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THE
DEPARTMENT OF
ENVIRONMENTAL
AFFAIRS

ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT STRATEGY

SUBTHEME 11: QUALITY OF TOOLS:

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environmental affairs

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LIST OF ACRONYMS

Baseline	Current conditions - also referred to as 'baseline environment' or 'status quo'
CA	Competent Authority
DEA	Department Of Environmental Affairs
EAPS	Environmental Assessment Practitioners
ECA	Environmental Conservation Act
EIA	Environmental Impact Assessment
EIAMS	Environmental Impact Assessment Management Strategy
EMF	Environmental Management Framework
EMP	Environmental Management Programme/Plan
GIS	Geographic Information System
GPS	Global Positioning System
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.
IAIA	International Association for Impact Assessment
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
NEAS	National Environmental Assessment System
NEM:BA	National Environmental Management: Biodiversity Act
NEM:PAA	National Environmental Management: Protected Areas Act
NEMA	National Environmental Management Act
NGO	Non-Governmental Organisation
REE	Review the Effectiveness and Efficiency of the Environmental Impact Assessment (EIA) System in South Africa (2008)
SANBI	South African National Biodiversity Institute
SDF	Spatial Development Framework
SDI	Spatial Data Infrastructure
SEA	Strategic Environmental Assessment
SoE	State of the Environment Report/ing

THEME 3: IMPACTS AND INSTRUMENTS

1 SUBTHEME11: QUALITY OF TOOLS

1.1 PROBLEM STATEMENT

The problem statement on Subtheme 11: Quality of tools is -

Quality management is not sufficient: codifying of reporting requirements are not available for EIAs and other tools

1.2 OBJECTIVE OF SUBTHEME 11

The objective is to ensure that Environmental Impact Assessment and Management tools as proposed within subtheme 9 meet a specified quality standard.

1.3 GOALS

This Subtheme report has the following goals:

- To identify the information requirements per tool.
- To ensure that minimum criteria for information, analysis and recommendations provided in reports are specified.
- To ensure that information used within tools is complete.
- To ensure that the correct information is used/included in reports or tools
- To ensure that information is correctly interpreted
- To eliminate “copy and paste” possibilities within reports

1.4 DELIVERABLE

Propose a quality management system to ensure the consistent quality of EIAM Tools.

1.4.1 **Tasks/ Deliverables:**

- Compile goals and objectives to achieve subtheme 11.
- Research existing information requirements for existing EIAM tools as identified in Subtheme 9.
- Research existing quality management requirements within existing EIAM Tools as identified in Subtheme 9 with regard to completeness, correctness and interpretation.
- Identify the reasons for poor quality in the EIAM reports.
- Reference subtheme 5 “Quality Assurance and Independence of EAPs” to correlate and integrate findings.
- Propose information requirements and quality control mechanisms (completeness, correctness and interpretation) within the framework of subtheme 5 and tools identified in subtheme 9.
- Identify threats to the implementation of proposals and mechanisms

2 BACKGROUND

2.1 CONTEXT

The Strategy will be developed within the context of existing legislation, policies, NEMA, plans including National, Provincial, and Local Integrated Development plans. The Strategy will need to respond to the current legislative context but should also influence it.

2.2 MANDATE AND LEGISLATION

The Mandate of the Strategy stems from NEMA chapter 5 with specific reference to:

Section 23: General objectives: Integrated Environmental Management:

The purpose of this Chapter is to promote the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities. Activities in this instance mean policies, programmes, processes, plans and projects. Section 24 gives effect to the objectives contained in Section 23 of NEMA only through environmental authorizations. Environmental Authorizations include mainly 3 themes:

- Identification of activities which require authorization.
- Process/procedures for authorization (including instruments).
- Implementation of authorization.

Section 24 fails to allow for usage of instruments such as norms and standards that do not fall within the scope of the definition of “norms and standards” as provided for in section 1 of the Act.

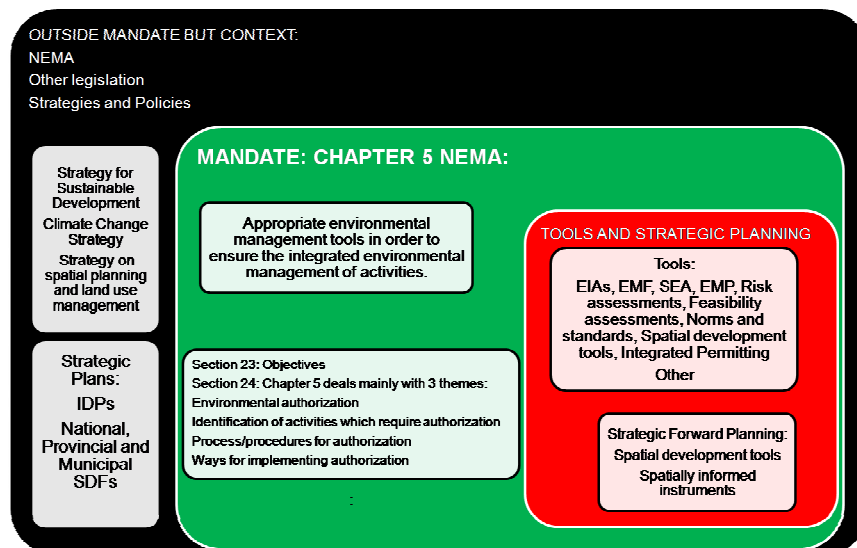


FIGURE 1: MANDATE

The following other existing Tools are also available (NEMA chapter 5, Section 24 (5) (bA)):

EIA, EMF, SEA, EMProgram, Environmental Risk assessments, Environmental Feasibility assessments, Norms and standards, Spatial development tools, and other relevant environmental management instruments that may be developed in time e.g. Strategic Forward Planning tools, Spatial development tools and Spatially informed instruments.

The quality of Tools is mainly assured by the requirement that every applicant must comply with the requirements prescribed in terms of this Act in relation to-

- Steps to be taken before submitting an application, where applicable.
- Any prescribed report.
- Any procedure relating to public consultation and information gathering.
- Any environmental management programme.
- The submission of an application for an environmental authorisation and any other relevant information.
- The undertaking of any specialist report, where applicable.

The Minister, or an MEC with the concurrence of the Minister, may also identify-

- Geographical areas based on environmental attributes, and as specified in spatial development tools adopted in the prescribed manner by the environmental authority, in which specified activities may not commence without environmental authorisation from the competent authority.
- Geographical areas based on environmental attributes, and specified in spatial development tools adopted in the prescribed manner by the environmental authority, in which specified activities may be excluded from authorisation by the competent authority.
- Activities contemplated that may commence without an environmental authorisation, but that must comply with prescribed norms or standards.

The Minister, or an MEC with the concurrence of the Minister, may make regulations;

- Prescribing minimum criteria for the report content for each type of report and for each process that is contemplated in terms of the regulations in order to ensure a consistent quality and to facilitate efficient evaluation of reports.
- Prescribing review mechanisms and procedures including criteria for, and responsibilities of all parties in, the review process.

- Prescribing any other matter necessary for dealing with and evaluating applications for environmental authorisations.

The Minister, or an MEC with the concurrence of the Minister, may also:

- develop or adopt norms or standards for activities, or for any part of an activity or for a combination of activities;
- prescribe the use of the developed or adopted norms or standards in order to meet the requirements of the Act;
- prescribe reporting and monitoring requirements; and
- prescribe procedures and criteria to be used by the competent authority for the monitoring of such activities in order to determine compliance with the prescribed norms or standards.

The Director-General must coordinate the activities of organs of state and assist them in giving effect to the objectives in chapter 5 and such assistance may include training, the publication of manuals and guidelines and the coordination of procedures.

2.3 INTEGRATED ENVIRONMENTAL ASSESSMENT INFORMATION AND GUIDELINES SERIES

Based on the mandate provided within the legislation, the DEA has embarked on the compilation of an Integrated Environmental Assessment Information Series 1-23 and Integrated Environmental Assessment Guidelines Series for different tools.

The following Information Series have been compiled focusing on:

Information Series 0: Overview of Integrated Environmental Management

Information Series 1: Screening

Information Series 2: Scoping

Information Series 3: Stakeholder Engagement

Information Series 4: Specialist Studies

Information Series 5: Impact Significance

Information Series 6: Ecological Risk Assessment

Information Series 7: Cumulative Effects Assessment

Information Series 8: Cost Benefit Analysis

Information Series 9: Life Cycle Assessment

Information Series 10: Strategic Environmental Assessment

Information Series 11: Criteria for determining Alternatives in EIA

Information Series 12: Environmental Management Plans

Information Series 13: Review in Environmental Impact Assessment

Information Series 14: Environmental Auditing

Information Series 15: Environmental Impact Reporting

Information Series 16: Environmental Economics

Information Series 17: Environmental Reporting

Information Series 18: Trade related assessment

Information Series 19: EIA for International Agreements

Information Series 20: Linking Environmental Impact Assessment and Environmental Management Systems

Information Series 21: Environmental Monitoring Committees

Information Series 22: Socio-Economic Impact Assessment

Information Series 23: Risk Management

The Guideline Series includes:

Guideline series 1: Co-operation Agreements

Guideline Series 4: Strategic Environmental Assessment (SEA)

Draft Guideline Series 6: Environmental Management Framework (EMF)

2.4 GAUTENG PROVINCIAL INTEGRATED DEVELOPMENT PLANNING ENVIRONMENTAL TOOLKIT

The Department of Environmental Affairs and Tourism & K2M Technologies developed the Gauteng Provincial Integrated Development Planning Environmental Toolkit dated April 2008,

investigating the Legal Mandate, Resource requirements, Guidance, Examples of practices, link to IDP process and potential added value for IDP of various tools.

2.5 ISO/ INTERNATIONAL

The International Organization for Standardization ISO and IEC provides a rich resource of helpful advice for standards writers in the form of guides.

The majority of these assists with dealing with specialist issues - such as consumer needs - when writing standards.

Many are also useful for people not involved in standards work as the advice contained can be generally applied to subject areas.

Please refer to 3.5 Other Guidelines, for applicable ISO standards assisting in quality of IEAM tools, listed by tool and where applicable.

3 STATUS QUO

3.1 GUIDELINES/ STANDARDS/ REGULATIONS

DEA prefaces many of the guidelines discussed in this document as being addressed to a wide audience. The audience 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 and active in the environmental assessment field from a research, teaching and training perspective), non-governmental organizations (NGOs) and interested persons.”*

The guidelines aim to *“provide general information on techniques, tools and processes for environmental assessment and management.”*

The material *“draws upon experience and knowledge from South African practitioners and authorities, and published literature on international best practice.”*

3.1.1 Environmental Management Framework

3.1.1.1 NEMA regulations February 2009 for content of an EMF

NEMA regulations of February 2009 prescribe the content requirements for an Environmental Management Framework.

A draft environmental management framework must:

- identify by way of a map or otherwise the geographical area to which it applies;
- specify the attributes of the environment in the area, including the sensitivity, extent, interrelationship and significance of those attributes;
- identify any parts in the area to which those attributes relate;
- state the conservation status of the area and in those parts;
- state the environmental management priorities of the area;
- indicate the kind of activities that would have a significant impact on those attributes and those that would not;
- indicate the kind of activities that would be undesirable in the area or in specific parts of the area; and
- include any other matters that may be specified.

3.1.1.2 Integrated Environmental Assessment Guidelines Series: Compilation of an EMF

The Integrated Environmental Assessment Guidelines Series, Guideline 6 is in process of development by DEA, and makes proposals on the following:

Information Gathering, **Quality and Detail**

Information gathering is an activity that takes place throughout the formulation of an EMF.

It is important for defining -

- Status quo of the project area;
- Environmental opportunities and constraints,
- Development pressures and trends in the area; and
- The establishment of management priorities in the area.

When planning how to produce an EMF, it is important to be systematic and make sure that **information is gathered and captured correctly. Accurate and relevant baseline information is imperative to the successful spatial analysis and determination of applicable environmental opportunities and constraints.** The status quo assessment forms the repository of all biological, physical, social and economic data, and where applicable and possible should be represented spatially. The spatial mapping of baseline information constitutes the framework and platform upon which the EMF is further developed. The **eventual quality and relevance of an EMF** will to a large extent depend on:

- The information included;
- **The credibility of information sources; and**
- **The quality and detail of the information.**

All **data sources** should accordingly be subjected to stringent **quality controls** and, in most cases, **verified at the source to ensure that errors are not built into the EMF** due to erroneous or sub-standard quality information. **New research and high resolution data capture may be required to ensure that the quality of information is both adequate and appropriate** to the development of the EMF, in instances where this does not exist.

The level of detail required for spatial data capture, especially in respect of key environmental attributes, will normally vary from 1:1000 to 1:5000. Coarser data is unlikely to meet the

requirements of the competent authorities. Spatial data capture requires up-to-date aerial photography and in some instances satellite remote sensing images. There should be clear integration with other information sources where these meet the above criteria.

Contents of EMF

The technical development phases of the EMF can be summarised into five basic phases, namely;

- Status quo assessment;
- Sensitivity analysis;
- Environmental opportunities and constraints;
- Identification of specific management zones; and
- Management guidelines.

The following should therefore be included within an EMF. The content of each requirement is described in detail in the guideline document:

- Status Quo Assessment
- **Desired State of the Environment**
- Identifying development pressures and trends
- Environmental Sensitivity Analysis
- Feature Status and Weighting
- Identifying Constraint Zones
- Establishing opportunities and constraints
- Management Zones
- Management Guidelines
- List of Activities
- Public participation process

The functionality of the EMF is largely dependent on how thoroughly the recommendations made in the management guidelines are implemented. After the assessment of inputs from the public participation process and information gathered from the various assessments; management provisions and guidelines can be developed.

These provisions and guidelines should be informed by the opportunities and constraints which have been identified and should aim to:

- **Integrate the outcomes of the desired state of the environment,**
- Clearly define and **address any management objectives** which have been established and identified through the development of the **desired state of environment,**
- Maximise the opportunities to the benefit of both the environment and development in the area;
- Make clear recommendations regarding the way that development should occur in a specific geographical area;
- **Provide guidance as to the environmental thresholds** to development in a geographical area;
- Identify development that would not be appropriate in sensitive areas; and
- Manage the constraints of the area through interventions that seek to protect the environment against significant impacts while being sensitive to the social needs and aspirations in the area.

The purpose of the management guidelines is to link management requirements to each of the attribute comprising the geographical areas, or management zone. The guidelines are not prescriptive in terms of land-use and do not indicate which land-uses must occur in which areas. Rather, the guidelines indicate specific **minimum environmental requirements and performance criteria, through management parameters**, which have to be met satisfactorily before approval of a development application should be considered.

Similarly the **management guidelines could indicate the level of assessment** required in the specified geographical area. The management guidelines should also be used as the **environmental input for the LDO and IDP processes**. The management guideline introduces a risk-averse approach to development planning decision-making. It fulfils the requirements of the environmental management mandates of the specific authorising authorities, **while it does not impose land-uses on the planning mandate of the local authorities**. They in effect **establish performance standards or criteria** which must be met before a certain use will be permitted. These criteria usually involve a combination of economic, environmental and social factors.

3.1.2 Strategic Environmental Assessment

3.1.2.1 Integrated Environmental Assessment (SEA) **Information** Series 4

This document is an Information document and not a guideline document. This document however provides guidance to **the EIA practitioner** in the following areas:

- Drafting and clarifying the terms of reference.
- Outlining the desired specialist study approach.
- Specialist reporting requirements.
- Choosing the appropriate specialists.
- Ensuring interdisciplinary interaction between specialists.
- Independent peer review and choosing the right reviewer.

This document provides guidance **to the specialist** in the following areas:

- Defining the scope of work.
- Establishing baseline environmental conditions.
- Field surveys and data collection.
- Identifying and predicting potential impacts.
- Prescribing mitigation measures.
- Implementing monitoring requirements.

