DRAFT
PRINCIPLES, CRITERIA, INDICATORS
AND STANDARDS
FOR SUSTAINABLE FOREST MANAGEMENT
OF NATURAL FORESTS AND PLANTATIONS
IN SOUTH AFRICA

Prepared by
Institute of Natural Resources

In association with
Fakisandla Consulting; Forestwood; Fractal Forests; HR Adie; Stephen Berrisford Planning, Law and Policy Consultant;
Ukwaziswa Consulting, and the University of Natal

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Institution of Natural Resources
Private Bag X01
Scottsville 3209
Tel: 033 – 346 0796
Fax: 033 – 346 0895
Email: inr@nu.ac.za

Investigational Report Number: 231
Prepared with contributions from:

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fonda Lewis</td>
<td>Institute of Natural Resources</td>
</tr>
<tr>
<td>Myles Mander</td>
<td>Institute of Natural Resources</td>
</tr>
<tr>
<td>Jennifer Mander</td>
<td>Institute of Natural Resources</td>
</tr>
<tr>
<td>Steven Ngubane</td>
<td>Institute of Natural Resources</td>
</tr>
<tr>
<td>Hylton Adie</td>
<td>H R Adie Consulting</td>
</tr>
<tr>
<td>Stephen Berrisford</td>
<td>Stephen Berrisford Planning, Law and Policy Consultant</td>
</tr>
<tr>
<td>Coert Geldenhuys</td>
<td>Forestwood</td>
</tr>
<tr>
<td>Cori Ham</td>
<td>Ukwaziswa Consulting</td>
</tr>
<tr>
<td>Mike Howard</td>
<td>Fractal Forests</td>
</tr>
<tr>
<td>Dominic Mitchell</td>
<td>Fakisandla Consulting</td>
</tr>
<tr>
<td>Cathy Oelofse</td>
<td>University of Natal</td>
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ACRONYMS

C&I Criteria and indicators
CI&S Criteria, indicators and standards
CARA Conservation of Agricultural Resources Act (Act 43 of 1983)
CEC Committee for Environmental Coordination (established in terms of NEMA)
CITES Convention on International Trade in Endangered Species of Wild Fauna and
CMA Catchment Management Agency
CSFM Committee for Sustainable Forest Management
DEAT Department of Environmental Affairs and Tourism
DG Director General
DWAF Department of Water Affairs and Forestry
ECA Environment Conservation Act (Act 73 of 1989)
EI&MP Environmental Implementation and Management Plan
EIA Environmental Impact Assessment
EIP Environmental Implementation Plan
FAII Fish Assemblage Integrity Index
FIETA Forest Industries Education and Training Authority
FMU Forest Management Unit
FSC Forest Stewardship Council
GDP Gross Domestic Product
GIS Geographic Information System
ha hectare
IDP Integrated Development Plan
ISO International Standards Organisation
ITTO International Timber Trade Organisation
IUCN International Union for the Conservation of Nature
LAAC License Application Advisory Committee
MAI Mean Annual Increment
MEC Member of the Executive Committee (of a provincial government, the
equivalent of a provincial ‘minister’)
MinMEC Regular meeting held between the Minister and MECs responsible for a
particular sector
MTEF Medium Term Expenditure Framework
NEMA National Environmental Management Act
NFA National Forests Act (Act 84 of 1998)
NFAP National Forestry Action Plan
NFP National Forestry Plan
NEMA National Environmental Management Act (Act 107 of 1998)
NGO Non-government Organisation
NTFP Non timber forest product
OHSA Occupational Health and Safety Act (Act 83 of 1993)
PCI&S Principles, criteria, indicators and standards
RVI Riparian Vegetation Index
SA South Africa
SAAPAWU SA Agricultural, Plantation and Allied Workers Union
SAPS South African Police Service
SARS South African Revenue Service
SASS5 South African Scoring System 5
SFM Sustainable Forest Management
SFRA Stream Flow Reduction Activity
SMME Small, Medium or Micro Enterprise
VAT Value Added Tax
VDCs Verified Desired Conditions

Section A: Draft principles, criteria, indicators and standards for sustainable forest management
GLOSSARY

The following definitions provided in Section 2 of the National Forests Act have been applied in the PCI&S:

**Forest management unit**  
An area of land, on all or part of which there is forest, and which is managed as an integrated unit.

**Forestry**  
The management of forests, including the management of land which is not treed but which forms part of the forest management unit.

**Tree**  
Includes any tree seedling, sapling, transplant or coppice shoot of any age and any root, branch or other part.

**Natural forest**  
A group of indigenous trees –  
(a) whose crowns are largely contiguous, or  
(b) have been declared by the Minister to be a natural forest under section 7(2)

**Plantations**  
A group of trees cultivated for exploitation of the wood, leaves, bark or essential oils in the tree

The following definitions have been applied for terminology used by the project team:

**Committee for Environmental Coordination**  
The Committee for Environmental Coordination (CEC) is an important inter-governmental body set up under the National Environmental Management Act (NEMA). The members of the Committee are the Directors General of a number of listed departments. DWAF is one of these departments and so the DWAF Director General has a centrally important role on this committee. The committee holds substantial powers to ensure that there is proper cooperation between organs of state in relation to environmental management.

**Core draft indicators**  
A select set of indicators derived from international sets of C&I, theory and the knowledge of the Project Team.

**Conflict**  
The term conflict is applied in reference to any form of disagreement between stakeholders. Conflict is defined in its broadest sense and reflects a situation where consensus cannot be reached.

**Conflict management**  
Considered in its broadest sense and referring to processes put in place to manage disputes between parties.

**Disadvantaged**  
Refers to those disadvantaged and marginalized (economically, politically and socially), historically and in the present, and relates particularly to women and youth.
Diversity
This term is referred to in its broadest term referring to variety, multiplicity and mixtures. It includes reference to diversity in biophysical, social and economic systems where applicable.

Desired conditions
List of issues derived from the engagement of stakeholders during the case studies, and correlated with the core draft indicators. The phrasing of these desired conditions does not match the definitions of principles, criteria, indicators or standards, but rather reflects a condition that stakeholders believe is in the interests of sustainable forest management.

DWAF’s Annual Timber Plantation Statistics Census Form
This form is completed annually by plantation managers and contains information on issues such as species cultivated, production, and areas harvested. The forms are submitted to DWAF where the information is collated and analysed. This form is also commonly referred to as the 'green mamba'.

EIP
The National Environmental Management Act (NEMA) requires each provincial government and some government departments to produce an Environmental Implementation Plan (EIP). These plans are compulsory. They must be produced every four years. The EIP has to describe the province’s environmental norms and standards, its policies and its efforts to ensure compliance in the province with environmental law. Every four years the EIP has to be revised and submitted to the Committee for Environmental Coordination for approval.

