



*Integrated Environmental Management Information Series*

*Criteria for determining  
Alternatives  
in EIA*

11



Department of  
Environmental Affairs and Tourism

Other topics in the series of overview information documents on the concepts of, and approaches to, integrated environmental management are listed below. Further titles in this series are being prepared and will be made available periodically. Sequence of release and titles are subject to change.

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Information Series 1:	Screening
Information Series 2:	Scoping
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Information Series 12:	Environmental Management Plans
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## PREFACE

This document is one of a series of overview information documents on the concepts of, and approaches to, Integrated Environmental Management (IEM). IEM is a key instrument of South Africa's National Environmental Management Act (NEMA). South Africa's NEMA promotes the integrated environmental management of activities that may have a significant effect (positive and negative) on the environment. IEM provides the overarching framework for the integration of environmental assessment and management principles into environmental decision-making. It includes the use of several environmental assessment and management tools that are appropriate for the various levels of decision-making.

The aim of this document series is to provide general information on techniques, tools and processes for environmental

assessment and management. The material in this document draws upon experience and knowledge from South African practitioners and authorities, and published literature on international best practice. This document is aimed at a broad readership, which includes government authorities (who are responsible for reviewing and commenting on environmental reports and interacting in environmental processes), environmental professionals (who undertake or are involved in environmental assessments as part of their professional practice), academics (who are interested in and active in the environmental assessment field from a research, teaching and training perspective), non-government organisations (NGOs) and interested persons. It is hoped that this document will also be of interest to practitioners, government authorities and academics from around the world.

This document has been designed for use in South Africa and it cannot reflect all the specific requirements, practice and procedures of environmental assessment in other countries.

This series of documents is not meant to encompass every possible concept, consideration, issue or process in the range of environmental assessment and management tools. Proper use of this series of documents is as a generic reference, with the understanding that it will be revised and supplemented by detailed guideline documents.

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## SUMMARY

Consideration of alternatives is one of the most critical elements of the environmental assessment process. Its role is to provide a framework for sound decision-making based on the principles of sustainable development.

Alternatives should be identified as early as possible in the project cycle. The search for alternatives should be well documented and should take into account the views of stakeholders. Key criteria for consideration when identifying alternatives are that they should be "practicable", "feasible", "relevant", "reasonable" and "viable". A range of alternatives exists, not all of which are necessarily appropriate for each project under consideration.

The different categories of alternatives that can be identified include: (1) activity alternatives; (2) location

alternatives; (3) process alternatives; (4) demand alternatives; (5) scheduling alternatives; (6) input alternatives; (7) routing alternatives; (8) site layout alternatives; (9) scale alternatives; and (10) design alternatives. The range of categories of alternatives to be evaluated should be considered along with the "no-go" alternative..

Assessment of alternatives should include a comprehensive comparison of all potential impacts, both direct and indirect and cumulative, on the environment. The goal of evaluating alternatives is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, or through reducing or avoiding potentially significant negative impacts.

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## 1. INTRODUCTION

The concept of alternative can be defined as a possible course of action, in place of another, that would meet the same purpose and need.

It is critical that an alternative relates to both these elements of a proposal. The purpose of and need for a proposal should be clearly and unambiguously stated as this provides the starting point for the identification of alternatives. The need and purpose of a proposal should be validated against local, regional and national priorities. It is generally understood that the principles of sustainable development, would provide the framework for evaluating the need and purpose of a proposal. For example, a current priority in Africa is the eradication of poverty. Therefore, alternatives that create employment, improve basic infrastructure or reduce mortality would rank higher when making comparative choices.

## 2. PURPOSE OF THIS DOCUMENT

This document has been written for a wide audience. Its objective is to serve as an initial reference text. The aim is to provide an introductory information source to government authorities, environmental practitioners, non-governmental organizations (NGOs), industry, project proponents, academics, students and other interested and affected parties (I&APs).

This document provides an overview of the key criteria for determining project alternatives, in the Environmental Impact Assessment (EIA) Process.

## 3. ROLE OF ALTERNATIVES IN ENVIRONMENTAL IMPACT ASSESSMENT

The role of alternatives is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, and or through reducing or avoiding potentially significant negative impacts.

