African Development Bank

Strategic Impact Assessment Guidelines

Final Report

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African Development Bank

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Final Report

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<th>Description</th>
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<tr>
<td>ADB</td>
<td>African Development Bank Group</td>
</tr>
<tr>
<td>EIA (EA)</td>
<td>Environmental Impact Assessment</td>
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<tr>
<td>EPA</td>
<td>Ethiopian Environmental Protection Agency</td>
</tr>
<tr>
<td>ERA</td>
<td>Ethiopian Roads Authority</td>
</tr>
<tr>
<td>FDRE</td>
<td>Federal Democratic Republic of Ethiopia</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>NEAP</td>
<td>National Environmental Action Plans</td>
</tr>
<tr>
<td>PBL</td>
<td>Project Based Lending</td>
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<tr>
<td>PPP</td>
<td>Policy, Plan and Program level</td>
</tr>
<tr>
<td>PSDU</td>
<td>Poverty Reduction and Sustainable Development unit (former: SDPRU)</td>
</tr>
<tr>
<td>RMC</td>
<td>Regional Member Countries</td>
</tr>
<tr>
<td>RROs</td>
<td>Regional State Rural Roads Organisation</td>
</tr>
<tr>
<td>RSDP</td>
<td>Road Sector Development Program</td>
</tr>
<tr>
<td>SIA</td>
<td>Strategic Impact Assessment</td>
</tr>
<tr>
<td>TOR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>UNECE</td>
<td>United Nations Economic Commission for Europe</td>
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</table>
ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

The Bank has made a systematic use of environmental impact assessment at the project level to ensure that Bank financed operations are environmentally sustainable since the release of the Bank Group’s Environment Policy Paper in 1990. Since 1996, also the social aspects carry a very important weight in project evaluation.

Project specific environmental and social assessments like EIAs and ESIA are less relevant when it comes to evaluating Policies, Programs and Plans.

As such the Bank is committed to introduce Strategic Impact Assessment (SIA) in order to assess Bank financed Policy-Based Lending. More specifically, SIA is of particular relevance for Structural Adjustment Programs, Sector Adjustment Programs as well as for Sector Investment and Rehabilitation lending.

SIA can be defined as “a systematic process for evaluating the environmental consequences of proposed policy, plan or program initiative in order to ensure they are fully included and appropriately addressed at the earliest stage of decision-making on a par with social and economic considerations”.

As such, SIA should be ex-ante applied at national, regional, local, transboundary and international levels, to assess strategic decisions at plan, program and policy level in key sectors with potentially significant effects such as transport, energy, agriculture, water management, irrigation, fisheries, forestry, waste management, health, education, tourism, industry, infrastructure, telecommunications, spatial planning or land use, trade, nature conservation and modern biotechnology.

The generic guidelines presented in this document, are aimed to guide RMCs applying for loans to assess environmental and social impacts at Policy, Program and Plan level. The guidelines offer a framework for assessment, discussion and cooperation between and amongst stakeholders such as RMCs, the Country Department Environmentalist/Social Expert, the Task Manager, PSDU and Civil Societal Organisations.

The roles and responsibilities of each of the stakeholders is described. In summary, the RMCs take ownership of the SIA. The guidelines offer, in annex, a step-by-step guide on how RMCs can present a SIA summary. It is the responsibility of the RMC to ensure public disclosure, early on in the process of the SIA, so that the Civil Society Organisations can also react in the earliest stages.

The Country Department Environmentalist/Social Expert have a number of tasks. Basically, they have to ensure that the environmental and social considerations are properly integrated in the Policy-based loans. The Bank’s PSDU has the responsibility to ensure that the Bank’s lending approvals
comply with the Bank’s vision, policies and guidelines, particularly those relating to cross-cutting issues. In addition, PSDU should also have a clearance role in the SIA screening process. Finally, the Task Manager engages in the policy dialogue on environmental and social issues with the RMCs in shared responsibility with the Country Department Environmentalist/Social expert.

Screening of whether an SIA is needed is carried out by means of clear criteria. In addition, one could conceive the option as to issue general requirements that make SIA compulsory for all PPPs. Exceptions are envisaged for cases of emergency like relief operations, matters of urgencies and for those PPPs where other donors or RMCs have previously and recently addressed the issues in an adequate way.

The actual SIA process is described. The eight steps of the process are presented in Annex, together with an illustration of how it was applied to the case study of the Ethiopia Road Sector Development Programme.

In the case that trans-boundary effects are expected, the SIA team will need to consist of experts from all countries involved and be organized before any strategic decision on how to proceed with the SIA is adopted.

How to move forward? The SIA guidelines as described here have been kept generic. It is important to note that as such the guidelines presented here provide general, rather than detailed instructions for assessing impacts, required baseline data and stakeholder consultation.

In a next phase it might be useful, starting from these generic guidelines and recommendations, to develop SIA checklists that are tailored as to address the specific SIA issues for all sectoral fields, which are judged as being strategic by the Bank.
3 INTRODUCTION

3.1 BACKGROUND

Environmental Resources Management (ERM) was commissioned in April 2002 by the Poverty Reduction and Sustainable development Unit (PSDU) within the African Development Bank Group (ADB) to develop guidelines for Strategic Impact Assessment (SIA).

SIA can be defined as “a systematic process for evaluating the environmental consequences of proposed policy, plan or program initiative in order to ensure they are fully included and appropriately addressed at the earliest stage of decision-making on a par with social and economic considerations”.

3.2 DIFFERENCE BETWEEN SIA AND EIA

The Bank has made a systematic use of environmental impact assessment (EIA) at the project level to ensure that Bank financed operations are environmentally sustainable since the release of the Bank Group’s Environment Policy Paper in 1990. Since 1996, also the social aspects carry a very important weight in project evaluation.

However, project-specific EA (or EIA’s) are not relevant instruments for addressing impacts at the Policy, Plan and Program level (PPP) for a number of reasons1:

- EIA operates as a ‘stand alone’ process and is poorly related to the project cycle;
- EIA is unable to address cumulative impacts;
- EIA is used reactively to assess specific development proposals at a high level of detail;
- EIA is focussed on the mitigation of impacts rather than on maintaining a chosen level of environmental quality.

The Bank is committed to introduce SIA as an assessment tool of the social and environmental sustainability of its policy based lending, structural adjustment and sectoral investment lending.

1 CSIR 1996
SIA has been used extensively for the past decade in the USA, Canada, Australia, New Zealand and a number of European countries. But recently SIA was also introduced in a number of African countries. Examples are Ethiopia and South-Africa. SIA approaches have also been introduced by multilateral and bilateral donor agencies and by other international development organisations. As such, interest from African countries to introduce SIA for domestic applications is growing.

Figure 1 presents the hierarchical order in the development of Policies, Plans, Programmes and Projects with its correlation to the instruments used in environmental and social assessment and management.

Sector specific SIA can function as an umbrella under which EIAs, both the Environmental and Social Impact Assessment (ESIA) and the Environmental and Social Management Plan (ESMP) as well as Environmental and Social Audits can be framed.

Once a sector specific SIA developed, it could very well speed up the Environmental and Social Assessment Procedures (ESAP) requested for project preparation. Not only to define the lines along which ESIA and ESMPs need to be drafted, but also, and equally important to better assess under which environmental and social category a specific project should resort.

The SIA should also provide a more solid ground on the basis of which one decides whether or not ESAP action is required.
**Figure 1**  
*SIA, EIA, EMP and their relation to the Development Hierarchy*
3.3 **Objective**

The overall objective of the study is to develop generic guidelines for the application of SIA in assessing Bank financed Policy-Based Lending. More specifically, SIA is of particular relevance for Structural Adjustment Programs and Sector Adjustment Programs as well as for Sector Investment and Rehabilitation lending.

The generic guidelines are aimed to guide proponent RMC (Regional Member Countries) governments applying for loans to assess environmental and social impacts at policy, program and plan level. The guidelines offer a framework for assessment, discussion and cooperation between and amongst stakeholders such as RMCs, the Country Department Environmentalist/Social Expert, the Task Manager, PSDU and Civil Societal Organisations. They are also set up as to provide consultants with a reference when assisting either the ADB or the RMC’s.
3.4 **SCOPE OF WORK**

In order to develop SIA guidelines and on ADB’s request, ERM undertook the following tasks:

**Task 1**  
A review and assessment of the general literature and practices on SIA’s among the various RMC’s and major international donor countries. Current SIA practice in African countries where they exist, were also reviewed.

**Task 2**  
A review of the Bank’s recent past operations dealing with policy – sectoral or structural – based loans and the extent to which environmental and social impacts were addressed. Key constraints that have prevented the use of SIA type of techniques in Bank’s operations were identified.

**Task 3**  
Preparation of draft generic SIA guidelines including summaries of several case examples from other institutions. Review of the document by Bank staff.

**Task 4**  
Incorporation of the experience gained in Task 3 and revision of the guidelines. Release of the final version.

A report containing outcomes from Tasks 1 and 2 has been submitted separately (refer to ERM (2002) Strategic impact assessment: A Review).

Task 3 resulted in the presentation of a first draft on ‘Strategic impact assessment Guidelines’ presented to the Bank Staff on September 10th, 2002. Dr. Buydens of ERM gave a Power Point presentation of the first findings. During his mission at the ADB Headquarters, September 10th – September 16th, 2002. he had the opportunity to exchange thoughts and welcomed suggestions from various Bank Staff on adjusting the document. The findings of these discussions are summarized in an additional document.

Task 4 was elaborated after feedback from Bank Staff. A final draft report was subsequently submitted. Dr. Buydens presented this final draft in Tunis during a mission to ADB’s temporary Headquarters, September 22nd - 26th, 2003.

From the feedback received during the Power Point Presentation on September 23rd and from the comments made during the one-on-one discussions, the current report is presented, containing the final version of the generic SIA guidelines.
3.5 **STRUCTURE OF THE REPORT**

The structure of the report is as follows:

- **Chapter 2** provides the background of the SIA guidelines, it also elaborates on the objectives and scope of work.

- **Chapter 3** describes the purpose and limitations of the guidelines;

- **Chapter 4** defines roles and responsibilities with respect to undertaking an SIA;

- **Chapter 5** describes the process for deciding whether or not an SIA should be carried out for a proposed PPP;

- **Chapter 6** describes the actual SIA process consisting of 8 steps;

- **Chapter 7** illustrates the requirements for assessing PPP resulting in transboundary effects;

- **Chapter 8** gives some suggestions on the implementation process; and

- **Chapter 9** provides recommendations for the successful integration of SIA into the Bank’s procedures.

Four annexes aim to clarify and to illustrate the SIA procedure.

**Annex A** provides a user-friendly approach, consisting of a form to be filled out by the RMC enabling thus to ensure that all steps have been addressed in the SIA by briefly documenting the outcomes. Where the screening or scoping process concludes there is no need for a full SIA to be carried out, the form allows this decision to be documented, justified and filed for accountability/transparency purposes.

**Annex B** provides a list of environmental and social factors to be considered when undertaking a SIA, along with data collection requirements.

**Annex C** describes the 8 steps in the SIA procedure

**Annex D** illustrates the 8-step process by means of a case study. The case study consists of a SIA for road sector development in Ethiopia.
ABOUT THE GUIDELINES

4.1 PURPOSE OF THE GUIDELINES

The guidelines for SIA are intended to assist the RMC governments when applying for loans in identifying social and environmental implications at an early stage of Policy, Plan or Program formulation so that those can be reformulated (if required) taking full account of social and environmental sustainability objectives as well as constraints and challenges.

The guidelines should facilitate the dialogue between all stakeholders, such as the Country Department Environmentalist/Social Expert, the Bank’s Task Managers, the PSDU and the Civil Society Organisations. The role and responsibilities of each of the stakeholders is presented further.

4.2 LIMITATIONS OF THE GUIDELINES

There is a wide range of strategic actions for which SIA is likely to be appropriate, and a wide range of contexts in which these strategic actions might be formulated and determined. An inescapable conclusion of this diversity in PPP’s is that no single SIA methodology will be apt to be applied uniformly to these different tasks. SIA methodologies need to be adaptive to the existence of different agendas, actors, discourses, knowledge requirements and bargaining styles within different policy-making sectors.

