

Environmental and Social Management System Arrangement

September 2017

Sri Lanka: Small and Medium-Sized Enterprises Line of Credit Project

Prepared by Hatton National Bank for the Asian Development Bank.

The environmental and social management system arrangements is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.



Environmental and Social Risk Management System Including Environmental & Social Review Procedures

Secton 1



Technical consultancy:

EML Consultants

Innovativkonzept

International Institute of Development Training

This Environmental and social risk management systems and procedures will enable Hatton National Bank (HNB) to implement its Environmental and Social Management Policy and to adopt necessary procedures to meet the requirements set by borrower agencies as well as to assist bank employees in assessing and managing environmental and social risks that relate to the bank's client's/investee's operations

TABLE OF CONTENTS

| | |
|---|----|
| 1. Introduction to Environmental and Social Management System(ESMS) | 1 |
| 1.1 Benifits of ESMS and ESRP..... | 3 |
| 1.2 Scope & Applicability | 4 |
| 2 Environmental & Social (E&S) Policy of HNB | 5 |
| 3 Addressing E&S Risks arising from HNB’s lending operations | 6 |
| 4 Risk Assessment Procedure by the HNB..... | 10 |
| 4.1 Credit Risk Management Process of HNB | 10 |
| 4.2 Revisions introduced for Risk Adequate Credit Appraisal Procedure | 10 |
| 4.3 ESMS Proposed Institutional Structure..... | 20 |
| 5 Management Capacity & Training Needs..... | 24 |
| 6 Environmental & Social Review Procedure (ESRP) | 26 |
| 6.1 Initial Screening of loan applications | 26 |
| 7 E&S Risk Categorization | 29 |
| 7.1 Risk Categorization Tool – EASI | 29 |
| 7.2 Dealing with loans under different risk categories | 31 |
| 8 Environmental & Social Due Diligence (ESDD) | 34 |
| 8.1 Environmental & Social Risk Mitigation | 37 |
| 9 Brief Introduction to IFC PS and Process Involved in Compliance..... | 40 |
| 9.1 Scope of work for the Bank’s external Consultant during E&S due diligence... | 41 |
| 10 Credit Approval & Legal Documentaion | 43 |
| 11 Environmental & Social Monitoring Report | 44 |
| 11.1 Summary overview of suggested process steps, responsibilities, tools needed, time frames | 45 |
| Annextures | 48 |
| Contact ESMS Unit | 94 |

List of Tables

| | | |
|----------------|---|-----------|
| Table 1 | HNB Lending Procedure Incorporated with ESMS – Summary | 11 |
| Table 3 | Bank’s Lending Procedure integrated with E&S Risk Assessment and Loan Management..... | 16 |
| Table 4 | Responsibility Matrix..... | 22 |
| Table 5 | HNB’s Key Stakeholders and Sustainability Vision | 24 |

List of Figure

| | | |
|-----------|--|----|
| Figure 1 | Components of an ESMS | 2 |
| Figure 2 | E&S Risk for Financial Institutions | 6 |
| Figure 3 | ESMS Integrated with existing Risk Management Procedure..... | 8 |
| Figure 4 | Credit Risk Management Process of HNB | 10 |
| Figure 5 | HNB Policies & Process at work | 15 |
| Figure 6 | Roles and Responsibilities | 20 |
| Figure 7 | Draft Organogram for ESMS Integration | 21 |
| Figure 8 | Summary of E&S Review Procedure..... | 26 |
| Figure 9 | High Risk Category..... | 32 |
| Figure 10 | Medium Risk Category | 33 |
| Figure 11 | Low Risk Category..... | 33 |
| Figure 12 | IFC approach for E&S Due Diligence | 35 |

List of Annexures

| | | |
|----------|--|----|
| Annex 1 | ESMS Checklist for Senior Management Approval | 48 |
| Annex 2 | Bank’s Exclusion list | 50 |
| Annex 3 | Project’s Environmental & Social Impact Initial Screening Form | 52 |
| Annex 4 | Environmental and Social Review Check List | 53 |
| Annex 5 | Environmental and Social Due Diligence (ESDD) Report for Banks | 57 |
| Annex 6 | Example of a Typical ESDD Summery Report | 60 |
| Annex 7 | Monitoring and Supervising Format (to be used by the independent Evaluators) | 63 |
| Annex 8 | Examples of Prescribed Projects by Environmental Risk Category | 66 |
| Annex 9 | Manual (Explanations on how to fill in EASI) | 70 |
| Annex 10 | Glossary | 78 |
| Annex 11 | Amendments to the Credit Policy | 83 |
| Annex 12 | HNB Guidelines on Sustainable (Green) Procurement & Operations | 86 |
| Annex 13 | General Operations: Guidelines | 91 |

Abbreviations

| | |
|-----------------|---|
| CB | Corporate Banking |
| CEA | Central Environmental Authority |
| CSR | Corporate Social Responsibility |
| CO ₂ | Carbon dioxide |
| DEG | Deutsche Investitions- und Entwicklungsgesellschaft |
| DFI | Development Financing Institutions |
| E&S | Environmental and Social |
| EIA | Environmental Impact Assessment |
| EML | Environmental Management Ltd |
| EHS | Environmental Health and Safety Guidelines |
| ESAP | Environmental and Social Action Plan |
| ESDD | Environmental and Social Due Diligence |
| ESMS | Environmental and Social Management System |
| ESM | Environmental and Social Manager |
| ESRP | Environment and Social Review Procedures |
| ESRS | Environmental and Social Review Summary |
| HNB | Hatton National Bank |
| IFC | International Finance Corporation |
| IK | Innovativ Konzepts |
| FI | Financial Intermediary or Financial Institution |
| SB | Sustainable Banking |

INTRODUCTION TO THE MANUAL

The E&S Policy and the set of procedures outlined in this manual constitute the Bank's ESMS, which will match similar procedures laid down by IFC for Financial Intermediaries (FIs)¹.

This ESMS manual is presented in two parts. The first section constitutes the ESMS together with its procedures (ESRP). The second section is the Reference Manual. In preparing the ESMS and the ESRP, resources were drawn from similar procedures adopted by the IFC for Financial Institutions.

The first section which contains the procedures is supported by several documents. They are the checklists and formats often to be used by ESMS team during the application of the procedures. They are as follows:

- ◆ ESMS checklist for senior management for approval
- ◆ A format to be used for environmental screening of loan applications
- ◆ A checklist to be used for Environmental and Social Assessment
- ◆ A Social and Environmental Due Diligence Report (SEDDR) for Banks
- ◆ A Format indicating suggested SEDD Report Outline
- ◆ Example of a Completed SEDD Report for a Bank
- ◆ Specimen Datasheet for Loan Appraisal
- ◆ A Monitoring Format to be used by an Independent Consultant
- ◆ Reporting Format to the IFC & DEG²

Guidelines have been given in the main document explaining how and when the above formats and checklists can be used during different stages of the E&S risk assessment of the Loans.

The Reference Manual (RM) presents the country's Environmental and Social Policies and the source documents on IFC performance Standards including that of World Bank EHS guidelines together with their links to relevant web pages for the easy accessibility of such information. A section on the gaps between the country E&S policies and IFC PS is also included.

The HNB staff will be required to be familiar with the contents given in the RM. It will help the HNB loan appraising staff to understand the context in which E&S risks

¹ A format to be used by the senior management of the bank to sign off the E&S review procedure is given in Annex (1)

² Reference the agreement with DEG , there is a reporting requirement to DEG periodically

assessment depending on the type and nature of the loan, and thereby to decide the level of due diligence required.

Time to time the procedures provided in this draft document will be revised if such revision is warranted.

1 Introduction to Environmental and Social Management System (ESMS)

The Environmental and Social Management System (ESMS) is a framework that integrates Environmental and Social Risk Management into a Financial Institution’s business processes (in case of a Bank). It is a set of actions and procedures that are implemented concurrently with the Financial Institution’s existing risk management procedures.

ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM (ESMS)

An ESMS may be considered as the organizational structure and associated responsibilities and procedures required integrating environmental and social considerations and objectives into the ongoing management decision-making processes and operations of an organization to alleviate environmental and social impacts.

The ESMS ensures that HNB’s lending activities are in compliance with accepted social and environmental risk assessment procedures and standards. It helps the Bank, to avoid and/or manage proactively any social and environmental risks likely to arise from a project or activity for which the bank grants a loan , by conducting social and environmental due diligence prior to loan approval and disbursement.

ESMS is therefore a proactive approach to serve as a deterrent during the term of the loan agreement, which imposes adequate E&S risk mitigation and supervision.

The ESMS for HNB is being developed based on the typical components of similar processes and systems adopted by IFC for the financial institutions³. The flow diagram of the components on which the ESMS is being developed is given in the figure (1) below. It contains the E&S policy, the management structure and review procedures and reporting requirements.

Therefore, the proposed ESMS and its operational procedures shall complement the Bank’s existing environmental and social policies, risk management practices and operational procedures and will thereby be aligned with the Bank’s typical loan management cycle.

The main objectives of the ESMS are:

- To identify and assess social and environment impacts of the lending activities of the Bank and thereby to enhance its understanding of environmental and social risks (E&S) associated with Bank’s transactions.

³ It should be noted that IFC has already developed procedures and guidelines that could be applied by banking institutions and therefore most of the procedures and guidelines have been found in this document are the ones adopted/developed by IFC for Financial Institutions.

- To promote improved social and environmental performance of client companies which arises from existing weaknesses of local legislation (e.g. insufficient EIAs).
- Adherence to IFC's Performance standards (PS), international best risk management practices when financing the private sector activities and thereby to significantly reduce the Bank's environmental and social risks.

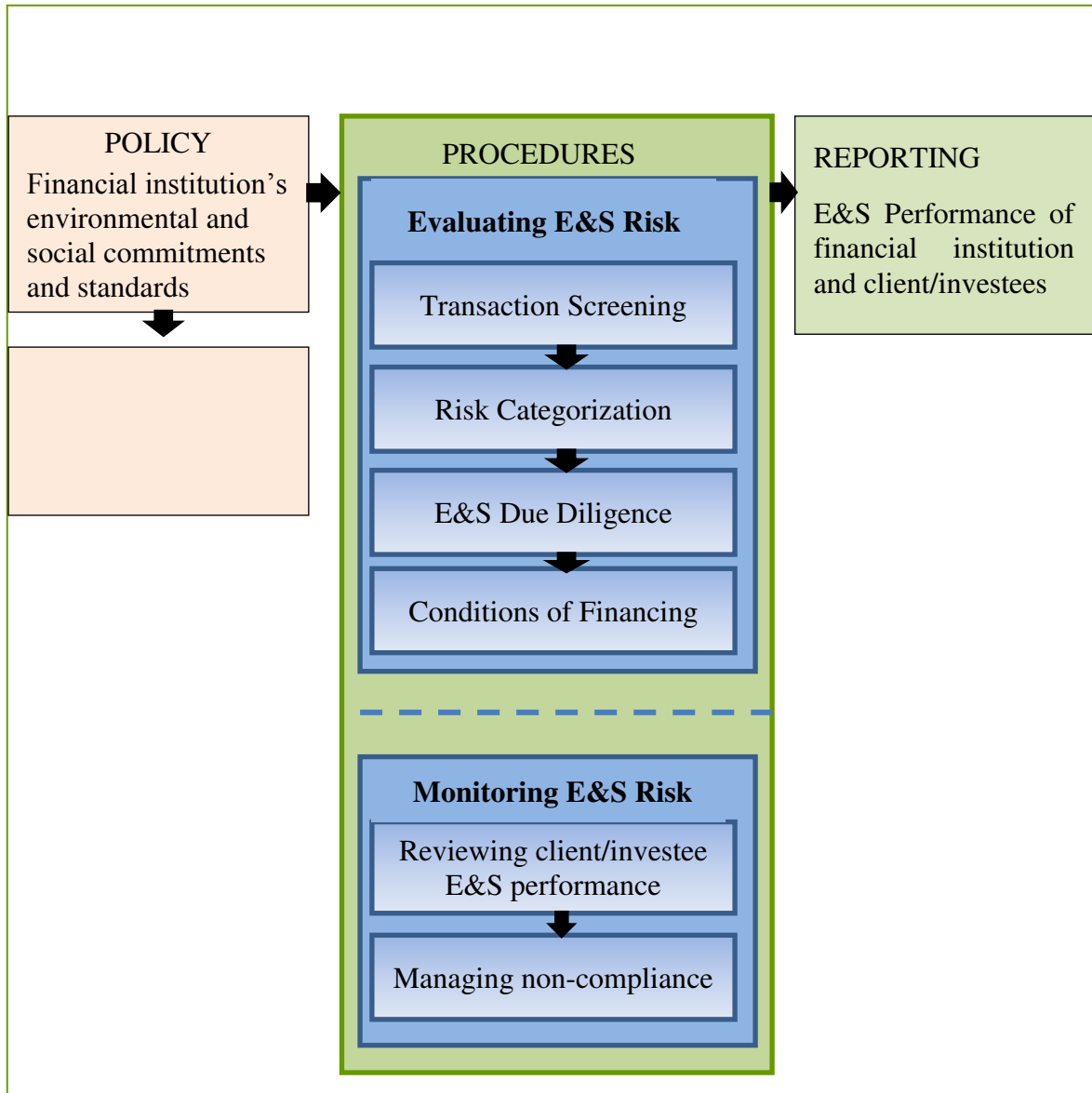


Figure 1 Components of an ESMS

The Environmental and Social Policy of HNB and the relevant procedures provide measures to be adopted by the Bank to implement full scale E&S risk analysis and management strategies, vis-à-vis:

- Loan applicants are initially screened to ensure that they will not be eligible to apply for loans which are in the exclusion list.
- E&S risk levels of the intended projects for which loans are requested be categorized in terms of the magnitude of the social and environmental risks.

- Due diligence is duly carried out to ensure that loan applicants comply with national and, where necessary, international environmental and social standards.
- Loan agreements to cover sufficient covenants for compliance to address E&S Risks.
- Loan applicants comply with E&S risk management requirements (implement Social and Environmental Action Plans) and
- Loan applicants ensure that periodical monitoring and reporting on the same is received by the Bank for E&S Risk compliance.

Annex (1) is the ESMS checklist for senior management for approval. The procedure which is explained in this document is given in this checklist. It is to be approved by the senior management.

1.1 Benefits of ESMS and ESRP

Transactions between a client/investee and HNB, can represent certain risks to the financial institution. Such risks may not only be reputational, legal and/or financial, but can also be with regard to the environment and to the society.

Environmental and Social (E&S) risks, which are perceptible as environmental and social issues, are intrinsic in the operations of any client or investee, and most transactions are exposed to a certain degree of both environmental and social risks. Aspects such as the industry sector, geographic environment, nature of business operations as well as other social, health and safety factors can impact on the nature of the E&S risks of a client or investees transactions.

The granting of loans by the Bank for various development purposes (eg: to the SME sector/project lending) can subsequently give rise to issues including environmental pollution, biodiversity loss, human health hazards, safety and security issues, involuntary resettlement, impacts to indigenous communities and impacts on cultural heritage. In many instances the client, investee or the loan applicant (developer) can take steps to mitigate such issues.

However, according to the International Finance Corporation (IFC) “by implementing an ESMS, a financial institution can enhance its understanding of environmental and social risks (E&S) associated with each transaction, which can be included in the decision-making process for proceeding with a transaction.”

An ESMS will also facilitate systematic assessment of the E&S risks and opportunities arising from a client’s operations and assist manage their exposure to risk as well. The following benefits also could be accrued to the bank:

- Provide the organization with assurance that the Bank meets, and will continue to meet, social and environmental commitments which are intrinsic to accomplish corporate wide E&S policy requirements.
- Show environmental leadership in the industry.

- Verify the Bank's systems for recognizing and complying with environmental laws and regulations, and go beyond environmental compliance.
- Improve relationships with regulators, (e.g. potentially fewer surveillance visits, reduce environmental liability, etc.).
- Show the business partners, regulatory agencies and community that HNB is environmentally and socially responsible.
- Increase competitiveness, increase profits through potential process improvements and energy conservation.
- Reduce costs (e.g. as a result of potentially lower insurance rates).
- Increased awareness and participation - organizations benefit from better communication about environmental issues inside and outside the organization.
- Safety benefits – by reviewing the procedures for controlling significant operations, including a review of emergency preparedness and response procedures.
- Capturing institutional knowledge – ESMS ensures information is properly documented, communicated and retained. The cyclical nature of this management system further ensures that all system information is reviewed and updated periodically.
- Streamlining operations - organizations often realize monetary savings as a result of greater operational efficiency (e.g. energy conservation, and reduction in use of hazardous materials and generation of hazardous wastes, etc).

1.2 Scope & Applicability

This Environmental and Social Management System (ESMS) details:

1. The Bank's Environmental and Social Policy.
2. Procedures to screen projects, assign environmental risk category, and conduct due-diligence to evaluate social and environmental risks.
3. Loan Management for E&S Compliance
4. Monitoring and record keeping.
5. Review procedure for continuous improvement.
6. Applicable performance requirements.
7. Roles and responsibilities.
8. Budget, training, and Senior Management approval that will be integrated in the existing risk management procedures of the Hatton National Bank.

The scope of application of ESMS is considered to be on the loans exceeding Rs.12-13. Million (equivalent to \$ 100,000/=) The ESMS will be applied to the full range of HNB's investment/lending activities, such as direct lending to private enterprises including corporate and project finance.

HNB intended to apply the Environmental and Social Review Procedures (ESRP) for all branch lending activities, in keeping with bank’s firm commitment to accomplish sustainable banking objectives. In keeping with above, Bank’s E&S policy has been changed to embrace the key components of the ESMS. The application of the ESMS including ESRP by the bank will henceforth go beyond the current procedures adopted by the Bank in risk assessment.

The bank will apply the risk categorization procedures and the requirements of undertaking due diligence, the other procedures involved in loan management, monitoring and reporting of the Bank’s lending activities (where the high risk projects will be concerned, irrespective of the source of funding), in keeping with the Bank’s E&S policy.

The scope of application of ESMS shall encompass therefore sustainable banking concepts, which are increasingly recognized by the banking sector globally.

Sustainable Banking (SB)

Bouma et al (2001) defines⁴ SB as a decision taken by banks to provide products and services only to customers who take into consideration the environmental and social impacts of their activities. The team goes on to explain that sustainable banking aims at benefiting its customers and the economy as a **whole without impacting negatively on the society and natural environment.**

2. Environmental & Social (E&S) Policy of HNB

A well-articulated environmental and social policy (E&S Policy) supported by the senior management of the HNB is fundamental to the requirement of establishing a proper Environmental and Social Management System within the Bank.

The E&S can be defined as a statement by an organization of its intentions and principles in relation to its overall environmental performance and social responsibilities which provides a framework for action and for achieving its objectives and targets.

The E&S policy is what really drives the whole of the organization’s ESMS and when finalized, it becomes a publicly available declaration of the organization’s intentions and commitment to improving environmental performance and social responsibilities.

A policy (below) has now been developed. The significance of the policy is that it gives due consideration to both environmental and social risks involved in the Bank’s lending activities and accepts in principle that the Bank will adopt robust E&S safeguard measures to minimize E&S risks from its lending activities by adopting international banking best practices.

Regular monitoring of its borrowers (who are required to comply with national environmental standards as well as international environmental and social safeguard measures), reporting and staff training are other key ingredients of the E&S policy of HNB.

⁴ (source) Sustainable Banking & Risk Management , a global comparative analysis.

3. Addressing E&S Risks arising from HNB’s lending operations

E&S Risk assessment is not entirely a new approach for the Bank. Therefore ESMS can be considered as an existing system with added explanation and commitment by way of improving E&S policy and relevany procedures.

E&S risks and their consequences to the Financial Institutions have been articulated in the figure (2) below. According to the IFC Guidelines, all financial institutions are exposed to some level of environmental and social risks through their clients/investees. If left unmanaged, these risks can lead to a decline in the financial institution's reputational image, costly litigation, or loss of revenue.

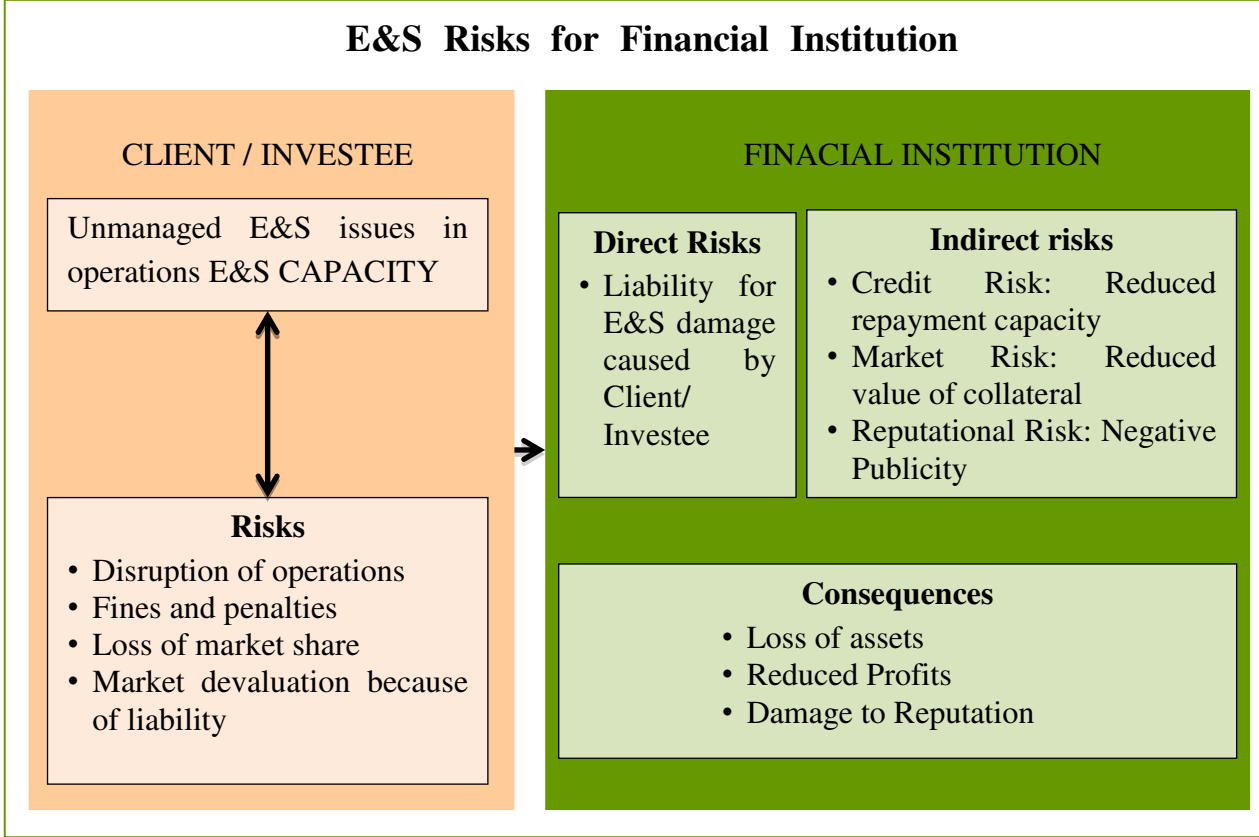


Figure 2 E&S Risk for Financial Institutions

It appears from the above that a financial institution's environmental and social risks are those of their clients/investees and are inherent in the nature of a client's/investee's operations. Some potential environmental and social risks may not seem significant or relevant at the time of approval of a financial transaction, but may become so during execution, as, for instance, as a result of higher regulatory standards and increased levels of enforcement. In other cases, environmental and social risks, such as spills or explosions, may seem unlikely to occur, but when they do, the environmental and social impact is potentially extremely high.

Types of E&S Risks in a Bank:

- Liability Risk
- Financial Risk
- Reputational risk
- Credit Risk
- Market risk

Liability Risk: By virtue of taking possession of collateral assets, a financial institution is exposed to liability risk stemming from a client's/investee's legal obligations. This includes fines, penalties and costs for addressing third-party claims for damages due to negligence in managing environmental and social risks¹ in a client's/investee's operations and clean-up of contamination. If the financial institution is a principal shareholder of a client's/investee's operations, it may also be directly liable for all environmental and social risks associated with a client's/investee's operations.

Financial Risk: A financial institution is exposed to financial risk stemming from potential disruption of client's/investee's operations as a result of environmental and social problems. If not managed properly, these problems can affect a client's/investee's ability to meet its financial obligations to the financial institution and/or can drive down the value of a client's/investee's collateral in the context of a transaction. A client's/investee's failure to effectively address environmental and social considerations can jeopardize its business operations as well as the financial institution that is supporting the transaction. The financial institution will also face liquidity risks from environmental and social problems associated with collateral. For example, the financial institution sometimes require to incur additional costs to undertake cleaning if investee's activities have led to pollute the environment of any particular land or similiar assets which the bank has obtained as collateral to a loan before such an asset is required to be liquidated.

Reputational Risk: A financial institution is exposed to reputational risk due to potentially negative publicity associated with a client's/investee's poor environmental and social practices. This harms a financial institution's brand value and image in the media, with the public, the business and the financial community, and even with its own staff. For example, if a client/investee faces strong public opposition against its operations, the financial institution's reputation may be tarnished through its association with this particular client/investee.

Credit Risk: A financial institution is exposed to credit risk when a client/investee is unwilling and/or unable to fulfill the contractual obligations associated with a transaction as a result of environmental and social issues. For example, if a client/investee faces increased capital or operating costs of complying with environmental and social standards or if operating and emission/discharge permits are absent or expired resulting in regulatory fines or penalties, there is a risk that the client/investee cannot meet its financial obligations to the financial institution.

Market Risk: A financial institution is exposed to market risk stemming from a reduction in the value of collateral associated with a transaction due to environmental and social problems. For example, if a production site becomes contaminated, the market value of the underlying collateral will fall.

Environmental and social risks can be mitigated through compliance with environmental regulations and social safeguard policies / standards and by adhering to international environmental and social standards. A financial institution can best achieve this by developing and implementing an environmental and social management system, to systematically assess the environmental and social risks and opportunities arising from their clients'/investees' operations and manage its exposure to risk.

The Bank needs to have a clear understanding of the potential environmental and/or social risks and implications for a client's/investee's operations prior to being linked to the client/investee in the context of a transaction.

This requires a system for proactive identification, assessment and management of environmental and social risks before they become significant or result in an adverse outcome on the client/investee. IFC guidelines devotes prominence to E&S risk assessment procedures and expects the ESMS to underline the need for E&S risk categorization of the intended activities for which borrowers seek loan facilities from the bank before the loans are approved and loan agreements are entered into with prospective borrowers.

IFC’s approach for integrating risk assessment into the credit appraisal process is given in the Fig (4) below:

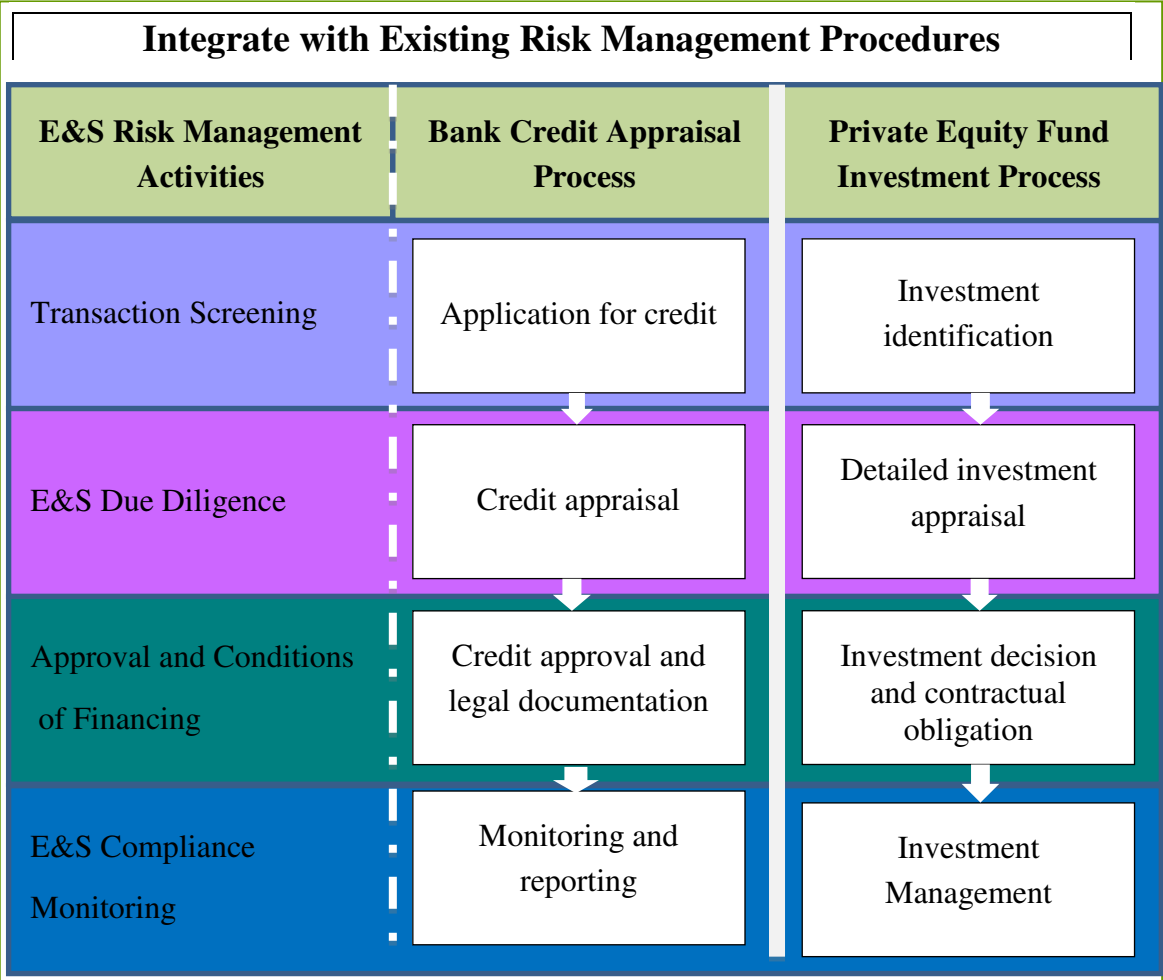


Figure 3 ESMS Integrated with existing Risk Management Procedure

The above diagram showing the E&S Risk Management Procedure clarifies the manner in which environmental and social risks can be integrated into the Bank's credit appraisal process in stages. It shows that various risk management activities can also be undertaken concurrently during various loan processing stages. A similar system of E&S risk assessment has been proposed for the HNB which is explained in the section below.

4 Risk Assessment Procedure by the HNB

E&S risk assessment procedure requires to be understood parallel to HNB's existing credit risk management procedure. Risk appraisal is fundamental to the Credit Risk Management Process of HNB according to the figure (3).

4.1 Credit Risk Management Process of HNB

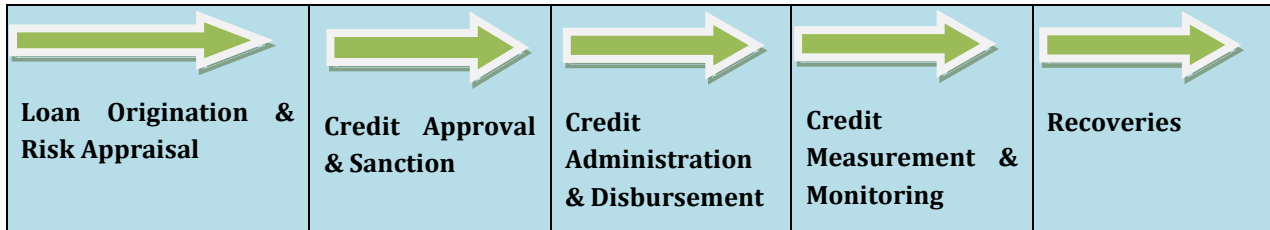


Figure 4 Credit Risk Management Process of HNB

The ESMS enables the Bank to integrate E&S risks assessment too into the existing credit risk management procedure. In this regard several revisions/ amendments have been introduced into the Bank's lending procedure. The process flow chart of the lending procedure of the bank has been revised considering various E&S risk management elements of a credit facility. The corresponding sections of the Bank's Credit Manual which describes the lending procedure have been revised.

The following sections received careful attention when introducing revisions⁵:

- Credit Policy
- Duties and Responsibilities of Credit Staff
- Principles of Good Lending
- Guidelines for Lending
- Post Credit Risks
- Internal Risk Rating Systems

4.2 Revisions introduced for Risk Adequate Credit Appraisal Procedure

Following are the major highlights in the revised credit appraisal procedure:

Introduction of Exclusion List – Bank's Exclusion List defines the types of activities the bank will not finance. It will be referred to by the Bank Credit Officer at the initial stage of loan application by the client. It is expected that the Credit Officer / Branch Manager can refer to the Exclusion List and inform the loan applicant whether the intended loan falls within the purview of the Bank's E&S Policy, as well as within the Exclusion List. This can be done at

⁵ Suggested Revisions introduced to Credit Manual (Annex 11)

the early stage of lending (when the bank will establish initial contacts with a loan applicant. Please refer to section 6.1 further guidelines. (Please refer ESMS Team for any clarifications).

Introducing the process of Risk Categorisation – Under the new procedure Credit Managers will categorize the projects for which loans are requested (loans in excess of US\$ 100,000/= equivalent) according to potential Environmental & Social risks (A=high risks, B=medium risks, C=low risks). The credit manual has been revised in order to accommodate this requirement. Hereafter the E&S risk categorisation is an important part of the loan appraisal process. The procedures to be entailed is given in Section (7) of this document and related formats to be used are given in the Annex (7).

Introducing a more structured E&S Due Diligence Process – Steps have been introduced for the Credit Manager to undertake Environmental & Social Due Diligence (ESDD) as part of the loan appraisal. The process of loan categorisation and E&S Due diligence is explained in chapter (7) & Chapter (8) respectively. Section 7.2 of chapter (7) explains how a project could be categorised for its E&S risks. Accordingly a project in terms of risks can be categorised into low, medium and high risks.

The Credit Officer will have to carry out due diligence using a more stringent procedure in respect of high risk projects. Refer to Chapter (8) which explains the process. For Category of projects falling within high risks, the Bank can delegate due diligence to a team of experts. On completion of the due diligence process a report has to be produced based on the observations.

The credit officer is expected to assess whether the loan applicant needs to fulfill the E&S risk mitigation compliances depending on the risk category of the respective project/activity. Credit Officer may use a checklist for this purpose.

The Credit Appraisal Procedure was also revised to accommodate incorporation of necessary covenants relevant to the compliance of E&S risk mitigation actions to loan documentation (agreement). The covenants compels the loan applicant to comply with the recommended action prior to approval of the loan.

Compliance with E&S Risk Mitigation Action can be in accordance with either the country's environmental and social safe guard policies/regulations or the IFC Performance Standards (as the case may be). This has been addressed both in the credit manual as well as in existing lending procedures.

The process that involves post disbursement of loans were also considered for integration of E&S consideration. Revisions were incorporated to mandate regular monitoring of the ESAP and reporting on same by the loan applicant who informs the Bank to submit to DEG/any other parties (IFC, etc.) the portfolio details of high risk projects. The revised sections of the lending procedure and the process map are given in the tables below:

Table 1 HNB Lending Procedure Incorporated with ESMS – Summary

| Key steps | Description |
|------------------------------------|---|
| Initial Contact with Client | <p>Client Contacts the Manager of the respective Branch of the Bank and requests for a loan.</p> <p>Manager interviews the Client and assesses whether the credit request falls within the purview of the Bank’s Exclusion List.</p> <p>If the answer is ‘No’, the Branch Manager introduces the client to the credit officer for follow up.</p> <p>If the answer is ‘Yes’, the Manager declines to accept credit request.</p> <p>Manager also briefs the client as regards the Bank’s new E&S policies.</p> |
| Client’s Loan Application | <p>The Credit Officer hands over relevant set of forms/documents including a loan application form to the client.</p> <p>The client fills the documents required by the Bank and submits the application to the Branch Manager or to the Credit Officer requesting for a credit facility.</p> |
| Inspection by Bank’s Staff | <p>Credit Officer (CO) visits the site and prepares an inspection report (Credit Officer will be able to get an initial understanding of the nature of the project, geographic location, etc., from this inspection and the information can be fed into the next stage).</p> |
| E&S Risk Categorization | <p>Categorization of Project for Risk Levels A,B,C. Credit Officer (CO) will use either the Excel Tool that has been shared with HNB for this purpose or will go by the lists which guides identification of projects for risk levels.</p> <p>CO should work with the client to get any additional information for the purpose of analyzing E&S risks of the intended activity. Reference section (6.1)</p> <p>If the project is categorized as ‘C’, the CO can recommend that no E&S risks will be involved and that the loan can be approved without requirements to comply with E&S risk mitigation actions (Due Diligence will be required).</p> <p>If the project is categorized as ‘B’, the CO can recommend that E&S risks are potential but the loan request can be approved subject to the loan applicant complying with E&S Risk Mitigation Actions as per the existing environmental and social policies, procedures, laws and regulations of the country (Due Diligence will be required).</p> <p>If the project is categorized as ‘A’ or a high risk project, the CO will have to identify key E&S Risk and Compliance Requirements based on country’s laws and regulations as well as the IFC performance standards and EHS guidelines, etc., and recommend that the loan will be approved subject to the client’s willingness to comply with the same.</p> |
| E&S Diligence & Due | <p>Site visits will be required as part of E&S Due Diligence. In addition to site visits by the Bank Officials, in the case of high risk projects the</p> |

| Key steps | Description |
|------------------------------------|---|
| Data Input | <p>Bank can engage an independent E&S consultant or a team of experts to undertake the E&S due diligence. They too need to undertake site inspections.</p> <p>The recommendations can be made in the form of an Environmental and Social Due Diligence (ESDD) Summary Report/ Environmental and Social Action Plan (SEAP).</p> <p>Credit officer derives information from the ESDD summary report and inputs basic data to the system.</p> |
| Loan Processing | <p>Credit Officer during credit appraisal will assess the viability of granting the loan; forward the credit application with his recommendation to the Branch Manager together with the Environmental and Social Due Diligence (ESDD) Summary Report/SEAP along with his recommendations.</p> |
| Approval/ Recommendation | <p>The Branch Manager reviews the application.</p> <p>The Branch Manager approves the facility provided the proposal is financially viable (credit worthy) and the facility is within his approval limits.</p> <p>If the facility is not financially viable the Branch Manager rejects the application.</p> <p>If the facility requested is beyond his approval limits, then he forwards the application to the regional office with his recommendations.</p> <p>The Regional Manager approves the facility if it is within his limits.</p> <p>If the approval exceeds his authority the proposal is forwarded to the head office with the Regional Manager's recommendations.</p> <p>Regional Manager may reject the proposal if he is of the view that the project is not viable.</p> <p>At the head office the proposal is forwarded to the respective authorities which holds the proper approval limits as given in the table below.</p> |
| Offer letter | <p>The Bank issues an offer letter informing the client that the facility is approved and giving the terms and conditions under which the facility /loan is approved, and details of any documents required to comply with E&S Risk Mitigation Action. Loan covenants will take into consideration the compliance requirements.</p> |
| Client Meets the Conditions | <p>Client meets required conditions and submits any additional document and information requested by the Bank.</p> <p>If the loan request has been categorized under 'B' or 'A', the client will also need to engage an expert or consultant to ensure that special studies are carried out in keeping with the SEAP/ESDD summary reports and that an Environmental and Social Management Plan and other compliance documentation are prepared for the activity proposes taking into consideration the recommendations made in the EIAs/IEEs and the IFC performance standards (in case of 'A' projects).</p> |

| Key steps | Description |
|---------------------------|---|
| Loan Documentation | <p>Once the loan is approved, the Branch Manager prepares the loan documentation.</p> <p>The branch will then execute the documents and grant the facility to the client.</p> <p>The legal department will assist the branch in preparing the legal documentation.</p> <p>Incorporate ESDD recommendation into loan covenants.</p> |
| Regular Monitoring | <p>Annual Monitoring of Environmental and Social Action Plan (ESAP). The client (loan applicant) will implement the relevant ESMS and regular reports are submitted to the Bank. Credit Officer/Bank appointed independent consultants visit the site for further due diligence surveillance and submits reports to the Bank on the level of compliance by the borrower.</p> <p>Prepare an E&S Review Summary Report (typically 2-4 pages) in a pre-described format</p> <p>Summary compliance report (industry and sector wise) to be submitted by the Bank head office to DEG as the case may be.</p> |

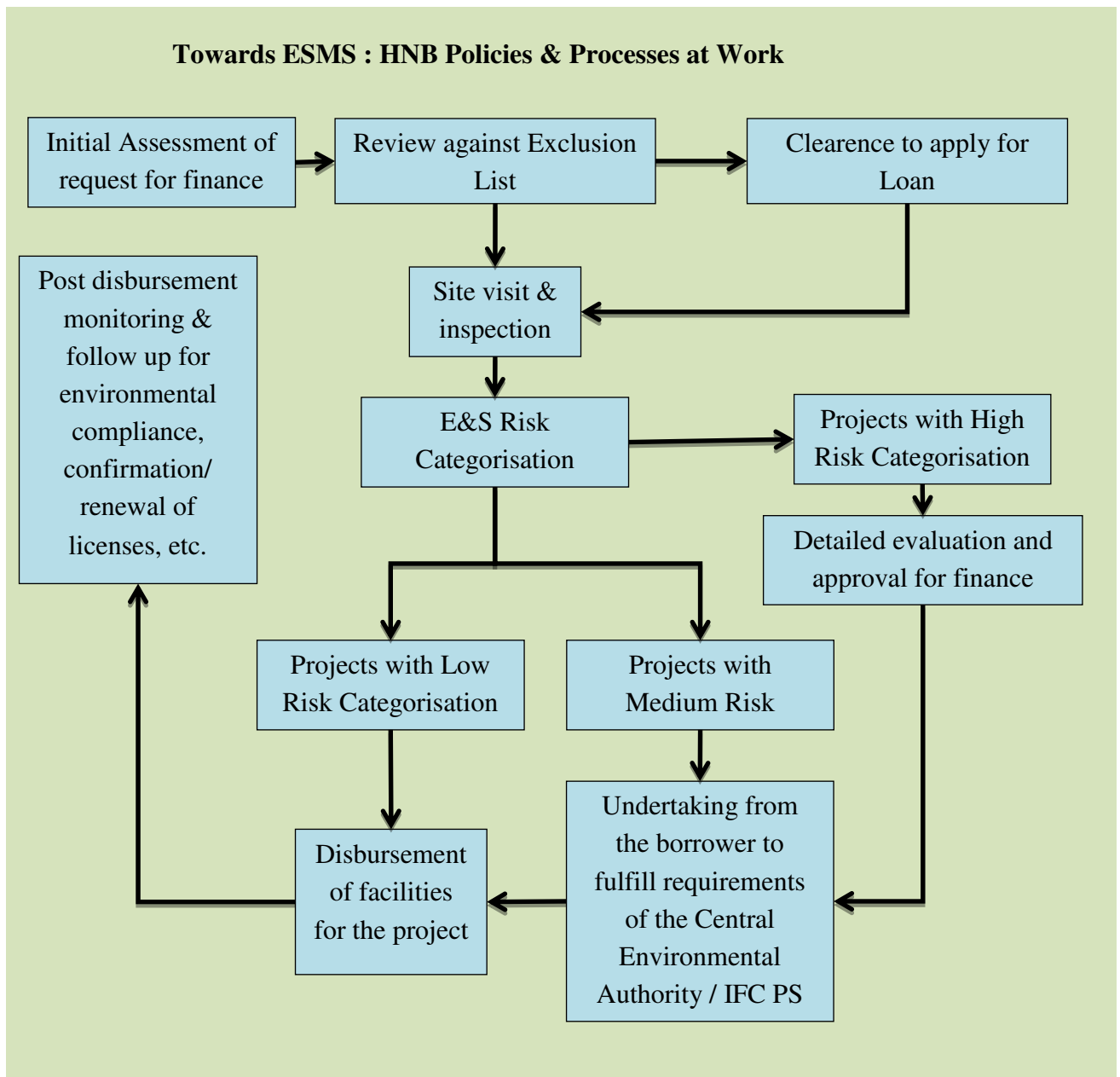
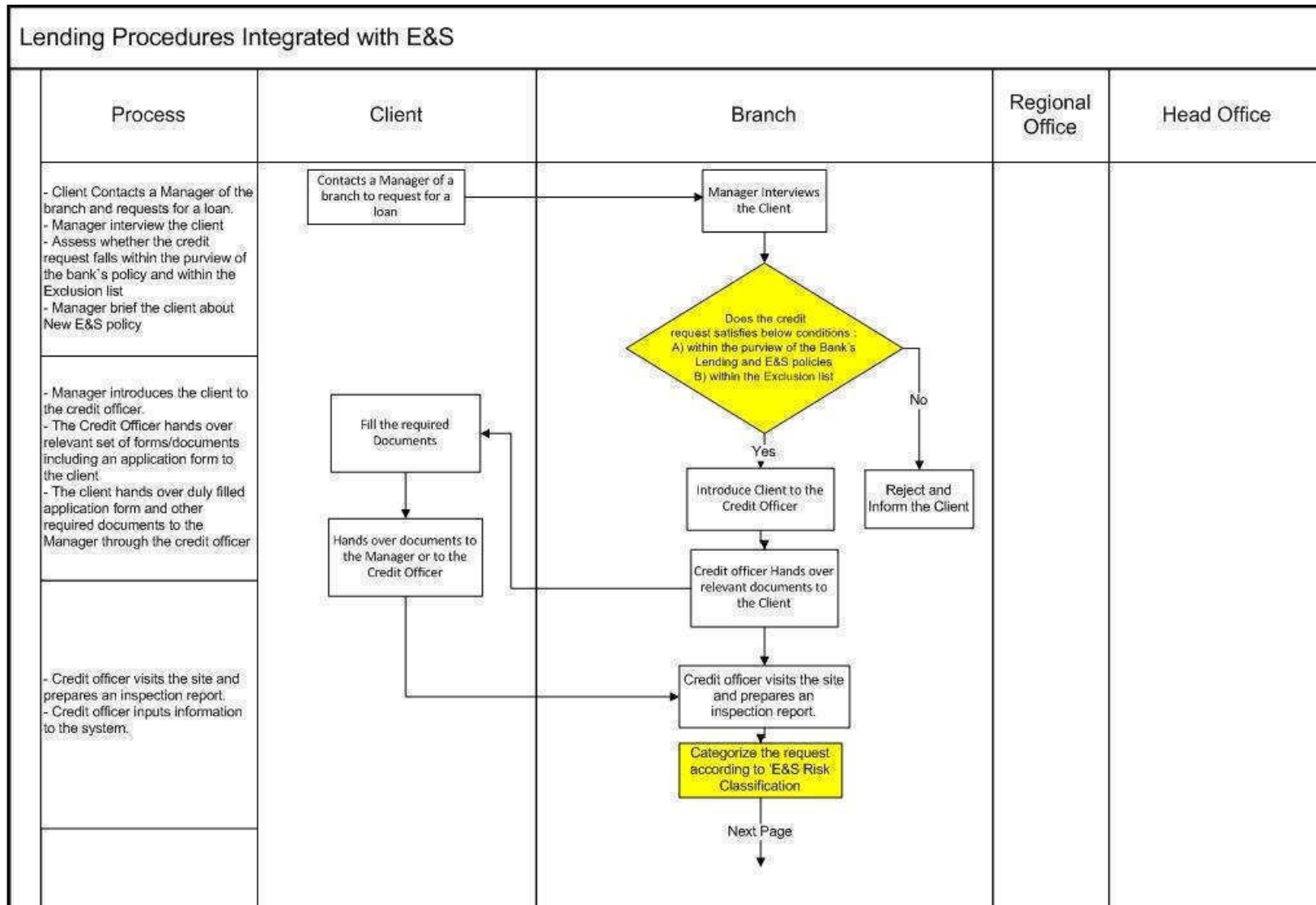
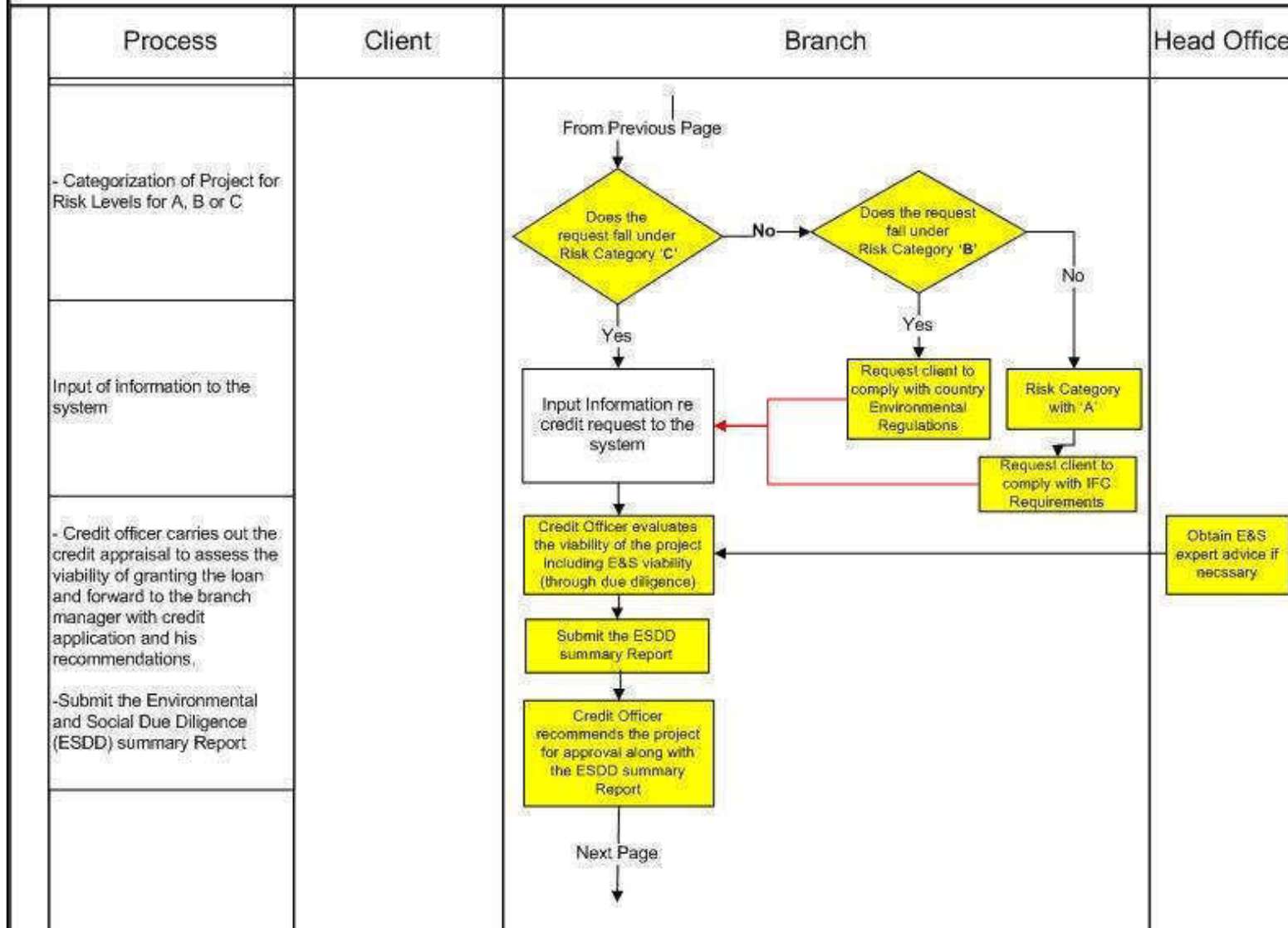