Consideration of potential alternatives in the EIA process is one of the most critical elements of the scoping phase (DEAT, 2002). Its importance is highlighted by Glasson et al. (1999) and by the Council of Environmental Quality (CEQ) in the United States, which describes the consideration of alternatives as the 'heart' of EIA (CEQ, 1978). By implication, alternatives are essential to the EIA process, yet they are often inadequately handled. It is not uncommon to find that feasible alternatives are omitted deliberately or that alternatives proposed by stakeholders are rejected without adequate justification.

Due consideration of alternatives ensures that the EIA is not reduced to defence of a single project proposal that is the desire of the proponent. Rather, it provides the opportunity for an unbiased, proactive consideration of options, to determine the most optimal course of action.

The manner in which alternatives are addressed in the scoping phase of an EIA is often indicative of the subsequent unfolding of the entire EIA process. An appropriate range of alternatives that would meet the

stated need for and purpose of the project has to be considered. Failure to consider alternatives adequately at the outset is often symptomatic of a biased process that is intent on defending a project proposal. Such EIA reports are often referred to as 'sweetheart' reports as they attempt to justify a particular course of action rather than weighing up all the alternatives in an objective manner. They can also lead to stakeholder dissatisfaction through failure to consider relevant suggestions for alternatives from stakeholders and as such may lead to conflicts within the EIA process. The manner in which alternatives to a proposal have been considered is often one of the contested areas of an EIA.

By contrast, recognition of the valuable role of alternatives implies a desire for transparency in the EIA process and a willingness to explore all feasible options in an objective manner, with a view to facilitating balanced decision-making in order to achieve sustainable development. Stakeholder confidence is established when alternatives are considered in an open and transparent manner and there is public acceptance of the alternatives to be considered. The entire EIA process often proceeds more smoothly as a result.

Obstacles to the full consideration of alternatives include:

- \* Technological obstacles, where high costs of a particular technology may prevent it from being considered as a viable option, or the lack of technological development may preclude certain options from consideration;
- \* Resource availability obstacles, which may limit the range of alternatives in a particular context;
- \* Political economy or intellectual obstacles, in which barriers may be imposed by groups or individuals, usually holding positions of economic or political power, who wish to advance a particular agenda.

The role of alternatives is to provide a framework for subsequent decision-making by a competent authority (Glasson et al., 1999). The importance of their role cannot be overestimated. Full disclosure of all impacts associated with relevant alternatives provides the basis for sound decision-making based on the principles of sustainable development. Decision-makers should be provided with adequate information to enable them to determine the most acceptable alternative by making trade-offs between biophysical, social, economic, historical, cultural and political factors.

## 4. TYPES OF ALTERNATIVES

A range of types of alternatives exists, not all of which are necessarily appropriate for each EIA. Consideration should be given to those that are most appropriate for the potential project. An important starting point for determining appropriate alternatives is to consider the following aspects:

- \* Who is the proponent? (private or public sector)
- \* Who are the intended beneficiaries? (general public, select groups or individuals)
- \* Where is the proposal to occur? (zoned land use, common property or private property)

Projects that are proposed on public land and/or for the public good should consider the major development alternatives that would meet the stated need for and purpose of the project. The nature and location of the proposed project would require interrogation through activity and location alternatives (see 4.1 and 4.2 below). Incremental alternatives (4.2 to 4.10) would be relevant for both public as well as private projects. Alternatives can be distinguished into discrete or incremental alternatives.

*Discrete alternatives*, are options which are generally identified during the pre-feasibility, feasibility and or scoping phases of the EIA.

*Incremental alternatives*, arise during the assessment process in order to address the negative impacts that have been identified. They are usually developed to reduce adverse impacts and or enhance benefits. Since they are linked closely with the identification of mitigation measures, they are often included with a discussion of mitigation measures or are incorporated into the final project proposal.

The following types or categories of alternatives can be identified:

1. Activity alternatives
2. Location alternatives
3. Process alternatives
4. Demand alternatives
5. Scheduling alternatives
6. Input alternatives
7. Routing alternatives
8. Site layout alternatives
9. Scale alternatives
10. Design alternatives.

### 4.1 Activity Alternatives

These are sometimes referred to as project alternatives, although the term activity can be used in a broad sense to embrace policies, plans and programmes as well as projects. Consideration of such alternatives requires a change in the nature of the proposed activity. An example is incineration of waste rather than disposal in a landfill, or the provision of public transport rather than increasing the capacity of roads. In view of the substantive differences in the nature of the proposed activities, it is likely that this category is most appropriate at a strategic decision-making level, such as in a Strategic Environmental Assessment (SEA).