3.1.2.2 Integrated Environmental Assessment **Guideline** Series 4

This Guideline document provides guidance on the main steps in SEA namely:

- Screening
- Stakeholder Engagement
- Scoping
- Situational Analysis
- Specialist studies
- Assessment of effects and evaluation of their significance
- Identifying and comparing alternatives
- Trade offs
- Developing of a strategic environmental management plan

- Implementation

Quality Control and Assurance

Five key quality control and assurance factors are identified namely:

- **Clear terms of reference,**
- **SEA terminology and scope**
- **SEA performance criteria**
- **Steering Committee**
- **Competency, certification and registration of consultants**
- **Independent review**

A list of questions has been compiled as a checklist to ensure quality control:

Process	Has the SEA process been optimum in terms of enabling proactive, sustainability led outcomes (i.e. choice of model been best suited to the context)?
	Has enough, relevant information on the environmental effects of strategic issues, options and/or alternatives been provided to the policy-making or planning process at key decision or choice points in that process?
	Were key stakeholders, particularly all relevant authorities, involved from an early stage of the process to ensure cooperation and shared responsibility for the direction, objectives and outcome of the SEA?
	Have strategic options (at policy level) or alternatives (at plan or programme levels) – against background trends and future scenarios - been considered throughout the process to ensure that optimum outcomes are derived?
Quality assurance	Has there been peer review of specialist studies, where deemed appropriate in view of complexity, controversy or unprecedented effects?
	Were certified or professionally registered specialists, from appropriate professional fields, involved in the SEA?
	Have key stakeholders been given reasonable and adequate opportunity to participate in, and review, findings of the SEA at appropriate points in the policy-formulation or planning process?
	Were different specialist inputs integrated to ensure linkages between social, economic and biophysical aspects were addressed?
Scope	Has a shared vision and clear sustainability objectives been defined?
	Has the spatial and temporal scope been defined?
	Have alternatives been identified and considered?
	Are clear terms of reference provided, both for the SEA and for specialist studies?
	Have the key strategic issues been clearly identified?
	Have potentially significant impacts been clearly identified?
Linkages	Have all relevant international standards, obligations, protocols and/or goals been considered?
	Have all relevant policies, plans, programmes and/or strategies been identified and checked in terms of consistency or compatibility with the proposed PPP?

	Have potential conflicts between the PPP and international or SADC regional standards, obligations, protocols or goals, and national and provincial policies, plans, programmes or strategies been resolved?
Environmental quality	Has the quality of the current environment been described in relation to desired objectives, LAC?
	Have probable trends that may affect environmental quality been identified?
	Have LAC or desired levels of environmental quality been determined?
Effects / impacts	Have the effects / impacts been explicitly evaluated in relation to the sustainability objectives, LAC or levels of environmental quality (i.e. has the SEA clearly been 'sustainability-led')?
	Have the potential direct, indirect and cumulative effects at a strategic level, both positive and negative, been identified and evaluated?
	Have strategic alternatives or specific measures been identified to mitigate significant negative effects?
	Have opportunities and specific measures been identified to enhance potential benefits at strategic level?
	Have trans-boundary effects been addressed, where relevant?
	Have irreversible impacts that could lead to irreplaceable loss of ecosystem services been 'red-flagged' in the SEA?
	Have high risk effects been highlighted?
	Has a risk-averse and cautious approach to these effects been adopted at decision or choice points in the policy-formulation or planning process?
	Have the main groups of beneficiaries and 'losers' as a result of the proposed PPP been identified?
	Have the effects of the PPP on the poor and vulnerable sectors of society been addressed?
	Are the links between human wellbeing (poverty, livelihoods, resilience, health and/or vulnerability) and dependencies on ecosystem services recognised?
	Would the PPP safeguard the resilience of these social-ecological systems?
Stakeholder involvement	Have stakeholders had an opportunity to engage in the SEA process to identify strategic issues, potential impacts, alternatives and mitigation/management measures?
	Have the views of civil society, particularly affected communities and less powerful stakeholders, been included and given due consideration?
Institutional and implementation	Has the capacity of institutions and agencies to implement, manage, regulate and enforce, and be accountable for the PPP been evaluated? Have specific measures been identified to give assurance of effective implementation?
	Is the legal, policy and/or planning authority in place to detect and respond to problems that may arise? Is there an institutional framework to manage high-risk environmental effects and/or institutional/agency failures?
Monitoring and management	Has an explicit strategic management plan and programme been developed, with clear objectives, criteria, parameters, indicators and/or guidelines both for implementing the PPP and for evaluating 'downstream' development proposals?
	Are measures proposed for monitoring key effects / impacts?
	Are monitoring measures practicable, feasible and clearly linked to objectives and indicators? Is guidance given on evaluation of results of monitoring, to enable appropriate adaptive action and/or changes to be made?
	Are responsibilities for implementing the SEMP explicit?
	Are intervals for re-visiting the SEMP and/or SEA provided?

Information	Is the level of information used in the SEA sufficient to assess and evaluate effects at a strategic (rather than a project) level?
	Are there significant data or information gaps or deficiencies that contribute to uncertainty about environmental effects at strategic level?
	Have appropriate studies, research and/or other ways to fill these gaps been identified?

The International Association for Impact Assessment has formally adopted a **set of performance criteria for SEA, to establish what is meant by a “good quality SEA process”**, in view of enhancing the credibility of strategic decisions. The performance criteria are as follows:

Integrated	<p>Ensures an appropriate environmental assessment of all strategic decisions relevant for the achievement of sustainable development</p> <p>Addressed the interrelationships of biophysical, social, and economic aspects</p> <p>Is tiered to policies in relevant sectors and (trans-boundary) regions and, where appropriate, to project EIA and decision-making</p>
Sustainability-led	Facilitates identification of development options and alternative proposals are more sustainable
Focused	<p>Provides sufficient, reliable and usable information for development planning and decision-making</p> <p>Concentrates on key issues of sustainable development</p> <p>Is customised to the characteristics of the decision-making process</p> <p>Is cost effective and time consuming</p>
Accountable	<p>Is the responsibility of the leading agents for the strategic decision to be taken</p> <p>Is carried out with professionalism, rigor, fairness, impartiality and balance</p> <p>Is subject to independent checks and verification</p> <p>Documents and justifies how sustainability issues were taken into account in decision-making</p>

Participative	<p>Informs and involves interested and affected publics and government bodies throughout the decision-making process</p> <p>Explicitly addresses their inputs and concerns in documentation and decision-making</p> <p>Has clear, easily understood information requirements and ensures sufficient access to all relevant information</p>
Iterative	<p>Ensures availability of the assessment results early enough to influence the decision-making process and inspire future planning</p> <p>Provides sufficient information on the actual impacts of implementing a strategic decision to judge whether this decision should be amended and to provide a basis for future decisions</p>

3.1.3 Environmental Impact Assessment

3.1.3.1 NEMA regulation 13 February 2009

In order to ensure quality of tools/reports, the regulations identify information that is a requirement for Basic Assessment reports, Scoping reports, Environmental Impact Assessment reports, Specialists reports and Environmental Management Programs.

3.1.3.1.1 Content of basic assessment reports (BAR)

A basic assessment report must contain all the information that is necessary for the competent authority to consider the application and to reach a decision and must include details of:

- the EAP who prepared the report; and
- the expertise of the EAP to carry out basic assessment procedures;
- a description of the proposed activity;
- a description of the property on which the activity is to be undertaken and the location of the activity on the property, or if it is a linear activity, a description of the route of the activity; or an ocean-based activity, the coordinates within which the activity is to be undertaken;
- a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;

- an identification of all legislation and guidelines that have been considered in the preparation of the basic assessment report;
- details of the public participation process conducted in connection with the application, including
 - the steps that were taken to notify potentially interested and affected parties of the proposed application;
 - proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given;
 - a list of all persons, organisations and organs of state that were registered in terms of regulation 60 as interested and affected parties in relation to the application; and a -summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;
- a description of the need and desirability of the proposed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity;
- a description and assessment of the significance of any environmental impacts, including cumulative impacts, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the activity;
- any environmental management and mitigation measures proposed by the EAP;
- any inputs made by specialists to the extent that may be necessary;
- a draft environmental management programme
- any specific information required by the competent authority; and
- any other matters required.

In addition, a basic assessment report must take into account

- any **relevant guidelines**; and
- any **departmental policies**, environmental management instruments and other decision making instruments that have been developed or adopted by the

competent authority in respect of the kind of activity which is the subject of the application;

- the EAP managing the application must provide the competent authority with a detailed, written **motivation if no reasonable or feasible alternatives** exist.

3.1.3.1.2 Content of scoping reports

A scoping report must contain all the information that is necessary for a proper understanding of the nature of issues identified during scoping, and must include details of

- the EAP who prepared the report; and
- the expertise of the EAP to carry out scoping procedures;
- a description of the proposed activity and of any feasible and reasonable alternatives that have been identified;
- a description of the property on which the activity is to be undertaken and the location of the activity on the property, or if it is linear activity, a description of the route of the activity; or an ocean-based activity, the coordinates where the activity is to be undertaken;
- description of the environment that may be affected by the activity and the manner in which the activity may be affected by the environment;
- an identification of all legislation and guidelines that have been considered in the preparation of the scoping report;
- a description of environmental issues and potential impacts, including cumulative impacts, that have been identified;
- details of the public participation process conducted including
 - the steps that were taken to notify potentially interested and affected parties of the application;
 - proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the application have been displayed, placed or given;
 - a list of all persons or organisations that were identified and registered in terms of -regulation 60 as interested and affected parties in relation to the application; and

- a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;
- a description of the need and desirability of the proposed activity and identified potential
- alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity; and
- a plan of study for environmental impact assessment which sets out the proposed approach to the environmental impact assessment of the application, which must include:
 - a description of the tasks that will be undertaken as part of the environmental impact assessment process, including any specialist reports or specialised processes, and the manner in which such tasks will be undertaken;
 - an indication of the stages at which the competent authority will be consulted;
 - a description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity; and
 - particulars of the public participation process that will be conducted during the environmental impact assessment process;
 - any specific information required by the competent authority; and
 - any other matters required.

A scoping report must take into account any guidelines applicable to the kind of activity which is the subject of the application.

The EAP managing the application must provide the competent authority with a detailed, written motivation if no reasonable or feasible alternatives exist.

3.1.3.1.3 Environmental impact assessment reports (EIA)

An environmental impact assessment report must contain all information that is necessary for the competent authority to consider the application and to reach a decision and must include:

- details of the EAP who compiled the report; and the expertise of the EAP to carry out an environmental impact assessment;
- a detailed description of the proposed activity;

- a description of the property on which the activity is to be undertaken and the location of the activity on the property, or if it a linear activity, a description of the route of the activity; or an ocean-based activity, the coordinates where the activity is to be undertaken;
- a description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity;
- details of the public participation process conducted in terms including steps undertaken in accordance with the plan of study;
- a list of persons, organisations and organs of state that were registered as interested and affected parties;
- a summary of comments received from,
- a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments; and copies of any representations, objections and comments received from registered interested and affected parties;
- a description of the need and desirability of the proposed activity and identified potential;
- alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity;
- an indication of the methodology used in determining the significance of potential environmental impacts;
- a description and comparative assessment of all alternatives identified during the environmental impact assessment process;
- a summary of the findings and recommendations of any specialist report or report on a specialised process;
- a description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures;

- an assessment of each identified potentially significant impact, including cumulative impacts, the nature of the impact; the extent and duration of the impact; the probability of the impact occurring; the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources; and the degree to which the impact can be mitigated;
- a description of any assumptions, uncertainties and gaps in knowledge;
- a reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;
- an environmental impact statement which contains a summary of the key findings of the environmental impact assessment; and a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives;
- a draft environmental management programme
- copies of any specialist reports and reports on specialised processes
- any specific information that may be required by the competent authority; and
- any other matters required.

The EAP managing the application must provide the competent authority with a detailed, written motivation if no reasonable or feasible alternatives, exists.

3.1.3.1.4 Specialist reports and reports on specialised processes

An applicant or the EAP managing an application may appoint a person who is independent to carry out a specialist study or specialised process.

A specialist report or a report on a specialised process prepared in terms of the Regulations must contain:

- details of the person who prepared the report; and the expertise of that person to carry out the specialist study or specialised process;
- a declaration that the person is independent in a form as may be specified by the competent authority;
- an indication of the scope of, and the purpose for which, the report was prepared;
- a description of the methodology adopted in preparing the report or carrying out the specialised process;

- a description of any assumptions made and any uncertainties or gaps in knowledge;
- a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment;
- recommendations in respect of any mitigation measures that should be considered by the applicant and the competent authority;
- a description of any consultation process that was undertaken during the course of carrying out the study;
- a summary and copies of any comments that were received during any consultation process; and
- any other information requested by the competent authority.

3.1.3.1.5 Environmental Management Programme

A draft environmental management programme must include:

- details of the person who prepared the environmental management programme; and the expertise of that person to prepare an environmental management programme;
- information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by the Regulations, including environmental impacts or objectives in respect of planning and design; preconstruction and construction activities; operation or undertaking of the activity; rehabilitation of the environment; and closure, where relevant.
- a detailed description of the aspects of the activity that are covered by the draft environmental management programme;
- an identification of the persons who will be responsible for the implementation of the measures;
- proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;
- as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures;

- a description of the manner in which it intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; remedy the cause of pollution or degradation and migration of pollutants; comply with any prescribed environmental management standards or practices; comply with any applicable provisions of the Act regarding closure, where applicable; comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;
- time periods within which the measures contemplated in the environmental management programme must be implemented;
- the process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity;
- an environmental awareness plan describing the manner in which
 - the applicant intends to inform his or her employees of any environmental risk which may result from their work; and
 - risks must be dealt with in order to avoid pollution or the degradation of the environment; where appropriate, closure plans, including closure objectives

3.2 OTHER GUIDELINES

As mentioned in the Background, the Department of Environmental Affairs and Tourism & K2M Technologies developed the Gauteng Provincial Integrated Development Planning Environmental Toolkit dated April 2008 also investigating the Legal Mandate, Resource requirements, Guidance, Examples of practices, link to IDP process and potential added value for IDP.

Guidance has been identified as available for each tool to ensure quality of the tool.

3.2.1 Cost Benefit Analysis (CBA)

The following guidance is available:

-DEAT (2004), IEM information series 8, Cost Benefit Analysis (Refer to Appendix for summary)

-The following source could also be useful for CBA in South Africa:

-Water Research Commission (2002) A Manual for Cost Benefit Analysis in South Africa with special reference to Water Resource Development, WRC Report GT177/02.

3.2.2 Cumulative effects assessment (CEA)

The following CEA guidance has been developed for South Africa:

-CSIR (2001) A practitioner's handbook for assessing cumulative effects, Council for Scientific and Industrial Research.

-DEAT (2004), IEM information series 7, Cumulative Effects Assessment

3.2.3 Conservation planning

-Specific national guidance has been developed for the integration of conservation planning with IDP:

-CSIR (2004) Integrating conservation planning into the integrated development planning process, Council for Scientific and Industrial Research.

3.2.4 Ecological Footprint

South Africa has not yet developed guidance for the use of Ecological Footprint in IDP. However, internationally a range of guidance and country specific experience exists which can be accessed through the Global Footprint Network website:

<http://www.footprintnetwork.org>

Ecological Footprint measures the ecological resource use and resource capacity over time.

3.2.5 Environmental Impact Assessment (EIA)

The following EIA guidance has been developed for the EIA Regulations (2006):

-DEAT, (2006), Guideline 3 – General guide to the Environmental Impact Assessment Regulations

-DEAT, (2006), Guideline 4 – Public participation in support of the Environmental Impact Assessment Regulations

-DEAT, (2006), Guideline 5 – Assessment of alternatives and impacts in support of the Environmental Impact Assessment Regulations

-DEAT, (2006), Guideline 6 – Environmental Management Frameworks in support of the Environmental Impact Assessment Regulations

3.2.6 Environmental Risk Assessment (ERA)

The following guidance is available:

-DEAT (2006), IEM information series 23, Risk Assessment

-DEAT (2002), IEM information series 6, Ecological Risk Assessment

The following 'codes' are also relevant:

-ISO 14001

-ISO 9000

-OHSAS 18000.

3.2.7 Integrated Environmental Programme (IEP)

The following guidance is available:

-Department of Provincial and Local Government and GTZ (2001), IDP Guide Pack Series, Guides 0-6.