Figure 5 HNB Policies & Process at work

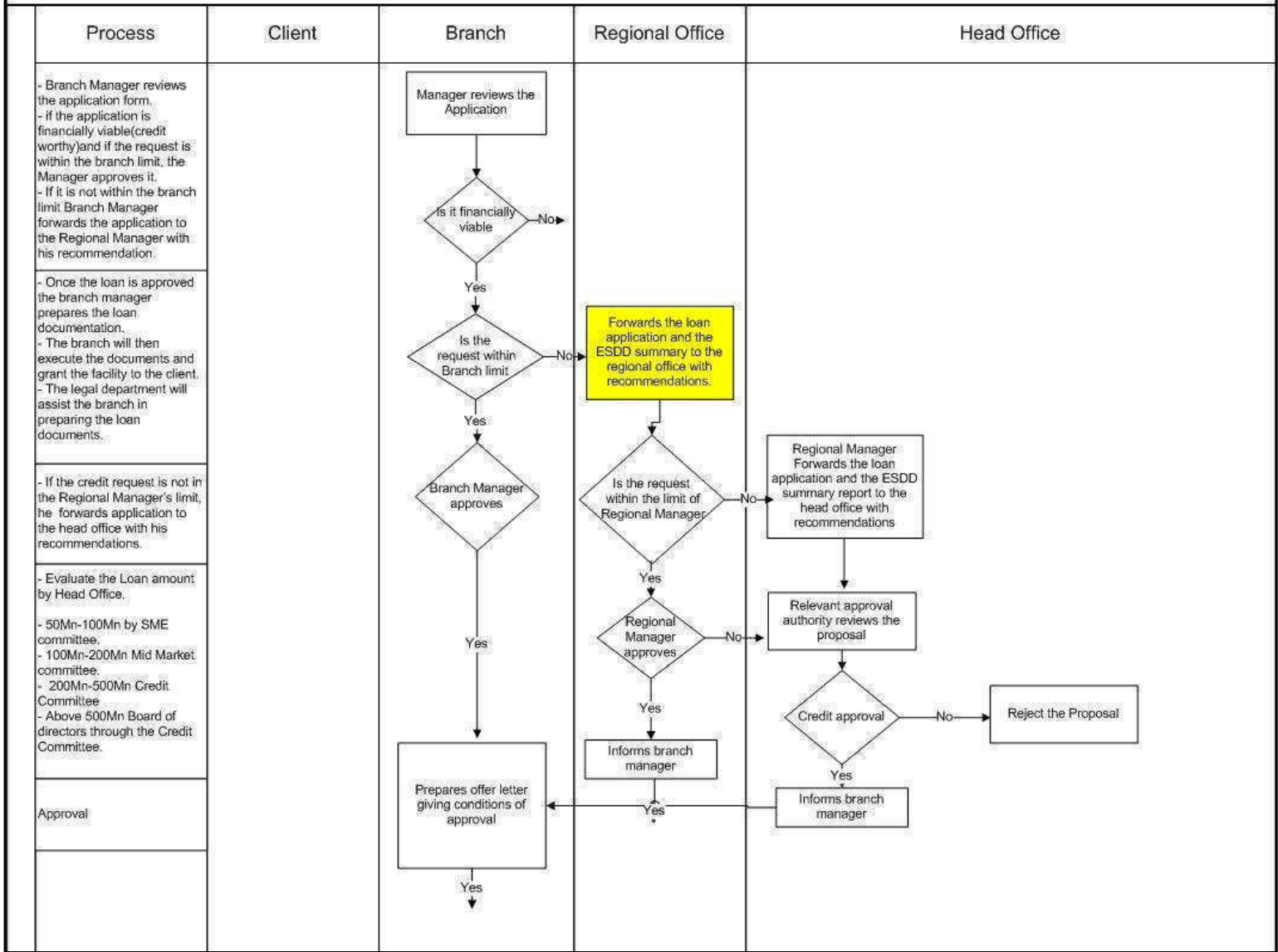
Table 2 Bank's Lending Procedure integrated with E&S Risk Assessment and Loan Management



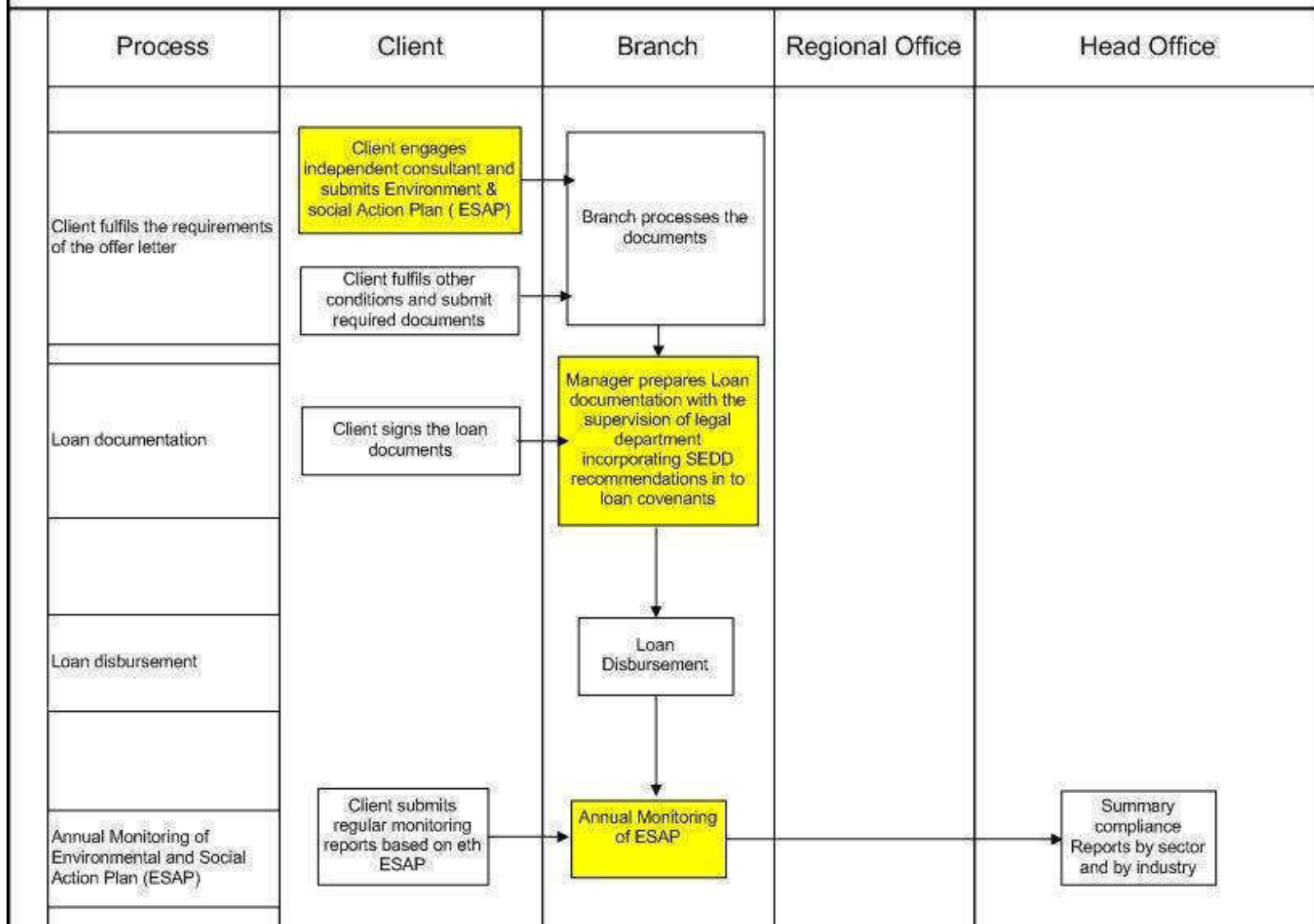
Lending Procedures Integrated with E&S Contd



Lending Procedures Integrated with E&S Contd



Lending Procedures Integrated with E&S Contd



4.3 ESMS Proposed Institutional Structure:

The IFC provides guidelines for Financial Institutions in respect of the roles and responsibilities to be involved in the key structures/positions holding the responsibility of implementing ESMS (Figure 6).



Figure 6

The following Institutional Structure is introduced:

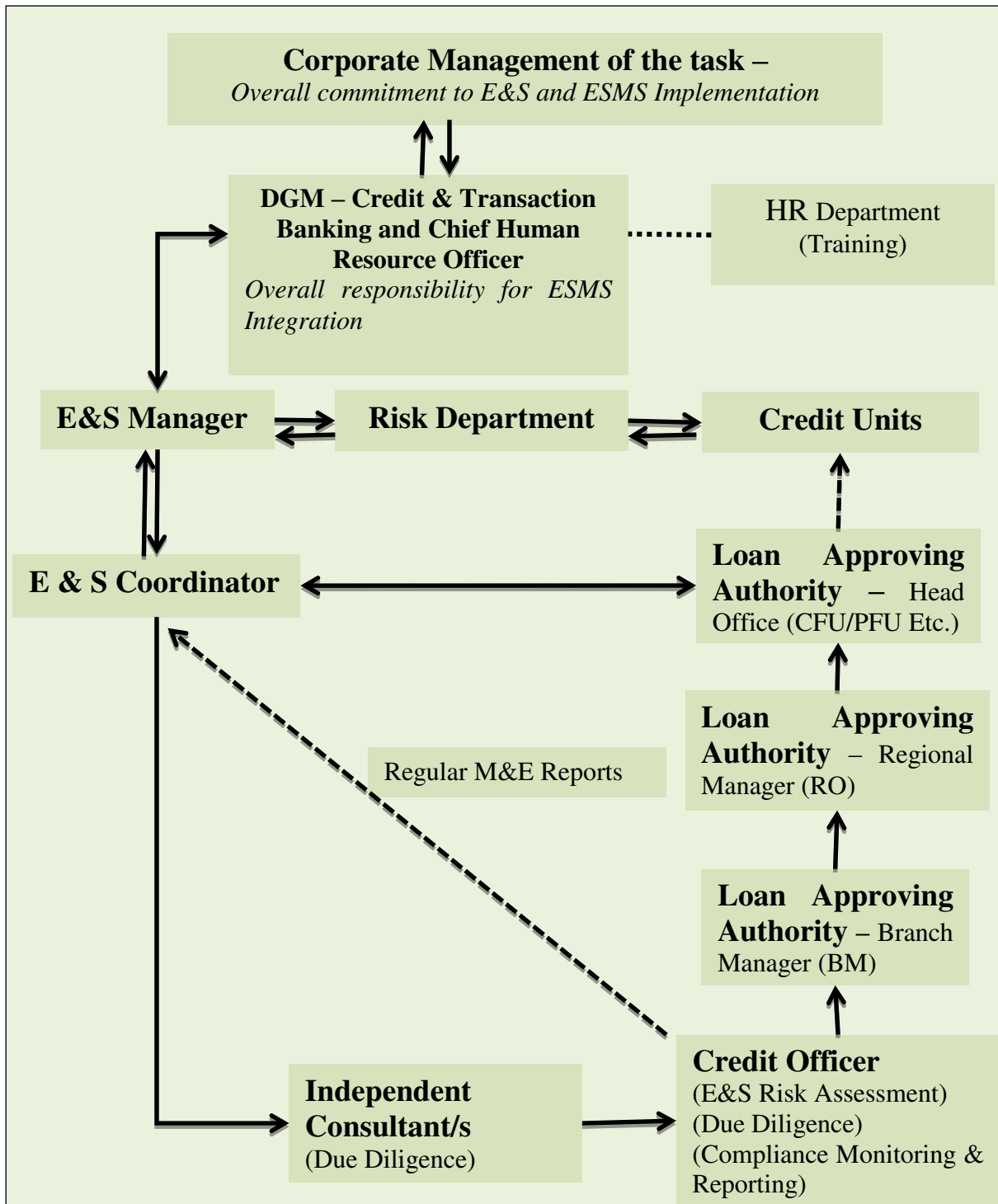


Figure 7 Draft Organogram for ESMS Integration

Specific Roles & Responsibilities:

The “Responsibility Matrix” contains comprehensive and current information about the roles, responsibilities and authorities assigned to various staff members of HNB for environmental

and social risk management issues. It falls within the roles and responsibility matrix identified by the IFC, which is shown below:

Table 3 Responsibility Matrix

| Name of the Staff Member/Position | Responsibility |
|--|---|
| Corporate Management | <ul style="list-style-type: none"> • Commitment to E&S Policy. In addition, the following roles are also envisaged: • Senior Management establishes the financial institution's environmental and social requirements and conditions for clients/investees. • In cases of unresolved environmental and social issues or non-compliance associated with a transaction that cannot be resolved by the Loan Officers/Relationship Managers, Senior Management determines the appropriate course of action to be followed to reduce the financial institution's potential exposure to environmental and social risk, which may include taking legal action against the client/investee. |
| ESMS Manager | <ul style="list-style-type: none"> • Ensure full implementation of ESMS. • Provide annual summary statements on E&S compliance of the Bank's loans to relevant agencies. • Be in overall charge of S&E Due Diligence. • Maintenance of the Register of Legal and Other Requirements. • Control of documents, forms and records required by the ESMS. |
| ESMS Coordinator | <ul style="list-style-type: none"> • Asking client to fill Bank's E&S questionnaire for category 'A' projects. • Hand over the relevant IFC sector guidelines and guidance notes (Provided in the Reference Manual) to the client. • Ask client to benchmark his performance against IFC performance standards. • Collect and study other relevant documents (audit reports, etc.). • Internet research on potential risks/potential NGO interest. • Visiting the site. (See Figure 6) • Prepare an action plan if the IFC standards are not yet being met. • Prepare an E&S Review Summary Report (typically 2-4 pages) in a pre-described format. • Maintenance of the Responsibility Matrix, including records of |

| Name of the Staff Member/Position | Responsibility |
|--|---|
| | <p>incumbents in positions and roles, competence requirements, competence possessed, training needs, training plans and training undertaken.</p> <ul style="list-style-type: none"> • Assessment of general environmental awareness of staff and contractors. • Represent at the Credit Committee on E&S Risks of a ‘A’ Category project before approval. |
| ESMS Assistant | <ul style="list-style-type: none"> • Assist in conducting training. • Keeping necessary documentation on Clients having ‘A’ Category Projects. • Assist in reporting. |
| Credit Officers | <ul style="list-style-type: none"> • Screening of the proposals/loan applications against Excluded Activity List and Bank’s lending policies. • Call for additional information from the client/loan applicant pertaining to E&S risk evaluation. • Filling the internal check list for category ‘B’ projects. • Take part in Due Diligence for Category ‘A’ project, Use Risk Categorization Tool (EASI) and assign the relevant risk category of a particular loan/activity. • Inform the Clients/Loan applicants of the decisions based on the initial screening and initial risk categorization. • Visiting the site for follow up monitoring and take part in Annual Monitoring of E&S compliances of Category ‘A’ Projects. |
| Credit Committee/Legal Department | <ul style="list-style-type: none"> • Decides the adequacy of E&S Risk mitigation actions before the approval of the loans. • Incorporate loan convents into loan agreement. |

Management Capacity & Training Needs

The implementation of the Environmental & Social (Risk) Management System involves policy and procedural interventions backed by extensive human resources development and continuous institutional capacity improvements of its (organisational) structures.

Major elements of the E&S risk review procedures are the E&S risk categorisation, procedure involved in due diligence and E&S compliance monitoring which also require regular reporting functions. E&S Risk categorisation will be particularly important, as the ESMS requires the Bank Officers to categorise the projects / activities for which loans are requested by clients in terms of their E&S risk levels. The Environmental & Social Index (EASI) helps the credit officers to categorize the loans based on risk levels. The credit officers need to have a better exposure to the terminology used and the EASI Manual.

Bank Officers who are involved in credit administration should have a better understanding of the country's environmental compliance requirements (Country Environment Regulations/ Standards and Country Social Safeguard Policies) which define specific requirements such as Environmental Impact Assessments and Environmental Protection Licenses. Other aspects are the IFC Performance Standards and EHS guidelines.

Once the projects / activities are categorised (Under C, B or A) the credit officers need to have a better understanding of the procedures to be followed thereafter. Exercising E&S due diligence in respect of high risk projects, the type of information to be sought at the time of due diligence, composition of the team of experts (depending on the nature of the activity) for which due diligence is required, preparation of the SEDD reports and to make specific recommendations in areas that should form the loan agreements, will need additional capacity development interventions.

HNB is also committed to uphold human rights in all areas of operation, referring to the Universal Declaration of Human Rights and the ILO labour practices as stipulated by local authorities. Implementing of ESMS has a relevance to such labour practices. Below is the sustainability vision of HNB towards different stakeholder groups. Responsible lending is already recognized by HNB in keeping with its commitment to the Environment.

Table 4 HNB's Key Stakeholders and Sustainability Vision

| Stakeholder Group | Sustainability Vision and Sustainability Business Objectives |
|--------------------------|---|
| Investors | To meet the confidence of the investors and maintain a balance between profits and the ability to sustain a long term, stable means of earning. To maintain internal processes and policies as tools to combat financial crime and poor quality lending. |
| Customers | To safeguard the interests of depositors through responsible banking. |

| Stakeholder Group | Sustainability Vision and Sustainability Business Objectives |
|--------------------------|---|
| | <p>To be a responsible lender by judging whether a customer’s aspiration to borrow is affordable and meets the Bank’s assessment of risk and pricing.</p> <p>To always serve customers with passion and dedication.</p> <p>To make finance more accessible especially to those who lack access to finance as a result of socio-economic, demographic and geographic limitations.</p> <p>To promote financial literacy proactively for capacity development.</p> |
| Employees | <p>To foster a diverse talent pool that delivers superior and efficient performance whilst ensuring that such efficiency is not achieved at the expense of work-life balance or corporate values.</p> |
| Suppliers | <p>To balance cost considerations with sustainable procurement practices..</p> |
| Community | <p>To engage with the community at every level.</p> <p>To act as a catalyst for positive change through action in healthcare, education and entrepreneurship.</p> |
| Environment | <p>To promote environmental conservation at the work place, integrating Environmentally friendly practices into daily operations whilst also extending due consideration to responsible lending.</p> |

5 Environmental & Social Review Procedure (ESRP)

In this section, explanation is provided as to how the Environmental and Social Review Procedure can be undertaken. The importance of this section is that guidance is provided as to use different types of formats at different stages of E&S review of the respective loan applications. The procedure to be adopted by a Finance Institutions which implements ESMS is provided by the IFC in its guidelines. The procedure will entail:

- Initial Screening of loan applications
- Carry out due diligence
- Consultations and negotiations & Loan approval
- Monitoring and Evaluation

In this regard it is important to identify and use the relevant formats in order to follow the required procedures at the relevant stage of risk management activity. Procedures to be followed are explained in the following sections:

Summary of E&S Review Procedures

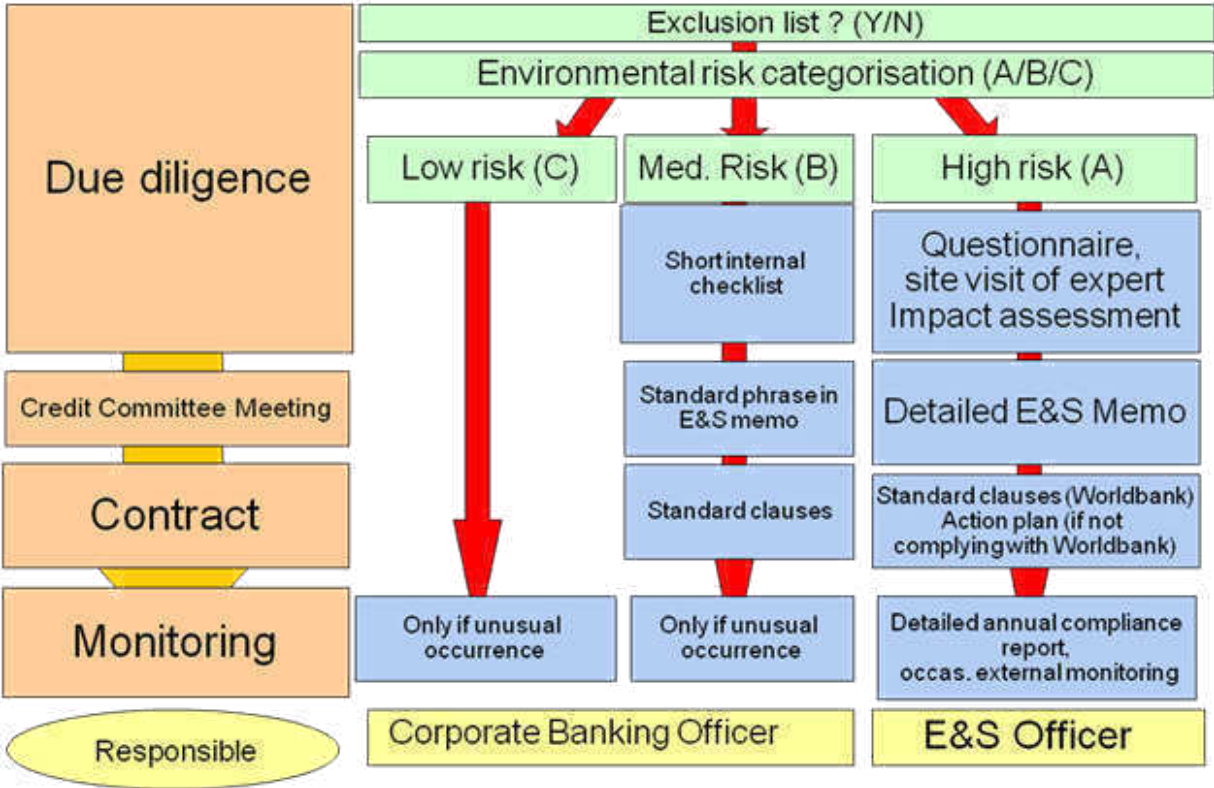


Figure 8 Summary of E&S Review Procedure

6.1 Initial Screening of loan applications:

Loan Origination and Risk Appraisal Stage:

As per the revised Credit Appraisal Procedure, the Bank compares the details of the intended loan against the Bank’s Exclusion List. (Annex 2) upon receipt of a loan application/proposal

from a customer, or even before the submission of the loan application by the applicant. (This applies only if the requested loan amount exceeds US 100,000 equivalent)

Credit Officer or the Bank Branch Manager or the relevant Bank Officer uses a format similar to what is provided in Annex (5) and obtains information from the loan applicant enabling the Credit Officer to undertake this initial screening of the proposed project for E&S risks.

The information so required will be among others:

- Nature and type of proposed activity
- Geographical location
- Scale of the project/activity
- Approval from the Local Authorities
- Whether the project will be located close to a designated area
- Any previous loans obtained for similar purposes
- Amount of Loan requested
- Any environmental issues arising from the proposed activity:
- Any social issues arising from the proposed activity

On comparing the information with the Bank's Exclusion List the Credit Officer/Bank Manager or the E&S Coordinator inform (depending of the type of the loan whether a corporate/project finance lending) the prospective client of the outcome.

If the activity is within the Bank's Exclusion List Credit Officer or the Bank Manager will reject the loan request. The Credit Officer can review any bank policies and precedents with regard to dealing with such loan applications and sometimes the Credit Officer will indicate the Applicable Requirements for the Loan.

Once the Loan is accepted in principle to be processed, the second stage of E&S Risk assessment begins. At this stage the loan application should be categorised into relevant environmental and social risk category. The Risk Categorisation Tool, which is called Environmental & Social Index (EASI⁶) below, should be used. Alternatively the list of prescribed projects can also be used to understand whether the particular activity / project for which the Loan will be utilised fall into high, medium or low risk categories. The lists are provided in Annex 8.

Once the E&S risk category is identified and the Credit officer or the ESMS Coordinator is satisfied with the risk category of the relevant project /activity, the prospective loan applicant/client will be informed of the E&S review process in detail.

⁶ Environmental and Social Index (EASI) is the tool used by DEG for E&S risk categorisation. This is given in Annex (9)

At the initial stage of loan appraisal, environmental and social risk review can be undertaken either through a desk review study, or through literature survey. Depending on the complexity of the project, (especially category 'A' Projects) a more vigorous environmental and social due diligence process can be undertaken.

The procedure for E&S risk categorisation using EASI is explained in detail in section (7) below:

7. E&S Risk Categorization

Risk categorisation is an important part of the ESMS. Loans requested by all new and existing clients are subject to a process of Risk Categorization of their (potential) Environmental and Social impacts. A Risk Categorization Tool is provided (below). There are three risk categories:

- High Risk (Category ‘A’): Projects with potential significant adverse social or environmental impacts those are diverse, irreversible and/or unprecedented. There may be highly significant, negative and/or long-term environmental and social impacts, the magnitude of which is difficult to determine at the application stage (e.g., gold mine).
- Medium Risk (Category ‘B’): Projects with potential limited adverse social or environmental impacts that are few in number, site-specific, largely reversible environmental and social impacts which can be readily identified and standard preventative and/or remedial measures can be prescribed and readily addressed through mitigation measures.
- Low Risk (Category ‘C’): Projects with minimal or no adverse social or environmental impacts. Environmental and social impacts are expected to be negligible.

Taking into account the nature, location, sensitivity and scale of the project, and the nature and magnitude of its possible environmental and social impacts and issues, the Credit Officers can determine the nature and level of environmental and social assessments required, the level of information disclosure and stakeholder engagement required for each project. The information received by the Credit Officer (using the format similar to Annex 3) can be used for this purpose.

Categorisation can also be done using the prescribed list of projects that fall into High, Medium and Low risk categories, issued by the Central Environmental Authority.

7.1 Risk Categorization Tool - EASI⁷

The EASI (Environmental and Social Index), is an excel based tool, widely been used for the E&S risk categorisation of the proposed activities for which development loans are sought from the Bank. The tool has been developed by DEG.

Given below is a screenshot of this automated tool together with an introductory note. The tool works on the basis of the input data (criteria), most of which are usually already available with the credit managers. Necessary data such as the type, location, sensitivity and scale of the project, as well as the nature and magnitude of its potential impacts will be necessary to evaluate the relevant risk category.

Screenshot of an automated categorisation tool (so called “EASI”)

⁷ Guidelines for the use of EASI Tool is provided in Annex (9)

| | | |
|--------------------|--|--|
| Economic | Project name SHP-AYCOM | Product Logistics |
| | Country O-HAI | DEG-Exclusion/Incl No |
| Environmental Area | Type of project Site expansion (spoc) | |
| | Sector Warehousing | IIACE Sector details G3 Storage (hazardous goods) |
| | Project size Large | In FTZ Project site No Inside/Outside |
| | Supply Chain Unspecific supply chain | Biodiversity No Critical Habitats in the vicinity |
| | Community impacts Negative impact on indigenous peoples | |
| Social Area | Environmental Category B+ | Social Category B+ |

| | | |
|--|--|------------------------------|
| No. of jobs ICDC | No. of new jobs 0 | No. of jobs for women 100 |
| Indirect employees 0 | Dismissals (int) 0 | Dismissals (outside PC) 0 |
| Risk Groups Young labor (under age-18) | Construction Site No large construction sites | |
| Physical (PD) or economic displacement No | Health & Safety Risks Higher | |

Criteria determining the environmental category:

- Project **sector and activities** (which cause for e.g. consumption of resources, use of hazardous materials, effluents, emissions, wastes, etc.).
- Specific **location** (site and potential impacts of operations on sensitive areas including impacts on biodiversity etc.).
- **Purpose** of financing (e.g. site expansion, modernization, etc.).
- **Size** of the project (large, medium or small scale).
- Environmental impact of the **supply chain** (immediate and important suppliers).

Criteria determining the social category

- **Number of employees** (present, newly created jobs, dismissals).
- **Percentage of risk groups** as a proportion of total workforce (e.g., temporary workers, migrants, minors, women, disabled persons).
- **Sub-contractors and social supply-chain management** (e.g., number of workers hired through sub-contractors, outsourcing of core business activities to sub-contractors).
- Affected **communities** (e.g., physical or economic displacement, impacts on social and economic infrastructure, community health and safety, vulnerable groups).
- **Sector** (e.g., low wage industries, agriculture, mining, infrastructure projects).
- Occupational health & safety risks related to the sector.
- Project type (e.g., greenfield, brownfield, projects incorporating privatizations)
- Projects with extended **construction activities** (e.g. which require establishment of construction camps)

Based on these input-data, the tool automatically suggests two categories: the environmental category and the social category. For the following process, the project should be classified under ONE SINGLE category only, which goes by the category that is higher (i.e., if environmental category is ‘A’ and the social category is ‘B’, the overall category becomes ‘A’).⁸ Projects are categorized by environmental risk level based on:

- Industry sector.
- Proximity to environmentally sensitive areas.
- Potentially irreversible impacts.
- Extent of social and environmental issues.

7.2 Dealing with loans under different risk categories

For **Category ‘A’ projects**, the procedure requires review and assessment of environmental and social risks and impacts through a detailed S&E due diligence process. The procedures require that the Credit Officer collects relevant E&S information using a questionnaire which can be a “internal checklist”⁹. Credit Officer has to ensure that all questions are answered properly to the best of his knowledge. The purpose of this checklist is to rule out possibility that major environmental and social risks are hidden in the project. The checklist is designed in a way that key statements with regard to environmental and social issues need to be either “confirmed” or “rejected” (“not confirmed”). The same checklist can also be used to deal with Category ‘B’ Projects.

If the project is High-Risk, (Category ‘A’) the Bank will inform same to the Loan Applicant/Client prior to making a loan decision. HNB examines the project’s potential positive and negative impacts, compares them with feasible alternatives, and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and to improve performance. This will require E&S Due Diligence (ESDD), the procedure of which is explained under the chapter below.

For Category ‘A’ project, the Loan Applicant / Client is responsible for preparing a full E&S compliance report, taking in to consideration the requirements stipulated in the IFC Performance Standards, the EHS guidelines and the Environmental & Social Impact Assessment (SEIA) report.

The Environmental and Social Manager (ESM) will be in charge of the ESDD. To carry out a full scale ESDD, expert knowledge is required. The ESM should seek assistance of an external expert/ panel of experts in this regard.

⁸ Detailed explanation of EASI is given in Annex (9)

⁹ Sample internal check list is given in Annex (4)

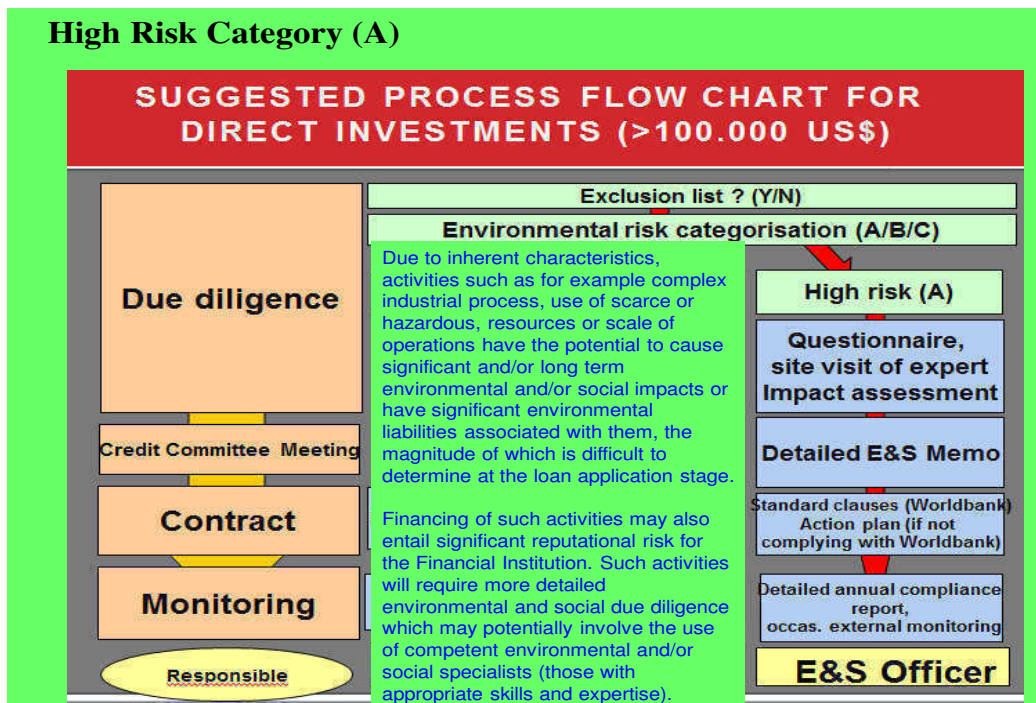


Figure 9 High Risk Category

Category ‘B’ or the activities classified as Medium Risk are those for which the environmental and social impacts can be readily predicted, prevented and/or mitigated given appropriate levels of a borrower’s financial and technical/ managerial capabilities.

The procedures require that the Credit Officer collects relevant E&S information using a short “internal checklist”¹⁰ which is described above under Category ‘A’ Projects.

If any red flag issues become apparent (one or several statements that are “not confirmed”) it is necessary that the Credit Officer contact the ESMS Manager/ESMS Coordinator and further investigations may have to be initiated. The main idea is to ensure that the client is fully complying with country E&S regulation.

ESMS Manager or Coordinator should ensure that the applicant implement an action plan for E&S compliance in keeping with the country environmental and social legislation could be formulated.

¹⁰ Sample internal check list is given in Annex (4)

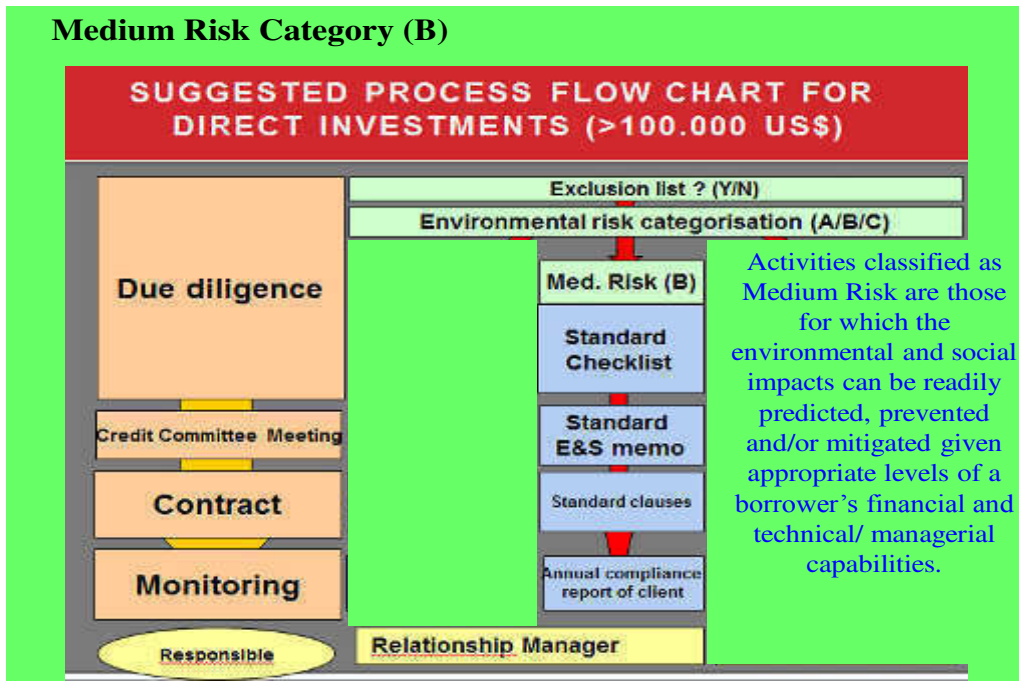


Figure 10 Medium Risk Category

'C' = low risk: Projects with minimal or no adverse social or environmental impacts.

A proposed project is classified as Category 'C' if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further action is required for a Category 'C' project.

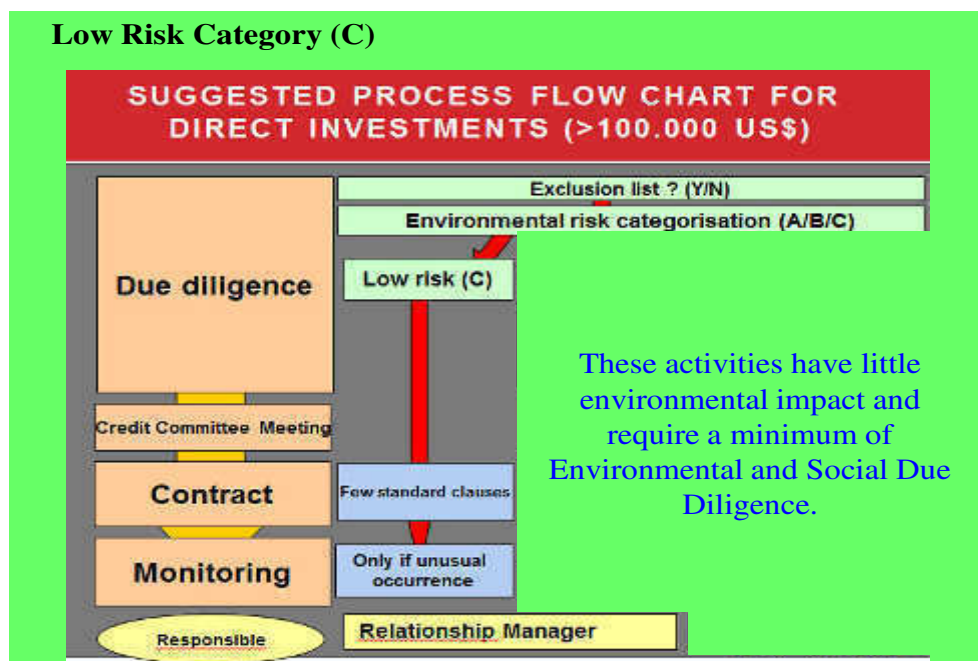


Figure 11 Low Risk Category

8. Environmental & Social Due Diligence (ESDD)

A SEDD is the record of the Bank's E&S review of projects at the time of appraisal. This ensures that the project is meeting and is expected to continue to meet the Applicable Performance Standards in order to minimise adverse environmental and social impacts arising of the project.

- Due diligence is the specific procedures adopted for loan appraisal and supervision;
- The due diligence process includes the gathering, analysis and interpretation of relevant information which leads to bank's decisions.
- It determines whether E&S risks have been identified and whether measures have been instituted to manage the risks.

Carrying out the Social & Environmental Due Diligence (SEDD)

In the case of a Category 'A' project, the due diligence is a full-scale review of the social and environmental risks preferably based on IFC Performance Standards and EHS guidelines. Therefore such a review can be conducted by a team of experts or consultants.

In summary a SEDD is based on all or some of the following:

- Review of information in the public domain to check for any social and/or environmental controversies/news related to the project.
- Review of project and social and environmental documents of the project;
- Discussions with the Project Officials.
- Site visit and discussions.
- Expert knowledge of external consultants (based on IFC PS and EHS Guidelines)

The most important element of the ESDD in respect of category 'A' Projects is to find out the gaps between the current E&S performance and the benchmark performance (IFC performance standards).

The gap analysis with regard to the IFC performance standards is considered crucial to ensure that the client is managing E&S risks in accordance with internationally recognized E&S risks management standards.

The Environmental and Social Due Diligence for category 'A' projects therefore has to involve the following steps:

- Asking client to fill E&S "questionnaire for category 'A' projects".
- Hand over to the client the relevant, sector specific IFC guidelines¹¹ and EHS guidance notes.

¹¹ <http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines>

- Ask client to prepare a gap analysis between client’s performance and the performance defined in the IFC performance standards (if necessary with the help of an external expert).
- Collect and study original EIA documents or other relevant documents (audit reports, etc.).
- Carrying out an internet research on potential risks/potential NGO interests.
- Visiting the site.
- Prepare an action plan if the IFC standards and EHS guidelines are not yet being met (based on the gap analysis).

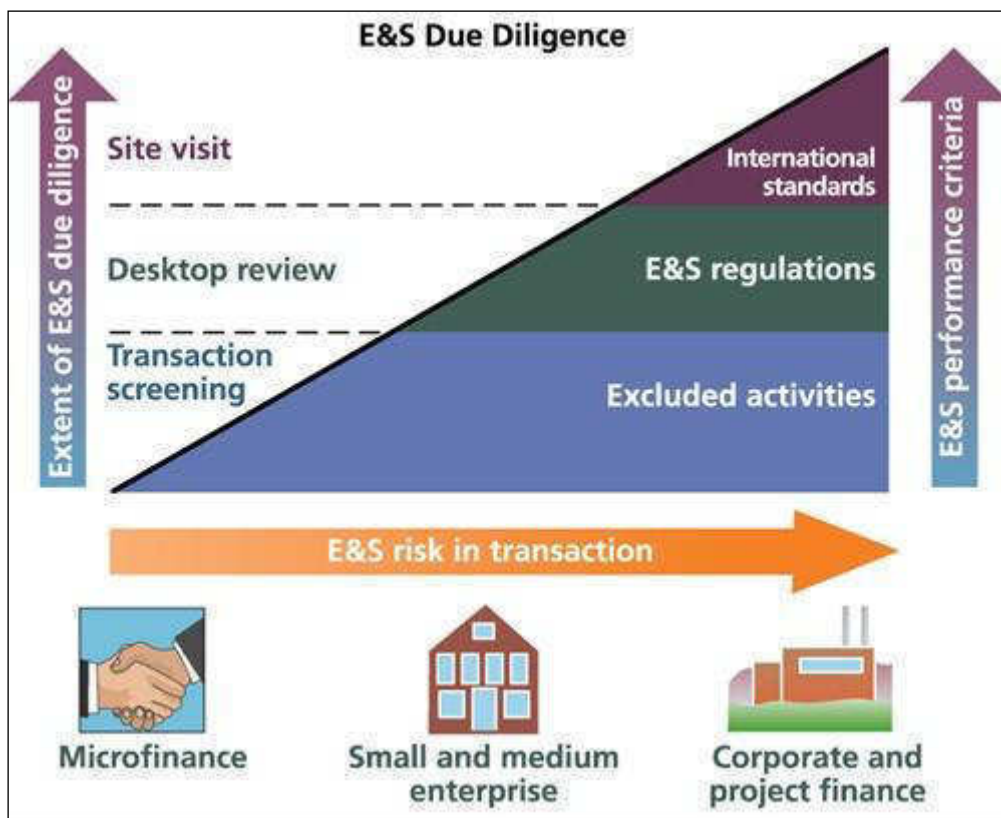


Figure 12 IFC approach for E&S Due Diligence

The ESMS Coordinator or other designated officer (Credit Officer) will undertake (or appoint a consultant to undertake) a Environmental and Social Due Diligence exercise. A checklist of information that should be looked at during ESDD is given in Annex (6).

For category ‘C’ and ‘B’ Projects the ESDD can be a desk review, or a simple review by the credit officer based on a site visit. Any environmental and social impacts of such projects can be addressed through the country environmental and social legislation. The Credit Officer obtains the technical views expressed by the Central Environmental Authority in this case.

Environmental and Social Review Summary Report

Based on the ESDD, the ESMS Coordinator has to prepare an “**Environmental and Social Review Summary**” report in a pre-described format.¹² The ESMS Manager has to add this summary report (see Annex 6) to the credit proposal before the same is submitted to the Credit Committee (CRECO).

This report primarily informs the decision makers about the clients’ compliance with the local standards, the gap analysis to IFC standards, the associated risks and the company’s management capabilities to cope with the risks. Ideally, the report shall also give an indication on the possible mitigation measures.

The Client/Loan Applicant must be able to demonstrate compliance to the Applicable Requirements. Demonstration of compliance must be to the satisfaction of the Environmental Coordinator (or other designated officer), although the opinion of third parties such as regulatory agencies or the IFC can be sought.

Where compliance cannot be demonstrated, a Corrective Action Plan must be agreed to for the investment to proceed. The plan must specify all of the necessary actions to be taken to bring a project within the ambit of compliance. A target completion date for each specified action must also be agreed.

Prospective clients must provide all requested information and the Environmental Coordinator (or other designated officer) must be of conclusive opinion that the Project is expected to meet the Applicable Requirements (with Corrective Action if required) prior to the Company’s decision to make an investment.

A set of Guidance Notes, corresponding to the Performance Standards, offers helpful guidance on the requirements contained in the Performance Standards, including reference materials on good sustainability practices to help clients improve project performance. The Guidance Notes can be found under the link¹³:

For **Category ‘C’** projects no ESDD is necessary.

¹² ESDD Summary Report is given in (Annex 5) and an Example is given in Annex (6)

¹³ <http://www.ifc.org/ifcext/sustainability.nsf/Content/GuidanceNotes>

8.1 Environmental & Social Risk Mitigation

For Category ‘B’ projects, E&S Risk mitigation will be effected by way of clients agreement to comply with country specific standards, regulations and procedures which very often surface as a result of the following:

- Environmental Impact Assessments/Environmental audits.
- Environmental and Social Action Plans (encompassing any further observation made during the due diligence).

Environmental Impacts Assessments/Initial Environmental Examination Reports

For the projects which cause adverse environmental and social consequences, such impacts be appraised through proper environmental impact assessments prior to loan approval.¹⁴

This applies only to “Prescribed Projects” which have been specified by the Minister in Charge of Environment and is implemented through designated Project Approving Agencies (PAAs) as prescribed by the Minister.¹⁵

Depending on the significance of the anticipated impacts, there are two types of reports i.e. the Initial Environmental Examination (IEE) and the Environmental Impact Assessment (EIA).

The **Initial Environmental Examination (IEE)** is a report which is comparatively less descriptive. IEE is written in the form of a statement as against key probing questions which are given in the Terms of Reference for such a study by the Central Environmental authority or any other PAA. The **Environmental Impact Assessment (EIA)** Report is a more comprehensive document. The EIA or IEE (country environmental compliance requirements) will be applicable to category ‘B’ projects and category ‘A’ projects.