### 4.2 Location Alternatives

Location alternatives could be considered for the entire proposal or for a component of a proposal, for example the location of a processing plant. The latter is sometimes considered under site layout alternatives. A distinction

should also be drawn between alternative locations that are geographically quite separate, and alternative locations that are in close proximity. In the case of the latter, alternative locations in the same geographic area are often referred to as alternative sites. This tends to be the more common application.

In some cases it may not be possible to consider alternative locations as there may be constraints to the activity location. For example, in the case of mining, extraction can only occur at the identified location of an ore body and thus it is not be feasible to consider alternative locations. In such a case other types of alternatives, particularly the 'no-go' alternative assume importance in the EIA.

Not all constraints are as obvious as the mining example. Glasson *et al.* (1999) refer to more subtle engineering constraints that may prevent all locations from being considered. Similarly, there are economic constraints, such as distance to markets, availability of labour supply and availability of infrastructure that may influence the choice of location for a project (Glasson *et al.*, 1999). Other constraints exist when a private landowner wishes to develop land. In such a case, alternative locations are also not applicable and again other types of alternatives assume importance.

Location alternatives are particularly relevant in change of land use applications as well as 'greenfield' developments. Location alternatives are unlikely to be important when a potential project under consideration forms part of an overarching strategic planning initiative such as an Industrial Development Zone or a municipal plan.

### 4.3 Process Alternatives

Various terms are used for this category, including technological alternative and equipment alternative. The purpose of considering such alternatives is to include the option of achieving the same goal by using a different method or process. An industrial process could be changed or an alternative technology could be used. For example, 1000 megawatt of energy could be generated using a coal-fired power station or an array of wind turbines. At a smaller scale, usually at the scale of a single plant, process alternatives could include the recycling of process water or the minimization of wastes. In the case of the smaller scale examples, it is possible for these to be incorporated into the project description and not necessarily evaluated as separate alternatives.

Generally, specialist input is required to identify process alternatives. The proponent should be encouraged to explore all possible alternatives, including the Best Practicable Environmental Option (BPEO). The BPEO can be defined as the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society in the long term as well as in the short term.

This type of alternative is particularly relevant to industrial projects. Due to the technical nature of the alternatives, the proponent is expected to play a major role in the identification of alternatives. For this reason transparency in identification and evaluation of alternatives is critical.

#### *4.4 Demand Alternatives*

Demand alternatives arise when a demand for a certain product or service can be met by some alternative means. Thus, for example, the demand for electricity could be met by supplying more energy or through using energy more efficiently by managing demand.

#### *4.5 Scheduling Alternatives*

These are sometimes known as sequencing or phasing alternatives. In this case an activity may comprise a number of components, which can be scheduled in a different order or at different times and as such produce different impacts. For example, activities that produce noise could be scheduled during the day to minimize impacts, and activities that may impact on birds could be scheduled to avoid the migratory season (Glasson et al., 1999). Such alternatives could be incorporated into the project proposal and so be part of the project description, and hence need not necessarily be evaluated as separate alternatives.

#### *4.6 Input Alternatives*

By their nature, input alternatives are most applicable to industrial applications that may use different raw materials or energy sources in their processes. For example, an industry may consider using either high sulphur coal or natural gas as a source of fuel. Again, such alternatives could be incorporated into the project proposal and so be part of the project description, and need not necessarily be evaluated as separate alternatives.

#### *4.7 Routing Alternatives*

Consideration of alternative routes generally applies to linear developments such as power lines, transport and pipeline routes. In route investigations, various corridors are investigated and compared in terms of their impacts.

#### *4.8 Site Layout Alternatives*

Site layout alternatives permit consideration of different spatial configurations of an activity on a particular site. This may include particular components of a proposed development or may include the entire activity. For example, siting of a noisy plant away from residences; and secondly, siting of a particular structure either prominently to attract attention or screened from view to minimize aesthetic impacts (Glasson et al., 1999).

#### *4.9 Scale Alternatives*

In some cases, activities that can be broken down into smaller units can be undertaken on different scales. For example, in a housing development there could be the option of 100, 150 or 200 housing units. Each of these scale alternatives may have different impacts.

