



Canadian International
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Handbook On The Integration Of Environmental **Considerations Into Proposals Submitted To** **Cida's Industrial Cooperation Program (Inc)**

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HANDBOOK ON THE INTEGRATION OF ENVIRONMENTAL CONSIDERATIONS INTO PROPOSALS SUBMITTED TO CIDA'S INDUSTRIAL COOPERATION PROGRAM (INC)

PREFACE

This handbook summarizes CIDA's environmental requirements and provides guidelines on the integration of environmental considerations for private Canadian companies seeking financial support under CIDA's Industrial Cooperation Program (INC). It refers explicitly to [CIDA's Policy for Environmental Sustainability](#) and the [Canadian Environmental Assessment Act \(CEAA\)](#).

The Handbook consists of three sections:

- Chapter I: Environmental Assessment in Canada and the World.
- Chapter II: Environmental Considerations in CIDA-INC.
- Appendices: Highlights of the the [Canadian Environmental Assessment Act \(CEAA\)](#) Proposed Content of the Environmental Site Assessment Report, Checklist for the Environmental Assessment of Small Manufacturing Plants, and Assessment of Impact Significance.

We hope that this handbook will assist you in addressing the environmental issues raised by your project and in preparing your environmental assessment and management plan.

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CHAPTER I - ENVIRONMENTAL ASSESSMENT IN CANADA AND THE WORLD

1.1 INTRODUCTION

The environmental assessment process is recognized around the world as an essential tool in the promotion of sustainable development. It provides a systematic approach for identifying, assessing and predicting the potential environmental effects of a project, on both the biophysical setting and the human population, determining means of reducing or eliminating these effects or enhancing its environmental and social benefits and, finally, addressing public concerns. Integrating these considerations as early as possible in the planning stages of the project can help to avoid downstream costs and delays arising from unforeseen environmental impacts and to ensure environmentally sound development.

The industrial sector has a number of other tools for the promotion of sustainable development. While this handbook deals primarily with environmental assessment, these other tools should be taken into consideration as well in the planning and implementation of the project.

- Environmental management plan: Integration of environmental concerns into the management system, particularly through conservation of raw materials, minimization of water and energy consumption and limitation of emissions and residual effluents. Possible components of an environmental management plan include closed-circuit production processes, waste reduction, recycling and reuse, adequate methods of waste treatment and disposal, and environmental monitoring.
- Clean production processes.
- Standards ISO 14000.
- Health and safety plan: Occupational health and safety measures.
- Environmental training: Inclusion of awareness sessions and environmental education in the training program.
- Risk management plan.

1.2 CANADA'S FOREIGN POLICY

In February 1995, the federal government released a foreign policy statement entitled [Canada in the World](#), which provided a clear mandate for Canada's Official Development Assistance (ODA) program to support sustainable development in the developing countries and confirmed CIDA's policy of reducing poverty while working towards a safer, more equitable and more prosperous world. At the



same time, the statement clearly identified concern for the environment as one of the cornerstones of sustainable development. The environment was listed as one of ODA's six key programming priorities.

1.3 CIDA'S POLICY FOR ENVIRONMENTAL SUSTAINABILITY

CIDA's Policy for Environmental Sustainability, adopted in 1992 and currently under review, reflects the Agency's strong commitment to supporting projects and activities focussed on sustainable development and respect for the environment.

The Policy requires that environmental considerations be taken into account in the development and implementation of policies, programs and projects. It calls for environmental assessments of all program and project activities and the adoption of appropriate measures to minimize their environmental impact.

The Policy's primary objectives are:

- to integrate environmental considerations into CIDA decision-making and activities;
- to collaborate with CIDA's partners in Canada and in the developing countries for the purpose of increasing their capacity to implement projects, policies and programs that promote sustainable development;
- to contribute to the resolution of global and regional environmental problems by promoting and supporting projects targeted directly at protecting or enhancing the environment.

1.4 THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

On January 19, 1995, the Canadian government enacted the CEAA, replacing the Environmental Assessment and Review Process Guidelines Order, which had been in effect since 1984. In combination with the Law List Regulation, the Exclusion List Regulation, the Inclusion List Regulations and the Comprehensive Study List Regulation, the CEAA sets forth the obligations and procedural requirements associated with the environmental assessment of projects performed in Canada or abroad and involving the Government of Canada as proponent, land administrator, regulator or source of funding. On November 7, 1996, the Government of Canada adopted the Projects Outside Canada Environmental Assessment Regulation, amending the basic process. Appendix A summarizes the requirements established by the CEAA and these Regulations.

1.5 INTERNATIONAL FINANCIAL INSTITUTIONS AND OTHER DONOR COUNTRIES

A growing number of donor countries, including Australia, Denmark, the Netherlands, the United Kingdom and the United States, have adopted environmental sustainability as one of the objectives of their aid programs. The development assistance programs offered by these countries are subject to environmental assessment procedures.



Major multilateral institutions, including the World Bank and the regional development banks, also require environmental assessments before granting financial assistance. Companies seeking financial support from these institutions should inquire about their requirements and incorporate them in their planning from an early stage.

1.6 ENVIRONMENTAL REQUIREMENTS OF DEVELOPING COUNTRIES

A number of developing countries have adopted environmental assessment legislation and procedures. Canadian companies should therefore identify the host country's environmental assessment requirements and other environmental legislation and standards (emissions standards, land use regulations, etc.) early in the planning process (viability study, feasibility study, project development) and ensure that these requirements are taken into account in their study and implementation plans.

CHAPTER II - ENVIRONMENTAL CONSIDERATIONS IN CIDA-INC

2.1 INTEGRATION OF ENVIRONMENTAL CONSIDERATIONS INTO PROJECT STUDIES AND IMPLEMENTATION

CIDA's Industrial Cooperation Program (INC) provides financial support to Canadian companies hoping to establish long-term business relations with developing countries. Under this program, CIDA also seeks to ensure that these commercial activities contribute to ecologically sustainable development.

Like economic, financial or technical analyses, environmental analyses are an integral part of project planning. If carried out early in the planning stage, environmental assessment can prevent environmental and social damage, protect the company from litigation, save time and money and help win public support.

A Canadian company applying to CIDA's Industrial Cooperation Program for financial assistance must indicate in its studies (viability study, feasibility study, project development) how it intends to address environmental issues, both biophysical and social, and, in the case of an application for project support, provide an environmental assessment of the project.

