to the project/report. This should include significant findings and recommended actions.

2. *Legal and Institutional Framework (i.e., why is the EA being done)*

This chapter considers the relevant sectoral legal issues/requirements and the regulatory institutions relevant to the sector/project. It also identifies relevant international environmental agreements to which the country is a party. All the associated applications/permits/projects need to be identified and described.

3. *Description of the Undertaking (including location plans and site plans)*

The process of environmental impact analysis depends on the full understanding of the project proposal and accurate identification of the project actions at all stages. If actions are unclear or not sufficiently detailed impact are not likely to be identified with the accuracy and specificity needed to enable the development of appropriate mitigation measures.

4. *Need for the Undertaking*

The objectives of the project should be described showing justification for need. Also, an Identification of existing land-use plans and other governmental and non-governmental planned activities, plans or programmes in the area of influence in relation to the project's need should be described.

5. *Evaluation of Alternatives to the Undertaking*

The assessment of sound alternatives is necessary to validate the EIA process. Therefore reasonable alternatives have to be fully and comprehensively considered. The alternatives to each project activity should be assessed: alternative methods to site, technology, design, and operation (including the without 'do nothing' project scenario), etc. In evaluating the alternatives the costs should be quantified where feasible.

6. *Description of the Existing Environment*

- a) Physical Setting (e.g., geology, topography, surface waters, hydrogeology/groundwater)
- b) Atmospheric Setting (e.g., air quality, noise, climatic conditions)
- c) Natural Environment (e.g., terrestrial and aquatic habitats and species)
- d) Social and Economic Setting (e.g., employment, community structure, land uses, indigenous communities, population, housing, cultural resources, health and safety, community services, transportation, local economy, gender equity)

Include a description of impacts from existing operations (if applicable)

7. *Environmental impacts (positive and negative)*

- a) Direct impacts (the projects direct impacts on the environment)

- b) Cumulative impacts (assessing the combined impacts being more significant than insignificant individual impacts)
- c) Impacts of Potential Accidents and Malfunctions

Identification of the environmental impacts is a cause-effect identification, in which primary causes are the project's planned accidents and malfunctions actions. If these are not properly identified, the whole process is threatened. On the other hand, all potential impacts should be identified – positive and negative, direct and indirect/primary and secondary, short-term, medium-term and long –term, reversible and irreversible, temporary and permanent, cumulative – in all the environmental factors (biophysical, socio-cultural and economic).

8. *Proposed Mitigation Measures or Environmental Management Plan (EMP)*  
Specifies measures to prevent, minimize, and offset (or otherwise compensate?) for loss or damage. The EMP will include the proposed mitigation measures for direct and cumulative impacts as well as for impacts which remain after mitigation measures have been taken, the so called residual impacts.
9. *Significance of Residual Impacts*  
What is the significance of the emissions and effluents of the project alternatives after adopting proper alternatives or mitigating measures?
10. *Public Consultation*
  - a) List of Stakeholders
  - b) Methodology for Consultation
  - c) Public Concerns & Responses to those Concerns
11. *Follow Up & Monitoring Plan*  
The purpose of a monitoring program is to provide information that the predicted impacts from a project are within the engineering and environmental acceptable limits, and to provide early warning information of unacceptable environmental conditions. The Applicant is obliged to conduct mandatory monitoring taking into account the implementation of the EMP.
12. *Decommissioning/Rehabilitation/Enhancement/Remediation Plan*
13. *Project Impact Management Summary Management Table*  
This is valuable tool for decision-makers and the public in general and will aid in making the review report of the review team.

**PROJECT IMPACT MANAGEMENT SUMMARY TABLE**

Project Actions	Potential Impacts	Proposed Mitigation measures	Proposed monitoring plan	Additional recommendation

14. *References*

## Annex 8: EA REVIEW PROCESS

1. Receive Report from Proponent.
  - a) Confirm review fee has been received (Once this is applicable)
  - b) Send an Acknowledgement Letter
  - c) Request copies of any related permit applications (if applicable). Should be part of document submitted.
  - d) Open a file
  
2. Preliminary Compliance Review
  - a) Using the Compliance Checklist, review the report to ensure that the minimum contents have been included.
  - b) Compare the report against the Terms of Reference (if applicable)
  - c) If all minimum components are there, go to Step 3.
  - d) If components are missing, send a letter to the proponent requesting the missing information as either an addendum to the original report, or in a replacement report.
  
3. Initiate Technical Review
  - a) Complete the Technical Circulation Checklist to determine which other government agencies should be sent the report.
  - b) Send a memorandum to the appropriate government agencies requesting them to provide an opinion memo on the report back to NIMOS (not to the proponent directly).
  - c) Follow-up with reviewers if comments have not been received in a timely manner (by phone or memo/letter)
  - d) Complete the NIMOS review of the report, using the Review Checklist as a guide.
  
4. Prepare Draft Response to the EIA
  - a) Consolidate all technical review opinions into a draft letter.
  - b) Meet with other government officials to discuss individual issues, if required. These meetings should be used to resolve conflicting opinions within the government, and are internal to government staff only. The proponent does not participate in these meetings.
  - c) Consider having a meeting with the proponent once a draft position is developed to discuss the outcome of the review. This will give the proponent the opportunity to take back the EIA and make revisions to address any outstanding concerns before a final response is issued by NIMOS. If the proponent chooses to revise the EIA, return to step 3.
  - d) Have a second person in the NIMOS office review the draft response, as a Quality Assurance measure.