In accordance with these findings and with the Terms of Reference, the SIA guidelines as described here have been kept generic. It is important to note that as such the guidelines presented here provide general, rather than detailed instructions for assessing impacts, required baseline data and stakeholder consultation.

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ROLES AND RESPONSIBILITIES

These guidelines have been developed to cater to a number of players in the SIA process:

- To assist RMC’s to carry out SIA as part of their decision-making process with respect to the development of PPP’s for which they require ADB lending. As part of applying for policy based lending, structural and sectoral adjustment loans, RMC’s are expected to demonstrate to the ADB that environmental and social issues have been taken into consideration in the decision-making process and that the PPP aims at achieving sustainable development goals; and

- To assist Bank’s Country Department Environmentalist/Social Experts in evaluating the quality of SIA’s submitted by the RMC’s to the Bank. Dialogue between the Bank, the initiating RMC government and civil society is essential during the SIA preparation process.

- To provide consultants with a “how-to” tool when assisting either the RMC carrying out SIA or when assisting Bank staff in evaluating the quality of a submitted SIA.

- To serve as a guideline to the PSDU department when assisting Country Department Environmentalist/Social Experts in their evaluation of the SIA report and PPP implementation.

- To facilitate Civil Society Organisations in their role as public participator.

In the following paragraphs, those roles and responsibilities are a bit expanded on.

What is proposed below is kept in accordance with the environmental and social assessment procedures for public sector operations of the ADB3:

3 ADB, 2001
5.1 **THE BORROWER OR RMC:**

when applying for policy based loans, structural or sectoral adjustment loans with the Bank, the Borrower is responsible for demonstrating to the Bank that environmental and social considerations are part of the PPP development process to the Bank’s satisfaction, or for showing willingness to incorporate these considerations into PPPs proposed for funding. Depending on whether the SIA procedures will become mandatory or not, the Borrower is required, or otherwise will be encouraged, to undertake SIA according to the Bank’s requirements.

In summary, the Borrower’s responsibilities include:

- Providing baseline environmental and social information to facilitate the screening process by the Country Department Environmentalist/Social Experts;
- Preparing TOR for SIA studies with appropriate consultations, unless Country Department Environmentalist/Social Experts decide to do so;
- Retaining independent environmental and social expertise to prepare SIA;
- Conducting meaningful consultations and ensure follow-up during all SIA steps;
- Approving SIA studies prior to appraisal and Bank Review;
- Finalising SIA Report;
- Preparing the SIA summary *(see Annex A)*;
- Ensuring compliance up to the monitoring program during PPP implementation;
- Continuing to consult with relevant stakeholders throughout PPP implementation;
- Reporting to Country Department Environmentalist/Social Experts on impact monitoring and ongoing consultation; and
- Proposing changes to the PPP and monitoring program whenever non-compliance to agreed requirements or unexpected impacts are noted.

**Remark:** a number of RMC may still face institutional weaknesses when it comes to implementation or clearance of the SIA. In such instances the Country Department Environmentalist/Social Expert will need to be more
closely involved in assisting the RMC when carrying out its above mentioned roles.

5.2 **THE COUNTRY DEPARTMENT ENVIRONMENTALIST/SOCIAL EXPERT:**

the Country Department Environmentalist/Social Expert’s responsibility is to ensure that environmental and social considerations are integrated into policy based loans, structural and sectoral adjustment programs and plans. To that end, the Country Department Environmentalist/Social Expert can rely on the SIA process, which should be integrated in the normal activities, carried out along the PPP decision-making and implementation cycle.

The Country Department Environmentalist/Social Expert’s responsibilities include:

- Carrying out pre-approval and compliance audits.
- Integrating relevant environmental and social data in Project brief;
- Carrying out or assisting the Borrower in screening the necessity for SIA related to applications for lending;
- Preparing or assisting the Borrower in preparing the TOR for SIA studies;
- Requesting bilateral funding for SIA studies as necessary;
- Reviewing and commenting on SIA studies prior to the appraisal mission;
- Reviewing the final SIA report;
- Integrating environmental and social information from the SIA report into Appraisal Reports;
- Addressing inquiries and document communications between the Bank and the public;
- Preparing environmental and social loan conditions and covenants;
- Ensuring that the SIA and monitoring programs are incorporated in loan agreements;
- Supervising the implementation of the monitoring and management plans; and
- Consulting with primary and secondary stakeholders during supervision.
5.3 **TASK MANAGER:**

Whereas the Country Department Environmentalist/Social Expert is responsible for the practical aspects of SIA implementation, it is the Task Manager’s responsibility to use the results of the SIA as one of the tools for negotiating the loan agreement between the Bank and the Borrower.

The Task Managers have the authority and the mandate to:

- Propose lending instruments to the Board that respond to the Bank’s vision; and
- To engage in the policy dialogue on environmental and social issues with the RMCs in shared responsibility with the Country Department Environmentalist/Social expert.

5.4 **PSDU:**

The PSDU has the responsibility to ensure that the Bank’s lending approvals comply with the Bank’s vision, policies and guidelines, particularly those relating to cross-cutting issues.

In addition to the list below, PSDU should also have a clearance role for SIA screening (decision whether an SIA is required or not).

PSDU’s responsibilities include:

- A first role is to assist the Country Department Environmentalist/Social Experts in fulfilling their requirements under the SIA guidelines;
- Lending environmental and social expertise for missions and audits and providing peer-level advice on SIA studies.
- Assisting Task Managers in the policy dialogue on environmental and social issues with RMCs;
- Providing technical advice and assistance to Country Department Environmentalist/Social Experts on environmental and social matters throughout the different phases of the PPP cycle;
- Clearing the SIA screening process;
• Supporting Country Department Environmentalist/Social Experts for missions requiring environmental and social expertise at any phase of the PPP cycle, upon request;

• Reviewing and commenting on SIA studies upon Country Department Environmentalist/Social Expert’s request;

• Clearing the SIA summary (Annex A); and

• Supporting the Country Department Environmentalist/Social Expert to carry out pre-approval and compliance audits, upon request.

5.5 CIVIL SOCIETY ORGANISATIONS:

Public participation is encouraged by general Bank policies. Stakeholder concerns are a key consideration for any environmental assessment. Making preliminary information available often facilitates public understanding of the ramifications of the proposed initiative and leads to more constructive input.

Although confidentiality of some aspects of policy development may preclude full public consultation, any effort to understand stakeholder concerns will improve the quality and credibility of the SIA and the policy itself.

Before making any decisions on the scope of the strategic impact assessment, the public should be able to provide comments. The decision on the scope should reflect how these comments have been taken into account.

It is the responsibility of the RMC to ensure public disclosure, early on in the process of the SIA, so that the Civil Society Organisations can also react, preferably ex-ante.
SCREENING

An initial step in any SIA is to undertake screening in order to evaluate whether an SIA is needed. Screening is typically carried out by means of clear criteria. In addition, one could conceive the option as to issue general requirements that make SIA compulsory for all PPPs. The screening will be carried out by the Country Department Environmentalist/Social Expert, as indicated in Chapter 4. However, to this extent the RMC’s need to provide the baseline environmental and social information to facilitate the screening process.

As such, SIA should be applied at national, regional, local, trans-boundary and international levels, to assess strategic decisions at plan, program and policy, regulatory level in key sectors with potentially significant effects such as transport, energy, agriculture, water management, irrigation, fisheries, forestry, waste management, health, education, tourism, industry, infrastructure, telecommunications, spatial planning or land use, trade, nature conservation and modern biotechnology.

Traditionally, the ultimate screening criterion for project EIAs is the potential for a significantly negative environmental impact. In view of the purpose of SIA to promote sustainable development, it is proposed to broaden the screening criterion to include ‘significant positive environmental effects’ and ‘the potential to promote sustainable development’\(^\text{4}\). The screening process can be illustrated as presented in Figure 2\(^\text{5}\).

\(^4\) Balfors and Schmidtbauer, 2002.

\(^5\) Adapted from Environment Canada, 2000.
The ADB requires that an SIA be completed when…

A proposal for Lending is submitted to the Bank for approval

AND

The implementation of the proposal may
1. Result in important environmental effects, whether positive or negative
2. Have a potential for promoting sustainable development

IF YES

IF NO → NO SIA required

Has the proposal been submitted in the case of
- an emergency
- a matter of urgency and/or
has the issue been previously adequately assessed in an adequate way?

IF YES

IF NO

SIA is NOT required

SIA is required

Figure 2  Screening process to decide on SIA
Box 1 illustrates a simple ‘pre-screening’ check for SIA to establish the proposals that are of concern.

**Box 1: A pre-screening procedure for determining SIA requirements**

<table>
<thead>
<tr>
<th>The following questions can be used to make a quick judgement about SIA requirements:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is the actual content of the PPP?</strong></td>
</tr>
<tr>
<td>- Is it concerned only or primarily with broad general direction(s)?; or</td>
</tr>
<tr>
<td>- Does it address or specifically include operational measures (projects, activities, etc.)?</td>
</tr>
<tr>
<td><strong>What policy area or sector is targeted?</strong></td>
</tr>
<tr>
<td>- Is it one known to have or likely to cause immediate environmental/social effects and/or</td>
</tr>
<tr>
<td>- Are there components which are likely to have cumulative or long-term consequences for the environment/social aspects?</td>
</tr>
<tr>
<td><strong>What environmental and social considerations are raised in the pre-feasibility phase? Does it appear likely to:</strong></td>
</tr>
<tr>
<td>- Initiate actions that will have direct or evident environmental/social impacts?;</td>
</tr>
<tr>
<td>- Raise broad environmental or social implications and/or issues that should be addressed?; or</td>
</tr>
<tr>
<td>- Have marginal or no environmental/social consequences?</td>
</tr>
</tbody>
</table>

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*6 Based on Sadler and Verheem, 1996*
The decision to subject or to exempt a strategic decision from strategic impact assessment should take into account comments by the public and by environmental and health authorities. Those should already be formulated in the proposal.

The decision, together with the reasons and the considerations on which it is based and how the comments from the public and experts have been taken into account, should be published and made publicly available.
THE SIA PROCEDURE

The proposed steps for undertaking a SIA were based on own experience and a compilation from literature review 7. The proposed SIA process consists of 8 steps, which have been illustrated in Figure 3. The detailed description for each one of the eight steps is outlined in Annex C.

The SIA team will consist of an independent environmental and social expert task force, retained by the RMC and agreed by the Country Department Environmentalist/Social Expert. The RMC will conduct consultations and ensure follow-up during all SIA steps. The Country Department Environmentalist/Social Expert evaluates all intermediate and final reports, assisted by the PSDU.

Furthermore, the RMC will approve SIA studies prior to appraisal and Bank Review. It will finalise the SIA Report and prepare the SIA summary (see Annex A) for review by the Country Department Environmentalist/Social Expert, with clearance by the PSDU.

Once the Report is finished, the work starts and it is the responsibility of the RMC to ensure compliance. The RMC is also responsible for the monitoring program during execution of the PPP. To this extent, the RMC will continue to consult with the relevant stakeholders.

Time frames and budgets required to complete a SIA vary widely, but if done well, the SIA can prevent future environmental and social issues and expenditure. The key is to tailor the environmental and social assessment to the particular policy, plan or program proposal, the timing and detail required will depend on its nature and scale.

All the steps must be completed, but the attention given to each step and the degree of detail required can vary considerably according to the type of application, external conditions and working modalities. While some steps may require much attention, others might be worked out rapidly on the basis of existing studies and knowledge. As SIA is a cyclical and iterative process, steps can be combined or repeated at different stages and at different levels of details.

Annex A provides a form to be filled out by the RMC as to ensure that all steps have been addressed in the SIA by briefly documenting the outcomes (referred to as SIA summary). Where the screening process (also carried out by the RMC) concludes there is no need for a full SIA to be carried out, the

form allows this decision to be documented, justified and filed for accountability/transparency purposes. The PSDU department clears the SIA summary, after prior evaluation by the Country Department Environmentalist/Social Expert.