2.2 BASIC PRINCIPLES OF ENVIRONMENTAL ASSESSMENT

The environmental assessment process is based on the following principles, which are widely accepted and consistent with those set out in the Canadian Environmental Assessment Act ([CEAA](#)):

- **Early application:** The environmental assessment should be performed as early in the project's planning stages as practicable (viability study, feasibility study, project development), and before irrevocable decisions are made;



- **Open and participatory:** The environmental assessment of the project must take into account public concerns. All environmental assessments performed under the Canadian Environmental Assessment Act are filed in a public registry.
- **Broad definition of environment:** All potential environmental effects must be considered, including effects on the biophysical environment, human health, socio-economic conditions, current use of lands and resources, and physical and cultural heritage.
- **Efficient and cost-effective:** The level of effort and detail required to undertake the environmental assessment and the method used will vary with the nature, scale, location and stage of development of the project (feasibility study, viability study, project development, implementation).
- **Self-assessment:** The applicant is responsible for carrying out an adequate environmental assessment of the project or, if an assessment has already been performed, for providing any additional information and analyses required.
- **Reporting:** The environmental assessment report must be prepared in conjunction with the viability study, the feasibility study or project development. Applications for implementation support must be accompanied by a copy of the environmental assessment report.

2.3 FINANCIAL ASSISTANCE MECHANISMS AND ENVIRONMENTAL INFORMATION REQUIREMENTS

This section explains the type of environmental information required by the various financial assistance mechanisms.

The objectives, level of detail and analyses required vary with the stages of project development, which correspond to the various financial assistance mechanisms of the Industrial Cooperation Program (viability study, feasibility study, project development and implementation). The objectives are presented below, while Table 1 summarizes the information requirements for the different financial assistance mechanisms.

2.3.1 Viability study (Investment), feasibility study (Professional Services) and project development (Private Participation in Infrastructure)

Companies submitting applications for a viability study (Investment), feasibility study (Professional Services) or project development (Private Participation in Infrastructure) must perform the environmental assessment at this stage to ensure that environmental considerations are integrated from the outset of the project.

The purpose of the environmental analysis is:

- to compile the environmental information available on the project;
- to outline the project's administrative and regulatory context in the host country (environmental laws and regulations, standards, guidelines, etc.);



- to assess the probable environmental, biophysical and social effects of the project and their significance;
- to define feasible measures for mitigating any adverse biophysical and social effects and for enhancing the benefits to the environment and local community;
- to identify any public concerns associated with the project and indicate how they have been addressed;
- to determine the need for a monitoring, follow-up or environmental management plan.

Section 2.4 explains how to prepare the environmental assessment.

2.3.2 Start-up support (Investment), implementation support (Professional Services) and infrastructure project implementation support (Private Participation in Infrastructure)

Companies seeking start-up support (Investment), implementation support (Professional Services) or infrastructure project implementation support (Private Participation in Infrastructure) must have already performed an environmental assessment. The objective at this stage is to establish the procedures governing application of the environmental measures and the environmental management plan, including:

- measures to be adopted to mitigate the adverse environmental effects of the project or to enhance its benefits, both biophysical and social;
- environmental training to be provided, where applicable;
- implementation of environmental management systems for monitoring environmental parameters, the emergency response plan, the health and safety plan, etc.

If the project is subject to the [Canadian Environmental Assessment Act \(CEAA\)](#), the environmental assessment must meet all the requirements of the Projects Outside Canada Environmental Assessment Regulation (summarized in Appendix A) and be placed in the Public Registry. Note that a file is opened in the Public Registry on submission of a project subject to the [CEAA](#), at the implementation or start-up support stage. The environmental assessment report must contain enough information to allow the Canadian public a good understanding of the project. Where applicable, it is the company's responsibility to submit separately those parts of the report that are to be considered confidential under the *Access to Information Act* or the *Privacy Act*.

Table 1: Summary of Environmental Information Required in Proposals and Final Reports

VIABILITY STUDY, FEASIBILITY STUDY, PROJECT DEVELOPMENT	
Proposals	Reports
<p>The proposal must include the following information:</p> <ul style="list-style-type: none"> • a summary of the information available to the applicant on the project, the host country and the environment; • the work plan, setting out the activities to be performed with respect to environmental aspects (biophysical and social); • the method to be used in compiling and analyzing the information and assessing the environmental effects; indicate the approach to be adopted and the groups to be consulted in identifying public concerns (e.g. local authorities, local population, non-governmental organizations); • a draft outline of the environmental assessment report (table of contents) to be produced as part of the viability study; • the resources (people, time and money) allocated to the environmental study (biophysical and social components), including the résumés of the individuals who will be performing these studies. 	<p>The completed study should generally include:</p> <ul style="list-style-type: none"> • the environmental assessment report (see Item 3 for a complete description); or • where the proposed initiative relates to existing infrastructures, the environmental assessment report prepared for the project must be submitted, together with any complementary analysis performed in connection with the present project and Canadian/international standards. If no such document is available, the report will include an environmental assessment of the site (see appendix B) and the proposed operations. The purpose of the environmental site assessment is to identify any environmental problem relating to the existing infrastructures; • determine whether further studies are required.
IMPLEMENTATION SUPPORT, START-UP SUPPORT	
Proposals	Reports
<p>Any application for project support must include the following information:</p> <ul style="list-style-type: none"> • the environmental assessment report and the environmental management plan, if available; • the scope of the work, the terms of reference and the method to be used for the environmental activities performed during implementation of the project (e.g. environmental management plan, implementation of mitigation measures, environmental training, environmental monitoring); • the financial and human resources allocated to environmental activities, the responsibilities of the individuals handling the environmental and social activities, and their résumés. 	<p>The completed study should generally include:</p> <ul style="list-style-type: none"> • the environmental management plan, where applicable; • the results of all assessment, supervision, training and follow-up activities carried out in connection with the application for implementation or start-up support.
<p>Note: If the project is subject to the <i>Canadian Environmental Assessment Act</i> (CEAA), the environmental assessment will be placed in the Public Registry. Note that a file is opened in the Public Registry on submission of a project subject to the CEAA, at the implementation or start-up support stage. The environmental assessment report must contain enough information to allow the Canadian public a good understanding of the project. Where applicable, it is the company's responsibility to submit separately those parts of the report that are to be considered confidential under the <i>Access to Information Act</i> or the <i>Privacy Act</i>. If you feel that no environmental assessment is required, indicate the reasons in the proposal and discuss them with the program manager.</p>	



2.4 ENVIRONMENTAL ASSESSMENT: REQUIREMENTS AND PROCEDURES

It is the responsibility of the company submitting an application to CIDA-INC to carry out an environmental assessment of its project, in a manner consistent with Canadian requirements and those of the host country. This section outlines the environmental assessment procedure for CIDA-funded projects. It will help the applicant to determine whether an environmental assessment is required and, if so, to prepare the assessment.

2.4.1 Determine whether an environmental assessment is required and define its scope

Under [CIDA's Policy for Environmental Sustainability](#), an environmental assessment is required whenever a project is likely to cause changes in the environment or is subject to the [CEAA](#).

Under the terms of the [CEAA](#), an environmental assessment must be conducted if the project involves a physical work (building construction, road widening, etc.) or a physical activity (dredging, pesticide spraying, transportation of hazardous wastes, etc.). For a general summary of the [CEAA's](#) field of application, see Appendix A. In addition, under [CIDA's Policy for Environmental Sustainability](#), any project likely to cause changes in the environment must undergo an environmental assessment. The level of effort and detail required to undertake the assessment and the methods of analysis used will vary with the nature, scale and location of the project.