EI&MP
The National Environmental Management Act (NEMA) requires certain national departments, including DWAF, to produce an Environmental Implementation and Management Plan. They must be produced every four years. The EI&MP has to describe fully how the department exercises all of its functions affecting the environment and how it carries out its powers to regulate the use of the environment by the public and private sectors. Every four years the EI&MP has to be revised and submitted to the Committee for Environmental Coordination for approval.

Environmental health
Environmental health comprises those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling and preventing those factors in the environment that can potentially affect adversely the health of present and future generations.

Environmental justice
Refers to the equitable distribution of environmental impacts. Environmental costs and benefits need to be fairly distributed.
Environmental impacts should not be unfairly loaded onto certain groups of people, especially the most vulnerable.

**Fair**

Fairness can be understood in terms of what is just. This is decided by stakeholders and may be based on what is deserved or as a distribution of benefits to those who are relatively worse off or deprived. Fairness is an ideal that is defined by stakeholders in a particular context at a particular time. Stakeholders will need to define fairness in their particular context.

**Forest based activities**

These activities refer to those that rely on the consumptive on non-consumptive utilization of forest resources, for the generation of either direct use benefits or financial benefits.

**Impacted area**

Area of natural forest or plantation disturbed directly by management activities or resource utilization.

**Landscape**

A geographical area with common characteristics in terms of water flows, soils, energy, biodiversity, and human activities, and which have significant functional relationships. The boundaries of a particular landscape can be locally defined.

**Local economy**

Refers to the economy of the local geographical area within which a forestry activity is located. Local economic development in this geographically defined region can be measured.

**Poverty**

Is defined more broadly than just lack of financial resources. Poverty is defined as deprivation in terms: lack of income; lack of assets; lack of power in decision making; lack of a means to a livelihood.

**Procedural equity**

Fairness, impartiality and justice in the process of participation.

**Social justice**

Referring to fairness in the distribution and allocation of the ‘goods’ and ‘bads’ of society amongst people.

**Stakeholder**

Groups or individuals who may be affected directly or indirectly by, have an effect on, incur costs, or derive benefits from, forests and their resources.

**Section 6 Report**

Section 6 of the National Forests Act imposes an obligation on the Minister for Water Affairs and Forestry to monitor forest management. Part of this obligation is that the Minister has to report every three years, publicly, to parliament on the state of forest management in the country.

**Target species**

Plant or animal species monitored to reflect the effect of management activities or resource utilization.
Verified desired conditions

List of desired conditions developed during the case studies that have been tested and validated during the workshops, containing comments and additional issues raised by stakeholders. The wording of the verified desired conditions is not intended to match the definitions of principles, criteria, indicators or standards, but rather reflects a condition that stakeholders believe is in the interests of sustainable forest management.

Vulnerability

The characteristics of a person or a group of people in terms of their capacity to anticipate, cope with, resist and recover from the impacts of natural and human induced hazards. The more vulnerable a group of people, the less able they are to anticipate and respond to such hazards.
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Michael Samways University of Natal
Dianne Scott   University of Natal

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Alta Dreyer    Institute of Natural Resources
Anthony Barbour  Environmental Evaluation Unit
Lucy Coelho    Fakisandla Consulting
Cathy Dzerefo Independent consultant
Penelope Geerdts Independent consultant
Nceba Ngcobo   University of Stellenbosch
Isaiah Mahlangu Independent consultant
Khulile Mavundla Ulwembo Craft
Barbara Wiseman Institute of Natural Resources
1 INTRODUCTION

SUMMARY
The terms of reference provided for this project required the preparation of a set of criteria, indicators and standards that comply with the principles for sustainable forest management as outlined in the National Forests Act. The Act requires that the CI&S address sustainable forest management of both natural forests and plantations, and that they should facilitate the following:

- Criteria ‘on the basis of which it can be determined whether or not forests are being managed sustainably’
- Indicators ‘which may be used to measure the state of forest management’
- Standards that must be ‘appropriate … in relation to the indicators’.

While the definition of forests in the Act includes woodlands, the mandate provided for this project excluded the development of CI&S for woodlands.

The PCI&S address four key aspects of sustainable forest management: environmental, social, economic, and policy. The PCI&S have been designed to form a network to capture a range of information on forest conditions and management activities. The purpose was to develop PCI&S that could be used at national, provincial, landscape and local scales, by a range of stakeholders, to monitor trends in forest condition and thereby to guide sustainable forest management.

The set of PCI&S include a number of standards or goals as benchmarks towards which forest management should strive. The standards identified are prescribed in current legislation as minimum requirements. However a number of aspirational goals have also been identified that are non-regulatory, but which can act as guidelines towards improving sustainable forest management.

1.1 Terms of reference

The Government, through the Department of Water Affairs and Forestry (DWAF), is committed to the sustainable management of South Africa’s forests. In 1998 the Government published the National Forests Act (NFA). Section 3 of this Act recommends the development of a set of criteria, indicators and standards (CI&S) for sustainable forest management (SFM). The Government will use the PCI&S to monitor progress towards sustainable forest management and to set minimum regulatory standards for forestry. Furthermore, the PCI&S could also be used as a basis for independent certification of forest management.

Subsection 3(3) of the NFA sets out a number of principles to guide decisions affecting forests (Appendix 1.1), while subsection 4(6) provides an indication of the type and purpose of these criteria and indicators. Furthermore, the Act requires the criteria, indicators and standards to apply nationally, regionally, to specific forest management units, or to all or specific forest types, and to take into account specific regional, economic, social and environmental conditions. Where it is necessary to differentiate between forest types, it is to be done at the level of the indicator.

The project mandate was therefore to develop a set of PCI&S that will provide the country with:

- A tool for assessing changes and trends in forest conditions and management systems at a national and sub-national level, and the basis for the Minister’s periodic reports on the state of the forests to the nation and to the international community
• An instrument to evaluate the degree to which the forest sector contributes to the nation’s economic, environmental social aspirations
• A common understanding as well as a practical interpretation of what constitutes sustainable forest management
• A guide to the development and revision of policies and legislation including documents such as the NFAP and NFP
• A set of objective standards for the management of forests that are credible, precise and measurable
• A tool for assessing and improving forest management practices in forest management units
• A guide for communicating the state of South African forests thereby broadening the base of information and understanding about the quality and quantity of the world’s forests.

The following tasks were set for the fulfillment of the terms of reference:
• Production of draft criteria, indicators and standards
• Sectoral consultation on draft criteria, indicators and standards
• Incorporation of relevant comments into final draft of indicators and standards for indigenous forests and plantations
• Preparation of draft criteria, indicators and standards; summary and analysis of consultation; justification for changes made to CI&S and recommendations for changes to principles.

While the definition of forests in the Act includes woodlands, DWAF and the CSFM decided that the mandate provided for this project would exclude the development of CI&S for woodlands, and that a separate project would be commissioned for this category of forest.