It is however, important to mention that the IDP Guide Packs do **not provide detailed guidance on how to do an IEP.**

In this regard the Centre for Environmental Management has developed a more detailed methodology and process on how to prepare an IEP:

-Centre for Environmental Management, (2002) Integrated Environmental Programme (IEP) for the Potchefstroom Local Municipality

3.2.8 Environmental legal compliance auditing

The following guidance is available:

- -Sampson, I (2000) Guide to environmental auditing in South Africa, Butterworth, Durban.
- DEAT, (2004), Environmental auditing, IEM Information Series 14.
- DEAT, (2004), Environmental Management Plans, IEM Information Series 12.
- The following 'codes' are also available from SABS
 - ISO 19011,
 - ISO 10011,
 - ISO 14010,
 - ISO 14011,
 - ISO 14012

3.2.9 Life cycle assessment (LCA)

The following guidance is available:

- Department of Environmental Affairs and Tourism (2004), IEM information series 9, Life Cycle Assessment
- The following 'codes' are also applicable to LCA:
 - ISO 14040 – Life Cycle Assessment – Principles and Framework (1997)
 - ISO 14041 – Life Cycle Inventory Analysis (1998)
 - ISO 14042 – Life Cycle Impact Assessment (2000)
 - ISO 14043 – Life Cycle Interpretation (2000)

Life cycle assessment (LCA) is the calculation and evaluation of the environmentally relevant inputs and outputs and the potential environmental impacts of the life cycle of a product, material or service (SABS ISO, 1998). (See Appendix for Summary of Guidelines)

3.2.10 Natural step

South Africa has not yet developed guidance for the use of the Natural Step in IDP. However, internationally a range of guidance and country specific experience exists which can be accessed through the international website: <http://www.thenaturalstep.org>

3.2.11 Strategic Environmental Assessment

The following SEA guidance has particular relevance to South Africa:

- DEAT (2000) National SEA guidance.
- DWAF (2001) Guide to SEA for water use in catchments.
- CSIR (2003) SEA guidelines for the coastal countries of eastern Africa.
- African Development Bank (2003) Strategic Impact Assessment Guidelines.
- DEAT (2004) IEM information series, volume 10: SEA.
- DEAT (2007) National SEA Guidance – in process

3.2.12 Social Impact Assessment

The following EIA guidance has been developed for SIA:

- DEAT (2006), Guideline 22 – Socio-economic Impact Assessment.
- DEAT, (2006), Guideline 4 – Public participation in support of the Environmental Impact Assessment Regulations, 2006

See Appendix for Summary of the Guideline.

Socio-economic Impact Assessment may be defined as -

- an examination of how a proposed development will change the lives of current and future residents of a community.
- an useful tool to help understand the potential range of impacts of a proposed change, and the likely responses of those impacted on if the change occurs.
- the process of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programmes, plans, projects) and any social change processes invoked by these interventions.

3.2.13 State of the environment reporting (SOER)

The following SOER guidance has particular relevant to South Africa:

- CSIR, (2002) Provincial and local government SOER training manual
- DEAT, (2005) IEM information series, Guideline 17, Environmental reporting
- DEAT, (2005) State of the Environment Reporting for local municipalities.

4 ANALYSIS

4.1 ANALYSIS OF STATUS QUO AND PROBLEM IDENTIFICATION

4.1.1 Elements informing quality

The Quality of Tools is presently mostly informed/ influenced by:

- NEMA and NEMA regulations.
- DEA Integrated Environmental Management Information Series.
- DEA Integrated Environmental Management Guideline Series which is only limited to SEA, Co-operation agreements and a draft EMF guidelines.
- NEMBA which described the requirements for Biodiversity management plans, bioregional plans, management agreements and review.
- ISO standards.
- Other guidelines
 - CSIR guidelines.
 - North West University Centre for Environmental Management guideline documents.
 - Provincial Government of the Western Cape, Department of Environmental Affairs and Development planning, (<http://www.capegateway.gov.za/>)
 - Department of Water Affairs (<http://www.dwa.gov.za/>)

DEA has therefore provided/regulated content and information to be provided in tool reports in abundance as well as guidelines for SEA and draft guidelines for EMF.

The **quality of the contents of tools reports** such as BAR, Scoping Reports, EIAs, Specialist reports, EMPs is mostly regulated by:

- List of required Information
- Relevant departmental guidelines and policies
- Information on the EAP/Specialist

The quality control for **strategic tools** includes the following measures:

- List of required Information.
- Relevant departmental guidelines and policies.
- Clear **terms of reference**.

- SEA **terminology and scope.**
- SEA **performance criteria.**
- Strong **Steering Committee.**
- **Competency, certification and registration of consultants.**
- **Independent review.**
- Correctness of **information gathering and capturing.**
- **Scale and accuracy of and relevant baseline information.**

International quality guidelines include principles of:

- Integrated approach: interrelationship of biophysical, social and economic aspects
- Sustainability-led
- Focused: sufficient, reliable and stable information and concentration on key issues of sustainable development
- Accountable: Professionalism and verification
- Participative: I&AP
- Iterative: Information availability for decision making

4.2 PROBLEMS ARISING FROM ISSUE LIST/COMMENTS

4.2.1 Content of Reports

4.2.1.1 Complying with the regulations

The Review found:

[EIA] is often executed without taking sufficient account of the broader context within which the application occurs. This means that while EIA processes may meet the quality criteria (get all the boxes ticked), it often fails to make a real contribution to the quality of the decision that is made in the context of the specific area or sector within which it is made.

In assessing the quality of project-based tools, officials reviewing and the consultants preparing may over-emphasise that content is “present”. This may result in less emphasis being placed on what guidance the content may provide in decision making. The exercise can degenerate into a cataloguing of content, in which case, critical assessment of the merits of the projects and the serious consideration of the impact of the project on the receiving environment, appear to be secondary considerations.

4.2.1.2 Link to sustainability goals

The guidelines require that *“information can be linked to the broader goals and priorities of sustainable development in South Africa, and that it explains clearly how the proposed activity would add to or detract from such goals”*.

Without adequate baseline information, comprehensive goals and the linkage between strategic objectives and local projects, this requirement will continue to be poorly attended to.

The criteria, indicators and the sustainability goals themselves, need to be accessible and implementable.

4.2.1.3 Voluminous reports vs Comprehensive and concise

The guidelines address this issue as follows:

“...comprehensive, concise and analytic – as opposed to encyclopaedic. Information overload results in “nothing but obfuscation”. Superfluous information should not be included in the EIR. Appendices, addenda or annexures, rather than the main body of the EIR should contain that material which provides technical backup and “substantiates the analysis”

What is required is the distilling all the relevant information, rather than providing copious volumes without analyses. Verbose reports add to *public participation fatigue*. There is a tendency to equate quality with volume, in which case EAPs may fail to give considered recommendations.

There are complaints, especially from I&APs, that summaries are poorly drafted and omit information that places the proposed development in a negative light.

Annexures could be better used. Specifically, conclusions and recommendation can be included in the main report, but the study details provided as annexures.

4.2.2 **Quality standards in the regulations are not enforced**

For many of the tools comprehensive guidelines exist. The regulations also permit poor quality of reporting to be addressed by officials, yet quality control appears poorly enforced.

4.2.3 Sustainable Development is not being achieved

“...Sustainable development, then, implies the selection and implementation of a development option which allows for the achievement of appropriate and justifiable social and economic goals (based on meeting basic needs and equity) without compromising the natural system on which it is based.”¹

Urgent action is required to direct the development path of the country towards sustainability – this is the concluding statement in the National Strategy and Action Plan for Sustainable Development. It conveys that sustainable development is not being achieved and that intervention is urgent.

In relation to Sustainable Development, the Review found:

- EIA processes generally serve to motivate activities rather than assess whether or not activities should be permitted;
- EIA processes tend to generate mitigation measures rather than assess whether or not activities should be permitted;
- There is general ignorance amongst both officials and practitioners in respect to the sustainable development purpose of EIA. Sustainable development is seldom reflected deliberately and comprehensively in EIA documents.
- The biodiversity conservation imperative that is set by NEMA as a cornerstone of sustainable development is also usually not adequately reflected in EIA processes, especially in how the local site specific issues impact on the broader biodiversity context.

The review concludes, *“Despite a plethora of policies, guidelines and information documents across authorities in the environmental and development fields, the biggest single issue that affects the effectiveness of EIA negatively in South Africa is that it is often executed without taking sufficient account of the broader context within which the application occurs. This means that **while EIA processes may meet the quality criteria (get all the boxes ticked), it often fails to make a real contribution to the quality of the decision that is made in the context of the specific area or sector within which it is made.**”* (emphasis added)

4.2.4 Indicators

¹ NATIONAL STRATEGY AND ACTION PLAN FOR SUSTAINABLE DEVELOPMENT, 23 February 2010

A good environmental indicator has the following characteristics:

- *an agreed, scientifically sound meaning;*
- *representative of an environmental aspect of importance to society;*
- *provides information of value, and its meaning is readily understood;*
- *has a sound and practical measurement process;*
- *helps focus information to answer important question,*
- *and assists decision making by being effective and cost-efficient to use.²*

Review found –

In the evaluation phase: **determine and record any relevant indicators**, policies, guidelines and performance measures in place at the different competent authorities **to be used as basis for evaluating the effectiveness of achieving government policies, aims and objectives;** (emphasis added)

The indicators for determining the effectiveness of instruments in achieving strategic or overarching goals, are not transparent, seldom referenced and rarely, if ever, monitored at a project level. There is no central repository to collect, collate and interpret data which drives the criteria for measuring for instance, sustainable development.

4.2.5 Strategic tools are not being used effectively to inform projects

Enhance the role of Strategic Environmental Assessment (SEA) in the development of Spatial Development Frameworks (SDF). These spatial planning instruments can play a very important role in the avoidance of unnecessary impacts at especially local level. They should discourage applications in areas that are unsuitable. This assumes that SDFs are implemented and adhered to when decisions are taken on development applications by all authorities. ~ Review

SEA is defined as “...a process that integrates sustainability considerations into the formulation, assessment and implementation of policies, plans and programme[s].” (DEAT, 1998)³. It is

² NATIONAL CORE SET OF ENVIRONMENTAL INDICATORS FOR STATE OF ENVIRONMENT REPORTING IN SOUTH AFRICA PHASE 1: SCOPING REPORT VOLUME 1 OF 2 PREPARED FOR: The Directorate: Environmental Information and Reporting National Department of Environmental Affairs and Tourism PREPARED BY: CSIR, Mzuri Consultants, HSRC May 2001

³ From Theme 9

therefore a tool which is used to determine the sustainability of what is being done by organs of state.

The SEA is insufficiently used as a strategic tool. It can be used to screen projects to avoid continued expenditure – say on EIA – where a project is inappropriate or unsustainable.

DEAT defines an EMF as:

“...the mechanism or study of the biophysical and socio-cultural systems of a geographically defined area to reveal where specific land uses may best be practiced and to offer performance standards for maintaining appropriate use of such land.” (South Africa, 2010)⁴

An EMF provides geospatial references of how planning can take the development and protection of natural resources into account.

EMF is under-utilised as a strategic tool. It can be used screen applications which are inappropriate to specific geographical areas.

From Subtheme 9: *“An EMF is, however, an SEA process that is customised to generate decision-making guidance in a spatial form. It follows the normal SEA process, but ultimately provides spatial planning practitioners with geospatial references of how planning can take the development and protection of natural resources into account.”*

4.2.6 Tools address cumulative impacts poorly

The Review found that cumulative impacts are generally not considered effectively and that there is a lot of room for improvement in this respect.

The Review concluded that the following would make EIA more effective -

- every EIA process must address cumulative impacts as it is important for sustainable development and the assessment of cumulative impacts should **not** be limited to indirect impacts of activities on off-site environmental/service resources that can be measured;
- the concept of cumulative impacts should be better integrated into the EIA process;

The assessment of cumulative impacts remains problematic and the extent to which this can be done beyond assessing impacts (direct or indirect) of the proposed activity on the existing base line

⁴ From Theme 9

in an EIA process is limited. The importance of supplementing EIA with strategic instruments that will not only establish the baseline but also levels of acceptable change must be emphasized⁵ (emphasis added)

94% of the respondents indicated that the consideration of cumulative impacts is important for sustainable development, while 71% indicated that cumulative impacts should only be considered in EIAs where the proposed activity is inconsistent with the surrounding broader context of the area in which it is proposed.

The Review recommends:

A stronger emphasis on indirect and cumulative impacts in Environmental Impact Management. Whilst case specific EIAs should improve in their attention to these considerations, it is important that the context is set through strategic instruments such as environmental management frameworks, SEAs, policies, etc.

Theme 9 concludes:

Cumulative effects assessment should be one of the basic information sources that informs EIA and SEA, since the synergism between issues within a cumulative impact effect may result in different outcome as opposed to assessing only individual impacts. However, cumulative effects are hard to assess at the level of project specific EIA, and therefore represent a compelling argument for the increased use of strategic level assessments.

4.2.7 Professional registration of professionals and the quality of EIA's.

The Review found:

"..professional registration of professionals working in the EIA field will greatly increase the quality of EIA's".

Much has been said about the professional and ethical behaviour of practitioners – as consultants, reviewers, educators or in the NGO sector. Often the comments are in the guise of “independence”. It is our contention that the issues of independence and objectivity need to be separated in this discussion.

⁵ Review, page xvi

Independence is provided for in the regulations, and there is recourse for any I&AP who consider the EAP to have a vested interest in the outcome of an application.

Objectivity would require an application to present logical, verifiable and scientific information about a project, and to make reasoned recommendation (for or against).

The Review found:

“Protect objectivity and independence” to be ranked 4th in order of importance to make EIA more effective.

Interference by applicant/proponents in the assessment process often undermine the independence of practitioners and prevent the objective evaluation of EIA by officials, and must be prevented” [the general questionnaire showed that 60% of respondents felt objective evaluation was compromised]

4.2.8 Authorisations are poorly drafted, aggravating poor enforcement

The Review found that –

more inspections should be done to check that conditions of authorisation are met

The subject of conditions of approval elicited the following views:

- *The conditions in authorisations are increasingly being used as a check list by the green scorpions and due to the long delays being experienced, **successful applicants are reluctant to appeal against the conditions even when they are clearly inappropriate;***
- *in general the **conditions are clearly cut and pasted from other documents and often do not make sense.** There is no evidence in many cases that the contents of specialist studies or environmental management plans which form part of the assessment process are incorporated into the conditions (one of the key outcomes of the EIA process is the identification of appropriate mitigation measures, which in turn should form part of the authorisation);*
- *the result of the current approach to conditions is that companies end up implementing the environmental management plan on the one hand and trying to comply with the check list in the authorisation to avoid prosecution by the green scorpions, which is clearly inefficient and not an appropriate approach to legislation; and*

- *in order to address the concerns about conditions, it may be an idea to allow the applicant to present a draft set of authorisation conditions based on the specialist studies as part of the application for the competent authority to consider.*
- *“the quality and application of ROD conditions, the issue was raised in terms of the quality and applicability of ROD conditions. The proposal is we need to designate EMIs on municipalities so that they can get out compliance and enforcement activities.”*

4.2.9 Ambiguity of EMP

Theme : Monitoring and Enforcement, found:

“In the projects that were reviewed the EMPs were found to be generally one dimensional with little attention paid to how the management and mitigation requirements would in fact be implemented. Very few EMPs deal with design in any meaningful way despite the fact that the environmental performance detailed in the EIA must be carried through to design specifications and criteria.

EMPs also tend to be vague on outcomes and tend to focus more on the definition of the input measures than the definition of output or outcome performance.

There also appears to be little recognition of the legal status of the EMP on the projects reviewed. Many developers view the EMP as a guideline document rather than one that has legally enforceable provisions.

The principle of adaptive environmental management is well recognised in the literature (refs) most especially in the transition from EIA to project implementation. The principle of adaptive environmental management is one in which changing circumstances are carefully monitored and the environmental management response adapted accordingly. With the EIA regulations as they are at present the principle of adaptive environmental management is severely constrained with new authorisations required for even changes to approved EMPs.”