5. Prepare Final Formal Response

- a) Revise and finalize the opinion letter based on the results of Step 4.
- b) Keep one copy for the file
- c) Circulate copies of the letter to appropriate government agencies, and permitting authorities
- d) Schedule any follow up inspections with appropriate staff.

### ANNEX 9: COMPLIANCE CHECKLIST FOR ENVIRONMENTAL ASSESSMENT REPORTS

<u>RECOMMENDED COMPONENTS OF THE EA</u>		<u>(YES/ NO)</u>	<u>Additional data needed</u>	<u>Not applicable</u>
1.	Executive Summary			
2.	Legal and Institutional Framework (i.e., why is the EA being done)			
3.	Description of the Undertaking (including location plans and site plans)			
4.	Need for the Undertaking			
5.	Evaluation of Alternatives to the Undertaking			
6.	Description of the Existing Environment  a) Physical Setting (e.g., geology, topography, surface waters, hydrogeology/groundwater) b) Atmospheric Setting (e.g., air quality, noise, climatic conditions) c) Natural Environment (e.g., terrestrial and aquatic habitats and species) d) Social and Economic Setting (e.g., employment, community structure, land uses, indigenous communities, population, housing cultural resources, health and safety, community services, transportation, local economy, gender equity)  Include a description of impacts from existing operations (if applicable)			
7.	Environmental Impacts  a) Direct Impacts b) Cumulative Impacts c) Impacts of Potential Accidents and Malfunctions			
8.	Proposed Mitigation Measures and/or Environmental Management Plan			
9.	Significance of Residual Impacts			
10.	Public Consultation  a) List of Stakeholders b) Methodology for Consultation c) Public Concerns & Response to those Concerns			
11.	Follow Up & Monitoring Plan			
12.	Decommissioning/Rehabilitation/Enhancement/Remediation Plan			
13.	Project impact management summary table			
14.	References			

**ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS**

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
<b>1 DESCRIPTION OF THE PROJECT</b>			
<i>Purpose of the Project &amp; Status of Decision Making</i>			
1.1 Are the purpose(s) and objectives, or rationale for the project explained?			
1.2 Does the report list all environmental approvals that are required for the project to proceed?			
1.3 Has the proponent made a decision to proceed before the results of the EIA are known? Does it indicate their status?			
<i>Project Timing</i>			
1.4 Does the report include a projected timeline for the construction phase, the operations phase and the decommissioning phase (if applicable)?			
<i>Details of Construction, Operations, Decommissioning</i>			
1.5 Are the methods of construction described? Is there sufficient detail?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
1.6 Are the nature and methods of production or other types of activity involved in operation of the project described?			
<i>Physical Characteristics</i>			
1.7 Are the design and size of the project described, using diagrams, plans and/or maps, as necessary?			
1.8 Are the following clearly shown on the scaled map: <ul style="list-style-type: none"> <li>• the land occupied by the project site(s)</li> <li>• access arrangements</li> <li>• auxiliary facilities</li> <li>• Landscaping Areas</li> <li>• the construction site(s), including the camps for housing workers (if required)</li> </ul>			
1.9 In the linear project, has the following been described: <ul style="list-style-type: none"> <li>• land corridor</li> <li>• vertical and horizontal alignment</li> <li>• a need for tunneling and earthworks</li> </ul>			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
1.10 Has the land use for the project site been described and shown on a plan?			
1.11 Has the ownership of the site been described? Are there any competing claims for ownership (including claims by indigenous peoples), and have they been noted?			
1.12 Are any additional services (water, electricity, emergency services etc.) or developments required as a consequence of the project described?			
<b><i>Project inputs</i></b>			
1.13 Are there indications of the nature and the quantities of the materials needed for the construction and operational phases?			
1.14 Is there an estimate(s) of the number of workers and visitors entering the project site during construction and operation?			
1.15 Have the workers' means of access and transport been described?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
1.16 Has the means of transporting materials and products to and from the site during construction and operation been indicated? Has the number of transports been given?			
<b>2 ALTERNATIVES</b>			
2.1 Does the report include references to the consideration of alternatives by the developers?			
2.2 If alternatives are described, are they realistic and genuine alternatives to the proposed project?			
2.3 Are the environmental factors used to compare alternatives adequately			
2.4 Is there an adequate comparison of the alternatives, using a clear set of environmental factors?			
<b>DESCRIPTION OF THE EXISTING ENVIRONMENT (BASELINE)</b>			
<i>Study Area</i>			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
3.1 Is there a definition of the study area broad enough to include potential significant environmental impacts on areas away from the immediate construction and operation sites.			
3.2 Does the report include maps showing the study areas? Are significant natural and settlement features shown on the map?			
3.3 Have the land uses of the areas surrounding the site(s) been described?			
<b><i>Baseline Conditions</i></b>			
3.4 Have the components of the environment potentially affected by the project been identified and described sufficiently for the prediction of impacts?			
3.5 Is there an adequate description of existing atmospheric conditions? (e.g., air quality, climate)			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
3.6 Is there an adequate description of existing geophysical conditions? (e.g., topography, soils & geology, surface water quality & quantity, groundwater quality & quantity)			
3.7 Is there an adequate description of existing noise conditions?			
3.8 Is there an adequate description of socio-economic conditions? (e.g., land uses, employment, settlement patterns, economic activities, community services, transportation, historic & cultural resources, indigenous communities, etc.)			
3.9 Is there an adequate description of both terrestrial and aquatic biological conditions (species and habitats, communities and populations)?			
3.10 Were the methods used to investigate the affected environment appropriate to the size and complexity of the assessment task?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
3.11 Does the report consider the likely changes to the baseline that might occur even if the project does not proceed?			
3.12 Have existing technical data sources, including local records and studies carried out for environmental agencies and/or interest groups, been searched? 3.13 Are statements or facts substantiated by data that is adequately referenced?			
3.14 Have local, regional and national plans and policies been reviewed and other necessary data collected to predict future environmental conditions?			
3.15 Have local, regional and national agencies holding information on baseline environmental conditions been approached?			