The CSFM and DWAF agreed that the Team would not be required to identify new standards during the term of the project, but rather identify existing standards in legislation. Appropriate standards from recognised best practice systems would also be highlighted. The Team may also make recommendations for research that would need to be undertaken to identify appropriate new standards if required. During negotiations between the CSFM, DWAF and the Project Team it was also agreed that the project would review the principles in the NFA to create the opportunity for making recommendations for revisions to the principles, in the event that the CI&S identified during the stakeholder consultation process were not consistent with these principles.

The Project Team initiated a process for the development of a set of criteria, indicators and standards that would conform with the requirements of these terms of reference. The Team also paid attention to ensuring that the CI&S are consistent with other CI&S processes in which South Africa is engaged (i.e. the SADC Africa Dry-zone Process) and complimentary certification processes (such as the Forest Stewardship Council’s certification standards). However the CI&S are not aligned with any of the certification standards, and the South African PCI&S set represents the South African stakeholders’ goals for sustainable forest management.

1.2 Definitions

1.2.1 PCI&S

PCI&S are applied for a wide range of purposes internationally, including for monitoring, informing regulation and as a certification tool. As a result a variety of definitions have been
applied to these terms. It was therefore important that suitable definitions were identified for principles, criteria, indicators and standards in the South African context. It is important that definitions be applied consistently throughout the development of the PCI&S to ensure that the final set are both vertically and horizontally consistent\(^1\).

The NFA provides that the Minister may determine:

- Criteria on the basis of which it can be determined whether or not forests are being managed sustainably
- Indicators which may be used to measure the state of forest management
- Appropriate standards in relation to the indicators.

Taking into account these requirements in the NFA, the following definitions have been applied during the development of the PCI&S\(^2\):

- **Principles (P)** are defined as the broad goal statements for achieving sustainable forest management as set out by society
- **Criteria (C)** are management objectives that are set in order to achieve the broad goals set out in the principles
- **Indicators (I)** are the tools for measuring whether the management objectives set in the criteria are being achieved
- **Standards (S)** are minimum levels or objectives set as targets to which management should strive in an attempt to improve sustainability.

### 1.2.2 Standards and aspirational goals

In the course of the compilation of the draft CI&S it has become clear that there is no shortage of standards set for various aspects of forest management by numerous laws and regulations. Currently different sectors and spheres of government are struggling to enforce these existing standards. Stakeholders do not see the need to identify more standards, but recognize the need for better enforcement of those that already exist. It is also clear that the monitoring of sustainable forest management requires more than simply a set of standards. Much of the work of sustainable forest management is about striving for an ideal end-state, rather than

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\(^1\) The set of PCI&S are traditionally designed as a hierarchy with vertical and horizontal consistency. Horizontal consistency means that aspects appearing at the same levels (e.g. principles or criteria) address issues at the same level, and do not have any overlap. Vertical consistency refers to the relationship between aspects appearing at adjacent levels (e.g. criteria and indicators, or indicators and standards). A set of parameters is vertically consistent if the aspects are placed at the right level in the hierarchy, and are linked to appropriate aspects higher and lower in the hierarchy (Lammerts van Bueren and Blom 1997).

\(^2\) The CSFM originally published the following definitions for PCI&S (SFM News, Newsletter of December 2000):

- **Principle**: A fundamental truth or law as the basis for reasoning. Principles are the broad goals for sustainable forest management.
- **Criterion**: Broad forest value that society seeks to maintain. Criteria define a principle and provide a basis of assessing whether the goals of sustainable forest management are being achieved.
- **Indicator**: A measure by which a criterion is judged by. Indicators are quantitative or qualitative variables which can be measured or described. They provide verifiable measures of change in a criterion over time.
- **Standard**: A defined measure that an aspect or component of forest management must achieve to be sustainable. Standards represent a minimum measurable level of objectives or targets for management that must be obtained in order to achieve sustainable forest management.

The definitions presented by the Project Team do not fundamentally differ from those presented by the CSFM, however the team believed that the definitions presented in section 1.2.1 are clear and concisely present the definitions of PCI&S as applied in the project during the preparation of the PCI&S.
mechanistically complying with a particular standard that may well be inappropriate in one or more of the host of different contexts in which forests are managed in South Africa.

The approach taken in this draft set of CI&S is thus as follows:

- **Standards** are only prescribed in relation to specific indicators where compliance with that standard is already required in terms of a law, for example, the Occupational Health and Safety Act or the National Water Act. In some cases a standard is prescribed which might not match exactly with a standard set in another law but rather provides more detail to that existing requirement. Examples of this approach can be found in the standards relating to the content of reports submitted by the Minister in terms of both the National Forests Act and the National Environmental Management Act.

- Where it is inappropriate to prescribe a standard, an *aspirational goal* is proposed. It may be that over time some of these goals are ‘upgraded’ to standards but for now it is sufficient that they represent the ideal, to which all forest managers and authorities should strive, rather than being enforceable in terms of regulations.

**1.2.3 Measures**

Measures have been introduced for use in conjunction with the indicators. While indicators provide the tools for measuring whether the management objectives set in the criteria are being achieved, the measures provide a detailed description of the specific aspect to be measured. For example, while the extent of natural forest in protected areas is an indicator of the protection of natural forests, one would measure the area (in hectares) to assess whether the management objective of forest conservation set in the criterion is being achieved.

In some cases there may be a number of measures associated with a single indicator, demonstrating the variety of ways in which achievement of the management objectives expressed in a criterion can be gauged.

**1.3 Design of principles, criteria, indicators and standards**

The set of PCI&S are designed to form a network to capture key information on management activities and trends, rather than a complete dataset of every aspect related to the management of forests. The network also indicates the connections between the criteria and indicators, and viewing each one in isolation would not provide an holistic impression. The objective is for the CI&S to paint an overall picture of the outcomes of forest management, rather than providing a measure of all inputs. PCI&S will define the goals and objectives for sustainable forest management, and assist the measurement of the achievement of goals.

The focus has been on developing criteria and indicators that are practical, understandable and relatively easy and inexpensive to apply. The CI&S are also designed to provide key information about the condition of forests and management at the national, provincial, landscape and forest management unit scale.

The fact that the design and development of the CI&S have been heavily focused on stakeholder consultation has meant that to a large extent the resultant CI&S represent stakeholder ambitions and goals for forest management in South Africa, and also reflects their understanding of sustainable forest management.
1.4 The purpose of principles, criteria, indicators and standards

People’s *perceptions* of the *condition* or state of forests shape their use and management *goals* for forests. These uses and goals shape human activities within forests, which in turn affect the *condition* of the forest. Sometimes a lack of information about the true condition of the forest results in inaccurate perceptions, and the resultant policy or management actions do not result in the desired changes in forest condition.