#### *4.10 Design Alternatives*

Consideration of different designs for aesthetic purposes or different construction materials in an attempt to optimise local benefits and sustainability would constitute design alternatives. Appropriate applications of design alternatives are communication towers. In such cases, all designs are assumed to have different impacts. Generally, the design alternatives could be incorporated into the project proposal and so be part of the project description, and need not be evaluated as separate alternatives.

## 5. THE 'NO-GO' ALTERNATIVE

The 'no-go' alternative is sometimes referred to as the 'no-action' alternative (Glasson *et al.*, 1999) and at other times the 'zero-alternative'. It assumes that the activity does not go ahead, implying a continuation of the current situation or the status quo. The 'no-go' alternative is also regarded as a type of alternative, but is described separately to emphasize its importance in EIA.

In a situation where negative environmental impacts have high significance, the 'no-go' alternative takes on particular importance. In some cases, the 'no-go' alternative may be the only realistic alternative and then it has a critical role to play.

It is not true to assume that the 'no-go' alternative is necessarily the best from an environmental perspective. In many cases, expansions and upgrades of existing industries (the 'go' alternative) permit the implementation of technological improvements such as the replacement of outdated equipment that leads to reduced emissions to the air or water, in addition to the primary aim of increased production capacity.

Many practitioners argue that the 'no-go' alternative should be included in every environmental assessment as it provides a baseline against which to assess the relative impacts of other alternatives. Indeed, the option of not proceeding with a project is regarded as important enough for the 'no-go' alternative to be included in the legislation of many countries.

It is recommended that the 'no-go' alternative should routinely be included as part of the analysis in EIA. The 'no-go' alternative provides the means to compare the impacts of project alternatives with the scenario of a project not going ahead. In evaluating the 'no-go' alternative it is important to take into account the implications of foregoing the benefits of the proposed project (World Bank, 1996).

The description of the baseline or existing environment or *status quo* is essential to all environmental assessments, and should be focussed on the key characteristics of, and values or importance attached to the environment. The baseline, or 'no-go' option, as well as all other relevant alternatives must be described, assessed and evaluated at the same scale and level of detail that enables adequate comparison with the proposed project.

## 6. IDENTIFICATION OF ALTERNATIVES

Various types of alternatives have been described above. Not all of these are necessarily appropriate for each project under consideration. Determination and analysis of alternatives should be appropriate for the potential project being examined.

Alternatives should be identified as early as possible in the project cycle (e.g. during the pre-feasibility stage). Identification of alternatives usually takes place during the scoping phase of the EIA.

The search for alternatives should be broad and objective and should be well documented. Stakeholders should be consulted in the identification of alternatives and their views taken into account. Key criteria when identifying alternatives are that they should be "practicable", "feasible", "relevant", "reasonable" and "viable".

Once all the alternatives are identified, it may be necessary to focus on a few and to eliminate others. The elimination process should be well documented and substantiated, with an explanation of why certain alternatives are not being considered in detail. It is usually possible in consultation with stakeholder groups to eliminate some alternatives. A detailed analysis of potential environmental impacts should be given for each of the remaining preferred alternatives, as well as a consideration of technical and financial aspects as they also have potential impacts.

A generic process for identifying and analysing alternatives is illustrated in Figure 1. The starting point for project EIA is to identify the project objectives. For SEA, the starting point is to define development objectives. This is followed by identifying alternative technologies (for project EIA) or alternative development strategies (for SEA). Having defined a range of technologies or strategies, resource requirements should be determined for each alternative (World Bank, 1996). Alternatives should then be screened to limit effort and cost associated with data collection and analysis. Screening should be based on criteria such as ability of technology to meet project objectives, availability of resource requirements, location suitability and social acceptability. Having identified a shortlist of alternative technologies, the next step is to identify a range of alternative locations. The location alternatives should then be screened. Once a short list of options have been produced, each alternative should be evaluated. The final step in the process is to comparatively assess the alternatives.