<b>4 DESCRIPTION OF IMPACTS</b>
<p><b>Impact Identification:</b> (Note: impacts may be described taking into account mitigation which is part of the basic project design, or mitigation may be identified after significant impacts have been identified)</p>

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
4.1 Have the direct and indirect/secondary effects of constructing, operating, and where relevant, after use or decommissioning of the project been considered (including positive and negative effects)?			
4.2 Is there consideration of whether effects will arise as a result of 'consequential' development, i.e. whether additional development, will be induced in the area leading to further environmental effects?			
4.3 Have the potential impacts on atmospheric conditions been investigated? (e.g., air quality, climate)			
4.4 Have the potential impacts on geophysical conditions been investigated? (e.g., topography, soils & geology, surface water quality & quantity, groundwater quality & quantity)			
4.5 Have the potential impacts on the noise setting been investigated?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
4.6 Have the potential impacts on socio-economic conditions been investigated? (e.g., land uses, employment, settlement patterns, economic activities, community services, transportation, historic & cultural resources, indigenous communities, etc.)			
4.7 Have the potential impacts on terrestrial and aquatic biological conditions been investigated (species and habitats, communities and populations)?			
4.8 If any of the above components were not investigated, is there an adequate rationale in the report to justify their exclusion?			
4.9 Is each impact investigated appropriately, relative to its importance for the decision? Does the investigation avoid unnecessary information and concentrate on key issues?			
4.10 Are impacts, which are not significant independently but may contribute cumulatively to a significant effect, considered?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
4.11 Are impacts on non-renewable resources considered?			
<b><i>Accidents &amp; Malfunctions</i></b>			
4.12 Has consideration been given to impacts which may arise from: <ul style="list-style-type: none"> <li>• non-standard operation conditions, (i.e. equipment failure, or unusual environmental conditions such as flooding)</li> <li>• accidents</li> <li>• emergencies</li> </ul>			
4.13 If the nature of the project is such that accidents are possible which might cause severe damage within the surrounding environment, has an assessment of the probability and likely consequences of such events been carried out and the main findings reported?			
<b><i>Residual Wastes &amp; Emissions</i></b>			
4.14 Have the types and quantities of the following been estimated: <ul style="list-style-type: none"> <li>• waste matter, energy (noise, vibration, light, heat,</li> </ul>			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
radiation etc.) • residual materials generated during construction and operation			
• the rate at which the above will be generated			
4.15 Are their proposed methods of handling and/or treating these wastes and residual material prior to release/disposal been indicated (including the routes that by which they will eventually be disposed of)?			
4.16 Are any special or hazardous wastes that will be produced identified? Is the method of their disposal described, as well as their likely environmental impacts?			
<b>Methodology</b>			
4.17 Does the information include a description of the methods/approaches used to identify impacts and the rationale for using them?			

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
4.18 Are areas of uncertainty appropriately acknowledged?			
<b>5 MITIGATION</b>			
<i>Description of Mitigating Measures</i>			
5.1 Has the mitigation of significant negative impacts been considered, and, where feasible, have specific measures been proposed to address each impact?			
5.2 Are there descriptions of the reasons for choosing a particular type of mitigation, as well as the other options available?			
5.3 Are the following considered appropriately in the mitigation: <ul style="list-style-type: none"> <li>• modification of project design</li> <li>• construction and operation</li> <li>• replacement of facilities/resources</li> <li>• creation of new resources</li> <li>• "end-of-pipe" technologies for pollution control</li> </ul>			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
5.4 Are mitigation measures generally recognized methods are are they experimental? Proven techniques are preferred.			
5.5 Is it clear to what extent the mitigation methods will be effective?			
5.6 Is the following made clear, and has data been introduced to justify assumptions made: <ul style="list-style-type: none"> <li>• where the effectiveness of procedures, climate conditions etc.</li> <li>• assumptions where there is a risk that mitigation will not work</li> </ul>			
5.7 Have the following been presented: <ul style="list-style-type: none"> <li>• details of how mitigation implemented</li> <li>• function over the time span for which they are necessary</li> </ul>			
<b><i>Environmental Effects of Mitigation</i></b>			
5.8 Have any adverse environmental effects of mitigation measures been investigated and described?			