More information on how to conduct each step is provided in Annex C.

A case study, detailing the eight steps of the SIA process, has been appended in Annex D. The case study consists of the SIA carried out on behalf of the Ethiopian Road Authority for its Road Sector Development Program for the period 1997-2007 8.

8 Plancenter, 1997
**Figure 3**  
*The Eight Steps of the SIA Procedure*

1. **STEP I**  
   Scoping

2. **STEP II**  
   Identify possible options for the PPP

3. **STEP III**  
   Establish standards, thresholds and sustainability criteria

4. **STEP IV**  
   Identify the likely effects of each viable option

5. **STEP V**  
   Determine what can be done to mitigate negative effects and enhance positive effects as well as integrating residual impacts

6. **STEP VI**  
   Develop an institutional strengthening plan to improve environmental and social management

7. **STEP VII**  
   Present the results of the analysis

   - Abandon or modify proposal
   - Proceed with PPP

8. **STEP VIII**  
   Monitor results
**SIA REPORT**

Before submitting the SIA report with its statements and recommendations to the Bank’s Board of Directors for final decision on whether or not to fund the PPP and the conditions under which funding would be granted, the SIA shall be reviewed by the Country Department Environmentalist/Social Expert with the assistance of the PSDU and possibly a (limited) team of external experts.

The elements listed in Box 2 specify the headings of an SIA report.

A practical tool on how to prepare an SIA is offered in the step-by-step guide in Annex 1. The tool aims to provide a user-friendly approach on completing the SIA report. Linked to this guide, an exhaustive list of the environmental and social parameters together with the relevant data requirements can be found in Annex 2.
Box 2: Elements of a typical SIA report

The information in the Strategic impact assessment report should:

a) Contain information on the content and the main objectives of the strategic decision drafted and its link with other documents;

b) Identify, analyse and assess the environmental protection and social objectives and those of the sustainable development strategy established at international, national, regional and local levels which are relevant to the SIA report. Also discuss the ways in which these objectives and other environmental considerations have been taken into account during the preparation of the SIA report;

c) Includes reactions, suggestions and objections from stakeholders;

d) Present an overview of the data requirements, quality and data gaps.

e) Identify, analyse and assess the state of the environment and social conditions likely to be significantly affected;

f) Identify, analyse and assess the likely significant effects on the environment and social aspects including cumulative and indirect effects;

g) Contain information on any likely trans-boundary effect on the environment;

h) Identify, analyse and assess the current state of the environment and social aspects and the likely evolution of this state should the provisions of the SIA report not be implemented; identify, analyse and assess measures to prevent, reduce, mitigate or compensate any adverse effects on the environment which may result from the implementation of the strategic decisions;

i) Discuss the residual effects remaining after mitigation;

j) Present relevant alternatives, including the status-quo option, to those contained in the proposed strategic decision, along with a justification for their choice;

k) Contain information on the methods envisaged for monitoring the implementation of the SIA report drafted;

l) Contain recommendations for institutional strengthening; and

m) Include an Executive Summary in non-technical language.
PPP'S WITH THE POTENTIAL FOR TRANSBOUNDARY EFFECTS

In case trans-boundary effects are expected, the SIA team will need to consider consultations of the government and public of the affected country.

As a matter of fact, it would be advisable to look at a regional team of experts, fulfilling the role as ascribed to the Country Department Environmentalist/Social Expert.

Examples of trans-boundary effects are paramount. Some PPPs can affect the regime and quality of water bodies shared by countries down or upstream. Other PPPs can have an impact on the management of wild parks encompassing neighbouring territories. The development of a harbour zone might aggravate the coastal erosion in an adjacent country. Negative health effects implicating the spreading of malaria or HIV don’t stop at the border.

The following process is recommended (to be embedded in the eight-step approach):

- The country of origin shall notify the affected country before the decision on how to proceed with the PPP is adopted or finalised by providing information on the proposed strategic decision, including information on its trans-boundary effects, as well as information regarding the decision-making procedure and an indication of the time schedule;

- The country of origin shall provide an opportunity to the environmental and health authorities and the public concerned of the affected country to participate in relevant decision-making procedures. The opportunity to participate should be equivalent to that provided to the environmental and health authorities and the public concerned of the country of origin;

- The country of origin shall ensure that strategic decisions with trans-boundary effects are guided by and take due account of the conclusions of the strategic impact assessment documentation and the comments received from the affected country;

- Provisions should be made in the SIA to deal with the harmonisation of the environmental and social assessment procedures in the affected countries. This could also extend to policies and regulations in the sector; and

- Provisions in the SIA process should be available for the affected country to challenge the decision before a court of law and/or other impartial body, in particular in relation to internationally established objectives of sustainability and of environmental and health protection.
IMPLEMENTATION

The current guidelines are generic and general in nature. How to move forward? The current generic guidelines are aimed to guide the RMC, the Bank’s Country Department Environmentalist/Social Expert, the Task Managers as well as the Civil Society Organisations in channelling the process of assessing environmental and social impacts at policy, program and plan level. They are also aimed at providing a framework for consultants assisting either ADB or RMC’s.

A next useful step, would be to develop, starting from these generic guidelines and recommendations, more detailed criteria and tailored checklists to address the specific SIA issues in the sectoral fields such as Agriculture, Infrastructure, Transport, Health, Education, Land development, Irrigation, Industry, Energy, Water Management, Fisheries, Forestry, Waste Management, Tourism, Telecommunications, Health and Education, Spatial Planning or Land use, Trade, Nature Conservation and Modern Biotechnology.

One could envisage to finish this exercise over a period of two to three years.

The sector-tailored SIA would ideally constitute the umbrella under which ESAPs are carried out. As a matter of fact, all four environmental and social categories of projects could then be evaluated in the light of a sector specific SIA. If a comprehensive sector-tailored SIA is undertaken, this could actually reduce the time required to undertake the ESAP process for projects from the same sector.
RECOMMENDATIONS

The following recommendations could assist the ADB in successfully integrating SIA into strategic decision-making relating to funding applications for policy, plan and program development in its RMCs.

1. SIA should be promoted as a means of changing attitudes and culture within the ADB organisation and the RCMs governments.

2. Effort should be concentrated on establishing appropriate communication processes and participation with all stakeholders.

3. Even if an SIA is only partially carried out due to lack of baseline data or skills, it provides a useful starting point for subsequent development into a more extensive and integrated SIA.

4. Auditing, monitoring and quality control should be an integral component of any SIA process.

Since the PPP process is often cyclical, feedback from the SIA to and throughout the policy process is essential if integration is to be made effective. The consequences of strategic decisions can have long-term implications at all subsequent lower levels of decision-making. In addition, parallel scientific evaluation of the SIA can support the development of best practice models and methodologies adapted to local conditions. Resources will need to be allocated for these purposes and some form of independent body is recommended (eg. an audit committee).

5. Good SIA needs transparent and participatory processes and decisions.

The development and application of appropriate methods of engaging stakeholders and the public at strategic levels can be difficult, but nonetheless essential. Particular effort is required to identify the ‘affected public’. NGOs may be able to act as a proxy for the wider public, but it should not be assumed they can in all cases. It may be necessary to establish an organised and/or qualified public for the purpose. As a minimum requirement, consultation should take place during scoping and review of the SIA report before any decisions are made. Transparency requires decisions to be explained, e.g. as to how the SIA informed the decision.

6. Stakeholders and the public should be encouraged to think as strategically as possible, to help avoid the ‘hijacking’ of the SIA by more parochial views.

Many stakeholders may be more interested in the detail of implementation on the ground (i.e. subsequent lower level decisions in the form of projects and site-specific details). This can force the SIA process to attempt to address solutions rather than problems and at a level of detail that is inappropriate for a truly strategic consideration of options.
7. There should be a named, senior individual responsible for the coordination and delivery of any SIA and also a named individual responsible for the communication of any SIA process.

It is important to provide leadership and strategic perspective on the whole process. Communication may be focused on another individual, but a single contact point is essential. An open and transparent process can help create new networks and enable effective communication between parties and individuals. The use of the Internet and web pages should become standard practice for disseminating information relating to the SIA.

8. Emphasis should be placed on building the right team of experts to assist both the RMC in drafting the SIA and to assist the Bank in evaluating the SIA.

Having social, economic, health impact, and public participation professionals in a team, as well as environmental experts, becomes particularly important in sustainability appraisals. Encouraging interdisciplinary working can be a challenge in itself.

9. Great effort is needed to improve the quality of baseline information against which policies, plans and programs can be assessed.

This can be achieved, for example, through the development of indicators and the production of State of the Environment reports at all levels – national, regional and local, and through developing improved consistency in data collection and GIS systems. Lack of data consistency can be particularly problematic in the case of trans-boundary effects. GIS can aid strategic thinking and so help avoid the diversion of the SIA to less strategic levels.

10. Lessons should be learned from the implementation of the SIA guidelines at plan and program level for wider application to policies.

International experience has shown that application of SIA at the plan and program level is relatively easier than its application at the policy level. It is therefore important to focus the learning process on plans and programs first, before taking SIA to the higher, more strategic level.

11. Guidance and training is essential to take forward SIA.

The development of SIA guidelines alone is not enough to take SIA forward. If Bank Staff doesn’t have the capability and confidence to undertake SIA, it will not be motivated to do so. Guidance and training is essential, but will require sufficient allocation of resources, in staff and financial terms.

12. Institutional strengthening is required.

Implementing the SIA will entail for the Bank reflecting on how to structure itself in order to most effectively implement SIA on all PPP. With even more urgency, the same gap analysis will need to be carried out by the RMCs.
11 REFERENCES


AID Environment (1999) A presentation of Strategic Environmental Analysis (SIAN) and the SIAN toolbox.


ANNEX A:

Step by Step Guide on SIA Summary
A Step-by-Step Guide on

The Strategic Impact Assessment Summary for Policy, Plan and Program Proposals

As stated before, this SIA summary will be filled out by the RMC and evaluated by the Country Department Environmentalist/Social Expert. Final clearance could then be given by the PSDU.

The Step-by-Step guide provides a user-friendly approach, consisting of a form to be filled out, ensuring the RMC that all steps have been addressed in the SIA. All outcomes will be briefly documented. In the case where the screening process concluded that there was no need for a full SIA to be carried out, this same form also allows such decision to be documented, justified and filed for transparency and accountability purposes.

File Number: Security:

Contact Name:

Phone Number: Fax Number:

E-mail address:

Proposal

Projected Submission Date of Proposal:

Include a descriptive title and/or a short note to identify the proposal being assessed. Note that the contents of the SIA should be assigned the same level of security as the document it is being developed for. Attach additional information/material as required throughout.

1. Preliminary Environmental Implications Checklist

1.1 Type of PPP initiative: ____________________________

The 2001 Environmental and Social Assessment Procedures Public Sector Operations of the African Development Bank directs that if a proposal is to be considered by the Bank, environmental considerations have to be integrated into decision-making processes.

PPP proposals to be considered by Bank Task Managers will be assessed for environmental implications where they are considered to warrant an environmental assessment. Following the SIA report, the RMC could prepare the SIA summary as follows. The SIA summary will subsequently be reviewed by the Country

9 based on DFAIT, 2002
Department Environmentalist/Social Expert and cleared by the PSDU. Next, it shall be submitted by the Task Manager to the Secretary General for circulation to the Board of Directors.

Where relevant, submissions to the Board of Directors should have a paragraph indicating that:

i. Environmental considerations have been taken into account;

ii. Reference to where these considerations are documented;

iii. With appropriate mitigation techniques there are no significant environmental impacts or that the 'environmental impacts can be justified;

iv. If required, that further assessments have been (or will be) completed.

1.2 Can the proposal be exempted from SIA requirements for one of the following reasons? If so, please indicate the appropriate reason and provide a brief explanation in the space provided. Sign and retain the completed form on file and no further assessment is required. Otherwise, proceed to question 1.3

________ Response to a clear and immediate emergency (e.g. disaster relief)

________ The proposal has been assessed previously

________ The proposal is a matter of routine administrative, human resource, or financial procedure: there are no significant environmental implications

The purpose of this question is to establish whether the proposal can be excluded from the requirements of a SIA. If the proposal can be excluded from the requirements of an assessment for any of the above reasons, sign, date and retain the checklist on file for accountability purposes. No further action is required unless deemed appropriate based on the guidelines below.