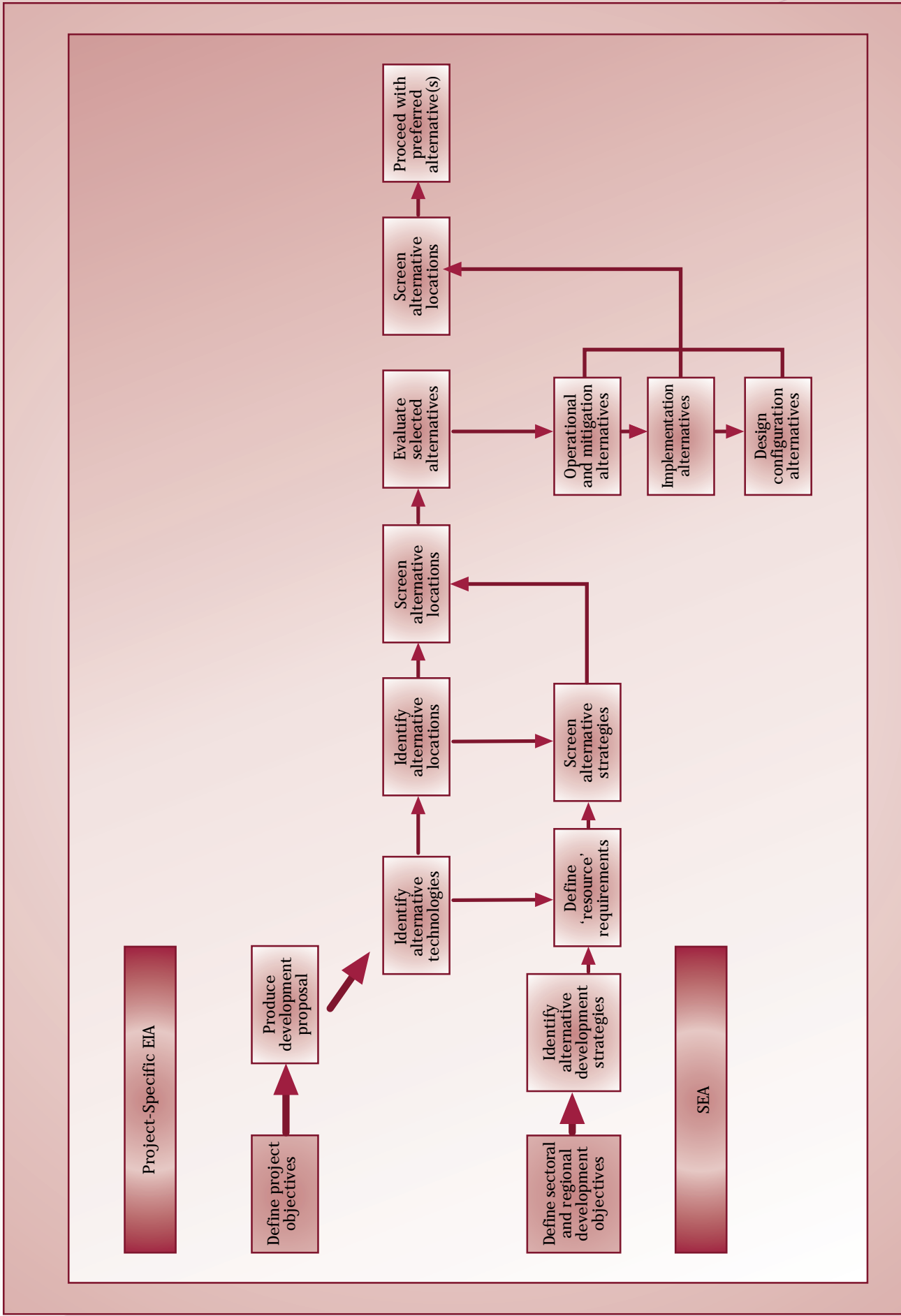
Alternatives must be assessed and evaluated at a scale and level that enables adequate comparison with the proposed project. Assessment should focus on the potential impacts, both direct and indirect or cumulative, on the environment of all reasonable alternatives.

The discussion of alternatives should include a statement on the criteria used to select certain alternatives and how the level of investigation that was applied to each alternative was established. If an alternative was rejected, a full motivation should be provided.

Methods for comparing alternatives range from very simple descriptive and non-quantitative methods, through methods based on varying levels of quantification to a full quantitative comparison, in which all impacts are expressed in monetary terms (Glasson *et al.*, 1999).



Figure 1: Generic process for identifying and analysing alternatives (adapted from World Bank, 1996)



No matter what method is used, it is important that the alternatives are compared in terms of all potential biophysical, social and economic impacts, both positive and negative. The effectiveness of mitigation measures should also be included. Technical and financial criteria are also relevant. The same evaluation criteria should be used for all alternatives. The comparison should be systematic and well documented and reasons for the preferred alternative given.