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
5.9 Has the potential for conflict between the benefits of mitigating measures and their adverse impacts been considered?			
<b>6 MAGNITUDE AND SIGNIFICANCE OF IMPACTS</b>			
<i>Magnitude</i>			
6.1 Are the impacts described in terms of: <ul style="list-style-type: none"> <li>• the nature and magnitude of the change</li> <li>• the nature (location, number, value, sensitivity) of the affected receptors.</li> </ul>			
6.2 Is it clear whether the timescale of the effects predicted are short, medium or long term, temporary or permanent, reversible or irreversible?			
6.3 Where possible, have predicted impacts been expressed in quantitative terms? If not, have quantitative descriptions been defined?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
6.4 If quantitative predictions are provided, is the level of uncertainty of the results described?			
6.5 Have the methods used to predict the nature, size and scale of the impact been described, and are they appropriate to the importance to each projected impact?			
6.6 Is the data used to estimate the size and scale of the main impacts sufficient for the task? Is it clearly described and have their sources been clearly identified?			
<b><i>Significance</i></b>			
6.7 Has the significance of effects been described in terms of extent (ie., the area over which the effects are expected to occur)?			
6.8 Has the significance of effects been described in terms of duration?			
6.9 Has the significance of effects been described in terms of frequency/timing?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
6.10 Has the significance of effects been discussed in terms of ecological importance and societal value (e.g., the impact on the local community and on the protection of environmental resources)?			
6.11 Has the potential reversibility of effects been considered?			
6.12 Has the probability or likelihood of the effect occurring been considered?			
6.13 Has the significance of effects been discussed taking account of appropriate national and international standards or norms, where these are available? Otherwise have the magnitude, location and duration of the effect been discussed in conjunction with the value, sensitivity and rarity of the resource?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
6.14 Where there are no generally accepted standards of criteria for the evaluation of significance, have alternative approaches been discussed, and if so, is a clear distinction made between fact, assumption and professional judgement?			
6.15 Does the report include clear conclusions on which impacts may be significant and which may not?			
6.16 Where mitigating measures are proposed, has the significance of any impacts remaining after mitigation been described?			
7 FOLLOW-UP & MONITORING ACTIVITIES			
7.1 Has the reinstatement and afteruse of the site been described?			
7.2 If impacts are uncertain, have monitoring arrangements been proposed to check the environmental impacts resulting from the implementation of the project and their conformity with the predictions made?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
7.3 Does the scale of any proposed monitoring arrangements correspond to the potential scale and significance of deviation from expected impacts?			
7.4 Are there clear monitoring requirements to ensure that mitigation measures are implemented and working properly?			
8 CONCLUSIONS			
8.1 Are there clear conclusions on the results of the EA process that are understandable?			
8.2 If the results are inconclusive, does the report recommend further study?			
8.3 Have gaps in the required data been indicated? Have the means used to deal with			
8.4 Have any difficulties in assembling or analysing the data needed to predict impacts been acknowledged and explained?			
9 NON TECHNICAL SUMMARY			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
9.1 Does the summary contain: <ul style="list-style-type: none"> <li>• brief description of the project and the environment undertaken by the developer</li> <li>• a description of any remaining or residual impacts</li> </ul>			
9.2 Have technical terms, lists of data and detailed explanations of scientific reasoning been avoided in the summary?			
9.3 Does the non-technical summary present the main findings of the assessment and cover all main issues raised in the information?			
9.4 Does the summary include a brief explanation of the overall approach to the assessment?			
9.5 Does the summary provide an indication of the confidence which can be placed in the results?			
<b>10 GENERAL APPROACH</b>			
<i>Organization of the Information</i>			
10.1 Is the information logically arranged in sections?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
10.2 Is the location of the information identified in an index or table of contents?			
10.3 When information from external sources has been introduced, has a full reference to the source been included?			
<b><i>Presentation of Information</i></b>			
10.4 Has information and analysis been offered to support all conclusions drawn?			
10.5 Has information and analysis been presented so as to be comprehensive to the non-specialist; using maps, tables, and graphical material as appropriate?			
10.6 Are all the important data and results discussed in an integrated fashion within the information?			
10.7 Has superfluous information (i.e. information not needed for the decision) been avoided?			
10.8 Has the information been presented in a concise form with a consistent terminology and are there logical links between different sections?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
10.9 Have prominence and emphasis been given to severe adverse impacts, to substantial environmental benefits, and to controversial issues?			
10.10 Is the information objective?			
11 STAKEHOLDER INPUT			
11.1 Has the proponent included a list of persons and groups that were consulted?			
11.2 Does the report include a description of the process used to consult with stakeholders? Was the process sufficient?			
11.3 Has the proponent included a list of concerns identified by stakeholders, and a response to those concerns?			
11.4 Does the information identify and address the main concerns of the general public and special interest groups (clubs, societies etc.) who may be affected by the project?			
11.5 If indigenous communities are affected by the project, were they consulted?			

ANNEX 10: CHECKLIST FOR THE REVIEW OF ENVIRONMENTAL ASSESSMENTS

QUESTION	RELEVANT (Y/N)	APPROPRIATELY ADDRESSED (Y/N)	COMMENT
11.6 Does the information take account of the main concerns of the relevant statutory bodies?			

## ANNEX 11: GUIDELINES AND CRITERIA FOR EA REVIEW

The adequacy, accuracy and completeness of the EIA study are assessed through a number of aspects. Guidelines on how to evaluate each specific component of the EIA study are presented below and followed by a summary table for EIA review.

- *Adequacy of the multidisciplinary team and achievement of an interdisciplinary work.*

The accuracy of the EIA results depend on the qualifications of the multidisciplinary team not only regarding the EIA process and methods but also regarding their knowledge of the several stages of the specific type of project. Therefore, individual CVs should be submitted as part of the Annexes of the EIA study.

- *Completeness and accuracy of project description actions at all stages*

The process of environmental impact analysis depends on the full understanding of the project proposal and accurate identification of the project actions at all stages. If actions are unclear or not sufficiently detailed impact are not likely to be identified with the accuracy and specificity needed to enable the development of appropriate mitigation measures.

- *Identification and description of alternatives*

The assessment of sound alternatives is necessary to validate the EIA process. Therefore reasonable alternatives have to be fully and comprehensively considered.