Finally, if the project does not involve any physical structure or physical activity and will not cause any change in the environment (joint venture to provide training services, professional services, etc.), no environmental assessment is required. It is suggested, however, that other relevant environmental considerations (environmental codes of practice for construction services, integration of environmental training, etc.) be taken into consideration.

The scope of the environmental assessment must cover all construction, operation, modification, maintenance, abandonment and decommissioning operations performed in relation to the project (plant construction, related repairs and maintenance, facilities, transmission lines, access road between the plant and the main road, etc.), together with all potential effects on the environment. It should include not only any change that the project may cause in the natural environment but also any effects of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources, on renewable and non-renewable resources, etc. The final decision as to the scope of the study lies with CIDA.

2.4.2 Assess the potential environmental effects of the project

This stage involves compiling the existing environmental information, visiting the site to confirm the information and conducting various analyses to assess the project's potential effects on the biophysical



and socio-economic environment. The method used (analytical methods, mathematical models, etc.) to assess the environmental effects should be clearly described.

Every environmental assessment must include an adequate description of the project and its setting and must consider the following elements:

- the environmental effects of the project, including any effect on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources or on any structure, site or thing that is of historical, archaeological or architectural significance. It must also consider the environmental effects of malfunctions or accidents, any cumulative effects¹ and any change to the project that may be caused by the environment;
- the significance of the effects (see appendix D)
- public comments and concerns;
- measures that would mitigate any adverse environmental effects of the project and enhance its environmental benefits;
- the need for, and the requirements of, any follow-up program in respect of the project;
- any other relevant matter, such as the need for the project and alternatives to the project.

For major infrastructure projects, the assessment should also consider the purpose of the project, alternative means of carrying out the project and the environmental effects of any such alternative means, and the capacity of renewable resources that are likely to be affected by the project to meet the needs of the present and those of the future.

The environmental assessment should cover all components of the project (facilities, access road, utilities, etc.) and all stages: effects related to project location, site preparation, construction, operation, transportation of raw materials and finished products and, where applicable, eventual abandonment and decommissioning of the site

Wherever possible, the report should use maps, photos and graphics. The maps should illustrate the location of the project, the design and layout of the site (for all project components) and its principal geographical and social features (watersheds, land-use patterns, wildlife habitats, human settlements, etc.). Item 1 suggests a series of elements to be examined in the environmental assessment.

Where a project is to make use of existing facilities, existing and potential environmental and health/safety problems should be identified. Every possible effort should be made to improve the operation and/or maintenance of the existing infrastructure and facilities in order to mitigate the environmental impact and address environmental issues, including health and safety. In this way, the

¹Generally, the assessment of cumulative effects is a way of placing a project in its broader ecological and socio-economic context. It involves examining the relationships between the proposed project and other existing or future projects. The discussion should not be limited to related industries but should apply to all development activities. For example, it should consider other existing or proposed projects, impact on community infrastructures, downstream water supplies, habitat fragmentation, etc.



company can prevent environmental damage and protect itself from litigation and prosecution for environmental damage. In addition, the company should assess the environmental effects of the project (new production line, new equipment, new process, etc.). See Appendix B for the proposed content of the environmental site assessment report.

Finally, Appendix C presents a checklist for manufacturing projects. Applicants may also consult the sector guidelines and checklists developed by such institutions as the World Bank and the Asian Development Bank.

Item 1. Examples of environmental issues

Biophysical effects:

- air quality;
- waste water discharges;
- hazardous materials;
- groundwater (quality and quantity);
- condition/state/sensitivity of ecosystems;
- rare, endangered or valuable plant species and their habitats;
- noise or vibrations;
- solid waste disposal;
- surface water (quality and quantity);
- slope stability and erosion;
- migratory species.

Socio-economic effects:

- relocation or disturbance of settlements;
- conflict with existing or potential land or natural resource uses;
- employment (job loss/creation, special training needs, distribution of income or property values, newcomers, employment equity, etc.);
- services and utilities (e.g. increase in demand in excess of local supply);
- health and socio-economic conditions (e.g. quality of life, health and safety, property values, scenic views);
- aboriginals and special groups;
- lifestyle, livelihood or housing;
- structure, thing or site of special significance (cultural, religious, aesthetic, archaeological, historical, paleontological, etc.).

2.4.3 Consider public concerns

The environmental assessment must take into account public concerns. It is particularly important that people be informed and consulted when a project is likely to have significant impact on the public.



Local people may have valuable information to contribute. If they are consulted early in the process, their concerns can be more easily integrated into the design and planning of the project, generating greater community support and reducing the likelihood of delays and cost overruns at subsequent stages.

There are various methods of consultation: formal or informal meetings with the appropriate authorities, community leaders, the local population and target groups (women, environmental groups, aboriginals, etc.); surveys; notices in the media; field trips; site visits; and other participatory approaches.

2.4.4 Determine appropriate mitigation measures

It is important to identify and integrate into the project design measures that are technically and financially feasible and that would eliminate, reduce or limit the environmental impact of the project and respond to public concerns. These measures may be implemented at various stages, including site preparation, construction, operation, abandonment, etc., and may take any of a number of forms: preventing or minimizing impacts by refraining from certain activities or limiting certain aspects of an activity; replacing or restoring a site; compensating individuals for environmental damage by providing substitute resources or land of equivalent value; optimizing industrial processes and design features. Item 2 lists some examples of mitigation measures.

Once mitigation measures have been identified, it is important to determine who will be responsible for their implementation. If the responsibility for certain aspects of the plan is assigned to other authorities, their capacity to carry out the work effectively must be determined.

Experience has shown that an effective mitigation program is more cost-effective than corrective measures.

Item 2. Examples of mitigation measures

General examples:

- avoiding sensitive areas, such as fish spawning beds or areas known to contain rare or endangered species;
- establishing wild lands or other protected habitats within the area affected by the project or elsewhere in the region to offset loss of habitat in the project area;
- providing buffer zones, wildlife corridors and other elements to maximize the benefits of the wildlife management areas or minimize the project's impact on wildlife;
- restoring damaged habitats or creating new habitats, such as wetlands;
- strengthening existing agencies to ensure effective implementation of the project;
- offering compensation and/or concessions to groups adversely affected by the conservation measures;
- establishing an environmental education and community involvement program;
- managing soil and water conservation;



- monitoring construction operations;
- installing pollution control devices, such as scrubbers and electrostatic precipitators, in new and existing facilities;
- modifying manufacturing processes or technologies and waste management practices, for example, by replacing hazardous chemicals with harmless substances, or re-cycling and re-using by products;
- adopting energy conservation practices and energy-efficient technologies;
- preparing an occupational health and safety plan and an emergency response plan or improving existing measures;
- providing training and ensuring continuous maintenance.