(Extracts from Theme 4 Report of 28 March 2011)

4.2.10 Weak Enforcement

In 56.6% of cases respondents indicated that competent authorities rarely, if ever, conduct inspections to ensure that the conditions of environmental authorisations are followed.

The Review found:

Compliance monitoring and enforcement of EMPs and conditions of authorisation require urgent attention

- Enforcement
- “The EIA weakens with post-approval. There is little to be done to ensure compliance with conditions imposed and even less to ensure recommendations in the specialist reports are implemented. A mechanism is needed to report, flag and monitor sensitive developments (which presumably translate into all that go through EIA). Understandable the resource demand will need an innovative solution.”
- There is insufficient focus on EMP and its compilation comes too late in the process. Many concerns of the public/officials could be addressed in the management of the environment and the qualitative and quantitative measures employed. The EMP is paper only if there is no follow up or positive consequences for non-compliance.
- The Department must aid in developing practical and implementable EMPs. The management of construction is the most important to minimize impacts. Most projects are not yes/no but more how to manage impacts. Liaison with contractors and building construction councils is important.

Theme 4: Monitoring and Enforcement, found:

It is clear from all the projects reviewed that there is a significant expectation of self-regulation that follows the issuing of an authorisation. This expectation includes that once activities have been authorised that they will ensure inter alia:

- *That their activities remain exactly as authorised;*
- *That their environmental profile is equivalent or better than what was used in the EIA;*
- *That they diligently and robustly implement all the conditions of authorisation;*
- *That they report all incidents accurately and timeously; and,*
- *That they effectively report their environmental performance.*

From the information contained in the files that were evaluated compliance monitoring and ensuring the implementation of mitigation measures are not receiving adequate attention. This is one area where major improvement is necessary across the board. Several stakeholders also believe that the current “green scorpion” approach to compliance monitoring is unnecessarily abrasive and counterproductive in using “scoring sheets” instead of evaluating real performance and assisting applicants in meeting desired outcomes. There is also a general lack of records and links of such records to the EIA files which makes it impossible to evaluate this aspect properly ~ from the Review.

4.2.11 Updating information systems

The Review found:

...the varying quality of EIA applications affects good decision-making. Scientific information provided by the practitioners in the application is often inconclusive.

The range of opinions include:

“the current EIA process has an unreasonable NGO bias that results in “run away” EIAs that include completely unnecessary and expensive information and assessment”

to

“The Department relies on old information when making decisions. They do not keep up with the current situation of the area”

And

“The general lack of baseline information about environmental thresholds, the general state of the environment and environmental no-go areas, has often resulted in the EIA process being used to collect this information, otherwise the potential impact of a project cannot be measured properly.”

Where monitoring and feedback takes places, there should be a way for data to be fed into knowledge/information systems so that information is updated and available for use in other processes, such as cumulative impact assessment .e.g. air pollution monitoring, water table re-charge, water quality, etc.

4.2.12 Administrative fines

Comment from Review:

“Enforce compliance by performing spot checks on every site and impose fines on non-complying offenders. This approach would depend on solving the problem in understaffing”.

There has also been a call for the re-instatement of Environmental Courts. The Department of Justice has opined that insufficient cases exist to warrant the courts; lobbyists have countered that insufficient cases exists because of the difficulties of moving an environmental case through the normal channels.

Some have proposed administrative fines as an alternative solution.

Below an extract from :Environmental authorisations and administrative fines, 2007 by Deneys Reitz.⁶

Extensive amendments have been made to Section 24 of NEMA which deals with environmental authorisations (which ultimately take the place of those provisions of the Environment Conservation Act (ECA) which prohibit the unauthorised undertaking of ‘Listed Activities’). (See new EM regulations, page 11.) In terms of existing law, it is only competent to proceed with such a Listed Activity once the requirements of the Environmental Impact Assessment Regulations have been complied with. Persons (such as developers) who have proceeded with Listed Activities without following the correct procedure may well find an inspector knocking on their doors to check whether the activity in question was properly authorised. ... Once a directive has been issued, if the transgressor then fails to comply with the directive he will be guilty of an offence and runs the risk of incurring a fine or imprisonment (or both), as referred to above.⁷

4.2.13 Offsets

One of the views expressed through the Review stated –

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http://www.deneysreitz.co.za/index.php/tools/print/improved_environmental_law_enforcement3/neWS

7

the notion of compensative investment for development that has a negative impact on the environment (including the “offset” policies that are being introduced in certain provinces) as a condition of authorisation is not acceptable to business in South Africa and should not be allowed by DEAT;

The Review states:

IAIA’s Principles of environmental impact assessment best practice lists the following “... objectives of EIA:

*To anticipate and avoid, minimise **or offset** the adverse significant biophysical, social and other relevant effects of development proposals;*

The practise of “offsets” is contentious.

For areas of unique and irreplaceable biodiversity value, offsetting is neither possible nor appropriate. Proposed development projects, in this case, can be carried out on sites with lower biodiversity value complemented by compensation (or not carried out at all).

There are three broad schools of thought:

- area alone (increasingly discredited);
- area and condition or quality of biodiversity (current best practice, of which many of US and German currencies are variants);
- and metrics of species’ populations and persistence

4.2.14 **Data availability and Scale**

Comments received –

“Ecology is driven by scale and then also the quality of data, in other words, the resolution of data being used. I’m worried about small scale datasets being used for detailed analysis. It’s not their function. It could be done on a strategic level, but we should be scared or worried about the fact that people are using small scale data to make detailed answers”

And

“I think other tools can be used to support EIA’s such as SEA’s, etc. planning policies need to incorporate key environmental resources into SDFs and PSDFs. GIS must be implemented as a tool in vegetation maps, water resources data, etc”.

And

“Often the legal & administrative processes and controlling the EIA, become the focus & consume significant resources of the developer & consultants, as opposed to the focus being on the substantive research and findings that come out of the study process, where generally more value can be added.”

The Theme Knowledge and Information has found that there are data gaps, different methodologies in use, access to information is often restricted, data collection is expensive as are storage, dissemination and maintenance. Theme 2 makes proposals on information management and the principles proposed will directly influence the quality of tools as well.

Appendix E contains a list of further comments/issues by various sectors.

4.3 CONCLUSION

The following is therefore concluded:

- In addressing the goals of this subtheme, information requirements per tool, minimum criteria, and completeness of information within the tool are concerns addressed by regulations and guidelines. Generally, the inadequacy could be attributed to inaccessibility of guidelines or simply not knowing the guidelines exist. The guidelines and regulations will require amendment, to be re-focused, made centrally available and be the subject of an awareness campaign.
- For many of the tools comprehensive guidelines exist. The regulations also permit poor quality of reporting to be addressed by officials, yet quality control appears poorly enforced.
- It seems as if strategic planning tools are moving towards an outcome-approach in order to ensure the quality of the tool e.g. Sustainability goals, although it has not really been implemented
- However, it seems that the quality control of project based tools is still focused on content of reports rather than an outcome-approach.
- In order for an outcome-approach to be effective, the manner in which information is interpreted in report will have to be revised.
- It is envisaged that certain baseline data will always be required, and therefore a pre-determined level of background information may be standardised for replication at a project level. (It then becomes the task of the EAP to continually ground-truth the information and add quality data in standardised formats to an information repository.)
- As found in the Review, the EIA is the most frequently used tool, even when other tools may be better suited, more economical or more effective.

4.4 PRINCIPLES TO BE ESTABLISHED

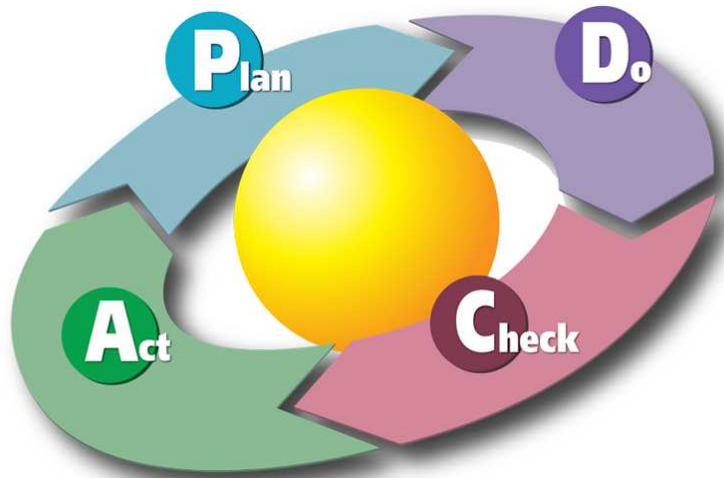
4.4.1 **Integrated Environmental Management (IEM)**

The Centre for Environmental Management which undertook various research on existing tools used in SA, has referenced the “Deming cycle of Management”. In the practice of environmental impact assessment, **the most commonly used Environmental Management tools, feature mainly in the planning phase.**

The Deming Cycle is also referred to as PDCA – Plan, Do, Check and Act – which illustrates the intent of the model. The model describes a means to reach a perfected output or operation. The fundamental principle of the scientific method and PDSA is iteration—once a hypothesis is confirmed (or negated), executing the cycle again will extend the knowledge further. When environmental impact management is viewed through this model, it becomes apparent that the component parts which extend knowledge, are poorly executed or absent.

The “check” which is equated to Monitor and Enforce, seldom leads to effective “Act”, which is in turn equated to Enforcement and Feedback.

FIGURE 2: DEMING CYCLE



Deming Cycle (also called PDCA) Image source: http://en.wikipedia.org/wiki/File:PDCA_Cycle.svg

In South Africa the EIA has also been abused to motivate already planned/commissioned developments and has therefore even been forced into the commissioning phase.

Figure 4 below illustrates the working model proposed by this subtheme to other subthemes. Through this subtheme report, it is agreed that IEM should include the 4 phases of management:

Planning and Design:

Tools utilized during this phase include Conservation Plans and targets, EMFs and SEAs and there should be a strong correlation with Spatial Planning tools, such as IDP.

Commission/ implementation:

Tools utilized during this phase include BAR, Scoping, EIA, Spatial Development Frameworks, EMPs)

Monitoring and Auditing:

The subtheme on Monitoring and Enforcement concludes the implementation of Chapter 5 of NEMA is weighted too heavily towards issuing an authorisation for an activity rather than policing that activity.

The **Environmental Management Plan** is a tool which is intended to be used to enforce appropriate impact control on the receiving environment. The efficacy of the tools is debatable as indicated in the subtheme 4 report:

“Many developers view the EMP as a guideline document rather than one that has legally enforceable provisions. In circumstances where authority audits are not clearly directed at auditing the EMP and its efficacy, that perception is compounded. “

~ Subtheme 4, Monitoring and Enforcement

Enforcement and Feedback:

Tools used to date for feedback include the State of the Environment Reports and Report on the Efficiency and Effectiveness of EIA in South Africa (REE).

Compliance notices may be issued when an inspector suspects that relevant environmental law (or a term or condition of a permit or authorisation issued) has not been complied with – and as such, compliance notices are a tool in enforcement. The efficacy of the action is questionable as indicated in the subtheme 4 report:

*“... the process for giving effect to that sanction was slow and too laborious to be effective as an enforcement mechanism. In one instance in particular there was a severe environmental incident that could have been used by the authorities to very effectively set an example through well directed and timeous punitive action. This ‘punitive action’ finally took the form of a **pre-compliance notice** which only required the rehabilitation of the affected area. No further action was taken despite the seriousness of the incident and the project in question continued to break the law with impunity. A key concern to emerge from one of the projects reviewed was the apparent power of the provincial government to exercise their discretion as to whether to take action or not. When challenged on this*

issue the head of department of the provincial government declared that they were not obligated to take action against reported transgressions.”

~ Subtheme 4, Monitoring and Enforcement

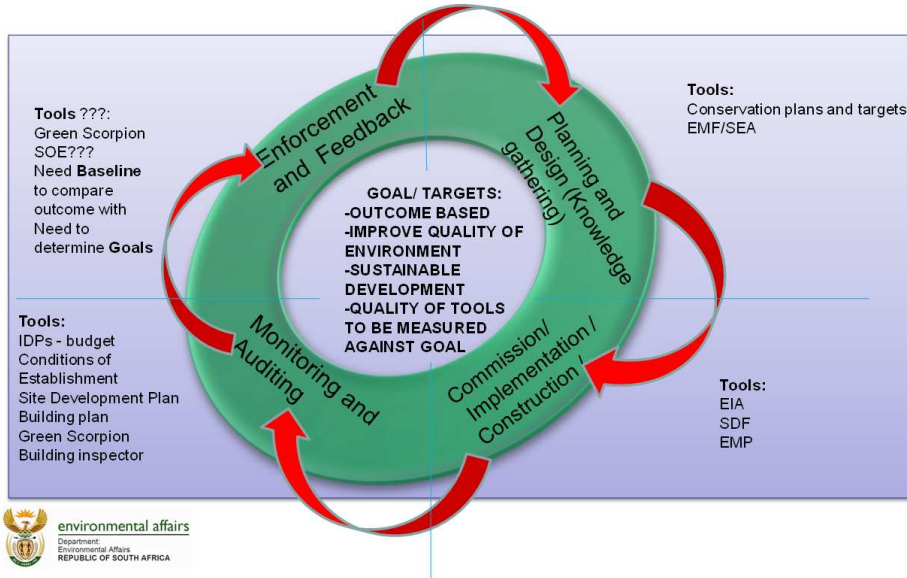


Figure 3: Integrated environmental management phases

The Centre for Environmental Management at North West University proposes various environmental management and Governance instruments that can play a role during the management cycle.

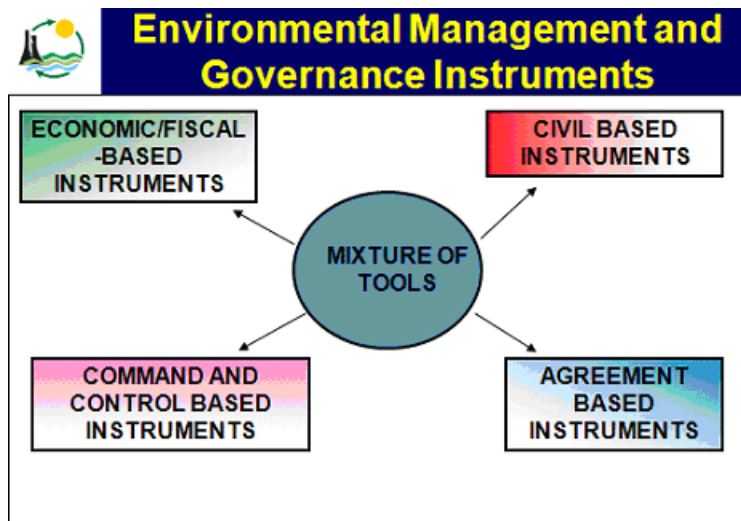


Figure 4: CER Management and instruments

Centre for Environmental Management North West University has proposed the applicability of a variety of tools. Proposals by the Centre include a mixture of tools within the different instruments namely:

- Command and control e.g. Effluent and emission standards in permits
- Market-based instruments e.g. pollution taxes and tradable permits
- Civil based instruments e.g. Eco-labelling, performance reporting, technical assistance
- Agreement based e.g. International, covenants and EMCA's
- Self-regulation e.g. COP's and **Voluntarism** e.g. ISO 14001

The conclusions of Subtheme 9: Existing and new Environmental Impact Management Tools, underscores this proposal.

“The need therefore exists for the environmental management system to be defined, and tools associated with the different phases or components. Such a framework can then also offer clear acknowledgement of process and information uncertainties, and therefore also indicate where there is a need for further tools to fill gaps”

It is proposed through this subtheme document that these instruments can play a major role in an outcome based approach rather than only an impact management approach provided the outcomes from the proposed tools can be measured against the desired state of the environment.

4.4.2 Outcome Based Approach based on GOALS and TARGETS

As indicated by Subtheme 1: Procedures and Organisational Structures:

“The main difficulty is that the EIA system is designed to reduce the harm caused by specific projects rather than to promote the overall societal objective of attaining ecologically sustainable development while promoting justifiable social and economic development. ... This means that in making decisions in relation to a specific project there is often insufficient attention given to the context in which the decision is being made and to whether or not the implementation of the project would have a positive impact on the

attainment of ecologically sustainable development and can be considered to be 'justifiable' socio-economic development."