The principles, criteria, indicators and standards provide the opportunity for the generation of accurate and essential information on the condition and trends of forests, and therefore for the generation of *informed* perceptions of the state of the forest. These informed perceptions could then form the platform for shaping the *goals* and *decision-making* required in application of policy and legislation, at a local, provincial or national scale. The local, provincial and national policies in turn shape the way people use or manage forest resources at the various scales. Indicators can also form the tools for measuring the achievement of the goals or compliance with policy and regulations. These measures guide *human action* around issues of resource utilisation, distribution of the costs and benefits of forestry, and management strategies.

1.4.1 Who will use PCI&S?

Stakeholders with a range of interests in sustainable forest management can use and benefit from PCI&S, including:

- Government (National, provincial and local)
- Natural and plantation forest managers and owners
- NGOs
- People neighbouring on plantation and natural forests
- Forest company employees and shareholders
- The general public.

1.4.2 At what scale will PCI&S be used?

The goals, tools for measurement and standards will be relevant at a range of different levels:

- National
- Provincial
- Landscape
• Site, or forest management unit (FMU).

The South African PCI&S could also potentially become internationally recognised as a locally relevant certification standard.

1.4.3 What can we measure and what information can be generated?

• CI&S can be used to measure ‘inputs’, such as management or resource utilization activities
• CI&S can be used to measure ‘outcomes’, such as the condition of the forest or trends in the condition of the forest
• CI&S can be used to generate information about the ‘perceptions’ of stakeholders, such as perceptions about the state of the forest or impact of utilisation.

1.4.4 How can we use PCI&S?

• CI&S can be used to measure the status of the forest sector in South Africa, including plantations and indigenous forests, whether state, privately or communally owned or managed
• CI&S can also be used to measure how satisfactory the condition of the forest sector is in terms of social equity, ecological sustainability, economic efficiency, good governance and management, and adequacy of public participation.
• CI&S can be used to monitor trends in forest condition, distribution of costs and benefits, and the effectiveness of management, governance and participation
• Perceptions (shaped by the information obtained by the CI&S) can guide policy development and revision by any stakeholder at any scale (i.e. national, provincial or local). These policies will then guide the actions of forest users and managers
• Information generated from CI&S will help to highlight information gaps and research requirements.

Examples of practical applications of PCI&S include:

• The Minister of Water Affairs and Forestry can use the information generated through PCI&S at national, provincial and local scales to prepare the State of the Forest Report which in turn would inform decisions regarding the revision of policy and regulations
• Forest managers would use local level CI&S to inform them on benchmarks and minimum standards set for the management of either plantations or natural forests. For example, recommendations for the distribution of benefits to neighbouring communities, or requirements for the management of watercourses
• Stakeholders can use the CI&S to monitor whether their concerns or requirements are being integrated into the management of particular forests
• NGOs and lobby groups could use the information generated through the CI&S as a platform to inform and direct their activities
• Provincial scale managers (private or government) can use CI&S to monitor trends in forest conservation or plantation production at a landscape and provincial scale.
1.5 Legal nature of PCI&S

1.5.1 Legal origin of the South African CI&S

An important, and in an international context, unusual, feature of the South African criteria and indicators is that the entire set is guided and defined by law, in the form of the National Forests Act (Act 84 of 1998) and to a lesser extent, by the National Environmental Management Act (Act 107 of 1998), and various other laws including the Conservation of Agricultural Resources Act (Act 43 of 1983) and National Water Act (Act 36 of 1998). This poses the challenge of fitting the criteria and indicators within a framework of laws and regulations, each of which has its own interpretation, and all of which are characterised by an inherent inflexibility. On the other hand it also has the distinct advantage of giving the set of criteria and indicators legal ‘teeth’, which will assist greatly with implementation.

The key sections of the NFA dealing with CI&S are sections 4 and 6. Section 4 of the NFA deals primarily, but not exclusively, with the regulatory purpose and effect of CI&S while section 6 of the NFA deals with the monitoring role of CI&S. In addition the NFA provides a set of principles to guide forest management in general. These principles are contained in section 3 of the NFA. The only body that can change the principles in any way is Parliament, by amending the NFA. The Minister alone cannot change or add to them. The legal effect of the principles is established in the subsection 3(1):

‘The principles set out in subsection (3) must be considered and applied in a balanced way:

a) in the exercise of any power or the performance of any duty in terms of this Act;
b) in the development and implementation of government policies affecting forests;
c) in the exercise of any power or the performance of any duty in terms of any other legislation where the exercise of that power or the performance of that duty will impact on a natural forest or woodland;
d) in the issuing of a license or other authorisation relating to the use of water for afforestation or forestry in terms of section 39(1) or 40(1) of the National Water Act, 1998 [stream flow reduction activity licenses]; and
e) by any person required in terms of any legislation to carry out an environmental impact assessment in respect of any activity which will or may have an effect on natural forests or woodlands.’

The development of criteria, indicators and standards thus has to hang on the legal peg of these principles. When the Minister publishes the CI&S he or she must be able to demonstrate in a clear and logical way that they are guided by the principles. The published CI&S must clearly reflect the requirement in section 3 that the principles in the NFA are ‘considered and applied in a balanced way.’ In addition to the National Forests Act principles, a number of principles in the National Environmental Management Act (Act 107 of 1998), are also relevant, and must be similarly taken into account when developing CI&S. The NEMA principles apply ‘to the actions of all organs of State that may significantly affect the environment.’ In addition they have to ‘serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provisions concerning the protection of the environment.’ They must also ‘guide the interpretation, administration and implementation of … any … law concerned with the protection or management of the environment.’ (section 2 of NEMA).
Section 4 describes CI&S for the purposes of the Act as:

- Criteria ‘on the basis of which it can be determined whether or not forests are being managed sustainably’
- Indicators ‘which may be used to measure the state of forest management’
- Standards which must be ‘appropriate … in relation to the indicators’.

The Minister does not have to set CI&S but may do so. However, if s/he does then it has to be ‘on the advice of the CSFM’. In addition the Minister has to taken into account ‘specific regional, economic, social and environmental conditions’ when determining CI&S. The Minister thus has to satisfy three tests before he or she sets CI&S: firstly they have to be checked for consistency with the principles in section 3 (as well as those in NEMA); secondly they must take into account, although they need not actually follow, the CSFM’s recommendations; and thirdly, they must take into account the various contextual conditions described above (e.g. regional or social conditions).

Subsection 4(6) suggests the subject matter of CI&S. It says what the criteria and indicators may determine. If, however, there is an area that the Minister feels should also form the subject matter of CI&S, and provided that it can be linked clearly to the relevant principles there is no reason why it should not be included. The subject matter for CI&S proposed in subsection 4(6) is:

- ‘The level of maintenance and development of:
  - forest resources
  - the health and vitality of forests
  - the productive functions of forests
  - the protective and environmental functions of forests
  - the social functions of forests
- The level of provision of socio-economic benefits
- The status and appropriateness of the policy and the legislative and institutional framework for forest management.’