For category ‘A’ projects (or Category ‘B+’) Environmental and Social Risk Mitigation Action should comply with more stringent standards or guidelines above country environmental standards or social safeguard policies. The clients who request for loans to implement such projects should follow the requirements as stipulated in IFC Performance Standards together with World Bank Environmental, Health and Safety (EHS) Guidelines. Mitigation actions should be compared with the standards between contry regulations and the IFC performance standards after a detailed analysis of the gaps between them and whatever the stringent standard should be adhered to.

This is done at the time of due diligence by the multi-disciplinary team of environmental and social experts and the ESDD summary report shall be prepared. The SEDD will address the social, environmental, occupational health and safety aspects related to the proposed activity.

¹⁴ Part IV C of the National Environmental Act includes provision for the EIA process.

¹⁵ A list of prescribed projects is given in Annex (8)(Country Environmental Legislation Document)

The site visit is meant to verify and check if all aspects of the ESMP are covered and thereby seek confirmation that the approach followed and the process meets the obligations of the IFC performance standards.

A detailed checklist for ESDD for the Category 'A' project is given in Annex (6).

The review shall encompass among others:

1. The gaps between the country regulations and the obligations in terms of the IFC performance standards including EHS guidelines to be analysed by the team dealing with due diligence. For example the country specific standards and regulations pertaining to air, water and noise pollution should be compared with that of the standards provided in the IFC fact sheets and all gaps should be identified for compliance.

(If the gap analysis shows that the country standards are below the international standards, it is necessary that the loan applicant comply with higher standards. A detailed list and analysis of gaps is provided in Section 2.)

2. Careful review of the EIA/IEE (in the light of IFC PS 1) to assess whether it has taken note of:
 - Adequate quantification of waste quantities, handling and disposal and description of existing waste at dump site.
 - Assessment of subsurface/surface water contamination from premises/existing dump site.
 - Assessment of types and quantities, disposal methods of hazardous waste present at the site and determine required mitigation/management measures.
 - IFC EHS Guidelines for Waste Management Facilities, Noise Standards, Effluent Emissions to water bodies and to the Atmosphere, etc. For example, define the standards for air and water emission standards as per IFC EHS Guidelines (if these details are not adequately found in the EIA).¹⁶
3. Careful review of the EIA (in the light of PS 2 & 5) to assess whether it has taken note of:
 - Social aspects and community sensitivities considering community health and safety risks and land alienation, involuntary resettlements and compensation (livelihood restoration, etc.).

By means of this process, recommended E&S risk mitigation actions are conveyed to the loan applicants. The conditions are eventually incorporated into the loan agreement enabling the Bank to ensure that the project applicant (borrower) will comply with same.

¹⁶ Reference www.ifc.org/ifcext/enviro.nsf/Content/Environmentalguidelines.

Very often, the mitigation actions recommended in the EIA reports are not sufficient in case of Category ‘A’ Projects. The Bank can request the loan applicant to prepare a separate environmental and social management action plan in keeping with the IFC relevant PS and EHS guidelines in such cases. (This should be in addition to the conditions of approval already given by the CEA).

The important aspects that are to be noted in the SEAP are:

- Whether the project has a properly defined Environmental and Social (Risk Management) Plan – ESMP.
- Whether a proper organizational structure is facilitated within the project to implement same with adequate professional staff.
- Whether adequate resources are made available by the loan applicant/borrower in respect of implementing the mitigation actions.
- Public disclosure is accepted in principle by the project proponent.
- Environmental pollution risks can be mitigated by complying with EHS guidelines or the country specific guidelines.
- Whether there is an employment policy to ensure nondiscrimination, safety of the workers and public safety.
- Whether the labor policies comply with country, as well as international, standards such as non-engagement of forced labor or child labor.
- Whether involuntary resettlement will be required and, if so, whether those who will be economically and physically displaced will be compensated as per the country laws (or IFC relevant performance standards) whichever is higher,
- Whether there will be biodiversity loss and if so how such impacts can be mitigated, whether the project will impact on the cultural heritage and the indigenous peoples’ interests, etc.

The section below (Brief Introduction to IFC PS) as well as the sections describing the IFC Performance Standards provided in the Reference Manual (Part ii of this manual) together with the Fact Sheet contained therein provides Industry Sector Guidelines¹⁷ that can be used as source documents for the Credit Officers to be familiar with E&S Risk Assessment in respect of Category ‘A’ projects.

The SEDDR shall also include key relevant documents, such as Environmental Assessment(s) prepared by the borrower, corrective action plans, environmental and social management plans and other material information collected or prepared during the due diligence process.

¹⁷ Reference Manual (section (2) of the Report

9. Brief Introduction to IFC PS and Process Involved in Compliance

All borrowers whose projects are categorized as high risk or Category ‘A’ projects/activities have to comply with IFC Performance Standards 1-8. Such standards are considered pre-requisites and will ensure compliance for the loan agreement. The basis is that *environmental and social issues of the proposed development activity need to be properly represented in the commitments made by the loan applicant (developer) prior to concluding the loan agreement*. Therefore, the Bank, as the Financial Institution which authorises the loan, should assess whether the intended loan is to undertake a High Risk project and take due cognisance and action if compliance with Country Environmental and Social Safeguard Policies, Standards and Regulation is not sufficient. If so, the loan covenants should incorporate the necessity to comply with the IFC Performance Standards (depending on the nature of the project) based on a suitable due diligence carried out by Bank’s internal staff or independent consultants hired by the Bank. Due Diligence will result in preparing an Environmental and Social Action Plan. It outlines early Environmental and Social Safeguard Compliance Requirements for the loan approval. In order to reach Credit Approval stage, it is necessary for the Client or the Loan Applicant to agree to an Environmental and Social Action Plan (ESAP).

IFC Performance Standards (PS 1-8)

PS 1: Assessment and Management of Environmental and Social Risks and Impacts

PS 2: Labor and Working Conditions

PS 3: Resource Efficiency and Pollution Prevention

PS 4: Community Health, Safety and Security

PS 5: Land Acquisition and Involuntary Resettlement

PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

PS 7: Indigenous Peoples

PS 8: Cultural Heritage

(Example PS 1.) This underscores the importance of managing environmental and social performance throughout the life of a project. One of the key outcomes of this process is that, the loan applicant (developer) will have to prepare a separate Environmental and Social Management System (ESMS) for the respective activity or the project, the implementation of which, is to be monitored by the bank during the post disbursement stage of the loan.

In this respect the loan applicant will have to conduct a review of the Environmental and Social Impact Assessment as against the IFC Relevant Performance Standards (if the ESIA has not sufficiently captured the environmental and social issues). The Client will establish and maintain an ESMS appropriate to the nature and scale of the project and commensurate with the level of its environmental and social risks and impacts. The ESMS will incorporate the following elements:

- (i) E&S policy
- (ii) Identification of risks and impacts
- (iii) Management programs
- (iv) Organizational capacity and competency
- (v) Stakeholder engagement
- (vi) Compliance Monitoring and periodical review.

The following steps should be adhered to:

- ◆ The Bank should review the entire available E&S Risk appraisal document such as EIA/ IEE, other documents; Site visits are to be carried out by the staff.
- ◆ The Bank should engage suitable experts to undertake Environmental & Social Due Diligence. (In case of High Risk Projects)
- ◆ Review the ESIA against IFC Performance Standards and EHS Guidelines and prepare a full scale E&S Due Diligence Summary Report.
- ◆ Bank will incorporate necessary loan agreements which require client to furnish additional compliances based on the ESDD Summary Report
- ◆ The Client needs to prepare a draft ESMS (Environmental & Social Management Plan) based on the EIA/IEE and relevant IFC standards;
- ◆ Allocate necessary resources to implement the mitigation actions as stipulated in the ESMP

9.1 Scope of work for the Bank's external Consultant during E&S due diligence.

In case of a high risk project, Category 'A' (or 'B+'), the Bank should engage an expert/ panel of experts to carry out the due diligence. Special Tasks to be undertaken by the expert /panel of experts will be, (among others depending on the scale and nature of the proposed activity) as follows:

- ◆ Assessment of the project sites (for its topography, geology and other ecological importance).
- ◆ Comment on the feasibility Study reports (financial as well as environmental) including ESIA/IEE Reports.

- ◆ Comment on the procedures adopted with regard to land acquisition and Resettlement Action Plan, if any.
- ◆ Comment on Environmental and Social Management Plans (including health and safety plans).
- ◆ Comment on E&S Policy Document (Recruitment, labour engagement, etc.).
- ◆ Comment on Occupational Health and Safety (OH&S) Plan.
- ◆ Comment on Waste and Hazardous Waste Management Plan.
- ◆ Comment on Emergency Preparedness and Response Plans.
- ◆ Comment on Community Health and Safety Plan.
- ◆ Comment on Grievance Redress Mechanism.
- ◆ Comment on Soil Protection Plan/Bio-diversity Conservation Plan.

The review will result in the preparation of an Environmental and Social Action Plan which the Bank will provide to the loan applicant whose task will be to comply with the requirements set in the SEAP.

The team of experts / consultants for such activities should be drawn from among:

1. Waste Management specialists.
2. Hydrologists.
3. Ecologists.
4. Environmental engineers (to look at both water contamination and hazardous waste management aspects).
5. Social scientists.
6. Environmental planning specialists.
7. Geologists.
8. Community health specialists.

The Bank expects the Loan Applicant/Client/Developer to engage an environmental consultant whose tasks in brief, are to:

- Provide support to the developer to prepare above documentation.
- Ensure their implementation at the site
- Training of the staff (contractor's staff).
- Periodic review of the progress and submission of reports to the Bank

There will be an independent consultant of the Bank or the Credit Officer whose task will be to periodically review and report to the Bank to ensure compliance in keeping with the IFC Performance Standards.

10. Credit Approval & Legal Documentaion

In order to ensure that from the beginning, the clients are aware of the environmental and social risk management requirements of high risk projects (**Category ‘A’**), the following standard clause have to be added to the loan agreement:

“The client has to comply with the relevant IFC Performance Standards”

Catergory ‘B’ and ‘C’ projects do not require a particularly stringent clause in the loan agreement except the standard clause indicating the expected environmental risks:

“The project has the Environmental and Social category ‘B’/‘C’. Related risks are considered to be moderate/low”

For Category ‘A’ projects the CO and ESMS Manager have to suggest **relevant contract clauses** based on a series of pre-formulated building block clauses.

In the summary the suggested process steps (in table 11.1) and necessary draft clauses to be incorporated into the loan agreement are provided. The following standard clauses need to be incorporated into the loan agreement.

- In respect of Category ‘B’ projects/activities, a loan covenant should explain that the borrower should comply with country’s environmental and social standards, regulations as stipulated in the laws pertaining to environment, labor and safety, resettlement, etc.
- In respect of Category ‘A’ projects/activities, a loan covenant should explain that the borrower should comply with IFC performance standards and describe the steps outlined in the SEAP. The clauses should also explain the need for preparation of an annual monitoring report in a pre-described format, and any other clauses if deemed necessary to remedy the noncompliance.
- For category C projects, it is sufficient to ask the client (in case of a serious event, based on due diligence) to remedy them before the loan is approved.

11.Environmental & Social Monitoring Report

The Bank is to submit an annual Environmental and Social monitoring report (to DEG) explaining the Borrower's compliance with the Environmental and Social requirements whose loans have been used for projects under Category 'A'.

Accordingly, Environmental and Social Performance will be evaluated on an annual basis, including status of implementation of the Corrective Action. The Benchmark for Performance will be the on-going compliance against the Applicable Requirements.

During the initial phase of the project, indicators are expected to be developed in order for the Bank to measure its performances against same to ensure whether progress has been achieved in relation to application of ESMS for its lending activities.

The Bank is required to follow the index of indicators when reporting on progress. The indicators encompass indicators to be measured during the project phase of the ESMS development and during the operational phase of the ESMS. This is provided as an Annex (7).

At the level of the individual loan recipients, submission of E&S monitoring reports on regular intervals is an essential part of the compliance requirements. Evaluation of the performances against the key indicators can be undertaken by the Client (self-evaluation) or by an independent panel of experts.

M&E reports will be prepared by the Loan Applicant/Client who will provide regular reports to the ESMS Coordinator (or other designated officer), who may follow up as required with further queries or site visits. The Bank should have the capacity to review the monitoring reports based on the monitoring indicators.

E&S Coordinator has to **monitor the Environmental and Social Performance** of Category 'A' projects annually and visits the site occasionally, if necessary. The results of this monitoring should be fed back to the overall reporting system.

11.1 Summary overview of suggested process steps, responsibilities, tools needed, time frames

| Phase | Process step | Purpose | Action | Responsibility | Tools | Timing |
|--|--|---|--|--|---|---------------------------------|
| Loan Appraisal (Initial Screening of Loan Applications) | Exclusion list | Avoiding disallowed projects | Crosschecking with loan applicant to see whether the purpose of the loan/project is on exclusion list . | Credit Officer /Bank Manager | Bank Exclusion List | At first contact with client |
| | Categorization of the loan/project based on the risk level | Determining whether the project is in category ,A' ,B' or ,C' | Getting necessary initial data and screen them through ESAI or through the list of prescribed projects | Credit Officer | EASI Categorization tool | After first contact with client |
| | Preparing a memo | Informing clients about E&S requirements | For category 'A' projects: Adding a standard phrase (e.g. "client has to comply with IFC standards in a given time frame") | ESMS Coordinator | Standard phrase, if category 'A' project, summary description of IFC PS | |
| Due diligence | Category C projects | Not Applicable | | | | |
| | Category B projects | Identifying potential E&S risks – based on Country Environmental and social standards | Filling short internal checklist thereby identifying potential risks ¹⁸ | CO, assistance of ESMS Manager necessary | "Internal checklist", Site visits if needed, EIA/IEE reports | Before credit committee meeting |
| | Category A projects | Identifying potential E&S | Prepare an Environmental | EO, assisted by ESMS | Internet research | Allowing |

¹⁸ If during the DD process unexpected E&S risks become apparent, the project needs to be re-categorized. Due diligence process needs to be repeated if the project will be considered to fall under a higher category.

| Phase | Process step | Purpose | Action | Responsibility | Tools | Timing |
|-----------------------------|-----------------------|---|---|--|--|---|
| | projects | risks based on the Gaps identified between the country E&S standards and IFC /EHS standards | and Social Management action plan for E&S risk mitigation | Coordinator If required, external expert to assist in finalizing the risk assessment | on potential risks/ Visiting the site | enough time prior to credit committee meeting |
| Credit Approval Process | Category 'C' projects | Short info to committee | Standard phrase to be included in the credit proposal ("project has low E&S risks..") | Credit Committee/ESMS Coordinator | Memo | CRECO meeting |
| | Category 'B' projects | Short info to committee | Standard phrase to be included in the credit proposal ("project has medium E&S risks..") | Credit Committee/ESMS Coordinator | Memo | CRECO meeting |
| | Category 'A' projects | Presenting E&S risks to committee | Short E&S review summary (between 6-10 lines only) based on E&S report) to be included in the credit proposal, full report to be attached as annex | ESMS Coordinator | Memo | CRECO meeting |
| Covenants to loan agreement | Category A projects | | Risk specific E&S clauses to be formulated and included in contract based on standard blocks ("compliance with local law <u>AND</u> IFC PS" + annual reporting + other issues if deemed necessary) | CO assisted by ESMS manager and legal officer | Standard building block system | During contract formulation |

| Phase | Process step | Purpose | Action | Responsibility | Tools | Timing |
|-------------------------|-----------------------|---|--|-------------------------------|---|--|
| | Category B&C projects | | Standard E&S clauses to be included in contract ("compliance with local law...") | CO, assisted by Legal Officer | Standard phrases | During contract formulation |
| Monitoring & Evaluation | Category 'A' projects | Fulfil M&E reporting requirement as per boorrowers commitment | Submission of Regalr M&EReports | ESO; | Monitoring report format for clients, Internal monitoring | Annually, by standard reporting format |

CO -Credit Officer

CRECO - Credit committee

DD - Due Diligence

ESMS Manager - Environmental and Social Management System Manager

E&S Coordinator - Environmental & Social Management System Coordinator

PS - Performance Standards of the IFC (International Finance Corporation)

Annex 1

ESMS Checklist for Senior Management Approval

| |
|---|
| Environmental & Social Management System (ESMS) Checklist |
| Name of Financial Institution: _____ |
| Name(s) of Senior Managers: _____ |
| Approval date: _____ |
| SEMS policy and management commitment— <i>check all that apply:</i> |
| <ul style="list-style-type: none"> <input type="checkbox"/> Policy with regard to Environmental & Social (E&S) Risk Management <input type="checkbox"/> ESMS Policy approved by Senior Management <input type="checkbox"/> ESMS specifies types of investments/loans and activities it applies to (e.g., entire portfolio/investment type) |
| ESMS process and procedures— <i>check all that apply:</i> |
| <ul style="list-style-type: none"> <input type="checkbox"/> Documented process to assess social and environmental impacts and risks of its projects (E.G. Formats used internally to categorise projects for risk levels, E&S Review Check List as shown in Annex (4) and E&S Summery Report as shown in Annex (6) <input type="checkbox"/> ESMS specifies applicable requirements (e.g., IFC Exclusion List/national laws/IFC Performance Standards) <input type="checkbox"/> E&S due diligence process integrated with risk assessment procedures <input type="checkbox"/> Project site visits conducted as part of risk assessment procedures <input type="checkbox"/> Review of borrower’s applicable environment, health and safety permits <input type="checkbox"/> Loan agreements contain covenants requiring ongoing compliance with applicable requirements (e.g., national laws) |
| E&S monitoring and record keeping— <i>check all that apply:</i> |
| <ul style="list-style-type: none"> <input type="checkbox"/> Process for monitoring ongoing compliance with applicable requirements <input type="checkbox"/> Borrowers required to report accidents/incidents within reasonable timeframe <input type="checkbox"/> Borrowers required to provide periodic reports pertaining to S&E performance of projects |
| ESMS internal feedback and continuous improvement— <i>check all that apply:</i> |
| <ul style="list-style-type: none"> <input type="checkbox"/> Process for periodically reporting social and environmental performance |

| |
|---|
| Environmental & Social Management System (ESMS) Checklist |
| <p>information internally to senior management</p> <p><input type="checkbox"/> Continuous improvement process in place to revise and update ESMS (e.g., changes in national law/international best practices)</p> |
| S&E external reporting— <i>check all that apply:</i> |
| <p><input type="checkbox"/> Annual reporting on S&E performance to IFC</p> |
| ESMS roles and responsibilities— <i>check all that apply:</i> |
| <p><input type="checkbox"/> Designated SEMS Officer</p> <p><input type="checkbox"/> Designated SEMS Environmental Coordinator(s)</p> <p><input type="checkbox"/> Description of SEMS responsibilities of different roles</p> |
| ESMS capacity and resources— <i>check all that apply:</i> |
| <p><input type="checkbox"/> Process for communicating ESMS policy and procedures across Financial Institution</p> <p><input type="checkbox"/> ESMS includes tools (e.g., checklists/guidance notes) for its implementation</p> <p><input type="checkbox"/> Budget allocated for ESMS training</p> <p><input type="checkbox"/> Training plan for ESMS implementation</p> |

Annex 2 Bank's Exclusion list

The HNB Exclusion List defines the types of projects that HNB **does not** finance. HNB does not finance the following projects:

- Production or trade in any product or activity deemed illegal under country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, ozone depleting substances, PCB, wildlife or products regulated under CITES.
- Production or trade in weapons and munitions.¹
- Production or trade in alcoholic beverages (excluding beer and wine).¹
- Production or trade in tobacco.¹
- Gambling, casinos and equivalent enterprises.¹
- Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment where IFC considers the radioactive source to be trivial and/or adequately shielded.
- Production or trade in un-bonded asbestos fibers. This does not apply to purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.
- Drift net fishing in the marine environment using nets in excess of 2.5 km. in length.
- Production or activities involving harmful or exploitative forms of forced labor²/harmful child labor.³
- Commercial logging operations for use in primary tropical moist forest.
- Production or trade in wood or other forestry products other than from sustainably managed forests.
- Production, trade, storage, or transport of significant volumes of hazardous chemicals, or commercial scale usage of hazardous chemicals. Hazardous chemicals include gasoline, kerosene and other petroleum products.
- Production or activities that impinge on the lands owned, or claimed under adjudication, by Indigenous People, without full documented consent of such peoples.
- Any business relating to **pornography or prostitution**.
- Trade in **wildlife or wildlife products** regulated under CITES.
- Production or use of or trade in **hazardous materials** such as radioactive materials, unbounded asbestos fibers and products containing PCBs.
- Cross-border trade in waste and waste products.

- Production, use of or trade in pharmaceuticals, pesticides/herbicides, chemicals, ozone depleting substances and other hazardous substances subject to international **phase-outs or bans**.
 - Production and distribution of **racist**, anti-democratic and/or neo-nazi media.
-

Footnotes

¹ This does not apply to project sponsors who are not substantially involved in these activities. "Not substantially involved" means that the activity concerned is ancillary to a project sponsor's primary operations.

² Forced labor means all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

³ Harmful child labor means the employment of children that is economically exploitive, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health, or physical, mental, spiritual, moral, or social well-being.

Annex 3 Project’s Environmental & Social Impact Initial Screening Form

Background information

1. Name and address of the applicant:
.....
.....
2. Name of the contact person (in relation to environmental issues if available):
.....
.....
3. Type of industry/product(s):
.....
.....
4. Location of industry/Project (please attach location map & route sketch to industry and surrounding neighbourhood and environment):
.....
.....
5. Name of local Authority:
.....
6. Factory/Project layout plan (with major buildings, unit operations and by products and waste generation points):
.....
.....
7. Has the local authority approved the Plans?
8. Extent of the Land & designated areas close to the land if any
9. Boundary of the project location / areas bounded by
.....
10. Ownership of the land (any acquisition required).....
.....
11. Should the project require EIA /IEE as per Environmental Regulations?
.....
12. Characteristics of potential Environmental & Social impacts:
.....
.....
13. How many workers will be employed (During construction / after construction)
14. Will there be migratory workers employed?
15. Any other Information useful for environmental and social risks of the project:

Annex 4 Environmental and Social Review Check List

(To be used by the credit officer)

| Social and Environmental Aspects Screening Checklist | |
|--|---|
| Project name: (Purpose of the Loan) | Location: |
| Lending amount (\$m) and financial purpose: | |
| Sector: | Type of Activity |
| Brief project description: | |
| Site visit date: | Additional technical review required: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Reviewed by: | |
| Compliance with applicable requirements—check all that apply: | |
| <input type="checkbox"/> Exclusion list <input type="checkbox"/> National regulatory requirements <input type="checkbox"/> Environmental, health and safety permits granted <input type="checkbox"/> Injuries and fatalities have occurred (how and when: _____) <input type="checkbox"/> Labor-related fines (when and why: _____) <input type="checkbox"/> Environmental incidents and fines (when and why: _____) | |
| Management systems—check all that apply: | |
| <input type="checkbox"/> Availability of written environmental and social policy <input type="checkbox"/> Availability of written human resources policy (e.g., employee rights/non-discrimination) <input type="checkbox"/> Availability of written fire/safety plan or emergency prevention/preparedness/response plan <input type="checkbox"/> Availability of environmental, health and safety training for employees <input type="checkbox"/> Availability of procedures for managing environmental and social risks <input type="checkbox"/> Availability of designated person in charge of environmental and social issues | |

| | |
|--|--|
| <input type="checkbox"/> Availability of internal process for sharing information | |
| Project site—check all that apply: | |
| <input type="checkbox"/> Urban/developed land <input type="checkbox"/> Far from or not within site river/stream/pond/lake/sea <input type="checkbox"/> Far from not within site a protected area (e.g., forest/endangered species)/ecologically sensitive area (e.g., wetland/breeding grounds) <input type="checkbox"/> Not a culturally sensitive/indigenous area | |
| Environmental issues—check all that apply: | |
| <i>Air emissions</i> <input type="checkbox"/> Boilers <input type="checkbox"/> Generators <input type="checkbox"/> Vehicles and equipment <input type="checkbox"/> Furnaces and incinerators <input type="checkbox"/> Welding and soldering <input type="checkbox"/> On-site burning <input type="checkbox"/> Use of solvents <input type="checkbox"/> Use of fumigation <input type="checkbox"/> Evaporation of chemicals <input type="checkbox"/> Refrigeration plant <input type="checkbox"/> Use of exhaust ventilation | <i>Waste water</i> <input type="checkbox"/> Waste water discharged to _____ <input type="checkbox"/> Drains and grates <input type="checkbox"/> Oil separators <input type="checkbox"/> Separation tanks or filters <input type="checkbox"/> Reed beds <input type="checkbox"/> Cut-off valves <input type="checkbox"/> Foul sewers and septic tanks <input type="checkbox"/> Water treatment units <input type="checkbox"/> Cleaning operations <input type="checkbox"/> Spraying operations <input type="checkbox"/> De-watering/water pump out |
| <i>Solid and hazardous wastes</i> <input type="checkbox"/> Waste generated <input type="checkbox"/> Types of waste: _____ _____ _____ <input type="checkbox"/> Hazardous waste (e.g., waste oils, pesticide washings, solvents, clinical waste, asbestos) <input type="checkbox"/> Waste disposed to | <i>Hazardous chemicals, fuels, and pesticides</i> <input type="checkbox"/> On-site chemicals or fuels storage <input type="checkbox"/> Protective measures against leaks/spills <input type="checkbox"/> Signs of leaks/spills <input type="checkbox"/> On-site spill clean up equipment <input type="checkbox"/> Protective measures against rain <input type="checkbox"/> Signs of corrosion on tanks/containers <input type="checkbox"/> Secured storage areas against theft <input type="checkbox"/> Training on proper handling of chemicals |

| | |
|---|--|
| <p>_____</p> | <p>and fuels</p> <p><input type="checkbox"/> Pesticide use and management</p> |
| <p><i>Resource consumption</i></p> <p><input type="checkbox"/> Materials used: _____ _____</p> <p><input type="checkbox"/> Use of renewable natural resources</p> <p><input type="checkbox"/> Use of tools and equipment</p> <p><input type="checkbox"/> Water source: _____</p> <p><input type="checkbox"/> Energy source: _____</p> | <p><i>Nuisance</i></p> <p><input type="checkbox"/> Dust</p> <p><input type="checkbox"/> Noise</p> <p><input type="checkbox"/> Odors</p> <p><input type="checkbox"/> Fumes</p> <p><input type="checkbox"/> Vibrations</p> <p><input type="checkbox"/> Traffic congestion and obstructions</p> |
| Community interactions—check all that apply: | |
| <p><input type="checkbox"/> Designated person in charge of responding to questions from the community is available</p> <p><input type="checkbox"/> Procedures for managing community complaints are in place</p> <p><input type="checkbox"/> Security personnel are in place</p> | |
| Social issues—check all that apply: | |
| <p><input type="checkbox"/> Land acquisition required</p> <p><input type="checkbox"/> Displacement/resettlement of local settlements</p> <p><input type="checkbox"/> Impact on local settlements/livelihood</p> <p><input type="checkbox"/> Impact on indigenous peoples</p> <p><input type="checkbox"/> Complaints from neighbors/communities</p> <p><input type="checkbox"/> On or adjacent to site of cultural/archaeological importance</p> | |
| Labor issues—check all that apply: | |
| <p><input type="checkbox"/> No Personal Protective Equipment provided (e.g., safety goggle/hard hat/protective glove)</p> <p><input type="checkbox"/> Inadequate employee health and safety measures (e.g., fall prevention/ventilation)</p> <p><input type="checkbox"/> Inadequate working conditions (e.g., air quality/lighting/confined spaces/on-site hygiene)</p> <p><input type="checkbox"/> Inadequate terms of employment (e.g., working hours/rest breaks/time off/overtime pay)</p> <p><input type="checkbox"/> Unequal employment opportunities (e.g., discrimination against gender/ethnic</p> | |

group/age)

- Payment below minimum wage
- Employees below minimum age
- Child or forced labor
- No process for employees to voice complaints
- No recognition of employee organizations/labor unions

Additional comments

Annex 5 Environmental and Social Due Diligence (ESDD) Report for Banks

(To be used by the Credit Officer/ESDD Team)

Transaction Title:

1. Nature of the Transaction and the Borrower's Business:
 - Type of transaction, amount and term.
 - Borrower and its business operations: [name, location, and nature of business, size (production capacity, number of staff)].
 - Purpose of loan.
2. Environmental and Social Information Reviewed and Issues Identified:
 - Information reviewed, e.g., representations from the borrower, copies of permits/licences, copies of policies/procedures, environmental impact assessment report, site visit, inspection reports.
 - Main environmental and social impacts of company operations (e.g., air emissions, wastewater, hazardous waste generated, land acquisition, occupational health and safety, public safety, labour standards, impacts on cultural heritage).
 - Key environmental and social concerns identified (e.g., high charges for emissions, known areas of current or future non-compliance with regulations, high worker accident rate, significant major accident risk, community grievances/protest, frequent strikes, bad worker/management relations).
3. Environmental Regulatory Compliance and Liability
 - Does the Borrower comply with environmental regulations and standards?
 - Has the Borrower obtained the necessary permits and approvals for construction/operation?
 - Finance of new developments/major expansion projects: Has the Borrower carried out an EIA in accordance with regulatory requirements? Has the EIA been disclosed to the local public that may be affected by the project? What public comments were received?
 - Has the Borrower paid excess charges or fines/penalties for non-compliance with environmental regulations and standards in the last two years? If yes, specify magnitude.
 - What are the main findings of the latest environmental inspection reports for the Borrower's business?
 - Is the Borrower subject to ongoing or pending administrative or court action because of environmental offences?
 - Is the Borrower exposed to potentially significant environmental liabilities, such as those arising from known or suspected land/groundwater contamination, related to the Company's past or ongoing operations? If yes, specify magnitude.

- Borrowers in EU accession countries: Will the enterprise be able to meet impending EU environmental requirements and product standards?
4. Social standards compliance:
- Does the borrower comply with national labour and employee protection regulations, in particular those related to occupational health and safety (OHS), employment of minors, the prohibition of forced labour, the non-discriminatory treatment of employees at the workplace, the freedom of association and the right to bargain collectively?
 - Has the Borrower paid excess charges or fines/penalties for non-compliance with OHS, labour and public safety/sanitary regulations and standards in the last two years? If yes, specify magnitude.
 - What are the main findings of the latest OHS/labour/Sanepid inspection reports for the Borrower's business?
 - Is the Borrower subject to ongoing or pending administrative or court action because of OHS, labour or sanitary offences?
 - Borrowers in EU accession countries: Will the enterprise be able to meet impending EU health and safety requirements, product standards and labour standards?
 - Does the project to be financed have any adverse effects on indigenous people, cultural or archaeological heritage? If yes, how are these impacts being mitigated?
 - Financing of new developments/major expansion projects. Does the project involve the acquisition of land, or expansion of the company's Sanitary Zone? If so, do any people have to be resettled? If yes, detailed information on applicable laws/regulations (if any) and proposed resettlement and compensation of affected people must be attached to the EDD Report.
5. Has the Borrower had any significant accidents or incidents in the last two years (e.g., oil spills, fires) involving deaths or serious injuries and/or significant environmental damage? If yes, please provide details.
- If land is taken as collateral, is there any indication of material contamination?
 - If yes, are there any liabilities of the Bank as a pledge holder to clean-up the land and what is their approximate magnitude?
 - Risk mitigation and monitoring:
 - State further actions required/planned by the Borrower, in particular actions to address any environmental and social non-compliance problems and liabilities.
 - State any risk mitigation measures to be taken by the Bank, such as environmental and social conditions, loan covenants or monitoring requirements (e.g. regular reporting from Borrower).
6. Environmental and Social Opportunities:
- State any measures taken/planned by the Borrower, in particular any financed through the loan (other than those mentioned in section 7), to further improve the

environmental or social performance of the enterprise, e.g., energy efficiency, cleaner technology, waste reduction, occupational health and safety management, community relations.

Credit officer

_____ _____ _____
Name Signature Date

Financing Institution

Annex 6 Example of a Typical ESDD Summery Report

Transaction Title: *Loan to Specimen Co.*

1. Nature of the transaction and the borrower's business:

- 1.1. Type of transaction, amount and term: *1 year (medium term) loan for \$200,000 under DEG credit line.*
- 1.2. Borrower/investment and its business operations: *Hotel Industry*
- 1.3. Purpose of transaction: *Construction of a hotel with 35 Rooms.*

2. Environmental and Social Information Reviewed and issues identified

[**Information reviewed**, e.g., representations from the borrower, copies of permits/licences, copies of policies/procedures, environmental impact assessment report, site visit, inspection reports].

- ◆ *Site walks round, inspection.*
 - ◆ *Discussions with management.*
 - ◆ *Hotel operating permit dated*
 - ◆ *Permit for discharge of waste water to the sewerage system dated .*
 - ◆ *Water extraction permit dated*
 - ◆ *Approval for Building Plan by Local Authority.*
 - ◆ *EIA / IEE Statement*
 - ◆ *Any Other documents (Safety Plan / Solid Waste Management Plan/ Land Acquisition Plan / Soil Protection Plan)*
- 1) *Main environmental and social impacts of company operations (e.g., waste water, and solid waste generated, land acquisition, occupational health and safety, public safety, labour standards, impacts on cultural heritage).*
 - ◆ *Wastewater from process and washing operations (this is treated both on and offsite).*
 - 2) *Key environmental and social concerns identified (e.g., high charges for emissions, known areas of current or future non-compliance with regulations, high worker accident rate, significant major accident risk, community grievances/protest, frequent strikes, bad worker/management relations).*

3) Environmental regulatory compliance and liability

- a) *Does the Borrower/investor comply with national environmental regulations and standards?*
Management reported full compliance with environmental regulations.
- b) *Has the Borrower/investor obtained the necessary permits and approvals?*
Permits inspected include:

- ◆ *Hotel operating permit dated*

- *EIA /IEE*
- *Permit for discharge to water: valid – expires*
- *Contract with LA to dispose solid waste water from the hotel*
- *Wastewater quality test results:*

a) *Permit for extraction of water from well/River;*

b) *As far as we are aware no other permits are required for legal operation.*

c) Has the Borrower/investor been penalized for non-compliance with environmental regulations and standards in the last two years?

Since testing in 1999 the company has been paying water charges of about \$1600 per year on account of slightly exceeding permitted levels as mentioned above.

d) What are the main findings of the environmental inspection reports for the Borrower's business?

1. Is the Borrower/investment subject to ongoing or pending administrative or court action because of environmental offences?

No.

2. Is the Borrower/investment exposed to potentially significant environmental liabilities, such as those arising from known or suspected land/groundwater contamination, related to the Company's past or ongoing operations? If yes, specify magnitude.

No.

3. Social standards compliance:

3.1. Does the borrower comply with national labour and employee protection regulations, in particular those related to occupational health and safety (OHS), employment of minors, the prohibition of forced labour, the non-discriminatory treatment of employees at the workplace, the freedom of association, and the right to bargain collectively?

3.2. What are the main findings of the latest OHS/labour/sanitary inspection reports for the Borrower's business?

3.3. Is the Borrower subject to ongoing or pending administrative or court action because of OHS, labour or sanitary offences?

3.4. Does the project to be financed have any adverse effects on indigenous people, cultural or archaeological heritage? If yes, how are these impacts being mitigated?

3.5. Financing of new developments/major expansion projects. Does the project involve the acquisition of land, or expansion of the company's own area? If so, do any people have to be resettled? If yes, detailed information on applicable laws/regulations (if any) and proposed resettlement and compensation of affected people must be attached to the ESDD Report.

4. Accidents

Has the Borrower/investor had any significant accidents or incidents in the last two years (e.g. oil spills, fires) involving deaths or serious injuries and/or significant environmental damage?

5. Collateral

If land is taken as collateral, is there any indication of material contamination? If yes, are there any liabilities of the company or financial institution to clean-up the land and what is their approximate magnitude?

6. Risk mitigation and monitoring:

State further actions required/planned by the Borrower/Investor, with regard to particular actions to address any environmental and social non-compliance problems and liabilities:

- *Expired construction permit must be renewed.*
- *Have requested to check on wastewater quality to check compliance.*
- *Talk to worker representatives to confirm that overtime payment issue has been resolved.*
- *Proof requested that 16–18 year olds are employed in accordance with national labour regulations.*
- *Request copies of future labour inspection reports as part of annual reports on environmental and social performance.*

State any risk mitigation measures to be taken by the Bank/investor, such as environmental and social conditions, loan covenants or monitoring requirements (e.g., regular reporting from Borrower).

7. Requirements placed on company as conditions of loan:

- *Renew expired construction permit; ensure all permits remain valid.*
- *Provide satisfactory evidence that 16–18 year olds are employed in accordance with national labour regulations.*
- *Inform the Bank if any material breach of regulation or product quality requirements takes place.*
- *Not to sell or acquire land or make any significant change to the nature of the business without approval from the Bank.*

8. Environmental and Social Opportunities:

State any measures taken/planned by the Borrower/Investor, in particular any financed through the loan (other than those mentioned in section 6), to further improve the environmental or social performance of the enterprise, e.g., energy efficiency, cleaner technology, waste reduction, occupational health and safety management, community relations, etc.

Annex 7 Monitoring and Supervising Format (to be used by the independent Evaluators)

| S.No | Name of the establishment: | Address (with contact details) | Name of officials met: | Designation and contacts: |
|--------------|---|---|-------------------------------|----------------------------------|
| 1.0 | Description of Activity: | <i>Date of commencement of the operation, description of activity with products output and their quantities, nature and quantity of raw materials used and process description with flow chart.</i> | | |
| 2.0 | Approval letters/Licences/permits/Agreement | <ol style="list-style-type: none"> 1. 2. 3. 4. <i>(if possible attach copies of the above as Annex to this doc.).</i> | | |
| 3.0 | Conditions | Observation | | |
| 3.1.0 | Air Emission | <i>Reference document-licence, agreement, etc.</i> | | |
| 3.1.1 | General description | <i>Description of the process and air pollution sources.</i> | | |
| 3.1.2 | Emission standards and conditions | <i>Emission standards stipulated in the licence/agreement.</i> | | |
| 3.1.2 | Available monitoring reports | <i>List out all the monitoring reports with date.</i> | | |
| 3.1.3 | Review of monitoring reports | <i>Review the monitoring report - whether the emissions tested adhere to the conditions of the licence/agreement.</i> | | |
| 3.1.4 | Operation of air pollution control system | <i>Describe all the air pollution control systems operations on visual basis.</i> | | |
| 3.1.5 | Air pollution in surrounding area (fugitive emission) | <i>Describe the surrounding environment of the facility in respect of air emission particularly the fugitive emission.</i> | | |
| 3.1.6 | General observation | <i>Provide your general observation on the air pollution control aspects with respect to the conditions in license and agreements.</i> | | |
| 3.4.0 | Wastewater | <i>Reference document-licence, agreement, etc.</i> | | |
| 3.4.1. | Discharge standards | <i>Description of the process and water pollution sources, discharge quantities, description of available treatment facilities, discharge method and description of the receiving water body.</i> | | |

| S.No | Name of the establishment: | Address (with contact details) | Name of officials met: | Designation and contacts: |
|--------------|---|---|-------------------------------|----------------------------------|
| 3.4.2. | Available monitoring reports | <i>Discharge standards stipulated in the licence/agreement.</i> | | |
| 3.4.3 | Review of monitoring reports | <i>List out all the monitoring reports with date.</i> | | |
| 3.4.4 | Operation of the wastewater treatment plant | <i>Review the monitoring report whether the discharge standards adhere to the conditions of the licence/agreement.</i> | | |
| 3.4.5 | General observation | <i>Provide your general observation on the water pollution control aspects with respect to the conditions in license and agreements.</i> | | |
| 3.5.0 | Solid waste | <i>Discharge standards stipulated in the licence/agreement.</i> | | |
| 3.5.1 | General description of solid waste generation | <i>Description of type of solid waste generated, their quantities, storage, transportation and disposal methods and available recycling system.</i> | | |
| 3.5.2 | Available Monitoring reports | <i>List out all the monitoring reports with date.</i> | | |
| 3.5.3 | Review of monitoring reports | <i>Review the monitoring report with respect to the conditions of the licence/agreement, etc.</i> | | |
| 3.5.4 | General observation | <i>Provide your general observation on the solid waste management aspects with respect to the conditions in license and agreements.</i> | | |
| 3.6.0 | Noise | <i>Reference document-license, agreement, etc.</i> | | |
| 3.6.1 | Description of noise source | <i>Machinery, construction, blasting, process, etc. Noise control method proposed.</i> | | |
| 3.6.2 | Available monitoring report | <i>List out all the monitoring reports with date.</i> | | |
| 3.6.3 | Review of monitoring reports | <i>Review the monitoring report with respect to the conditions of the licence agreement, etc.</i> | | |
| 3.6.4 | General observation | <i>Provide your general observation on the water pollution control aspects with respect to the conditions in license and agreements.</i> | | |
| 3.7.0 | Occupational, Health & Safety | | | |

| S.No | Name of the establishment: | Address (with contact details) | Name of officials met: | Designation and contacts: |
|--------------|--|--|-------------------------------|----------------------------------|
| 3.7.1 | Description of safety measures | Description of all safety methods indicated in the licence/agreement. | | |
| 3.7.2 | Available monitoring report | | | |
| 3.7.3 | Review of monitoring reports | <i>Review the monitoring report with respect to the conditions of the licence agreement, etc.</i> | | |
| 3.7.4 | General observation | <i>Provide your general observation on the water pollution control aspects with respect to the conditions in license and agreements.</i> | | |
| 3.8.0 | Storage of chemicals and hazardous substances | Description of nature of chemical and hazardous substances and available storage facility and handling. | | |
| 3.8.1 | General observation | Any condition other than the above which are not covered. | | |
| 3.9.0 | Governance | | | |
| 3.9.1 | Any Public complaints received | Nature of the complaints and the responses of the developer. | | |

Summary of the overall observation:

Recommendations:

Name:

¹⁹Signature:

Date:

¹⁹ If more than one person, please sign separately.

Annex 8 Examples of Prescribed Projects by Environmental Risk Category

Credit Officers can use the categorisation (EASI) Tool or can refer to the list below for categorising projects for risk levels (High, Medium and Low).

Examples of High-Risk Projects

- Large dams and reservoirs.
- Mining and quarrying.
- Forestry and logging (large scale).
- Agro-industries (large scale).
- Industrial plants (large scale).
- Major new industrial estates.
- Major oil and gas developments, including major pipelines.
- Large ferrous and non-ferrous metal operations.
- Large-scale pulp and paper industries.
- Large port and harbor developments.
- Large thermal or hydropower development.
- Manufacture, use or disposal of large quantities of pesticides/herbicides and mineral fertilizers.
- Manufacture, transportation and use of hazardous and/or toxic materials.
- Domestic and hazardous waste disposal operations.
- Large-scale tourism developments.
- Large-scale textile industries involving wet processes.
- Large-scale transportation projects (airports, highways, motorways, railroads).
- Projects in or near to highly sensitive and high value ecosystems.
- Projects with large resettlement components and all projects with potentially major impacts on human populations.
- Projects affecting indigenous or tribal populations.
- Projects which impose serious occupational or health risks.
- Projects which pose serious socioeconomic concerns.

Typical Category ‘A’ Projects (Additional List)

- Projects affecting indigenous people.
- Construction of dams and reservoirs.
- Projects involving resettlement of communities/families.
- Pesticides and herbicides: production or commercial use.
- All projects which pose serious socioeconomic concerns.

- Major irrigation projects or other projects affecting water supply in a given region.
- Projects associated with induced development (e.g., inward migration).
- Domestic or hazardous waste disposal operations.
- Projects which impact on cultural property (e.g., religious and archeological sites).
- Hazardous chemicals: manufacture, storage or transportation above a threshold volume.
- Projects which pose serious occupational or health risks.
- Oil and gas developments, including pipeline construction.
- Impacts on protected natural habitats or areas of high biological diversity including wetlands, coral reefs and mangroves.
- Large infrastructure projects, including development of ports and harbors, airports, road, rail and mass transit systems.
- Forestry operations.
- Metal smelting, refining and foundry operations.
- Mining (opencast and pit).
- Large thermal and hydropower developments.

Examples of Medium-Risk Projects

- Agribusiness (small scale).
- City hotels, small scales tourism.
- General manufacturing.
- Chemical industries, without any bulk storage of inflammable, explosive or hazardous substances.
- Manufacture of plastic products.
- Processing and preservation of fruit, vegetables, fish and meat.
- Vegetable/animal oil production and processing.
- Manufacture of wines and other fermented beverages.
- Dairy products manufacture.
- Manufacture of leather products (except tanning and dyeing).
- Repair and maintenance shops.
- Spinning, weaving and finishing of natural and synthetic fabric.
- Printing.
- Manufacturing of wood products.
- Saw milling.
- Manufacture of veneer, plywood and other wood-based materials.
- Small power plants.

Typical Category ‘B’ Projects (Additional List)

- Breweries.
- Hotel/tourism development.
- Cement manufacture.
- Mining (small scale).
- Dairy operations.
- Metal plating.
- Food processing.
- Modernization of existing plants.
- General manufacturing plants.
- Pulp and paper mills.
- Hospitals.
- Textile Plants.

Examples of Low-Risk Projects

- Establishment of business services industries (business advisors, accountancy auditors, etc.).
- Establishment of restaurants and other food premises.
- Education and training.
- Broadcasting (TV, radio, satellite).
- Health and family planning.
- Purchase of computer equipment.
- Establishment and equipment of art, design, telecommunications studios.
- Spinning, weaving and finishing of natural and synthetic fabric.
- Tailoring and dress-making shops.
- Manufacture of leather products and clothing (except where tanning or dyeing is involved).
- Advisory assignment.
- Life insurance companies.

Typical Category ‘C’ Projects (Additional List)

- Software development.
- Factoring companies.
- Consulting firms.
- Share registries.
- Service industries.
- Stockbrokering.
- Technical assistance.

Annex 9 Manual (Explanations on how to fill in EASI)

PART 1

Why EASI?

The “Environmental and Social Risk Indicator” (EASI) is an **integral part of the environmental and social examination** of investment projects. In all project phases, it gives a quick and clear first insight into the **environmental and social category** of the project and the underlying information. EASI is a **simple model**, which can reflect complex situations with sufficiently high accuracy. As such, it **objectifies and standardizes** the categorization. EASI is a **knowledge management and also a know-how-analyzing tool** at the same time. EASI has been designed to enable a first assessment of the environmental and social risk by the project manager in charge largely **without E+S expert know-how**. Gross misinterpretations are very unlikely if the tool is diligently used. A major factor of influence for the results is the "sector". It is therefore paramount to fill this in correctly. In view of the great importance of the sector, EASI even provides for a subdivision of sectors (“sectors details”) for particularly heterogeneous sectors.

Limitations of EASI

EASI is a simplifying model, which describes complex situations with sufficient accuracy, rather than to perfection. To assure its use by non-experts, it is furthermore deliberately structured in a simple manner, i.e. EASI values usability higher than to be scientifically exact.

A tool like EASI can only be as good as the **reliability** and **completeness** of the underlying data. Both are the responsibility of the person entering the data. Some questions allow for several answers the separations of which may be blurred or may be impossible to describe in more detail so that a certain **subjectivity** of the person entering the data might play a role.

Despite these limitations, **sensitivity analyses** of EASI have furnished very good results with very close approximations to the results of “manual entries” at almost all times. In addition, it was demonstrated that filling in EASI using “**common sense**” cannot lead to completely wrong results, i.e., that significant risks cannot be ignored. E+S expertise is therefore not imperative, particularly not for projects of low to moderate relevance.

PART 2 – How to use EASI

Instructions on how to use EASI:

- Macros must be **ACTIVATED** (when opening the Excel files). Without this activation, the E&S category will **NOT** be calculated properly.
- The environmental data (light green background) will lead to the Environmental sub-category (‘A’, ‘B’ or ‘C’), the social data (orange background) will primarily lead to the Social sub-category (‘A’, ‘B’ or ‘C’). In the end, each project will get only **one single project E&S category** which is the higher category of the two

sub-categories (i.e., a project with the environmental sub-category ‘A’ and the social sub-category ‘B’ with have an overall E&S category ‘A’).

- The subcategories can be calculated to be ‘B +’. These project subcategories are treated as ‘B’ (as per E&S procedures). The “+” is for reference only, indicating that the project has a medium to high risk. It is strongly advised that input-data for these projects is thoroughly scrutinised in order to ensure that these projects are not ‘A’ projects, which would need to be treated differently according to the E&S procedures.
- Kindly fill in all boxes. Most boxes must be filled in with the help of a **pull-down menu**. (Click box with left mouse click and access menu with the grey arrow which appears on the right).
- Almost all selection options give you a **choice of pre-selected answers**. They generally range from particularly critical answers to particularly positive answers. (Example: Biodiversity: “Project in Critical Habitats” / ... / “No impact on Critical Habitat”).
- Results are only given once all **obligatory boxes** required have been filled. In reverse: all these fields must be filled in, if necessary, with the preliminary option “**unknown**”. Please note that the answering options may indeed influence the results and frequently influence the results towards a higher E+S risk. As far as certain parameters are concerned, one has to assume the “highest risk case”.
- In case of doubt, please contact the Environmental and Social Officer.