~ Subtheme 1: Procedures and Organisational Structures

Many countries are grappling with the wider context of environmental impacts. In addressing the frequently onerous, under-resourced and complicated EIA process, some countries have opted to incorporate an outcomes based approach. Others have included **a risk-based assessment in the upfront scoping process as a means of screening applications.**

Additionally, the outcomes model has been introduced into governmental processes by the Presidency, (the Twelve Outcomes) making the notion widely accessible.

The guideline issued by the Presidency makes the following statements:

- *It starts with identifying what outcome must be achieved*
- *Monitoring and Evaluation of outcomes creates the basis for accountability and learning.*
- *Clear statements of the outcomes expected and clear indicators, baselines and targets to measure change will ensure we have reliable information we can use to monitor progress, evaluate how successful we were and plan to improve. (This describes closing the loop on the Deming Cycle in the "Check" and "Act" which iteratively feeds into "Plan" as discussed above)*

This subtheme report proposes that the quality of tools should be measured by an Outcome-based approach, thus moving beyond merely checking contents, EAPs qualification etc.

Through focusing on the outcomes which are desired, the quality of the tools and the overall environmental impact management system are addressed in a wider context, with immediate relevance.

The tools within the environmental impact management system should consider and respond to:

- **The desired state of the environment**
- **Improvement of the quality of the environment**
- **Sustainable development**

Consequently, a suite of indicators or criteria must be developed. These should include at least -

- Land use management
- Biodiversity, including Invasive Alien control, coverage of protected areas, threatened species
- Water Quality
- Water quantity
- Ground water
- Geo-hydrology
- Air
- Land degradation, including Desertification, Soil compaction, Erosion,
- Soil
- Agriculture
- Forestation
- Waste
- Ecosystem services – including fragmentation of ecosystem, ecosystem failure
- Light pollution
- Scenic beauty and sense of place

4.4.3 Quality of Tools in IEM and interaction with other subthemes

The *Subtheme 11: Quality of tools* has been approached as an overarching subtheme. Through the proposed management cycle, this subtheme has interfaces with the other subthemes.

For the quality of tools to suffice, Outcomes must be determined throughout the environmental impact management cycle.

- Monitoring should be done against the pre-determined outcomes/goals to determine success/quality of tools used to bring about integrated environmental management as provided for in Chapter 5 of NEMA
- Monitoring should rely on identified indicators as a means to demonstrate the environmental change or result of an activity, project or programme, and should lead to responsive/adaptive action where required
- Guidelines are still needed for quality of content of tools but should relate to outcome-based approach

- Independence and registration process for EAPs and other professions is still a necessity to ensure quality
- Appropriate tools should be used to ensure goals/ outcomes can be achieved
- Public participation should also play a major role in monitoring of outcomes/ goals
- Outcome-based approach as an integrated management option should be enforced by means of a cooperative governance procedural structure, and the Intergovernmental Relations Framework Act, 2005 (Act 13 of 2005 – ‘the IGR Act’) is proposed as a useful mechanism.⁸

4.5 ANTICIPATED PROBLEMS WITH OUTCOME BASED APPROACH

The problems anticipated with an outcome-based approach are as follows:

- The desired state of the Environment has not been determined
- All goals/outcomes for environmental quality control have not been determined
- Where goals/outcomes may have been determined, it was not done within a cooperative governance paradigm
- The baseline status quo has not been determined yet, and SoE and Biodiversity reporting is not sufficient for this purpose
- Presently, quality of Tools is managed by means of regulations (NEMA), checklists as part of tool application content/documents, guideline documents and other standards. However the checklist/requirements are not available for all tools and guidelines are not drafted to cater for the outcome-approach
- In terms of the monitoring of the success of EIA in South Africa, the REE focused mainly on the evaluation of EIA content/process in order to determine success of EIA as tools in South Africa. The REE did not focus on how/if EIA was successful in improving the quality of the environment.

⁸ The Framework requires that joint programmes have these characteristics:

- Programmes that require a cross-departmental involvement in the planning, budgeting and delivery of services.
- A number of departments are often responsible for a specific aspect of the programme, but none is responsible for it in its entirety.
- Programmes that require integration rather than mere co-ordination.

- Performance measures within Government are based on finalization of RODs within regulated timeframes and not against the achieved environmental outcomes.
- During a transition period, the granting of authorizations may take longer. It would be important to demonstrate efficiency and effectiveness is attainable.
- EAPs, including officials, do not necessarily have the skills or capacity to adopt the outcome-based approach without attending a bridging course. A level of expertise and experience will also be a pre-requisite in decision-making and the use (preparation) of strategic tools
- There may be resistance to change
- Local authorities will also have to recognise ecological sustainability, and capacity problems may be aggravated

4.6 HOW TO DEVELOP OUTCOME BASED IEM

This subtheme investigates international case studies on performance/ outcome based environmental management. Three case studies are highlighted here: Western Australia, Saskatchewan and Michigan.

4.6.1 **Environmental Assessment Guidelines towards Outcome-Based Conditions: Western Australia**

*Draft Environmental Assessment Guideline No. 4 December 2009
Towards Outcome-based Conditions, Western Australia*

Extracts follow -

This Environmental Assessment Guideline specifically addresses the development of outcome-based conditions and sets out:

- the method for the development of outcome-based conditions which is to be followed when preparing documentation relevant to the EIA process and
- issues to be considered as part of the development of the condition to ensure all aspects of the intended outcome of the proposal, once implemented, will be delivered by the condition.

Outcome-based conditions are defined for this Guideline as those conditions that may impose:

- a specific environmental outcome to be achieved (explicit condition) – for example, the avoidance of particularly significant vegetation or habitat;
- or the progressive rehabilitation of an area; or
- an environmental performance standard that is to be met (performance-based condition) – such as standards that set out the limits or criteria (such as an emission limit) but do not describe how such limits or standards will be met.

The key tools in this Guideline are the:

- four-step process to be followed when drafting outcome-based environmental conditions;
- issues which need to be considered when drafting outcome-based;
- environmental conditions, including validity and enforceability; and
- example of an outcome-based environmental condition which demonstrates how the process can be applied.

4.6.2 Methodology

The development of outcome-based conditions should be undertaken via a four step process as follows.

Step 1: Identify the environmental outcome to be achieved by the proposal in relation to the environmental factor.

This step is the most important part of the condition as it is the statement of what is to be achieved. The environmental outcome is the proposal-specific interpretation of the environmental objective, defining the acceptable level of change to the environment as a result of the proposal. The description of the environmental outcome should use statements of realistic and measurable intentions that are specific, achievable, clearly stated, and time-related.

The development of outcome-based conditions should be undertaken via a four step process as follows.

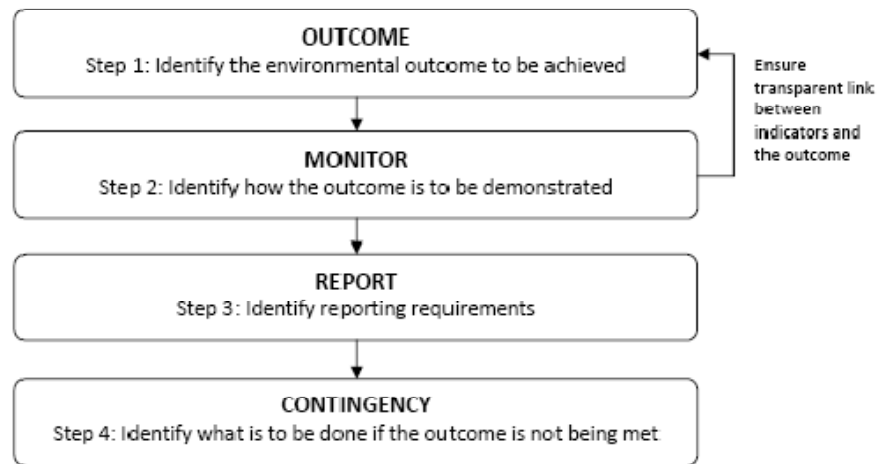


FIGURE 5: OUTCOMES METHODOLOGY

Step 2: Identify how the outcome is to be demonstrated

The most appropriate method is via monitoring. The reason for undertaking the monitoring and what it needs to demonstrate must be clear. For example, “The proponent shall monitor xxx within the disturbance footprint [defined in the Schedule] to identify any significant change in abundance or condition ...”. It is then the responsibility of the proponent to design the monitoring program so that it is able to support an evaluation of the level of change or significance in the environmental factor. It is also important that the monitoring is able to distinguish between impacts that result from the proposal and those which may occur as a result of other factors. Monitoring of both proposal (impact) and natural (reference) sites is therefore likely to be required. Monitoring across the impact gradient may also be of assistance when interpreting data.

Issues to consider: In most instances, a baseline will be required so that the allowable levels of change (impact) can be measured. Appropriate baselines should be established as part of the EIA documentation. Where this has not been established as part of the assessment process, possibly where insufficient reference information had been gathered, it will need to be included as a requirement in the condition. It must be noted that an appropriate period of time would then be required prior to a particular proposal activity commencing to establish the baseline.

The choice of measure, such as “abundance” or “condition” is an important element. There must be a direct relationship between the measure (or indicator) and the outcome. Preference should be

given to the identification of well-defined measures which are not open to interpretation or do not involve a subjective assessment. Often a simple measure, such as canopy cover or abundance, which has a basic means of measurement or a published, technical methodology, will provide the most representative assessment. It is important to define the degree of change which is acceptable or unacceptable. It may be appropriate in some instances to require the identification of any statistically significant change (at a specified probability level) in the appropriate measure, where the level of statistical significance is justifiable or has been determined as part of the EIA and is considered to adequately reflect an environmentally significant degree of change. Consideration of significance should always be guided by environmental criteria.

Where the outcome is performance-based, it is possible that the monitoring requirements will need to be outlined in a schedule, as the monitoring frameworks and/or protocol will need to stipulate the desired levels of performance to be achieved; the indicators to be measured (including locations); and the various criteria to be met with reference to guidelines, trigger values and standards. The condition should include the interval of monitoring, including timing (e.g. seasonal) where this is critical, as well as the duration of monitoring. This must be relevant to the life of the proposal and the extent of the responsibility of the proponent. The condition needs to reflect the life of the proposal or impact, as defined by the proposal description contained in the condition statement, and require action accordingly.

Step 3: Identify reporting requirements

The condition must stipulate the reporting requirements regarding the monitoring, with reference to the particular condition number. **A Compliance Assessment Report**, submitted annually, will then document the actions taken by the Proponent and the outcome of those actions. However, where additional reporting is required, such as where the interval of reporting is less than annually this will need to be stipulated in the condition. For example, Rehabilitation activities shall continue as necessary until such time as the requirements of the conditions are met, and are demonstrated by annual inspections and reports, to the requirements of the conditions.

Step 4: Identify what is to be done if the outcome is not being met.

The condition must include instructions on the actions required if the outcome is not being met. This should include the required action and timing of that action, and would likely be a tiered

response, such as to carry out a preliminary management response; carry out a secondary management response; stop operations; criteria for re-starting operations; and action to remediate or mitigate impacts.

To address the requirement of providing model outcome-based conditions that are representative of particular environmental factors, it is proposed to collate example conditions from the most recently published reports and provide them on a website. It is anticipated that examples of outcome-based conditions could be continually updated to collate the best examples for most environmental factors.

Based on conditions currently in development, examples could be provided in the near future for:

- Flora and Vegetation
- Fauna Troglifauna/Stygofauna/Short Range Endemics
- Ground and Surface Water Quality
- Marine Water Quality – single point discharge
- Marine Water Quality – dredging
- Mine Closure and Rehabilitation – hard rock mines
- Mine Closure and Rehabilitation – mineral sand mining

4.7 TOWARD A RESULTS-BASED REGULATORY SYSTEM

*Saskatchewan Ministry of Environment
Regina, Saskatchewan
Ministry of Environment
File R4143.6 February 2009*

Extracts follow -

4.7.1 Results-Based Regulation

The current regulatory regime in Saskatchewan is highly prescriptive with the proponent submitting approvals for operations, and MOE issuing permits and approvals that specify what the environmental protection measures must be and how they should be implemented.

This is in contrast to Results-Based Regulation (RBR) that specifies the environmental protection to be achieved and leaves the proponent to determine how to achieve them e.g. The Alberta Water

Act are also Results-Based in that they provide that the operator must provide evidence that water diversion:

- Will not cause adverse effects on the water supply of nearby users over the short-term or long-term; and,
- Will not cause adverse effects on the source aquifer or other aquifers.

In addition, Alberta is undertaking a comprehensive review of legislation and regulations that may result in further migration to Results-Based regulation.

The key principle of a Results-Based regime is that proponents are responsible to manage risks associated with achieving specified results or objectives while government's role is to hold proponents accountable for achieving those results and assure the public that compliance is being achieved. Under the existing regulatory regime in Saskatchewan, government oversight of design and engineering in the permitting process and regulatory prescriptions may confuse the issue of respective accountability for compliance and enforcement initiatives. Shared accountability confuses compliance and enforcement initiatives. Simply put, if the government has precisely prescribed what must be done and how it must be done, who is responsible if the environmental outcome is not what was intended? Though the matter of legal accountability is normally dealt with by permit provisions making it clear that statutory requirements are paramount, under the existing regime, **the focus tends to be on the "what and how" rather than on the desired outcome in terms of environmental protection and sustainability.**

Much of the aim of a Results-Based regime is to "decouple" responsibilities for compliance and enforcement, by clearly defining the desired environmental outcome and making the operators clearly accountable to provide that result. This approach requires **strengthening the regulatory compliance and enforcement regime so that government can intervene when appropriate to assure compliance with the specified outcome.**

This strengthened role, and the clear accountability of operators, creates strong incentives for operators to properly manage risks to achieve the desired objectives. The emphasis is on making progress toward environmental goals and targets and on enabling firms to maintain compliance.

In general, Results-Based regulation should focus on producing the desired environmental performance, not on producing more rules. The intent is to publish clear policy statements supported by unambiguous performance objectives, and to establish mechanisms and procedures

to assure the public that the desired environmental goals are being achieved, always emphasizing that the onus is on industry for compliance.

4.8 A ROADMAP TO A NEW ENVIRONMENTAL MANAGEMENT MODEL FOR MICHIGAN

*Recommendations of the Environmental Advisory Council
December 16, 2009*

Extracts follow -

4.8.1 Principles and Recommendations

The main principles of the Environmental Advisory Council indicate that Michigan must transition from the current environmental management model, which tracks performance by measuring activities (outputs) without an adequate nexus to desired outcomes, to a new model focusing on outcomes. Outcomes must include public health, environmental quality, and ecological function and integrity, and must be accomplished with efficiency, effectiveness, lower transaction costs, and improved service to users.

In contrast to the current system, **adequate funding must be specifically earmarked for planning, establishing baselines, priority setting, collaboration, monitoring, and evaluation with outcomes as the focus.**

Affected stakeholders must be involved in identifying appropriate outcomes.

The agency should manage for agreed-upon outcomes. This approach **includes conscientious decisions about the most appropriate mix of tools (e.g., permitting, scientific inquiry, compliance, enforcement, incentives, and education) to achieve objectives.** It also implies careful attention to priorities when allocating resources. For example, the agency should discontinue activities associated with low-priority permitting activities and instead use less time-intensive regulatory methods, and collect and use data, education and/or voluntary initiatives to achieve desired and defined outcomes. System-based environmental monitoring would assure these lower priority sources do not cause unacceptable impacts.

5 SYNTHESIS

5.1 QUALITY OF TOOLS: STRATEGY PRINCIPLES

The strategy proposed by this subtheme is thus based on the following principles:

- Operating effectively in all phases of the management cycle
- Linking appropriate tools to those management phases, and encouraging the application of diverse tools
- Measuring the effectiveness of the tools in delivering the required outcome
- Determining a desired state, the indicators by which to measure that state, and the baseline from which to measure progress (or lack of)
- Aligning the State of the Environment Reporting
- Addressing shortfalls or changes to regulations and guidelines
- Using additional tools as required to realise the desired outcome
- Including planning and design tools, specifically, spatial planning and strategic tools
- Strengthening monitoring and enforcement

The principles are discussed in more detail below.