If the proposal is to address a clear and immediate emergency, the immediate concerns of the proposal come first. At the latter stages of the proposal's implementation, environmental factors should be considered. The completion of an environmental assessment after the fact creates a valuable 'lessons learned' file for similar initiatives in the future.

If an assessment has already been completed there is no reason to repeat the work. Sometimes an existing assessment will have specifically covered the policy or program under consideration, while at other times an existing assessment may have only covered related issues, but can still be used as a reference. Likely sources for information include assessments completed by the World Bank or United Nations
staff or assessments completed by another country for a similar proposal. In case there is another assessment, the appropriate action would be to:

- obtain a copy of the assessment;
- review the assessment for relevancy, completeness and quality (if not complete or of poor quality it should be improved); and
- summarise the appropriate findings within the analysis documentation.

1.3 Is it likely that any of the options presented in the proposal will lead to significant environmental impacts, either positive or negative, or will provide an opportunity for promoting sustainable development?

Yes ___ No ___ Uncertain ___

In the event that the proposal cannot be excluded for one of the reasons listed in 1.2, but the proposal will clearly not have any significant environmental implications, this can be noted to conclude the requirement for further action. If the proposal clearly will not lead to significant environmental impacts, sign, date and retain the checklist on file for accountability purposes and no further action is required. Refer to the information in 2.3 for guidance on establishing significance.

If there is uncertainty or risk associated with the outcome, then a more detailed analysis of the environmental impacts is recommended, and Part 2 of the form should be completed. The following questions are intended to assist RMCs and Task Country Department Environmentalist/Social Experts in determining whether the proposal will have environmental impacts:

- What are the intended outcomes of the proposal?
- Does the proposal have an outcome that could affect the supply, use, or management of natural resources or the health or quality of ecosystems?
- Will implementation of the proposal involve the release of a significant amount of waste to the air, land, and/or marine environment?
- Does the proposal have an outcome that could affect socio-economic conditions, health, societal relationships including gender, of any stakeholder group?
- Does the proposal involve an existing or new process, technology or delivery arrangement with important environmental implications?
- Have similar policies, plans or programs in the past resulted in environmental impacts?
- Will the outcome of the proposal positively or negatively affect the
achievement of an environmental quality goal or objective as outlined in the country’s NEAP?

- Is the proposal likely to affect the number, location, type and characteristics of sponsored initiatives which would be subject to project-level environmental assessments?

1.4 Have there been, or is there likely to be, strong public concerns expressed about possible environmental/social impacts of the proposal? If yes, please summarise the concerns.

Yes ___ No ___ Uncertain ___

In the event that the proposal can be excluded based on the answers provided to questions 1.2 or 1.3, the RMC should assess whether the public has, or would have, strong concerns about environmental / social impacts of the proposal. If so, further analysis may be warranted and Part 2 of the form should be completed. If there are serious public concerns about the environmental / social impacts of the proposal, the proponent country should consider drafting a separate public document or press release that details the main points of the SIA. If a public document is prepared, it should be appended to the submission.

If questions 1.3 and 1.4, were answered 'no', then no further assessment is required. Sign and retain a copy of the form on file. Otherwise, proceed to Part 2.

Signed:______________________ Date:____________

2. Strategic impact assessment

2.1 What are the intended outcomes of the proposal?

This question is intended to lay out the main objectives of the proposal, identifying the anticipated economic, social or cultural changes or outcomes. Usually the proposal alone may not have obvious direct environmental implications, but more likely, the activities and projects that the proposal may foster will. RMCs should summarise the major elements of the proposal, indicating the expected outcomes, both direct and indirect.
<table>
<thead>
<tr>
<th>Economic conditions:</th>
<th>Social conditions:</th>
<th>Cultural conditions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• competitiveness</td>
<td>• health conditions</td>
<td>• cultural / heritage</td>
</tr>
<tr>
<td>• public, industry or</td>
<td>• population distribution</td>
<td>resources</td>
</tr>
<tr>
<td>government consumption</td>
<td>• population demographics</td>
<td>• traditions or values</td>
</tr>
<tr>
<td>practices</td>
<td>• work environment</td>
<td>• religious and spiritual</td>
</tr>
<tr>
<td>• available technologies</td>
<td>• recreation patterns</td>
<td>values and practices</td>
</tr>
<tr>
<td>• market conditions</td>
<td>• individual awareness and behaviour</td>
<td>• arts</td>
</tr>
<tr>
<td>• resource use/management practices</td>
<td>• concentration of changes in any one group or population within society</td>
<td></td>
</tr>
<tr>
<td>• trade relationships / patterns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• industrial structure (size, location)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• land use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• transportation practices</td>
<td></td>
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<tr>
<td>• regional development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• urbanisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• business practices</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

...
2.2 Are any of outcomes identified in 2.1 expected to have associated environmental impacts, either positive or negative?

The outcomes identified in 2.1 should be assessed to determine if they will have environmental impacts. The term "environment" as used in this directive means the components of the Earth, including land, water and air (all layers of the atmosphere), all organic and inorganic matter and living organisms, and the interacting natural systems that include the components just listed. It is important to note that both positive and negative impacts should be identified.

As noted in the introduction, the real challenge to policy and program officers (both from RMC or ADB) conducting an environmental assessment is to think more broadly about the outcome of the proposal, the kinds of activities it may trigger (intended or not) and the interaction of those activities with the environment. How might the outcome of the proposal affect, or be affected by, the environment in which it is to be implemented?

Check whether, at the bare minimum, the following environmental impacts were considered and whether the relevant questions were addressed:

- **Air Quality**
  Could the proposal lead to changes in air quality? "Air" includes, for the purposes of analysis, local and regional air quality as affected by pollutants, including sulfur dioxide, nitrogen oxides, carbon monoxide, carbon dioxide and persistent organic pollutants.

- **Water Quality/Quantity**
  Could the proposal lead to changes in water quality or quantity? "Water" encompasses both freshwater and oceans, and includes both quality and quantity.

- **Land Use**
  Could the proposal lead to changes in land use? "Land" encompasses both soil quality and land use.

- **Climate Change**
  Could the proposal lead to climate change? The major greenhouse gas emissions that effect climate change are carbon dioxide, methane, nitrogen oxides, chlorofluorocarbons and halons.
• **Biodiversity**

Could the proposal lead to changes in Biodiversity? Biodiversity refers to the number of species and encompasses all types of living organisms, including animals, plants and microorganisms. Activities can affect biota directly, or indirectly as in the case of soil erosion or changes in land use.

• **Natural Resources**

Could the proposal lead to changes in the use or management of renewable and/or non-renewable natural resources? Renewable and non-renewable natural resources include forest, mineral and energy resources.

2.3 **Are any of the outcomes identified in 2.1 expected to have associated impacts on the human environment, either positive or negative?**

The outcomes identified in 2.1 should be assessed to determine if they will have impacts on the human environment. The components to consider in the human environment include the elements and characteristics of the social, cultural and economic environment, as well as infrastructure and services.

Impacts to consider should at least include:

• **Population**

Could the proposal lead to changes in demographics, characteristics of poor people and other vulnerable groups, or migration patterns?

• **Gender**

Could the proposal lead to changes in the gender divisions of labour, rights and responsibilities, access to and control over resources, or decision-making power?

• **Health**

Could the proposal lead to changes in the spread of diseases (communicable and non-communicable), malnutrition, injuries and violent assaults, occupational health and safety, environmental health issues, mortality, hygiene or health awareness?

• **Civil Society**

Could the proposal lead to changes in composition and size of the civil society, key decision makers at the local and regional levels, level of organisation of vulnerable groups?
• Societal Framework

Could the proposal lead to changes in the country’s position on human rights and gender equality, governments priorities in terms of development and budgeting, governmental institutions, institutional capacity in the environment and social sectors, local and regional political and administrative structures and their interrelations?

• Cultural Environment

Could the proposal lead to changes in cultural heritage (customs and traditions, beliefs, ethnic dialects, etc.), right and use of natural resources, environmental awareness or architectural, archaeological and landscape heritage?

• Economic Environment

Could the proposal lead to changes in major economic activities at the local and regional levels (primary, secondary and tertiary sectors, formal and informal sectors), right, use and dependence on renewable and non-renewable natural resources, inequality patterns (wealth distribution, rural-urban differences, man and women), working conditions or employment levels?

• Infrastructure and Services

Could the proposal lead to changes in the provision and type of energy (coal, natural gas, hydro, renewable, etc.), communications (mail, radio, telephone, internet, television), transportation (road, rail, air), water supply, waste and sanitation, health services, education and social services?

• Poverty and inequity

Could the proposal affect the poor. It is good to stress that proposals that leave the poor in their misery are not sustainable. To what extent could the project lead to changes in the inequity level (e.g. measure by Gini index).

2.4 What is the significance of the positive and/or negative environmental/social impacts?

If likely environmental/social impacts are identified in 2.2 and 2.3, they should be analysed to determine their significance. When considering whether an environmental/social impact is significant or not, the following factors are considered:
• What is the magnitude of the impact?
  
i. is something being completely destroyed, or is the impact creating an inconvenience?
  
ii. is an entire population or species involved?
  
• What is the geographical extent of the impact?
  
iii. is the impact in one small area or global?
  
• What is the duration, rate and frequency of the impact?
  
iv. will this impact last for a long time repeating itself every day or for an extended period, or is this a one time impact?
  
• Is the impact irreversible?
  
v. can the impact be remediated with ease or is an ecosystem component lost forever;
  
• What is the ecological context of the impacts?
  
vi. is this a unique or important component of wildlife, or is it a common and plentiful species.
  
• What is the degree of risk/uncertainty associated with the impact?
  
• Will the scale or timing of a program result in significant implications for the environment, both natural and human?

The scale of a proposal will dictate the appropriate level of effort given to the analysis of environmental/social impacts. Criteria for identifying the scale of a plan could be regional, provincial, national, or international. This is by no means an exhaustive list and consequently there is a certain amount of latitude in this area.

Environmental management policy, infrastructure development, and various other activities can play a significant role in determining the appropriate time for implementing a proposal. The need to change policy in the future may be affected by other policy decisions.

2.5 Can the environmental/social impacts identified in 2.2 and 2.3 be mitigated if negative, or enhanced if positive? If so, note the mitigation and/or enhancement options.

The purpose of this question is to establish if the likely and significant impacts can be enhanced if positive or mitigated if negative. Mitigation means the elimination, reduction or control of the adverse environmental/social effects of the proposal through protective measures or clauses included in the proposal or policy/program
responses that could be pursued outside the proposal. Enhancement means including elements in the proposal to increase the anticipated positive impacts of the initiative.

2.6 If mitigation and/or enhancement options are proposed, is a monitoring or follow up process recommended to ensure that the measures undertaken are effective?

Yes ____ No ____ Uncertain ____

Mitigation or enhancement options may be proposed that have not been tested before. This question seeks to establish whether a monitoring process would be appropriate to ensure that all measures undertaken to protect the natural and human environment are effective.

2.7 Based on the foregoing information, is a more detailed environmental / social assessment warranted?

Yes ____ No ____ Uncertain ____

Ultimately, the judgement of the personnel most familiar with the proposal, supplemented by the advice and assistance of other experts, will provide the best understanding of the implications of the proposal. Officers should use their best judgement, and if confident that there is no potential environmental impact, it is likely that no further analysis is required. Contact PSDU for further guidance and assistance.

If there is a high degree of uncertainty, then further study and investigation may be warranted. RMCs should continue the analysis until they are confident in their understanding of the likely environmental/social impact of the proposal, and the enhancement/mitigation options available.

2.8 Summarise the environmental/social impacts of the proposal. This statement may be used for the "Environmental/Social Considerations" section of the submission to the Board of Directors.