## 7. ROLE OF VARIOUS STAKEHOLDERS IN THE IDENTIFICATION AND EVALUATION OF ALTERNATIVES

In order to ensure full disclosure of alternative activities, it is important that various role players contribute to their identification and evaluation. Government authorities have an important contribution to make at this stage of the investigation.

The role of the environmental practitioner is to:

- \* encourage the proponent to consider all feasible alternatives;
- \* provide opportunities for stakeholder input to the identification and evaluation of alternatives;
- \* document the process of identification and selection of alternatives;
- \* provide a comprehensive consideration of the impacts of each of the alternatives; and
- \* document the process of evaluation of alternatives.

The role of the proponent is to:

- \* assist in the identification of alternatives, particularly where these may be of a technical nature;
- \* disclose all information relevant to the identification and evaluation of alternatives;
- \* be open to the consideration of all reasonable alternatives; and
- \* be prepared for possible modifications to the project proposal before settling on a preferred option.

The role of the public is to:

- \* assist in the identification of alternatives, particularly where local knowledge is required;
- \* be open to the consideration of all reasonable alternatives; and
- \* recognise that there is rarely one favoured alternative that suits all stakeholders and that alternatives will be evaluated across a broad range of criteria, including environmental, social and economic aspects.

## 8. SPECIAL CASES WHERE ANALYSIS OF ALTERNATIVES IS NOT FEASIBLE

There are likely to be a few cases where consideration of alternatives is not applicable. These may include a project that is granted exemption from the EIA process by the competent authority since no significant environmental impacts were identified during the screening process. In such a case it must be clearly demonstrated that the proposal is aligned within a pre-evaluated development zone. The proposal should also

be aligned with defined needs and meets development objectives. It is further expected that no aspect of the proposal could be improved.

## 9. ROLE OF ALTERNATIVES IN STRATEGIC ENVIRONMENTAL ASSESSMENT

At the level of a Strategic Environmental Assessment (SEA), consideration of alternatives is critical. Early identification and assessment of alternatives in policies, plans and programmes can avoid many potential problems at the project level (Therivel and Partidario, 1996). In certain cases there may be a range of alternatives at the strategic level to consider. It may be necessary to select preferred alternatives from a general assessment and to refer the detailed assessment to subsequent project level assessments (Lee and George, 2000).

SEA practice is still developing and therefore considering alternatives is often inadequate. Nonetheless, alternatives have a critical role to play at this level of assessment.

## 10. CONCLUSION

Consideration of alternative activities is a critical element of both EIAs and SEAs. Identification should take place during the scoping phase and should facilitate input from all stakeholders. Evaluation should focus on a few preferred alternatives and should include a comprehensive comparison of all potential impacts, including biophysical, social and economic aspects.

Key issues to consider when identifying alternatives are that:

- \* alternatives to most proposals exist;
- \* the need for and purpose of a development activity must be clearly identified to facilitate the identification of appropriate and feasible alternatives;
- \* the appropriate development response is identified from a range of possible options;
- \* the selection is based on a comprehensive and participatory assessment of the full range of options;
- \* social and environmental aspects are accorded the same significance as economic and financial factors in the assessment process; and
- \* the assessment and evaluation of alternatives continues through all stages of project planning, development and implementation.

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## 12. GLOSSARY

### Definitions

#### *Affected environment*

Those parts of the socio-economic and biophysical environment impacted on by the development.

#### *Affected public*

Groups, organizations, and/or individuals who believe that an action might affect them.

#### *Alternative proposal*

A possible course of action, in place of another, that would meet the same purpose and need. Alternative proposals can refer to any of the following but are not necessarily limited thereto:

- \* alternative sites for development
- \* alternative projects for a particular site
- \* alternative site layouts
- \* alternative designs
- \* alternative processes
- \* alternative materials

In IEM the so-called “no-go” alternative also requires investigation.

#### *Authorities*

The national, provincial or local authorities, which have a decision-making role or interest in the proposal or activity. The term includes the lead authority as well as other authorities.

#### *Baseline*

Conditions that currently exist. Also called “existing conditions.”

#### *Baseline information*

Information derived from data which:

- \* Records the existing elements and trends in the environment; and
- \* Records the characteristics of a given project proposal

#### *Decision-maker*

The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal.