### 1.5.2 Regulatory effect of CI&S

Once the Minister has agreed on the CI&S s/he must then publish them as regulations pursuant to the NFA. This is important, as the publication is not ‘gazetting for public information,’ for example, but as lawmaking. Regulations are not merely for information but are rules for the purpose of controlling the activities of all persons bound by them. The Act lists the people bound by these regulations as being ‘all owners of land on which there are forests…[and]…any other persons to whom they are expressly made applicable’ (subsection 4(7)(d) and (e)). In practice the only aspect of CI&S that really lends itself to effective regulation is the set of standards.

However, the Act also provides the Minister with a stronger remedy. He or she has the discretion, when publishing the CI&S as regulations, to identify certain standards that, if not met will amount to a criminal offence. In the case of these identified standards the Act provides a procedure by which a forest officer can notify the forest owner and set a time period within which the standard has to be met. If however, the owner fails to comply with that notice, he or she is ‘guilty of a fifth category offence’, which is defined in the Act as one that carries a fine of up to R50 000, without an option of imprisonment (sections 58 and 61).
context of a large commercial operation this fine is unlikely to be much of a deterrent. For a smaller operator however, it could have a severe impact.

The Act allows CI&S to be made applicable at a range of different scales, i.e. ‘nationally, regionally or to specific FMUs as well as ‘to all or to specific forest types’. This differentiated application is at the discretion of the Minister. It also allows for a phased introduction of CI&S, with application at first perhaps being limited only to certain areas or forest types and later extending gradually to others as determined by the Minister.

The extensive process of stakeholder consultation that preceded the compilation of the draft CI&S has revealed that there is fairly weak support for the idea that the CI&S be too regulatory or punitive in practice. This viewpoint is shared by a range of government, private sector and NGO stakeholders (see section 3 of this report, dealing with stakeholder perceptions). The general view is that there is already a great deal of regulation with which forest managers have to comply and that there is limited benefit in generating additional red tape without a very good cause. The approach adopted in the draft CI&S is therefore to avoid establishing new, enforceable standards but rather to use existing standards, established in a number of laws, wherever feasible. In this way the CI&S do not give rise to a host of new requirements for how forests should be managed but rather reinforces and complements the existing standards. This is in the interests both of efficient administration as well as cooperative governance. Where there is no existing standard it may be that the Minister wishes to add one. In a number of cases however, the nature of the criteria and indicators is such that a fixed or prescriptive standard is either inappropriate or unrealistic. In those cases the draft CI&S refer to aspirational goals instead of standards. When the Minister publishes the final CI&S, it will be necessary to stipulate very clearly that the purpose CI&S is not to regulate excessively. The published notice will have to begin with a clause stating precisely the extent to which forest management is - or is not - bound by any of the standards established by the CI&S. The importance of this is highlighted by the requirement of many forest certification programmes that forest management be ‘in compliance with all applicable laws.’ In this situation it is important to avoid a scenario where certification is denied because of non-compliance with a standard that was not ever intended to be binding in that way.

1.5.3 Monitoring and CI&S

Section 6 of the National Forests Act imposes an obligation on the Minister ‘to monitor forests’, and further that such monitoring should be with reference to the determined CI&S. It can therefore be understood that the intention of the legislation is that the CI&S play a key role in the assisting the Minister to exercise his or her monitoring responsibilities. Stakeholder participation in the process of developing the draft CI&S has shown that there is widespread support for the CI&S to be used for monitoring purposes.

In order for CI&S to be used effectively for monitoring purposes, the Minister will have to ensure that there is a consistent, reliable flow of information from a range of bodies and organizations into a central point at which proper analysis of trends and phenomena can be done. This may well require the Minister to exercise his or her powers in terms of subsection 3(2)(d) of the National Forests Act to ‘make regulations to deal with … monitoring of the forest resource, including regulations relating to – (i) the registration … and collection of data from owners of forests; (ii) the registration … and collection of data from persons who harvest, saw,
process or sell forest produce; [and] the collection of data from institutions which certify sustainable forest management.

### 1.6 Relationship between PCI&S

The principles from the NFA and NEMA (Appendix 1) are the overarching goals for sustainable forest management and therefore guide the requirements for the management objectives expressed as criteria that follow. The principles can be categorised into three groups: conservation of the forest resource base; distribution of costs and benefits; and participation-management-governance.

A number of criteria are identified for each of the three categories of principles. The criteria within each of the principle categories are inter-related and together provide the picture of sustainability.

The achievement of the management objective stated in each criterion may be measured in one or more ways and the tools for management are expressed in the indicators. Each criterion therefore has one or more associated indicators, and one indicator may provide a measurement tool for more than one criterion. For example, the measurement of nutrient levels in soil would be an indicator of the overall health and vitality of a forest, as well as soil condition.

The measure describes the methodology for measurement of the indicator, while the standards and aspirational goals set the benchmark against which the indicator's value is judged.
2 PROJECT METHODOLOGY

<table>
<thead>
<tr>
<th>SUMMARY</th>
</tr>
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<tbody>
<tr>
<td>The project methodology involved both a technical process for developing and refining the criteria, indicators and standards, as well as an extensive and integrally linked stakeholder consultation process for gaining stakeholder input into the criteria, indicators and standards, and for testing and refining them. The technical methodology involved the following key steps:</td>
</tr>
<tr>
<td>• Literature review and selection of preliminary draft indicators</td>
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<tr>
<td>• Identification and drafting of stakeholders’ desired conditions and correlation with core draft indicators</td>
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<tr>
<td>• Verification of draft desired conditions with stakeholders</td>
</tr>
<tr>
<td>• Drafting of criteria, indicators and standards from verified desired conditions and review of principles</td>
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<tr>
<td>• Testing of draft PCI&amp;S</td>
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<tr>
<td>• Revision of draft CI&amp;S</td>
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<tr>
<td>• Preparation of final support documentation.</td>
</tr>
<tr>
<td>The stakeholder consultation methodology included the following key steps:</td>
</tr>
<tr>
<td>• Identification and engagement of stakeholders</td>
</tr>
<tr>
<td>• Evaluating case studies to generate the desired conditions for sustainable forest management</td>
</tr>
<tr>
<td>• Convening national, provincial and local workshops to verify the desired conditions</td>
</tr>
<tr>
<td>• Conducting key informant meetings for the testing of the draft CI&amp;S</td>
</tr>
<tr>
<td>• E-mailing the draft CI&amp;S to stakeholders for comment.</td>
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</table>

2.1 Introduction

The development of the draft CI&S was largely qualitative, and included two processes:

- A technical process of identifying, reviewing and refining of the CI&S
- A stakeholder consultation process that involved ongoing participation and consultation with stakeholder in the drafting and testing of the CI&S.