Specific example:

The road will be built on already disturbed land and will bypass the few stands of trees. A 30-metre buffer zone will be left between the road and the lake. Topsoil will be set aside to restore the roadside. Native grass species will be used to replant cleared areas, etc.

2.4.5 Establish a monitoring/follow-up program

A follow-up program serves to verify the accuracy of the environmental assessment and determine the effectiveness of the mitigation measures. A program of this kind should be planned during preparation for the environmental assessment. A follow-up program is particularly critical when:

- the project is using new or unproven technology;
- the mitigation measures being applied are new or unproven;
- the project will be carried out in a new or unfamiliar environmental setting;
- the analysis performed in the course of the environmental assessment was based on a new assessment technique or model, or the conclusions remain uncertain;
- the nature of the anticipated impacts warrants such a program;
- changes in project scheduling may result in environmental effects other than those anticipated.

The follow-up program may include site visits, direct observations, meetings with community leaders and the local population, etc. It may also be necessary to monitor the evolution of certain environmental parameters (air emissions, effluent quality, etc.).

The follow-up program should include a description of the proposed activities within a predetermined timetable. It should describe the monitoring activities in detail, together with the procedures to be followed if threshold values are exceeded or other problems are identified. Finally, it should indicate the distribution of the roles and responsibilities associated with the follow-up activities. If the project is subject to the [CEAA](#), these documents will also be placed in the Public Registry.

2.4.6 Environmental assessment report



If the environmental assessment has been performed under the terms of the [Canadian Environmental Assessment Act \(CEAA\)](#), the report must be submitted under separate cover for placement in CIDA's Environmental Assessment Public Registry. Where applicable, the company should submit separately those parts of the report that are to be considered confidential under the *Access to Information Act* or *Privacy Act* so that the environmental assessment can be filed in the Public Registry.

Item 3 provides a suggested format for the environmental assessment report. While this format is not mandatory, the environmental assessment report must deal adequately with the principal components, shown in bold.

Item 3: Environmental assessment report

The environmental assessment report should include at least the following information:

Summary: If the report is more than 20 pages long, attach a concise description of the principal findings, the proposed measures to mitigate the adverse effects of the project and enhance its environmental benefits, and the follow-up measures.

Purpose of the project and alternatives: Description of the rationale for the project, any alternative options, and the reason for selecting the proposed option.

Description of the project and its components, including scale and location: List and location of the activities, site layout and project design, construction plans and scheduling, magnitude or scale of the work (quantified, if possible), quantitative and qualitative estimate of emissions, pollution-control devices (for industrial projects), operating methods and decommissioning plans.

Environmental regulatory context: Description of the host country's environmental requirements (laws, regulations, standards, guidelines, local land use bylaws) and of Canadian or international environmental standards applicable to the project.

Description of the environment: Summary of the current context and description of the status of the receiving environment (biophysical and social). Rather than providing an exhaustive inventory of the environmental components, the description should focus on those relevant to the proposed project (components that may affect or be affected by the project, sensitive and valuable environmental components, etc.).

Environmental effects: Assessment of the project's adverse environmental effects and description of the methods used to collect and analyze the necessary data and assess the environmental effects. Clearly describe the analytical methods. The assessment must consider the environmental effects of all operations, including those relating to the location of the project, site preparation, construction,

operation and, if relevant, decommissioning or abandonment of the facilities. For example, appendix C suggests a list of elements to be examined in the case of small manufacturing plants. The assessment must consider the effects of the project on the biophysical and social environment, including any effect on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources, or on any structure, site or thing that is of historical, archaeological or architectural significance. It must also consider the environmental effects of malfunctions or accidents, any cumulative effects and any change to the project that may be caused by the environment. In addition, it is important to determine the significance of these effects. Appendix D offers a proposed method of impact assessment. For major infrastructure projects, the assessment should also consider the capacity of renewable resources that are likely to be significantly affected by the project to meet the needs of the present and those of the future.

Proposed mitigation measures: List and description of the technically and financially feasible measures proposed to mitigate any significant adverse environmental effects of the project.

Nature and significance of residual effects: Discussion and assessment of the residual environmental effects persisting following application of the applicable mitigation measures, and significance of these effects (intensity, extent, duration, frequency, reversibility). Indicate as well whether these effects are certain or uncertain.

Public concerns: Nature of public participation in the environmental assessment, concerns raised and proposed means of addressing them.

Follow-up program: Need for, and requirements of, a follow-up program.

Environmental management plan²: If appropriate, describe: the mechanisms used to ensure the implementation and effectiveness of the proposed mitigation measures, identifying the responsible authorities; the follow-up program; the environmental components to be integrated into the training program; and any other relevant information. This may include an emergency plan describing, for example, the mechanisms to be established to manage health and environmental risks (health and safety control/verification measures, inspection and maintenance, fire protection, emergency procedures, accidental spills, etc.)

Other supporting information and sources of information: Environmental studies, maps, consultations, other sources of information (traditional and community knowledge).

2.4.7 Review of the environmental assessment report by CIDA

²Depending on the circumstances, the environmental management plan may be prepared at the implementation/start-up stage.

On receipt of the environmental assessment report, the CIDA program administrator will coordinate its review by the Agency's environmental and technical advisors, who will determine whether it is satisfactory. The environmental assessment report should cover the full scope of the terms of reference and meet the requirements of the Projects Outside Canada Environmental Assessment Regulation. In particular, the report must demonstrate that:

- the environmental effects have been adequately assessed and public concerns taken into consideration;
- adequate mitigation measures have been identified and appropriate measures taken to ensure their implementation;
- arrangements have been made for the implementation of an environmental plan, if necessary;
- individuals in the host country will be adequately trained to ensure the successful transfer of technology and methods; and
- an appropriate follow-up/monitoring program will be implemented, if required..

Item 4 lists the basic points that are examined during the review of an environmental assessment report.

CIDA's program administrator may request any additional information or analysis that he may reasonably consider necessary for a decision on the project. The results and conclusions of the environmental assessment will be determining factors in the decision on whether to fund the project.

Projects that have significant environmental impact or arouse strong public concern may also be referred to the Canadian Environmental Assessment Agency, which will submit them to a review panel, an advisory committee or a mediator before reaching a decision.

Item 4: Review of the environmental assessment report

Presentation and clarity:

- Is the report clear and well organized?

Analysis:

- Is the scope of the assessment appropriate?
- Have all relevant factors been considered (terms of reference, [CEAA](#))?
- Are there any serious gaps in the information or analysis?
- Are the proposed mitigation measures appropriate?
- Have public concerns been adequately considered?
- Is the proposed follow-up program appropriate?
- Are the analytical methods and results presented in a clear and concise manner that will permit an informed decision?
- Are the sources of information reliable?
- Are the assumptions and uncertainties explicitly stated?