#### *Decision-making*

The sequence of steps, actions or procedures that result in decisions, at any stage of a proposal.

#### *Environment*

The surroundings within which humans exist and that are made up of -

- i. the land, water and atmosphere of the earth;
- ii. micro-organisms, plant and animal life;
- iii. any part or combination of (i) and (ii) and the interrelationships among and between them; and
- iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being. This includes the economic, cultural, historical, and political circumstances, conditions and objects that affect the existence and development of an individual, organism or group.

#### *Environmental Assessment (EA)*

The generic term for all forms of environmental assessment for projects, plans, programmes or policies. This includes methods/tools such as EIA, strategic environmental assessment, sustainability assessment and risk assessment.

#### *Environmental consultant*

Individuals or firms who act in an independent and unbiased manner to provide information for decision-making.

#### *Environmental Impact Assessment (EIA)*

A public process, which is used to identify, predict and assess the potential environmental impacts of a proposed project on the environment. The EIA is used to inform decision-making.

### *Fatal flaw*

Any problem, issue or conflict (real or perceived) that could result in proposals being rejected or stopped.

### *Impact*

The positive or negative effects on human well-being and/or on the environment.

### *Integrated Environmental Management (IEM)*

A philosophy which prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development and decision-making process. The IEM philosophy (and principles) is interpreted as applying to the planning, assessment, implementation and management of any proposal (project, plan, programme or policy) or activity - at the local, national and international level - that has a potentially significant effect on the environment. Implementation of this philosophy relies on the selection and application of appropriate tools to a particular proposal or activity. These may include environmental assessment tools (such as Strategic Environmental Assessment and Risk Assessment); environmental management tools (such as monitoring, auditing and reporting) and decision-making tools (such as multi-criteria decision-support systems or advisory councils).

### *Interested and affected parties (I&APs)*

Individuals, communities or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. These may include local communities, investors, business associations, trade unions, customers, consumers and environmental interest groups. The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

### *Lead authority*

The environmental authority at the national, provincial or local level entrusted in terms of legislation, with the responsibility for granting approval to a proposal or allocating resources and for directing or coordinating the assessment of a proposal that affects a number of authorities.

### *Mitigate*

The implementation of practical measures to reduce adverse impacts.

### *Non-governmental organizations (NGOs)*

Voluntary environmental, social, labour or community organisations, charities or pressure groups.

### *Proponent*

Any individual, government department, authority, industry or association proposing an activity (e.g. project, programme or policy).

### *Proposal*

The development of a project, plan, programme or policy. Proposals can refer to new initiatives or extensions and revisions to existing ones.

### *Public*

Ordinary citizens who have diverse cultural, educational, political and socio-economic characteristics. The public is not a homogeneous and unified group of people with a set of agreed common interests and aims. There is no single public. There are a number of publics, some of whom may emerge at any time during the process depending on their particular concerns and the issues involved.

### *Role-players*

The stakeholders who play a role in the environmental decision-making process. This role is determined by the level of engagement and the objectives set at the outset of the process.

### *Scoping*

The process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an environmental assessment. The main purpose of scoping is to focus the environmental assessment on a manageable number of important questions. Scoping should also ensure that only significant issues and reasonable alternatives are examined.

### *Screening*

A decision-making process to determine whether or not a development proposal requires environmental assessment, and if so, what level of assessment is appropriate. Screening is initiated during the early stages of the development of a proposal.

### *Significant/significance*

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic). Such judgement reflects the political reality of impact assessment in which significance is translated into public acceptability of impacts.

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### *Stakeholders*

A sub-group of the public whose interests may be positively or negatively affected by a proposal or activity and/or who are concerned with a proposal or activity and its consequences. The term therefore includes the proponent, authorities (both the lead authority and other authorities) and all interested and affected parties (I&APs). The principle that environmental consultants and stakeholder engagement practitioners should be independent and unbiased excludes these groups from being considered stakeholders.