5.1.1 Environmental Management Cycle

The Integrated Environmental Management cycle includes 4 phases namely:

- Planning and Design
- Commencement, Implementation, construction
- Monitoring and Auditing
- Enforcement and Feedback
- The Strategy Principles can be presented graphically as follows also indicating existing tools within the management phases:

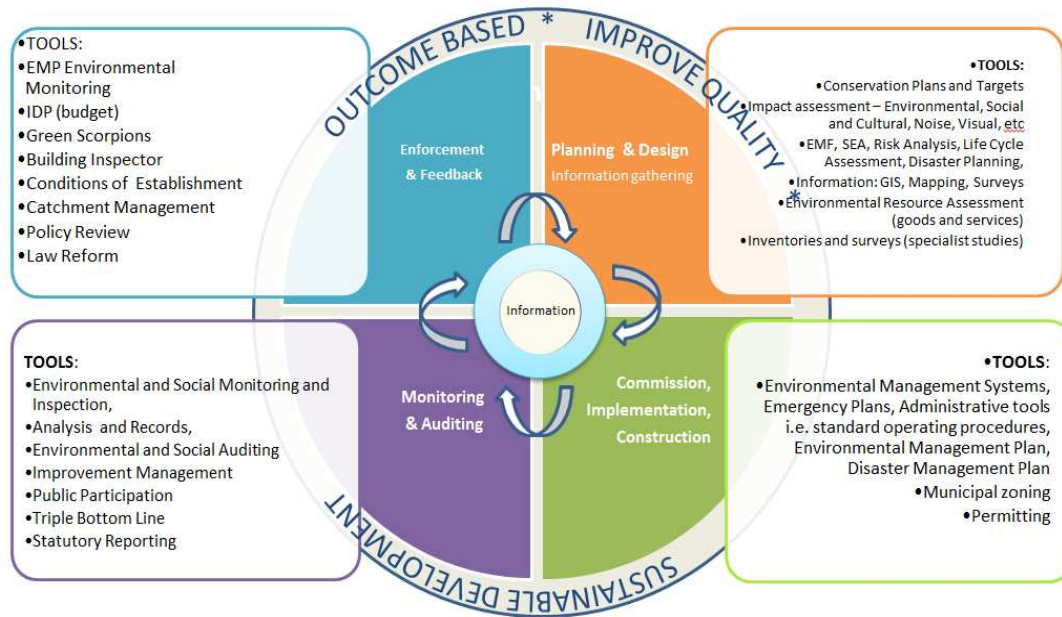


Figure 6: Strategy cycle



Figure 7: Planning phase

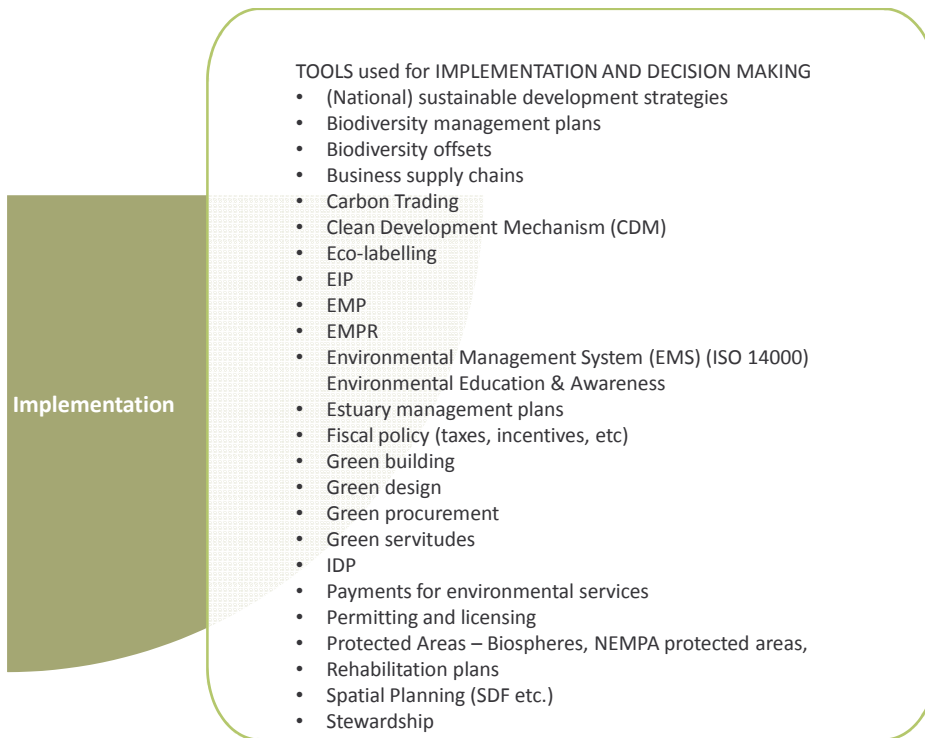


Figure 8: Implementation phase

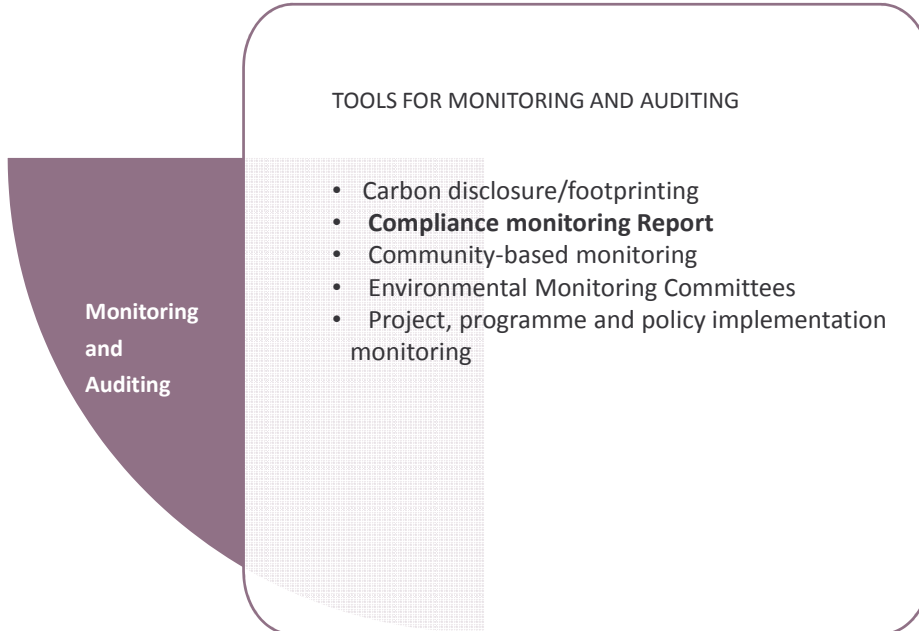


Figure 9: Monitoring and auditing phase

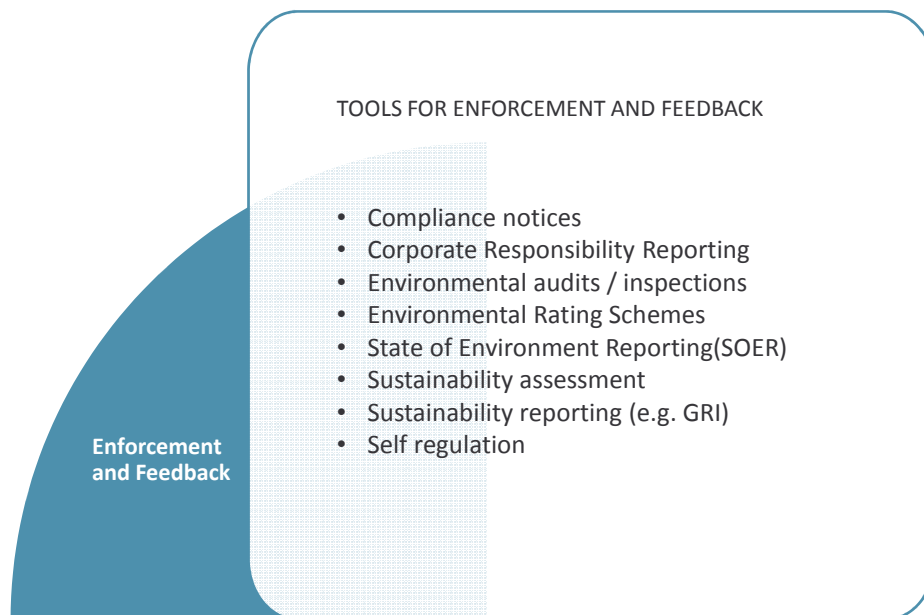


Figure 10: Enforcement and feedback phase

5.1.2 Appropriate tools linked to phases

For each phase in the Integrated Environmental Management Cycle, appropriate tools should be determined by Subtheme 9 or at the least a more appropriate screening process to ensure that the most appropriate mix of tools are used to achieve the outcomes.

Subtheme 9 states:

This IEM cycle is visualized as an iterative process that starts with the collection and processing of data, the use of the new knowledge in decision-making, parallel processes, construction etc., the monitoring of the implementation actions, and finally a phase that takes stock of how implementation took place and implements corrective actions in terms of either the existing application or new iterations of the cycle.

Environmental management actions can be tested against these phases to evaluate their function, relationships and position within the management cycle. Typical actions or steps within the integrated environmental management project cycle are matched to the four IEM phases, and

immediately, structure is given to the spectrum of environmental tools available to environmental practitioners.

~Subtheme 9 Report

5.1.3 Measure the quality of the tools

The quality of tools within each phase will be measured against pre-determined and agreed to outcomes.

5.1.4 Indicators, Outcomes and Desired State of the Environment are determined

The desired state of the Environment should be determined and must inform the Outcomes to be used by the framework.

With the desired outcome determined, the outputs and activities can be appropriately formulated (where outputs are the final product/s delivered, for example a SEA or EMF; and activities are the processes or actions that use a range of inputs to produce the outputs, and ultimately the desired outcomes). Outputs, activities and outcomes must be described for (at least) land use management, Biodiversity, Water, Air, Soil, Agriculture, Ground Water, Forestation, Geo-hydrology, Waste and Ecosystem Service Rendering within a cooperative governance paradigm.

Indicators which align with International standards and requirements and which address the country-specific needs can then be used in monitoring and reporting.

5.1.5 Aligning State of the Environment Reporting

The State of the Environment report should reflect the baseline for the determined Outcomes.

State of the Environment reporting represents an integrated and comprehensive approach to many different reporting requirements – international, regional and national - and can help to provide timely information to support decision-making.

5.1.6 Guidelines, regulations and other references

Guideline documents and regulations must continue to ensure the quality of tools.

Considerations include –

- A list of required information
- Departmental guidelines and policies
- Predetermined and clear terms of reference
- Terminology
- Scope
- Pre-determined performance criteria
- Competency
- Certification and registration of consultants
- Independent review
- Correctness of information gathering and capturing
- Accepted standards and formats for datasets
- Scale and accuracy of relevant baseline information
- Input from I&AP

5.1.7 Using additional Instruments

Additional instruments should be used where appropriate to support attaining the desired outcome.

Different instruments can play a major role in ensuring an outcome based approach, and include –

Command and control – “Command” facilitates setting the standards which are linked to the desired outcome; “Control” facilitates stringent yet pragmatic monitoring and decisive enforcement.

Market/Fiscal based instruments – taxes, subsidies, tax relief, fees, charges, etc, may be used to stimulate the implementation of measures which improve the environment, closely linked to policies such as the Green Economy and Climate Change.

Agreement-based instruments – such as Biodiversity Management Agreements, and International Agreements.

Civil based instruments - such as Eco-labelling, performance reporting, technical assistance

5.1.8 Include Planning and Design

Tools which focus on Planning and Design must be included.

Planning and Design tools will play a major role in determining the goals/outcomes that need to be achieved within IEM.

5.1.9 Monitoring, Enforcement and Feedback Tools

Monitoring, Compliance Assessment Reports, Enforcement and Feedback tools are an essential part of the EIM cycle.

The State of the Environment, the Environmental Management Plan, Compliance Notices and Self-regulation, or the application of industry standards, are tools used for enforcement and feedback.

In this part of the cycle, instruments are scant and application/use inadequate.

To achieve a full-cycle, balanced approach to Integrated Environmental Management, enforcement and monitoring need to be strengthened.

This subtheme therefore proposes a new tool: a **Compliance Assessment Report**.

Compliance Assessment Reports have been effectively used by Treasury in South Africa as well as in the European Union. While the focus of these successful reports is fiscal compliance, the principle may be extrapolated.

In the Environmental arena the Compliance Assessment Report typically addresses the following –

- Subject e.g. Marine Water Quality
- Action e.g. An activity which is linked to an EMP, an authorisation condition, etc.
- Method/How e.g. Ensuring water quality meets the levels of ecological protection
- Objective e.g. Maintain and improve water quality to within specified limits
- Evidence e.g. Laboratory results
- Requirement of e.g. Authorisation condition, DEA, DWA, etc.
- Advice e.g. Consulting firm, DEA guideline, etc.
- When e.g. the timeframe set to either achieve an objective, or the duration of the monitoring

5.2 QUALITY CONTROL MEASURES PER MANAGEMENT PHASE

The quality of tools will be measured by means of an outcome based approach as well as existing and to be developed additional checklisting and guideline documents for different tools.

The following most important quality measures should be developed within each management phase:

Phase of IEM cycle	Quality control mechanisms: Outcome based	Quality control mechanisms: Information requirements Guidelines on required information Skills	Quality control mechanisms: Public Participation
Planning and Design	The quality of the tool should be measured against the pre-determined outcome. The desired state of environment should also include targets in terms of land use management, Biodiversity planning, Water, Air, Soil, Agriculture, Ground Water, Forestation, Geo-hydrology, Waste, Ecosystem Service Rendering - within a cooperative governance paradigm. It	List of required information in regulations and quality guideline documents, Relevant departmental guidelines and policies, Information on the Multidisciplinary specialist team rather than only information on the competency/registration of EAP/Specialist, Clear terms of reference, terminology and scope, strong Steering Committees, Independent review if required, Correctness of information gathering and capturing and scale and accuracy of and relevant baseline information.	Participation by I&AP should play a more important role to determine desired outcomes and therefore ensure quality of the products
Implementation and Commencement	Outcome based in terms of pre-determined planning targets/goals	List of required information in regulations and quality guideline documents, Relevant departmental guidelines and policies, Information on the Multidisciplinary team rather than only information on the competency/registration of EAP/Specialist, Correctness of information gathering and capturing and scale and accuracy of and relevant baseline information	Participation by I&AP should play a more important role during this phase in order to ensure quality in terms of the desired outcome

Phase of IEM cycle	Quality control mechanisms: Outcome based	Quality control mechanisms: Information requirements Guidelines on required information Skills	Quality control mechanisms: Public Participation
Monitoring and Auditing	Outcome based in terms of pre-determined outcomes within tool e.g. EMP targets	Specialist skills in order to monitor pre-outcomes e.g. quality of water Independent monitoring if required, Correctness and accuracy of information gathering The Tool: Compliance Assessment Report should be developed	Participation by I&AP should play a more important role in monitoring and auditing
Enforcement and	Outcome based in terms of	Specialist skills for enforcement	Participation by I&AP should play a more important role in enforcement and reporting
Reporting	Pre-determined outcomes	Team of specialist knowledge to determine state of the environment Correctness and accuracy of information gathering for measuring state of the environment against pre-determined outcome or desired state of the environment Guideline documents for reporting, list of information required	

5.3 METHODOLOGY TO DETERMINE OUTCOME ON A PROJECT BASE

The development of outcome-based conditions should be undertaken via the four step process based on the Western Australia guideline model as detailed below.

Step 1: Identify the environmental outcome to be achieved by the proposal in relation to the environmental factor

This step is the most important part of the condition as it is the statement of what is to be achieved – the desired state of the environment. The environmental outcome is the proposal-specific interpretation of the environmental objective, defining the acceptable level of change to the

environment as a result of the proposal. The description of the environmental outcome should use statements of realistic and measurable intentions, specific, achievable, clearly stated, time-related.