The key points of the SIA should be summarised by the Task Manager assisted by the Country Department Environmentalist/Social Expert. This paragraph forms the basis of the "Environmental/Social Considerations" paragraph in the submission to the Board of Directors. The summary demonstrates that steps have been taken to consider the environmental/social implications of the proposal.

The summary should indicate that:

i. Environmental/social considerations have been taken into account;
ii. Reference to where these considerations are documented;

iii. With appropriate mitigation techniques there are no significant environmental/social impacts or that the impacts can be justified;

iv. If applicable, that further assessments will be completed as appropriate for projects arising from the policy.

Signed:_____________________________ Date:_____________

Completed checklists should be signed, dated, and together with any attachments, appended to the submission to the Board of Directors.

Copies should also be maintained in the divisional file.

For additional information or assistance contact: PSDU
ANNEX B:

Environmental and social parameters and the data requirements in an SIA
Baseline environmental and social data should be obtainable from:

- ADB documents such as Country Strategy Papers, Country Environmental Profiles, Country Social Profiles and Poverty Reduction Strategies;

- RMC government agencies and research institutions, including publications such as State of the Environment reports, National Environmental Action Plans;

- “A compendium on environmental laws in African countries” by Prof. Charles Okidi (1998) provides an overview of environmental legislation throughout Africa; and

- Social and environmental reports by or interviews with NGOs and international organisations (i.e. IUCN, WWF, United Nations agencies).

The following table provides a list of environmental and social factors to be considered when undertaking a SIA, along with specific data collection requirements.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Environment</strong></td>
<td></td>
</tr>
<tr>
<td>Climate and weather conditions</td>
<td>Climatological data obtainable from Dept of Meteorology:</td>
</tr>
<tr>
<td></td>
<td>radiation, temperature, precipitation, wind directions and velocity,</td>
</tr>
<tr>
<td></td>
<td>atmospheric pressure, relative humidity, evaporation and evapotranspiration</td>
</tr>
<tr>
<td></td>
<td>Specific issues may include storms, cyclones, floods, drought, etc.</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Environmental Monitoring data from Ministry of Environment (or equivalent),</td>
</tr>
<tr>
<td></td>
<td>research institutions: pollutant or nuisance (noise, dust) sources</td>
</tr>
<tr>
<td></td>
<td>including type, level and causes. Data collected can be limited to those air</td>
</tr>
<tr>
<td></td>
<td>quality issues that are regionally significant.</td>
</tr>
<tr>
<td></td>
<td>Of specific concern is global climate change.</td>
</tr>
<tr>
<td>Geology and Soils</td>
<td>Data obtainable from Departments of Agriculture or Land Administration or</td>
</tr>
<tr>
<td></td>
<td>their equivalents</td>
</tr>
<tr>
<td></td>
<td>At the SIA level, broad information on regional geology and soil types is</td>
</tr>
<tr>
<td></td>
<td>sufficient</td>
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<tr>
<td></td>
<td>Specific issues of interest may include: distribution of mineral resources,</td>
</tr>
<tr>
<td></td>
<td>soil stability (Landslides, erosion), soil contamination, desertification,</td>
</tr>
<tr>
<td></td>
<td>earthquakes</td>
</tr>
<tr>
<td>Parameter</td>
<td>Data Required</td>
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<tr>
<td>----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Water Resources</td>
<td>Data obtainable from Departments of Hydrology, Energy, Geology, Coastal Affairs. Surface water: hydro-graphic network, catchments, lakes and wetlands (check Ramsar Convention on regionally significant wetland areas), rivers, dams and reservoirs, flow rates, environmental flows, annual or seasonal water level fluctuations, physio-chemical characteristics and pollution. Marine and Coastal waters: currents, tides, waves and swell, bathometry, physio-chemical characteristics, coastal erosion and pollution Ground water: types of aquifers, location, depth, recharge patterns, flow direction, physio-chemical characteristics and pollution For the purpose of SIA, broad information on water resources at the national/regional level is sufficient</td>
</tr>
<tr>
<td>Parameter</td>
<td>Data Required</td>
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<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Biological Environment</strong></td>
<td></td>
</tr>
<tr>
<td>Ecosystems</td>
<td>Data obtainable from Dept. of National Parks and Reserves (or equivalent), research institutions and universities, national and international NGOs (IUCN, WWF,....) Types of ecosystems (terrestrial, aquatic, marine and coastal) and ecosystem functions, protected areas and sensitive zones, ecosystem health and integrity, sustainability, pollution and degradation threats (natural or human pressures), regional to international significance of ecosystems (scientific, cultural, educational, leisure, aesthetic, historic) Conservation and protection measures at the national and international level For the purpose of SIA, ecosystem information at the national/regional level is sufficient. Detailed field investigations are not justified unless no reliable baseline data are available at all and are deemed critical for decision-making.</td>
</tr>
<tr>
<td>Vegetation</td>
<td>Data obtainable from Dept. of National Parks and Reserves (or equivalent), research institutions and universities, national and international NGOs (IUCN, WWF,....) Biodiversity, nature conservation significance (rare, vulnerable, threatened or protected species), species value (aesthetic, commercial, genetic, cultural or ecological), pollution and threats affecting certain plant species (natural or human pressures) Conservation and protection measures at the national and international level For the purpose of SIA, emphasis should be given to key plant species.</td>
</tr>
<tr>
<td>Wildlife</td>
<td>Data obtainable from Dept. of National Parks and Reserves (or equivalent), research institutions and universities, national and international NGOs (IUCN, WWF,....) Wildlife biodiversity, nature conservation significance (rare, vulnerable, threatened or protected species), species value (aesthetic, commercial, genetic, cultural or ecological), pollution and threats affecting certain wildlife species (natural or human pressures) Conservation and protection measures at the national and international level For the purpose of SIA, emphasis should be given to key animal species.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Data Required</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Social Environment</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>Data obtainable from national and regional government, NGOs and other civil society groups</td>
</tr>
<tr>
<td></td>
<td>Demographic data (population size, age and sex composition, geographic distribution, density, ethnicity, literacy and education, population growth, problems/pressures associated with demographic trends)</td>
</tr>
<tr>
<td></td>
<td>Special issues: migration patterns and associated problems, characteristics of poor people and other vulnerable groups</td>
</tr>
<tr>
<td></td>
<td>For the purpose of SIA, broad information on demographic data and trends, emphasising vulnerable groups and pressures, is sufficient.</td>
</tr>
<tr>
<td>Gender</td>
<td>Data obtainable from national and regional government, NGOs and other civil society groups</td>
</tr>
<tr>
<td></td>
<td>Gender perspective in legal and policy framework, sociocultural norms regarding gender (in)equity (labour, rights, access to and control over resources), participation in decision making at all levels, existence and capacity of CSOs and women’s organisations, types of development programmes and projects targeting women</td>
</tr>
<tr>
<td></td>
<td>For the purpose of SIA, a broad understanding of gender issues at the national/regional level is sufficient.</td>
</tr>
<tr>
<td>Health</td>
<td>Data obtainable from Health department, national and international NGOs (Red Cross, Médecins sans Frontières, CARE)</td>
</tr>
<tr>
<td></td>
<td>Epidemiological data on communicable and non-communicable diseases, tropical diseases, data on malnutrition status, occupational health and safety, environmental health, mortality, hygiene and health awareness</td>
</tr>
<tr>
<td></td>
<td>For the purpose of SIA, a broad understanding of health issues at the national/regional level is sufficient.</td>
</tr>
<tr>
<td>Civil Society</td>
<td>Data obtainable from government and civil society organisations</td>
</tr>
<tr>
<td></td>
<td>Data on composition and size of the civil society (community-based organisations, NGOs, professional associations, etc) and their activities and dynamics, involvement in decision making at all levels.</td>
</tr>
<tr>
<td></td>
<td>Of specific interest may be the level of organisation of vulnerable groups (youth, elderly, vulnerable ethnic groups, etc.), poor and women and their participation in political and community activities.</td>
</tr>
<tr>
<td></td>
<td>A broad understanding of civil society dynamics and activities at the national/regional level suffices.</td>
</tr>
</tbody>
</table>
Environmental And Social Parameters To Consider In SIA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Societal Framework</td>
<td>Data obtainable from government agencies and national/international NGOs &lt;br&gt;Country’s position on human rights and gender equality and implementation level, national laws, policies and programs aiming to address social problems, government’s priorities in terms of development and budgeting, governmental institutions and administrative structures (national and regional) &lt;br&gt;Specific interest in capacities in the environment and social sectors &lt;br&gt;A broad understanding of the societal framework is sufficient</td>
</tr>
<tr>
<td>Cultural Environment</td>
<td>Data obtainable from national and regional government, national and international NGOs (eg. UNESCO), community consultation &lt;br&gt;Data on cultural heritage (architectural, archaeological, landscape), right and use of natural resources related to cultural practices, major concerns, opinions and aspirations of local populations, environmental awareness &lt;br&gt;A broad understanding of the cultural settings is sufficient for the purpose of SIA.</td>
</tr>
<tr>
<td>Economic Environment</td>
<td>Data obtainable from Ministry of Economic Affairs or Finance (or equivalent), Dept. of Agriculture, Industry, industry federations, labour unions, agricultural organisations, etc. &lt;br&gt;Broad data on major economic activities and growth (primary, secondary and tertiary sectors), relative importance of the formal and informal sectors, right, use and dependence on renewable and non-renewable resources, inequality patterns (wealth distribution, male-female, rural-urban), national and regional employment levels and working conditions</td>
</tr>
<tr>
<td>Parameter</td>
<td>Data Required</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Infrastructure and Services</td>
<td>Data obtainable from national and regional government (Dept of Transport, Energy, Health, Education, Public Affairs, Roads, etc.), civil society organisations</td>
</tr>
<tr>
<td></td>
<td>Energy sector: electricity network, affordability, type of energy, use of renewable energy sources</td>
</tr>
<tr>
<td></td>
<td>Communications: type and distribution</td>
</tr>
<tr>
<td></td>
<td>Transportation: types and networks, affordability, private and public transportation means, seasonal reliability</td>
</tr>
<tr>
<td></td>
<td>Water supply: facilities and coverage, water quality, affordability</td>
</tr>
<tr>
<td></td>
<td>Waste and sanitation: facilities and coverage, mgmt practices, affordability</td>
</tr>
<tr>
<td></td>
<td>Health services: facilities, personnel, ratio per capita, affordability</td>
</tr>
<tr>
<td></td>
<td>Education: facilities, personnel, budgets, ratio per capita, affordability</td>
</tr>
<tr>
<td></td>
<td>Social services: community centres, youth centres, service accessibility of poor and marginal groups</td>
</tr>
<tr>
<td></td>
<td>For regional SIA, a broad understanding of the infrastructure and services at the regional level is sufficient. For sectoral SIA, the targeted sector should be analysed in detail, which may require more detailed field work/consultation.</td>
</tr>
<tr>
<td>Land Use</td>
<td>Data obtainable from government (Dept of Land Administration or Planning or equivalent)</td>
</tr>
<tr>
<td></td>
<td>Data on current and future land uses, land carrying capacity, traditional land use management practices, access to property, land tenure</td>
</tr>
<tr>
<td></td>
<td>Development land policies, plans, zoning, municipal and regional regulations</td>
</tr>
<tr>
<td></td>
<td>For the purpose of SIA, information at the regional level is sufficient.</td>
</tr>
</tbody>
</table>
ANNEX C:

The eight steps in a SIA procedure
STEP 1: STUDY APPROACH - SCOPING

Determining the study approach is a key stage in the SIA process and the first challenge for the SIA team. In this first step, key issues and stakeholders need to be identified, data requirements and level of detail need to be agreed upon and a study program needs to be established.

Typical questions that need to be answered are:

1) What are the key environmental and social issues associated with the proposal?

2) What are the main environmental functions (environmental production, space, regulation and cultural functions\(^ {10} \)) that stakeholders depend upon?

3) Who are the main stakeholders in the area?

4) Identify priority stakeholders and environmental/social issues.

5) What are the likely stakeholder concerns about the environmental/social issues identified?

6) How and when will the public be involved?

7) Decide on the study team and government agencies to be involved in the SIA process.