- *Definition of the physical boundaries of the areas of influence (direct and indirect)*

Inconsistency in identifying the correct areas of influence will inevitably lead to inconsistency in the baseline data and the impact analysis.

- *Analysis of the environmental legal framework related to the project proposal*

The analysis of the legal framework involves more than a list of legal Acts. It involves assessing the consequences for the project of the enforcement of all the environmental legislation and regulations regarding the proposed site and sectoral requirements related to the proposed activity.

- *Identification of existing land-use plans and other governmental and non-governmental planned activities, plans or programmes in the area of influence.*

This information is of utmost importance to ensure that land-use and other types of conflicts do not rise later during the project implementation. The compatibility between the proposal and the identified activities should be analyzed.

- *Appropriateness of EA Methods*

The use of appropriate EA methods is necessary to ensure reliability of the results of the EIA study. Each type of EA method has different strengths and vulnerabilities regarding their appropriateness to perform each step of the EIA study.

- *Impact identification*

Impact identification is a cause-effect identification, in which primary causes are the project's planned actions. If these are not properly identified, the whole process is threatened. On the other hand, all potential impacts should be identified – positive and negative, direct and indirect/ primary and secondary, short-term, medium-term and long – term, reversible and irreversible, temporary and permanent – in all the environmental factors (biophysical, socio-cultural and economic).

- *Impact characterization*

An important step in impact analysis, impact characterization enables the understanding of the impact process, path and social distribution. It also makes possible (i) to attribute the relative importance and significance of impacts, and (ii) to design appropriate mitigation measures (together with the knowledge of the magnitude of the impact).

- *Impact indicators*

They enable the estimation of impact magnitude, and relate to further impact monitoring.

- *Prediction techniques*

Without the use of adequate impact prediction techniques, accurate impact analysis is not possible. They allow the estimation of the magnitude of the impacts.

- *Prediction of the magnitude of the impacts*

One of the most important steps in impact analysis. It ensures the accuracy of the EIA study and that the appropriate mitigation measure is identified and implemented.

- *Importance and significance of impacts*

This activity needs to follow the appropriate technical criteria in order to minimize subjectivity of judgements.

- *Social distribution of impacts*

The balance between positive and negative impacts cannot be done without the correct identification of how impacts will affect different social groups.

- *Appropriateness of the mitigation measures*

The design of the appropriate mitigation measure requires a comprehensive understanding of the impacts characteristics. If that particular activity was not appropriately performed, appropriate measures cannot be designed. Furthermore, appropriate mitigation measures have to be budgeted and built into the project design and management procedures.

- *Analysis and selection of the best alternative*

Selection must be based on impact information and appropriate analysis and decision-making method.

- *Monitoring and environmental management plans*

Monitoring and environmental plans are necessary to ensure cost-effectiveness of the EIA process. They are also useful corporate management tools. For that purpose they need to be applicable, adequate, specific and cost-effective.

- *Implementation of the environmental management plan*

Implementation mechanism must be in place to ensure effective implementation of the mitigation measures and all other recommendations that might arise from the EIA study. It usually involves the assignment of an environmental management responsible person and an approved timetable for implementation of measures.

## ANNEX 12: GUIDELINES for ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS) and ENVIRONMENTAL MANAGEMENT PLANS (EMP)

### I. Environmental Management Systems

#### Introduction

An Environmental Management System (EMS) is part of an enterprise's overall management system. It includes the organisational structure, planning activities, responsibilities, practices, procedures, processes, and resources for implementing and maintaining sound environmental management in a company.

Modern successful enterprises see the environment as a potential for both *risks and cost*, and *opportunities*. Therefore, they manage their activities either to *reduce risks and costs*, reducing exposure to liabilities or to *increase profits*, expanding market shares or accessing new markets.

An *environmental risk* might involve, among other situations:

- an accidental spill of contaminated effluents;
- a release of air emissions above the established standards;
- emission of noises above standards;
- contamination of products to the extent that they are not acceptable in the markets;
- accidents resulting in injury to workers or to the surrounding communities.

In all cases it will result in increased operational costs.

An *environmental opportunity*, on the other hand, will always result in reduced operational costs. It might involve, among other:

- reduction of energy and other resources consumption;
- increase of the efficiency of the production processes, therefore, reducing wastes and waste management costs;
- expansion of markets by reaching new markets that imposes environmental requirements.

#### **EXAMPLE**

3M Corporation has reached savings of more than US\$ 1 million per year with its programme "Pollution Prevention Pays".

Environmental Management Systems have been designed to address these issues in a systematic way. EMS is a problem identification and problem-solving tool and can be

implemented in any organisation in many different ways. The application of an EMS to a specific sector of the activity depends on the needs perceived by management. Also, a specific system is designed to address the particular needs and objectives of the organisation.

The integration of the EMS into the overall management system of the organisation is critical because the environment is only one among the many external issues that impact the organisation. Therefore, a stand-alone EMS is not effective. Thus, when reviewing a company's EMS, the Environmental Agency must ensure that the appropriate mechanisms to integrate EMS into the overall management system are in place (such as an environmental budget, the integrated decision-making process, among others).

## Definition and Concepts of the Environmental Management System

There are many definitions of what is an Environmental Management System (EMS), in several different documents, mainly:

- ISO 14001- Environmental Management Systems – Specifications and Guidance to Use
- The British Standard BS 7750
- The French Standard NF X30-200
- The European Union's Council Regulation EEC/1836/93
- The Business Charter for Sustainable Development, from the International Chamber of Commerce

The ISO 14001 defines the term “Environmental Management System (EMS)” as the part of the overall management system that addresses the environmental aspects (inputs, outputs, operations and interactions between them) of the organisation's activities.