Step 2: Identify how the outcome is to be demonstrated

The most appropriate method is via monitoring. The reason for undertaking the monitoring and what it needs to demonstrate must be clear.

For example, “The proponent shall monitor xxx within the disturbance footprint to identify any significant change in abundance or condition ...”

It is then the responsibility of the proponent to design the monitoring program so that it is able to support an evaluation of the level of change or significance in the environmental factor. A baseline will be required so that the allowable levels of change (impact) can be measured. Appropriate baselines should be established as part of the planning and EIA documentation.

Where the outcome is performance-based, it is possible that the monitoring requirements will need to be outlined in a schedule, as the monitoring frameworks and/or protocol will need to stipulate the desired levels of performance to be achieved; the indicators to be measured (including locations); and the various criteria to be met with reference to guidelines, trigger values and standards. The condition should include the interval of monitoring, including timing (e.g. seasonal) where this is critical, as well as the duration of monitoring. This must be relevant to the life of the proposal and the extent of the responsibility of the proponent. The condition needs to reflect the life of the proposal or impact, as defined by the proposal description contained in the condition statement, and require action accordingly.

Step 3: Identify reporting requirements

The condition must stipulate the reporting requirements regarding the monitoring, with reference to when, how by whom.

Step 4: Identify what is to be done if the outcome is not being met

The condition must include instructions on the actions required if the outcome is not being met. This should include the required action and timing of that action, and would likely be a tiered response, such as to carry out a preliminary management response; carry out a secondary management response; stop operations; criteria for re-starting operations; and action to remediate or mitigate impacts.

5.4 RECOMMENDATIONS

In this conclusion the report collates the most applicable actions, and assigns a suggested timeframe for the activities.

5.4.1 Immediate Actions

- Accessibility of existing guidelines to be improved
 - Ensure officials (particularly in local government) are aware of the guidelines, how to use and interpret
 - Ensure all identified Guidelines are available at a central repository
- Improve the quality of authorisations
 - Authorisations must be drafted in a manner which allows the compliance and enforcement function to be effectively and efficiently executed
 - Authorisations (including conditions) must be accessible to all registered I&APs, and changes to authorisations (at any time frame) must be communicated to I&APs within a tight time frame (days, not weeks)
- Compile Guideline documents
 - For the application of the principles of NEMA
 - For attaining the objectives in Chapter 5 of NEMA
 - For tool selection within the management cycle, particularly where changes to the “default” tools (particularly EIA) are proposed

5.4.2 Short term Actions

The following immediate actions are proposed in order to move towards the Outcome based IEM model:

- Compile Guideline document on Outcome-based approach that will lead to a regulated Outcome-based Management System
- Establish and maintain indicators to measure outcomes linked to environmental priorities. The process of identifying these criteria should include a robust public participation component

- Compile Guideline documents
 - For the new format of EIA reporting described below
 - For the use of the new tool, Compliance Assessment Report
 - For the use of any other new tools which may be identified
- Change the requirements for EIA reports
 - EAPs should include three perspectives in the EIA reports –
 - a) the biophysical environment in compliance with the regulations BUT specifically focussing on the desired outcome for the environment and how it will be achieved or supported as indicated in 5.3,
 - b) the motivation *as articulated by the proponent focussing on the outcome based approach* as determined in 5.3 and
 - c) collation of any number of needs/desires of Interested and Affected Parties in order to determine the desired state of the environment in line with strategic targets.

Note: The change (c) is to address the perception of subjectivity, and to clarify the position/s of the I&APs into the final EIR. For (b) the proponent (or a consultant other than the EAP) as the most qualified party, should author the motivation for the development. These changes are to foster objectivity.
 - Suitably qualified EAPs should indicate how the proposed development will contribute to *achieving ecological sustainability*. The EAP must stipulate how, when and which indicators will be used to quantifiably determine ecological sustainability. The measures should be integrated into the Environmental Management Programme (EMP), and reported using the format of the (newly described) Compliance Assessment Report.
- Change the requirements for EMPs
 - The EMP must clearly demonstrate how and when specific indicators for ecological sustainability will be measured, captured and reported.

- The EMP must clearly indicate the actions to be taken if ecological sustainability measures indicate failure, and should also indicate the priority of the action required, including time frames and resource allocation.
- The EMP should indicate a chain of escalation within the organization and to officials, correlating the severity with seniority for the priorities identified above.

5.4.3 Intermediate Actions

- Develop a system to collate monitoring information, provided by projects as described in EMPs (see above). The collated information should conform to the requirement that may be identified by Subtheme 2: Information and Knowledge, and should be available to inform strategic processes – such as EMF, SDF, SEA,.
- Develop baseline data, integrating with the requirement for data integrity and management as defined by Subtheme 2: Information and Knowledge. The baseline data will be used to validate the information provided in Compliance Assessment Report (see above), and should align with the current and future needs of SoE reporting.
- Compliance interventions (including site inspections and compliance notices) must be tracked and be transparent to stakeholders, including a complainant and I&APs. It is envisaged that the National Environmental Assessment System (NAES) could be adapted to fulfill this function.

5.4.4 Longer term Actions

- Eliminate duplication and inefficiency in permitting
- Availability of information, and integrity (quality) of data must be improved. There is a two-fold intention – one, to make information about the local environment available to stakeholders. Two, to make a level of “base data” for reports compulsory and also available. This will allow the EAP and specialists to focus resources on ground truthing and adding value to data already available. This intervention addresses the tendency to copy and paste report content, while also recognising that some geographic commonality infers a standard component to some of the content is possible without compromising validity or applicability.

- “Close the loop” indicates the need to feed information from one phase of the management cycle into the next – so for instance, to take valuable learning from Enforcement as Feedback into Planning.
- Draft guidelines for how to process, track and implement learning. This will require close collaboration with other subthemes, particularly ST2 and ST1
- Implement more regular auditing of tools to ascertain effectiveness and efficiency in measuring and attaining sustainable development and integrated impact management
- Amend as may be required the Regulations in terms of Chapter 5 of the National Environmental Management Act as required to reflect the elements introduced in the guidelines wrt a) outcome-based approach and b) the full management cycle of an integrated environmental impact management system

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Appendix A - Indicators

The key to developing an effective Monitoring Programme is the identification of an appropriate set of indicators. An indicator is a measure used to demonstrate the change or result of an activity, project or programme. At the most elementary level, indicators should be SMART:

S	Specific	An indicator should reflect what is trying to be measured in an accurate way. Good indicators limit and focus data collection
M	Measurable	An indicator must be measured in either qualitative or quantitative term
A	Attainable	An indicator should be feasible in terms of finances, equipment, skills and time
R	Relevant	An indicator should be relevant in terms of the objectives of the assessment and perceptions of the stakeholders
T	Trackable	An indicator should be capable of picking up changes over time

Indicators should also be:

- Factual: mean the same to everyone;
- Valid: measure what they claim to measure;
- Verifiable: can be checked; and,
- Sensitive: reflect changes.

In terms of selecting indicators for a Monitoring Programme the following aspects should be considered:

- What are the objectives of the activity, project or programme and what sort of information will assist to assess if the objectives are being met. At the end of the day the indicators need to be relevant and provide useful data;
- Who needs what type of information? The indicators selected must reflect the needs of the affected community and as such must be accessible and accepted by the community;
- Why do they need the information?
- How frequently do they need it?

- What is the most effective and efficient way to collect the information required. The indicators need to provide useful information at an acceptable cost;
- What is the most effective and accessible way of presenting the information; and,
- Is the information presented in a format that is accessible and can be understood by the affected communities? Understanding the information is critical for community buy in into the programme.

Each indicator should have:

- A name;
- A definition and objective;
- An outline of its relevance to the project objectives;
- Indication of which stage in the programme the indicator is being used (e.g. the actual move, settling down phase or long-term, on-going component of the project);
- A description of the linkages with other the indicators;
- A description of how it will be measured (approach);
- Indication of the frequency, timing and the level (macro/micro) being monitored;
- A description of any limitations/constraints related to the use of the indicator; and
- A description of the nature of the information to be collected (descriptive vs. quantitative).

Appendix B

Cost benefit analysis, Guideline 8

CBA simply compares all the expected present and future benefits of a project or policy with its present and future costs. In general future costs and benefits appear less important than present ones, for this reason CBA attaches a progressively lower weight to costs and benefits the further in the future they appear. It is this practice of discounting that forms the basis of the opposition to CBA by some environmentalists.

CBA can be used to:

- Evaluate or rank the feasibility of projects.
- Analyse the effect of regulation.
- Justify equipment and technology investment.
- Determine the most effective way to cut costs, especially in capital planning
- Determine the relative benefits of outsourcing and leasing
- Quantify hidden costs and intangible benefits
- Ensure accountability by public sector decision-makers

The process:

- Identify and define the project.
- Identify consequences of the project or policy, place them in time order and obtain monetary values for them.
- Determine type of CBA
- Identify incidence of costs and benefits in income distributional terms.
- Where appropriate, adjust costs and benefits using weights based on the existing and desired distributions of income
- Discount the flows of costs and benefits and use the appropriate decision tool
- Conduct a sensitivity analysis.

Decision rules

Different rules may be applied, but in all cases the discount rate (r) plays a key role. The higher the discount rate the greater the emphasis on start up costs and short term benefits and the shorter is the decision maker's effective time horizon. The lower the discount rate, the greater the emphasis on long term costs and benefits.

Net Present Value

A project can only be acceptable if its present value is positive

If the two competing projects are mutually exclusive, the preferred project is the one with the higher Net Present Value.

Internal Rate of Return

To a businessman, a project is only worth considering once the percentage return on the money he invests in it is greater than the interest rate he has to pay to borrow the money in the first place.

Benefit-Cost (B/C) Ratio

The Benefit-Cost Ratio offers a way of ranking projects. The ratio is not suitable for comparing mutually exclusive projects.

Cost-Effectiveness Analysis (CEA) and Cost-Utility Analysis (CUA)

These are not so much decision rules but different approaches to decision making. CEA and CUA identify the cheapest way to achieve a given outcome.

The private sector also uses -

- Return on Investment (ROI) measures the business value of a project.
- Payback Period which measures how long an investment takes to 'pay for itself'.
- Economic Value Added (EVA) measures true economic profit.

For any given project, financial CBA looks at the costs and benefits to an individual stakeholder. Social CBA looks at the costs and benefits to society as a whole, trying to determine whether the project will make society better or worse off.

A CBA performed by the government would necessarily go further in order to consider the implications of the project on the whole of society.

The prices of land, labour and capital would be corrected to address any implicit subsidies, distorting taxes or market imperfections.

The exchange rate would be checked to ensure that over or under valuation was not generating a spuriously high or low net earnings flow.

It would consider all stakeholders, looking not only at the direct costs incurred in the project's construction and running, but also at the costs to the rest of society. This could include things like an estimation of the cost of environmental destruction, the effect of noise pollution, the impact on local communities etc.

They would also have to consider a broader range of benefits (e.g. increased tax revenue, an increase in foreign exchange, a reduction in unemployment etc).

A complete social CBA should also consider the needs of future generations and adjust the discount rate accordingly. The two types of CBA can therefore yield substantially different outcomes.

When a CBA study is conducted the data is extracted from the specialist reports produced during the EIA process. It is entered on a spreadsheet and can then be tested for its sensitivity to - amongst other things - different discount rates and impacts on income distribution. It is therefore reliant on the information provided in specialist reports.

One of the key weaknesses of CBA is that it can oversimplify, reduce complex cause and effect linkages to a single number like the Net Present Value (NPV) or the Benefit/Cost ratio.

This can be overcome by either ensuring that the sensitivity analysis performed captures the effects of variations in key variables (such as discount rates and income distributional weights) or by combining CBA with one of the multi-criteria decision analysis methods which allow weights to be attached to concerns and impacts identified by specific stakeholders as significant.

Common errors

Ignoring Implicit or Opportunity Costs

A project may use resources that are already in place, but which could be either sold, or used for some alternative purpose. Their best alternative value is called their 'opportunity' cost.

Failing to Recognize Sunk Costs

Some expenditures should be ignored. The only relevant costs are those that depend on the existence of the project or policy. These are costs incurred irrespective of whether the project proceeds or not.

Failing to Include External Costs

An external cost is a cost that is borne by parties not directly involved in the activity. It reflects missing or imperfect markets

Secondary Benefits and Multiplier Effects

Only undisputable secondary benefits that would not be induced by alternative project or policy should be included.

Double Counting

It is important that neither costs nor benefits be double counted.

Considerations

Since the discount rate can have a significant impact, it is important to see how sensitive the recommendations of a CBA are to the discount rate.

The standard real rate used in South Africa is 8%, but it is sensible to replicate the analysis at rates of 3% and 12% to test for sensitivity.

Conservatism of an 8% discount rate becomes clear when it is understood that the state currently borrows money at a long-term real rate of approximately 3%

In evaluating the sensitivity analysis recognize:

- a low discount rate means a long time horizon and consequently an increased awareness of the distant future. It sounds more appropriate when “sustainability” is an issue.

- a low discount rate means that the hurdle a project has to cross before it is judged ‘viable’, is set relatively low. Projects that have low benefit cost ratios can nonetheless be passed. -

- This may be at odds with the search for sustainability.

Problems

Discounting is especially problematic for environmental projects because the nature of these projects often involves long-term benefits but short-term costs, consequently CBA is biased toward the current generation.

Real-world markets have many imperfections (e.g. subsidies, price fixing, monopolies and externalities). As a result prices do not always reflect marginal social costs and benefits accurately.

State or policy interventions may skew costs. e.g. unskilled labour is not a scarce resource in the economy. Commodities and factors that are not scarce have no price in a free market. That unskilled labour earns the low wage it does, reflects state intervention and not its scarcity.

When a good is not traded, no market price for it exists. This does not mean that the good has no value. The values of such goods and services can often be inferred from economic behavior and from a study of other (related) markets. A simple example of such an intangible is the enjoyment of scenery. The value of time and of life are two further examples.

Many benefits and costs are almost impossible to quantify. Examples of these include:

- Improvements in human health and safety.
- Impacts on quality of life (visibility; noise level etc.).
- The market-related economic productivity of ecological systems (for example, its contribution to the viability of farming, forestry, and fishing).
- Ecological stability and biodiversity.
- Improvements in economic productivity

Many of these benefits and costs have an environmental impact. When it is impossible to measure such benefits, or when the measurement seems prone to error, a way out of the problem is to identify a target benefit (say some number of statistical lives saved per annum) and use Cost-Effectiveness Analysis to find the cheapest way to achieve it.

When the benefits and costs of a project are uncertain, it is sometimes necessary to calculate their certainty equivalent. Since the majority of people are risk-averse, the certainty equivalent normally includes a risk premium. This requires information on both the expected benefits and cost of a project, and the level of risk aversion of individual affected.

It is important to note that even when the expected benefits and costs alone are sufficient measures, valuation is often difficult. This is because the probability of occurrence of these benefits and costs is rarely known with certainty. Sometimes only a 'cost-range' is possible. If this is the case, the ranges must be explicitly noted, along with any important geographic dimensions of these costs.

All important assumptions and major points of uncertainty need to be disclosed. If certain benefits or costs are not included or valued in any way, then this omission should be noted in a caveat. Any significant cost elements that have not been quantified, should be clearly stated and discussed.

Where costs cannot be precisely annualised, the time frames within which these costs will be incurred also need to be recorded.

Environmental Considerations

The Valuation of Environmental Impacts

The public goods aspects of the environment are obvious sources of social utility, but they appear to command a price of zero in the market. Even where the environment can be depleted (e.g. fish stocks decline) and the public can be excluded (e.g. no access to a beach spot unless one pays the entry fee), the prices that result often reflect administered powers rather than market forces.

Conventional CBA operates on the premise that market efficiency is a pointer to social efficiency if one can simply spot the market's failures and correct for them. Environmental impacts are one source of missing markets (i.e. externalities)

Both the true value of the environmental services provided, and the external costs imposed on others, have to be counted in an economic CBA; and the values have to be included without any double counting.

There is increasing pressure on current EIA practice to place a real value on the environment, and force public and private enterprises to take cognisance of it.

The true value of the damage done, however, only appears at the level of economic CBA. Environmental regulations may impose costs on polluters, but may not put pressure on them to emit the socially 'optimal' amount of any pollutant.