8) What technical studies/data/consultations are required to assess the impacts? What is the level of detail required for each of these studies?

9) What data and studies are already available? What are the remaining gaps?

10) How is the decision-making process set up?

11) What is the appropriate reporting method? The SIA need not necessarily be a stand-alone document. Results of the SIA may simply be incorporated in the amended PPP proposal.

12) What is the relation to other SIAs and project EIAs? Previous studies may provide useful information, and some SIA requirements may already have been met. The SIA may also need to link to other ongoing assessment processes.

\(^ {10} \) AIDEnvironment 1999
*STEP 2: POLICY/PLAN/PROGRAM OPTIONS*

The key strength of SIA is that it identifies and assesses alternative options for the proposed PPP. This obviously implies that the SIA process is introduced at this early stage.

One of the options that the SIA team definitely needs to consider is the ‘status quo’ or ‘do nothing’ alternative, as it provides the benchmark for comparison of other alternatives. The ‘status quo’ needs to be well documented in the SIA. All this bearing in mind that also the ‘status quo’ alternative will entail environmental and social implications, since no system is static. The other options to be considered should include the major ones that are technically, legally, socially and economically possible.

Options should be short listed following a preliminary review which eliminates alternatives that are not deemed feasible. Once the shortlist is established, any relevant policies and regulations should be identified. This analysis puts the options in their proper context.

Box 3 is an example of possible options identified for a policy to promote recycling in the paper industry.

**Box 3: Identifying options for a policy to promote recycling in the paper industry**

Options identified included:
1. Status quo: no policy to encourage recycling
2. Incentives: the government provides grants or tax relief; or require the use of eco-logo certified paper for government procurement;
3. Legal measures: pass laws or regulations requiring recycling;
4. Recognition: publicize efforts of good corporate citizens;
5. Information: distribute information about recycling techniques for industry;
6. Research: government funded research into recycling technologies;
7. Marketing: assist the industry in marketing recycled products.

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11 Environment Canada, 2000
It is of paramount importance to document all options considered. This will show that the analysis was thorough and that environmental/social concerns were addressed at each stage.

**STEP 3: STANDARDS, TRESHOLDS AND SUSTAINABILITY CRITERIA**

It is necessary to define relevant environmental standards and thresholds to assess whether and when current or predicted trends may lead to collapse of the environmental function. In addition unacceptable change with regards to social or economic criteria for all stakeholders need to be defined.

It is also important to consider international as well as national environmental quality objectives, sustainability criteria and indicators. These may be in place in some countries as part of their NEAPs, but if they are not, they should be established in the context of the SIA. For regional plans and programs, the national environmental quality objectives may be complemented with relevant environmental objectives from the regional or local level. In SIA, the focus is on aiming to actively promote sustainable development in addition to minimizing environmental ‘threats’. The guidelines need, therefore, to specify opportunities for enhancing sustainable development, next to the mere ‘damage control’ of adverse environmental impacts.

As standards may be absent and thresholds not known, generally a qualitative assessment is made using insights and views from different actors involved. This process may consist of a combination of literature research, expert judgement and stakeholder consultation.

1. Literature research: previous studies on ecological thresholds, relevant standards for environmental quality;

2. Expert judgement: may be required to obtain an insight into ecological carrying capacity and thresholds if such data are not available in the literature; and

3. Stakeholder consultation: provides the SIA team with an insight into acceptable ecological changes from a social and economic perspective, cultural and other values associated with natural resources, environmental quality objectives and sustainability criteria.

In the context of SIA, detailed fieldwork and scientific research not always appropriate. However, knowledge gaps need to be illustrated to demonstrate limitations to the environmental assessment and recommendations for further research should be made as part of the SIA report.

Experience has shown those difficulties in setting environmental objectives and sustainability criteria hamper the possibilities for prediction of significant environmental impacts of activities flowing from PPPs.
Box 4 illustrates sustainability indicators and parameters that were developed in the context of the SIA for the Local Agenda 21 for the city of Graz in Austria. In 1996, Graz won as the first city in Europe the “European Sustainable City Award” for its ambitious LA21 approach\textsuperscript{12}.

**Box 4: Local Agenda 21 Graz – Sustainability Indicators for SIA**

<table>
<thead>
<tr>
<th>Area/Factor</th>
<th>Sustainability Parameter/Indicator</th>
<th>Goal by 2000 (reference year in brackets)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Quality</strong></td>
<td>Emission of SO\textsubscript{2}, CO and dust</td>
<td>-30% (1987)</td>
</tr>
<tr>
<td></td>
<td>Emission of NO\textsubscript{x}, VOC</td>
<td>-60% (1988, 1985)</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td>Streets with more than 65dB(A)</td>
<td>-10% (1994)</td>
</tr>
<tr>
<td><strong>Energy &amp; Climate</strong></td>
<td>Extent of CO\textsubscript{2} emissions</td>
<td>-20% (1987)</td>
</tr>
<tr>
<td></td>
<td>Energy consumption (electricity only)</td>
<td>-7% (1994)</td>
</tr>
<tr>
<td></td>
<td>Proportion of renewable energy sources</td>
<td>25% (1994: 16%)</td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td>Traffic performance (private vehicles)</td>
<td>-2% (1991)</td>
</tr>
<tr>
<td></td>
<td>Kilometres performance of buses, tramways</td>
<td>+10% (1993)</td>
</tr>
<tr>
<td></td>
<td>Vehicle registrations</td>
<td>Balance (1989)</td>
</tr>
<tr>
<td><strong>Waste</strong></td>
<td>Overall local waste</td>
<td>-13% (1993)</td>
</tr>
<tr>
<td></td>
<td>Local residual waste</td>
<td>-30% (1993)</td>
</tr>
<tr>
<td></td>
<td>Trade/industry waste</td>
<td>-30% (1993)</td>
</tr>
<tr>
<td></td>
<td>Hazardous waste</td>
<td>-50% (1993)</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>Amount of drinking water</td>
<td>-5% (1993)</td>
</tr>
<tr>
<td></td>
<td>Water quality category</td>
<td>Category 1 or 2</td>
</tr>
<tr>
<td><strong>Soil</strong></td>
<td>Built-up surface</td>
<td>Balance</td>
</tr>
<tr>
<td><strong>Nature/Green Areas</strong></td>
<td>Additional protected areas</td>
<td>+50 hectare (1995)</td>
</tr>
<tr>
<td></td>
<td>Additional nature reserves</td>
<td>+30 hectare (1995)</td>
</tr>
<tr>
<td></td>
<td>Additional natural monuments</td>
<td>+7 hectare (1995)</td>
</tr>
</tbody>
</table>

\textsuperscript{12} ICON 2001
Another example of generic environmental quality objectives and sustainability criteria is provided in Box 5. The Box lists the Swedish Environmental quality objectives and the sustainability criteria from the European handbook on SIA for regional development plans 13.

**Box 5: Swedish National Environmental Quality Objectives and European Commission Sustainability Criteria**

<table>
<thead>
<tr>
<th>Swedish Environmental Quality Objectives</th>
<th>Sustainability Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Clean air</td>
<td>- Minimise use of non-renewable resources</td>
</tr>
<tr>
<td>- High quality groundwater</td>
<td>- Use renewable resources within limits of capacity for regeneration</td>
</tr>
<tr>
<td>- Sustainable lakes and water courses</td>
<td>- Environmentally sound use and management of hazardous/polluting substances and wastes</td>
</tr>
<tr>
<td>- Flourishing wetlands</td>
<td>- Conserve and enhance the status of wildlife, habitats and landscapes</td>
</tr>
<tr>
<td>- A balance marine environment, sustainable coastal areas and archipelagos</td>
<td>- Maintain and improve the quality of soils and water resources</td>
</tr>
<tr>
<td>- No eutrophication</td>
<td>- Maintain and improve the quality of historic and cultural resources</td>
</tr>
<tr>
<td>- Natural acidification only</td>
<td>- Maintain and improve local environmental quality</td>
</tr>
<tr>
<td>- Sustainable forests</td>
<td>- Protection of the atmosphere</td>
</tr>
<tr>
<td>- A varied agricultural landscape</td>
<td>- Develop environmental awareness, education and training</td>
</tr>
<tr>
<td>- A magnificent mountain landscape</td>
<td>- Promote public participation in decisions involving sustainable development</td>
</tr>
<tr>
<td>- A good urban environment</td>
<td></td>
</tr>
<tr>
<td>- A non-toxic environment</td>
<td></td>
</tr>
<tr>
<td>- A safe radiation environment</td>
<td></td>
</tr>
<tr>
<td>- A protective ozone layer</td>
<td></td>
</tr>
<tr>
<td>- Limited influence on climate</td>
<td></td>
</tr>
</tbody>
</table>

In order to enable impact assessment and benchmarks for monitoring purposes, these objectives and criteria need to be translated into indicators and goals/targets.

---

13 ICON, 2001
Parallel to the example in Box 4, RMC’s are advised to develop their own environmental quality objectives where their country’s specific NEAP’s account for the sustainability criteria. Quality objectives and sustainability criteria need then, subsequently, be translated into indicators, goals, targets as to guarantee the relevancy of impact assessments of the PPP. They are also requested as to establish benchmarks to monitor implementation of PPP.

**STEP 4: IMPACT ASSESSMENT**

The impact assessments are best undertaken in a cyclic process in which the proposed PPPs are assessed in relation to the environmental/social quality objectives, sustainability criteria, standards and thresholds. In the impact assessment cycle, proposed PPPs are accepted if they promote the fulfilment of the environmental and social objectives and hence lead in the direction of sustainable development. Otherwise they should be modified in order to increase the environmental / social benefits and reduce the environmental / social harm of the potential projects 14.

**TYPE OF IMPACTS**

Potential positive and negative environmental and social impacts need to be identified, including:

- Direct impacts: are typically correlated with Projects and with Plans and Programs that initiate and locate specific activities;
- Indirect impacts: associated more with policies and with certain types of plans and programs, such as legislative and fiscal initiatives;
- Cumulative impacts: consisting of ancillary impacts of large-scale schemes (e.g. Infrastructure development) or incremental effects of numerous, small-scale actions of a similar type; and
- Large-scale effects: regional to global impacts. In the case of transboundary effects, refer to further procedures in Chapter 7.

14 see also Balfors and Schmidtbauer, 2002.
**IMPACT ANALYSIS METHODS**

Impact analysis methods that are applicable to SIA include:

1. Scenario development (medium to long-term vision, worst case vs. best case);
2. Risk assessment;
3. Environmental indicators and criteria;
4. Policy impact matrix (elaborated in box 6);
5. Predictive and simulation models;
6. Significance thresholds (elaborated in box 7);
7. GIS capacity/habitat analysis (elaborated in box 8);
8. Cost/benefit analysis
9. Lease Cost analysis;
10. Multi-criteria analysis;
11. Other economic valuation methods.

Which method, or better, combination of methods is used, depends on the SIAs team members’ professional experience and informed judgement.

A first example (Box 6) illustrates the impact assessment process using impact matrices as proposed in the Canadian SIA guidelines\(^{15}\).

\(^{15}\) Environment Canada (2000)
Box 6: Impact assessment using impact matrices

The impact assessment consists of a two-step process:

1) Identification of potential positive and negative environmental/social effects of each viable PPP option; and

2) Determination of significant effects based on the likelihood and magnitude of anticipated effects.

**Step 1** requires the completion of an impact matrix worksheet for each viable PPP option. First, those outcomes of the PPP (being products, activities or events) that have environmental or social implications should be identified. This information goes in the first column of the worksheet.

For each of these identified outcomes, you should then identify those environmental features that may be affected, either positively or negatively. This is done by inserting a “+” (positive effect) or a “-” (negative effect) in the appropriate columns under the heading “potentially affected environmental/social features”.

<table>
<thead>
<tr>
<th>Policy Outcomes (list the products, activities and/or events that the policy, plan or program proposal will bring about. This requires listing these specific, tangible results of the proposal that may have environmental implications)</th>
<th>Potentially affected environmental/social features (+ = positive effect / - = negative effect)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic</td>
<td>Terrestrial</td>
</tr>
<tr>
<td>Hydrology: Flora</td>
<td>Fauna</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Step 2** involves a description of each identified effect in terms of its likelihood and magnitude. Again, one worksheet should be completed for each PPP option under consideration.