### *Stakeholder engagement*

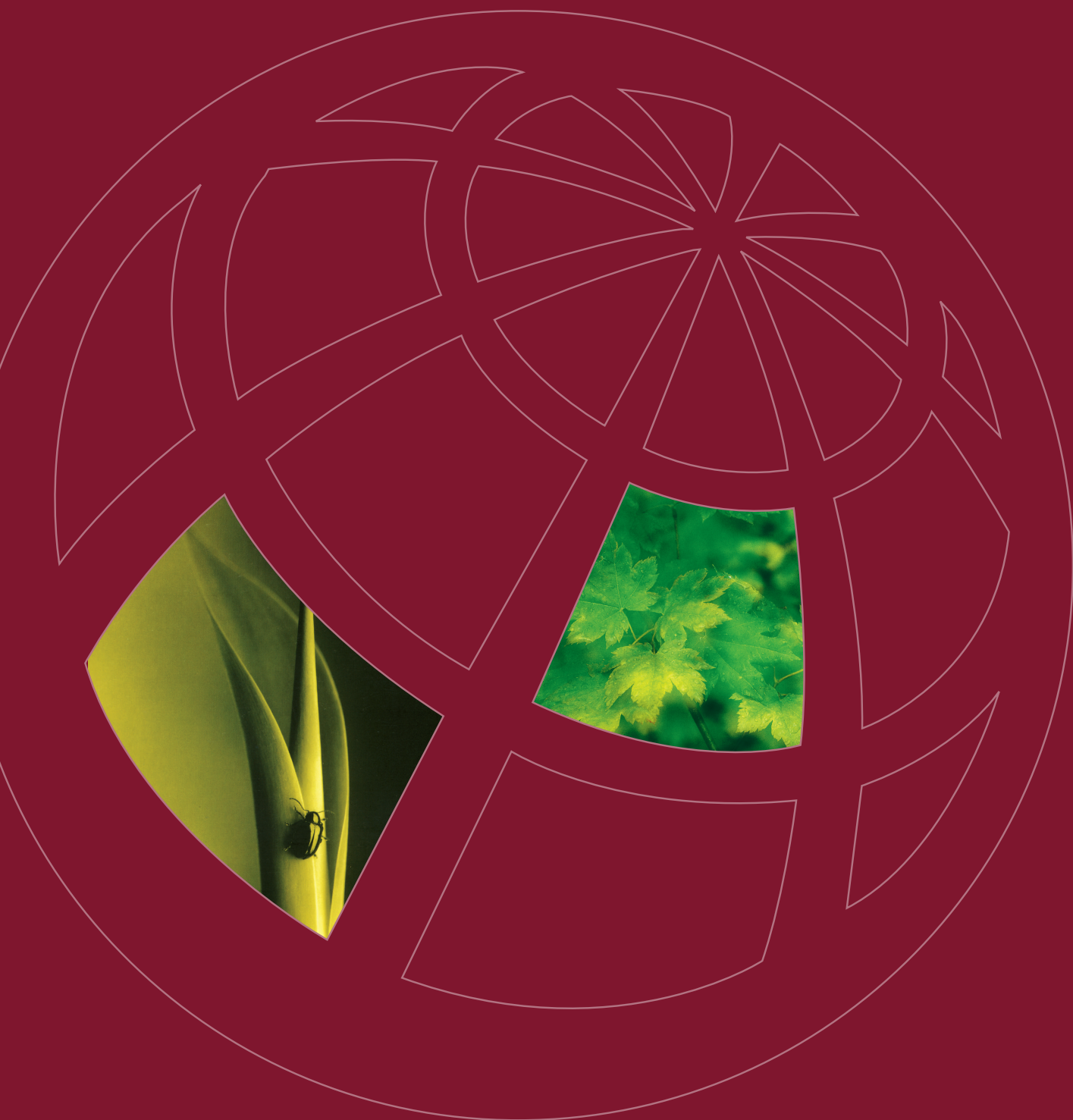
The process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities. The level of stakeholder engagement varies depending on the nature of the proposal or activity as well as the level of commitment by stakeholders to the process. Stakeholder engagement can therefore be described by a spectrum or continuum of increasing levels of engagement in the decision-making process. The term is considered to be more appropriate than the term "public participation".

### *Stakeholder engagement practitioner*

Individuals or firms whose role it is to act as independent, objective facilitators, mediators, conciliators or arbitrators in the stakeholder engagement process. The principle of independence and objectivity excludes stakeholder engagement practitioners from being considered stakeholders.

## *ABBREVIATIONS*

CBO	Community-based Organization
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management Systems
I&AP	Interested and Affected Party
IEM	Integrated Environmental Management
NGO	Non-governmental Organization
SEA	Strategic Environmental Assessment



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