Some environmentalists oppose the monetary valuation of natural resources that have 'immeasurable' intrinsic and aesthetic values. However, in today's monetised global economy, valuing resources (even if the figure attained is imprecise) can suggest the worth of protecting them.

Where a project is positive but the environmental impacts negative, inspection of the EIA reports may indicate the relative magnitude of the problem, and whether or not it can be mitigated. Again it may be possible to avoid valuation of impacts. Only if valuation of environmental impacts is likely to influence the outcome of the analysis should it be carried out.

Valuation Expounded

A general 'checklist' of environmental values can be useful to ensure that all 'uses' of an environmental good are accounted for in its valuation.

- Direct Use Value – can be commercial or non-commercial e.g. output of a forest would include both lumber (commercial) and recreational amenity value (non-commercial)
- Indirect Use Value – e.g. the ecological functions of the ecosystem such as climate stabilization
- Option Value – the premium that people would be willing to pay to ensure the future supply of an environmental resource whose existence could be threatened.
- Existence value – the values conferred by humans on the ecosystem regardless of its use. It captures the idea that an environmental good may be valuable merely because the public are happy that it exists, quite apart from any future option to consume it, visit it or otherwise use it.

Even in the best of EIA's information on impacts may be incomplete. If such 'unknown' impacts will be irreversible, the significance of such information is increased.

A different approach to the problem may be to use Generational Cost Benefit Analysis (GBA). This approach discounts net benefits from the perspective of all generations involved.

For instance in environmental restoration projects, GBA accounts for the fact that current restoration efforts may produce benefits to future generations. These benefits therefore need to be valued using the respective discounting clocks of the generation receiving the benefits

Methods for environmental valuation

Contingent Valuation Method [CVM]: This involves conducting a survey to establish the affected public's willingness to pay (WTP) to preserve a resource or willingness to accept (WTA) compensation for its destruction (the difference between these two is relevant when an allocation of property rights or a redistribution of income is a project feature).

Travel Cost Method [TCM]: this method assumes that the time and travel cost expenses that people incur when visiting a site represent a revealed willingness to pay for access to the site.

Hedonic Pricing: uses real estate prices. Since house prices capture relevant amenities they should also reflect environmental amenities and disamenities ('goods' like open space close by, view of a pristine area, and "impacts" like traffic noise and air pollution). The characteristics of houses are collected and regressed against house prices, the result enables such characteristics to be valued.

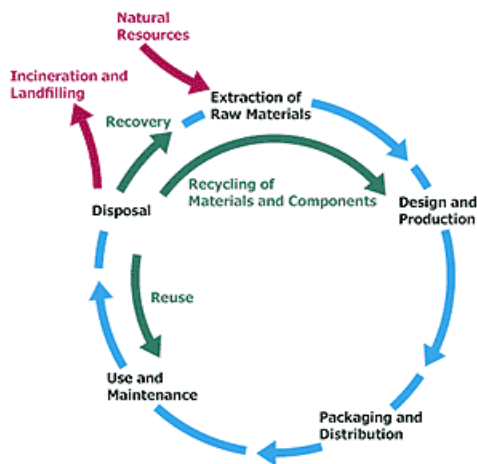
Appendix C

The Life Cycle Assessment Guideline, Series 9

Life cycle assessment (LCA) is the calculation and evaluation of the environmentally relevant inputs and outputs and the potential environmental impacts of the life cycle of a product, material or service (SABS ISO, 1998). Environmental inputs and outputs refer to demand for natural resources and to emissions and solid waste.

LCA methods and techniques assist in decision making by looking at the production, use and disposal of a product or service. It provides information on the environmental burden at all stages, and thus enables a choice to be made on both an economic and a resource usage, or environment-based perspective.

The use of life cycle approaches and thinking can contribute information towards the development of practical action plans and programmes to address unsustainable consumption and production patterns.



(Image source: <http://www.uneptie.org/scp/lifecycle/>)

There are generally four components to the LCA –
Goal and Scope

This component defines the limits of the study, including the intended application, the motivation for the study, the limitations of the study, the systems investigated, the data requirements, the data quality requirements, the key assumptions, the impact assessment method, the interpretation method and the type of reporting.

Inventory

The Inventory will consist of a full listing and categorisation of the different elements involved in the cycle and the analysis of the data results in a flow model of the technical system.

Impact Assessment

This stage describes and quantifies the impacts from an environmental perspective using category indicators. There are four mandatory elements –

- selection of impact categories, category indicators and models,
- assignment of the LCIA results (classification),
- calculation of category indicator results (characterisation), and
- data quality analysis

These elements are optional –

- calculating the magnitude of category indicator results relative to a reference value (normalisation),
- grouping, and
- weighting

Improvement Assessment

This assessment is the basis for improvement of the existing cycle. The results are analysed in relation to the goal and scope definition, conclusions are reached, the limitations of the results presented, and recommendations made.

Types of LCA

The simplest form of the LCA is the *conceptual LCA*, or *Life Cycle thinking*. It is based on limited and usually qualitative inventory. The results can indicate which components or materials have the largest impact on the environment and why.

The conceptual LCA has limited application.

The *Simplified LCA* is used for screening, and does so superficially by using generic data and standard modules for energy production. Using the simplified LCA commences with screening which is generally identifying data gaps, followed by focusing on elementary flows or important parts of the system, and finally a check that simplifying has not significantly reduced the reliability of the results.

The tool may be used to support companies in the increasing (consumer and legal) demand to take accountability for the actions and consequences of their products and services, also called the “chain responsibility”. In this regard, it is about managing the company’s reputation and product credibility while addressing the environmental liabilities and benefits.

The tool may become increasingly significant as eco-labelling gains momentum, and as consumers become more astute in checking for “environmental friendliness”.

LCA can support providing information to consumers about more than the price of the commodity – the running costs and pollution potential in short and long term can also be made know.

From a standards perspective, LCA is dealt with under the umbrella of the ISO 14000 series. The standards address environmental declarations and claims (especially pertinent to labelling), guidance on conducting the LCA, including the interpretation of results, and determining the scope.

The main documents are as follows:

- ISO 14040 – Life Cycle Assessment – Principles and Framework (1997)
- ISO 14041 – Life Cycle Inventory Analysis (1998)
- ISO 14042 – Life Cycle Impact Assessment (2000)
- ISO 14043 – Life Cycle Interpretation (2000)

Weaknesses

- The LCA may have inherent design faults, if there are no standards in place to cover study approaches and study design parameters.
- Abnormal events such as spills and incidents can only be effectively accommodated through the parallel use of risk assessments;
- Limited data, questionable data quality and varying regional relevancy, is a constraint;

- The lack of confidence in data (especially areas such as ecotoxicity and human toxicity, soil erosions and biodiversity change) means that the environmental scores could be unreliable
- Assumption of potential worst case scenario environmental effects in an “all or nothing” perspective
- ICA assumes linearity of impact, i.e. the greater the pollutant, the greater the impact, which does not allow for variability in local conditions or critical loads;
- Scarcity of LCA expertise. LCA studies are difficult to interpret.
- Data quality and availability creates a major practical bottleneck in LCA studies.
- Lack of generally agreed methods and this appears not to be adequately addressed through ISO standardisation.

Even where LCA may be the appropriate tool, it may not be used (and therefore compromise quality of environmental management) -

- Absence of a perceived need for LCA - the “Stockholm Principles” state that every country is responsible for its own resources, as long as it causes no harm to any other country; the World Trade
- Organisation agreement forbids discrimination on the basis of environmental information.
- LCA studies are time consuming and project may be delayed.
- Cost of LCA Studies is high because it requires high level of expert knowledge required by
- Complex LCAs, coupled with the need to purchase data from commercial databases suggest high costs. The costs are further increased by the ISO requirements for review

Overcoming problems

Clear and transparent guidelines and robust peer review mechanisms will help ensure that the highest of standards are maintained in study approach and technique.

Appendix D

Socio-economic Impact Assessment, Guideline 22

Socio-economic Impact Assessment is an interactive process by nature, and input from the community is crucial. This tool assists the community to be part of the environmental decision-making process, and empower communities to participate in decisions that will affect their livelihoods.

Application

A Socio-economic Impact Assessment (SEIA) aims to develop an understanding of the current social and economic environment and aims to assess or assesses the potential impact of the project on the socio-economic environment. SEIA is designed to forecast, monitor and control prospective social and economic problems resulting from development projects or the process of technological change. It is for use as a baseline for predictions and measurements.

Revealing the existence of adverse impacts before they occur ensure that planners, the general public and groups specially affected can conduct an informed debate over which impacts can be avoided, which are socially necessary and which are socially intolerable.

A good quality SEIA achieves the following:

- Identifies Interested and Affected Parties
- Facilitates and coordinates participation of stakeholders
- Documents and analyses local historical setting of project
- Gives rich picture of local cultural context
- Identifies and describes activities likely to cause impacts
- Predicts likely impacts and how different segments of community is likely to respond
- Assists in evaluation of alternatives
- Assists in site selection
- Recommends mitigation measures
- Provides suggestions about compensation

- Describes potential conflict and advises on resolution processes
- Where there is no mitigation, coping strategies are developed in community for dealing with impacts
- Contribute to skills development and capacity building in community
- Advises on appropriate institutional and co-ordination arrangements for all parties
- Assists in developing and implementation of monitoring and management programs
- Collects baseline data for evaluation and audit purposes

Among the variables a SEIA will consider are -

Population Change

- Population size, density and change
- Influx and outflow of temporary workers
- Presence of seasonal (leisure) residents
- Relocation of individuals or families
- Racial and ethnic composition and distribution

Community/Institutional arrangements

- Voluntary associations
- Interest group activity
- Size and structure of local government
- Industrial/commercial diversification
- Employment/income characteristics
- Local/regional/national linkages
- Employment equity of disadvantaged groups
- Historical experience of change

Political and social resources

- Distribution of power and authority
- Inter-organisational cooperation
- Conflict between newcomers and long term residents

- Identification of stakeholders
- Interested and Affected Parties
- Leadership capability and characteristics

Individual and family level impacts

- Displacement/relocation concerns
- Trust in political and social institutions
- Residential stability
- Family and friendship networks
- Density of acquaintanceships
- Perceptions of risk, health and safety
- Attitudes towards the proposed action
- Concerns about social well-being

Community Resources

- Change in community infrastructure
- Indigenous populations
- Changing land use patterns
- Family and friendship networks
- Effects on known cultural, historical, sacred and archaeological resources

Projecting impacts

A number of projection techniques are commonly used by social scientists, including population multiplier approaches,

- cost benefit analysis,
- comparison communities (comparing communities with similar social fabric that was exposed to similar projects)
- consulting experts,
- input-output models,

- economic base models,
- and many others.

It is recommended that more than one technique is used in order to triangulate and ensure the proposal is on the right track.

Categories of Impacts which should be considered include -

- Health and social wellbeing
- Quality of the living environment
- Economic impacts & material wellbeing
- Cultural impacts
- Family and community impacts
- Institutional, legal, political and equity impacts
- Gender relations
- Indirect and cumulative impacts

Monitoring

A monitoring plan should track project development and compare real impacts with projected impacts and should spell out the nature and extent of additional steps to be taken when unanticipated impacts or impacts larger than the projections occur. It is suggested that a **Community Monitoring Committee** consisting of key role players from the community, local authorities and proponent, is established early in the SEIA process and acts as a watchdog throughout the project lifecycle of the proposed development.

This committee will have a similar function to Environmental Monitoring Committees, but will include the social aspects of the proposed development. **Alternatively the functions of the EMC's can be extended to include the social environment.**

Approaches and techniques

Technocratic

This approach entails that a scientist remains a neutral observer of social phenomena. A key assumption is that, given sufficient data, accurate predictions can be made by trained social scientists.

Participatory

This approach uses the knowledge and experiences of individuals most affected by the proposed changes as the basis for projecting impacts. It assumes that individuals' perceptions, attitudes and beliefs can be a key component of impact assessment.

A community that possesses social capital will thus participate more in community matters and work together for collective benefits. Social capital is a public good comprised of trust among a diverse group of citizens within the same community and as such it facilitates cooperative networks among those citizens supports this by stating that social capital comprises the abilities, traditions and attitudes that help ensure that a group of people will support each other, respond to challenges in a constructive manner, and innovate. However, where social capital is low, the opposite is true, and participation may be poor, fragmented or contradictory.

Research techniques

Quantitative techniques aim to measure the social world objectively, to test hypothesis and to predict and control human behaviour.

Quantitative research is an inquiry into a social or human problem, based on a theory composed of variables, measured with numbers, and analysed with statistical procedures, in order to determine whether the predictive generalisations of the theory hold true.

Problems

In conducting the SEIA, the following obstacles or problems may occur -

Unrealistic expectation from the community

The practitioner maintains an "outsider's" perspective

The practitioner is influenced by his/her own history, and "filters" exchanges, which may lead to prejudice

It is easy to see only the obvious and easily accessible

The process is complicated and requires specialist input

SEIA is a process that should be initiated as early in the project cycle as possible, in order to provide sufficient time for communities to participate and influence decisions which can alter their lives and livelihoods

Appendix E – Issues raised by different sectors

The following issues were raised by the sectors as part of Review the Effectiveness and Efficiency of the Environmental Impact Assessment (EIA) System in South Africa (2008) (REE) and other workshops, and should be considered within strategy proposals:

- “Ecology is driven by scale and then also the quality of data, in other words, the resolution of data being used. I’m worried about small scale datasets being used for detailed analysis. It’s not their function. It could be done on a strategic level, but we should be scared or worried about the fact that people are using small scale data to make detailed answers.”
- “In terms of the environmental management plans, I think it’s important to recognise that by the time people get RODs, many of the method statements for the construction phase have not been put out. So, it’s very difficult for environmental management plans to be in a format that is really implementable and something that we maybe should address in the EIA regulations is to say the environmental management plan will only really be able to be updated once the ROD is issued, and then the engineers will go and give you the statements. That will effectively change the environmental management plans to a large extent”.
- “Exactly how are we going to measure sustainable development? Two things that maybe should be looked at, apart from obviously the ecological baseline, are things like need. Is this development actually needed? And the other thing we should look at is what the carbon footprint of this development is. Sustainable development is far broader than just that, but I think we need guidelines. How can we determine if this development is sustainable or isn’t.”
- “There must be some kind of safety net to safeguard those people who bought properties that now cannot develop on them. The problem that we have here is that we often don’t even consider that no-go option, because we are actually too scared to tell people that they can’t develop there.”
- “How significance assessment is communicated, - this high, medium, low issue, which doesn’t say very much about efficiency, equity or sustainability and who the affected parties are. I think that’s also something that needs looking at in terms of assessment processes, or that’s perhaps methodology rather than tools.”
- “Allow the EIA process not merely to be tokenism, but an effective and efficient process.”

- “Sustainable development – define the boundaries and the concept of sustainable development.”
- Streamlined EIAs
- Clear, effective EIA’s
- Measurable + routine impact assessment + review
- Use of norms and standards
- Assessments that are more robust and considered
- Quality of EIAs
- “In the process I would like to see less of “what will the impact be” and more of “how will this development benefit; a) the environment; b) The I&APs and c) society”. Too much emphasis is presently on the developer. What gets created stays and impacts long after the developer is gone. The emphasis is disproportional.”
- Need a set of measurable criteria to measure sustainable development.
- The BAR is not so basic. Too many specialist reports are required.
- The detail required for alternatives assessments?
- Need to include carbon footprint for each development
- Natural capital should be established
- Government should be aware of costs of EIAs / BAR.
- “We do actually need to move towards or start moving towards objectives- led, environmental management and decision- making. We are aspiring to try and retain and secure a certain degree of environmental quality and productivity.”
- “I haven’t come across one single environmental management plan that has any meaning whatsoever on the ground. They are all vague wish lists of generalised intentions of what the developer might do on the ground. They cannot be measured. They cannot be audited and they certainly can’t be implemented in many cases. We can have the best EIA and the best system and the best legal and the best certified consultants doing it, the most qualified authorities reviewing it, but without any kind of proper implementation on the ground, it is meaningless, utterly meaningless.”