2.5 ENVIRONMENTAL MANAGEMENT PLAN

For industrial and infrastructure projects, the company must prepare an environmental management plan setting out the objectives to be achieved and the measures to be taken to mitigate environmental damage and to permit the most environmentally responsible operation possible at all phases of the project (site preparation, construction, operations, abandonment). If the environmental assessment has identified the need for a follow-up program, it should be included as well. The environmental management plan should cover the entire life-cycle of the production process, including raw materials, products and wastes. It ensures the adoption of a coordinated and efficient approach to environmental issues.

A growing number of industries and organizations recognize the value of such a plan. For example, the International Standards Association has developed international standards (ISO 14000) for environmental management systems.

At the project support stage, the environmental management plan must include the following elements in particular:

Objectives of the plan. The objectives of the environmental management plan should be described. Performance must be measured on the basis of environmental indicators.

Mitigation strategy. This section describes how environmental impacts are to be addressed. It lists the mitigation measures. Internal regulations and control measures should be adopted to:

- improve energy efficiency;
- minimize waste production and water consumption;
- replace or eliminate toxic products;
- promote recycling and recovery of wastes and waste water;
- reduce the adverse effects of plant operations on the environment.

Compliance. This section indicates the legislation, regulations and, in some cases, the guidelines, codes of practice and policies with which the environmental management plan + complies.

Environmental effects monitoring program. This part refers to the measures, procedures and management mechanisms proposed to ensure effective implementation of the environmental measures. It explains how the anticipated effects will be monitored and how the effectiveness of the mitigation measures and the need for other environmental management techniques and methods will be determined.



Health and safety plan. This relates in particular to the operational safety plan developed to prevent emergency situations. This plan describes the measures designed to protect employees and lists the existing emergency response equipment. The plan also describes the operational safety measures and environmental practices adopted.

Emergency response plan. This plan permits rapid and effective response in the event of an accident. Its thoroughness determines the organization's capacity to protect employees or the environment in the event of an emergency.

Human resources and training. This section deals with the human resources and training required to ensure application of the environmental management plan. In particular, it may cover health and safety; handling, transportation and storage of hazardous substances; environmental practices applicable to the project, etc.;

Responsibility. The authorities responsible for mitigation measures and general supervision must be clearly identified.

2.6 ENVIRONMENTAL ASSESSMENT AUDIT

For a period of five years following payment of the final instalment of its financial contribution, CIDA may conduct site visits or an environmental assessment audit to determine whether the mitigation measures and follow-up program have been implemented as stipulated in the environmental assessment report or environmental management plan.

2.7 FURTHER INFORMATION

For further information on CIDA's environmental requirements, contact an environmental adviser at:

Environmental Division
Policy, Strategic Planning and Operations (PSPO)
Canadian Partnership Branch
CIDA
Tel.: (819) 997-1167



Appendix A - Highlights of the Canadian Environmental Assessment Act (CEAA)

1. When does the CEAA apply?

The [CEAA](#) applies whenever CIDA provides financial assistance to a project (as defined by the [CEAA](#)). A “project” is defined by the [CEAA](#) as “any proposed construction, operation, modification, decommissioning, abandonment or other undertaking” in relation to a physical work or a physical activity that is listed in the *Inclusion List Regulation*. The *Projects Outside Canada Environmental Assessment Regulation* specify the obligations and the procedure to be followed. CIDA is the authority responsible for determining whether a project is subject to the [CEAA](#).

Some projects do not require an environmental assessment under the [CEAA](#) because of their minimal impact on the environment. These are listed in the *Exclusion List Regulation*. Examples include the maintenance and repair of an existing physical work and the construction of a building with a footprint of less than 100 m² that would not be carried out in or on or within 30 metres of a water body or involve the likely release of a polluting substance into a water body.

2. What must the environmental assessment cover?

Where a project is in relation to a physical work, the environmental assessment must be conducted in respect of every construction, modification, operation, maintenance, decommissioning, abandonment or other undertaking in relation to that physical work. CIDA is responsible for determining the scope of the assessment. For example, in the case of a manufacturing plant, the assessment may encompass siting, construction, operation and maintenance, installation of an electrical transmission line, construction of an access road, etc. In the case of a road, it must cover the impact of siting, construction and maintenance, extraction and transportation of the gravel required for the road, etc.

The factors to be considered in the environmental assessment and the level of effort required to undertake the assessment will vary with the type of project, but must include the following elements:

- the environmental effects of the project, including the environmental effects of malfunctions or accidents, any change to the project that may be caused by the environment, and any cumulative environmental effects that are likely to result from the project in combination with projects or activities that have been or will be carried out;
- the significance of the effects;
- comments from the public;
- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project;
- any other relevant matter, such as the need for the project and alternatives to the project, the need for, and the requirements of, any follow-up program in respect of the project; and



- the capacity of renewable resources that are likely to be significantly affected by the project to meet the needs of the present and those of the future.

3. What is meant by "environment" and "environmental effect"?

The “environment”, as defined by the [CEAA](#), means “the components of the Earth” and includes:

- a. land, water and air, including all layers of the atmosphere,
- b. all organic and inorganic matter, living organisms, and
- c. the interacting natural systems that include components referred to in paragraphs a. and b.

The [CEAA](#) defines “environmental effect” as “any change that the project may cause in the environment, including any effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance”. All these elements should be explicitly considered in the environmental assessment report and their significance assessed.

4. How is the environmental assessment considered in the project approval?

CIDA will review the environmental assessment report and determine the significance of the environmental effects of the project, taking into account the proposed mitigation measures. CIDA may not grant financial assistance to any project that generates adverse environmental effects.

Where it is uncertain whether the project will cause significant environmental effects or is likely to cause significant adverse environmental effects that may be justified under the circumstances, the project must be referred to a panel review, an advisory committee or a mediator prior to a decision. Public concerns may also warrant such a reference.

5. Public access to information on the environmental assessment

All information relating to the project's environmental assessment will be filed in the Public Registry, except information considered confidential under the *Access to Information Act*.

This public information includes, in particular, the environmental assessment report, related correspondence, the environmental follow-up, the environmental management plan and any other relevant information. The environmental assessment report must contain enough information to allow the Canadian public a good understanding of the project. Where applicable, it is the company's responsibility to submit separately those parts of the report that are to be considered confidential under the *Access to Information Act* or the *Privacy Act*.

Further information on the [Canadian Environmental Assessment Act](#)

The [Canadian Environmental Assessment Act](#) and related amendments and regulations:

Government of Canada. Canadian Environmental Assessment Act. Assented to June 23, 1992, proclaimed January 19, 1995.

SOR/94-638 The Comprehensive Study List, Inclusion List and Exclusion List Regulations. October 19, 1994. Canada Gazette, Part II, Vol. 128, No. 21. These Regulations complement the Canadian Environmental Assessment Act.

Chapter 34. Miscellaneous Statute Law Amendment Act, 1993. This Act corrects certain anomalies and errors in the French version of the Canadian Environmental Assessment Act.

Chapter 46. An Act to Amend the Canadian Environmental Assessment Act. Assented to December 15, 1994.