The approach used has been both deductive (top down) and inductive (bottom up). “The challenge in forestry is to make decisions that meet multiple needs in an environment of political, market, social, technological and climatic change and uncertainty, and moreover, in circumstances of incomplete information” (Bass 2001, p 29). For this reason the technical development process and the stakeholder consultation process were closely integrated (Figure 2.1).

2.2 Technical methodology for developing CI&S

The following steps were undertaken in the technical development of the CI&S, and the review of the principles in the NFA:

- Literature review and selection of preliminary draft indicators
- Identification and drafting of stakeholders’ desired conditions and correlation with core draft indicators
Verification of draft desired conditions with stakeholders
Drafting of criteria, indicators and standards from verified desired conditions and review of principles
Testing of draft PCI&S
Revision of draft CI&S
Preparation of final support documentation.

Five sources of information and knowledge were in the identification and development of the CI&S. These were:
- Theory and literature on PCI&S
- Policy, legislation and regulations
- The specialist knowledge and experience of the Project Team
- Stakeholder input
- Review by the Project Team and the CSFM.

The methodology for the development of the CI&S focused on an iterative approach where knowledge from theory and literature, the specialist knowledge of the Project Team and input from an extensive stakeholder consultation process is integrated throughout the development of PCI&S. Both expert and local knowledge have been used in the generation and testing of the PCI&S. Figure 2.1 outlines the methodology applied in this project, and demonstrates the integration of knowledge from a wide range of stakeholders into the technical development process.

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3 The Project Team has been assisted by DFID appointed international advisors, namely Mike Garforth, Simon Pryor and Ravi Prabhu.
Figure 2.1: Overview of project method, output and time scales

June 2001

SELECTION OF PRELIMINARY DRAFT INDICATORS
Identification of issues clusters

Identification of stakeholders & initial engagement
Identification of case study areas
Identification of case study participants

September 2001

CASE STUDIES FOR ISSUES RAISING AND TESTING OF DRAFT INDICATORS
8 local level case studies
2 provincial level case studies
1 national case study with range of departments

October 2001

KEY ISSUES
Use case studies to identify and record concerns and aspirations for SFM by local, provincial & national case study participants

DRAFT DESIRED CONDITIONS
Correlate key issues from each case study into a generic set of desired economic, environmental, social and policy conditions

TESTING OF DRAFT DESIRED CONDITIONS VIA:
STAKEHOLDER WORKSHOPS
local, provincial, national

TECHNICAL WORKSHOPS

FEEDBACK to case study participants

December 2001

VERIFIED DESIRED CONDITIONS
Correlate verified local, provincial, national desired conditions

OUTPUT

Report on outcomes of review
Table of draft core indicators
Milestone Report 1
Tables of stakeholder issues
Milestone Report 2
Table of draft desired conditions
Stakeholder consultation records
Verified desired conditions
Milestone Report 3
2.2.1 Review and selection of core draft indicators

The Project Team conducted an extensive literature review at the outset of the project. This review included a thorough review of PCI&S sets developed internationally, which enabled the Team to gain insight and an understanding of PCI&S from an international perspective. This led to the selection of approximately 200 core draft indicators that emanated from the literature as well as the knowledge and experience of the Project Team. These core draft indicators would be used as a basis to initiate stakeholder consultation, and to align the set of South African PCI&S with international norms.

This set of core draft indicators was evaluated using a matrix (see Appendix A1 in Milestone Report 3) to assess the indicators in terms of a number of key issues, namely:

- The aspect of sustainability i.e. social, economic, ecological or political they referred to
- The principles and criteria that they addressed
- Forest type, i.e. their applicability to plantation and/or natural forests
- Scale at which they could be applied, national, provincial, local/FMU
- Ownership
- Reflected strong or weak sustainability
- Practicality in terms of measurability
- The extent to which they addressed vulnerability.

The core draft indicators were given a score on the matrix in terms of the above elements, with the scoring reflecting the strength of the indicator in addressing the elements listed above. This data was analysed using descriptive statistics and a summary document was compiled.

This quantitative assessment of the draft indicators highlighted a number of key issues that have informed the way in which the draft indicators were selected, refined and considered. The key finding from this analysis was that many of the indicators were shown to apply to all forest types, at all levels (national, provincial and local), and that ownership did not seem to be a critical issue. What became apparent was that it was at the level of standards that differentiation across the different sets would become critical. The output of this phase of the project was a table of draft indicators and a summary report of the mapping of these indicators to the key elements listed above.

The Project Team then reviewed the draft indicators and condensed them into a list of 92 core draft indicators reflecting those with greater relevance to the South African context (this process is described in detail in section 1.2.1. in Milestone Report 3). This review process involved the filtering of the draft indicators through matrixes, again scoring them and selecting only those that scored well (see Appendix A2 in Milestone Report 3).

In order to identify a set of issues that could be discussed with stakeholders, the core draft indicators were grouped into clusters with issues in common (see Appendix A3 in Milestone Report 3). These clusters were merely organizational as they divide the draft indicators into groups of key issues around which discussions with stakeholders regarding sustainable forest management could be held. Some of the clusters were identified as being redundant and fell away, while new clusters were also identified in the stakeholder participation process.
2.2.2 Identification of stakeholders’ issues and correlation with core draft indicators

A series of case studies were undertaken at national, provincial and local scales with the purpose of identifying stakeholder priority issues for sustainable forest management (see detailed methodology in section 2.3.4). Stakeholders at these sites were identified and engaged for the purpose of identifying issues that they believed are central to sustainable forest management and need to be addressed by the PCI&S.

The following types of case studies were conducted:

- One national case study was conducted, involving interviews with a range of representatives from national stakeholder groups including government, labour and the forest industry.
- Two provincial case studies were held, in KwaZulu-Natal and the Western Cape. These case studies involved meetings with a range of representatives from provincial stakeholder groups including conservation authorities, government, and NGOs.
- Eight local level case studies were undertaken, during which a range of stakeholders were engaged. These stakeholders included forest managers, plantation owners, and people neighbouring on natural forests and plantations.

a) Selection of case study sites

Case study sites were selected to ensure that they contained the variation of conditions and characteristics that are representative of forestry and forest management in South Africa. The sampling technique was purposive as areas were chosen because they comprised a range of characteristics and conditions that needed to be reflected in the set of PCI&S.

The Project Team used a map of South Africa to identify the geographical areas of natural forests and plantations in the country. Information regarding environmental, economic, social and policy characteristics was then over-layed onto the forest map. This information included:

- Environmental: biophysical characteristics of natural forests and plantations
- Economic: scale of the industry, corporate or private, small-scale growers
- Social: broader development context of forest users and surrounding communities, including consideration of levels of vulnerability
- Policy: forms of management and ownership (e.g. state, private or communal).