The following criteria may be used to determine the likelihood and magnitude of effects:

- Geographic extent of the effect (limited, moderate, or extensive);
- Duration (short-term, moderate, or long-term);
- Frequency of the effect’s recurrence (no recurrence, infrequent, or frequent recurrence);
- Reversibility (can the environment be restored to the pre-effect conditions, or is the effect irreversible?);
- Ecological sensitivity (are the potentially affected aquatic, terrestrial, or atmospheric features particularly sensitive, or are they resilient?);
- Socio-economic sensitivity (are the potentially affected human populations particularly vulnerable to the predicted effects?);

<table>
<thead>
<tr>
<th>Worksheet: Likelihood/Magnitude of Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>Negative Effects</td>
</tr>
<tr>
<td>Positive Effects</td>
</tr>
</tbody>
</table>
The United Nations Economic Commission for Europe \(^{16}\) identified the following significance thresholds for environmental impacts arising from strategic decisions (Box 7).

**Box 7: General Criteria to assist in the Determination of “Significance Thresholds”**

- Nature of the objectives of the strategic decision (eg. relating to environmental, health, sustainable development);
- Types (i.e. sector, defining developing consent) and scale (i.e. national or local) of strategic activity;
- Extent of the geographical area covered by the strategic decision;
- Nature and scale of the effect (irreversible, trans-boundary, etc.);
- Duration, magnitude and probability of the effect;
- The degree to which the strategic decision will affect protected areas (national and international);
- The degree to which the strategic decision will affect species protected by national legislation or international agreements;
- The degree to which the strategic decision sets framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources;
- The degree to which the strategic decision influences other strategic decisions including those in a hierarchy;
- The relevance of the strategic decision for the integration of environmental and health considerations in a comprehensive system of promoting sustainable development;
- Environmental and health problems relevant to the strategic decision;
- The degree to which the strategic decision will further strengthen the application of environmental and health objectives in other economic sectors;
- The degree to which the strategic decision is likely to be a matter of significant public concern.

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\(^{16}\) UNECE, 2001
A third example (Box 8) illustrates the use of GIS tools to assess impacts. The SIA in question was carried out for multi-modal infrastructure linking Paris, France and Brussels, Belgium by means of the North Corridor 17.

Box 8: Impact analysis using GIS

The SIA methodology consisted of:

1. Identification, validation and location of environmental values.

Information gathered was used to identify 8 environmental key themes with 29 associated elements. The themes included surface water, ground water, natural environment, agriculture, ecology, landscape, human and industrial activity and ancient monuments. These themes and elements were assigned value ratings (5-6 for very major value, 3-4 for major value and 1-2 for low value). Environmental quality was shown through these value ratings.

2. Integration of environmental factors into the design of each scenario.

Information created in phase 1 was used to produce specialised maps:

- One map of major environmental factors;
- One map of the general occupation of the land;
- Three maps relating to each mode of transport (road, rail, river) showing the impact of the project on the environment;
- Three maps relating to each mode of transport showing the impacts of the project after mitigation;
- One map for each mode of transport showing its capacity of insertion into the North Corridor.

3. Identifying and analysing the effect on the environment of the different modes of transport and comparison of the values with each scenario.

From each of the elements identified in phase 1 a number of indicators was developed. In general, the indicators showed the effects of the new infrastructure on the environment and how the environment had been degraded. The indicators were also used to compare new effects with effects that had already occurred due to previous constructions. For this study, there were 3 stages for comparing the various indicators:

1. North Corridor without any infrastructure,
2. Important present infrastructure
3. Different scenarios shown against present infrastructure. In the final impact statement maps were provided for three of the indicators. For example, there was one map each showing actual infrastructure, noise and natural environment. The individual scenarios were then compared against each of these maps.

17 ICON, 2001
STEP 5: MITIGATION/ENHANCEMENT MEASURES AND ADDRESSING RESIDUAL IMPACTS

Mitigation of negative effects and enhancement of positive effects can be achieved by:

1. Changes in the proposed PPP;
2. Conditions placed on projects or activities arising from the PPP; or
3. Compensation measures.

This step also involves identifying uncertainties and determining the means to acquire more information about unknowns. This information acquisition may be part of the scope of the Environmental Impact Assessment (EIA) for projects arising from the PPP.

As far as the residual effects were concerned, here the SIA team evaluates the net effect of each PPP option in the light of mitigation measures that can or will be applied. Again, an important part of this analysis is to identify uncertainties and requirements for further analysis.

The magnitude of the remaining effects is a major factor in the selection of the preferred PPP option.

STEP 6: INSTITUTIONAL STRENGTHENING PLAN

A beneficial ‘side-effect’ outcome of SIA should be the development, by the SIA team, of an institutional strengthening plan that would ensure appropriate environmental/social management upon implementation of the policy, plan or proposal. The plan should be based on the gaps in environmental and social management skills identified at the national, regional or local level during scooping, and the future needs for improved environmental and social management.

The institutional strengthening plan should consist of:

1. Recommendations for strengthening and identification of the individual authorities/institutions responsible for the implementation of the PPP (e.g. forestry, agriculture, transport, health, finance, industry
departments) and for monitoring its effectiveness (e.g. environment and/or health departments);

2. Recommendations for creating synergies between the various identified authorities and institutions thus encouraging collaboration and formation of alliances around common goals;

3. Recommendations for strengthening of public participation skills; and


5. Development of education as an important mechanism contributing to a plan or program’s sustainability and to the distribution of PPP derived benefits to local people.

6. Ensuring an adequate distribution of benefits, as to minimise conflict of interest among different societal groups.

7. Ensuring that special attention will be given to extending the benefits to the poorest levels of the society.

**STEP 7: PRESENTATION OF PREFERRED OPTION**

Based on the analysis of options, the SIA team selects a preferred option. This option is provided, along with the others, to the decision-making Authority for final decision. The specific documentation required will depend on the situation. However, the positive and negative environmental/social implications of each option should always be presented.

The rationale for the SIA conclusions and recommendations should be included in the documents supporting the proposal. This can take the form of a stand-alone document or one that can be annexed to the actual PPP proposal.

At the same time, besides environmental constraints, mitigation or compensation measures, the opportunities for enhancing the sustainability function should be adequately addressed. An example for the South-African Somchem industrial complex is presented in Box 8.

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18 CSIR, 1998
Box 8: Examples of environmental opportunities and constraints

Examples of environmental opportunities and constraints identified in the SIA for the Somchem industrial complex at Krantzkop near Wellington:

Opportunities

- Water supply currently available for industrial usage, as Krantzkop only uses 25% of its permitted 4.000.000 m³ per annum water allocation.
- Potential usage of good quality groundwater.
- The R44 is identified as a scenic route and offers opportunities to support eco-tourism growth.

Constraints

- Possible limited pollution risk to shallow groundwater and stream if appropriate management actions are not taken.
- Total SO₂ emissions from the site may in a “worst case” scenario exceed levels which will ensure protection of sensitive receptors near the site.
- The ability of existing transportation routes in the area to sustain further demand, in particular between the site and the R44 – Soetendal Road intersection.

It is also useful to remind that decision-makers do not necessarily have a solid background in environmental or social sciences. As a result, a non-technical recommendations section in the form of an executive summary and backed up by a sound scientific analysis of the PPP options is an essential element in any SIA statement.

Affected stakeholders should also be provided with the opportunity to review the SIA and provide comments. All those comments need to be recorded and the SIA statement shall be reviewed if required.

STEP 8: EVALUATION AND MONITORING

Following the final decision on the PPP and its implementation, a follow-up evaluation and monitoring program should be implemented by the RMC and reported to the Country Department Environmentalist/Social Expert who shall in turn report to the Task Manager. Such allows for enhancement of the SIA benefits by providing a feedback mechanism to determine the effectiveness of the SIA process. It also helps in identifying further changes that may be needed in the PPP. The following issues should be addressed in the monitoring program:
1. An evaluation of the validity of the impact predictions and strategic assessment conclusions;

2. Whether the proposed measures to mitigate adverse effects and optimise benefits were actually carried out;

3. An evaluation of the effectiveness of the mitigation/optimisation measures;

4. To what extent the PPP purpose has been achieved and to what extent the achievement is as a result of the PPP;

5. Whether the achievement is sustainable;

6. Whether the achievements extend to the poorest and most marginalised levels of society;

7. Identification of any further changes needed to improve environmental/social benefits of the PPP;

8. Identification of any additional strategic or project EAs that may be needed as a result of the PPP; and

9. Lessons learned from the SIA.

The follow-up program should clearly define roles for the coordination of the monitoring system, monitoring methods and indicators, procedures for regular adjustments of policy and external communication and capacity building.
ANNEX D: CASE STUDY

SIA for Road Sector in Ethiopia
Case Study: Ethiopia Road Sector development programme

Background

The Federal Democratic Republic of Ethiopia (FDRE) considers rural development, through Agricultural Development-led Industrialisation, to be of highest priority. Rural infrastructure development and in particular the acceleration of the roads program, is vital to this plan, since it will increase connectivity between settlements and regions.

The Ethiopian Roads Authority (ERA) has therefore developed a Road Sector Development Program (RSDP) for the period 1997-2007, to accelerate the expansion and improvement of the road network. This is being implemented by the Ethiopian Roads Authority (ERA) and the Regional State Rural Roads Organisation (RROs).

IDA is providing credit financing for an RSDP “Support Project” which forms part of the overall RSDP. The principal aims of the Support Project are to:

- Improve trunk and regional road access to meet agricultural and other economic development needs;
- Ensure the rehabilitation and upgrading of trunk and rural roads and the provision of technical assistance to facilitate this;
- Build institutional capacity for sustainable road development and maintenance, in both the public (ERA and the regional RROs) and private sectors;
- Provide economic opportunities for the rural poor through employment in road construction and provision of affordable means of transport; and
- Assist in the development of environmental guidelines and sector EA capacity building.

The cost of the RSDP Support Project totals around US$540 million of which IDA is providing some US$310 million. The development of environmental guidelines and Sector EA capacity building represents just 0.3% of the total cost of the Support Project. This component is being financed by the EU and the Nordic Development Fund. The RSDP Support Project is being implemented between 1998 and 2003.

The case study focuses on the EA of the whole RSDP. The assessment of the RSDP consisted of two types of studies: a road sector EA (for the purpose of

19 Adapted from Plancenter Ltd, 1997.
this summary referred to as SIA) and site specific EAs for five planned road components.

The following sections describe the SIA process in accordance with the eight SIA steps.

The SIA process

Step 1: Scoping

Study Objectives

The aim of the SIA was to ensure that in-country capacity, regulatory frameworks and procedures for environmental management were established and that they would serve as a basis for environmental assessment of all future road construction carried out under the RSDP.

The specific objectives were to:

• Identify the most significant environmental issues that could arise in the RSDP and future road sector development in Ethiopia;
• Develop in-country capacity for road sector EA or SIA (looking at the policy/regulatory and institutional framework);
• Define environmental principles and criteria for road development to inform the process of selecting priority roads for the RSDP; and
• Provide the basis for published guidelines for the EA of road projects in Ethiopia.

Stakeholder Identification

The major stakeholders identified included:

• Ethiopian Roads Authority (ERA);
• The Ethiopian Environment Protection Agency (EPA);
• Regional/local NGOs;
• Road side dwellers;
• Road users;
• Road side businesses; and
• Local town and village communities.

Environmental/Social Issues Identification
Upon scoping, the most significant impacts were expected to be related to the road construction works. The impacts studied were:

- Adverse impacts on vegetation during construction (i.e. operating quarries);
- Wildlife impacts during construction (i.e. expected to be limited to temporary displacement of migratory species during construction); and
- Induced development, interpreted to refer to construction camps and the issue of their location, rather than to induced ribbon development being attracted along the road.