JUS-96-736-OIC Projects Outside Canada Environmental Assessment Regulation. These regulations came into force on November 7, 1996.

To obtain these documents, contact:

Canada Communications Group - Publishing

Ottawa, ON

K1A 0S9

Tel.: (819) 956-4800 or 1-800-565-7757, Fax: (819) 994-1498 INTERNET: <http://www.ceaa.gc.ca>.

For further information on the *Canadian Environmental Assessment Act* and its regulations, contact:

Canadian Environmental Assessment Agency

9th Floor, Fontaine Building

200 Sacré-Coeur

Hull, QC

Canada

K1A 0H3

Tel.: (819) 997-1000, Fax: (819) 994-1469

INTERNET: <http://www.ceaa.gc.ca>.



Appendix B - Proposed content of the Environmental Site Assessment (ESA) Report³

The environmental site assessment is used to identify any environmental problem arising from existing facilities. The proposed content is not exhaustive and the report should include any other information that may be considered relevant. Finally, to meet CIDA requirements, the proponent must include with this study an assessment of the proposed operations arising from the current project.

1. SUMMARY

The summary should present a concise description of the study and its principal conclusions.

2. INTRODUCTION

The introduction should outline the content of the Phase I ESA. The amount of information to be compiled will depend on its relevance in assessing the environmental conditions of the site. Factors affecting the choice of information include the activities conducted on the site and adjoining lands, the legislative framework and published guidelines applicable to the site, the materials used on the site, the types of processes and activities conducted on the site, the amount of information available on environmental safety on the site, and the client's need for additional information. (Note that the Phase I ESA presupposes the use of qualified and objective assessment experts.) Remember that the purpose of a Phase I ESA is to identify signs of actual and potential pollution on a site, that is, the probability of pollution, its location and the types of pollutants. The scope of the work must be noted (the party for whom the Phase I ESA is being prepared, the land in question, the activities to be undertaken for the Phase I ESA). Since the adjoining lands may affect or be affected by the site assessed, an appropriate scope must be defined for the study. The scope of the research will be determined on the basis of the current and historic uses of the site in question and the adjoining lands, known or suspected pollution on the site and adjoining lands and, where applicable, the proposed future use of the site, rezoning plans or official development plans.

3. SITE DESCRIPTION

A site description must be provided to support the information sections.

4. FILE STUDY

The file study involves the collection of data on previous activities that may have contributed to existing pollution and affected the environmental conditions of the site. This section will include the history and uses of the site, the history and uses of the adjoining lands and the sources and methods used. (The sources must be identified in sufficient detail to allow reconstruction of the research and to determine their limitations.)

In general, the following files should be studied, when available:

³Based on Standard CSA-Z768-94; see: CSA (Canadian Standards Association). 1995. Phase I Environmental Site Assessment. Environmental Techniques. Toronto: CSA. (416) 747-4000



- aerial photographs (historic and general use of the site and adjoining lands, structures and improvements, tank farms, quarries and sandpits, poorly drained areas, site access, areas of disturbed soil, etc.);
- sources of information on the use of the site and adjoining lands (including insurance files and industrial or municipal directories of activities);
- title searches (chronology of the property and adjoining lands);
- previous Phase I ESAs (with necessary time-space qualifications);
- geological and geotechnical reports;
- corporate files (including site plans, building plans, permits, production or maintenance files, asbestos surveys, illustrations of site utilities, emergency response measures or emergency plans, spill files, chemical supplies with descriptions of their use, material safety data sheets, results of ongoing environmental monitoring, waste management files, list of underground and aboveground storage tanks, and environmental audit reports);
- regulatory information (including permits, certificates of approval, storage tank registrations, legal proceedings, work orders, control orders, previous complaints, violations of laws, regulations and orders).

Additional useful information may be obtained from:

- geological, hydrogeological and soil maps (bedrock, petrography, faults, folds, formational contacts, unconsolidated deposits, unconsolidated material, groundwater runoff, aquifers, groundwater chemistry, pollutant filterability, factors affecting pollution migration);
- well logging or water well data bases;
- topographical maps (filled areas, etc.);
- purchase and sale agreements (including guarantees or special conditions regarding pollution);
- thematic maps and official plans (including information on rezoning, subdivision, construction and demolition permits applicable to the site);
- public health information (public health concerns related to pollution of the site, the adjoining lands or the community in general, inspection and monitoring of water distribution and wastewater systems, public health notices concerning hazardous materials);
- utility files (to check the existence of distribution systems);
- local sources of information (municipal archives, public libraries and other sources of information on the history of the site, including photographs, maps and newspaper articles);
- lists of landfill sites, PCB-containing waste storage sites, coal gasification plants, underground and aboveground storage tanks;
- air, surface water and groundwater quality data;
- waste producer registrations.

5. SITE VISIT



The method used to make observations on the site and adjoining lands must be described. General boundaries must be noted, including physical obstacles (such as neighbouring buildings, waterways and paved areas) and limiting conditions (including snow or rain, denied access, inaccessible areas and security measures). The site visit must allow the observation and description of the following elements: current uses or evidence of previous uses of the site (including activities such as the use, handling, storage, disposal and production of hazardous materials, soil filling or the storage of wastewater in holding tanks); current and previous uses of adjoining and adjoining lands; inventory of hazardous materials, including wastes (approximate quantity of materials, types of containers and storage conditions); unknown substances located on the site (approximate quantities, types of containers and storage conditions); aboveground and underground storage tanks (approximate age, size and, where possible, content; location of abandoned or retired tanks; vent pipes, filling pipes and access roads indicating the presence of underground storage tanks); storage containers (presence, condition and, where possible, content); strong, acrid or offensive odours and their potential sources; sources of potable water; potential presence of substances such as polychlorinated biphenyl (PCB), asbestos-containing materials, lead, ozone-depleting substances, urea-formaldehyde foam insulation (UFFI) and radon; noise, electromagnetic frequencies and vibrations.

Specifically, interior observations must include:

- inspection of structure interiors to detect any sign of pollution (areas under floors, above ceilings or behind walls need not be inspected unless they are accessible);
- description of heating and cooling systems, type of energy (fuel) and waste disposal methods;
- description of stains on floors, walls or ceilings (where possible, the size of the stain should be indicated and the potential source described);
- description of cracks, proximity of floor drains and catch basins or any other means by which pollutants may escape from a source;
- location and state of drains and disposal wells showing signs of pollution.