### DEFINITION OF EMS

An EMS is a planned and co-ordinated set of management actions, operating procedures, documentation and record-keeping, implemented by a specific organisational structure with defined responsibilities, accountabilities and resources, and aimed at prevention of adverse environmental effects as well as the promotion of actions and activities that preserve and/or enhance environmental quality.

UNEP/ICC/FIDIC EMS Training Resource Kit, 1995

Despite the different definitions that one might find in various sources, some key concepts are involved in all of them. One of the most important concepts to understand the role of EMS and EMP in the EIA process and the overall country's environmental management

system is the definition of “environment”. ISO 14001 defines “environment” as *the surroundings in which the organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interactions. Surroundings in this context extend from within the organisation to the global system.*

The environmental effects that the EMS is intended to manage include *any direct or indirect effects on the environment of the activities, products and services of the organisation, whether adverse or beneficial.*

Another important concept addressed in ISO 14001 is “environmental vulnerabilities”: the risks to workers, the community and the local or wider environment (area of influence) from the organisation’s activities, products or wastes, including damage to the functioning and future of the company<sup>1</sup> (UNEP, 1995).

Many EMS include procedures for communicating and dealing with stakeholders or interested parties. They can include government regulators and environmental agencies, investors (banks, shareholders and others), insurance companies, community and consumers organisations, and other non-governmental organisations (NGO).

#### Objectives and Components of an Environmental Management System (EMS) – The review of EMS

An Environmental Management System (EMS) is designed to address a number of objectives:

- Identify and control environmental impacts and risks relevant to the organisation;
- Achieve the objectives established in the Environmental Policy of the organisation;
- Establish environmental targets and goals, making sure to balance benefits and costs for the organisation, its shareholders and stakeholders;
- Achieve the targets and goals established;
- Define and document specific tasks, responsibilities, authorities and procedures to ensure that every employee acts in course of their daily work to minimise or eliminate the company’s negative impact on the environment;
- Communicate these throughout the organisation and train people to effectively fulfil their responsibilities;
- Measure performance against pre-agreed standards and goals (UNEP/ICC/FIDIC EMS Training Resource Kit, 1995).

The various components of an EMS have been conceived to address one or more of the above stated objectives. The main components of an EMS are described in many textbooks on corporate environmental management, as well as in national and international standards, such as the BS 7750 and ISO 14001, respectively. For the purpose of this document, the main components of an EMS will be described according to ISO 14001.

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<sup>1</sup> In this document Company, Organisation, Enterprise, Corporation, Firm and Institution are used interchangeably according to the principles of ISO 14001.

An Environmental Management System involves the actions, procedures and resources necessary to support the performance of the company's activities in an environmentally sound way and according to environmentally sustained practices. When reviewing a company's EMS, the Environmental Agency should verify that the following components are clearly and comprehensively presented, as defined in ISO 14001:

1. *Policy*
  - Environmental Policy and Statement
2. *Planning*
  - Environmental aspects
  - Legal and other requirements
  - Objectives and targets
  - Environmental Management Programme(s) or Plan
3. *Implementation and Operation*
  - Organisational structure and responsibilities for environmental management
  - Training, awareness and education
  - Communication (internal and external)
  - EMS documentation
  - Document control
  - Operational control
  - Emergency preparedness and response
4. *Checking and corrective actions*
  - Monitoring and measurements
  - Non-compliance and corrective and preventive measures
  - Record keeping and management of data banks.
  - EMS audits – periodicity, responsibilities, reporting requirements and guidelines for auditing, financial resources allocation, training activities (when necessary).
5. *Management review*

The purpose of the Environmental Agency's review of the company's EMS is to ensure that the proposed EMS is not a mere bureaucratic document, but that it has been conceived to be effectively integrated into the company's overall management. Therefore, all components of the EMS should be clearly stated as to give the Environmental Agency a significant level of confidence in the company's commitment to adopt sound environmental practices. Nevertheless, some technical guidelines on how to review the EMS are given, as follows:

*Policy: The Environmental Policy Statement*

Establishing the Company's Environmental Policy is the first step to developing an EMS. It involves an initial environmental review to understand the company's relevant

environmental aspects, its performance and practices, environmental impacts and their implications. An Environmental Policy will state what the company intends to do to respond to current and anticipated environmental issues. The Policy Statement should define the broad objectives and goals the Company has decided to achieve, in a clear and often quantified way.

#### **EXAMPLES OF CONTENTS OF ENVIRONMENTAL POLICY STATEMENTS**

An Environmental Policy Statement of a chemical company might include: “to reduce the generation of hazardous wastes by 15% by year 2003” and “to reduce SO<sub>2</sub> emission by 95% within five years”.

An Environmental Policy Statement of a municipality might state: “to provide sewerage and biological treatment of sludge for 60% of the population by year 2005.”

(UNEP/ICC/FIDIC EMS Training Resource Kit, 1995).

Policies must be designed and signed by the senior executives. However, to ensure that goals are technically, financially and organisationally feasible, they must receive inputs and support from the entire chain of command and staff. In some cases, external stakeholders, such as governmental environmental agencies, or clients and customers also play important roles in defining these goals (such as defining environmental standards to be followed by the company, for example).