**Study Approach**

It was decided that the study approach should consist of:

- Collection and review of baseline data (including relevant legislation, policy papers and guidelines of the Ethiopian road and environment sectors; reports and statistics on the baseline biological and physical environment; recently completed road EAs from Ethiopia; and design specifications for the proposed road developments);
- Interviewing organisations, institutions and persons relevant to the work;
- Site visits to the five proposed road sites for consultations;
- Questionnaires, meetings and interviews with all stakeholders;
- Public meetings in towns and villages during site visits; and
- A workshop held to discuss the environmental impacts of the road sector.

Given the wide-ranging objectives of the SIA, environmental issues were analysed from a national policy and institutional level down to site specific concerns. The approach taken appears to have focused on institutional issues with regards to the high strategic level planning, whilst focusing most of the impact assessment work at project level.

**Step 2: Program Options**

At the strategic planning level, the two options considered in the SIA were the rehabilitation and upgrading of the existing federal road network versus the construction of a new road network.

A third option to be considered in individual road projects would be the ‘no action’ option. However, in all five proposed road rehabilitation projects, this ‘no action’ alternative was dismissed due to:
• Current dust emissions from unpaved, unmanaged roads causing reduced visibility and consequent high frequency of accidents, as well as health impacts on road users and dwellers;

• Other environmental impacts and hazards, including extensive erosion problems, slippery roads during the rainy season, etc.;

• Ethiopia’s economic progress depending on the presence of a well managed, reliable road network.

Step 3: Establish Standards, Thresholds and Sustainability Criteria

This SIA did not establish quantitative environmental standards and sustainability criteria for the road sector as such. As a result, significance of impacts was not evaluated against these benchmarks and was mainly addressed in a descriptive way.

One of the main objectives of the SIA was to define environmental principles and criteria for road development to inform the process of selecting priority roads for the RSDP.

However, the consultant deemed a general priority setting mechanism at RDSP level on environmental grounds impossible. The consultant advised it was possible to compare two or more specified projects (roads) based on environmental impacts, but this requires the setting of weightings for different issues, and setting of numerical measuring principles for various impacts, which are difficult in a manner acceptable to all interest groups. Similarly, it was found to be impossible to define ‘environmental costs’ or ‘benefits’ comparable with financial inputs.

Since the objective of the whole road sector development program was to promote economic growth through providing a reliable road network, which constitutes a basic infrastructure need for the country, the focus of the SIA was more on minimising and mitigating environmental and social impacts as a way of achieving sustainable road development.

The SIA did provide descriptive sustainability principles for road development. It was deemed that the key success factor of the RSDP from an environmental sustainability point of view will mainly depend on the progress in institutional development, i.e. capacity building within the ERA, EPA and contractors to deal with environmental issues related to the road sector.
Other sustainability principles put forward included:

- Careful siting of road alignments and major structures to avoid erosion hazards;
- Careful siting of quarry and borrow areas and their rehabilitation upon completion of the road works;
- Siting of the construction camps such that they can develop into permanent settlements without putting too much pressure on local natural resources including water and fuel wood;
- Avoidance of road alignments through National Parks or other sensitive areas;
- Control measures on use of local natural resources for energy, food or construction purposes;
- Establishment of appropriate and transparent compensation and resettlement procedures; and
- Extensive public participation and consultation with all stakeholders about their values, attitudes and possible alternative solutions to be integrated into all phases of the project cycle.

Step 4: Impact Assessment

The SIA addresses the most critical environmental and social impacts associated with RSDP projects. However, the consultant states that this does not mean that for individual road projects, the EA could be limited to these issues. All road projects need either a full EIA process or an initial environmental assessment in which all potential impacts shall be assessed. The consultant recommends using the checklist developed by the World Bank as a basic tool. Once more in-country experience is gained by ERA, more specific checklists and further guidelines can be developed for the Ethiopian conditions.

As the SIA addresses the environmental issues associated with the road sector in Ethiopia in general, the impact assessment is qualitative rather than quantitative and entirely based on existing national background data/statistics and views of stakeholders. Site visits were undertaken as part of the project EIAs, but also provided useful information for the SIA.
The critical environmental and socio-economic impacts identified in the SIA were:

- Erosion hazards;
- Pollution hazards (water, soil and air) from dust, oil and fuel spills, cement slag, turbidity, etc.
- Vegetation loss due to quarrying, clearing for road construction and use of fuel wood;
- Fauna impacts due to habitat loss and fragmentation, wildlife migration;
- Land occupation and resettlement needs;
- Reduced livelihood (land occupation, loss of business or costs for relocation);
- Occupational health and safety of construction workers; and
- Impacts from the construction camps including prostitution, social conflicts, spread of venereal diseases, price inflation.

Step 5: Mitigation/Enhancement Measures and Addressing Residual Impacts

The main enhancement measure aimed at achieving environmental and social sustainability of road sector projects is to strengthen EIA and environmental management capacity within the ERA and the Ethiopian EPA.

Specific mitigation measures aimed at minimising environmental and socio-economic impacts arising from road projects, were also addressed in the SIA, be it in a generic way. Detailed mitigation and monitoring programs need to be developed at the project EIA level on a case by case basis.
An example of mitigation measures for economic impacts associated with road construction is listed in Table D/1.

Table D/1  Mitigating measures for economic impacts

<table>
<thead>
<tr>
<th>Potential Environmental Impact</th>
<th>Mitigation Measure</th>
<th>Responsibility</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human and Social Environment: Economic Issues</td>
<td>Avoid/minimise the temporary losses of agricultural land</td>
<td>ERA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rehabilitate sites to their previous condition</td>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>Loss of agricultural land</td>
<td>Avoid/minimise the temporary losses of grazing land</td>
<td>ERA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rehabilitate sites to their previous condition</td>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>Loss of grazing land</td>
<td>Required areas for construction should be planned so as to minimise the effects on</td>
<td>ERA</td>
<td>Units of coffee bushes, chat bushes and eucalyptus trees</td>
</tr>
<tr>
<td></td>
<td>the growing crop, coffee and chat plants, and trees</td>
<td></td>
<td>Price/sq metre: hollow block house about 1200 birr</td>
</tr>
<tr>
<td></td>
<td>The value of the lost crop should be estimated according to market prices</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demolished houses are compensated according to the cost of a new house.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The SIA study concluded that the only significant residual impacts would be temporary and occur mainly during construction. Using the appropriate management strategies, these impacts can be minimised.

Residual social impacts should be mainly positive, as an effective road network would stimulate economic development in previously isolated areas. The only potential for permanent adverse effects could result from a badly managed expropriation and resettlement program.
Step 6: Institutional Strengthening Plan

The main focus of the SIA report was on institutional strengthening of the institutions involved in road sector projects, i.e. governmental road sector (ERA) and environmental (EPA) agencies, as well as national contractors.

For example, staffing and qualification requirements for the Environmental Management Branch of the ERA have been defined by the SIA team and are listed in Table 2.

Table 2  Staffing Requirements for ERA’s Environmental Management Branch

<table>
<thead>
<tr>
<th>Position</th>
<th>Main Tasks and Responsibilities</th>
<th>Qualifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA Manager</td>
<td>Branch leadership and management&lt;br&gt;Policy and strategy advice&lt;br&gt;Technical inter-institutional cooperation&lt;br&gt;Technical (economic, social, physical, ecological) acceptability and prioritisation of projects and measures&lt;br&gt;EA training management</td>
<td>M.Sc. or equivalent degree in disciplines with environmental management background&lt;br&gt;Management and team building experience&lt;br&gt;Extensive environmental training (include EA)</td>
</tr>
<tr>
<td>Environmental Engineering Specialist</td>
<td>Environmental impact assessment of engineering solutions&lt;br&gt;Evaluation of road plans, alignments, designs and maintenance&lt;br&gt;Trainer in environmental engineering&lt;br&gt;Environmental Modelling</td>
<td>Engineering degree&lt;br&gt;Experience in road design and engineering and modelling&lt;br&gt;Training/experience in environmental impact analysis and mitigation</td>
</tr>
<tr>
<td>Hydro-geologist</td>
<td>Specialist/adviser in erosion control, road stabilisation, hydrological impacts of road development, as well as accidents and chemical risks and bioengineering&lt;br&gt;Trainer in hydrological, geological, and soils issues and problem solving</td>
<td>M.Sc. in Hydrogeology, Engineering Geology&lt;br&gt;Teamwork and teaching skills&lt;br&gt;Training/experience in environmental impact analysis and mitigation</td>
</tr>
<tr>
<td>Ecologist</td>
<td>Specialist/adviser in mitigating adverse biological and ecological impacts of roads&lt;br&gt;Trainer in ecological</td>
<td>M.Sc in Biological Sciences&lt;br&gt;Teamwork and teaching skills&lt;br&gt;Experience and training in EA and infrastructure projects</td>
</tr>
<tr>
<td>Position</td>
<td>Main Tasks and Responsibilities</td>
<td>Qualifications</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Sociologist or Socio-Economist</td>
<td>environmental optimisation and problem solving and infrastructure projects desirable</td>
<td>Demonstrated understanding of ecological modelling desirable</td>
</tr>
<tr>
<td></td>
<td>Specialist/adviser in community development, public participation, and social/socio-economic baseline and impact studies, land use issues</td>
<td>M.Sc. in Sociology or equivalent Good understanding of economics and infrastructure projects an asset</td>
</tr>
<tr>
<td></td>
<td>Trainer in the optimisation of social impacts</td>
<td>Experience in social impact analysis/synthesis desirable</td>
</tr>
</tbody>
</table>

Furthermore, the consultant recommended extensive EIA training for the personnel of the Environmental Management Branch, as well as specific training modules for other ERA personnel.

The training topics for other ERA personnel may include:

For management level:

- Environmental issues of road sector
- Environmental management system
- Environmental leadership

For engineering level:

- Environmental issues of road sector (all)
- Environmental management system (all)
- Environmental Assessments, legislation, purpose, contents, procedures (project managers in planning)
- Public participation in planning and design process (project managers in planning and design)
- Abilities as a public performer and communication skills (project managers in planning and design)
- Environmental aspects in planning and design (project managers, planners and designers)
- Equipment and machinery (procurement staff)
For maintenance and construction staff:

- Environmental issues of the road sector, emphasis on maintenance (construction) issues (all)
- Environmental management system (district managers and deputies)
- Specific issues: workshops, machinery, waste, recycling and reuse of materials, salvaging of waste oils, solvents, etc., safety at work, traffic safety, smooth driving, saving of energy, quarries, crushing plants, asphalt plants, borrow pits.

**Step 7: SIA Reporting**

A total of six reports were submitted by the consultant, consisting of one actual SIA report (Environmental Analysis of the Road Sector) and five project-level EAs for the five proposed road rehabilitation projects within the RSDP.

The SIA report consists of a description of:

- The policy, legal and institutional framework of the environmental aspects of the Ethiopian road sector, including staffing and training needs for the Environmental Management Branch of the ERA;
- An overview of the ERA’s Road Sector Development Plan from an environmental point of view;
- The critical environmental impacts associated with the Ethiopian road sector and their mitigation measures; and
- A monitoring plan (limited to responsibilities and a list of parameters to be monitored. Detailed monitoring plans need to be developed for each road project on a case-by-case basis).
Step 8: Monitoring

The monitoring program proposed in the SIA will ensure that 1) the mitigation measures are carried out effectively and in accordance with the SIA’s recommendations, and 2) good construction practices are followed to minimise impacts to the environment.

The SIA report briefly describes monitoring requirements from construction to decommissioning, including responsibilities. Although ERA will retain ultimate responsibility, certain components of the monitoring program shall be performed by other governmental agencies under contract to ERA.

Detailed monitoring programs, including methodologies, frequency, responsibilities, accountability and costs, need to be developed for each road project on a case-by-case basis.

Monitoring requirements were established for the following parameters:

- Soil and erosion;
- Fauna and flora;
- Topsoil management;
- Health and safety;
- Nuisance, noise and dust;
- Equipment fuelling and maintenance;
- Cleanup, including quarry rehabilitation; and
- Monitoring of social and economic issues, including success of resettlement and compensation measures, migration, social structural changes, cultural and historical monuments and sites, growth of tourism and other economic activities.