Specifically, exterior observations must include:

- inspection of exterior structures located on the site, to detect any sign of pollution (including an examination of the exterior surfaces of the structures, such as roofing, and soil);
- observation of adjoining lands and the structures located thereon from the site in question and from a publicly-accessible vantage point;
- observation of topographical conditions on the site and in the surrounding area (including subsurface exposure conditions);
- description of the structures and other improvements located on the site (number of buildings, approximate age, number of floors and location);
- description of abandoned or existing wells (water, oil, gas, injection wells);



- description of waste disposal method and disposal systems on the site;
- description of drainage ditches and dugouts on the site and adjoining lands;
- description of stained materials (soil, asphalt, etc.);
- description of the location and extent of stressed vegetation;
- description of areas that appear to have been filled or levelled by other than natural means (or filled with material of unknown origin);
- description of wastewater and other liquid wastes;
- description of surface water (rainwater and runoff on or near the site, gullies, streams, rivers, ponds, lakes);
- public thoroughfares (roads, parking lots and rights-of-way crossing or bordering the site).

6. INTERVIEWS

Interviews are used to corroborate or complete information collected in the file study and site visit or to obtain information for use in planning the site visit. The questions to be asked should deal with current and past activities on the site and events that may affect environmental conditions and pollution on the site, and should focus on relevant information identified in the course of the file study and site visit. Interviews may be conducted in person, by telephone or in writing, before, during or after the site visit. Reasonable follow-up should be provided to ensure that answers are obtained. If the assessment expert has been unable to obtain answers or has not received full answers to his questions, this fact should be noted, together a description of the method used and its limitations. A representative number of site occupants must be interviewed, ideally during the site visit. Where appropriate, and with the client's consent, the assessor may arrange interviews with neighbours of the site and former employees. The assessment expert must make a reasonable effort to interview at least one staff member who is thoroughly familiar with the site in question and at least one of the following government agencies (explaining the reasons for his choice):

- the public health authority serving the region where the site is located;
- the local agency or regional office of the federal, provincial, territorial or municipal agency responsible for environmental issues in the region where the site is located;
- the fire station serving the site;
- engineering services and public works departments.

7. RESULTS AND ASSESSMENT OF RESULTS

In assessing information, it is important to distinguish between fact and opinion. Clearly indicate any actual or potential polluted areas, the bases for the results and the relative degree of uncertainty associated with the results and the evidence of potential pollution. All results, including null findings, must be noted in the report. The report must indicate the dates on which results were obtained. The



report must describe tasks not completed because of limiting conditions, such conditions existing only in those cases where a task cannot be performed.

8. CONCLUSIONS

This section must indicate that the Phase I ESA:

- (i) revealed no evidence of pollution on the site;
- (ii) revealed evidence of potential pollution on the site (indicated and described);
- (iii) revealed evidence of actual pollution on the site (indicated and described); or
- (iv) revealed evidence of actual and potential pollution on the site (indicated and described).

The conclusions must be presented in a manner that can be understood by the client; they must describe the methods used to reduce the degree of uncertainty and justify the use of these methods. The conclusions must be supported by results, including null findings, and provide sufficient detail to allow reconstruction of the results and conclusions. The relative dates of the conclusions must be indicated in the report.

9. QUALIFICATIONS OF ASSESSMENT EXPERT

The report must indicate the names of the key participants involved in the main stages of the Phase I ESA. The assessment expert's signature and qualifications must be included as well.

10. REFERENCES AND SUPPORTING DOCUMENTS

The report must indicate the documents, including references and key exhibits, supporting its results and conclusions. The report must also list the relevant federal, provincial/territorial and local legislation and published guidelines on which the results or conclusions of the Phase I ESA are based.

11. APPENDICES

The appendices generally contain maps, figures and photographs, title and historical documents, regulatory documents, interview documents and the contract between the client and the assessment expert.



Appendix C - Checklist for the Environmental Assessment of Small Manufacturing Plants⁴

Any manufacturing project may have adverse impacts on the natural environment and the local population, particularly if environmental considerations are not properly integrated into its planning and design. These guidelines are designed to assist the applicant in assessing the environmental impact of the project. They are not exhaustive and should be adapted to include any other issues relevant to the proposed project and site. These issues relate to the various phases of the project:

- A. Project preparation
- B. Design
- C. Site preparation and construction
- D. Operations
- E. Termination and abandonment

A. **Project Preparation**

Need for the product or service: Explain the need for the product or service in terms of historic, present and projected demand. Compare various competing processes and/or products capable of meeting the demand and establish the location of the demand.

Alternatives to the project: Indicate the alternative solutions considered and their comparative advantages, particularly on the biophysical and socio-economic levels.

Importance of the site: One of the objectives of the environmental assessment is to determine whether the proposed location is a good choice. It is important to look not only at the commercial aspects associated with this choice (production, market, water supply), but also at the environmental aspects (ecological resilience and assimilative capacity, cultural and social constraints, etc.). In general, ecologically sensitive areas should be avoided. Populated areas should also be avoided if the plant will generate high noise levels, heavy traffic or emissions; alternatively, a buffer zone should be provided between the plant site and inhabited areas.

Resettlement: Will the project force out local residents? The presence of transients or the eviction of squatters living illegally on project lands is another complex issue. While this type of occupation is not officially recognized, these people should nevertheless be considered in the planning process.

⁴This checklist is adapted from the Asian Development Bank's list of environmental effects commonly associated with industrial projects.



Land and resource use: Use of water resources, renewable and non-renewable natural resources, agricultural land, traditional land use (hunting, fishing, areas of religious significance, etc.), scenic views, zoning laws, wilderness areas, urban areas, etc.

Effects on property values: Ownership and use of adjacent properties. Positive and negative effects of the project on land values and manner in which adverse effects will be dealt with in the planning process, particularly as regards the need for compensation.

Water supply and hydrology: The use of water may affect water availability for other users in the community or region. The site selection process should determine whether the water supply is adequate in terms of quantity and quality and indicate the security of the supply.

Encroachment on valuable ecological components: Encroachment on forests, marshlands and other valuable areas could prove extremely disruptive. Consideration should be given to the intrinsic value of forest/wildlife resources and the possible impact of the project on these resources, including fish and wildlife, plant communities and rare and endangered plant and animal species.

Encroachment on physical and cultural heritage: Consideration should be given to the historical and cultural value of the proposed plant site and adjacent land to ensure the protection of monuments and sites of historical, cultural, archaeological, paleontological, architectural and spiritual significance.

Traffic: Will there be any change in traffic type, volume or frequency? Careful consideration should also be given to the risk of accidents, particularly with respect to hazardous wastes, and the potential congestion, smog and noise problems resulting from construction and operation of the plant.

Socio-economic impact: Assess the positive and negative impacts of the project on the local population, particularly on certain groups (women, the poor, etc.). It is important to understand the social context in order to identify the potential impacts, since they may vary widely depending on the location (urban/rural, cultural context, social structure, etc.). It may be necessary to consult the population concerned for information on the local context and public concerns about the project. Points to be considered include the impact of migrant workers on community services and socio-cultural aspects, reductions in land values, deterioration in quality of life (heavy traffic, loss of access to certain resources, noise, etc.), inequitable income distribution, etc.

Relationship to other existing and future industries and infrastructures: What are the development characteristics of the site/area? How will the project, in combination with other existing and future projects, affect the natural environment and community infrastructures (energy potential, water supply, downstream effects and other cumulative effects)?