What do the individual boxes mean? – Comments on the explanations of the form

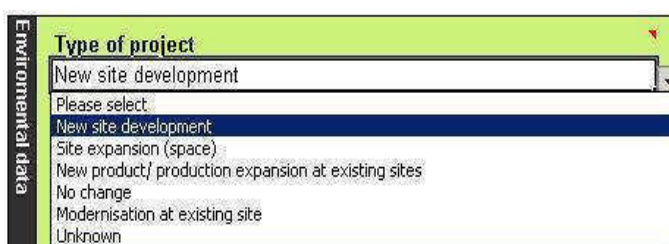
Environmental Data

While environmental data are the major source for the environmental category, they also include parameters which have an effect on the social category.

| | | |
|------------------------------|-------------------------------|------------------------------|
| Environmental data | Type of project | |
| | New site development | |
| | Sector | NACE Sector details |
| | Food | 15 Coffee, processing of ca- |
| | Project size | In FTZ Project site |
| | Medium | No Multiple sites / non-site |
| Supply-Chain (Tier 1) | Biodiversity | |
| Unspecific supply chain | No impact on Critical Habitat | |
| Community impacts | DEG-Exclusionlist | |
| No risk | No | |

Type of project

Information on the “Project character“ is asked. “Development of a new location” stands for ”Greenfield” project. A “Site expansion (space)” means a considerable enlargement of the existing premises. In such case, the answer



referring to the “Project site” (see below) must refer to this expanded section. While EASI assesses a “New product/production expansion at existing sites” as environmentally neutral, a “Modernisation at existing site” has a slightly positive effect on the EASI results.

Sector

The Sector (including sectors details) is the **key variable for the assessment of the potential effects** and therefore on the allocation of the category of a project. It is therefore vital to determine the sector as precisely as possible. In case the project can be attributed to two or more different sectors (e.g., food + agriculture + logistics) the sector with the supposed higher E&S risks needs to be filled (e.g., agriculture).



NACE

This code is generated automatically and for your reference only. The NACE code (Nomenclature générale des activités économiques dans les Communautés européennes) classifies the économique activités. As a first approximation, the two-digit code is used.

Sector details

The E&S impacts of some sectors can be very different, depending on the specific project focus (e.g. a cocoa project may have more social impacts than the mineral water production). It may hence be required to provide sector details, i.e., tick the appropriate sub sector in the pull down menu provided.



Project size

A sector-related estimate of the project size is desirable, particularly in the national context, if impossible, in the international context. This does not concern your financing contribution but is rather about the parameters customary for the industry (e.g., production volume, capacity, surface, etc.).

Project site

Investments at existing sites (“Brownfield” investments), the close vicinity (up to 2.5 km) is decisive. In case of developing new sites (“Greenfield”), it is the project site itself. Should several answers be possible, chose the one which is “more critical” from the E+S point of view (e.g., if there is a residential area close to the location, enter this as well).

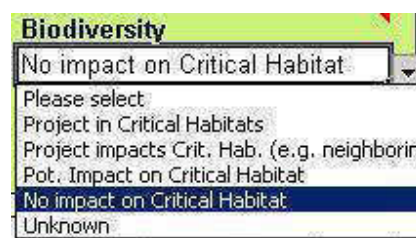
Supply Chain (Tier 1)

The E+S processing generally includes at least the first step of the supply chain and possibly the first step of the purchasers for its considerations. This particularly applies in certain sector/country combinations which imply the actual E+S risk rather than the project itself. (e.g., it makes a difference whether a wood treatment unit receives the raw material from natural forests or from certified plantations). In this context, problematic environmental and social issues are recorded. Please select from the pull-down menu what issues arise in the supply chain.



Biodiversity

Is the project located in or close to critical habitats? “Critical Habitat” describes residential or other sites of species which experts consider endangered owing to specific criteria (endangered species, high biological diversity, temporary habitat of specific migrant birds, etc.). For further details, see “Guidance Note 6 – Biodiversity Conservation and Sustainable Natural Resource Management” of the IFC Performance Standards.



Community Impacts

The potential risks from the areas of environment, social issues and occupational health and safety are recorded. Should several risks apply, select the “more severe” risk.

Social Data

Social data are important initial variables to establish the social category.

Number of jobs

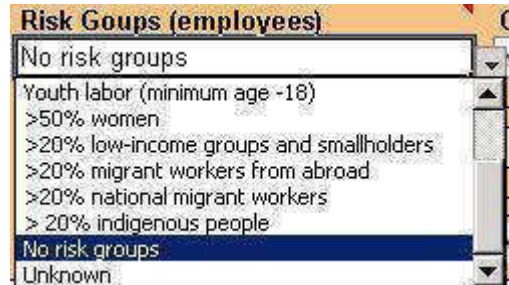
Source: The data should include the number of people that are planned to be directly and permanently or temporarily employed by the company on the sites targeted by the project.

Risk Groups (employees)

Temporary workers – staff assigned by its employer to a third party to render certain services.

Seasonal workers – staff executing work for a transitory period (season) only.

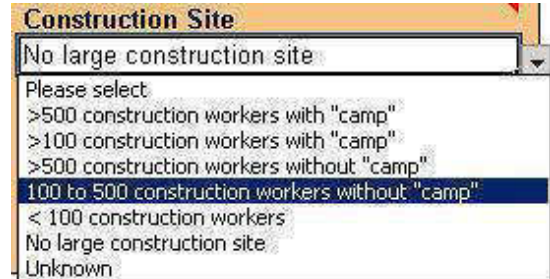
Migrant workers – staff who have to work at a place far away from home.



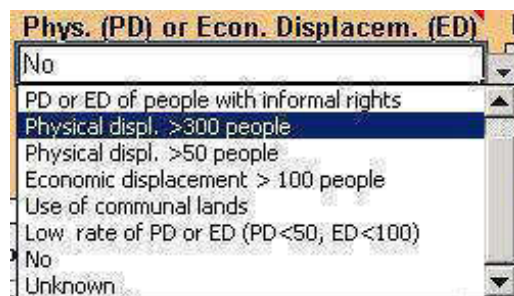
Low-income – staff where the income is clearly below the average, usually close to the minimum wage and/or weighted income of the overall population.

Construction site

Even if temporarily limited, the construction phase is a major part of the project cycle and therefore a vital part of the E+S assessment. It is here that many projects produce their main E+S effects. Environmental and Social standards of DEG apply without any restriction in this context. Within the course of the project, this will naturally change, i.e., the Project Manager can set this parameter at “no construction site” once the construction work has been completed.



Physical (PD) or Economical Displacement (ED)



Resettlements (PD) stand for (forced or voluntary) actual resettlement of residence of groups of people. Financial restrictions (ED) mean loss of (or loss of access to) economic goods resulting in lack of sources of income and/or means of existence. For further details, see “Guidance Note 5 – Land acquisition and involuntary resettlement” of the IFC

Performance Standards.

Results

Note: Results will automatically be generated once all **obligatory boxes** required have been filled in.

Environmental sub-category

Shows the potential environmental effects and/or relevance of the project ('A', 'B+', 'B' or 'C' equivalent to high, medium-high, medium or low relevance).

Social sub-category

Shows the potential social effects and/or relevance of the project ('A', 'B+', 'B' or 'C' equivalent to high, medium-high, medium or low relevance). Essential factors of influence are the industry, number of staff and certain circumstances increasing social risks or risks related to occupational health and safety.

Note (1)

Basic Information Questionnaire (BIQ) – Portfolio Analysis

| ENVIRONMENTAL (data) CATEGORY | | | |
|----------------------------------|--|---------------------------------------|--|
| Sector | | Financial Services | |
| Wearing Apparel | | Financial Intermediary | |
| Office Machinery and Computers | | Culture, Sports | |
| Chemical Industry | | Land Transport | |
| Computers and Related Activities | | Agriculture | |
| Other Business Activities | | Leather & Leather Products | |
| Retail Trade | | Air Transport | |
| Electrical Machinery | | Machinery & Equipment | |
| Energy Supply | | Precision Instruments | |
| Sewage and Refuse Disposal | | Basic Metals, Metal Products | |
| Crude, Petroleum and Natural Gas | | Metal Products | |
| Food | | Furniture, Jewellery, Wood, SI metal | |
| Mining and Metal Ore | | Post and Telecommunications | |
| Education | | Pulp, Paper and Paper Products | |
| Fishery | | Private Households | |
| Exterritorial | | Recycling | |
| Research, Development | | Radio, TV and Communication Equipment | |
| Forestry | | Navigation | |
| Hotel Restaurant | | Other Transport Equipment | |
| Health Sector | | Other Service activities | |
| Mining | | Tobacco | |
| Glass, Ceramic | | Textile | |
| Wholesale Trade | | Ware Housing | |
| Rubber, Plastic Products | | Uranium Mining | |
| Wood and Wood Products | | Publishing & Printing | |

| | |
|---|--|
| Representation of Interests/Lobby | |
| Motor Vehicle and Spares | |
| Sales, Maintenance, Repairs of Motor Vehicles | |
| Climate Protection Certificates | |
| Mining of Coal Lignite | |
| Coke, Refined Petroleum | |

| | |
|---|--|
| Leasing | |
| Insurance | |
| Public Administration | |
| Collection Purification and Distribution of Water | |
| Construction | |
| Housing | |

| | |
|------------------------------------|--|
| Type of project | |
| New Site Development | |
| Site Expansion | |
| Product Expansion at Existing Site | |
| No Change | |
| Modernisation at Existing Site | |
| Unknown | |

| | |
|--------------|--|
| Project Size | |
| Very Large | |
| Large | |
| Medium | |
| Small | |
| Unknown | |

| | |
|--|--|
| Project Site | |
| Nature (Unused) | |
| Agriculture Land | |
| Residential Area | |
| Multiple site (non-site specific activities) | |
| Commercial Area | |
| Industrial Area | |
| Unknown | |

| | |
|---------------------------------------|--|
| Community Impacts | |
| Integrated Dam (Energy/Water Supply) | |
| Transport of Hazardous Goods | |
| Negative Impacts on Indigenous People | |
| Marked Increase of HGV Traffic | |
| High Influx of Migrant Workers | |
| Over Land Lines (200 Kv >) | |
| Armed Security Force | |

| | |
|--------------------------------|--|
| Supply Chain | |
| Small Holder | |
| Dependent Micro enterprise | |
| Mines, Extractive Industry | |
| Risk of Child or Forced Labour | |
| Homeworker | |
| Wood From Plantation (FSC) | |
| Wood From Natural Forest (FSC) | |
| Wood From Plantation | |
| Wood From Natural Forest | |
| Large Scale Agriculture | |
| GMO Agriculture | |
| Unknown | |

| | |
|--------------------------------|--|
| Biodiversity | |
| Project in Critical Habitats | |
| Neighbouring Critical Habitats | |
| Near Critical Habitats | |
| No Critical Habitats | |
| Improve Biodiversity | |

| | |
|---|-----------------------------------|
| SOCIAL DATA (CATEGORY) | |
| No. of Jobs | Physical or Economic Displacement |
| 1000> | PD/ED of Indigenous People |
| Risks Groups | PD/ED with Informal Rights |
| Youth Labour Minimum Age (18) | Physical Displacement >300 |
| >20% Temporary, Seasonal, Migrant Workers | Physical Displacement >50 |

| | |
|---|--|
| > 50% Women | |
| > 20% Low Income Groups & Small Holders | |
| >20% Migrant Workers from Abroad | |
| >20% National Migrant Workers | |
| No Risk Groups | |
| Unknown | |

| | |
|-----------------------------|--|
| Economic Displacement >100- | |
| No | |
| Not Known | |

Annex 10 Glossary

(Not purely connected to the EASI Tool, but will be useful for general understanding.)

Diversity

Remarks: Species richness, ecosystem complexity and genetic variation are different aspects of biological diversity.

Definition: Species richness of a community or area, measured in terms of the number of different plant and animal species (often called “species richness”) it contains. However, the community characteristics are better assessed by the relative abundance of the species present. Diversity in ecosystems is usually equated with stability due to climax community.

Related Terms: biodiversity; biological diversity.

Biological diversity

Remarks: Variant.

Remarks: Genetic diversity refers to diversity within species; species diversity to the number of variety of species; and ecosystem diversity to the total number of ecosystem types.

Definition: The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Related Terms: functional biodiversity; agro-biodiversity; genetic diversity; species diversity; ecosystem diversity.

Conservation

Definition: Includes protection, maintenance, rehabilitation, restoration and enhancement of populations and ecosystems. This implies sound biosphere management within given social and economic constraints, producing goods and services without depleting natural ecosystem diversity.

Related Terms: Conservation of natural resources; in situ conservation; ex situ conservation.

Conservation of natural resources

Remarks: A distinction is made between conservation and preservation; a conservationist recognizes that man will use some of the products in a forest but a preserver would ban forest use entirely.

Definition: The protection, preservation, management, or restoration of wildlife and of natural resources such as forests, soil and water. Conservation of natural resources is usually embraced in the broader concept of conserving the earth itself by protecting its capacity for self-renewal. It may be defined as the protection of natural resources and landscapes for later use.

Related Terms: Conservation; agro ecology; natural resource management; conservation agriculture.

Corporate Social Responsibility (CSR)

Form: Abbreviation.

Remarks: Increasingly organic and fair trade objectives are pursued simultaneously, offering a basis for environmental and social accountability. CSR does not only cover products but also institutional practices.

Definition: A set of management practices in businesses that aim at minimizing the negative impacts of their operations on society and at maximizing the positive impacts. A concept, whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis. CSR covers social and environmental issues, in spite of the English term Corporate Social Responsibility. An important aspect of CSR is how enterprises interact with their internal and external stakeholders: employees, customers, neighbours, nongovernmental organizations, public authorities, etc.

Related Terms: social standard; environmental and social responsibility; ethical responsibility; responsible.

Cost of compliance

Remarks: For firms, this is the total cost of complying with environmental regulations. In the case of organic agriculture, it is the cost of obeying standards and certification costs.

Definition: Compliance costs are all the costs associated with meeting the obligations of legislation in force, with the exception of direct financial costs and their long-term structural effects.

Related Terms: certification; avoidance costs.

Environmental footprint

Remarks: As an indicator of sustainability.

Definition: The ecological footprint is a measure of human demand on the Earth's ecosystems; it compares human demand with planet Earth's ecological capacity to regenerate itself. It represents the amount of biologically productive land and sea area needed to regenerate the resources a human population consumes and to absorb and render harmless the corresponding waste, given prevailing technology and resource management practice. Using this assessment, it is possible to estimate how many planet Earths it would take to support humanity if everybody lived a given lifestyle. While the ecological footprint term is widely used, methods of measurement vary. But calculation standards are now emerging to make results more comparable and consistent.

Related Terms: low energy footprint food system; life-cycle analysis.

Ecosystem services (environmental services)

Remarks: Concept usually expressed in the plural.

Remarks: Essential regulating services such as air quality, climate regulation, disease regulation, erosion regulation, natural hazard regulation, pest regulation, pollination, water regulation, water purification and waste treatment are tightly linked with agricultural management. Well-managed organic systems deliver most of the essential regulating environmental services, which costs are internalized in organic commodity prices, owing to consumers' willingness to pay the relevant premium price.

Definition: The benefits people obtain from ecosystems, including provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on Earth.

Environmental and social cost (societal cost)

Remarks: The price premium on organic products reflects the extra effort undertaken by farmers to avoid environmental and social cost (or externalities) during the production and processing process.

Definition: They refer to the costs which affect individuals, society and the environment for which the entity causing/generating this adverse impact is not accountable.

Related Terms: environmental externality; corporate social responsibility (CSR).

Energy efficiency

Remarks: Improving energy efficiency by better managing agricultural and food inputs can make a positive contribution to reducing agricultural greenhouse gas emissions. Organic agriculture reduces energy requirements for production systems by 25 to 50 per cent compared to conventional chemical-based agriculture. Reducing greenhouse gases through their sequestration in soil has even greater potential to mitigate climate change. Carbon is sequestered through an increase of the beneficial soil organic matter content. Inputs in organic management replace fossil fuel elements (e.g., highly soluble fertilizers, pesticides, machines) with lower impact, often locally accessed inputs and management skills. Higher labour input decreases expenses on purchased inputs by some 40 per cent but labour costs increase by 10 to 15 percent. The main benefit of organic systems is energy efficiency in natural resource use.

Definition: Optimizing input/output ratio of energy units to reduce economic costs and negative environmental impacts.

Related Terms: energy flow; nutrient cycle; economic efficiency; efficiency.

Environmental Impact Assessment (EIA)

Form: Abbreviation.

Definition: A sequential set of activities designed to identify and predict the impacts of a proposed action on the bio geophysical environment and on human health and wellbeing, and to interpret and communicate information about the impacts, including mitigation measures

that are likely to eliminate risks. In many countries and organizations, new projects or legislations require an EIA before being approved for implementation.

Related Terms: social standard; life-cycle analysis (LCA); ecological footprint.

Environmental viability

Definition: Refers to the capacity for survival of the natural environment, or the capacity for living, developing, or germinating under a given management. The environmental viability of a farming approach refers to its (ecological) sustainability.

Related Terms: environmental sustainability; environment stability; environmental efficiency.

Environmental standard

Definition: Environmental standards are standards for materials, products and production processes to ensure that negative impacts on the environment are minimal or kept within certain limits.

Related Terms: social standard; ecolabel.

Environmental sustainability

Remarks: Linked to the definition of sustainable development.

Definition: Forms of progress that meet the needs of the present generations of natural resources capital and environmental services without compromising the ability of future generations to meet their needs.

Related Terms: sustainable use of natural resources; sustainable development.

Greenhouse gas (GHG)

Form: Abbreviation.

Definition: Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. This property causes the greenhouse effect. Water vapour (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), and ozone (O₃) are the primary greenhouse gases in the Earth's atmosphere. Moreover there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine-containing and bromine-containing substances, dealt with under the Montreal Protocol. Besides CO₂, N₂O and CH₄, the Kyoto Protocol deals with the greenhouse gases sulfur hexafluoride (SF₆), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

Related Terms: climate change; global warming potential; greenhouse effect; global warming.

Land conversion

Remarks: Conversion is often confused with clear-cut. An area that is clear-cut remains forested.

Definition: Converting an area to another use such as converting forest area or wetlands into agricultural land or urban area.

Related Terms: land use planning; landscape ecology.

Non-conformity

Definition: An instance where a particular standard or certification requirement is not being met. Major nonconformity: breach of applicable standard; minor nonconformity (violation); breach of certification requirements other than standard (organic integrity of the products remains unaffected).

Related Terms: Conformity assessment; requirement for conformity; complaint; appeal; de-certification; standard.

Non-point-source pollution

Definition: Pollution sources that are diffused and do not have a single point of origin or are not introduced into a receiving stream from a specific outlet. The pollutants are generally carried off the land by storm-water runoff. Nonpoint sources of pollutants include agriculture, urban areas and mining.

Annex 11 Amendments to the Credit Policy

1. To revise 2nd point of the 3rd paragraph on page 1 as follows:

Requirement arising out of changing demographic, socio economic, environmental, technological, legislative and regulatory requirements affecting the Bank’s operating environment, the banking industry and commercial practices.

2. Insert following paragraph at the end of the section “Principles of Good Lending” on pages 1-3:

Comply with our Environmental and Social Management Systems (ESMS) and Procedures.

3. The following sections to be introduced under “Functions of the Credit Manager” pages 1-31 and the “Branch Credit Officers” on pages 1-33.

Acquire a good knowledge/understanding of the HNB’s Environmental and Social Management Systems (ESMS) and apply the procedures accordingly.

4. The following section to be inserted in the Risk - Assessment under the section “Guide to Evaluation of Credit proposals” (pages 2-10)

Replace “Ecology related issues” with the “Environment and Social Risks” and revise the table as follows:

| Evaluation criteria | Issue to be Considered and matters to be verified | Examples/Instances |
|----------------------------|--|---|
| Risk Assessment | Environment and Social Risks | Environmental & Social Risk Assessment- E.g. - Water pollution (Environmental) - Involuntary resettlement (Social) |

In addition to above inclusion, it may be useful to revisit the “Issues to be considered and matters to be verified” Column as against Environment and Social Risks and re–arrange the Issues and the Examples/Instance Columns

5. The following points to be inserted under Risk Mitigating Factors, Pages 2-11

| Evaluation criteria | Issue to be Considered and matters to be verified | Examples/Instances |
|----------------------------|--|---------------------------|
| Risk Mitigating Factors | Following to be introduced after point 4- Close and regular monitoring of the implementation of Environment and Social Management plans of the business/activities by the client if the project is considered high risk. | |

6. The following changes to be made to the bullet point “Social and Environmental Factors” (2-19) under section “Understanding Evaluation of Credit Risk”.

This paragraph to be revised and bullet points to be prepared giving the gist of the ESMS manual (which is under preparation).

Points to be considered under social factors:

- Health and Safety
- Involuntary Resettlement
- Public Security
- Land Acquisition
- Labour Engagement Related Issues, e.g., child labour
- Points to be considered under Environmental factors
- Impact of Client Activities on Land, Air and Water
- Biodiversity loss
- Degradation of forests, wetlands and land resources
- Pollution of water and air resources, etc.

7. The 2nd paragraph of the section “Risk Management Policies and Procedures” (page 2-52) to be revised as follows:

Policy documents are in place for all key risk areas including environmental and social risks.

8. To include following statement as another point under the section Early Warning Signals outside the Bank records (page 2-59).

Any dispute arising out of non-compliance with the Bank’s agreement to fulfill Environmental and Social Management Standards by the client.

9. The following to be changed in the “Early Warning System and Watch Listing Exercise”.

Explanatory note on Watch Listing of clients (pages 2-63)

Subsection on Account to be Watch Listed (4th bullet point)

- Non adherence to lending covenants, conditions of the banks by the client.
- Examples - Compliance to relevant IFC performance standards and/or country regulatory requirements including approval of the Central Environmental Authority (CEA) .

10. Following change to be made for Credit Facilities to Board of Investments (BOI) approved ventures:

Bullet Point under Specific Risk page nos 3-69.

| | |
|---------------------------|---|
| Ecology and social issues | Environmental issues as well as social issues including anti-social practices such as employment of child labour, substandard working environments, exploitation of labour etc., can violate National and International Environmental and Social Standards and may dissuade western buyers from placing orders. Refer to E&S Management System. |
|---------------------------|---|

11. Following changes to be made for the section “Project Financing - Evaluation and Terms of Lending for Project Financing Facilities” (pages 4-8).

- Factors to be considered for Project Financing
- Project Evaluation

| Evaluation Criteria | Issues to be considered & matters to be verified | Examples/Instances |
|--|--|---|
| Acceptability of the project | No change suggested | Following to be added: Compliance to the exclusion list, compliance to national environmental regulations, compliance to the IFC performance standard. |
| To be amended as follows: Formalities/procedures and issues in relation to Government legislative provisions and international social and environmental management requirements | Following to be added as the 3 rd Bullet point: In case of E&S high risk projects, procedures laid down in the Environmental and Social Management Manual should be followed and ensure compliance of same by the borrower | Following to be added as the 4 th Bullet point: Prepare Environment and Social Management Plan in keeping with relevant IFC Performance Standards, in addition to national regulatory compliance. |

What is sustainable (Green) procurement?

Sustainable (Green) procurement as a broad concept first emerged following the Rio Earth Summit in 1992. Sustainable procurement aims to reduce the adverse environmental, social and economic impacts of purchased products and services throughout their life. Examples of environmental, social and economic impacts are:

- Inputs of natural resources, energy and water in the manufacture, use and disposal of goods
- Pollution produced from the manufacture, use and disposal of goods
- Costs of operation and maintenance over the life of the goods
- Labour conditions in the manufacture, use and disposal of goods or delivery of services
- Loss of flora and fauna resulting from the removal or alteration of natural resources.

Sustainable procurement looks beyond the up-front cost to make purchasing decisions based on the entire life cycle of the goods and services, taking into account associated costs, environmental and social risks and benefits, and broader social and environmental implications. Sustainable (Green) procurement is a core theme within the HNB’s environmental policy as shown in its operational diadram²¹ It consider the environmental and social impacts (both positive and negative) from products and services alongside the cost



Principles for procuring sustainably

Value for money is the core principle. This means that all relevant financial and non-financial costs and benefits should be taken into account over the entire life of the procurement. Sustainability should be considered as part of the value for money assessment.

²⁰ Based on the information provided in Sustainable Procurement Guide published by the Department of Susainability, Environment, Water, Population Communities of the Government of Australia

²¹ Source Annual Report (2011)

Other principles of sustainable procurement include:

- Adopting strategies to avoid unnecessary consumption and manage demand
- Minimizing environmental impacts over the life of the goods and services by choosing products or services that have lower adverse impacts associated with any stage in their production, use or disposal
- Fostering innovation in sustainable products and services through the design and implementation of procurements
- Ensuring that fair and ethical sourcing practices are applied and that suppliers are complying with socially responsible practices, including legislative obligations to employees.

Definitions of Sustainable Procurement

(A process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimising damage to the environment.)²²

The term sustainable procurement is frequently used interchangeably with ‘green purchasing’ and ‘environmentally preferable purchasing’, but there is a distinction. Green purchasing and environmentally preferable purchasing relate to the consideration of environmental impacts and costs in the procurement of goods and services, whereas sustainable procurement considers the social, environmental and economic implications of procurement.

Benefits of sustainable procurement

The benefits of adopting a sustainable procurement approach are numerous. The receiver of the benefits can be the purchaser, the market (or supplier) or the community. Some benefits can apply to all these groups. Benefits to the purchaser can include:

- Securing best value for money and achieving a more efficient use of public resources
- Generating financial savings through greater energy efficiency; reduced waste disposal (including reduced packaging to waste); reduced water use; and reusing materials and products, thereby lowering the cost of a product over its life cycle
- Achieving positive publicity associated with the purchase and use of products, services and suppliers with good environmental and social responsibility records

²² In 2005, definition for sustainable procurement was developed by the UK Government which set up a Sustainable Procurement Task Force..

- Providing government leadership to the community in demonstrating social and environmental responsibility through the purchase of sustainable products and services.

Benefits to the market can include:

- ◆ Increasing the availability of sustainable products and services at more cost-effective prices
- ◆ Expanding the market for sustainable products and services, with potential benefits for local businesses
- ◆ Expanding market opportunities gained from stronger product and service differentiation
- ◆ Reducing transport-related costs such as fuel, vehicle maintenance and road congestion

Sustainability issues in purchasing decisions

When considering a purchase, the sustainability issues could include:

- ◆ Examining the need for the product or service, to avoid unnecessary consumption and manage demand
- ◆ Considering the alternatives to purchasing a replacement product, such as reusing, refurbishing or reconditioning the existing product or its components to extend its life with all factors being equal in the purchase of a product,
- ◆ Choosing the product with the least environmental and/or social impact utilising extended warranties considering the environmental management practices of the supplier/manufacturer
- ◆ Refer to benchmarking environmental management programs where practicable, such as ISO 14001 requiring suppliers to meet their employment obligations under relevant legislation and other related instruments
- ◆ Considering the emissions, pollutants, energy and water required at all stages of the life cycle

Identify whether there is a need for the goods or services

Investigate the genuine need for the procurement by asking ‘Do we really need this? Considering sustainability at an early stage of procurement decision-making can identify opportunities to:

- ◆ avoid or reduce consumption
- ◆ identify whether there is a more sustainable alternative readily available

- rethink and revise specifications in order to improve sustainability outcome

Consider whether the need could be met in a way that minimises environmental and social impacts and risks. For example, the timber used to make another Office Building may be identified as having a significant environmental impact, particularly if its source cannot be verified – for example, it could have been harvested illegally. This prompts thinking about solutions to fulfil the procurement requirements in a different way. The timber could be substituted with a material identified as having a lower environmental impact, such as building designs with reduced timber requirements, use of reclaimed timber (timber taken for reuse), a composite of wood waste and recycled plastic, or timber from a certified source. When considering the environmental and social impacts arising from procurement, be aware of not restricting competition or discriminating on the basis of size, degree of foreign affiliation or ownership, location or origin of goods and services.

Consider alternatives to buying

Alternatives to buying, such as reuse or hire of the goods/services, are part of demand management strategies. Demand management encourages a reduction in the volume of goods purchased, usually through a combination of behaviour change and technology. For example, demand management strategies for paper include setting printers to default doublesided and black and white printing, in combination with draw-down technology (swipe cards or PIN codes to retrieve the job from the printer), and reduction targets for business units for paper and toner.

Assessing supplier sustainability performance

It is important to ensure that the suppliers the Bank work with operate in a responsible manner and meet basic standards of environmental and social performance. The same principles and standards that the bank upholds should equally be applied to Bank's supply chain. It is the Bank's responsibility to ensure that this is the case. Supply chains can be long and complex, with hidden environmental and social impacts. In the HNB it is found that of the entire supplier portfolio over 95% is micro suppliers. 23% of the value of procurements is passed on to the Micro Suppliers. The HNB has been in contact with them, having discussions on the need for compliance to Bank's Green Policy which is an encouraging element in Bank's Green Procurement Policy.

The responsibility for procurement of equipment and materials, if centralized based on a list of "accredited suppliers" who have already received EPL, ISO certifications, other certifications, environmental awards, certification of the brands they sell, etc. supplier sustainability performance can better be guaranteed. A "one-shop" procurement responsibility will better guarantee adhering to sustainability criteria, it will save money (better position for negotiation), and it will create transparency for sustainability reporting.

HNB Best Practices in sustainable Procurement is explicit in following:

6 Sustainable procurement

Suppliers with an annual turnover in excess of Rs. 1 million have been requested to comply with the Bank's Green policy in as many areas as possible. Over 55% are partially compliant.

Of the Bank's supplier portfolio 97.5% is classified as SME/Micro suppliers where the classification is defined as vendors with an annual Micro suppliers is estimated at 23% of total procurements.

160 meetings were held with representatives of major suppliers to address issues pertaining to responsible business practice.

All suppliers including micro-suppliers are granted supplier credit, depending on their financial and credit records.

Annex 13 General Operations: Guidelines

General operational guidelines for sustainability can be built on accomplishing the reducing of

1. Bank Waste Footprint
2. Bank Transport Transport Footprint
3. Bank Water Footprint
4. Bank Energy Foot Print

Reducing Energy Footprint

The Bank need to pro-actively apply sound environmental practices to internal operations with regard to energy savings practices. Minimizing the consumption of resources, including Electricity and, heating systems of all the banks' head office and branch offices are very important. It is necessary to take an inventory of the baseline status and make annual targets in reducing the energy foot print relative to its expansion programmes.

- Timely maintenance of cooling equipment/heating systems
- Enhanced computer servers and use of high-energy-use monitors with energy-efficient LCD monitors
- Launching of an employee energy-efficiency training / awareness programmesprogram
- Implement more other energy-efficiency projects can be the way to achieve reduced energy foot print in bank wide operations.

The international standard outlines energy management practices that are considered to be the best, globally. ISO 14001, ISO 50001 are tools to reduce energy intensity and carbon emissions in their own facilities (as well as those belonging to their customers or suppliers) and to benchmark their achievements. The purpose of this International Standard (ISO 50001) is to enable organizations to establish the systems and processes necessary to improve energy performance, including energy efficiency, use, and consumption. Implementation of this standard is intended to lead to reductions in greenhouse gas emissions, energy cost, and other related environmental impacts, through systematic management of energy.

Reducing Water Consumption

Water is the most important natural resource on earth, and without it, all life would cease. Access to clean freshwater, the preservation and management of watersheds and water conservation are becoming increasingly urgent environmental concerns, both globally and in many of the regions in which we operate. Climate change, pollution, and inefficient water usage are factors contributing to a growing water crisis. Many communities are dependent on the preservation and management of the marine and freshwater environment, as their economies require clean water for their tourism, fisheries and other industries. Without clean water, the ability of communities and industries to endure and prosper is limited. The Bank should play a role in supporting efforts to address global water issues. Whilst the Bank can introduce mechanical devices that make the water more sparingly use (self controlled taps etc), water harvesting methods designed for the new office buildings will be important initiatives.



“ I know that my everyday actions leave a big impact on the environment. I know that what I do affects not just my future, but that of my peers, my customers, my family and my fellow countrymen. Therefore, I pledge to commit myself to creating a greener office. I pledge to the following actions. ”

- I will, in whatever I do, be conscious of my environment.
- I will use paper sparingly and only out of necessity.
- I will use the photocopier only if it is unavoidable.
- I will endeavor to print on both sides wherever possible and when not possible to re-use the blank side at the earliest opportunity.
- When taking notes I will optimize my paper and use the space wisely.
- I will re-use folders and throw away less paper.
- I will switch off my monitor whenever I leave my desk and programme the computer to go to sleep mode if it is idle for more than 10 minutes.
- I will switch off the computer, printer and any other equipment before I leave office.
- If I am the last to leave, I will check that all lights are switched off.
- I will separate my waste and dispose it in the correct bin.
- I will use water sparingly and will close any running tap.
- I will do my best to take home these pledges and strive to live by example as I re-commit myself to the green habitat, every passing day!

In this respect, HNB's Green Pledge has already recognised this need. It emphasises that the Banking staff to pledge supporting to achieve more important actions. However what is mission here is a set of targets. Bank can only improve their working efficiency if the staff members know to what results they are to contribute to. Setting of those targets is a task of the general management, in discussion with internal or external specialists. There are a number of conditions to setting targets:

Reducing Waste:

In the Bank, general operations require large quantities of paper which if sparingly used can contribute to sustainability in an effective way. Decrease the flow of paper by providing more and more opportunities to work towards enhancing electronic information flows with a set target is a strong indicator for achieving success in minimizing waste from the excessive use of paper. The Green Pledge of the Bank already had identified this as a prominent area. It is necessary that the staff be further made aware of this as a target to achieve.

- Targets will have to be realistic and understandable. If targets give the feeling that they can “never be achieved” they will fail in creating the necessary motivation to meet them. To prevent this, targets will often have to be divided into “sub-targets”, of which only the first one is communicated to the work floor;
- Targets require time limits, before which they have to be met. If, however, in the course of the first period the set time limit proves to be too optimistic, it has to be adjusted in order to maintain motivation;
- If meeting targets require a higher level of knowledge and sophistication than normally might be expected among the workers concerned, the provision of on-the-job training is a requisite; experience has showed that including environmental information in training sessions (reasons for sustainability, biodiversity, effects of carbon emissions, climate change and its implications, importance of biodiversity) tends to increase the motivation to meet the targets;

CONTACT DETAILS

ESMS UNIT

Human Resources Department

HNB Towers - Level 19

Hatton National Bank PLC

479, T B Jayah Mawatha,

Colombo 10

011-2661937



Environmental and Social Risk Management System Including Environmental & Social Review Procedures

Section 2 Reference Manual Country Environmental & Social Regulation

Hatton National BANK – SRI LANKA



Technical consultancy:

EML Consultants

Innovativkonzept

International Institute of Development Training

This Environmental and social risk management systems and procedures will enable Hatton National Bank (HNB) to implement its Environmental and Social Management Policy and to adopt necessary procedures to meet the requirements set by borrower agencies as well as to assist bank employees in assessing and managing environmental and social risks that relate to the bank's client's/investee's operations

Table of contents

| | | |
|----------|--|-----------|
| 1 | Environmental Impact Assessment | 1 |
| 1.1 | Introduction | 1 |
| 1.2 | Environmental legislation pertaining to EIA in Sri Lanka | 1 |
| 1.2.1 | EIA in Coastal Areas | 1 |
| 1.2.2 | EIA in the Fauna and Flora Ordinance | 3 |
| 1.2.3 | EIA in the Provincial Administration | 3 |
| 1.2.4 | EIA under the National Environmental Act | 3 |
| 1.3 | Procedure For Conducting an IEE/EIA..... | 4 |
| 2 | Environmental Protection License..... | 7 |
| 2.1 | Introduction | 7 |
| 3 | Waste Management | 9 |
| 4 | Environmental Standards..... | 10 |
| 4.1 | Water quality standards..... | 10 |
| 4.2 | Atmospheric emission | 10 |
| 4.3 | Noise Control | 11 |
| 5 | Other Regulations..... | 12 |
| 5.1 | Ozone depleting substances..... | 12 |
| 5.2 | Basel Convention on Transboundary Movement of Hazardous Waste | 12 |
| 6 | Regulatory and Policy Compliance on Social Safeguards in Sri Lanka | 13 |
| 6.1 | Introduction | 13 |
| 6.2 | Existing Legal Framework Dealing with Social Safeguard Management..... | 13 |
| 6.2.1 | National Laws Directly Dealing with Land Acquisition and Involuntary Resettlement..... | 14 |
| 6.2.2 | Other National Laws Containing Provisions Relevant to Land Acquisition, Involuntary Resettlement and Other Social Safeguard Elements | 15 |
| 6.2.3 | Sri Lanka National Involuntary Resettlement Policy (NIRP)..... | 17 |
| 7 | IFC Performance Standards on Social & Environmental Sustainability..... | 20 |
| 7.1 | Performance Standards on Social and Environmental Sustainability..... | 20 |
| 8 | LIST OF ANNEXES..... | 22 |

List of Annexures

| | | |
|----------|--|----|
| Annex 1 | Prescribed project for EIA..... | 22 |
| Annex 2 | Designated Project Approving Agencies | 27 |
| Annex 3 | The prescribed activities for which a license is required | 28 |
| Annex 4 | List of Scheduled Wastes | 34 |
| Annex 5 | The Water Quality standards | 43 |
| Annex 6 | Ambient air quality standards under the NEA..... | 54 |
| Annex 7 | Draft Stationary Source Emission | 56 |
| Annex 8 | Noise Levels | 73 |
| Annex 9 | Ozone depleting substances | 74 |
| Annex 10 | Basel Convention on Trans boundary Movement of Hazardous Waste | 76 |
| Annex 11 | Fact Sheet..... | 77 |

Abbreviations

| | |
|-----------------|---|
| CB | Corporate Banking |
| CEA | Central Environmental Authority |
| CSR | Corporate Social Responsibility |
| CO ₂ | Carbon dioxide |
| DEG | Deutsche Investitions- und Entwicklungsgesellschaft |
| DFI | Development Financing Institutions |
| E&S | Environmental and Social |
| EIA | Environmental Impact Assessment |
| EML | Environmental Management Ltd |
| EHS | Environmental Health and Safety Guidelines |
| ESAP | Environmental and Social Action Plan |
| ESDD | Environmental and Social Due Diligence |
| ESMS | Environmental and Social Management System |
| ESM | Environmental and Social Manager |
| ESRP | Environment and Social Review Procedures |
| ESRS | Environmental and Social Review Summary |
| HNB | Hatton National Bank |
| IFC | International Finance Corporation |
| IK | InnovativKonzepts |
| FI | Financial Intermediary or Financial Institution |
| SB | Sustainable Banking |

PREAMBLE

The HNB has partnered with DEG to implement a project to establish a risk adequate Environmental and Social Management System (ESMS) together with an Environmental and Social Review Procedure. The ESMS is expected to be integrated into the Bank's lending process which is to be consistent with the chronology of events in the Bank's existing operational procedures.

During the initial phases of the project, an action plan was prepared with the technical assistance of EML and InnovativKonceptz (IK), and subsequently the E&S capacity of the HNB was assessed based on discussions with the Bank staff. During such discussions the benefits of an ESMS and necessary key actions to be taken (within the context of the project) were presented to HNB.¹

Environmental sustainability is ensured through various policy instruments and activities by HNB. But it was transpired at the initial assessment that HNB's **ESMS** (Environmental and Social Management System) so far **does not cover E&S risk assessment in line with good international banking practices**. So far, the knowledge base with regard to IFC standards is little developed, according to the assessment's findings. Therefore the need to develop E&S risk assessment procedures in keeping with other international banking practices was agreed as a necessity in view of the Bank's commitment towards adopting sustainable banking practices.

Loan documentation between DEG and HNB stipulates that:

- Para 17.6: an annual report providing details of high risk clients that do not meet IFC Performance Standards.
- Para 19.14.1: High risk projects financed by DEG loan to comply with IFC Performance Standards – high risk projects outside loan to comply with IFC Guidelines.
- Para 19.14.2: compliance with “exclusion list”.
- Para 19.14.5: E&S Management System until March 14 assisted by a TA project covering all transactions > 100.000 US\$.

This set of procedures once agreed upon by the Bank's Senior Management, will constitute the Bank's ESMS. The [procedures will then complement with similar procedures laid down by IFC for Financial Intermediaries (FIs).

This ESMS together with the Environmental and Social Review Procedures is in two parts, one being the ESMS together with its procedures and the second being the Reference Manual.

¹ Annex (1) provides the Assessment Report.

Regulatory Requirement for Sri Lanka

Summary of the laws and regulations

The order of the laws and regulations given in the Annex are as follows for easy reference.

| No | Annex | Laws and regulations |
|----|--|---|
| 1. | Annex I: Prescribed project for EIA | Part I: Projects and undertakings if located wholly or partly outside the coastal zone as defined by Coast Conservation Act No. 57 of 1981. |
| | | PART II: All projects and undertakings listed in Part I irrespective of their magnitudes and irrespective of whether they are located in the coastal zone or not, if located wholly or partly within the areas specified in part III of the Schedule. |
| | | Part III: List of environmentally sensitive areas. |
| 2. | Annex II | Designated Project Approving Agencies. |
| 3. | Annex III | The prescribed activities for which a license is required. |
| | | Part A – High Polluting Activities. |
| | | Part B - Medium Polluting Activities. |
| | | Part C - Low polluting Activities. |
| 4. | Annex IV | List of Scheduled Wastes. |
| 5 | Annex V | The Water Quality Standards. |
| | | Tolerance limits for the Discharge of Industrial Waste in to Island's Surface Waters. |
| | | Tolerance limits for Industrial Waste Discharged into on Land for Irrigation Purposes. |
| | | Tolerance Limits for Industrial and Domestic Waste Discharged into Marine Coastal Areas. |
| | | Tolerance Limits for Waste Form Rubber Factories being Discharged into Inland Surface Waters. |
| | | Tolerance Limits for Waste from Textile Industry being discharged into Inland Surface Waters. |
| | | Tolerance Limits for the Waste from being discharged from Tanning Industries. |

| No | Annex | Laws and regulations |
|-----|------------|---|
| | | Tolerance Limits for Discharge of Effluents into Public Sewers with Central Treatment plants. |
| 6. | Annex Vi | Ambient Air Quality Standards under the NEA |
| 7. | Annex VII | Draft Stationary Source Emission |
| 8. | Annex VIII | Noise Levels |
| 9. | Annex IV | Ozone Depleting Substances |
| 10. | Annex X | Basel Convention on Trans boundary Movement of Hazardous Waste |

1 Environmental Impact Assessment

1.1 Introduction

In Sri Lanka, the environmental impact assessment (EIA) process was first introduced through the legislation of the Coast Conservation Act No. 57 of 1981. This was confined to only a 300 meter strip of land along the coastal zone of the island. Subsequently, the statutory provision to make EIA as a mandatory requirement for all development activities was made by an amendment to the National Environmental Act (Act No. 56 of 1988). Accordingly the process of EIA was administratively introduced in January 1984, by a decision of the Cabinet of Ministers. It was made applicable to all major development activities, including public and private sector projects.

All projects that should undergo the EIA process and the procedures and methods to be adopted were gazetted on 24th June 1993 and are contained in Gazette Extra – Ordinary No. 772/22. The process is being managed and monitored by the Central Environmental Authority (CEA)² and implemented through 18 State Agencies.

1.2 Environmental legislation pertaining to EIA in Sri Lanka

1.2.1 EIA in Coastal Areas

The Coast Conservation and Coastal Resource Management Act No. 57 of 1981, and its Amendment Act, No. 64 of 1988 and No. 49 of 2011 govern the coastal zones that require an EIA for any permanent development in the coastal zone area.

Part III of the Act, details the permit procedure and according to the Regulation No. 260/22 of 02.10.1983 published under this section, a permit is required for activities other than the cultivation of crops and planting of trees and other vegetation. According to the Act, for all proposed developments a detailed list of project activities has to be submitted for a permit. Based on the submission of project details, the Director General may decide the activity which needs an EIA depending on the magnitude and the anticipated environmental impacts.

Activities for **a Permit** must be obtained from the DG/CC&CRM in the Coastal Zone are:

- Dwelling houses and related structures of total floor area 1000 sq. feet (93 Sq. m) or more.
- Tourism, commercial and industrial structures.
- Recreational/sports structures.
- Harbour structures and navigational channels.

²

- Roads, bridges and railway lines.
- Public and religious structures.
- Shoreline protection works.
- Sewage treatment facilities and ocean outfalls.
- Aquaculture facilities.
- Waste water discharge facilities.
- Disposal of solid wastes.
- Dredging, filling, landscaping and grading.
- Removal of sand, sea shells or vegetation.
- Mining and reclamation.
- Removal of corals for research.
- Breaching of sand bars.
- Reclamation.
- Installation of oil, air, water pipes and electricity lines.
- Any other development activity that will alter the physical nature of the coastal zone.

Director General of the Coast Conservation and Coastal Resources Management Department (DG/CCCRM) has the authority to request an IEE/EIA study to clear the project of any adverse environmental consequences.

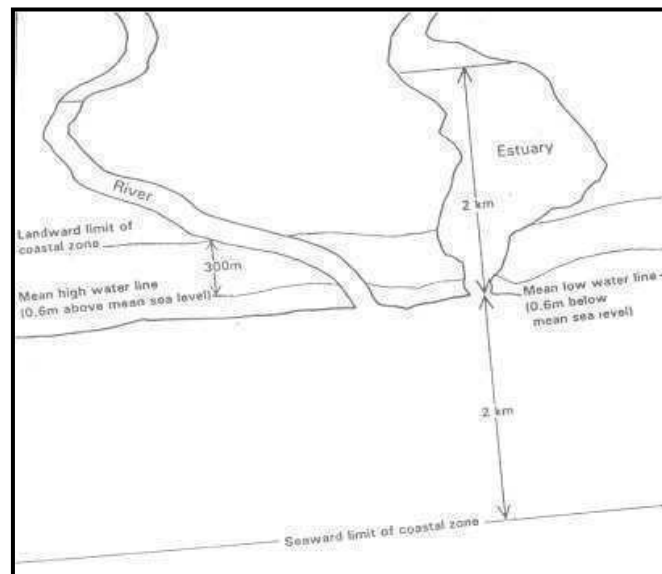


Figure 1 Boundaries of the Coastal Zone

The coastal zone is defined in the Act as "the area lying within a limit of three hundred meters landwards of the Mean High Water line and a limit of two kilometers seawards of the Mean Low Water line in the case of rivers, streams, lagoon or any other body of

water connected to sea either permanently or periodically, the landwards boundary extends to a limit of 2 km measured perpendicular to the straight base line drawn between the natural entrance points thereof and includes waters of such rivers, streams, lagoon or any other body of water so connected to the sea, and shall also include the area lying within a further extended limit of one hundred meters inland from the zero Mean Sea Level along the periphery". The boundary of Coastal area is given in the Figure 1.1.

1.2.2 EIA in the Fauna and Flora Ordinance

Enactment of the amendment to the Fauna and Flora (Protection) Ordinance in 1993 calls for prior written approval from the Director of the Wildlife Department for any development activity within one mile (1.6 km) of the boundary of any National Reserve and mandates that such projects should undergo the EIA process in terms of the National Environmental Act.

1.2.3 EIA in the Provincial Administration

Provincial environmental protection and management was introduced by the 13th amendment to the constitution in November 1987, in Sri Lanka. So far, only the North Western Provincial Council (NWPC) has enacted legislation on environmental protection. The National Environmental Act remains suspended and inoperative within the North Western Province with effect from 10th January 1991.

1.2.4 EIA under the National Environmental Act

The National Environmental Act No. 47 of 1980 (NEA) is the basic national charter for protection and management of the environment in Sri Lanka. The NEA was amended by Act No. 56 of 1988 to include a provision relating to Environmental Impact Assessment (EIA) contained in Part IV C of the statute entitled "Approval of Projects".

Part IV 'C' of the National Environmental Act includes provision for the EIA process. This applies only to "Prescribed Projects" which have been specified by the Minister of Environment and is implemented through designated Project Approving Agencies (PAAs) as prescribed by the Minister.

Under the provisions of section 23 Z of the NEA, the EIA process applies only to "Prescribed Projects" (PP), which have been specified by the Minister in charge of the subject of Environment in Gazette Extra-Ordinary No. 772/22 of 24th June 1993 and its amendment by the Gazette Extra Ordinary No. 1104/22 of 05th November 1999. (**Annex I**)

The EIA process will be implemented through designated Project Approving Agencies (PAA) as prescribed by the Minister under Section 23 Y of the NEA in Gazette Extra – Ordinary No. 859/14 of 23rd February 1995, and Gazette Extra Ordinary No. 978/13 of 04th June 1997 (**Annex II**).