Using this baseline information, local scale case study sites were selected across the country. The sites were selected to ensure coverage of the range of forestry contexts, as well as coverage of specific significant sites, for example the Knysna forests where commercial logging is being undertaken. Table 2.1 lists the case study areas and the key attributes of each of these areas, including the characteristics for which they were selected.

The final selection of case study sites was also influenced by the accessibility of these areas to the Project Team in terms of; the willingness of the stakeholders to participate, the financial cost, and the physical accessibility of the site. Where possible, areas were also selected in which the project team had experience and where they were know to the stakeholders.
<table>
<thead>
<tr>
<th>Local case study locations</th>
<th>Key attributes for selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Cape – Tokai</td>
<td>Urban plantation forest; primary recreational usage by range of income groups; high impact activities; logistically accessible.</td>
</tr>
<tr>
<td>Eastern Cape – Storms River</td>
<td>Natural and plantation forest; tourism potential; high and low income area; unique demographics</td>
</tr>
<tr>
<td>Eastern Cape – Port St Johns</td>
<td>Natural forest; developing context; poverty of surrounding communities; perceived unsustainable utilisation of forest resources; ambiguous role of local authorities; social vulnerability; high levels of forest dependency.</td>
</tr>
<tr>
<td>Eastern Cape – Umzimkulu</td>
<td>Plantation forestry; natural forest; smaller private owners; emerging micro-growers; site of SAFCOL privatisation; heavy utilisation of medicinal species; previous exposure to similar projects; logistically accessible; high levels of social vulnerability; forest dependent communities in close proximity to the forest</td>
</tr>
<tr>
<td>KwaZulu-Natal – Bulwer</td>
<td>Plantation forests; montane natural forest; smaller growers; large corporate activity; impact of forestry on urban social patterns; proximity to areas under traditional leadership.</td>
</tr>
<tr>
<td>KwaZulu-Natal - Harding</td>
<td>Mist belt; wattle growers; transport infrastructure problems; marginal but tenacious commercial operations; close to the Ingeli natural forest complex; high vulnerability.</td>
</tr>
<tr>
<td>KwaZulu-Natal – Kwambonambi</td>
<td>Plantation forestry; large corporate operations; dune forest and other natural forest types; includes areas of traditional tribal leadership; small and micro growers; perceived unsustainable cultivation practices; monoculture; pulp product focused; social vulnerability; logistically accessible.</td>
</tr>
<tr>
<td>Limpopo Province – Graskop to Bushbuckridge</td>
<td>Mix of plantation and natural forests; high levels of social vulnerability; heavily populated; poverty; unchecked harvesting of dwindling woodland and natural forest resources; logistically accessible.</td>
</tr>
<tr>
<td>Limpopo Province – Thathe Vondo</td>
<td>Mix of plantation and natural forests; developing medium and micro growers; high levels of use of natural forest; usage of forest for religious purposes; proximity to areas under traditional leadership; strong influence of traditional leadership into plantation economy; fairly accessible.</td>
</tr>
</tbody>
</table>
b) Outcomes of case studies

The outcome of each case study was a set of issues expressed by stakeholders as desired outcomes for sustainable forest management in South Africa. The Project Team consolidated the stakeholder issues compiled from each of the case studies into a single set, identifying potential overlaps and contradictions.

The next step involved the integration of the core draft indicators (compiled by the Project Team) with the stakeholder issues (expressed during case studies). The stakeholder desired conditions were correlated with the core draft indicators to identify:

- Overlaps between desired conditions and core draft indicators
- Highlight issues covered by the core draft indicators but omitted by stakeholders
- New issues raised by stakeholder but not covered by core draft indicators.

2.2.3 Verifying the desired conditions

The desired conditions produced from the stakeholder consultation were tested through a series of stakeholder workshops (see section 2.3.5). The workshops were held to present the desired conditions to a broad group of stakeholders. The stakeholders reviewed the desired conditions, identified omissions and provided information on the applicability and relevance of the conditions to various forestry contexts. The comments from all stakeholders were consolidated and the desired conditions were revised to reflect the input from the workshops. The outcome was a final list of verified desired conditions (VDCs) that was representative of stakeholder desires and ambitions for sustainable forest management, and could be used in the drafting of the criteria, indicators and standards (see Section 3 of Milestone Report 3).

2.2.4 Drafting of CI&S

The NFA presents nine principles for sustainable forest management of plantations and natural forests in South Africa (Appendix 1). NEMA (Appendix 1) also prescribes a number of principles for sustainable environmental management that have relevance to forest management. Earlier in the process, the CSFM identified a draft set of criteria to be considered in the development of the C&I. The principles of the NFA and NEMA, as well as the CSFM draft criteria, were therefore used to guide the development of the CI&S.

Four main sources of information were used as inputs into the drafting of the CI&S. These were:

- Stakeholders’ verified desired conditions (VDCs)
- International theory and literature on best practices
- Principles and criteria drafted earlier by the CSFM, DWAF and their appointed international advisors
- The specialist knowledge and experience of the Project Team.
The information generated from these four sources was consolidated into a complete list of ‘desires’ for sustainable forest management. The Project Team then assessed and evaluated this list of conditions against the principles of the NFA, NEMA and other relevant legislation to ensure that all the principles of these Acts were covered by the list of conditions. This resulted in a list of ‘conditions’ that meet legal obligations for CI&S as required by South African legislation.

Six pillars of sustainability were identified by the Project Team in the context of forest management in South Africa. These are economic, ecological, social, participation, management and governance. The list of conditions meeting legal obligations was then evaluated/filtered against these pillars of sustainability. This led to the drafting of the set of criteria and indicators. For each indicator, one or more measures were then identified, which provided a means for assessing the level of performance with respect to the indicator.

Concurrent with the process of generating the criteria and indicators was a review of South African legislation (including regulations arising out of international conventions to which South Africa is a signatory) for the identification of standards that have been prescribed. Where
relevant standards have not been prescribed in legislation, the Project Team identified *aspirational goals* that could be set as benchmarks toward which managers should strive (see section 1.2.2).

Four of the draft criteria proposed by the Committee for Sustainable Forest Management were not explicitly addressed by the set of criteria and indicators developed for this project: These were:

a) A minimum area of each woodland type is protected (CSFM draft criterion 1.2)

b) The management of forests contributes to the prevention of desertification (CSFM draft criterion 5.4)

c) Forests are managed so as to maintain their ability to act as filters for airborne pollutants (CSFM draft criterion 5.5)

d) Forest management takes into account the ability of forests to sequester carbon (CSFM draft criterion 5.6)

The following rationale is provided for the omission of CSFM draft criterion 5.4 from the set:

- **A minimum area of each woodland type is protected**
  While the NFA requires that woodlands also be addressed by the PCI&S, the terms of reference provide for this project explicitly excluded woodlands, which will reportedly be addressed in a separate project.