*Planning: The Environmental Management Programme, or Environmental Action or Management Plan*

The Environmental Management Programme (EMP) or Environmental Action or Management Plan (EMP)<sup>2</sup> translates the company’s environmental policy into more specific objectives and goals and identifies how they will be achieved. For example, in the case of the chemical company mentioned above, the Environmental Action/Management Plan will identify the steps to be taken by each department to reduce the generation of hazardous wastes, commit the necessary funds and resources to meet these specific goals, and designate the responsible persons and accountabilities.

For the purposes of the Environmental Agency in implementing environmental management tools, the Environmental Management or Action Plan is the most important part of an EMS and, therefore, should be more closely reviewed by the Environmental Agency as a relevant component of the EIA report. Further information and guidelines to review EMPs are given in Annex 3.2.

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<sup>2</sup> These are used interchangeably in this document. The terms Environmental Action Plan and Environmental Management Programme are used by ISO 14001. The term Environmental Management Plan is used mainly when part of the EIA requirements.

### *Implementation and Operation*

Involves all the requirements necessary to implement the EMP or Action Plan. It involves the organisational structure, activities, priorities, procedures, responsibilities, accountabilities, schedules, internal and external communications, human and financial resources allocation, training requirements, and schedule for actions/implementation.

When reviewing the EMP, the Environmental Agency must verify that all these elements are present and they are appropriate to reflect the company's commitment to sound environmental management, as well as to achieve the general objectives and goals established in the corporate Policy Statement and the specific goals defined in the EMP.

### *Evaluation and Corrective measures*

- Monitoring

The appropriate systems for monitoring and follow-up are important components of the EMS. The Environmental Agency's review must ensure that the adequate monitoring programme and indicators have been defined, that procedures for systematic follow-up of activities and compliance are proposed, and that the adequate indicators have been selected. It is also important to ensure that adequate and efficient record-keeping systems and database management for the monitoring data, as well as for the operational data is implemented.

- Audit

Another relevant aspect to verify is the proposed EMS audit system, and the procedures adopted by the company to incorporate the findings of the monitoring and audits into the review and improvement of the EMP. The following aspects of an audit programme must be checked:

- a) Periodicity

Preferably, the company should adopt a systematic approach to its audit programme. For example, a company might commit to internal audits on a yearly basis and to an external audit every three years.

- b) Responsibilities and accountabilities

Responsibilities for auditing must be clearly stated – either a department, a division or individual (s) must be assigned responsible for conducting the programme (not necessarily for conducting the audit).

- c) Reporting requirements and guidelines for auditing

The company's requirements for reporting the findings of the audits must be clearly stated (internal and/or external reporting) as well as the procedures for incorporating these

findings into the Environmental Management Plans/Programmes. For example, some companies may define that EMPs are revised on a yearly basis taking into consideration the results of the monitoring programmes and the audits reports.

The same applies to the company's guidelines for auditing – they must be clearly defined. In some countries, there are legal requirements for environmental audits; in other cases, governmental agencies define guidelines for environmental auditing. The Environmental Agency must verify what the requirements applicable are and check if the company's audit programme complies with them (for example, when International or National agreements apply to the activity).

d) Financial resources allocation

Another important aspect to review is the financial resources allocated to the audit programme and check if they are enough to ensure the quality of the audits.

e) Training activities (when necessary)

In most cases, companies embarking on an environmental audit programme need to train and accredit internal environmental auditors. This requires the identification of the number of persons to be trained, the schedule of the training programme and/or the financial resources allocated to the training programme. All these items must be checked by Environmental Agency regarding their consistency.

## II. Environmental Management Plans (EMP)

### Introduction

From a government's perspective, the integration of Environmental Impact Assessment into a company's planning and management tools is one effective strategy to ensure cost-effective environmental management. Nevertheless, to achieve such integration requires that a number of requirements be fulfilled, mainly:

- *Effective scoping processes*

Scoping is the step in the EIA process that enables the identification of the main issues and potential impacts that are relevant to the decision-making regarding a particular project proposal, in a given site. Scoping results in the preparation of specific and issue-oriented terms of reference (TOR) for the development of a competent and relevant EIA study and report. It also allows to streamline the EIA review and decision-making process, by reducing the time for reviewing, the need for complementary information, as well as the potential for arise of late conflicts regarding criteria for decision-making.

On the other hand, when appropriate requirements for an EMS and/or EMP are included in the TOR for an EIA, it enables to verify the developer's commitment to sound

environmental practices, and therefore eases the decision-making and environmental permitting process.

- *Technical quality of the EIA studies and report*

No matter how competent and relevant the TOR are, they will not result in competent and relevant EIA unless a technically qualified multidisciplinary team is involved and committed to produce a scientifically and technically relevant EIA study and report. One way of fostering the enhancement of EIA studies is to establish a systematic and qualified EIA review process.

- *Effective quality control of EIA reports*

A qualified EIA review process involves (a) the use of skilled and trained reviewers and (b) the use of systematic and appropriate review criteria to ensure that EIA studies and report conform to the TOR and to the technical and scientific requirements. Qualified reviewers must be knowledgeable of the overall contents of an EIA report (including the contents of an EMP), and the technical and scientific aspects involved in impact prediction (such as EIA methods, impact indicators and prediction techniques). One of the review criteria must, therefore, address the appropriateness of the proposed EMS and/or EMP.