The National Environmental Act has identified two types of approval procedures in the EIA processes based on the magnitude and significance of environmental impacts. The type I – i.e. the **Initial Environmental Examination (IEE)** is a report where comparatively less impacts are considered. The second type, the **Environmental Impact Assessment (EIA)** Report, is a more comprehensive document whereby alternatives to the proposed project are considered and the option with the least impact on the environment identified and assessed. Mitigation measures for the impacts identified as significant are part of an EIA report. An environmental cost benefit analysis is also undertaken wherever possible

The evaluation of environmental impact is delegated to various government bodies, of which the Minister has now specified 18, depending on the nature of the project. The EIA process is to be initiated by the Project Proponent (PP). Determination of the appropriate project approving agency is on the basis of jurisdiction over the project area. Other criteria are :

- Jurisdiction over diverse unique ecosystems,
- Jurisdiction of the area in which environmental impacts are likely to be the greatest, and
- Being the statutory authority to license or otherwise approve the prescribed project.

The PP cannot perform the functions of the PAA.

1.3 Procedure For Conducting an IEE/EIA

The sequential steps of carrying out an IEE/EIA are schematically depicted in figure I. The timing of the IEE/EIA is crucial if it is to become a useful tool in decision-making. **If the timing is late, then many important decisions would have been made. Project proponents are thus advised to come within the EIA process at a very early stage in the project cycle** (Figure II).

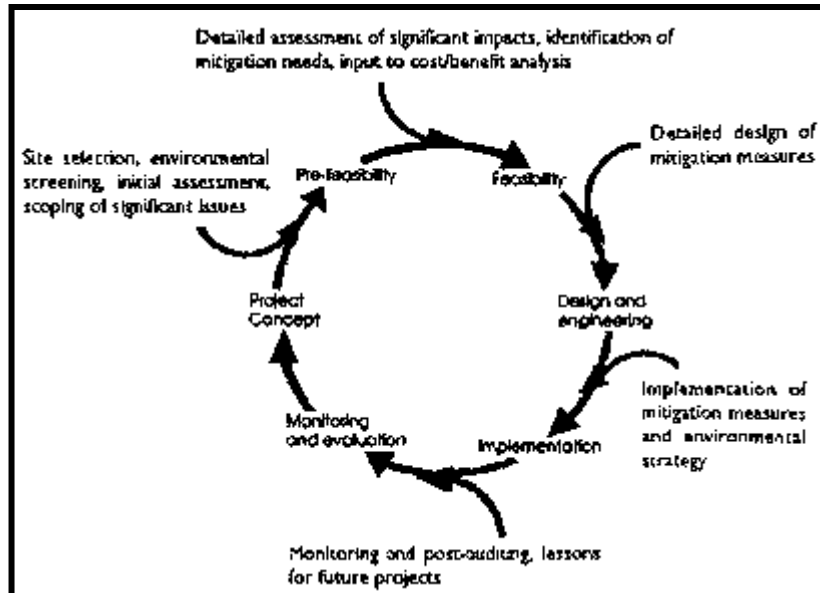


Figure 2 EIA process at the project cycle

The major steps in the EIA process are as follows:

Step 1 -Preliminary Information

A project proponent is required to give the PAA preliminary information on the proposed prescribed project as early as possible. It should include a description of the nature, scope and location of the proposed project accompanied by location maps and any other details as may be required by the PAA. The preliminary information submitted should be comprehensive and may even suffice to be considered as an IEE.

Step II -Environmental Scoping

Environmental scoping is the process of identifying the important issues, which must be addressed in detail in the IEE/EIA. Environmental issues involve national, regional and local government agencies and cover a broad range of responsibilities (wild life, health, water, land use, tourism, etc.). Thus co-ordination among government agencies and the public is crucial. This is best achieved through Inter Agency scoping meetings to identify issues, types of analyses and mitigatory measures to be considered.

Step III -Public Participation

The involvement of the public is one of the most crucial aspects of the EIA process. The provision for public participation is contained in the NEA. The notice of availability of the EIA Report for public review must be inserted in one newspaper issue each in the Sinhala, Tamil and English languages and in the gazette. 30 days are allowed for public review. Once the public comment period is over the PAA must decide whether the case warrants a public hearing. The public comments received during the 30-day period must be sent back to the project proponent for review and response. The project proponent must respond to comments by making every effort to modify alternatives including the proposed action, develop and evaluate alternatives not provided, give

serious consideration to providing supplementary information in the document and Impact Assessment can contribute positively to the cycle's progress by making factual corrections. All substantive comments received on the draft should be attached to the final statement.

Step IV – Decision-making

According to the regulations, the PAA shall grant approval for the project subject to specified conditions or refuse approval for the implementation of the project with reasons for doing so. A project proponent who is aggrieved by a refusal can appeal to the Secretary of the Minister in charge of the subject of environment. A member of the public aggrieved by a decision to grant approval for a project would have to seek recourse in courts.

Step V – Monitoring

The success of the EIA process would be totally negated if the conditions imposed by the PAA are not effectively monitored. The regulations state that the PAA should forward to the CEA a report which contains a plan to monitor the implementation of every approved project within 30 days of granting such approval. Monitoring by the PAA would involve compliance with conditions and the effectiveness of the mitigatory measures.

2 Environmental Protection License

2.1 Introduction

The Environmental Protection License is a regulatory/legal tool under the provisions of the National Environmental Act, No. 47 of 1980 (NEA). It was first introduced by the National Environmental (Amendment) Act, No. 56 of 1988 and was further amended by the National Environmental (Amendment) Act, No. 53 of 2000. The main objective of the EPL is to prevent or minimize the release of discharges and emissions into the environment from prescribed (industrial) activities in compliance with national discharge and emission standards

Section 23A of NEA states that no person shall carry out any prescribed activity except under the authority of an Environmental Protection License. Therefore in effect legal authorization under certain conditions is granted for industries/activities to discharge effluents, deposit wastes, emit smoke/gases/fumes/vapor or excessive noise/vibration into environment.

Industries/activities that are prescribed in accordance with the regulations of the National Environmental Act (NEA) have to obtain EPL in order to comply with the standards published under the NEA. According to the Gazette Notification No: 1533/16 of 25.01.2008, industries are prescribed under three categories such as Part A, B and C.

In part 'A' comparatively 80 high polluting industries, in part 'B' 33 medium polluting industries and in part 'C' 25 low polluting industries are prescribed. Prescribed industries are published in the Gazette Notification No: 1533/16 of 25.01.2008 (**Annex III**).

Monitoring activities are carried out by inspecting the industries at regular intervals and by going through the reports on wastewater analysis, noise/vibration measurements and reports on efficiency/evaluation of pollution control systems adapted in an industrial activity by the CEA. If the industrialist continues to violate the conditions legal action will be initiated.

The EPL holder has legal authority for the discharge of effluents, deposit wastes, emit smoke/gases/fumes/vapor, noise/vibration into the environment in accordance with the standards and criteria stipulated by the CEA.

This will help the EPL holder to prevent or minimize the discharges and emissions into the environment from the industrial activity. Public confidence in the industry may be gained and the products will be able to attract foreign investors or buyers towards the industry. The EPL holder will be able proceed towards the ISO certification to provide the means to fulfill international obligations relating to environmental protection.

- Industries/activities which are prescribed under parts “A” and “B” according to the Gazette Notification No: 1533/16 of 25.01.2008 has to obtain the EPL from the CEA Provincial or District Offices.
- Industries/activities which are prescribed under part “C” has to obtain the EPL from the respective Local Authority (LA) - Municipal Council/Urban Council/ Pradeshiya Sabha to the location of industry. (The powers of the CEA with regard to issue of EPLs have been delegated to the Local Authorities under Section 26 of the NEA).
- Industries/activities which are registered under Section 17 of the Act of the Board of Investment of Sri Lanka (BOI), has to obtain EPLs from the BOI.
- An EPL for an industry/activity which is situated in the North Western Province has to be obtained from the North Western Provincial Environmental Authority (NWPEA) situated at Maligawa, Kurunegala. The North Western Provincial Council has its own statute and the EPL program for industries is administered through the NWPEA.

3 Waste Management

Sri Lanka is a signatory of the Basel Convention of the trans-boundary movement of the hazardous waste. As per the obligations of the convention, all signatory countries should develop and implement necessary legal provisions to ensure proper management of hazardous waste in their respective countries.

Considering the requirement of the obligations of the Basel Conventions, the National Regulations for the Management of Hazardous Waste was published in 1996. This regulation covers control of storage, collection, transportation, recycle, recovery and disposal of hazardous waste. According to this regulation any action related to the above activities should obtain a License from the CEA.

This regulation was amended in 2008 accommodating a list of waste to be considered as hazardous waste. This hazardous waste is called as scheduled waste.

According to the National Environmental (Protection and Quality) Regulations, No. 1 of 2008, no person shall generate, collect, transport, store, recover, recycle or dispose waste or establish any site or facility for the disposal of any waste specified in the Schedule VIII (herein after referred to as “scheduled waste”) except under the authority of a license issued by the Authority and in accordance with such standards and other criteria as may be specified by the Authority.

The Schedule VIII- the schedule waste is given in the **Annex IV**.

4 Environmental Standards

According to the Section 23A (2) of the National Environmental Act, No. 53 of 2000, no person shall carry on any prescribed activity except-

1. under the authority of a license issued by the Authority ; and
2. in accordance with such standards and other criteria as may be prescribed under this Act.

In this regard necessary standards are specified in Section 23 C of the NEA and the relevant regulations. The environmental standards are given below.

4.1 Water quality standards.

There are 2 types of discharge standards gazetted in NEA. The two types are:

1. Standards based on the receiving source where 4 types of standards are included for four different types of receiving bodies. These standards are given below.
 - a. Tolerance limits for the discharge of industrial waste in to inland surface waters.
 - b. Tolerance limits for industrial waste discharged into land for irrigation purposes.
 - c. Tolerance limits for industrial and domestic waste discharged into marine coastal areas.
 - d. Tolerance limits for discharge of effluents into public sewers with central treatment plants.
2. Industry Specific Standards for three types of industrial activities. These standards are:
 - e. Tolerance limits for waste from rubber factories being discharged into inland surface waters.
 - f. Tolerance limits for waste from textile industries being discharged into inland surface waters.
 - g. Tolerance limits for the waste from tanning industries being discharged.

The Water quality standards are given in **Annex V**.

4.2 Atmospheric emission

There are two types of air pollution standards gazetted in the NEA. The standards are:

1. Ambient Air Quality Standards, which is the quality of air in our surrounding environment
2. Stationary Source Emission standards for stack emissions which is emitted from a particular activity.

The ambient air quality standards under the NEA are given in **Annex VI** and the draft stack emissions are given in **Annex VII**.

4.3 Noise Control

The permissible noise levels are defined in the National Environmental (Noise Control) Regulations No.1 1996..

5 Other Regulations

5.1 Ozone depleting substances

Order No. 1309/20 of the NEA regulates the uses of ozone depleting substances. The order prohibits the use of the substances specified in the following Schedule, with effect from October 15, 2003 from being used for any new process, trade or industry as being Ozone depleting substances, which will endanger the quality of the Environment, provided that the said substances specified in the Schedule hereto, may be used for the limited purpose of servicing equipment or industrial plants already in operation or which have been installed prior to January 01, 2000. The regulation is given in **Annex - IX**

5.2 Basel Convention on Transboundary Movement of Hazardous Waste

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was adopted in 1989 and it came into force in 1992. It is the most comprehensive global environmental agreement on hazardous wastes and other wastes. The Convention aims to protect human health and the environment against the adverse effects resulting from the generation, transboundary movements and management of hazardous wastes and other wastes.

The Basel Convention regulates the transboundary movements of hazardous wastes and other wastes and obliges its Parties to ensure that such wastes are managed and disposed of in an environmentally sound manner. The Convention covers toxic, poisonous, explosive, corrosive, flammable, ecotoxic and infectious wastes. Parties also have an obligation to minimize the quantities that are transported, to treat and dispose of wastes as close as possible to their place of generation and to prevent or minimize the generation of wastes at source.

Sri Lanka ratified to the Basel Convention on 28.08.1992. The focal point for the convention is Ministry in charge of Environment. There are two lists (A and B) of hazardous wastes given in **ANNEX VIII of the Basel Convention** based on their nature.

The importation of hazardous wastes given in List A in **ANNEX VIII of the Basel Convention** has been prohibited in Sri Lanka and Wastes given in list B will be considered on a case-by-case basis. The procedures adopted for the importation of list B wastes are given in the Annex X.

6 Regulatory and Policy Compliance on Social Safeguards in Sri Lanka

6.1 Introduction

Development Activities and Social Safeguard Management:

In Sri Lanka, during the last four decades tens and thousands of families were involuntarily resettled, mainly to facilitate irrigation, highway and urban development projects, and majority of them are low income families. Until recently, development-induced displacement of population was considered a "sacrifice"- with a comparatively small group of people's duty making way for the benefit of a large number of people or the country in general. What these involuntary re-settlers received as compensation in general were limited to statutory monetary compensation for land and house acquired for the project, provided that they could prove the legal ownership, generally resulting in making the poor and landless people more poor and more vulnerable. Therefore, correct identification of adverse social and economic impacts and risks during the construction and operation stage of the project and incorporation of adequate social safeguards and risk management measures into project planning and management, are widely accepted as the key pre-requisites for minimizing social impacts and risks of development projects.

6.2 Existing Legal Framework Dealing with Social Safeguard Management

Introduction: The key areas affecting people due to the development/investment process are:

- Land Acquisition and Involuntary Resettlement
- Indigenous People
- Cultural Heritage
- Community Health, Safety and Security
- Common/community properties
- Labor and Working Conditions

Out of all of the above, the Land Acquisition and Involuntary Resettlement is the most important element of the social safeguard management process.

6.2.1 National Laws Directly Dealing with Land Acquisition and Involuntary Resettlement³

There are only two national laws that directly deal with land acquisition and involuntary resettlement in Sri Lanka. These laws deal with the land acquisition and involuntary resettlement, the manner in which the affected persons are notified, handling of objections and claims, computing and determining the amount of compensation, right to additional considerations, 'general status' of the affected person, and, how environmental consequences of development projects involving the resettlement of persons are considered and taken into account.

Land Acquisition Act: The Land Acquisition Act, No. 9 of 1950 is identified as the most important piece of legislation in this respect. Under this Act, lands and servitudes may be acquired for a public purpose. The Minister decides whether land in any area is required for a public purpose. The law does not specify that the Minister should divulge the public purpose to the persons affected by his decision.

In considering objections to the intended acquisition, the law provides the opportunity to consult and consider the recommendations of relevant ministers. The Minister as sole decision-maker is given the chance to consider whether to go ahead with the acquisition or not. This is a crucial point at which the Minister can re-consider his decision to avoid or reduce involuntary resettlement. However, it is possible that the limitations in the notification requirement will affect the decision of the Minister.

A declaration under Section 5 is conclusive evidence that the land or servitude is needed for a public purpose. Thereafter, the acquiring officer notifies and invites every person interested in the land to be acquired to notify in writing the nature of their interest in the land, particulars of claims for compensation, amount of compensation and computation of such amount. At this point the law considers persons other than owners of the land to be acquired. Persons interested in the land as co-owner, mortgagee, lessee, or otherwise are also invited to make claims for compensation. A tenant on a monthly tenancy is not included in this category.

The Land Acquisition Act of 1950, in general only provides for compensation for land, structures and crops. It does not require project executing agencies (PEA) to address key resettlement issues such as (a) exploring alternative project options that avoid or

³ *Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or means of livelihood) as a result of project-related land acquisition. Resettlement is considered involuntary when affected individuals or communities do not have the right to refuse land acquisition that results in displacement. This occurs in cases of: (i) lawful expropriation or restrictions on land use based on eminent domain; and (ii) negotiated settlements in which the buyer can resort to expropriation or impose legal restrictions on land use if negotiations with the seller fail – IFC Guidelines 2006.]*

minimize impacts on people; (b) compensating those who do not have title to land; (c) consulting affected people and hosts on resettlement options; (d) providing for successful social and economic integration of the affected people and their hosts, and (e) full social and economic rehabilitation of the affected people. However, the recent regulations imposed by the Minister of Land and Land Development under Section 63(2)(f) of the Land Acquisition Act, No. 09 of 1950, approved by the Parliament of Sri Lanka on 17th March, 2009, and published in the government gazette No.1596/12 on April 07, 2009 have incorporated the main principles of the NIRP into the Land Acquisition Act.

National Environmental Act: Development activities requiring involuntary resettlement exceeding 100 families, other than resettlement resulting from emergency situations, is a prescribed project requiring approval under the NEA. A Project Approving Agency may require a project proponent to prepare a 'resettlement action plan' where involuntary resettlement exceeds 100 families. However, as per the NIRP and the Cabinet decision taken, a resettlement action plan needs to be prepared for the resettlement of 20 families or above.

6.2.2 Other National Laws Containing Provisions Relevant to Land Acquisition, Involuntary Resettlement and Other Social Safeguard Elements

There are several laws, which although they do not have a direct bearing, are nevertheless contain provisions that could give rise to a situation where affected persons may be left with no option but to resettle. These laws do not address the fact that affected persons may be subjected to such a situation, possibly because of the 'small' numbers involved.

Land Settlement Ordinance: The objective of the Land Settlement Ordinance, No. 20 1931 is to settle unclaimed land in favor of the State. The general structure of the law is for the purpose of ascertaining and defining state right over an allotment of land and for the payment of compensation. It does not mention that the land would be taken 'possession' of by the state nor that persons occupying the land should be given notice of such possession.

Land Development Ordinance: The Land Development Ordinance, No. 19 of 1935 regulates the disposal of state land by grant or permit to provide for systematic development of such land.

Land Reform Law: The purposes of the Land Reform Law, No. 1 of 1972 is to ensure that no person owns agricultural land in excess of the prescribed extent and to take over land owned in excess. The ceiling on the extent of agricultural land to be held by persons is fixed by the Land Reform Commission. The object of the law is to limit land ownership, increase productivity and to generate employment. A lessee has to pay a lease rent to the Commission. Where the land has been developed and improved, the lessee is entitled to compensation. Compensation is computed according to criteria

specified in the law, namely, based on average annual profit on the land during the previous five years and the value of the land as assessed by the Commissioner-General of Inland Revenue.

Land Grants (Special Provisions) Act: Considering the need to augment the area of land available to the State for the purposes of distribution, any agricultural or estate land vested in the Land Reform Commission could be vested in the State under the Land Grants (Special Provisions) Act, No. 43 of 1979.

State Lands (Recovery of Possession) Act: The possession or occupation of any State land is deemed at all times to be subject to the provisions of the State Lands (Recovery of Possession) Act, No. 7 of 1979. Any person in unauthorized possession or occupation of any State land may be issued a 'quit notice' by the competent authority to vacate the land and to deliver vacant possession on a specified date. Where court decides in favor of the person who instituted action, he may claim compensation for the damage sustained by virtue of having to deliver vacant possession of the land.

Mahaweli Authority of Sri Lanka Act: Special Areas are declared under the Mahaweli Authority of Sri Lanka Act, No. 23 of 1979 which can be developed with the water of the Mahaweli River or any major river. Land in a Special Area may be acquired under the Land Acquisition Act on behalf of the Authority. Compensation is paid on the basis of the market value of the land on the date of the Order, increased by reasonable amount on account of bona fide improvements. Persons claiming any right, title or interest in the land are informed by notice to refer their claims in writing to the Authority. The amount of compensation is determined on the basis on which compensation would be determined under the Land Acquisition Act.

Urban Development Authority Law: Urban Development Areas are declared under the Urban Development Authority Law, No. 41 of 1978. The Urban Development Authority is empowered to develop every UD area for the better physical and economic utilization of the area. Where any land in any UD area is required by the Authority, the Government may acquire the land for the Authority under the provisions of the Land Acquisition Act. The purpose for which the land is required by the Authority is deemed to be a 'public purpose' for the purposes of the Land Acquisition Act. Payment of compensation is based on market value of the land as of the date of the Order declaring it an UD area.

Urban Development Projects (Special Provisions) Act: Land urgently required for carrying out urban development projects is acquired under the provisions of the Urban Development Projects (Special Provisions) Act, No. 2 of 1980. The President acquires the land on the recommendation of the Minister. Any action in court for remedy or relief in relation to such an acquisition is limited only to compensation or damages.

State (Crown) Land Ordinance: The grant or disposition of state land is by the President subject to the provisions in the State (Crown) Land Ordinance, No.8 of 1947

and to regulations made thereunder. Disposition of land must be affected by an instrument. Such an instrument contains the terms and conditions under which the disposition is made. Lands may be declared as “crown reservation” for prescribed public purposes provided the land is acquired under the Land Acquisition Act.

Sri Lanka Land Reclamation and Development Corporation Act: Low-lying, marshy, waste, or swampy areas within specified local authorities are declared to be Reclamation and Development Areas under the Sri Lanka Land Reclamation and Development Corporation Act, No.15 of 1968 and have to be reclaimed and developed and rendered suitable for building purposes. Compensation is based on the market value of the land at the date of the commencement of the Act if it was in the same condition as it is at the time of acquisition.

Town and Country Planning Ordinance: Where a physical plan authorizes the acquisition of land, it will be acquired under the Land Acquisition Act by the Government for the Council under the Town and Country Planning Ordinance, No.13 of 1946 as amended by Act, No. 49 of 2000. In the application of the provisions of the Land Acquisition Act, the Ordinance contains a list of matters which shall not be taken into account, including any improvements to the land, and temporary increase in value due to the expectation of a rise of prices on the operation of a planning scheme.

National Housing and Development Authority Act: Under the National Housing and Development Authority Act, No.17 of 1979 the Minister’s certificate to the effect that land other than State land is required for the purpose of the Authority, that purpose is considered a public purpose and land is acquired under the Land Acquisition Act. Compensation is based on the market value of the land as on July 22, 1977, increased by a reasonable amount on account of improvements, if any, affected to the land after that date.

Ceylon Electricity Board Act: Acquisition of immovable property under the Ceylon Electricity Board Act, No 17 of 1969, is in terms of the Land Acquisition Act as for a public purpose. The Ceylon Electricity Board pays any sum payable for the acquisition of the immovable property.

National Water Supply and Drainage Board Law: Similar provisions are available under the National Water Supply and Drainage Board Law, No. 2 of 1974. Where the Minister approves the requirement for immovable property by the National Water supply and Drainage Board, land is acquired under the Land Acquisition Act as for a public purpose. Any sum for the acquisition of immovable property is paid by the Board.

6.2.3 Sri Lanka National Involuntary Resettlement Policy (NIRP)

The past evidence has clearly showed the ineffectiveness of the legal framework in dealing with compensation for the people involuntarily displaced by development projects such as highways, flood control schemes, hydropower and urban development projects, as well as the adverse impact of the policy vacuum in social safeguards. While

the Land Acquisition Act of 1950 sets standards for payment of compensation for land and other immovable assets, it did not address the broader social and economic impacts of land acquisition, until recently. Consequently, ad hoc measures to deal only partly with these impacts have been adopted by project implementing agencies in Sri Lanka.

In order to ensure that people affected by development projects are treated in a fair and equitable manner, and that they are not impoverished in the process, the Government of Sri Lanka has adopted a **National Involuntary Resettlement Policy (NIRP)** in 2001 with an objective of avoiding, minimizing and mitigating negative impacts of involuntary resettlement through providing facilitation for the re-establishment of the affected people on a productive and self-sustaining basis.

The new policy ensures that people adversely affected by development projects are:

- 1) fully and promptly compensated,
- 2) successfully resettled, and
- 3) provided assistance to (i) re-establish their livelihoods, (ii) deal with the psychological, cultural, social and other stresses, the redress of grievances that are easily accessible and immediately responsive, and (iv) have in place a consultative, transparent and accountable involuntary resettlement process with a time frame agreed to by the PEA and the affected people.

The new policy is based on human and ethical considerations and requires the payment of resettlement value (replacement cost) and, to provide assistance and facilitation for smooth resettlement and, where necessary even rehabilitation of affected persons. It is

BOX I: NIRP Principles

1. Avoid/minimize involuntary resettlement by reviewing (a) alternatives to the project. (b) alternatives within the project.
2. Affected people should be assisted to re-establish themselves and improve their quality of life ensure and adhere to gender equality and equity.
3. Affected people should be fully involved, at the earliest opportunity:
 - 3.1. in the selection of relocation sites.
 - 3.2. livelihood improvement and development options.
4. In the case of loss of land, options for compensation should be:
 - 4.1. replacement of land, and
 - 4.2. cash compensation (in the absence replacement land compensation should be based on full replacement cost and should be paid promptly for loss of land, structures, other assets and income).
5. Resettlement should be planned and implemented with full participation of the provincial and local authorities.
6. Participatory measures should be designed and implemented to assist those affected to be economically and socially integrated into the host communities.
7. Common property resources, and community and public services should be provided to affected people.
8. Resettlement should be planned as a development activity for the affected people.
9. Affected people who do not have documented title to land should receive fair and just treatment.
10. Vulnerable groups should be identified and given appropriate assistance to substantially improve their living standards.
11. Project Executing Agencies (PEAs) should bear the full costs of compensation and resettlement.

envisaged that the NIRP would establish the framework for project planning and implementation ensuring that project affected persons are adequately compensated, relocated and rehabilitated.

Existing provisions in the national legislation address indirectly the issues relating to involuntary resettlement. It has now been generally accepted that the existing provisions only provide for compensation for land, structures and crops under the LAA, and cover the impact of large-scale projects under the NEA, but do not require project-executing agencies (PEA) to address key resettlement issues directly affecting involuntary resettlers. Although the Mahaweli Authority Act deals comprehensively on the settlement of persons in order to provide income and development, the scope of the Act is limited to the development of 'special areas' as determined by the Minister.

The three important elements of involuntary resettlement policy are:

- compensation for lost assets and loss of livelihood and income,
- assistance for relocation including provision of relocation sites with appropriate facilities and services, and
- assistance for rehabilitation to achieve at least the same level of well-being with the project as without it.

The NIRP is specifically aimed for the development-induced involuntary resettlement, where the option to stay behind does not exist. NIRP principles are given in Box 1.

The scope of the NIRP extends to all development induced land acquisition and involuntary resettlement (public and private sector) where more than 20 families are affected. The Policy requires a Resettlement Action Plan where 20 or more families are affected. If less than 20 families are affected the policy still applies, but a plan of lesser level in detail is envisaged.

7 IFC Performance Standards on Social & Environmental Sustainability



7.1 Performance Standards on Social and Environmental Sustainability

The International Finance Corporation (IFC) applies the Performance Standards to manage social and environmental risks and impacts and to enhance development opportunities in the private sector financing in its member countries eligible for financing.¹ The Performance Standards may also be applied by other financial institutions electing to apply them to projects in emerging markets.

Together, the eight Performance Standards establish standards that the client is to meet throughout the life of an investment by the IFC or other relevant financial institutions:

- Performance Standard 1: Social and Environmental Assessment and Management System
- Performance Standard 2: Labor and Working Conditions
- Performance Standard 3: Pollution Prevention and Abatement
- Performance Standard 4: Community Health, Safety and Security

- Performance Standard 5: Land Acquisition and Involuntary Resettlement
- Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management
- Performance Standard 7: Indigenous People
- Performance Standard 8: Cultural Heritage

For further information and detailed guidelines please refer to <http://www.ifc.org/> and http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/publications/publications_handbook_pps

8 LIST OF ANNEXES

Annex 1 Prescribed project for EIA

Prescribed Projects set out in the Gazette Extra Ordinary No. 772/22 of 24th June 1993, No: 1104/22 dated 6th November 1999, and No: 1108/1 dated 29th November 1999

SCHEDULE

Part I

Projects and undertakings if located wholly or partly outside the coastal zone as defined by Coast Conservation Act No. 57 of 1981

1. All river basin development and irrigation projects excluding minor irrigation works (as defined by Irrigation Ordinance chapter 453)
2. Reclamation of Land, wetland area exceeding 4 hectares.
3. Extraction of timber covering land area exceeding 5 hectares
4. Conversion of forests covering an area exceeding 1 hectare into non-forest uses.
5. Clearing of land areas exceeding 50 hectares.
6. Mining and Mineral Extraction
 - (a) Inland deep mining and mineral extraction involving a depth exceeding 25 meters
 - (b) Inland surface mining of cumulative areas exceeding 10 hectares
 - (c) All off shore mining and mineral extractions
 - (d) Mechanized mining and quarrying operations of aggregate, marble, limestone, silica, quartz, and decorative stone within 1 kilometer of any residential or commercial areas.
7. Transportation Systems
 - (e) Construction of national and provincial highways involving a length exceeding 10 kilometers
 - (f) Construction of railway lines
 - (g) Construction of airports
 - (h) Construction of airstrips
 - (i) Expansion of airports or airstrips that increase capacity by 50 percent or more.
8. Port and harbour development
 - (j) Construction of ports
 - (k) Construction of harbours
 - (l) Port expansion involving an annual increase of 50% or more in handling capacity per annum.
9. Power generation and transmission
 - (m) Construction of hydroelectric power stations exceeding 50 Megawatts

- (n) Construction of thermal power plants having generation capacity exceeding 25 Megawatts at a single location or capacity addition exceeding 25 Megawatts to existing plants.
- (o) Construction of nuclear power plants
- (p) All renewable energy based electricity generating stations exceeding 50 Megawatts
- 10. Transmission lines**
 - (q) Installation of overhead transmission lines of length exceeding 10 kilometers and voltage above 50 Kilovolts
- 11. Housing and building**
 - (r) Integrated multi-development activities consisting of housing, industry, commercial infrastructure covering a land area exceeding 10 hectares.
- 12. Resettlement**
 - (s) Involuntary resettlement exceeding 100 families other than resettlement effected under emergency situations.
- 13. Water supply**
 - (t) All ground water extraction projects of capacity exceeding ½ million cubic meters per day
 - (u) Construction of water treatment plants of capacity exceeding ½ million cubic meters
- 14. Pipelines**
 - (v) Laying of gas and liquid (excluding water) transfer pipelines of length exceeding 1 kilometer
- 15. Hotels**
 - (w) Construction of Hotels or holiday resorts or projects which provide recreational facilities exceeding 99 rooms or 40 Hectares, as the case may be.
- 16. Fisheries**
 - (x) Aquaculture development projects of extent exceeding 4 hectares
 - (y) Construction of fisheries harbours
 - (z) Fisheries harbour expansion projects involving an increase of 50% or more in fish handling capacity per annum.
- 17. All tunnelling projects**
- 18. Disposal of Waste**
 - (aa) Construction of any solid waste disposal facility having a capacity exceeding 100 tons per day
 - (bb) Construction of waste treatment plants treating toxic or hazardous waste.
- 19. Development of all Industrial Estates and Parks exceeding an area of 10 hectares.**
- 20. Iron and Steel Industries**
 - (cc) Manufacture of iron and steel products of production capacity exceeding 100 tons per day using iron ore as raw material

(dd) Manufacture of iron and steel products of production capacity exceeding 100 tons per day using scrap iron as raw material

21. Non-Ferrous Basic Metal Industries

(ee) Smelting of aluminium or copper or lead of production capacity exceeding 25 tons per day.

22. Basic Industrial Chemicals

(ff) Formulation of toxic chemicals or production capacity exceeding 50 tons per day

(gg) Manufacture of toxic chemicals of production capacity exceeding 25 tons per day.

23. Pesticides and Fertilizers

(hh) Formulation of pesticides of combined production capacity exceeding 50 tons per day

(ii) Manufacture of pesticides of combined production capacity exceeding 25 tons per day.

24. Petroleum and petrochemical

(jj) Petroleum refineries producing gasoline, fuel oils, illuminating oils, lubricating oils and grease, aviation and marine fuel and liquefied petroleum gas from crude petroleum

(kk) Manufacture of petro-chemicals of combined production capacity exceeding 100 tons per day from raw materials obtained from production processes of oil refinery or natural gas separation.

25. Tyre and Tube Industries

(ll) Manufacture of tyre and tubes of combined production capacity exceeding 100 tons per day from natural or synthetic rubber.

26. Sugar Factories

(mm) Manufacture of refined sugar of combined production capacity exceeding 50 tons per day.

27. Cement and Lime

(nn) Manufactures of Cement

(oo) Manufacture of lime employing kiln capacity exceeding 50 tons per day.

28. Paper & Pulp

(pp) Manufacture of paper or pulp of combined production capacity exceeding 50 tons per day

29. Spinning, Weaving and Finishing of Textiles

(qq) Integrated cotton or synthetic textile mills employing spinning, weaving, dyeing and printing operations together, of combined production capacity exceeding 50 tones per day

30. Tanneries and Leather Finishing

(rr) Chrome tanneries of combined production capacity exceeding 25 tones per day.

(ss) Vegetable (bark) of combined production capacity exceeding 50 tones per day

(tt) Provided however, where the projects and undertaking set out in items 20 to 30 are located within Industrial Estates and parks as described at (19) above, the approval shall not be necessary under the provisions of Part IV C of the Act.

31. Industries which involve the manufacture, storage or use of Radio Active Materials as defined in the Atomic Energy Authority Act No. 19 of 1969 or Explosives as defined in the Explosives Act, No. 21 of 1956, excluding for National security reasons.

PART II

32. All projects and undertaking listed in Part I irrespective of their magnitudes and irrespective of whether they are located in the coastal zone or not, if located wholly or partly within the areas specified in part III of the Schedule.

32(a) *Construction of all commercial buildings as defined by the Urban Development Authority Law, No. 41 of 1978 and the construction of dwelling housing units, Irrespectively of their magnitudes and irrespective of whether they are located in the coastal zone or not, if located wholly or partly within the areas specified in Part III of this schedule.*

The following industries if located wholly or partly within the areas specified in Part III of the Schedule

- 33.** Iron and Steel
- 34.** Non-Ferrous Basic Metal
- 35.** Plastic Industrial Chemicals
- 36.** Pesticides and Fertilizer
- 37.** Synthetic Resins, Plastic materials and Man-made Fibres
- 38.** Other Chemical Products
- 39.** Petroleum and Petro-chemical products
- 40.** Tiers and Tubes
- 41.** Manufacturing and Refining of Sugar
- 42.** Alcoholic Spirits
- 43.** Malt Liquors and Malt
- 44.** Cement, clinker and lime
- 45.** Non-metallic Mineral Products
- 46.** Paper, Pulp and Paperboard
- 47.** Spinning, Weaving and Finishing of Textile
- 48.** Tanneries and Leather Finishing
- 49.** Shipbuilding and Repairs
- 50.** Railroad Equipment
- 51.** Motor Vehicles
- 52.** Air Craft

Part III

- 1 Within 100 m from the boundaries of or within any area declared under
 - the National Heritage Wilderness Act No. 3 of 1988;
 - the Forest Ordinance (Chapter 451);
 - whether or not such areas are wholly or partly within the Coastal Zone as defined in the Coast Conservation Act, No. 57 of 1981
- 2 Within the following areas whether or not the areas are wholly or partly within the Coastal Zone:
 - any erodible area declared under the Soil Conservation Act (Chapter 450)
 - any Flood Area declared under the Flood Protection Ordinance (Chapter 449) and any flood protection area declared under the Sri Lanka Land Reclamation and Development Corporation Act, 15 of 1968 as amended by Act, No. 52 of 1982.
 - 60 meters from the bank of a public stream as defined in the Crown Lands Ordinance (Chapter 454) and having a width of more than 25 meters at any point of its course.
 - any reservation beyond the full supply level of a reservoir.
 - any archaeological reserve, ancient or protected monument as defined or declared under the Antiquities Ordinance (Chapter 188)
 - any area declared under the Botanic Gardens Ordinance (Chapter 446)
 - within 100 meters from the boundaries of, or within, any area declared as a Sanctuary under the Fauna and Flora Protection Ordinance (Chapter 469).
 - within 100 meters from the high flood level contour of, or within, a public lake as defined in the Crown Lands Ordinance (Chapter 454) including those declared under section 71 of the said Ordinance.

In these regulations unless the context otherwise requires;

Annex 2 Designated Project Approving Agencies

PROJECT APPROVING AGENCIES (PAA) SET OUT IN THE GAZETTE EXTRA – ORDINARY NO. 859/14 OF 23RD FEBRUARY 1995:

- 1) The respective Ministries to which the following subjects are assigned:-
 - (a) Plan Implementation (Gazette extra – ordinary no. 978/13 of 4th June 1997)
 - (b) Irrigation
 - (c) Energy
 - (d) Agriculture
 - (e) Lands
 - (f) Forests
 - (g) Industries
 - (h) Housing
 - (i) Construction
 - (j) Transport
 - (k) Highways
 - (l) Fisheries
 - (m) Aquatic Resources
 - (n) Plantation Industries
- 2) The Department of Coast Conservation
- 3) The Department of Wildlife Conservation
- 4) The Urban Development Authority established by the Urban Development Law. No. 41 of 1978
- 5) The Central Environmental Authority established by the National Environmental Act, No. 47 of 1980
- 6) The Geological Survey and Mines Bureau established by the Mines and Minerals Act, No. 33 of 1992
- 7) The Ceylon Tourist Board established by the Ceylon Tourist Board Act, No. 10 of 1966
- 8) The Mahaweli Authority of Sri Lanka established by the Mahaweli Authority of Sri Lanka Act, No. 23 of 1979
- 9) The Board of Investment of Sri Lanka established by the Greater Colombo Economic Commission Law, No. 4 of 1978 as amended *inter alia* by Act, No 49 of 1992

The order made under section 23 Y and published in Gazette Extra – Ordinary 772/22 of 24th June 1993 is hereby rescinded.

Annex 3 The prescribed activities for which a license is required

PART A

- Chemicals manufacturing or formulating or repacking industries.
 1. Soaps, detergents, softener or any other cleansing preparations manufacturing industries having a production capacity of 1,000 kilograms per day or more.
 2. Bulk petroleum liquid or liquefied petroleum gas storage or filling facilities having a total capacity of 150 or more metric tons excluding vehicle fuel filling stations.
 3. Industries involved in the use of fibre glass as a raw material where 10 or more workers are employed.
 4. Synthetic rubber, natural rubber manufacturing or processing or rubber based industries excluding industries which manufacture less than 100 kilograms of ribbed smoke rubber sheets per day.
 5. Activated carbon or carbon black manufacturing industries or charcoal manufacturing industries having a production capacity one or more metric ton per batch.
 6. Industries involved in manufacturing extracting or formulating Ayurvedic, Indigenous medicinal products where 25 or more workers are employed.
 7. Chemical fertilizer manufacturing, formulating, processing or repacking Industries.
 8. Pesticides, insecticides, fungicides and herbicides manufacturing, formulating or repacking industries.
 9. Oil (mineral oil or petroleum) refineries.
 10. Dye and dye intermediate manufacturing or formulating industries.
 11. Paints (emulsion or enamel), inks, pigments, varnish, polish manufacturing or formulating industries.
 12. Petrochemical (basic or intermediates) manufacturing or formulating industries.
 13. Industrial gas manufacturing, processing or refilling industries.
 14. Asphalt processing plants.
 15. Industries involved in the manufacture of polymers or polymer based products (i.e. polyethylene, polyvinyl chloride (PVC), polyurethane, polypropylene, polyester, nylon, polystyrene, resins, fibreglass or other manmade fibres etc.) or polymer or polymer based products, recycling industries.
 16. All types of tyres, tubes manufacturing or tyre retreading industries.
 17. Industries involved in manufacturing or reconditioning of batteries.
 18. Any industry involved in the use of asbestos fibres as a raw material.
 19. Industries involved in manufacturing, extracting or formulating pharmaceuticals or cosmetic products including intermediates.
 20. Adhesives manufacturing industries excluding natural gums.
 21. Match sticks manufacturing industries and explosives manufacturing or formulating industries.
 22. Batik industries where 10 or more workers are employed.

23. Textile processing (i.e. bleaching, dyeing, printing) industries or garment washing industries or textile sand blasting industries or commercial laundries where 10 or more workers are employed.
24. Tanneries.
25. Lather finishing industries having effluent generating operations.
26. Jute processing industries.
27. Industries involved in bleaching or dyeing of natural fibre or natural fibre based industries where 25 or more workers are employed.
28. Power looms having 25 or more machines or power looms with sizing activities.
29. Sugar manufacturing industries or sugar refineries.
30. Fermentation industries (Distilleries, Breweries) or alcoholic beverages bottling plants or bottling plants having bottle washing operations.
31. Food manufacturing and processing industries including bakery products and confectioneries where 25 or more workers are employed.
32. Abattoirs.
33. Coconut oil or cinnamon oil extraction industries where 25 or more workers are employed.
34. Plants or animal oil/fats extraction industries having production capacity of 10 litres or more per day excluding coconut oil and cinnamon oil extraction industries.
35. Instant tea or coffee processing industries.
36. Non-alcoholic beverages manufacturing industries where 25 or more workers are employed.
37. Desiccated coconut mills or coconut processing industries where 10 or more workers are employed.
38. Rice mills having wet process and having a production capacity of 5,000 kilograms or more per day.
39. All hatcheries or poultry farms having 2,500 or more birds or piggery, cattle, goats farms having animals 50 or more or having rating* for mixed farming 2,500 or more.
40. Rating for Mixed Farming = No. of Birds + 50 x (No. of Pigs + No. of Cattle + No. of Goats)
41. Animal feed manufacturing industries having a capacity of 25 or more metric tons per day.
42. Cigarettes or other tobacco products manufacturing industries where 50 or more workers are employed.
43. Industries involved in surface treatment of metal or plastic including electroplating, galvanizing and powder coating industries.
44. Iron and steel mills.
45. Foundries with any type of furnaces.
46. Non-ferrous metal processing industries including secondary process, smelting and recovery of metals.
47. Metal fabricating industries or machinery, machinery parts or hardware items or electrical and electronic goods and equipment manufacturing or assembling

- industries where 24 or more workers are employed. (Including lathe workshops, welding shops, spray painting industries).
48. Cement industries (clinker grinding, manufacturing or repacking).
 49. Concrete batching plants having a production capacity of 50 or more cubic meters per day.
 50. Glass or glass based product manufacturing industries.
 51. Lime kilns having a production capacity of 20 or more metric tons per day.
 52. Ceramic industries where more than 25 or more workers are employed.
 53. Mechanized mining activities with multi bore hole blasting or single bore hole blasting activities with production capacity having 600 or more cubic meters per month.
 54. Crushing or processing of non-metallic minerals (i.e. limestone, dolomite, apatite, rock phosphate, sand stone, feldspar, quartz, ilmenite, rutile, zircon, mica, graphite, kaolin, etc) excluding lime shell and granite crushing activities.
 55. Granite boulders making or processing industries (extracting, blasting, slicing, polishing).
 56. Granite crushing (Metal crushing) industries having a total production capacity of 25 or more cubic meters per day.
 57. Common wastewater (industrial or sewage) treatment plants.
 58. Incinerators having a feeding capacity of 5 or more metric tons per day.
 59. Water treatment plants having a treatment capacity of 10,000 or more cubic meters per day.
 60. Municipal solid waste and other solid waste composting plants having a capacity or 10 or more metric tons per day.
 61. Solid waste recovery/recycling or processing plants having a capacity of 10 or more metric tons per day.
 62. Solid waste disposal facility having a disposal capacity of 10 or more metric tons per day.
 63. All toxic and hazardous waste treatment facility or disposal facilities or recycling/recovering or storage facilities.
 64. Industries involved in chemical treatment and preservation of wood excluding Boron treatment.
 65. Saw mills having a milling capacity of 50 or more cubic meters per day or wood based industries where 25 or more workers are employed.
 66. Hotels, guest houses, rest houses having 20 or more rooms.
 67. Hostels and similar dwelling places where occupancy level is exceeding 200 or more.
 68. Health care service centres generating infectious wastes, including medical laboratories and research centres.
 69. Automobile or bicycle manufacturing or assembling industries.
 70. Vehicles service stations or container yards having vehicle service activities excluding three wheeler and motor cycles services and interior cleaning.
 71. Railway workshops or all bus depots having vehicle servicing activities.
 72. All vehicle emission testing centres.

73. Electrical power generating utilities excluding standby generators and hydro or solar or wind power generation.
74. Printing presses with lead smelting or newspaper printing or printing process which generates wastewater or colour photographs processing centres.
75. Paper and Pulp Industries or corrugated cartons manufacturing industries.
76. Any industry where 200 or more workers per shift are employed.
77. Industrial Estates approved under the part IVC of the National environmental Act including Katunayake and Biyagama Export processing Zones.
78. Zoological gardens.
79. Transmission towers providing facilities for telecommunication and broadcasting.
80. Any industry not included above which discharges 10 or more cubic meters of wastewater per day or using toxic chemicals in its process.

PART B

1. Soaps, detergents, softener or any other cleansing preparations manufacturing industries having a production capacity less than 1,000 kilograms per day.
2. Bulk petroleum liquid storage facilities excluding filling stations or liquefied petroleum gas (LP Gas) storage or filling facilities having a total capacity less than 150 metric tons.
3. Industries involved in the use of fibre glass as a raw material where less than 10 workers are employed.
4. Ribbed smoke rubber sheet manufacturing industries having a production capacity of more than 50 kilograms and less than 100 kilograms per day.
5. Activated carbon or carbon black manufacturing industries or charcoal manufacturing industries having a production capacity less than one metric ton per batch.
6. Industries involved in manufacturing, extracting or formulating Ayurvedic, indigenous medicinal products where more than 10 workers and less than 25 workers are employed.
7. Batik industries where less than 10 workers are employed.
8. Commercial laundries where less than 10 workers are employed.
9. Leather finishing industries having dry process operations.
10. Natural fibre based industries where less than 25 workers are employed excluding industries involved in bleaching or dyeing of natural fibre.
11. Power looms having less than 25 machines.
12. Hand Looms or knitting or embroidery industry having more than 10 looms.
13. Garment industries where 25 or more workers and less than 200 workers per shift are employed.
14. Sugar cane based industries excluding sugar factories or sugar refineries.
15. Food manufacturing and processing industries including bakery products and confectioneries where 5 or more workers and less than 25 workers are employed.

16. Cinnamon oil extracting industry where less than 25 workers are employed.
17. Rice mills having wet process with a production capacity of less than 5,000 kilograms per day.
18. Grinding mills having production capacity of more than 1,000 kilograms per month.
19. Poultry farms have 250 or more and less than 2,500 birds or piggery, cattle, goats farms having animals 5 or more and less than 50 or having rating * for mixed farming 250 and less than 2,500.
20. Rating for Mixed Farming = No. of Birds + 50 x (No. of Pigs + No. of Cattle + No. Goats)
21. Animals feed manufacturing industries, having a capacity of less than 25 metric tons per day.
22. All ice manufacturing industries.
23. Metal fabricating industries or machinery, machinery parts or hardware items or electrical and electronic goods and equipment manufacturing or assembling industries where less than 25 workers are employed. (including lathe workshop, welding shops, spray painting industries).
24. Concrete batching plants having a capacity less than 50 cubic meters per day.
25. Single borehole blasting with industrial mining activities using explosives, having a production capacity of less than 600 cubic meters per month.
26. Granite crushing (Metal crushing) industries having a total production capacity of less than 25 cubic meters per day excluding manual crushing operations using hand tools.
27. Municipal solid waste and other solid waste composting plants (excluding household composting) having a capacity of less than 10 metric tons per day.
28. Solid waste recovery/recycling or processing plants having a capacity of less than 10 metric tons per day.
29. Solid waste disposal facilities a disposal capacity of less than 10 metric tons per day.
30. Hostels and similar dwelling places where occupancy level or 25 or more boarders and less than 200 borders.
31. Vehicle repairing and maintaining garages including spray painting or mobile air-conditioning activities.
32. Recycling or recovering centres of refrigerants form air-conditioners or refrigerators.
33. Three wheeler or motor cycle servicing activities or vehicle interior cleaning activities.
34. Any industry not included above which discharges 3 or more and less than 10 cubic meters of industrial processing wastewater per day.

PART C

1. All vehicle filling stations (liquid petroleum and liquefied petroleum gas).
2. Manufacturing of candles where 10 or more workers are employed.