Public concerns: Does the public view the project with hope or fear? Public concerns should be taken into account in project siting and design.

Other: Any other issue.

B. Project Layout and Design

Plant layout and processes: Topographical maps or aerial photographs of suitable scale may be used to illustrate the principal geographical and environmental features of the proposed site. Provide any relevant information: descriptions, drawings or plans showing the plant layout (size and height of buildings, transmission lines, roads, etc.), processes, pollution prevention and control devices, waste emissions, etc.

Water requirements: The plant's estimated water requirements (quantity and quality). Consider means of minimizing water requirements, including water recycling and treatment.

Liquid effluents: Production residues may pollute groundwater and water bodies and affect downstream communities. A quantitative and qualitative estimate of the liquid effluents and disposal methods should be presented. Careful attention must be given to downstream waterways and users likely to be affected by the liquid effluents and to the potential impact on groundwater.

Air pollution: Airborne pollutants may affect human health and comfort, plant life, environmental aesthetics, etc. Pollution control devices to limit point source emissions of dust and fumes must be installed and adequately maintained.

Energy demand: Excessive energy demand may place undue pressure on local capacity. Proper consideration should be given to energy-efficient equipment and design and to the security of the energy supply. Energy consumption should not adversely affect other users.

Solid wastes: Where possible, provide for reduction at the source and recycling of solid wastes. Non-hazardous commercial solid wastes can generally be disposed of by conventional methods. Hazardous wastes require special handling and disposal methods.

Toxic or hazardous substances: Name, volume and characteristics of toxic or hazardous substances entering or leaving the plant, including all residual emissions (liquid, gaseous, solid). Concentration levels should be measured against environmental standards (see "Environmental standards", below). An emergency response plan may be required for incidents involving the transportation, handling and storage of hazardous substances.



Environmental standards: The company should be aware of and comply with the host country's standards for emissions, air quality, water quality, noise level, etc. In cases where these standards do not exist or are obsolete, the company should comply with Canadian or international standards.

Noise and vibrations: The effects of changes in noise and vibration levels may range from simple discomfort to serious health problems. Noise level should be controlled by various means: reduction at the source (e.g.: choice of appropriate equipment), installation of barriers and noise abatement equipment, reduction of working hours, etc.

Drainage: Inadequate drainage may result not only in flooding of the plant and adjacent land but also in the release of large quantities of polluting materials that would otherwise never have reached the waterways. This aspect requires careful planning.

Traffic: (see above).

Socio-economic context: Special management measures may be required: training of local applicants, working conditions and safety, compensation for reductions in land value, support for local social infrastructures, adaptation of working hours, daycare, etc.

Environmental aesthetics: Will the presence of the plant adversely affect environmental aesthetics (scenic views) and, if so, has this fact been taken into account in the plan (site selection, architectural design, landscape)?

Environmental management plan: Environmental concerns should be an integral part of the environmental management plan: occupational health and safety plan, emergency procedures, water and energy conservation, waste management, monitoring of specific pollutants, receiving aquatic and atmospheric environments, etc. For liquid and gaseous waste emissions, modelling may be required for realistic and reliable prediction and monitoring of concentration levels of the principal parameters of pollution.

Other: Any other issue.

C. Construction

Present the proposed construction operations in detail, together with the methods applied to reduce their impact (including a description, if necessary).

Site preparation: Site clearing and preparation and final clean-up and landscaping following construction. Particular attention should be given to preventing soil erosion and silt runoff caused by the existence of bare cleared/filled areas.



Construction materials: Source and transportation of construction materials (quarry products, lumber, cement, etc.);

Water supply: Source of water supply.

Hazards to workers and the local population: Construction site security, risk of accidents (including fire and explosions), spills of hazardous materials, quarrying hazards, risk of communicable disease, noise and vibrations, dust, etc.

Housing and transportation of workers: Sanitary conditions, potable water supply, disposal of sanitary wastes, etc. Particular attention should be given to the impact of large numbers of migrant workers on the local population (particularly in small communities).

Effluents, emissions and solid wastes: Location and description of effluents; emissions; waste disposal methods; noise; adverse impact on aesthetic factors, etc., during construction.

Site monitoring: Ensure that construction work is carried out in accordance with the plan (which should include environmental protection measures).

Other: Any other issue.

D. Operations

Pollution: Impact of gaseous, liquid and solid wastes on groundwater and downstream waterways (and their users), local/regional air quality, soil, human population.

Hazards to workers and local population (nuisances, health risks, pollution): Effects of various emissions (dust, fumes, odours, pollutants, hazardous materials, etc.) and traffic congestion on workers, the local population and property. A plan should be developed to address these health and safety issues. The plan should include: emergency procedures, routine health examination/surveillance program, compensation of injured workers, injury prevention (hazardous material spills, accidents, fires, excessive noise, dust, fumes), in-plant sanitation maintenance program (proper management of sanitary wastes, potable water supply, adequate sanitary facilities), adequate housing for workers' families, etc.

Social impacts: (see section A).

Environmental management plan: (see section B).

Other: Any other issue.

E. Termination and abandonment

Consideration should be given to the expected life of the project, problems that may occur as a result of abandonment of the facilities and measures to be taken to avoid these problems.



Appendix D - Assessment of Impact Significance

The assessment of impact **significance** generally requires the consideration of various parameters, including the value assigned to the component concerned and the intensity, scope and duration of the impact.

The **value** of a component relates to its rarity, uniqueness and importance to society and its ability to withstand change. Based on these criteria, the value of a component may be low, medium or high.

The **intensity** of the stress varies from low to high, depending on the degree to which the resource is altered. A low-intensity stress results in slight alteration of one or more environmental components, without significantly altering its use, characteristics or quality. In contrast, a high-intensity stress significantly alters a component, compromising its integrity or considerably reducing its use, characteristics or quality.

The **scope** of the impact may be specific, local, regional or national. A specific scope corresponds to a well-defined stress, affecting a small area used by a limited group of individuals. A local scope relates to a wider area. Finally, a regional scope relates to extensive areas or large communities. In the case of resources of exceptional value, impacts may also be considered national in scope.

Finally, the **duration** of the impact may be relatively short (lasting for a specific limited period or a few years) or long (lasting for several years or permanently).

In the grid shown on the following page, the first step consists of establishing the degree of stress, based on the intensity and scope of the impact (part one of the table). In the second part of the table, the degree of stress is related to the relative value assigned to the environmental component concerned and the duration of the stress. This determines the overall significance of the impact.



Degree of Stress				
Intensity	Scope			
	Specific	Local	Regional	National
Low	1	1	2	2
Medium	1	2	2	3
High	2	2	3	3

Significance of Impact			
Value	Degree of Stress		
	1	2	3
Short-term			
Low	Low	Low	Low
Medium	Low	Low	Medium
High	Low	Medium	High
Long-term			
Low	Low	Low	Low
Medium	Low	Medium	High
High	Low	High	High