#### Definitions of an Environmental Management Plan (EMP)

There are many definitions on Environmental Management Programmes, Action Plan or Plan in different standard documents and textbooks. According to ISO 14001, the Environmental Management Plan translates the company's environmental policy into more specific objectives and goals and identifies how they will be achieved<sup>3</sup>.

#### **WORLD BANK DEFINITION OF PROJECT EMP**

A project's environmental management plan (EMP) consists of a "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".

World Bank Operational Guideline, 1999

The preparation of an EMP involves four basic steps:

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<sup>3</sup> When applied to a specific project proposal, however, an Environmental Management Plan (EMP) may or may not be linked to existing Environmental Policy Statement and Environmental Management System (EMS) - it depends whether the company has (or not) a Policy Statement and an EMS. Nevertheless, in case the company does not have an EMS, it will have to develop some components of an EMS as part of the EMP, mainly those relevant to ensure the effective implementation of the proposed EMP.

*ANNEX 12: GUIDELINES for ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS) and ENVIRONMENTAL MANAGEMENT PLANS (EMP)*

- (a) identification of the potential adverse impacts and environmental risks;
- (b) design of the appropriate mitigation measures to respond to these impacts and the operational procedures to avoid or reduce the risks;
- (c) determination of requirements for ensuring that those responses are made effectively and in a timely manner;
- (d) description of the means for meeting those requirements.

Management plans are, therefore, essential elements of EIA reports for large-scale and complex projects of various natures (industrial, mining, energy, transportation, agriculture, and forestry, among others). EMPs are necessary to ensure that the proposed procedures, actions and measures are not just a statement of good will but that they will be effectively implemented.

EMP will vary according to the nature and scale of the project, and to whether the company has or not an EMS. In many cases, when the company does not have an EMS, it might be necessary to integrate a few components of the EMS into the EMP, to ensure that it will be effectively implemented. These components could be: (a) the organisational structure and organisation's unit/department responsible for implementing the EMP; (b) the assignment of the responsible Environmental Manager; (c) the adequate monitoring programme, record-keeping systems and database management for the monitoring data, and the reporting schedule for monitoring results; and (d) the training required (when necessary).

Components of an Environmental Management Plan (EMP)

More specifically, the review of the EMP must ensure that the Plan includes the following components:

- *Impact Management Plan (or Mitigation)*

The EMP should identify feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels. When mitigation measures are not feasible, cost-effective, or sufficient the Plan should also include compensatory measures. It should also involve operational procedures needed to avoid environmental risks, as well as emergency and contingency plans in case of accidents.

For some projects, such as rehabilitation, upgrading, or expansion of existing facilities, remediation of existing environmental problems may be as important as mitigation and monitoring of expected impacts. For such projects, the management plan must also include cost-effective measures to remediate and manage these problems.

Specifically, the EMP must:

- (a) Identify and summarise all anticipated significant adverse environmental impacts (including those involving indigenous people or involuntary resettlement);

- (b) Describe with technical details each mitigation/compensation/remediation measure, including the type of impact to which it relates and the conditions under which it is required (for example, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate;
- (c) Estimate any potential environmental impacts arising from the implementation of these measures;
- (d) Provide linkage with any other mitigation plans (for example, for involuntary resettlement, indigenous peoples, or cultural property) required for the project.

◦ *Monitoring programme*

The EMP must contain an environmental monitoring programme to be developed during the various stages of project implementation. The monitoring programme must be designed to provide information about key environmental aspects of the project, particularly some environmental factors, the estimated environmental impacts, and the effectiveness of the proposed mitigation measures. Such information enables the developer and the Environmental Agency to evaluate the success of mitigation as part of project supervision, and allows corrective action to be taken when needed. Therefore, the EMP must clearly identify the monitoring objectives and specify the type of monitoring required, with linkages to the impacts assessed in the EIA report and the mitigation measures described in the EMP. Specifically, the monitoring section of the EMP should provide:

- (a) Specific description, with technical details, of the 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, data collection and management, and reporting procedures to (i) ensure early detection of conditions that need particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

◦ *Organisational or Institutional requirements*

As mentioned before, when a company does not have an EMS in place, some components of an EMS will have to be developed and included as part of the EMP, such as the organisational structure that will be responsible for implementing the Plan. This will include (a) the identification of the responsible organisational unit and (b) the assignment of an Environmental Manager.

In some cases, it might be necessary to develop specific institutional arrangements to implement mitigation measures that involve institutions or organisations other than the developer's company. For example, when implementing mitigation measures such as involuntary resettlement programmes, indigenous people development plans, rural development plans, health protection and improvement programmes, among others.

◦ *Training and Capacity building*

When necessary, the EMP must identify the training requirements to ensure that the proposed mitigation measures, operational procedures and emergency and contingency plans are implemented in an effective manner. The Plan must also provide detailed information on how the training will be imparted, and how many people will be trained. For example, training the company's personnel to conduct environmental audits, or to adopt best practice in industrial operations.

◦ *Implementation Schedule and Cost Estimates*

For all four components mentioned above (impact management/mitigation, monitoring, institutional arrangements, and training capacity development), the EMP must provide:

- (a) An implementation schedule for measures that must be carried out as part of the project, showing phasing and co-ordination with overall project implementation plans;
- (b) The capital and recurrent cost estimates and sources of funds for implementing the EMP.

These figures must also be integrated into the total project cost tables.

◦ *Integration of EMP with Project*

The decision to proceed with a project is based in part on the expectation that the EMP will be executed effectively. Consequently, the decision-makers expect 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. Establishing the EMP within the project so that the plan will receive funding and supervision along with the other components achieve such integration.