3. Coconut oil extraction industries where 10 or more workers and less than 25 workers are employed.
4. Non-alcoholic beverages manufacturing industries where 10 or more workers and less than 25 workers are employed.
5. Rice mills having dry process operations.
6. Grinding mills having production capacity of less than 1,000 kilograms per month.
7. Tobacco barns.
8. Cinnamon fumigating industries with sulphur fumigation having capacity of 500 or more kilograms per batch.
9. Edible salt packing and processing industries.
10. Tea factories excluding instant tea processing.
11. Concrete pre-cast industries.
12. Mechanized cement blocks manufacturing industries.
13. Lime kilns having a production capacity of less than 20 metric tons per day.
14. Plaster of Paris industries where less than 25 workers are employed.
15. Lime shell crushing industries.
16. Tile and brick kilns.
17. Single borehole blasting with artisanary mining activities using explosives, having capacity of less than 600 cubic meters per month.
18. Saw mills having a milling capacity of less than 50 cubic meters per day or industries involved in Boron treatment of wood or timber seasoning.
19. Carpentry workshops which use multipurpose carpentry machine or wood based industries where more than 5 workers and less than 25 workers are employed.
20. Residential hotels, guest houses, rest houses with 05 or more and less than 20 rooms.
21. Vehicle repairing or maintaining garages excluding spray-painting or mobile air-conditioning activities.
22. Repairing, maintaining or installation centres of refrigerators and air-conditioners.
23. Container yards excluding where vehicle servicing activities are carried out.
24. All electrical and electronic goods repairing centre where more than 10 workers are employed.
25. Printing presses and later press machines excluding lead smelting

Annex 4 List of Scheduled Wastes

SCHEDULE VIII

List of Scheduled Wastes

PART I - SCHEDULED WASTES FROM NON-SPECIFIC SOURCES

- | Code | Waste Scheduled Waste |
|------|-----------------------|
|------|-----------------------|
- 1. Mineral Oil and Oil-Contaminated Wastes**
 - N011 - Spent oil or grease used for lubricating industrial machines
 - N012 - Spent hydraulic oil from machines, including plastic injection moulding machines, turbines and die- casting machines
 - N013 - Spent oil-water emulsion used as coolants
 - N014 - Oil tanker sludge
 - N015 - Oil-water mixture such as ballast water
 - N016 - Sludge from oil storage tank
 - 2. Waste containing polychlorinated biphenyls (PCBs) or polychlorinated triphenyls (PCTs)**
 - N021 - Spent oil contaminated with PCB and/or PCTs
 - N022 - Electrical equipment or parts containing or contaminated with PCBs and/or PCTs
 - N023 - Retrofilled transformer contaminated with PCBs and/or PCTs
 - N024 - Containers and all waste materials contaminated with PCBs and/or PCTs
 - 3. Spent organic solvents containing halogen or sulphur, including methylene chloride, 1, 1, 1,-trichloroethane, perchloroethylene and dimethyl sulphide**
 - N031 - Spent halogenated solvents from cleaning and degreasing processes
 - 4. Spent aromatic organic solvents not containing compounds of organic halogen or sulphur, including toluene, xylene, turpentine and kerosene.**
 - N041 - Spent aromatic organic solvents from washing, cleaning, or degreasing processes
 - 5. Spent non-aromatic organic solvents without containing compounds of organic halogen or sulphur, including acetone, ketones, alcohols, cleaning-benzene, and dimethyl formamide**
 - N051 - Spent non-aromatic organic solvents from washing, cleaning or degreasing processes
 - 6. Residues from recovery of halogenated solvents, may contain oil, fat and solvents**
 - N061 - Residues from recovery of halogenated solvents

7. Residues from recovery of non-halogenated solvents, may contain oil, fat and solvents

N071 - Residues from recovery of non-halogenated solvents

8. Spent organometallic compounds may be mixed with benzene excluding mercury compounds

N081 - Residues of organometallic compounds, including tetraethyl lead, tetramethyl lead and organotin compounds from mixing process of anti-knock compound with gasoline

9. Flux wastes, may contain mixture of organic acids, solvents of compounds of ammonium chloride

N091 - Flux wastes from fluxing bath of metal treatment processes

10. Spent aqueous alkaline solutions not containing cyanide, may contain heavy metals

N101 - Spent aqueous alkaline solutions from treatment process of metal or plastic surfaces

N102 - Spent aqueous alkaline solutions from bleaching process of textile materials

11. Spent aqueous alkaline solutions containing cyanide, may contain heavy metals

N111 - Spent aqueous alkaline solution containing cyanide from treatment process of metal or plastic surfaces

12. Spent aqueous chromic acid solutions

N121 - Spent aqueous chromic acid solutions from treatment process of metal or plastic surfaces

N122 - Spent aqueous chromic acid solution from leather tannery processes

13. Spent aqueous inorganic acid solutions other than spent chromic acid solutions, may contain heavy metals

N131 - Spent aqueous acid solutions from treatment process of metal or plastic surfaces

N132 - Spent aqueous inorganic acid solutions from industrial equipment cleaning

14. Spent aqueous or discarded photographic waste from film processing or plates making

N141 - Spent aqueous or discarded photographic waste from film processing or plate making

15. Metal hydroxide sludges containing one or several metals, including chromium, copper, nickel, zinc, lead, cadmium, aluminium and tin

N151 - Metal hydroxide sludges from wastewater treatment system

16. Plating bath sludges containing cyanide

N161 - Plating bath sludges containing cyanide from metal finishing processes

17. Spent salt containing cyanide

N171 - Spent salt containing cyanide from heat treating process

18. Sludge of inks, paints, dyes, pigments, lacquer with or without organic solvent

N181 - Paint sludge from solvent recovery of solvent-based paint waste

N182 - Ink sludge from solvent recovery of solvent-based ink waste

N183 - Lacquer sludge from solvent recovery of solvent-based lacquer waste

N 184 - Paint sludge from paint wastewater treatment system

N 185 - Ink sludge from ink wastewater treatment system

N 186 - Pigment sludge from pigment wastewater treatment system

N 187 - Dye sludge from dye wastewater treatment system

19. Wastes from the production, formulation and use of printing ink, paint, pigment, lacquer or varnish containing organic solvents

N 191 - Discarded or off-specification ink, pigment and paint products

20. Sludge, dust, slag, dross and ashes, may contain oxides or sulphate or one of several metals, including lead, cadmium, copper zinc, chromium, nickel, iron, vanadium, and aluminum

N 201 - Dross, slag, ash, dust from metal smelting process or dust emission control system

N 202 - Dross from soldering process

N 203 - Residues from recovery of acid pickling liquor

N 204 - Hydroxide or sulphate sludge from wastewater treatment system

21. Spent or discarded strong acids or alkalis

N 211 - Spent or discarded acid of pH less or equal to 2

N 212 - Spent or discarded alkali of pH greater or equal to 12.5

22. Spent oxidizing agents

N 221 - Spent oxidizing agent

23. Contaminated soil, water, debris or matter resulting from clean-up of a spill or chemical or scheduled waste

N 231 - Contaminated soil, water debris or matter resulting from cleanup of a spill or chemical or scheduled waste

24. Immobilized scheduled wastes, including chemically fixed or encapsulated sludges

N 241 - Immobilized scheduled wastes

25. Discarded drugs except living vaccines and euphoric compounds

N 251 - Discarded drugs except living vaccines and euphoric compounds

26. Pathogenic and clinical wastes and quarantined materials

N 261 - Pathogenic and clinical wastes and quarantined materials

27. Containers and bags containing hazardous residues and material

N 271 - Used containers or bags contaminated with scheduled waste and residues

28. Mixtures of scheduled wastes

N 281 - A mixture of scheduled wastes

N 282 - A mixture of scheduled and non-scheduled wastes

29. Mercury wastes containing metallic mercury, organic and inorganic mercury compounds

N 291 - Discarded, Used, fused, broken and off specified fluorescent lamps/bulbs

30. Waste Electrical and Electronic Equipment

N 301 - Discarded Computers and accessories

N 302 - Discarded Mobile phones.

PART II - SCHEDULED WASTES FROM SPECIFIC SOURCES

1. Mineral Oil and Oil-Contaminated Wastes

S011 - Waste oil or oily sludge from waste water treatment plant of oil refinery or crude oil terminal

S 012 - Oily residue from automotive workshop or service station oil grease interceptor

S 013 - Oil contaminated earth from re-refining of used lubricating oil

S 014 - Oil or sludge from oil refinery maintenance operation.

2. Tar or tarry residues from oil refinery petrochemical plant

S 021 - Tar or tarry residues from oil refinery or petrochemical plant

3. Waste of printing inks, paints, dyes, pigments, lacquer, varnish or wood preservative containing organic solvents

S 031 - Ink waste from washing of reaction tank or container of ink manufacturing plant.

- S 032 - Paint waste from washing of reaction tank or container of paint manufacturing plant
- S 033 - Dyes waste from washing or reaction tank or container of dyes manufacturing plant
- S 034 - Pigment waste from washing of reaction tank or container of pigment manufacturing plant.
- S 035 - lacquer or varnish Pigment waste from washing of reaction tank or container of lacquer or varnish manufacturing plant.

4. Clinker, slag and ashes from scheduled wastes incinerator

- S 041 - Clinker, slag and ashes from scheduled wastes incinerator

5. Waste or printing inks, paints, dyes, pigments, lacquer without containing solvents

- S 051 - Water based Paint waste from the washing of reaction tank or container of paint manufacturing plant.
- S 052 - Water based Ink waste from the washing of reaction tank or container of ink manufacturing plant.
- S 053 - Water based dye and pigment waste from the washing of reaction tank or container of dye and pigment manufacturing plant.
- S 054 - Ink waste from the washing of cleaning of printing machine of printing works.
- S 055 - Pigment waste from brick and tile works
- S 056 - Paint waste from the paint spraying of dipping process of metal works, motor vehicle assembly plant or electrical appliances manufacturing plant.

6. Spent tars or anti-corrosion oils

- S 061 - Anti-corrosion oils or tar residues from the sealing or spraying or casting processes of motor vehicle assembly plant or automotive workshop.

7. Spent ethylene glycol

- S 071 - Contaminated ethylene glycol from gas processing plant.
- S 072 - Unhardened ethylene glycol from polyester manufacturing plant

8. Waste containing phenol or formaldehyde

- S 081 - Phenol or formaldehyde waste from the washing or reaction or mixing tank of adhesive or glue or resin manufacturing plant
- S 082 - Sludges containing phenol or formaldehyde waste from the Waste water treatment system of adhesive or glue or resin manufacturing plant

9. Residues of isocyanate compounds, excluding solid polymeric materials.

S 091 - Residues of isocyanate compounds from foam manufacturing process.

10. Adhesive or glue waste may contain organic solvents, excluding solid polymeric materials

S 101 - Off-specification adhesive or glue products from adhesive or glue manufacturing plant

S 102 - Effluent from the washing of the reaction or processing tank of adhesive or glue manufacturing plant.

11. Uncured resin waste, may contain organic solvents or heavy metals including epoxy resin phenolic resin

S 111 - Uncured resin residues from electronic or semiconductor, electrical appliances, fibreglass manufacturing plants and metal works.

S 112 - Effluents from washing of reactor of resin manufacturing plant

S 113 - Resin sludge from waste water treatment system of resin manufacturing plant

12. Latex effluent, rubber or latex Sludges containing organic solvents or heavy metals

S 121 - Rubber or latex sludges containing heavy metals from the waste water treatment system of rubber products manufacturing plant.

S 122 - Rubber or latex sludges containing organic solvent from rubber products manufacturing plant.

S 123 - Latex effluent from rubber products manufacturing plant.

13. Sludges from the re-refining of used oil products including oily sludges containing acid or lead compounds.

S 131 - Acid sludge from the re-refining of used lubricating oil.

14. Sludges containing fluoride

S 141 - Sludges containing fluoride from the waste water treatment system of electronic or semiconductor manufacturing plant.

15. Mineral sludges, including calcium hydroxide sludges, phosphating sludges, calcium sulphite sludges and carbonate sludges.

S 151 - Sludges from phosphating process of motor vehicle assembly, air conditioning, electrical appliances and electronic or semiconductor plants.

- S 512 - Sludges from the waste water treatment system of plant producing ceramic or tiles, industrial gas and bleaching earth containing heavy metals.

16. Asbestos waste

- S 1611 - Asbestos sludges from the waste water treatment system of Asbestors/cement products manufacturing plant.
- S 162 - Asbestos dust or loose asbestos fibre wastes from asbestos/cement products manufacturing plant.
- S 163 - Empty bags or sack containing loose asbestos fibres from asbestos/cement products manufacturing plant.
- S 164 - Waste arising from repairing/renovation processes and demolition/construction debris containing asbestos.

17. Waste from the production, formulation, repacking, and trade of pesticides; including herbicides, Insecticide, rodenticides, and fungicides.

- S 171 - Dust from air emission control equipment, or exhaust systems of pesticides production, formulation and repacking plants.
- S 172 - Sludges from wastewater treatment systems of pesticides production, formulation and repacking plants.
- S 173 - Residues from filtering process of intermediate products at pesticides production and formulation plants.
- S 174 - Waste from washing of reaction tank or mixing tank and spillages at pesticide production and formulation plants and spillages at pesticides repacking plants.
- S 175 - Solid residues resulting from stamping process of mosquito coil production plant.
- S 176 - Off-specification and out dated products and contaminated containers from pesticides formulation and repacking plants and trade of pesticides

18. Press cake from pre-treatment of glycerol soap lye

- S 181 - Press cake from pre-treatment of glycerol soap lye from detergent or soap or toiletries plants

19. Wastes containing dye

- S 191 - Waste water containing dye from textile manufacturing plant.

20. Waste from wood preserving operations using inorganic salts containing copper, chromium as well as arsenic of fluoride compounds or using compound containing chlorinated phenol or creosote

- S 201 - Waste from wood preserving operations using inorganic salts containing copper, chromium as well as arsenic of fluoride

compounds or using compound containing chlorinated phenol or creosote

21. Mercury wastes containing metallic mercury, organic and inorganic mercury compounds

- S 211 - Mercury wastes containing metallic mercury from manufacturing of fluorescent lamps
- S 212 - Activated carbon waste containing mercury from hydrogen gas purification process.
- S 213 - Mercury bearing sludges from brine treatment and Mercury bearing brine purification muds from chlorine production plant.

22. Spent catalysts

- S 221 - Spent industrial catalysts from chemical plant manufacturing detergent or soap or toileries plants.
- S 222 - Spent industrial catalysts from petroleum and petro-chemical processes
- S 223 - Spent industrial catalysts from sulphuric acid and other inorganic acid manufacturing process

23. Leachate from scheduled waste landfills.

- S 231 - Leachate from scheduled waste landfills.

24. Rags, papers plastics or filters contaminated with organic solvents

- S 241 - Rags, papers plastics or filters contaminated with paint or ink or organic solvent from motor vehicle assembly plants, metal works, electronic or semiconductor plants and printing or packaging plants.

25. Containers and bags containing hazardous residues

- S 251 - Used containers or bags contaminated with residues of raw materials and products of pesticide formulation plant

26. Discarded or off specification batteries containing lead, mercury, nickel, cadmium, lithium and Electrolyte from batteries and accumulators.

- S 261 - Discarded or off specification batteries from battery manufacturing plant
- S 262 - Used or off specified batteries and accumulators

27. Pharmaceutical waste

- S 271 - Waste water from washing of reaction vessels and floors of Pharmaceutical products manufacturing plant.

- S 272 - Sludges containing pharmaceutical material from waste water treatment plants of pharmaceutical manufacturing/ formulation plants

28. Bio Medical and Health Care Waste from Health Care Institution including Medical Laboratories and Research Centres.

- S 281 - Infectious health care waste including laboratory cultures; waste from isolation wards ; tissues (swabs), materials or equipment that have been in contact with infected patients ; Human tissues or fluids
- S 282 - Sharps including needles and scalpels
- S 283 - Biological and Anatomical waste including tissues, organs, body parts, human fetuses and animal carcasses, blood, and body fluids.
- S 284 - Outdated and discarded drugs including cytotoxic drugs and chemical reagents
- S 285 - Materials and containers contaminated with the above specified waste

Annex 5 The Water Quality standards

SCHEDULE I

TOLERANCE LIMITS FOR THE DISCHARGE OF INDUSTRIAL WASTE IN TO ISLAND SURFACE WATERS

| No | Parameter | Unit type of limit | Tolerance Limit values |
|----|--|---|--|
| 01 | Total suspended solids | mg/1,max. | 50 |
| 02 | Particle size of the total suspended solids | um, less than | 850 |
| 03 | pH at ambient temperature | | |
| 04 | Biochemical oxygen demand (BOD, in five days at 20 ⁰ BOD ₃ in three days at 27 ⁰ c) | mg/ 1, max. | 30 |
| 05 | Temperature of discharge | ⁰ C,max. | Shall no exceed 40 ⁰ C in any section of the stream within 15m downstream from the effluent outlet. |
| 06 | Oils and greases | mg/1,max. | 10 |
| 07 | Phenolic compounds (as C ₆ H ₅ OH) | mg/1,max. | 1 |
| 08 | Chemical oxygen demand (COD) | mg/1,max. | 250 |
| 09 | Colour | Wavelength Range 436 mm (Yellow range) 525 mm (Red range) 620 mm (Blue range) | Maximum spectral absorption coefficient 7m ⁻¹ 5m ⁻¹ 3m ⁻¹ |
| 10 | Dissolved phosphates (as P) | mg/1,max. | 5 |
| 11 | Total Kjeldahl nitrogen (as N) | mg/1,max. | 150 |

| No | Parameter | Unit type of limit | Tolerance Limit values |
|----|---|--------------------|------------------------|
| 12 | Ammoniacal nitrogen (as N) | mg/1,max. | 50 |
| 13 | Cyanide (as N) | mg/1,max. | 0.2 |
| 14 | Total residual chlorine | mg/1,max. | 1.0 |
| 15 | Flourides (as F) | mg/1,max. | 2.0 |
| 16 | Sulphide (as S) | mg/1,max. | 2.0 |
| 17 | Arsenic (as As) | mg/1,max. | 0.2 |
| 18 | Cadmium (as Cd) | mg/1,max. | 0.1 |
| 19 | Chromium total (as Cr) | mg/1,max. | 0.5 |
| 20 | Chromium, Hexavalent (as Cr ⁶⁺) | mg/1,max. | 0.1 |
| 21 | Cpper (as Cu) | mg/1,max. | 3.0 |
| 22 | Iron (as Fe) | mg/1,max. | 3.0 |
| 23 | Lead (as Pb) | mg/1,max. | 0.1 |
| 24 | Mercury (as Hg) | mg/1,max. | 0.0005 |
| 25 | Nickel (as Ni) | mg/1,max. | 3.0 |
| 26 | Selenium (as Se) | mg/1,max. | 0.05 |
| 27 | Zinc as (as Zn) | mg/1,max. | 2.0 |
| 28 | Pesticides | mg/1,max. | 0.005 |
| 29 | Detergents/surfactants | mg/1,max. | 5 |
| 30 | Faecal Coliform Radio Active Material : | MPN/100ml.max | 40 |
| 31 | Alpha emitters Beta emitters | micro curie/ml.max | 10 ⁻³ |
| | | micro curie/ml.max | 10 ⁻⁷ |

Note 01 : All efforts should be made to remove unpleasant odour as far as possible.

Note 02: These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times the permissible limits are multiplied by the 1/8 of the actual dilution.

Note 03: The above mentioned general standards shall cease to apply with regard to a particular industry when industry specific standards are notified for that industry.

Note 04: Pesticides as per world Health Organization (WHO) and Food and Agriculture Organization (FAO) requirements

List II.

TOLERANCE LIMITS FOR INDUSTRIAL WASTE DISCHARGED ON LAND FOR IRRIGATION PURRPOSE

| No | Parameter | Unit type of limit | Tolerance value | Limit |
|-----|--|----------------------|-----------------|------------------|
| 1 | Total dissolved solids | mg/1.max. | | 2100 |
| 2 | pH at ambient temperature | - | | 5.5 - 9.0 |
| 3 | Biochemical oxygen demand | | | |
| | (BOD ₅ in five days at 20 ⁰ C or BOD ₃ in three days at 27 ⁰ c) | mg/1.max. | | 250 30 |
| 4 | Oils and greases | mg/1.max. | | 10 |
| 5 | Chemical Oxygen Demand (COD) | mg/1.max. | | 400 |
| 6 | Chlorides (as Cl) | mg/1.max. | | 600 |
| 7 | Sulphates (as SO ₄) | mg/1.max. | | 1000 |
| 8 | Boron (as B) | mg/1.max. | | 2.0 |
| 9 | Arsenic (as As) | mg/1.max. | | 0.2 |
| 10 | Cadmium (as Cd) | mg/1.max. | | 2.0 |
| 11 | Chromium. total (as Cr) | mg/1.max. | | 1.0 |
| 12 | Lead (as Pb) | mg/1.max. | | 1.0 |
| 13 | Mercury (as Hg) | mg/1.max. | | 0.01 |
| 14 | Sodium adsorption ratio (SAR) | - | | 10 - 15 |
| 15 | Residual sodium carbonate (RSC) | mol/1,max. | | 2.5 |
| 16 | Electrical conductivity | uS/cm.max. | | 2250 |
| 17 | Faecal coliform | MPN/100ml,max | | 40 |
| 18 | Copper (as Cu) | mg/1.max. | | 1.0 |
| 19. | Cyanide (as CN) | mg/1.max. | | 0.2 |
| 20 | Radio Active Material: | | | |
| | (a)Alpha emitters | Micro curie./ml,max. | | 10 ⁻⁹ |

| No | Parameter | Unit type of limit | Tolerance value | Limit |
|----|------------------|----------------------|-----------------|------------------|
| | (b)Beta emitters | Micro curie./ml,max. | | 10 ⁻⁸ |

Hydraulic Loading Applicable for Different Soils

| Soil Texture Class | Recommended dosage of settled Industrial Effluents (m ³ /hectare, day) |
|--------------------|---|
| Sandy | 225-280 |
| Sandy Loam | 170-225 |
| Loam | 110-170 |
| Clay loam | 55-110 |
| Clay | 35-55 |

LIST III

TOLERANCE LIMITS FOR INDUSTRIAL AND DOMESTIC WASTE DISCHARGED INTO MARINE COASTAL AREAS

| No. | Parameter | Unit Type of limit | Tolerance Limit Values |
|-----|---|--------------------|--------------------------------|
| 1. | Total suspended solids | mg/l, max. | 150 |
| 2. | Particle size of - | | |
| | (a) Floatable solids | mm, max. | 3 |
| | (b) Settlabe solids | mm, max | 850 |
| 3. | pH at ambient temperature | - | 5.5-9.0 |
| 4. | Biochemical oxygen demand (BOD ₅ in five days at 20 ⁰ C or BOD ₃ in three days at 27 ⁰ C) | mg/l. max. | 100 |
| 5. | Temperature | ⁰ C,max | 45°C at the point of discharge |
| 6. | Oils and greases | mg/l,max. | 20 |
| 7. | Phenolic compounds (as Phenolic OH) | mg/1 max. | 5 |
| 8 | Chemical oxygen demand (COD) | mg/1 max | 250 |
| 9. | Total residual chlorine | mg/1 max | 1.0 |

| No. | Parameter | Unit Type of limit | Tolerance Limit Values |
|-----|---|-------------------------|--------------------------------------|
| 10 | Ammonia c al Nitrogen (as N) | mg/1 max | 50 |
| 11. | Cyanide (as CN) | mg/1 max | 02 |
| 12. | Sulphides (as S) | mg/1 max | 5.0 |
| 13 | Fluorides (as F) | mg/1 max | 15 |
| 14. | Arsenic (as As) | mg/1 max | 02 |
| 15 | Cadmium (as Cd) | mg/1 max | 2.0 |
| 16. | Chromium, total (as Cr) | mg/1 max | 2.0 |
| 17. | Chromium, Hexavalent (as Cr ^{5"}) | mg/1 max | 1.0 |
| 18. | Copper (as Cu) | mg/1 max | 3.0 |
| 19. | Lead (as Pb) | mg/1 max | 1.0 |
| 20. | Mercury (as Hg) | mg/1 max | 0.01 |
| 21. | Nickel (as Ni) | mg/1 max | 5.0 |
| 22. | Selenium (as Se) | mg/1 max | 0.1 |
| 23. | Zinc (as Zn) | mg/1 max | 5.0 |
| 24. | Pesticides | mg/1 max | 0.005 |
| 25. | Organo-Phosphorus compounds | mg/1 max | 1.0 |
| 26. | Chlorinated hydrocarbons (as Cl) | mg/1 max | 0.02 |
| 27. | Faecal coliform | MPN/100ml.max | 60 |
| | | micro curie/m 1. max | 10 ⁻⁸ 10 ⁻⁷ |
| | | micro curie/m 1. max | |

LIST IV

TOLERANCE LIMITS FOR WASTE FROM RUBBER FACTORIES BEING DISCHARGED INTO AND SURFACE WATERS

| NO | Parameters | Units Type of limit | Tolerance Limit Value | |
|----|--|---------------------|-----------------------|-----------------------|
| | | | Type I* Factories | Type II" Factories |
| 1 | pH value at ambient temperature | - | 6.5 to 8.5 | 6.5 to 8.5 |
| 2 | Total suspended solids | mg/1,max. | 100 | 100 |
| 3 | Total Solids | mg/1,max | 1500 | 1000 |
| 4 | Biochemical Oxygen Demand. BOD ₅ in five days at 20°C or BOD ₅ , in three days at 27°C | mg/1,max | 60 | 50 |
| 5 | Chemical Oxygen Demand (COD) | mg/1,max | 400 | 400 |
| 6 | Total Nitrogen (as N) | mg/1,max | 300 | 60 |
| 7 | Ammonical Nitrogen (as N) | mg/1,max | 300 | 40 |
| 8 | Sulphides (as S) | mg/1,max | 2.0 | 2.0 |

Type I Factories - Latex Concentrate

Type II Factories - Standard Lanka Rubber

Crepe Rubber and Ribbed Smoked Sheets

Note I: All efforts should be made to remove unpleasant odour and colour as far as practicable.

Note 2 : These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.

LIST V

TOLERANCE LIMITS FOR WASTE FROM TEXTILE INDUSTRY BEING DISCHARGED INTO INLAND SURFACE WATERS

| No. | Parameter | Unit, type of limit | Tolerance valves | Limit |
|-----|--|-----------------------|---|-------|
| 01 | pH at ambient temperature | °C,max. | 6.5 to 8.5 | |
| 02. | Temperature | mg/1,max. | 40 measured at site of sampling | |
| 03 | Total suspended solids | mg/1,max. | 50 | |
| 04 | Biochemical al Oxygen Demand BOD ₅ in five days at 20 ⁰ c or BOD ₃ in a three days at 27 ⁰ C | mg/1,max. | 60 | |
| 05 | Colour | Wavelength Range | Maximum spectral Absorption coefficient | |
| | | 436 nm (Yellow range) | 7m ¹ | |
| | | 525 nm (Red range) | 5m ¹ | |
| | | 620nm (Blue range) | 3m ⁴ | |
| 06. | Oils and grease | mg/1,max | 10 | |
| 07. | Phenolic compounds (as Phenolic OH) | mg/1,max | 1.0 | |
| 08. | Chemical Oxygen Demand (COD) | mg/1,max | 250 | |
| 09. | Sulphides (as S) | mg/1,max | 2.0 | |
| 10. | Chromium total (as Cr) | mg/l, max. | 2.0 | |
| 11. | Hexavalent Chromium (as Cr ⁴⁺⁵) | mg/l, max. | 0.5 | |
| 12. | Copper, total (as Cu) | mg/l, max. | 3.0 | |
| 13 | Zinc, total (as Zn) | mg/l, max. | 5.0 | |
| 14. | Ammoniacal nitrogen (as N) | mg/l, max. | 60 | |
| 15. | Chloride (as Cl) | mg/l, max. | 70 | |

Note 1: All efforts should be made to remove unpleasant odour and colour as far as practicable

Note2: *These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution*

LIST VI

TOLERANCE LIMITS FOR WASTE FROM BEING DISCHARGED FROM TANNING INDUSTRIES

| No. | Parameter | Unit Type Limit | Tolerance Limit of Values for effluents Discharged into Inland Water | Tolerance Limit for Values for Effluents Discharged into Marine Coastal Areas |
|-----|---|-----------------------|--|--|
| 01 | pH value at ambient temperature | °C | 5.5-9.0 | 5.5-9.C |
| 02 | Total suspended solids | mg/1,max. | 100 | 150 |
| 03 | Biochemical Oxygen Demand (BOD ₅ in five days at 20°C or BOD ₃ in three days at 27°C) | mg/1, max. | 60 | 100 |
| 04 | Chemical Oxygen Demand (COD) | mg/1 max | 250 | 300 |
| 05 | Colour | Wavelength Range | Maximum Absorption Coefficient | |
| | | 426 mm (Yellow range) | 7m ⁻¹ | |
| | | 525nm (Red range) | 5m ⁻¹ | |
| | | 620nm (Blue range) | 3m ⁻¹ | |
| 06 | Alkalinity (as Ca CO ₃) | mg/1. max. | 750 | - |
| 07 | Chloride (as Cl) | mg/1, max. | 1000 | |
| 08 | Hexavalent Chromium (as Cr ⁺⁶) | mg/1 max | 0.5 | 0.5 |
| 09 | Chromium total (as Cr) | mg/1. max. | 2.0 | 2.0 |

| No. | Parameter | Unit Type Limit | Tolerance Limit of Values for effluents Discharged into Inland Water | Tolerance Limit for Effluents Discharged into Marine Coastal Areas |
|-----|-------------------------------------|-----------------|--|--|
| 10 | Oils and Grease | mg/1 max | 10 | 7 0 |
| 11 | Phenolic Compounds (as phenolic OH) | mg/1 max | 1.0 | 5.0 |
| 12 | Sulphides (as S) | mg/1, max. | 2.0 | 5.0 |

Note 1: All efforts should be made remove unpleasant odour and colour as far as practicable.

Note 2: These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times the permissible limits are multiplied by the 1/8 of the actual dilution

List VII

TOLERANCE LIMITS FOR DISXCHARGE OF EFFLUENTS IN TO PUBLIC SEWERS WITH CENTRAL TREATMENT PLANTS

| No. | Parameter | Unit type of limit | values Tolerance Limit |
|-----|---|--------------------|---------------------------|
| 1. | Total suspended solids | mg/1,max | 500 |
| 2. | pH at ambient temperature | - | 5.5-10.0 |
| 3. | Temperature | °C.max. | 45 |
| 4. | Biochemical oxygen demand (BOD ₅ in five days at 20°C or BOD ₃ , in three days at 27°C) | mg/1,max | 350 |
| 5. | Chemical Oxygen Demand (COD) | mg/1,max | 550 |
| 6. | Total Kjeldahl nitrogen (as N) | mg/1,max | 500 |
| 7. | Free ammonia (as N) | mg/1,max | 50 |
| 8. | Ammoniacal nitrogen (as N) | mg/1,max | 50 |
| 9. | Cyanide (as CN) | mg/1,max | 2 |
| 10. | Total residual chlorine | mg/1,max | 3.0 |
| 11. | Chlorides (as Cl) | mg/1,max | 900 |
| 12. | Flourides (as F) | mg/1,max | 20 |
| 13. | Sulphide (as S) | mg/1,max | 5.0 |
| 14. | Sulphates (as SO ₄) | mg/1,max | 1000 |
| 15. | Arsenic (as As) | mg/1,max | 0.2 |
| 16. | Cadmium (as Cd) | mg/1,max | 1.0 |
| 17. | Chromium. total (as Cr) | mg/1,max | 2.0 |
| 18. | Copper (as Cu) | mg/1,max | 3.0 |
| 19. | Lead (as Pb) | mg/1,max | 1.0 |
| 20. | Mercury (as Hg) | mg/1,max | 0.005 |
| 21. | Nickel (as Ni) | mg/1,max | 3.0 |
| 22. | Selenium (as Se) | mg/1,max | 0.05 |
| 23. | Zinc (as Zn) | mg/1,max | 5.0 |
| 24. | Pesticides | mg/1,max | 0:2 |

| No. | Parameter | Unit type of limit | values Tolerance Limit |
|-----|-------------------------------------|---------------------|---------------------------|
| 25. | Detergents/surfactants | mg/1,max | 50 |
| 26. | Phenolic compounds (as phenolic OH) | mg/1,max | 5 |
| 27. | Oil And Grease | mg/1,max | 30 |
| 28. | Radio Active Material: | | |
| | (e) Alpha emitters | micro curie/ml. max | 10 ⁻⁸ |
| | (f) Beta emitters | micro curie/ml. max | 10 ⁻⁷ |

Note: The Following conditions should be met:

- Discharge of high viscous material should be prohibited.
- Calcium Carbide sludge should not be discharged
- Substances producing inflammable vapours should be absent

Annex 6 Ambient air quality standards under the NEA

The National Environmental (Ambient Air Quality) Regulations 1994, published in Gazette Extraordinary No 850/4 of December 1994 are hereby amended by the substitution for the schedule to that regulation of the following-

2A Part 1: Sec (1) GAZETTE EXTRAORDINARY OF THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA-15.08.2008

SCHEDULE

| pollutant | Averaging time* | Maximum Permissible Level | | + Method of measurement |
|---|-----------------|---------------------------|-------|--|
| | | Pgm ³ | Ppm | |
| Particulate Matter- Aerodynamic diameter Is less than 10 mm in size(PM ₁₀) | Annual | 50 | - | Hi- volume sampling and Gravimetric or Beta Attenuation |
| | 24 hrs | 100 | - | |
| Particulate Matter Aerodynamic diameter is less than 2.5 pm. In size (PM _{2.5}) | Annual | 25 | - | Hi-volume sampling and Gravimetric or Beta Attenuation |
| | 24 hrs | 50 | - | |
| Nitrogen Dioxide (NO ₂) | 24 hrs | 100 | 0.05 | Colorimetric using Saltzman method or equivalent Gas phase chemiluminescence |
| | 8hrs | 150 | 0.08 | |
| | 1 hr | 250 | 0.13 | |
| Surplus Dixoxide(SO ₂) | 24 hrs | 80 | 0.03 | Pararosaniliene method or equivalent pulse Fluorescent |
| | 8 hrs | 120 | 0.05 | |
| | 1 hr | 200 | 0.08 | |
| Ozone(O ₃) | 1 hr | 200 | 0.10 | Chemiluminescence method or Equivalent Ultraviolet photometric |
| Carbon monoxide (CO) | 8 hrs | 10.000 | 9.00 | Non-Dispersive infrared Spectroscopy |
| | 1 hr | 30.000 | 26.00 | |
| | Anytime | 58.000 | 50.00 | |

* Millennium number of observations required to determine the average over the specified period.

03 hour average – 03 consecutive hourly average

08 hour average- 08 hourly average

24 hour average - 18 hourly average

Yearly average- 09 monthly average with at least 02 monthly average each quarter

+ By using Chemicals or Automatic Analysers.

Annex 7 Draft Stationary Source Emission

THE NATIONAL ENVIRONMENTAL ACT, No. 47 of 1980

REGULATIONS made by the Minister of Environment under Section 32 of National Environmental Act No.47 of 1980 read with Section 23], 23K and 23L of the aforesaid Act.

Minister of Environment

Colombo. 2012

REGULATIONS

- These regulations may be cited as the National Environmental (Stationary Source Emission Control) Regulations of No -----, Of 2012
- Any person who manages or in control of any Stationary Source specified in Schedule I and which emanates Stack Emissions, shall ensure that such Stationary Source be constructed in conformity with the Stationary Source Emission Control Standards specified in Schedule II to these regulations.
- All emissions from Stationary Sources which are not specified in schedule I, shall comply with the pollutant based standards specified in Schedule III to these regulations.
- All fugitive emissions emanating from any process operation shall be measured and controlled according to the methods and standards specified in schedule IV, V, VI, and VII to these regulations.
- USEPA approved methods or any other method validated with reference to USEP A methods and approved by the Central Environmental Authority shall be used in the measurement of emissions.
- The Standards specified in these regulations are defined on dry basis and parameter relating to the concentration of any stationary source emission measured shall be converted into dry basis.

Following equation shall be used for such conversion.-

$$\text{DRY GAS CONCENTRATION} = \frac{\text{MEASURED CONCENTRATION}}{(100 - \text{MOISTURE}\%)} \times 100$$

- The Source Emission Standards are defined on the basis of 0 -c and 760mmHg as the Normal Conditions and any parameter measured in :relation to stationary source emissions shall be converted into Normal Condition. Following equation shall be used for such conversion.

$$C_n \text{ (mg/Nm}^3\text{)} = C_s \text{ (mg/m}^3\text{)} \times \frac{(P_n \cdot T_s)}{(P_s \cdot T_n)}$$

- Where
- C_n = Emission concentration at normal conditions
 - C_s = Measured Emission Concentration
 - P_n = 760mmHg
 - P_s = stack pressure in mmHg
 - T_n = 273 Kelvin
 - T_s = Stack temperature in Kelvin

- The Source Emission Standards are defined on the basis of reference oxygen levels in schedule VII and concentration of any parameter measured in relation to stationary source emissions shall be corrected for relevant reference oxygen level therein. Following equation shall be used for such conversion.

$$E_r \left[\frac{mg}{m^3} \right] = E_m \left[\frac{mg}{m^3} \right] \left[\frac{20.9 - O_2\% \text{ ref}}{20.9 - O_2\% \text{ m}} \right]$$

- Where
- E_r = Corrected Emission concentration at reference oxygen level
 - E_m = Measured emission concentration
 - $O_2\% \text{ ref}$ = Reference oxygen level specified in schedule VII
 - $O_2\% \text{ m}$ = Measured volume percentage of oxygen level on dry basis.

- The Source Emission Standards are defined on the basis of reference oxygen levels in schedule VII and concentration of any parameter measured in relation to stationary source emissions shall be corrected for relevant reference oxygen level therein. Following equation shall be used for such conversion.
- Where the fuel type is not specified in relation to the combustion process, the reference oxygen level shall be six percent (6%). Provided that where there is a multiple fuel usage, the major fuel type defined based on energy input shall be considered.
- Provided for the in case of multiple fuel usage, the standards specified 111 Schedule II to those regulations for each type of fuel shall be applied.
- Minimum chimney height C (m) in meters of any combustion point source shall be defined by following equation.

$$C(m) = H(m) + 0.6U(m)$$

Where H shall be the height of the tallest building within $5U$ radius of the chimney and U shall be the uncorrected height for heat input. U shall be defined by following equation.

$$U(m)=1.36Qo^6$$

Where Q shall be the gross heat input in MW.

In any case, **chimney height shall not be less than 20m.**

- In relation to power plants and to any other combustion source, air pollution caused by Sulfur Dioxide shall be controlled by fuel quality and stack height to maintain the ambient air quality in the vicinity. Minimum stack height shall be defined by acceptable Air Quality Modeling tool. In the absence of such modeling, following equation shall be applied to define the minimum stack height.

Stack Height $H(m) = 14 Q^{0.25}$ where Q is SO_2 emission rate kg/hour.

Where emission limit value for total Sulfur Dioxide emission load is defined for one plant, construction of two or more plants in the vicinity shall not be permitted.

- Emissions from Crematoriums shall be controlled by emission reduction utilities incorporated into the stack of the crematorium.
- Dioxin and Furan Emissions from incinerators shall be controlled by maintaining temperature at 1100 °c to 1250° c and 2-3 seconds retention time in secondary chamber.
- Any person who fails to comply with the regulations above shall be liable to offence under the National Environmental Act. No. 47 of 1980.
- In these regulations:-

"Authority" means the Central Environmental Authority established under the National Environmental Act No 47 of 1980;

"USEPA" means United States Environmental Protection Agency.

SCHEDULE 1

(Regulation 1)

- Thermal Power Plants
- Boilers
- Thermic Fluid Heaters
- Incinerators
- Cupola, Blast Furnace, Coke Oven, Basic Oxygen Furnace, Induction (induction and arc) Furnace
- Cement Kilns

SCHEDULE 11

(Regulation 2)

**Instrument/equipment based Standards
Part I. Thermal Pollutant Plants**

| Fuel | Rated output capacity (C) | Type of Pollutant | Emission Limit mg/Nm³ |
|-------------|----------------------------------|-------------------------------------|--|
| Oil | C<J MW | PM,S0 ₂ ,NO _x | Shall be controlled by stack height as defined in Regulation 11 and 12 |
| | | Smoke Opacity | 20% Opacity |
| | I. <C<3MWe | S0 ₂ | Shall be controlled by stack height as defined in Regulation 12 |
| | | NO _x | 650 for steam turbine' |
| | | | 550 for gas turbine/combine cycle |
| | | | 850 for internal combustion engines |
| | | PM | 200 |
| | Smoke Opacity | 20% Opacity | |
| | | S0 ₂ | Shall be controlled by stack height as defined in Regulation 12 |
| | 3≤C<25 MW | NO _x | 600 for steam turbine |
| | | | 500 for gas turbine/combine cycle |
| | | | 850 for internal combustion engines |
| | | PM | 150 |
| | | Smoke Opacity | 20% Opacity |
| | | S0 ₂ | Shall be controlled by stack height as defined Regulation 12 |
| | 25≤C<100 MW | NO _x | 550 for steam turbine |
| | | | 450 for gas turbine/combine cycle |
| | | | 700 for internal combustion engines |
| | | PM | 150 |
| | | Smoke | 20% Opacity |

| Fuel | Rated output capacity (C) | Type of Pollutant | Emission Limit mg/Nm³ |
|-------------|----------------------------------|--------------------------|---|
| | | Opacity | |
| | | SO ₂ | 1. 850 for new plants with maximum 50kg SO ₂ /MW/Day subject to maximum 30 metric tons of / SO ₂ Day. |
| | | | 2. Shall be controlled by fuel quality for existing plants. |
| | C≤100 MW | NO _x | 500 for steam turbine |
| | | | 450 for gas turbine/combine cycle |
| | | | 650 for internal combustion engines |
| | | PM | 150 |
| | | Smoke Opacity | 20% Opacity |

SCHEDULE 11

(Regulation 2)

**Instrument/equipment based Standards
Part I. Thermal Power Plants**

| Fuel | Rated output capacity (C) | Type of Pollutant | Emission Limit mg/Nm³ |
|-----------------|----------------------------------|--------------------------|---|
| Biomass | C<0.5 MWe | PM, NO _x | Shall be controlled by stack height as defined in Regulation 11. |
| | | Smoke Opacity | 25% Opacity |
| | 0.5≤C<3MWe | NO _x | 500 |
| | | PM | 250 |
| | | Smoke Opacity | 25% Opacity |
| | C>3 MWe | NO _x | 450 |
| | | PM | 200 |
| | | Smoke | 20% Opacity |
| | Coal | C<50 MWe | SO ₂ |
| NO _x | | | 750 |
| PM | | | 200 |
| Smoke Opacity | | | 20% Opacity |
| C<50 MWe | | SO ₂ | 1. 850 for new plants with maximum 100kg SO ₂ /MW/Day subject to maximum SO ₂ /Day 2.Shall be controlled by fuel quality for existing plants |
| | | NO _x | 650 |
| | | PM | 150 |
| | | Smoke Opacity | 15% |
| | | All | Minimum stack height shall be specified on case by case |
| Natural Gas | | C<50 MWe | SO ₂ |
| | NO _x | | 350 for steam turbine |
| | | | 250 for gas turbine/combine cycle |
| | | | 400 for internal combustion engines |

| Fuel | Rated output capacity (C) | Type of Pollutant | Emission Limit mg/Nm ³ |
|-------------------|---------------------------|--|---|
| | C _≤ 50 MWe | PM | 100 |
| | | PM, SO ₂ NO _x | Minimum stack height shall be specified on case by case |
| | | SO ₂ | 75 |
| | | NO _x | 300 for steam turbine |
| | | | 200 for gas turbine/combine cycle |
| | | | 350 for internal combustion engines |
| | | PM | 75 |
| Naphtha | Any | SO ₂ | 75 |
| | | NO _x | 350 for steam turbine |
| | | | 250 for gas turbine/combine cycle |
| | | | 400 for internal combustion engines |
| Standby Generator | | PM | 75 |
| | | PM, SO ₂ , NO _x | Shall be controlled by stack height and fuel quality as defined in regulation 11 and 12 |
| | | Smoke Opacity | 10% |
| Solid Waste | Any | SO ₂ | 70 |
| | | NO _x | 400 |
| | | PM | 350 |
| | | Smoke Opacity | 20 |
| | | CO | 50 |
| | | HCl | 80 |
| | | Mercury | 0.01 |
| | | Lead | 0.1 |

SCHEDULE 11

(Regulation 2)

**Instrument/equipment based Standards
Part II. Boilers**

| Fuel | Rated Output Capacity (C) | Type of Pollutant | Emission limit [rng/Nm ³) |
|--------------------------------|---------------------------------|---------------------------------------|--|
| Oil | C<2 metric tones of steam /hour | PM, SO ₂ , NO _x | Shall be controlled by fuel quality and stack height as defined Regulation 11 and 12 |
| | | Smoke Opacity | 20% |
| | C>2 metric tones of steam/hour | NO _x , SO ₂ | Shall be controlled by fuel quality and stack height as defined Regulation 11 and 12 |
| | | Smoke Opacity | 15% |
| | | PM | 100 |
| | Biomass | C>2 metric tones of steam/hour | PM, NO _x |
| Smoke Opacity | | | 10% |
| C>2 metric tones of steam/hour | | NO _x | Shall be controlled by stake height as defined in Regulation 11. |
| | | Smoke Opacity | 20% |
| | | PM | 200 |
| Coal | | C>2 metric tones of steam/hour | PM, SO ₂ , NO _x |
| | Smoke Opacity | | 20% |
| | | NO _x | 500 mg/Nm ³ |
| | | SO ₂ | 850 mg/Nm ³ |
| | | Smoke Opacity | 20% |
| | | PM | 150 |

SCHEDULE 11

(Regulation 2)

**Instrument/equipment based Standards
Part III. Thermic fluid heaters**

| Fuel | Rated Output Capacity (C) | Type of Pollutant | Emission limit (mg/Nrn ³) |
|----------------|---------------------------|--|--|
| Oil | C<5000 MJ/hour | PM, SO ₂ , NO _x | Shall be controlled by fuel quality and stack height as Regulation 11 and 12. |
| | | Smoke Opacity | 20% |
| | C>5000 MJ/hour | SO ₂ , NO _x | Shall be controlled fuel quality and height as Regulation 11 and 12. |
| | | Smoke Opacity | 15% |
| | | PM | 100 |
| | Biomass | C<5000 MJ/hour | NO _x , PM |
| Smoke Opacity | | | 10% |
| C>5000 MJ/hour | | NO _x | Shall be controlled by stack height as defined in Regulation 11. |
| | | Smoke Opacity | 20% |
| | | PM | 200 |
| Coal | C<5000 MJ/hour | SO ₂ , NO _x , PM | Shall be controlled by fuel quality and stack height as defined in Regulation 11 and 12. |
| | | Smoke Opacity | 20% |
| | C>5000 MJ/hour | NO _x | 500mg/Nm ³ |
| | | SO ₂ | 800mg/Nm ³ |
| | | Smoke Opacity | 20% |
| | | PM | 150 |

SCHEDULE 11

(Regulation 2)

**Instrument/equipment based Standards
Part IV. Incinerators**

| Rated Output Capacity (C) | Type of Pollutant | Emission limit [mg/Nm³] |
|----------------------------------|--------------------------|--|
| C < 1 Metric tone /Hour | S02 | 70 |
| | NOx | 400 |
| | PM | 350 |
| | Smoke Opacity | 20% |
| | CO | 50 |
| | HC! | 80 |
| | Mercury | 0.01 |
| | Lead | 0.05 |
| | Dioxin and Furans | Shall be controlled by temperature and retention time as defined in regulation 14. |
| | | |
| C > 1 Metric tone/hour | S02 | 70 |
| | NOx | 300 |
| | PM | 100 |
| | Smoke Opacity | 10 % |
| | CO | 50 |
| | HC! | 15 |
| | Mercury | 0.01 |
| | Lead | 0.05 |
| | Dioxin and Furans | Shall be controlled by temperature and retention time as defined in Regulation 14. |
| | | |
| Any Infected waste incinerators | S02 | 70 |
| | NOx | 300 |
| | PM | 100 |
| | Smoke opacity | 10% |
| | CO | 50 |

| Rated Output Capacity (C) | Type of Pollutant | Emission limit [mg/Nm ³] |
|---------------------------|-------------------|--|
| | HC! | 15 |
| | Mercury | 0.01 |
| | Lead | 0.05 |
| | Dioxin/Furan | Shall be controlled by temperature and retention time as defined in Regulation 14. |
| | | |

SCHEDULE 11

(Regulation 2)

**Instrument/equipment based Standards
Part V. Cupola, Blast Furnaces, Coke Oven, Basic Oxygen Furnace, Electric (Induction & arc) Furnace**

| Rated Output Capacity (C) | Type of Pollutant | Emission limit (mg/Nm³) |
|----------------------------------|--------------------------|---|
| Any | S02 | 800 |
| | NO _x | 500 |
| | Particulate | 150 |
| | Smoke Opacity | 20% |

**Instrument/equipment based Standards
Part VI. Cement Kilns**

| Rated Output Capacity (C) | Type of Pollutant | Emission limit (mg/Nm³) | |
|----------------------------------|--------------------------|---|--------------|
| | | Existing* | New** |
| Any | PM | 400 | 200 |
| | SO ₂ | 540 | 270 |
| | NO _x | 1250 | 1000 |
| | Opacity | 20% | 20% |

- a) Existing cement kilns refer to those operating before the effective date of this gazette notification
- b) New Cement kilns refer to those operated after effective date of this gazette notification

Schedule III
Pollutant based standards

(Regulation 3)

| Pollutant | Process/Source | Emission Limit Combustion | Emission Limit Non Combustion |
|----------------------------------|-----------------------|--|--|
| Particulate Matter | Any | 150 mg/Nm ³ | 100n:glm ^l |
| Smoke /Dust | Any | 25% Opacity | 25% Opacity |
| CO | Any | 900 mg/Nm ³ | 1100mg/m ³ , |
| SO ₂ | Sulfuric acid | 2kg/Mt of Sulfuric acid production | |
| | Any Other | 1000 mg/Nm ³ | 800 mg/m ³ |
| NO _x | Nitric Acid | 1.5 Kg/Mt of acid production | |
| | Any Other | 500 mg/Nm ³ | - |
| Total volatile organic compounds | Any | - | 0.1 mg/m ³ |
| Chlorine | Any | Chlorine 35mg/Nm ³ | |
| Hydrogen Chloride | HCl Plants | 0.08 Kg per ton of HCl production | |
| | Any | Hydrogen Chloride 50mg/Nm ³ | |
| Fluorine | Any | Fluorine 20mg/Nm ³ | |
| Fluoride (Hydrogen or silicon) | Phosphate Industry | 180g/ton of raw material | |
| Hydrogen sulfide | Any | 10mg/Nm ³ | |
| Cadmium or its compounds | Any | 1mg/Nm ³ as Cd | |
| Lead or its compounds | Lead Smelting | 2mg/Nm ³ as Pb | |
| | Any | 2mg/Nm ³ as Pb | |
| Antimony or its compounds | Any | 5mg/Nm ³ as Sb | |
| Arsenic or its compounds | Any | 1 mg/Nm ³ as Ar | |
| Copper or its compounds | Copper smelter | 10mg/Nm ³ as Cu | |
| | Any | 5mg/Nm ³ as Cu | |
| Zinc or its compounds | Any | 10 mg/Nm ³ as Zn | |

| Pollutant | Process/Source | Emission Limit Combustion | Emission Limit Non Combustion |
|--------------------------|-----------------------|--------------------------------------|--|
| Mercury or its compounds | Any | 0.01mg/Nm ³ as Hg | |
| Dioxin/Furan | Any | 2ng/ Nm ³ | |
| Ammonia | Any | 75mg/Nm ³ | |

Schedule IV

Fugitive Dust Emission Standards

(Regulation 4)

1. The Difference between two simultaneous 3 hour Total Suspended Particulate Matters (TSPM) measurements (gravimetric) carried out on upwind and downwind basis from emission area or process area shall not be greater than $450 \mu\text{g}/\text{m}^3$.
2. Measurement location shall be within 1m from any process equipment or emission area towards upwind and downwind directions.
3. The wind direction shall be the most predominant wind direction during the time of measurement.

Schedule V

Fugitive Total Volatile Organic Carbon (TVOC) Emission Standards

(Regulation 5)

The Total Volatile Organic Compounds (TVOC) emissions from any process area shall not be greater than $1 \text{ mg}/\text{m}^3$ (Methane and Non Methane determined using USEPA accepted methods). The measurement location shall be within 5m downwind from the process area.

Schedule VI

Fugitive Acid Mist and Ammonia Emission Standards

(Regulation 6)

Fugitive Acid mists or fugitive ammonia emissions (determined by USEPA accepted methods) from any process area shall not be greater than $30 \text{ mg CaCO}_3/\text{m}^3$. The measurement location shall be within 5m downwind from the process area.

Schedule VII

Asbestos Fiber Emission Standards

(Regulation 7)

Ambient Asbestos fiber concentrations in process area shall not be greater than 1 fiber/ m^3 (Test Method: USEPA accepted methods). The measurement location shall be within 20m downwind from the process area.

SCHEDULE VIII

Reference Oxygen Levels

(Regulation 8)

| Fuel Type | Reference Oxygen Level |
|-----------------------|-------------------------------|
| Oil and Gaseous Fuels | 03% |
| Solid Fuels | 06% |

In relation to Incinerators, reference oxygen level shall be ten percent (10%).

References

http://www.gic.gov.lk/gic/index.php?option=com_info&id=622&task=info&lang=en

CEA 1- "Guidance for Implementing the EIA Process, No.2: A General Guide for Conducting Environmental Scoping 2003, Central Environmental Authority, Sri Lanka"

Annex 8 Noise Levels

SCHEDULE I (Regulation 2)

Maximum Permissible Noise Levels at Boundaries in Laeq ' T

| Area | Laeq T | |
|--------------|----------|------------|
| | Day Time | Night Time |
| Low Noise | 55 | 45 |
| Medium Noise | 63* | 50 |
| High Noise | 70 | 60 |
| Silent Zone | 50 | 45 |

Provided that the noise level should not exceed 60 dB (A) inside existing houses, during day time.

“Low noise area” means an area located within any Pradeshiya Sabha area.

“Medium noise area” means an area located within any Municipal Council or Urban Council area

“High noise area” means any export processing zone established by the Board of Investment or industrial estates approved under Part IV C of the National Environmental Act:

“Silent Zone means the area covered by a distance of 100 meters from the boundary of a courthouse, hospital, public library, school, zoo, sacred areas and areas set apart for recreation or environmental purposes.

SCHEDULE II

(Regulation 3)

The following noise levels will be allowed where the background noise level exceed or is marginal to the given levels in Schedule I

| | |
|--|---|
| <ul style="list-style-type: none"> For low noise areas in which the background noise level exceed or is marginal to the given level | Measured Background Noise Level +3dB (A) |
| <ul style="list-style-type: none"> For medium noise areas in which the background noise level exceeds or is marginal to the given level | Measured Background Noise Level +3dB (A) |
| <ul style="list-style-type: none"> For silent zone in which the background noise level exceeds or is marginal to the given level | Measured Background Noise Level +3dB (A) |
| <ul style="list-style-type: none"> For high noise areas in which the background noise level exceeds or is marginal to the given level | |
| (i)For day time | Measured Background Noise Level +3dB (A) |
| (ii)For night time | Measured Background Noise Level +3 dB (A) |

The above maximum noise levels should be maintained inside the boundary of the land, in which the source noise is located

SCHEDULE III

(Regulation 4)

| | |
|--|----------|
| Maximum permissible Noise Levels at Boundaries of the land in which the source of noise is located in Laeq', T, for construction activities. | |
| Laeq', T | |
| Night Time | Day Time |
| 75 | 50 |

Annex 9 Ozone depleting substances

PART 1: SECTION (1) – GENERAL

Government Notifications

THE NATIONAL ENVIRONMENTAL ACT NO 47 OF 1980

BY virtue of the powers vested in me by Section 23W of the National Environmental Act, No 47 of 1980, I, Sirimani Athulathmudali, Minister of Transport, Highways, Environment and Women's Affairs, do by this Order, prohibit with effect from 01st January, 2000, the use of the material specified in the Schedule hereto, being used for any process, trade or industry as being Ozone depleting materials and substances which will endanger the quality of the Environment;

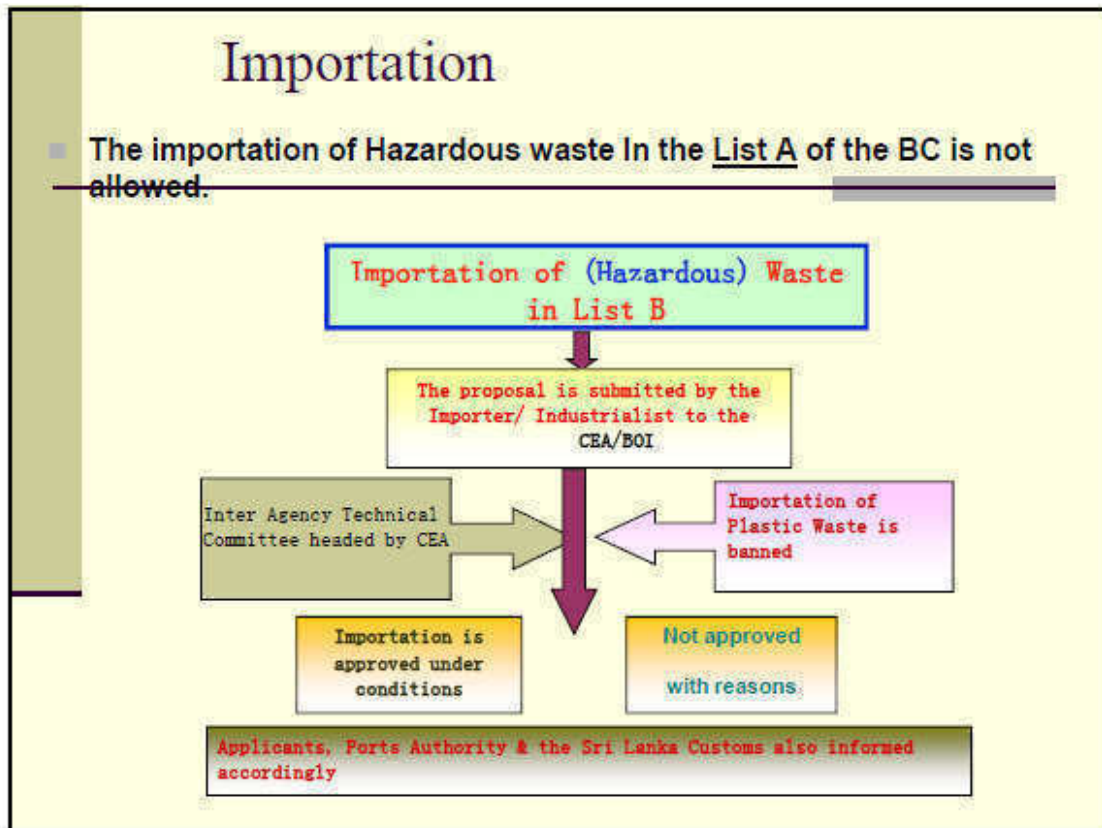
Provided that the said materials in the Schedule hereto, may continue to be used until 01st January, 2005 for the limited purpose of servicing equipment or industrial plants already in operation or which have been installed prior to 01st January, 2005

SCHEDULE

| <i>Code</i> | <i>Symbol</i> | <i>Substance</i> |
|-------------------|-----------------------------------|-------------------------------|
| CFC – 11 (R 11) | CFCl_3 | Trichlorofluoromethane |
| CFC – 12 (R 12) | CF_2Cl_2 | Dichlorodifluoromethane |
| CFC – 113 (R 113) | $\text{C}_2\text{F}_3\text{Cl}_2$ | Trichlorofluoroethane |
| CFC – 114 (R 114) | $\text{C}_2\text{F}_4\text{Cl}_2$ | Dichlorodifluoromethane |
| CFC – 115 (R 115) | $\text{C}_2\text{F}_5\text{Cl}$ | Chloropentafluoroethane |
| Halon – 1211 | CF_2BrCl | Bromochlorodifluoromethane |
| Halon – 1301 | CF_2Br | Bromotrifluoromethane |
| Halon – 2402 | CF_4Br_2 | Dibromotetrafluoroethane |
| CFC – 13 | CF_3Cl | Chlorotrifluoromethane |
| CFC – 111 | C_2FCl_5 | Pentachlorofluoroethane |
| CFC – 112 | $\text{C}_2\text{F}_2\text{Cl}_4$ | Tetrachlorodifluoroethane |
| CFC – 211 | 3FCl_7 | Heptachlorofluoropropane |
| CFC – 212 | $\text{C}_3\text{F}_2\text{Cl}_6$ | Hexachlorodifluoropropane |
| CFC – 213 | $\text{C}_3\text{F}_3\text{Cl}_5$ | Pentachlorotrifluoropropane |
| CFC – 214 | $\text{C}_3\text{F}_4\text{Cl}_4$ | Tetrachlorotetrafluoropropane |
| CFC – 215 | $\text{C}_3\text{F}_5\text{Cl}_3$ | Trichloropentafluoropropane |
| CFC – 216 | $\text{C}_3\text{F}_6\text{Cl}_2$ | Dichlorohexafluoropropane |
| CFC – 217 | $\text{C}_3\text{F}_7\text{Cl}$ | Chloroheptafluoropropane |

Importation

- The importation of Hazardous waste In the List A of the BC is not allowed.



Annex 11 Fact Sheet

| Fact Sheet | Page No |
|-------------------------------|----------------|
| Chemicals, Plastic and Paints | 86 |
| Oil and Gas | 87 |
| Pharmaceuticals | 88 |
| Textiles and Apparel | 89 |
| Leather and footwear | 90 |
| Food and Beverages | 91 |
| Livestock Farming | 92 |
| Metal Products and Machinery | 93 |
| Iron, Steel and other Metals | 94 |
| Cement and Concrete | 95 |
| Glass and Ceramic Products | 96 |
| Mining and Quarrying | 97 |
| Recycling and Waste Treatment | 98 |
| Water Supply | 99 |
| Wood products | 100 |
| Tourism and leisure | 101 |
| Health Service | 102 |
| Garages and Petrol Stations | 103 |
| Energy Supply | 104 |
| Printing | 105 |
| Pulp and Paper | 106 |
| Fishing and Hunting | 107 |

| Fact Sheet | Page No |
|--------------------------|----------------|
| Transport | 108 |
| Precision Instruments | 109 |
| Laundry and dry cleaning | 110 |
| Forestry | 111 |
| Construction | 112 |
| Crops and Gardening | 113 |
| Electronic Products | 114 |
| Low Risk Sector | 115 |

Chemicals, Plastic and Paints

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Chemicals, Plastic and Paints

High Risk Sector



Processing raw materials from the petroleum industry, mining or agriculture into new products for direct use (i.e. fertilizers, paint, soap, plastics) or further processing in other industries (i.e. pharmaceuticals).

Related Sectors:

- Pharmaceuticals
- Oil and Gas
- Printing



Production Processes

The chemical industry includes industries supplying agrochemicals, plastics, synthetic fibers, paints and detergents – among a wide range of other substances. The processes applied in this sector include the mixing of substances, distillation, filtration, heating and cooling, solvent extraction, centrifugation and application of pressure.

Plastics, synthetic fibers and rubber are one of the primary product categories of the chemical industry. Plastics describe a range of synthetic or semi-synthetic polymers – long chains of bonded atoms. The main raw materials are natural gas, crude oil and chlorine or chlorinated organic substances. The key step in plastics production is referred to as polymerization, polycondensation or polyaddition. The desired end product, the processes and additives involved, plasticity, hardness, heat tolerance, resilience and other properties can be defined according to the raw material used. Further processing of plastics includes extrusion, injection molding, supercalendering and foaming.

Paints and dyes are a second important category of products from the chemical industry. The ingredients that give these products their color may be of mineral, synthetic, vegetal or animal origin. Paints are mainly emulsion pigments and fine colored powders in a liquid. The pigments are mixed with a film former (binders, resins and polymers) which binds the particles together and allows them to adhere to a surface. Solvents and additives (thickeners, biocides, antifreeze, etc.) are added to obtain certain properties such as color, viscosity, gloss and durability. As opposed to paints, which are mechanically applied to surfaces, dyes are absorbed by and chemically react with substrates such as textiles.

Agrochemicals such as fertilizers and pesticides are specialist chemical industry outputs. Fertilizers contain nitrogen and phosphorus used to promote the growth of plants, while pesticides serve to protect these plants from fungi and insects.

Sustainability Issues

| | |
|------|---------------------------|
| High | Energy |
| High | Water Use |
| High | Emissions to Water |
| High | Waste |
| High | Emissions to Air |
| High | Ecosystems |
| High | Workplace Health & Safety |
| High | Disaster Risk |
| High | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Wastewater and liquid waste may contain toxic chemicals and lead to environmental pollution.**
Water used in production processes and for cleaning may contain solvents, various types of salts and a wide range of chemical substances as well as by-products. The impact on water quality and the resulting risks for human health, the environment and other uses can be mitigated by the appropriate treatment of wastewater.
- **The main risks to workers are: Toxic substances and processes involving high temperatures and high pressure.**
Chemical products are often highly reactive and therefore toxic. Production processes may involve hazardous reagents and solvents, high pressures and temperatures and lead to toxic by-products. Risks to workers may be mitigated by training, protective equipment, low-risk process design and substitution of hazardous substances.
- **Emissions to air can be a nuisance in the areas surrounding chemical plants and entail material risks to human health.**
Chemical production may emit (highly) toxic substances to the air, which can negatively affect the health of residents in the areas surrounding chemical plants. Examples are solvents, dust and vapors from chemical products, as well as exhaust gases and fumes from on-site waste incineration.
- **The main disaster risks in chemical plants are fires, explosions and the accidental release of toxic chemicals to the environment.**
Chemical production may involve high-temperature and high-pressure processes as well as toxic and flammable substances. A disaster in a chemical plant may cause physical damage over large areas (fires, explosions) and present a health risk for residents in the surrounding areas (release of toxic chemicals).

Oil and Gas

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Oil and Gas

High Risk Sector



The extraction, storage, transportation, trading and retailing of oil and gas products. The refining, transportation, storage, trading and retailing of petroleum products.

Related Sectors:

- Garages and Petrol Stations
- Mining and Quarrying
- Chemicals, Plastic and Paints
- Energy Supply
- Transport



Production Processes

The key processes in the oil and gas sector are: Exploration, well development, petroleum refining and transport.

The exploration process starts with the search for rock formations indicating oil deposits. Geophysical research is undertaken and explorative drilling is conducted where necessary. Once potentially profitable fields have been identified, a well is drilled into the underground reservoir. Often many wells will be drilled into the same reservoir, to ensure that the extraction rate is economically viable. Some wells may be used to pump water, steam or other gas and liquid mixtures into the reservoir to increase the reservoir pressure, and so maintain an economic extraction rate. Where the underground pressure in the oil reservoir is sufficient, the oil will be forced to the surface by this pressure. After the oil has been brought to the surface, liquid and gas components are separated, and impurities such as sand, silt and water are removed. Once crude oil has been cleansed from impurities, it is ready for transportation to the refinery for further processing. Most crude oil is transported in pipelines, while a smaller proportion is freighted on vessels, trains and trucks.

Petroleum refining is the process of extracting different kinds of hydrocarbons. An oil refinery is an industrial plant where crude oil is processed and refined into useful petroleum products, such as petroleum, kerosene, diesel and industrial fuel oil. Hydrocarbons are molecules of varying length and complexity made of hydrogen and carbon. Hydrocarbons are separated and purified in the oil refining process. Hydrocarbons have different structures and boiling points, which makes their separation by distillation possible.

Sustainability Issues

| | |
|----|---------------------------|
| HS | Energy |
| MF | Water Use |
| MS | Emissions to Water |
| MF | Waste |
| MS | Emissions to Air |
| MS | Ecosystems |
| MS | Workplace Health & Safety |
| MS | Disaster Risk |
| MS | Site Contamination |

Sector Rating

- HS High risk issue
- MS Medium risk issue
- LF Low risk issue

Risks & Opportunities

- **Wastewater containing chemicals can cause harm if released into the environment.**
In oil production, many chemicals such as biocides, corrosion inhibitors, scale inhibitors and gas treatments are used. Water can be polluted by drilling, stocking, refueling and cleaning activities, as well as from oil spills. Wastewater containing residual oil and chemical additives should not be released untreated into the environment.
- **Oil and gas products are inflammable and explosive. Oil spills can occur.**
Gas or vapors from oil products are highly explosive when mixed with air. They are also inflammable and must be kept away from naked flames, including cigarettes, as well as potential sources of electrostatic discharge. Oil spills can pollute rivers, bays, the ocean and land areas. Oil spills are caused by accidents involving tankers, barges, pipelines, refineries and storage facilities.
- **Oil and petrochemical products can pollute the air.**
Vapors from petrochemical products such as diesel and petrol can pollute the air. Gas flaring and oil refineries may emit various chemicals into the atmosphere and generate bad odors. Refrigerants used in gas cooling equipment entail risks to health and safety.
- **Empty oil containers and waste from production processes can contain oil residues.**
The removal, cleaning and disposal of oil containers should be done in such a way that water resources are not polluted. Sludges and residues from the processing and storage of petrochemical products must be treated as hazardous waste.

Pharmaceuticals

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Pharmaceuticals

High Risk Sector



Processing chemical base materials into drugs for humans or animals.

Related Sectors:

- Chemicals, Plastic and Paints
- Health Services



Production Processes

The pharmaceutical industry delivers medication for human and animal health. In addition to manufacturing, research – which includes year-long clinical trials – is a key activity in the pharmaceutical sector.

The production of pharmaceuticals starts from a wide range of chemicals. As opposed to the chemical industry, small amounts of highly reactive substances are produced from large amounts of raw materials and auxiliary substances, such as solvents.

At the heart of these production processes is the chemical reactor, usually a vessel containing between a few kilograms and a few tonnes of material. In the chemical reactor, the mixture of substances is stirred and heat and pressure may be applied. Additional reagents may be added and unwanted by-products removed or extracted. Producing pharmaceutical products may involve numerous steps, many of them required to ensure a high purity. Before it is sold, the active substance is converted into its final dosage form, such as tablets, syrups or creams, and then packaged.

Sustainability Issues

| | |
|------|---------------------------|
| High | Energy |
| High | Water Use |
| High | Emissions to Water |
| High | Waste |
| High | Emissions to Air |
| Low | Ecosystems |
| High | Workplace Health & Safety |
| High | Disaster Risk |
| High | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **The main risks to workers are: Toxic and highly active substances, processes at high temperatures and under high pressure.**
Pharmaceutical products per se are highly active and may therefore be toxic. Production processes may involve hazardous reagents and solvents, high pressures and temperatures and involve toxic by-products. Risks to the health and lives of workers may be mitigated by training, protective equipment, low-risk process design and the substitution of hazardous substances.
- **The main disaster risks in chemical plants are fires, explosions and the accidental release of toxic chemicals to the environment.**
Pharmaceutical production may involve high-temperature and high-pressure processes as well as toxic and flammable substances. A disaster in a chemical plant may cause physical damage over large areas (fires, explosions) and presents a health risk for residents in the surroundings (release of toxic chemicals).
- **The contamination of property presents a risk to its value, to human health and to the environment.**
Spills of liquids in production, leaks in tanks or pipes, and the disposal of liquid waste may contaminate buildings and the ground. This may present a risk to groundwater resources or to human health. Clean-up costs may be considerable. The market value of contaminated property may be impaired. Contaminations can be avoided by training of staff and technical measures such as sealed ground and catchment tanks.
- **Wastewater and liquid waste may contain toxic substances and lead to environmental pollution.**
Water used in production processes and for cleaning may contain solvents, various types of salts and a wide range of chemical substances as well as by-products. The impact on water quality and the resulting risks for human health, the environment and other uses can be mitigated by appropriate (pre-)treatment of waste water.
- **A reliable and sustainable supply of high-quality fresh water is essential.**
The production of pharmaceuticals may require large amounts of fresh water for cooling and heating and as solvents or reagents in chemical processes themselves. A reliable supply is essential for ensuring continuity of production. Fresh water of high quality could be required in order to meet quality standards for products.

Textiles and Apparel

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Textiles and Apparel

Medium Risk Sector



Production of textile fibers and manufacture of textiles and fabrics or similar products such as rope.

Related Sectors:

- Leather and Footwear
- Laundry and Dry Cleaning



Production Processes

Textiles and clothing are manufactured either from natural fibers like wool, cotton, flax or silk, or from synthetic fibers such as nylon, rayon, etc. The key steps in the value chain of the textile industry are: Yarn manufacture, fabric production, wet processing and making up.

Raw fibers are converted into yarn by grouping and twisting operations used to bind them together. Unlike manmade fibers, fibers with a natural origin have to be cleaned intensively from impurities first. Fibers must then pass through various preparation steps before they can be spun into yarn. In a next production phase, yarn is converted into fabric by knitting, crocheting or weaving. This fabric production process creates the raw textile material from which most textile products are made.

Before processed into the final products, woven and knit materials usually pass through several water-intensive wet processing stages. Wet processes are applied to improve the appearance, durability and serviceability of the finished garment. Wet processing usually involves preparation, dyeing, printing and finishing. This may include treatment in chemical baths, washing and drying. Finishing encompasses chemical or mechanical treatments performed on fiber, yarn or fabric to improve appearance, texture or performance.

Finished cloth can be made up into a variety of garments, household and industrial products. The simpler of these products, such as bags, sheets, towels, blankets and draperies are often produced by the textile mills themselves. Clothing and more complex products are usually manufactured by the cutting trades.

Sustainability Issues

| | |
|-----|---------------------------|
| (H) | Energy |
| (M) | Water Use |
| (H) | Emissions to Water |
| (M) | Waste |
| (M) | Emissions to Air |
| (L) | Ecosystems |
| (M) | Workplace Health & Safety |
| (M) | Disaster Risk |
| (H) | Site Contamination |

Sector Rating

- (H) High risk issue
- (M) Medium risk issue
- (L) Low risk issue

Risks & Opportunities

- **Wastewater and liquid waste may contain toxic substances and lead to environmental pollution.**
Wastewater is the largest waste stream of the textile industry. It may contain a mixture of substances such as dyes, salts, acids, alkalis, oils and fats as well as (chlorinated) solvents. Pre-treatment may be required to minimize negative impacts on water quality, health risks and conflicts with other uses.
- **The contamination of property presents a risk to its value, to human health and to the environment.**
Spills of liquids in production, leaks in tanks or pipes and the disposal of liquid waste may contaminate buildings and the ground. This may present a risk to groundwater resources or to human health. Clean-up costs may be considerable. The market value of contaminated property may be impaired. Contaminations can be avoided by training staff and technical measures.
- **A reliable and sustainable supply of high-quality fresh water is essential.**
Producing textiles may require large amounts of fresh water. The most water-intensive production steps are washing of raw materials and the various wet-processing stages. A reliable supply is essential for ensuring continuity of production. Where water supply is limited, conflicts with other uses may arise.
- **Emissions to air can be a nuisance in the areas surrounding of textile plants and entail material risks to human health.**
Production steps that cause emissions to air are mainly wet processes such as coating, finishing and dyeing. Potential pollutants are solvents, dyes, dust and various other substances used in textile production.

Leather and footwear

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Leather and Footwear

Medium Risk Sector



Processing raw skins into leather and producing leather goods such as clothing, shoes and luggage. Dyeing of textiles and fur.

Related Sectors:

- Textiles and Apparel



Production Processes

Leather-ware production starts from raw skins, which require various steps to turn them into leather ready for further processing. The main processes are cleaning, pickling, tanning and finishing.

Cleaning: Hides and raw skins are first preserved by salting or chilling, before excess flesh and fatty tissue are removed. Hides are then loaded into drums, where dirt and blood from the surface of the skin are washed away. Other impurities are removed by adding water, lime and alkaline chemicals. Used lime and alkaline substances are removed by lowering the pH level and raising the temperature. In the bating process the grain surface is cleaned by enzymes and remaining hair roots and pigments are destroyed.

Pickling (in acid solution) prepares the hides and skins for the tanning process, which may involve chromate and other chemical reagents or substances of vegetable origin. The resulting leather is heat resistant and does not shrink at 100°C. The wet-blue hides are then removed from the processing drums and excess moisture is squeezed out.

The finishing process depends upon the type of leather to be produced and its further use. Some leathers are thinned using splitting or shaving methods; other leathers are retanned to be softer or firmer. Leather can also be dyed and then coated with oil. Dried leather is staked to remain soft, smooth and flexible. Overall the finishing process protects the surface of the leather from moisture, dirt and abrasion.

Sustainability Issues

| | |
|--|---------------------------|
| | Energy |
| | Water Use |
| | Emissions to Water |
| | Waste |
| | Emissions to Air |
| | Ecosystems |
| | Workplace Health & Safety |
| | Disaster Risk |
| | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Wastewater and liquid waste from the leather industry (especially from tanning activities) may contain toxic substances and lead to environmental pollution.**
Tanning and dyeing are the steps in leather production that generate significant amounts of hazardous wastewater. Potential pollutants are heavy metals (chromium), dyes, solvents and other substances. Pre-treatment may be required to minimize negative impacts on water quality, health risks and conflicts with other uses.
- **The main risks to workers are: Toxic and highly active substances (tanning, dyeing), high temperatures, noise and dust and exposure to machinery.**
Risks to the health and lives of workers may be mitigated by training, protective equipment, low-risk process design and substitution of hazardous substances.
- **The contamination of property presents a risk to its value, to human health and to the environment.**
Spills of liquids in production, leaks in tanks or pipes and disposal of liquid waste may contaminate buildings and the ground. This may present a risk to groundwater resources or to human health. Clean-up costs may be considerable. The market value of contaminated property may be impaired. Contaminations can be avoided by training of staff and technical measures.
- **Leather manufacturing may generate organic residues and hazardous waste which present a nuisance (bad odors) and risk to human health.**
Organic residues stem from the preparation of raw skins for leather production. Sources of hazardous waste are mainly tanning and dyeing processes. Appropriate storage and disposal of these waste fractions minimizes risks to human health and the environment.

Food and Beverages

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Food and Beverage

Medium Risk Sector



Manufacturing, processing and preservation of food, beverages and animal feeds.

For preliminary production processes refer to the related sectors.

Related Sectors:

- Livestock Farming
- Crops and Gardening
- Fishing and Hunting
- Water Supply



Production Processes

The value chain in the food and beverages industries usually begins with the outputs of the agricultural and fisheries sector and proceeds to deliver products for wholesale and further processing or immediate consumption.

This involves the production, processing and preservation of meat, fish, fruit, vegetables, oils and fats, the manufacture of dairy products and the milling of grain, as well as the manufacture of alcoholic and non-alcoholic beverages. In the food and beverages sector, the value chain consists of businesses of all sizes on both the production and distribution sides.

The food industry employs an innumerable range of processes, which are part of one of the following links in the value chain: Firstly, there is a facility where the raw material is delivered and stored before further processing.

Typical food processing steps involve the butchering of animals, dressing of fish, extraction of plant products, heat or chemical treatment, milling and mashing, fermentation of dairy products, crystallization, refining and other methods. Finally, the products are preserved, for example by sterilizing or pasteurizing, refrigerating or freezing, smoking, pickling, salting, drying or by using additives. The end product is then packaged and prepared for sale or further processing.

The beverage industry can be categorized roughly into the manufacture of alcoholic and non-alcoholic beverages. Beer is made of malted barley or other cereals, hops, yeast and water. Wine and cider are made of crushed and stemmed grapes or apples respectively. The steps involved in making beer or wine/cider are very different, although both use the process of fermentation. In the beer industry it is fermentation by yeast, and in the wine and cider industry it is alcoholic fermentation. Several ingredients, primarily fruit juices and sugar, as well as colorants and other substances, are mixed to make soft drinks or mineral waters. Depending on the product, the liquids are sometimes carbonated before bottling takes place. To produce tea, coffee and cocoa, the raw products undergo fermentation, roasting and other treatments. The actual beverage is then produced by the consumer.

Sustainability Issues

| | |
|-------------|---------------------------|
| Low Risk | Energy |
| High Risk | Water Use |
| Medium Risk | Emissions to Water |
| Low Risk | Waste |
| Medium Risk | Emissions to Air |
| Medium Risk | Ecosystems |
| Low Risk | Workplace Health & Safety |
| Low Risk | Disaster Risk |
| Low Risk | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Beverage production requires large amounts of fresh water, which is also used for cleaning activities, cooling and heating.**
A reliable and sustainable supply of fresh water is essential for ensuring continuity of production. Fresh water of high quality could be required in order to meet quality standards for products. There may be potential for optimizing the efficiency of water use, for preventing shortages and for addressing conflicts with other users of the same water resources.
- **Effluents from the food industry may contain significant quantities of organic material or highly toxic substances.**
High levels of nutrients and microbes can result in water pollution. Washing fruit or vegetables can contaminate water with pesticides, while the cleaning of production plants may lead to the pollution of water with biocides and detergents.
- **Food processing may also emit unpleasant odors.**
The processing of meat is usually related to unpleasant odors which may be a nuisance for people living in the vicinity.

Livestock Farming

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet

Livestock Farming

Medium Risk Sector



Rearing of animals to produce meat, seafood, wool, furs and other products. For milk processing refer to the related 'Food and Beverage' sector.

Related Sectors:

- Crops and Gardening
- Fishing and Hunting
- Food and Beverage



Production Processes

Animals like chickens, pigs, sheep, cattle and goats are bred for their meat or their products such as eggs, milk or wool. Rearing includes the care and feeding of animals either on pasture land or by using processed fodder. Crop plantation for fodder production, as well as pastures, requires large areas. Livestock-based farming generates large amounts of manure, which has to be collected, stored and then recycled or disposed of, possibly by spreading on land for fertilization.

Increasing demands for cheap animal products encourage farmers to apply methods of intensive livestock production, also called factory farming. Often chicken and pigs are reared in a high-density manner, which requires barns designed for that purpose and sophisticated animal health management. In animal farming the use of antibiotics and hormones is widespread. Some countries have special regulations concerning this issue. Pesticides are common in crop plantation for fodder production.

Aquaculture is a specific subsector and describes the cultivation of aquatic organisms, such as fish, shellfish, algae and other aquatic plants. Some examples of aquaculture include raising catfish or shrimp in fresh or saltwater ponds, growing cultured pearls, and farming salmon in net-pens set out in bays.

Sustainability Issues

| | |
|--------|---------------------------|
| Low | Energy |
| Medium | Water Use |
| High | Emissions to Water |
| Medium | Waste |
| High | Emissions to Air |
| High | Ecosystems |
| Low | Workplace Health & Safety |
| Low | Disaster Risk |
| Low | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Liquid waste from livestock farming can lead to environmental pollution.**
Intensive livestock farming generates large amounts of fecal and urinary waste. In addition to nutrients, these may contain antibiotics, hormones and pesticides. From water pollution, conflicts with other uses, such as with fisheries and drinking water extraction, may result. Pesticides applied to animals must be handled carefully in order to mitigate risks for human health and the environment.
- **Large-scale farming may lead to deforestation and desertification.**
Large forest areas may have to be cleared for pastures. Grazing animals may prevent forest growth. Overgrazing, i.e. unsustainably large animal populations on too-small areas, may lead to desertification, which turns pasture to unproductive wasteland. Some of these impacts may be irreversible. Well-managed livestock farms ensure that their business is sustainable in the long run.
- **Intensive livestock farming may put a strain on the local water supply.**
Animal farming requires considerable amounts of fresh water for feeding and cleaning. A reliable and continuous supply of fresh water of high quality is essential. There may be potential for optimizing the efficiency of water use, for preventing shortages and for addressing conflicts with other users of the same water resources.
- **The use of pesticides/herbicides subject to international phaseouts or bans presents a risk to reputation.**
Bans and phaseouts indicate that substances present material risks to human health and the environment. Restricting the use of such substances may be essential if products are to be exported to markets overseas.

Metal Products and Machinery

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Metal Products and Machinery

High Risk Sector



Processing raw metal into products such as machines, tools, structural elements etc. for use in household, construction and industry. For manufacture of basic metals refer to the related sector 'Iron, Steel and other Metals'.

Related Sectors:

- Iron, Steel and other Metals
- Electronic Products
- Precision Instruments



Production Processes

Production of metal goods and machinery involves the (mechanical) shaping of metal parts and the (chemical) treatment of metal surfaces. Processes may be largely manual, with each item dealt with individually, or highly automated.

When working metal mechanically, heat and/or physical forces are applied. To obtain items of the desired size and shape, metals may be forged, rolled, cast, formed, turned, drilled, punched, etc. Lubricant or water is applied to cool the worked pieces. The products may then be screwed, welded, riveted or assembled in other ways.

In a further step, the surface of metal parts may be treated or coated. The main purposes are abrasion, hardening, corrosion protection and coloring.

The technologies employed range from abrasive blasting to acid washes and multi-stage chemical processes. Often, metal is coated for protective and/or decorative purposes. Among the various painting methods, spray painting and electrodeposition are most common.

Among the largest purchasers of fabricated metal products are the automotive industry, mechanical engineering, shipbuilding, aerospace and air transportation.

Sustainability Issues

| | |
|------|---------------------------|
| High | Energy |
| High | Water Use |
| High | Emissions to Water |
| High | Waste |
| High | Emissions to Air |
| Low | Ecosystems |
| High | Workplace Health & Safety |
| High | Disaster Risk |
| High | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Waste water and liquid waste may contain toxic substances which present a risk to water quality.**
Potential water pollutants are: Plating solutions from electroplating (containing heavy metals, cyanides, fluorides, etc.), chlorinated solvents used for degreasing, oil and grease, cutting and drilling liquids.
- **While most waste will be recyclable metals, some waste may be hazardous.**
Potential sources of hazardous waste produced in metals and machinery manufacturing: Sandblasting (grit), wastewater treatment and electroplating (sludges), cleaning and ventilation (dust). Recycling options and appropriate disposal of hazardous waste improve efficiency and minimize environmental impacts.
- **Emissions to air come mainly in the form of metal dust and solvents from varnishes and paints.**
Volatile solvents from paints and surface treatment may present a temporary nuisance and a health risk for residents in the surroundings. Metal dusts can result in long-term contamination and poisoning. Appropriate ventilation and filters can effectively minimize emissions to air.
- **The contamination of property presents a risk to its value, to human health and to the environment.**
Spills of liquids in production, leaks in tanks or pipes and disposal of liquid waste may contaminate buildings and the ground. This may present a risk to groundwater resources or to human health. Clean-up costs may be considerable. The market value of contaminated property may be impaired. Contaminations can be avoided by training of staff and technical measures.
- **The main risks to workers' health are: Noise, exposure to heavy machinery, metal dust heat and vapours from metal working fluids.**
Training, adequate process and workflow design as well as state-of-the-art protective equipment keep these risks to the health and lives of workers to a minimum level.

Iron, Steel and other Metals

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Iron, Steel and other Metals

High Risk Sector



Processing ore into metal such as iron, steel or precious metals as raw materials for further activities.
For product manufacturing refer to related sectors.

Related Sectors:

- Mining and Quarrying
- Metal Products and Machinery
- Electronic Products
- Precision Instruments



Production Processes

The production of iron, steel, non-ferrous metals such as copper and precious metals such as silver starts with metal ores, raw metals and scrap metal. As the chemical and physical characteristics of metals differ widely (aluminum, steel, mercury), the metals industry employs a wide range of technologies.

Iron: After mining, the ore is crushed and milled, sorted by size and sintered. In a blast furnace coke is added to the ore and the sinter, reacting with oxygen and producing carbon monoxide. Carbon monoxide then interacts with the ore, generating liquid metal. Impurities like silicon dioxide are removed by adding lime.

Precious and non-ferrous metals are produced from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes. **Aluminum**, for example, is extracted from bauxite, which is produced mainly in Australia, Guinea, Brazil and Jamaica. Via a wet chemical leach method, the alumina is purified and then turned into aluminum metal via an electrolytic reduction. The production of gold may involve liquid mercury as an auxiliary or chemicals such as cyanides.

Steel is an alloy made of low-carbon iron. It is obtained by blowing oxygen through molten iron, thereby reducing its carbon content. Fluxes are added to remove any remaining impurities. The properties of steel can be adapted by alloying it with other metals such as copper, chromium, titanium or vanadium. Usually the steel is then cast, forged or rolled into sheets, strips, bars or plates.

Sustainability Issues

| | |
|--------|---------------------------|
| High | Energy |
| Medium | Water Use |
| Medium | Emissions to Water |
| High | Waste |
| High | Emissions to Air |
| Low | Ecosystems |
| High | Workplace Health & Safety |
| Medium | Disaster Risk |
| High | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue


Risks & Opportunities

- **The production of iron, steel and other metals requires large amounts of energy.**
The most common sources of energy for generating heat are coal (often in the form of coke) and natural gas. Metal producers are the largest energy consumers in the manufacturing sector.
- **Wastewater may contain heavy metals and oils.**
Wastewater from processes such as coating may contain (heavy) metals in high concentrations. Water used for cooling processes may also be contaminated.
- **Waste from metals production includes furnace slag and collected dust. Quantities may be huge.**
Solid waste stems in particular from dismantled refractories and furnace scale. In the iron and steel industry, risks related to solid waste arise from the quantity rather than from toxicity.
- **Furnaces and smelters are the main sources of emissions in metal production.**
Exhaust gases may present a temporary nuisance and a health risk for residents in the surroundings. Metal dusts can result in long-term contamination and poisoning. Air pollution depends upon the metals produced, the fuel used and the level of technology.
- **The main risks to workers' health are: Exposure to heat and hot materials, noise, metal dust, vapours and fumes as well as exposure to heavy machinery.**
In order to mitigate substantial risks to workers exposed to extreme conditions, adequate training, process and workflow design as well as state-of-the-art protective equipment are essential.

Cement and Concrete

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Cement and Concrete


High Risk Sector

H

Processing of limestone and mining material into cement, concrete and related products.

Related Sectors:

- Mining and Quarrying
- Glass and Ceramic Products
- Construction



Production Processes

The process of cement production consists of three main steps:

- raw milling
- clinkering
- finish milling

Step 1: The main raw materials are limestone (80%), clay, iron ore and sand. These materials are proportioned and crushed in a first step. In the so-called dry process, the raw materials are preheated by recycled hot exhaust gases from the kiln. The second step – a wet process – follows directly.

Step 2: The raw feed from Step 1 is fed into a kiln, a rotating cylindrical metal tube of several meters' diameter. Material passing through the kiln is heated to very high temperatures achieved by burning fuel, such as heavy oil, coal, waste or natural gas. This results in a chemical and physical transformation into a grey pebble-like material called clinker. The limestone loses approximately 50% by weight as carbon dioxide.

Step 3: Finish milling is the grinding of clinker into a fine grey powder. Gypsum (CaSO₄) is blended with the ground clinker, along with other materials, to produce finished cement.

Cement is primarily used for building brick and concrete structures. Concrete is a mixture of cement with gravel, sand and possible further mineral components, such as broken stone and recycled concrete.

Sustainability Issues

| | |
|---|---------------------------|
| H | Energy |
| L | Water Use |
| L | Emissions to Water |
| H | Waste |
| H | Emissions to Air |
| H | Ecosystems |
| H | Workplace Health & Safety |
| H | Disaster Risk |
| H | Site Contamination |

Sector Rating

- H High risk issue
- H Medium risk issue
- L Low risk issue

Risks & Opportunities

- **Cement production requires large amounts of energy. A reliable supply is essential for continuous output.** Common sources of energy are oil, coal, wood and waste. Owing to the high process temperatures, cement kilns consume large amounts of energy. There may be a significant potential for energy - and thus production cost - savings.
- **High temperatures, caustic dust, moving machines and falls from heights are the main health and safety issues.** Heavy machinery is involved in cement and concrete manufacturing. Production processes expose workers to high temperatures and caustic dust. Risks to the health and lives of workers are mitigated by training, protective equipment and technical measures ensuring distance from danger zones.
- **Fumes from combustion processes and dust may be emitted to the air.** Emissions to the air depend upon the technology installed and the type of fuel used. The combustion of coal or waste such as used tires results in more toxic emissions than natural gas or oil. Most steps in cement production emit dust, which may be a nuisance or entail a risk to humans exposed to it. Up-to-date technology is more efficient and minimizes emissions to air.
- **Fuel stored on site presents a risk of fire and explosions.** In order to ensure continuous production, large amounts of fuel may be stored. Tanks for gas, petrol and light oil present risk of fires and explosions. Heavy oil, coal and waste could lead to large fires but not to explosions.
- **The extraction of raw materials (from quarries) may have an impact on landscapes.** The main raw materials for producing cement are limestone, clay, iron ore and sand. Cement and concrete plants process large amounts of these raw materials. Extracting raw materials and building the roads to transport them may alter local landscapes and impact upon agricultural uses and ecosystems.

Environmental and Social Assessment for SMEs

www.ifc-esat.org

Page 1 of 1

Version 1.0 - August 2005

Glass and Ceramic Products

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Glass and Ceramic Products

Medium Risk Sector



The processing of sand and minerals into glass, ceramic and other non-metallic mineral products.
For processing limestone into cement, refer to the related 'Cement and Concrete' sector.

Related Sectors:

- Cement and Concrete
- Mining and Quarrying



Production Processes

The main steps in the glass production process are: Mixing, melting, forming, cooling and finishing.

The mixing process (either wet mixing or batch agglomeration) prevents dusting, ensures homogeneity and increases melting efficiency. After the mixing process, glass is melted in furnaces. The main raw material for glass salt production is milled silica sand, which is melted together with soda (sodium carbonate) or potash to reduce the melting temperature. The molten substance has to be homogenized and gas bubbles have to be removed through the addition of gas building substances. The forming step depends on the final glass product. Some are mouth-blown, but typically the forming process is performed with machines. Once formed, the hot substance is cooled rapidly, not allowing enough time for a regular crystal structure to form. The finishing processes may be mechanical or chemical. Mechanical processes include cutting, drilling, grinding and polishing. Chemical treatments may enhance the strength and durability of the glass product.

The industrial process of ceramics production is very similar to glass. Ceramics are originally made from clay and other non-metallic materials. Today, some high-tech ceramics use alumina, silicon carbide and other synthetic raw materials. As in the glass process, ceramics tend to be formed from melts. Ceramic materials are used as pottery, from crude earthenware to the finest porcelain. Ceramics are also used for electric equipment (e.g. insulators) and engineering products.

Sustainability Issues

| | |
|--------|---------------------------|
| High | Energy |
| Medium | Water Use |
| Medium | Emissions to Water |
| Medium | Waste |
| Medium | Emissions to Air |
| Low | Ecosystems |
| High | Workplace Health & Safety |
| Medium | Disaster Risk |
| Low | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **The production of glass and ceramics is very energy-intensive.**
Energy is used primarily to melt and refine raw materials. In addition, further downstream processing to form and finish glass or ceramics also requires a significant amount of energy.
- **High temperatures, toxic dust, moving machines and falls from heights are the main health and safety issues.**
Heavy machinery is involved in glass and ceramic manufacturing. Production processes expose workers to high temperatures and solvents. Risks to the health and lives of workers may be mitigated by training, protective equipment and technical measures.
- **Large amounts of water are used for cooling and production purposes.**
Water is used to cool the molten raw material and the tools used in the glass product manufacturing process.
- **The gaseous emissions from kilns and furnaces may contain toxic substances.**
Emissions to air depend on the choice of fuel used for the kilns and furnaces. Emissions normally include substances as NOx, SOx, CO, hydrocarbons and fluorides. Fluorides, in particular, can pose a risk to human health.
- **Wastewater may be contaminated with heavy metals.**
There are several wastewater sources stemming from glass finishing processes. Dangerous wastewaters are released from coloring, in particular.

Mining and Quarrying

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Mining and Quarrying

High Risk Sector



Underground and open-pit mining to extract coal, ores, base metals, stones, sand, clay and uranium.

Related Sectors:

- Cement and Concrete
- Oil and Gas
- Glass and Ceramic Products
- Iron, Steel and other Metals



Production Processes

Mining is the extraction of valuable minerals or other geological materials from the earth. A quarry is a type of open-pit mine from which rock or minerals are extracted.

Materials commonly recovered by mining include bauxite, coal, copper, diamonds, iron, gold, lead, manganese, magnesium, nickel, phosphate, platinum, salt, silver, tin, titanium, uranium, zinc, clay, sand, cinder, gravel, granite, and limestone. There are three methods of mineral extraction: Open-pit (surface), underground, and fluid (solution) mining.

- **Open-pit mining** is a method of extracting rock or minerals from the earth from an open pit or borrow. Open-pit mines are used when deposits of minerals or rock are found near the surface. This method involves moving large amounts of material, as soil, rock and vegetation has to be removed to make the minerals accessible. Characteristic of open-pit mines are large holes resembling craters with "benches" (broad ledges), so that deeper ores can be accessed with heavy machinery.
- **Underground mining** involves sinking shafts and tunnels to reach mineral deposits far below the surface. Underground mines can be as much as 3,000 meters deep.
- **Fluid mining (solution mining)** is a method in which minerals are extracted by the injection of a solution into an ore deposit. The resulting mineral solution is pumped to the surface, where the mineral or metal is extracted from the solution by processes such as precipitation, ion exchange and electrolysis.

Sustainability Issues

| | |
|------|---------------------------|
| High | Energy |
| High | Water Use |
| High | Emissions to Water |
| High | Waste |
| High | Emissions to Air |
| High | Ecosystems |
| High | Workplace Health & Safety |
| High | Disaster Risk |
| High | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Collapsing mine structures, accidents with explosives as well as gases and dust present a high risk for mineworkers.**
Most accidents within the mining industry involve collapsing mine structures. Up-to-date technology and equipment, as well as careful procedures, are therefore essential to avoid risks for miners. Dust can lead to lung diseases among miners and quarrymen.
- **Heavy metals, acids and other pollutants may contaminate water resources.**
Heavy metals and other substances may be leached from tailings. Wastewater may contain heavy metals, acids and other pollutants. They may contaminate water resources such as rivers or groundwater as a result of accidents, intentional dumping or leaks in containment ponds.
- **Land use and the long-term effects of erosion or chemical contamination have a major impact on local ecosystems.**
Open-pit mines are often not re-vegetated after exploitation and therefore are exposed to wind and weather which leads to erosion. Mining operations sometimes require a lowering of the groundwater level or a drainage of the mining site, thus making water unavailable for other users and the environment.
- **Leaking containment ponds are the main disaster risk within the mining industry.**
Ponds containing acids and heavy metals from processing minerals or ores might burst or leak and release toxic substances into the ground and surface water.

Recycling and Waste Treatment

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Recycling and Waste Treatment

High Risk Sector



Disassembling of waste and scrap into material for recycling or disposal at landfill sites.

Related Sectors:

- Water Supply
- Construction



Production Processes

Recycling means reusing materials which would otherwise be treated as waste. It allows the reuse of materials for the same or for different purposes. Typical examples are scrap metal, glass bottles, wood, textiles and plastics. Materials to be recycled may be either collected separately or extracted from waste. For this, there are different methods, such as mechanically sorting by size, density, by hand or magnetically. Unusable waste and contaminants have to be separated from the recyclable materials. The remaining waste may be incinerated in order to extract the energy contained in it as heat or electricity. Recycling businesses may be of any size and usually sell their output in second hand markets (textiles) or to other industries for further processing (scrap metal).

Waste treatment describes the process of managing waste materials from transport and processing to their final disposal. Landfills are the most traditional method of waste disposal and remain common practice in many countries. Incineration involves burning waste streams under controlled industrial conditions. There are two main categories of incineration:

Hazardous waste (toxic chemicals, infectious waste from the healthcare sector) and solid municipal waste. The differences in incineration arise from both the different characteristics of the waste streams and their concomitant regulatory contexts. Industrial incineration has the potential advantage of producing energy, of minimizing the volume of remaining waste (slag) to be disposed of and of eliminating most hazardous substances.

A method of treating liquid waste and wastewater is its discharge into sewage systems and subsequent treatment in sewage treatment plants. The storage of liquid waste on site and transport by truck to a sewage treatment plant may be an option for some industries. Depending upon the technology employed, sewage treatment eliminates a large proportion of pollutants from wastewater. This can then be discharged into rivers, lakes or the sea.

Sustainability Issues

| | |
|-----|---------------------------|
| (M) | Energy |
| (L) | Water Use |
| (H) | Emissions to Water |
| (H) | Waste |
| (H) | Emissions to Air |
| (M) | Ecosystems |
| (H) | Workplace Health & Safety |
| (M) | Disaster Risk |
| (H) | Site Contamination |

Sector Rating

- (H) High risk issue
- (M) Medium risk issue
- (L) Low risk issue

Risks & Opportunities

- **Recycling processes may be very energy-intensive: They either require or produce large amounts of energy.**
The recycling of scrap metal requires a lot of energy, such as for extraction and smelting. Incineration plants may produce excess heat that can be used directly or for generating electricity.
- **Recycling facilities, sewage plants, dump sites and landfills may contaminate water.**
Examples are hazardous liquids seeping into the ground, wastewater discharged into rivers and seepage water from landfills.
- **Recycling facilities and incineration plants may produce hazardous waste.**
Examples: Slag and cinder from waste incineration plants; oil and other fluids from vehicle wrecking; plastics, electronic parts and heavy metals from computer and household goods recycling.
- **Emissions to air can be a nuisance and a health risk for humans and animals.**
Incineration plants and some recycling facilities emit smoke and fumes which may contain bad-smelling and toxic substances. These emissions can often be substantially reduced by process design and technology.
- **Landfills require large areas of land and may have an impact far beyond the actual disposal site.**
Incineration of waste on the disposal site causes emissions to air, and wind may disperse waste to the landfill's surroundings. Some waste presents health risks or may attract pests. Seepage water may negatively affect the quality of groundwater and rivers.

Water Supply

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Water Supply

Medium Risk Sector



The purification and distribution of water. For sewage and wastewater treatment refer to related 'Recycling and Waste Treatment' sector.

Related Sectors:

- Food and Beverage
- Recycling and Waste Treatment
- Energy Supply



Production Processes

Water supply facilities obtain water either from groundwater sources or from a variety of surface water sources, including lakes, rivers, wells and the sea. Water usually has to be purified and, if it is taken from the sea, desalinated. Processes to remove contaminants from drinking water: Filtration, sedimentation and disinfection. Ion exchange and adsorption may also be applied. In some cases, groundwater is of such good quality that no treatment at all is required. Most water utilities choose a combination of treatment processes, depending on the quality of the water.

- **Sedimentation:** Small particles are combined into larger particles, which are segregated from the water as sediment. Aluminum and iron salts may be used to support this process.
- **Filtration:** Suitable for removing particles including clays and silts, natural organic matter and precipitates from other treatment processes in the facility, iron and manganese and microorganisms. Filtration clarifies water and enhances the effectiveness of disinfection. If inorganic contaminants cannot be removed adequately by sedimentation or filtration, ion exchange may be applied.
- **Adsorption:** Helps to remove organic contaminants, undesired colors and tastes from drinking water.
- **Disinfection:** Ensures that microbes are eliminated. Common disinfectants are chlorine, chloramines and chlorine dioxide, as well as ozone and ultraviolet radiation. Water is then either stored in tanks or distributed via pipes directly to houses and businesses.

Sustainability Issues

- Low Energy
- High Water Use
- Low Emissions to Water
- Low Waste
- Low Emissions to Air
- Low Ecosystems
- High Workplace Health & Safety
- High Disaster Risk
- Low Site Contamination

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Extensive water use may lead to conflicts with other users of the water resources.**
Fresh water of high quality is required in order to meet quality standards. A reliable supply of water is essential. The unsustainable use of water resources will cause problems for other users (e.g. falling water tables, increased pumping costs) or even lead to water shortages. Large amounts may be lost as a result of leakage. There may be potential for preventing shortages, increasing efficiency and for addressing conflicts with other users of the same water resources.
- **Heavy machinery may present a health and safety risk to workers.**
Using heavy machinery or working near traffic entails a significant risk to the health and safety of water utility employees. Compared with other sectors, accident rates are high (e.g. related to back injuries, hazardous chemicals and excavation). This requires special precautions and equipment.
- **Accidents with chlorine gas entail severe risks for health and safety.**
Chlorine is heavier than air and will settle in low-lying areas if accidentally released. Exposure to low concentrations of chlorine gas over short periods of time does not present a public risk in most cases. As chlorine reacts with (body) moisture to form acids, exposure to high concentrations can be harmful, e.g. to the skin, eyes, mouth or to the respiratory organs.

Wood products

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet

Wood Products

High Risk Sector



Processing of cut wood into products such as furniture or construction materials.
For logging refer to the related 'Forestry' sector.

Related Sectors:

- Construction
- Forestry



Production Processes

Wood products are widely used in construction, e.g. for casements, roofs, walls and flooring, as well as for manufacturing furniture.

Raw logs harvested from forests are delivered to a sawmill where they are debarked manually, mechanically or with high-pressure water jets. The logs are then sawn into boards and large-dimension lumber, before they are cut to the proportions as required for their final purpose.

A large proportion of wood products is treated with chemicals in order to protect the wood from decay or biological attack from fungi and insects, such as termites. Wood preservation agents may be applied like paint, or the wood products impregnated in high-pressure reactors. The output of a wood manufacturer usually consists of boards, beams, roundwood, particleboard, plywood, furniture, etc. Boards and beams often make up the largest percentage of the output. Roundwood is debarked and peeled and used in a variety of ways including retaining walls, marina piles, building foundations, and telegraph poles. Particleboard is made out of wood particles that stem partially from wood processing waste. The wood particles are bonded together with a synthetic resin. The board is then blended with additives such as synthetic adhesives and wax. Plywood is normally produced in the form of panels. Most is used in the construction and boat-building industries and for railways, where the ability to withstand large forces is very important. Production processes for wood furniture includes the following steps: Sawing, planing, sanding, gluing, and finishing.

Sustainability Issues

| | |
|--|---------------------------|
| | Energy |
| | Water Use |
| | Emissions to Water |
| | Waste |
| | Emissions to Air |
| | Ecosystems |
| | Workplace Health & Safety |
| | Disaster Risk |
| | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Equipment for cutting wood and hazardous chemicals for wood preservation are major risks to workers' health.**
In wood processing, the primary risks to the health and lives of workers are linked to equipment for sawing and drilling, to hazardous chemicals and to exposure to dust and noise. In particular, the chemicals that are used for wood preserving entail a risk to human health and the environment.
- **Using wood from non-sustainable sources presents a risk to reputation.**
Logging may have a material impact on ecosystems, particularly in sensitive areas. Negative side-effects may be deforestation and loss of biodiversity. Well-managed forests and plantations ensure a sustainable supply of wood. Particularly in export markets, there is demand for sustainably harvested wood products.
- **The high flammability of wood, particularly wood dust, as well as chemicals presents a disaster risk.**
Fires, explosions and accidental emissions of hazardous substances may have disastrous effects on a lumber or other wood processing plant and its surroundings. Approaches to managing disaster risks include emergency planning, safe equipment and process design as well as the substitution of hazardous substances.
- **Contamination of soil and buildings presents a risk to health and real estate value.**
Spills of liquids used for wood treatment, leaks in tanks or pipes, disposal of liquid waste and incidents involving hazardous substances may contaminate buildings and the ground. These contaminations may present a risk to groundwater resources or to human health. Contaminations can be avoided by training staff and technical measures such as proofed floorings and catchment tanks.

Tourism and leisure

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Tourism and Leisure

Medium Risk Sector



Providing tourism activities, including construction of facilities.

Related Sectors:

- Transport



Production Processes

Tourism is traveling for the purpose of recreation and leisure. The tourism and leisure industry provides all the necessary services for these activities. Supplying the tourist with their needs involves the construction and operation of accommodation, restaurants and entertainment facilities. Infrastructure is needed for almost all activities related to tourism and leisure. Construction therefore accounts for a considerable part of the tourism and leisure 'production process'. Hotels, restaurants, and roads are examples of essential infrastructure. The operational processes involved in tourism and leisure include a broad spectrum of services. Jobs created range from waiter, receptionist and cleaning personnel to caterer, guide and management at all levels.

Tourism and recreational activities may, in many cases, be perceived as the consumption of environmental goods such as natural heritage and, in some cases, sensitive and protected ecosystems. The relationship between tourism and natural heritages is complex. One side of the coin is the negative impact that tourism can have on the environment, while on the other hand, tourism may also help to protect environmentally sensitive areas.

Sustainability Issues

| | |
|------|---------------------------|
| High | Energy |
| High | Water Use |
| High | Emissions to Water |
| High | Waste |
| Low | Emissions to Air |
| High | Ecosystems |
| Low | Workplace Health & Safety |
| Low | Disaster Risk |
| Low | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Tourism may contribute to environmental protection and the conservation of biodiversity.** Ecosystems may be adversely affected by tourism and leisure activities. The development of tourism facilities can lead to land degradation and the loss of natural habitats. Keeping these impacts to a minimum helps to protect the environment. Sensitive ecosystems with high biodiversity may be a decisive reason for tourists to choose a location - and therefore a highly valuable asset.
- **Fresh water consumption may put a strain on local supply and compete with other users.** Tourism and leisure activities involve the use of water for hotels, pools, golf courses, washing and cleaning, etc. resulting in high per-capita water consumption. There may be potential for optimizing the efficiency of water use, for preventing shortages and for addressing conflicts with other users of the same water resources.
- **Untreated sewage, particularly from hotels, may contaminate coastlines and other tourist attractions.** If sewage is disposed of untreated, it may impair water quality, potentially causing illness. Insufficient wastewater treatment may pollute bathing water, which may cause major damage to the reputation of a tourist destination.
- **Appropriate waste disposal is essential for keeping the natural environment intact.** Most waste produced by the tourism industry is non-hazardous. However, the tourism industry produces large amounts of waste, which should be disposed appropriately in order to minimize negative side-effects. Waste minimization, recycling, well-managed landfills and incineration plants are potential options for addressing the issue.
- **The high energy demands of tourist facilities may indicate a potential for savings.** Air conditioning, heating and hot water supplies consume large amounts of energy. Sound energy management has the potential for significant cost savings. It helps to ensure that local supply is not overstretched and minimizes negative side effects such as emissions to air or noise.

Health Service

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Health Services

Medium Risk Sector



The provision of services in clinics, hospitals, etc.

Related Sectors:

- Pharmaceuticals



Production Processes

Health services (healthcare) covers all services for the prevention and treatment of illness. These services are provided in hospitals, physicians' and dentists' practices, medical and diagnostic laboratories and outpatient healthcare services, as well as in inpatient/residential care.

Clinical Research and Laboratory Services Medical and diagnostic tests and services are performed on a daily basis. The services may include chemical analysis, blood banks, hematology, microbiology, etc.

Surgical Services Surgical activities include anesthesia, preoperative services and surgery. Surgical procedures are used to diagnose or cure an illness or an injury, or to ease pain. Surgery requires technological equipment and precise instruments.

Non-Surgical Services Non-surgical services summarize those services where no manual or instrument-based procedures or treatment are conducted. It includes general medicine in individual private practices, radiology, rehabilitative services, physical therapy, cancer care services (oncology), etc.

Dentistry Dentistry services, which may include oral surgery, are provided in settings ranging from individual private practices to dental surgery centers.

Sustainability Issues

| | |
|--|---------------------------|
| | Energy |
| | Water Use |
| | Emissions to Water |
| | Waste |
| | Emissions to Air |
| | Ecosystems |
| | Workplace Health & Safety |
| | Disaster Risk |
| | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Healthcare facilities generate infectious and hazardous waste.**
Between 75% and 90% of the waste produced by healthcare providers is non-risk waste, mostly from administrative and housekeeping functions. It can be disposed of as municipal waste. The remaining 10-25% of healthcare waste is regarded as hazardous and requires special treatment. It includes: Waste which contains pathogens, human tissues or fluids, pharmaceuticals and chemical substances, heavy metals (from batteries; broken thermometers and blood-pressure gauges) or radioactive substances (from radiotherapy or laboratory research).
- **Wastewater may contain contagious pathogens, detergents and disinfectants.**
Wastewater which may contain chemicals (for example pharmaceuticals, disinfectants, detergents or film developer) must be collected and treated separately. Some liquid effluents might be returned to the manufacturer. Special care must be taken when dealing with liquid effluents which contain pathogens. They might be contagious. A dentist must pay attention to mercury and dental amalgam wastes.
- **Contagious pathogens, pharmaceuticals, sharp instruments, radiological and chemical substances present major health and safety risks.**
Potential hazards include radiation, toxic chemicals, biological hazards, heat, noise, and dusts. Special care must be taken with regard to the risk of infection. Exposed are all healthcare employees including surgeons, doctors, dentists, nursing staff, cleaning staff and staff taking care of waste.

Garages and Petrol Stations

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet

Garages and Petrol Stations

Medium Risk Sector



Repair and maintenance of motor vehicles, including changing oil and other fluids as well as sale of fuel.

Related Sectors:

- Oil and Gas
- Transport



Production Processes

In garages, motor vehicles are bought, sold and maintained. This work may include changing oil and other lubricants, refilling coolants, brake fluids and the repair of tires.

Body shop activities also involve the machining of metal parts. This may include cutting, welding, hammering, forging, sanding, polishing and turning, as well as the cleaning, degreasing and painting of metal parts.

Car painting is done with liquid paints in paint booths or by using the powder coating technique. The former method requires paints or varnishes based on water or organic solvents. The latter technique describes the process of spraying electrostatically charged pigment and resin particles onto the surface to be coated. The adhered particles are then fused onto the surface in a curing oven.

Car washes range from do-it-yourself coin-operated facilities to fee-based full-service operations. Whereas the former offer water and soap for cleaning, the latter are mechanized and also offer waxing and sometimes underbody and engine washes.

Petrol stations primarily provide fuels, such as petrol, diesel and natural gas. Usually, lubricants, water and pressured air, as well as cleaning services, are also on offer.

Fuel and gas is delivered to petrol stations in large tankers and then stored in large tanks.

Sustainability Issues

| | |
|----|---------------------------|
| CL | Energy |
| CL | Water Use |
| HT | Emissions to Water |
| MT | Waste |
| HT | Emissions to Air |
| CL | Ecosystems |
| HT | Workplace Health & Safety |
| HT | Disaster Risk |
| HT | Site Contamination |

Sector Rating

- HT High risk issue
- MT Medium risk issue
- CL Low risk issue

Risks & Opportunities

- Contamination of real estate presents a risk to its value, to human health and to the environment. Spills, leaks and the disposal of waste on site may lead to contamination by fuel and other hazardous substances. Contamination may present a risk to groundwater sources and to human health. Clean-up costs can be considerable and the market value of the land may be impaired. Contamination can be minimized by training staff and technical measures such as sealed ground and catchment tanks.
- Substances traded in filling stations and used in garages may pollute water. Hazardous substances (fuel, oil, paints, chlorinated solvents and detergents) may be emitted with wastewater from washing vehicles or they may be spilled. Tanks and pipes may leak. Basic precautions, such as sealed ground, catchment tanks and oil separators reduce the risk of emissions to water.
- Garages generate significant amounts of hazardous waste that should be disposed of appropriately. The majority of waste from garages can be recycled (used tyres, metal parts, etc.). Hazardous waste includes: Used oil, transmission and brake fluids, antifreeze, solvents, cleaning agents, paints and thinners, batteries, abrasive grit blast media. Appropriate disposal of hazardous waste minimizes risks to human health and the environment.
- Filling stations emit volatile substances such as fuels to the air. In built-up areas this may be a nuisance and a health risk to neighbors. Emissions of fuel vapors to the air also contribute to summer smog.
- The large amounts of fuels stored at filling stations pose a risk of fires and explosions. Fires at a fuel station can lead to explosions. The effects on the plant and its surroundings may be disastrous and fire may spread to neighbouring areas. Standard precautions minimize the risk of such events while emergency planning mitigates the effects.

Energy Supply

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Energy Supply

High Risk Sector



The generation and distribution of different forms of energy (electricity, gas, steam, hot water).

Related Sectors:

- Oil and Gas
- Water Supply



Production Processes

Electrical energy is generated by utility companies using mainly coal, natural gas, water and oil as well as nuclear fission in some cases. In recent years, the use of solar, wind and tidal power has also become widespread. A large proportion of electricity is generated from petroleum and coal as primary energy sources. Oil, natural gas, coal and petroleum are used for combustion and to produce heat, which in turn produces high temperatures and high-pressure steam. The steam is then transmitted to a turbine, which drives an electric generator.

Another key source of electrical energy in some regions is hydropower. This technology exploits the kinetic energy of moving water to convert it to electrical energy by a water turbine driving a generator. Hydropower belongs to the group of renewable energies of which other examples are wind and solar energy.

Electricity is supplied to consumers via transmission and distribution networks. High-tension power lines transport electricity over long distances. Before the electricity can be distributed to consumers via low-tension power lines, transformers modify voltage from high to low tension.

Sustainability Issues

| | |
|----|---------------------------|
| HS | Energy |
| HS | Water Use |
| MS | Emissions to Water |
| MS | Waste |
| HS | Emissions to Air |
| MS | Ecosystems |
| MS | Workplace Health & Safety |
| MS | Disaster Risk |
| MS | Site Contamination |

Sector Rating

- HS High risk issue
- MS Medium risk issue
- LS Low risk issue

Risks & Opportunities

- **Large quantities of water are used, mainly for cooling.**
Water use in energy generation is an important issue, especially in areas where water is scarce. Conventional power plants use large amounts of water for the condensation part of the thermodynamic cycle. For coal plants, water is also used to clean and process fuel.
- **Waste from fuel-based power plants must be disposed of appropriately.**
Energy generation may produce large amounts of waste, such as ash and slag. The highest volume of waste is caused by lignite or coal-fired power plants. Waste must be disposed of appropriately. One potential way of disposal is use in the cement industry or for tarmac.
- **Fuel-based power plants produce significant amounts of air pollutants.**
Power plants based on fossil fuels (e.g. oil, coal, lignite) produce enormous amounts of emissions to air, depending on the type of fuel used, the combustion technology applied, and the treatment of the fumes. These air pollutants can cause health and environmental hazards.
- **The contamination of property presents a risk to its value, to human health and to the environment.**
Spills of fuels, leaks in tanks or pipes, and the disposal of liquid waste may contaminate buildings and the ground. This contamination may present a risk to groundwater resources, rivers and to human health. Clean-up costs may be considerable. The market value of contaminated property may be impaired.
- **Energy-inefficient processes waste primary energy sources and pollute the environment.**
The transformation of primary energy sources, such as coal, oil or gas, to electricity or heat involves large amounts of these energy sources. The efficiency of this process varies with the fuel used and the level of technology. This might also be an important cost factor.

Printing

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Printing

Medium Risk Sector



Applying ink or dye to different materials, predominantly papers of various qualities.

Related Sectors:

- Pulp and Paper
- Chemicals, Plastic and Paints



Production Processes

Printing is the industrial process of producing and reproducing texts and images in multiple copies, typically with ink on paper using a printing press. The main printing techniques include letterpress, flexography, offset lithography, gravure and screen printing.

Letterpress is still widespread in the newspaper industry and for printing books. Usually, the text and images to be printed are set in lead using individual letters. This yields a raised top surface which is inked and then pressed against the substrate to transfer the image.

Flexography is used in the packaging and wrapping industry. The technique is similar to the letterpress, but the image carrier is a plate instead of individual letters. The advantages of flexography are the wider range of usable inks and the possibility of printing on different materials such as cardboard boxes, plastic packaging, paper napkins or wallpaper.

In contrast to flexography, lithography is used to print on smooth surfaces, primarily paper. An oil-based image is etched with acid into a surface. Modern techniques derived from traditional lithography include offset printing, photolithography and granolithography.

For intaglio or (roto-)gravure the image to be printed is carved or engraved on an image-carrier, usually on copper or zinc plates. After engraving the image-carrier is covered in ink. The ink is then rubbed away from the surface, to remain only in the incisions. The plates are then covered with a damp sheet of paper and run through a printing press which transfers the ink to the paper. Intaglio printing is often used in the production of paper money.

Screen printing, also known as silk-screening or serigraphy, is based on a porous fabric and a stencil. The stencil is produced on the screen either photo-mechanically or manually to protect the non-printing areas. Screen printing is a very versatile printing technique. It will print on substrates of any shape, thickness and size such as paper, plastics, glass, metals, fabrics and wood, and will produce posters, electronic circuit boards, printed textiles, etc...

Sustainability Issues

| | |
|------|---------------------------|
| Low | Energy |
| Low | Water Use |
| High | Emissions to Water |
| High | Waste |
| High | Emissions to Air |
| Low | Ecosystems |
| High | Workplace Health & Safety |
| Low | Disaster Risk |
| High | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Solvents, inks, paints and varnishes as well as heavy metals may lead to site contamination.**
Substances used in printing range from (organic, chlorinated) solvents through paints and varnishes to heavy metals such as lead. Handling losses and leaks from machinery may lead to the contamination of buildings, soil or groundwater.
- **Wastewater may be contaminated with (toxic) substances used in printing.**
Wastewaters from printing operations may contain lubricating oils, waste ink, solvents, detergents, photographic chemicals, acids, alkalis, and plate coatings, as well as metals. Appropriate disposal of wastewater and liquid waste mitigates risks to human health and the environment.
- **Volatile substances emitted to the air may be a nuisance and a risk to human health.**
In printing, large amounts of volatile substances are used, such as solvents, solvent-based inks, wetting agents and photographic chemicals. Uncontrolled emissions to the air may result in local air pollution.
- **Hazards arise from chemicals used in the printing process, paper handling and cutting machinery.**
Substances used in printing (solvents, photochemicals and cleaning fluids) present a risk to workers' health. Handling of heavy paper rolls and equipment for cutting paper entail risks of injuries. Standard precautionary measures can minimize most of these risks.

Pulp and Paper

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Pulp and Paper

Medium Risk Sector



Processing of wood into pulp and paper, which may be further processed into cardboard and paper articles.

Related Sectors:

- Printing
- Forestry



Production Processes

The primary raw material for pulp and paper manufacture is wood. The trees are debarked, chipped and washed before the fibers may be used for paper production. The raw material is first converted into pulp, a concentrated mixture of fibers suspended in liquid. Part of the raw material may also stem from recycled paper. Fibers have to be separated from impurities and washed. Usually they are also bleached or dyed in order to alter the appearance of the final product.

The pulp mixture is then further diluted with water, resulting in thin slurry. The diluted slurry is drained through a moving fine-mesh screen to form a fibrous web. This moving web is pressed and dried into a continuous sheet of paper. Alternatively, in the molding process, a quantity of the pulp is placed into a mould with a wire-mesh base, so that the fibers are left coating the mesh and excess water can drain away. At this time, pressure may be applied to squeeze out more water. The paper may then be removed from the mold, wet or dry, and go on to further processing.

Paper that contains only pressed and dried pulp is very absorbent (for example, blotting paper), and does not provide a good surface for writing or printing. Hence, a variety of additives such as dyes, china clay or glue are used improve the structure of the paper. It may also be dried several times during its manufacture. In the finishing process the paper is cut and packaged for sale or further processing.

Cardboard is produced employing a similar production process as for paper. Cardboard is thicker, stiffer and more durable than paper, because of its heavy wood-based type of paper.

Sustainability Issues

| | |
|--------|---------------------------|
| High | Energy |
| Medium | Water Use |
| High | Emissions to Water |
| Medium | Waste |
| Medium | Emissions to Air |
| Low | Ecosystems |
| Medium | Workplace Health & Safety |
| Medium | Disaster Risk |
| Medium | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Pulp and paper production consumes large amounts of energy for pulping and bleaching.**
Chemical pulping requires energy in the form of heat, which is mainly supplied as steam generated by incinerating production waste. Mechanical pulping requires mechanical energy, usually supplied as electricity. Cost savings from energy efficiency improvements may be considerable.
- **Effluents from paper mills may contain toxic and non-toxic substances, both of which may have a negative impact on water quality.**
Examples of non-toxic substances are organic solids, resins and fatty acids from raw materials, pulp and paper. These are an issue for water quality as they may be discharged in very large amounts.
- **Emissions to air can be a nuisance in the surrounding areas of pulp and paper plants and entail material risks to human health.**
Typical air pollutants emitted by pulp and paper productions are: Dust, sulfur, nitrogen oxides. Emissions depend primarily upon production processes, sources of energy and the level of technology.
- **A reliable and sustainable supply of high-quality fresh water is essential.**
Producing pulp and paper may require large amounts of fresh water. A reliable supply is essential for ensuring continuity of production. Where water supply is limited, conflicts with other uses may arise.

Fishing and Hunting

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Fishing and Hunting

Medium Risk Sector



Fishing and hunting of wild animals.
For fish and shrimps from aquaculture refer to the related 'Livestock Farming' sector.

Related Sectors:

- Livestock Farming
- Food and Beverage



Production Processes

Fishing: Catching fish or other aquatic animals, mainly for food. The catch of a commercial fishery includes a wide range of species: Tuna, salmon, cod, lobster, clams and squid. Commercial fishing methods have become very efficient using sonar, satellite images, huge nets and sea-borne processing factories.

A distinction is made between deep-sea fishing, fishing in middle waters and coastal fishing. Wet-fish trawlers are used for deep-sea fishing. Small, open trawlers are used for fishing near the coast and for middle-water sea fishing. Deep-sea fishing is usually conducted by large trawlers that catch the fish, process it and store it on ice. On factory ships, the fish is caught, processed and deep-frozen, salted or canned.

Hunting: Capturing or killing animals for food, sport, or to trade in their products such as furs. Animals that are hunted are referred to as game animals. Hunting is also a form of wildlife management, to reduce animal populations which have exceeded the capacity of their habitat or where individual animals have become a danger to humans.

Sustainability Issues

| | |
|--------|---------------------------|
| Low | Energy |
| Low | Water Use |
| Medium | Emissions to Water |
| Low | Waste |
| Low | Emissions to Air |
| High | Ecosystems |
| High | Workplace Health & Safety |
| Low | Disaster Risk |
| Low | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Extensive fishing may lead to the depletion of stocks of fish and other species.**
The effect of overfishing is the decline in fish populations, which may take decades to recover. This presents an economic risk for communities that rely heavily on fishing. The risk of overfishing increases with the number of fishermen, mechanized fishing technologies such as drift net fishing and a lack of effective regulation.
- **Over-hunting may endanger animal species and entail a risk for biodiversity.**
Excessive hunting of single species is unsustainable, as populations may decline irreversibly. Species may become extinct locally or globally. Over-hunting may have a negative knock-on effect on local ecosystems, and consequently for the local economy. The hunting of endangered species may violate national and/or international regulations.
- **Falls overboard, falls from heights and slips are the main risks for fishermen.**
Accidents in the fishing industry are often related to stress, fatigue and adverse weather conditions. Under these circumstances, the handling of machinery and work on board becomes riskier.
- **Waste from fish processing and from boat maintenance entails a risk for fishing grounds.**
Spills of oil from boat maintenance and waste from seafood processing may contaminate fishing grounds. This environmental impact increases with inappropriate waste disposal into the sea and high concentrations of older-generation fishing boats. Clean coasts are also a key asset in the tourism industry. Oil and solid waste may be washed up onto beaches, which will make them unattractive for tourist activities.

Transport

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Transport

Medium Risk Sector



Transport of passenger and freight by road, water and air, including related activities like warehousing.

Related Sectors:

- Garages and Petrol Stations
- Tourism and Leisure
- Oil and Gas



Production Processes

The transport sector provides the service of moving people and goods from one place to another. This includes transport on water, land and in the air. Transport may have commercial or recreational purposes. Transport on water may be handled by barges, boats, ships and sailboats. Compared with other transport options, water transport is relatively slow, but costs are low. Sea transport is the most cost-effective method of transporting large quantities of non-perishable goods. Transport on land consists mainly of railways and roads. Both modes of transport need sound infrastructure to function efficiently. Road transport is popular for commercial purposes owing to its low infrastructure costs compared to railway systems, as well as its relatively easy accessibility. Transportation via air is more expensive, but allows passengers and cargo to be transported at high speed to their destination. Auxiliary activities are common in transportation companies and may include the fuelling and maintenance of vehicles, de-icing of aircraft, etc.

Sustainability Issues

| | |
|--|---------------------------|
| | Energy |
| | Water Use |
| | Emissions to Water |
| | Waste |
| | Emissions to Air |
| | Ecosystems |
| | Workplace Health & Safety |
| | Disaster Risk |
| | Site Contamination |

Sector Rating

| | |
|--|-------------------|
| | High risk issue |
| | Medium risk issue |
| | Low risk issue |

Risks & Opportunities

- **Transport consumes large amounts of energy, primarily fossil fuels.**
Energy consumption per passenger or tonne of freight increases from ship transport, over railways and roads to air transport. This exposes transport businesses to supply risks and variations of energy prices. Fossil fuels are a non-renewable source of energy.
- **Fuel combustion entails the emission of exhaust gases to the air. Vehicles and infrastructures such as airports and roads are sources of noise.**
In the areas surrounding of transport infrastructures, levels of air pollution and noise may reach levels that are a nuisance or present a risk to human health and the environment. High levels of emissions, such as in the vicinity of airports, can result in complaints.
- **Accidents during the transportation of hazardous substances may cause environmental disasters.**
Radioactive materials or highly toxic substances can be released during an accident involving transportation, and result in the pollution of a wider area.
- **Transport infrastructures such as airports and harbors can have a significant impact on water quality.**
Ships release bilge and ballast water, solid waste, oil, etc. into harbor basins, where pollutants may accumulate and reach levels harmful to human health and the environment. Wastewater from airports may contain detergents and de-icers.

Precision Instruments

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Precision Instruments

Medium Risk Sector



Processing of metal and plastics into precision instruments such as watches and clocks, optical and photographic instruments or medical equipment. For manufacturing of electrical equipment and machinery refer to the related 'Electronic Products' sector

Related Sectors:

- Iron, Steel and other Metals
- Metal Products and Machinery
- Electronic Products



Production Processes

Precision instruments such as watches and clocks, optical and photographic instruments, medical equipment, musical or navigation instruments, etc. are made of metal, glass, electrical and electronic components.

Overall, production processes are similar to the electronics industry and the metal and machinery sector. The challenge in manufacturing precision instruments is often the small size of the parts to be assembled, the expensive raw materials and substances involved and the high requirements regarding precision and quality.

Given the small size of components, the usually small series of instruments produced and the high quality standards, assembling is often done by hand.

Sustainability Issues

| | |
|-----|---------------------------|
| (M) | Energy |
| (M) | Water Use |
| (H) | Emissions to Water |
| (M) | Waste |
| (M) | Emissions to Air |
| (L) | Ecosystems |
| (L) | Workplace Health & Safety |
| (L) | Disaster Risk |
| (H) | Site Contamination |

Sector Rating

- (H) High risk issue
- (M) Medium risk issue
- (L) Low risk issue

Risks & Opportunities

- **The contamination of property presents a risk to its value, to human health and to the environment.**
Spills of liquids in production and disposal of liquid waste may contaminate buildings and the ground. This may present a risk to groundwater resources or to human health. Clean-up costs may be considerable. The market value of contaminated property may be impaired. Contaminations can be avoided by training of staff and technical measures.
- **Wastewater and liquid waste may contain toxic substances which present a risk to water quality.**
Potential water pollutants are: Plating solutions from electroplating (containing heavy metals, cyanides, fluorides etc.), chlorinated solvents used for degreasing, oil and grease, cutting and drilling liquids.
- **Waste produced in precision instruments manufacturing may be small, but some of it will be hazardous waste.**
Potential sources of hazardous waste produced in metals and machinery manufacturing: Sandblasting (grit), wastewater treatment and electroplating (sludges), cleaning and ventilation (dust). Recycling options and the appropriate disposal of hazardous waste improve efficiency and minimize environmental impact.
- **Emissions to air come mainly in the form of metal dust and solvents from varnishes and paints.**
Volatile solvents from paints and surface treatment may present a temporary nuisance and a health risk for residents in the surrounding areas. Metal dusts can result in long-term contamination and poisoning. Appropriate ventilation and filters can effectively minimize emissions to air.

Laundry and dry cleaning

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet

Laundry and Dry Cleaning

Medium Risk Sector



Cleaning of textiles using soap and water as well as a wide range of chemicals.

Related Sectors:

- Textiles and Apparel



Production Processes

Commercial laundry services include the washing, bleaching, drying and pressing of textiles. They are generally restricted to washing with machines that use water as the main cleaning solution. After the washing process, bleaching may follow. Bleaching is the process of whitening textiles. After washing, the textiles are put in dryers where the moisture is removed before the textiles are pressed in a final step.

Dry cleaning is very similar to washing except that textiles are washed in liquid cleaning solvent instead of water, as some fabrics are harmed when washed with water. The term "dry cleaning" refers to the fact that no water is used in the washing process. Before transferring the laundry from the washer to the dryer, the residual detergent/solvent is extracted. Finally, garments are dried with warm air to vaporize remaining solvents, a similar process as in a tumble-dryer. The dry cleaning process mainly uses chlorinated solvents, although petroleum solvents, which are less pollutant, are also applied.

Sustainability Issues

| | |
|--------|---------------------------|
| Low | Energy |
| Medium | Water Use |
| High | Emissions to Water |
| Medium | Waste |
| Medium | Emissions to Air |
| Low | Ecosystems |
| Medium | Workplace Health & Safety |
| Low | Disaster Risk |
| High | Site Contamination |

Sector Rating

| | |
|--------|-------------------|
| High | High risk issue |
| Medium | Medium risk issue |
| Low | Low risk issue |

Risks & Opportunities

- **Cleaning agents and liquid effluents from washing and dry cleaning may contaminate water.**
Wastewater should be treated before being released into the environment. Liquid, usually chlorinated solvents used in dry cleaning can cause cancer in the long run and should not be disposed of into the environment.
- **Solvents used in dry cleaning can contaminate the site, and present severe health and safety risks.**
Dry cleaning usually uses chlorinated solvents as detergents, the main one being PCE (perchloroethylene). These chemicals are volatile and entail high risks of site contamination (of the building, the soil and/or the groundwater). Furthermore, PCE presents risks for health and safety as it is a common cause of skin diseases and can also cause other severe illnesses. PCE is also thought to cause cancer. Emissions to air can present risks to neighbours. Waste and residues from the dry cleaning process are hazardous and have to be treated appropriately.
- **Volatile substances may be emitted to air.**
PCE and other highly volatile solvents may be a nuisance and a health risk to neighbors in built-up areas. These emissions may also contribute to summer smog.

Forestry

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Forestry

Medium Risk Sector



Planting of forests and logging activities.
For further wood processing refer to the related 'Wood Products' sector.

Related Sectors:

- Wood Products
- Crops and Gardening
- Pulp and Paper



Production Processes

Forestry relates primarily to the logging of trees in forest areas and plantations. Tree trunks and branches are cut in order to use the timber directly or to market it as a raw material for further processing. There are two main methods of logging: Clear cutting and selective cutting. The most common in commercial operations is clear cutting, a practice that removes essentially all trees in a selected area.

- **Clear cutting:** The most common method in commercial operations. All trees are removed in a selected area.
- **Selective cutting:** Only the largest, most commercially viable trees are cut, leaving younger trees and non-commercial trees to continue to grow. The harvesting of trees is mostly accomplished mechanically by large felling machines and chain saws. The logs usually are stored for a short time at a collection point, from where they are transported onward for further manufacturing.

Most conventional logging results in either pulpwood for the manufacture of paper products or saw logs for further wood production. A significant percentage of wood is used as firewood or for charcoal production and, today, a very large and growing volume of logging output is used in chipwood production.

Sustainability Issues

| | |
|--|---------------------------|
| | Energy |
| | Water Use |
| | Emissions to Water |
| | Waste |
| | Emissions to Air |
| | Ecosystems |
| | Workplace Health & Safety |
| | Disaster Risk |
| | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Logging activities may have irreversible impacts on ecosystems.**
Clearcutting forests exposes soil to erosion and increases the risk of floods and landslides. Fertile topsoil may be carried away, making reforestation or agricultural use impossible. Deforestation of large areas entail a risk for regional biodiversity.
- **Logging equipment (saws, axes etc.) and moving timber entails significant health and safety risks.**
The main health and safety risks lie in the use of logging equipment such as chainsaws, in falling timber and in handling timber for transport. Dust and noise may negatively affect the health of workers if no preventive measures are implemented.
- **Tree plantation in monocultures involves the use of large amounts of agrochemicals.**
While tree plantations avoid some of the negative effects of clearcuts (soil erosion, floods, landslides) monocultures still have a negative effect on soil fertility and biodiversity. Monocultures may require the application of large amounts of pesticides and fertilizer, which presents risks to man (workers) and the environment, particularly to water.
- **Reforestation may be a business opportunity.**
The Kyoto protocol - ratified by many countries - allows trading in CO2 absorption certificates. Reforestation is the practice of re-establishing a forest on a site that has recently been harvested or the reestablishment of a forest on a site that has been cleared for some period of time. Reforestation acts as a carbon reserve since it results in the build-up of carbon stocks in the newly established biomass.

Construction

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Construction

Medium Risk Sector



Construction or demolition of infrastructure, buildings and other installations.

Related Sectors:

- Cement and Concrete
- Wood Products
- Recycling and Waste Treatment



Production Processes

The construction sector provides services such as the construction, refurbishment and maintenance of buildings and infrastructure such as roads. Demolition and wrecking of buildings and infrastructure is also supplied by this sector.

Operations involved in construction activities:

- The construction site has to be cleared and prepared by groundwork such as excavation and land filling, leveling and land drainage. In addition to this, drilling operations, tunneling and shaft sinking may be necessary.
- The building of foundations and the construction of the building itself is conducted, which involves constructions made of wood, concrete, steel, bricks, etc. as well as external facings and cladding.
- Finishings such as electrical installations, painting, joinery and others are completed.
- Finally, the construction site is reinstated and its surroundings restored. Construction companies often operate large machinery fleets and may own reserves of building land.

Sustainability Issues

| | |
|--|---------------------------|
| | Energy |
| | Water Use |
| | Emissions to Water |
| | Waste |
| | Emissions to Air |
| | Ecosystems |
| | Workplace Health & Safety |
| | Disaster Risk |
| | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Construction sites are risky for workers where occupational health and safety are concerned.**
Construction entails significant risks to the health and safety of workers. Specific risks arise from underground construction, demolition (especially of industrial buildings and of constructions containing asbestos) and the use of heavy machinery. This requires special precautions and equipment.
- **Land contamination from previous industries is common in the construction sector.**
Building companies often possess various sites for future development. Those sites might be polluted from former industrial use. Liability for environmental damage and decontamination should be addressed between the contractor and the developer. Site remediation may present major technical problems with significant associated costs where sites are contaminated or incorporate major natural features such as rivers.
- **Construction sites cause dust emissions and air pollution from the use of machinery.**
Construction machinery often causes disproportionately high air pollution owing to low standards of prevention. Furthermore, significant dust emissions during construction or demolition activities may cause emissions to air.

Crops and Gardening

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Crops and Gardening

Medium Risk Sector



Growing and harvesting of crops, vegetables and fruit for the food and beverage sector. Includes tobacco, nurseries and floriculture. For processing of harvested goods refer to the related 'Food and Beverage' sector.

Related Sectors:

- Livestock Farming
- Forestry
- Food and Beverage



Production Processes

Crops and gardening refers to the growing of vegetables, fruits and crops. This sector includes the process of cultivating food, feed, fibers and other useful products that can be gained from plants.

The mechanization and modernization of farming – including fertilizers and irrigation – are the chief characteristics of today's agriculture, and have increased farm efficiency and productivity enormously. However, animals, including horses, mules, oxen, camels, etc. are still used to cultivate fields, harvest crops and transport farm products to market in many parts of the world.

As agricultural activities extend into drier areas, irrigation has become crucial. There are various types of irrigation techniques that differ in how the water is obtained from the source and how it is distributed across the field.

The three main techniques are water distribution via canals or ditches, overhead (sprinkler) irrigation and underground irrigation. In addition to dry areas, woodland is increasingly being transformed into fields and pastures. In some regions, tobacco is a key cash crop and an important subsector of agriculture. Tobacco fields are mainly harvested by hand. After the harvest, tobacco is dried either in the sun or in curing barns before it is fermented and sold to producers of cigars and cigarettes, or exported.

Sustainability Issues

| | |
|------|---------------------------|
| High | Energy |
| High | Water Use |
| High | Emissions to Water |
| Low | Waste |
| Low | Emissions to Air |
| High | Ecosystems |
| High | Workplace Health & Safety |
| Low | Disaster Risk |
| High | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- **Intensive crop-growing may put a strain on the local water supply.**
Crop-growing may require large amounts of fresh water for irrigation. A reliable supply of fresh water is essential for ensuring continuity of production. There may be potential for preventing shortages (i.e. storage tanks) and for addressing conflicts with other users of the same water resources. Inadequate irrigation may result in salinization of the ground.
- **The release of liquid effluents can lead to environmental pollution.**
Intensive crop-growing may use chemical fertilizers and pesticides, resulting in the contamination of rivers, lakes and groundwater. Conflicts with other users may result from water contamination. The application of pesticides must be handled carefully in order to mitigate risks to human health and the environment.
- **Monocultures impair soil quality and diminish biodiversity.**
Monocultures have a negative effect on soil fertility and require the application of large amounts of plant protective agents. By limiting the field size of a specific crop and planting a different crop each season (crop rotation) these effects can be mitigated.
- **Large-scale crop production may have a material impact on ecosystems, such as deforestation and desertification.**
Large forest areas or swampland may be cleared and drained for crop plantation. Deforestation results in erosion and changes the groundwater level. A groundwater level that is too low leads to the salinization of land, turning it into unproductive wasteland.
- **Production in greenhouses demands a great deal of energy for heating purposes.**
Crops produced in heated greenhouses require three to four times as much energy as conventionally grown crops.

Electronic Products

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet



Electronic Products

High Risk Sector



Manufacture of electrical equipment and machinery linked to electrical devices.

For manufacture of mechanical machinery refer to the related 'Metal Products and Machinery' or 'Precision Instruments' sectors.

Related Sectors:

- Iron, Steel and other Metals
- Metal Products and Machinery
- Precision Instruments



Production Processes

The main components produced and processed in the electronic industry are resistors, capacitors, transistors, integrated circuits, diodes and coils. Finished electronics goods may also contain electrical components, such as transformers.

Industrial processes involved in the manufacture of the basic electronic components include metal cutting, metal degreasing, welding, riveting, bolting, gluing, polishing, lacquering, filling of condensers and transformers, etc. A wide range of metals, plastics and chemicals serve as raw materials in the production of electronic elements.

To manufacture semiconductors, an ultra-clean, dust-free working environment has to be established. The production process starts with growing silicon crystals and making ingots, which are then sliced and cleaned. This is followed by photolithography or etching techniques to imprint a pattern on the silicon wafer. Chemical developers then remove unnecessary coatings. After etching, rinsing and drying of the boards, dopants are added to increase electrical conductivity. Now the wafer surface can be coated in thin layers of metal. A final layer of oxide seals the circuit. After extensive testing the chips are mounted on a metal frame and connected to strips.

Many firms in the electronics sector supply circuit boards as semi-manufactured products. Assembling electronic components such as resistors, semiconductors, etc. on the raw printed circuit boards may involve large amounts of manual labor or highly automated technology.

Typical finished goods supplied by the electronics industry are televisions, radios, computers, pocket calculators, communications equipment, etc. Most electrical devices, vehicles and any kind of industrial equipment contains electronic components.

Sustainability Issues

| | |
|-----------|---------------------------|
| High Risk | Energy |
| High Risk | Water Use |
| High Risk | Emissions to Water |
| High Risk | Waste |
| High Risk | Emissions to Air |
| Low Risk | Ecosystems |
| Low Risk | Workplace Health & Safety |
| Low Risk | Disaster Risk |
| High Risk | Site Contamination |

Sector Rating

| | |
|-----------|-------------------|
| High Risk | High risk issue |
| High Risk | Medium risk issue |
| Low Risk | Low risk issue |

Risks & Opportunities

- **Wastewater and liquid waste may contain toxic substances which present a risk to water quality.**
Potential water pollutants are: Solutions and sludges from electroplating (containing heavy metals, cyanides, fluorides, etc.), chlorinated solvents used for degreasing, PCBs, paint sludge, acids and alkalis, photochemicals.
- **A contamination of property presents a risk to its value, to human health and to the environment.**
Spills of liquids in production and disposal of liquid waste may contaminate buildings and the ground. This may present a risk to groundwater resources or to human health. Clean-up costs may be considerable. The market value of contaminated property may be impaired. Contaminations can be avoided by training of staff and technical measures.
- **The main risks to workers' health are: Noise, exposure to metal dust and fumes (e.g. from welding), heat and vapours from metal working fluids.**
Training, adequate process and workflow design as well as state-of-the-art protective equipment keep these risks to the health and lives of workers to a minimum level.
- **Part of waste will be recyclable (recoverable metals), part of it may be hazardous.**
Examples of (hazardous) waste that must be disposed of appropriately: Oil and grease, solvents and degreasing fluids, sludges from electroplating and wastewater treatment, insulating oil containing PCBs, dust from ventilation filters. Recycling and appropriate disposal of hazardous waste improve efficiency and minimize environmental impacts.

Low Risk Sector

ESAT Environmental and Social Assessment Tool

Sector Fact Sheet

Low Risk Sector

Low Risk Sector



All sectors that have no material impact on the environment and the society. Primarily services, consulting, training and education, trading, retail sales, etc.

Related Sectors:

- -



Production Processes

Business activities which entail no or low environmental and social risks.

Sustainability Issues

| | |
|--|---------------------------|
| | Energy |
| | Water Use |
| | Emissions to Water |
| | Waste |
| | Emissions to Air |
| | Ecosystems |
| | Workplace Health & Safety |
| | Disaster Risk |
| | Site Contamination |

Sector Rating

- High risk issue
- Medium risk issue
- Low risk issue

Risks & Opportunities

- A high energy bill may indicate potential for efficiency improvements and cost savings.
- The emission of polluted water to the environment may lead to conflict with other users and intervention by the authorities.
- Activities and substances that are on the IFC exclusion list entail a risk to reputation.
- Emissions to air may lead to intervention by neighbors and the authorities.
- Large amounts of waste and hazardous waste require appropriate disposal.