The following rationale is provided for the indirect rather than direct inclusion of these criteria:

- **The management of forests contributes to the prevention of desertification**
  Desertification is the expansion of arid zones and deserts caused by changing climatic patterns (long term) or inappropriate veld and stock management practices (short term). Desertification is usually manifested by deterioration in veld condition and cover leading to irreversible changes in soil structure. Typically, desertification is a problem of arid and semi-arid grasslands and shrublands. These vegetation types are characteristic of regions that receive less than 500mm of rainfall annually and experience temperature extremes. In South Africa, arid regions are located in the western interior of the sub-continent. Natural forests and timber plantations are located in the mesic eastern parts of South Africa where annual rainfall is generally higher than 700mm. It is therefore unlikely that desertification will be a problem in forested regions. Climatic shifts caused by global warming, however, might facilitate desertification or forest degradation in marginal forested areas in the future. Forest degradation is addressed by the indicators that: identify degraded natural forests (Indicators 3.1 & 3.2); which identify the breakdown of forest structure (Indicators 2.3, 2.4, 3.3); and that detect the loss of forest patches (Indicator 3.4). In addition, Indicator 3.5 focuses specifically on forest rehabilitation. Long term monitoring of climate change and the associated response by vegetation is necessary but should be coordinated at a national scale.

- **Forests are managed so as to maintain their ability to act as filters for airborne pollutants & forest management takes into account the ability of forests to sequester carbon**
  Both of these CSFM draft criteria refer to the ability of forests to ameliorate airborne contaminants, and address broad scale conditions that extend beyond the boundaries of natural or plantation forests. The issues of ameliorating airborne pollutants are actions that result naturally from healthy forests. The set of criteria and indicators developed to measure forest protection (Criterion 1), biodiversity conservation (Criterion 2) and the
maintenance of forest ecosystem structures and processes (Criterion 3) all provide an indication of the health and vitality of the forest ecosystem. Provided the indicators reflect positively on the functioning of the forest, the contribution of forests towards the health and vitality of air is implicitly addressed.

2.2.5 Testing draft CI&S

The draft set of criteria, indicators, measures, standards and aspirational goals were circulated to a range of stakeholders for comment. A number of follow up key informant workshops were also held (see section 2.3.6) to test the draft CI&S and obtain comment from stakeholders. In addition to overall comments on the CI&S, specific discussions were also held around the relevance, applicability, and practicality of the CI&S, as well as the measures and aspirational goals. A workshop was also held with the Project Team’s Expert Panel to review and assess the focus and rigour of the CI&S in terms of the coverage of key issues such as biodiversity, hydrology, ecology, participation, and social equity.

2.2.6 Final revision and preparation of draft CI&S

The Project Team reviewed all comments received from stakeholders on the draft CI&S and final revisions were made to the criteria, indicators, measures, standards and aspirational goals, in line with requests and recommendations made by stakeholders. In addition, the Project Team compiled profiles for each of the indicators, which contain all the support information for each of the criteria and indicators, including:

- Rationales
- Measures
- Methods of application
- Scales of application
- Forest type relevance
- Associated standards or aspirational goals
- Links with other C&I
- Research requirements.

The draft CI&S and profiles containing supporting information are presented in Section B.
2.3 Methodology for stakeholder consultation and participation

2.3.1 Overview of stakeholder consultation and involvement

The stakeholder participation process has been an integral part of the process of identifying and developing the criteria, indicators and standards, and stakeholder input has been considered as fundamental to the drafting of the PCI&S. According to Raison et al (2001, p 11) "while science can inform and guide indicator selection, it does not decide on what is best: stakeholders must collectively define what is to be sustained and how that should be assessed". An outline of the integrated stakeholder consultation process is provided in Figure 2.1. Those involved in, or affected by, forestry have “the deepest knowledge of many of the issues that need to be discussed, particularly those involved in field operations” (Higman et al 1999, p 97). Participation by stakeholders is also critical as it ensures greater acceptance of the PCI&S once they are implemented. The integration of scientifically based knowledge of experts, and the more subjective knowledge of stakeholders, has formed the focus of the development of PCI&S in this project.

The stakeholder participation process developed in this project has recognised the key problems and issues related to participation in South Africa and wherever possible these have been addressed (Scott and Oelofse 2000; Greyling 1999; Fowkes and Goudie 1995). Effective participation takes time - stakeholders need to be identified, communication must be established and relationships built and maintained. Issues such as the building of trust, provision of good information, accessing marginalized stakeholders, transparency, documentation and recording of all issues that have been raised, and feedback to stakeholders have been addressed using guidelines for participation (Higman et al 1999; Fell and Sadler 1999; Greyling 1999).

Stakeholder consultation and involvement comprised the following core activities:

- Identification of stakeholders
- Initial engagement of stakeholders
- Evaluation of case studies to generate the desired conditions for sustainable forest management
- Conducting of national, provincial and local workshops to verify the desired conditions
- Conducting key-informant meetings for testing the draft CI&S
- The circulation of the draft CI&S via e-mail for testing.

A complete list of all stakeholders engaged during this project is provided in Section C, Appendix 2. A list of all stakeholder events and participants is provided in Appendix 3.

2.3.2 Identification of stakeholders and initial engagement

The first stage of the stakeholder consultation process involved the identification of stakeholders (described in Milestone Report 1, section 5). The Project Team considered the following sectors and groups as critical to the process (see Milestone Report 1, section 5 for detail):

- Government departments including DWAF, DEAT, conservation authorities and relevant provincial and local government departments
- The forestry industry
• Communities and their Tribal Authorities
• NGOs
• Academics
• Labour.

A stakeholder database was compiled for each of the sectors, starting at national scale, and then moving to a provincial and local scale (Appendix 2). The identification of stakeholders throughout the project was based on both purposive sampling and snowballing (Robinson 1998). Purposive sampling involved the targeting of key stakeholders, which were then drawn into the process (Walford 1995; Robinson 1998). Identifying stakeholders in this manner would include:
• Identification of individuals with specific expertise from within forestry organizations
• Self-selection of representatives by organizations themselves
• Identification of individuals by other knowledgeable individuals
• Identification of individuals through written records.

Snowballing, which is a technique that relies on following leads from key stakeholders until the sector shows good coverage of those that need to be included, was also adopted. “Having identified certain individuals, the sample is extended by use of information they provide or through their contact network” (Robinson 1998 p 386). The above processes enabled the stakeholder participation team to develop an extensive list of organizations and individuals that needed to be consulted in the project.

Existing lists, such as the original CSFM mailing list were also used to generate the stakeholder list for the project. Because the process of deriving issues for sustainable forest management from stakeholders was not based on the need to build consensus, but rather to generate a set of issues covering all aspects considered to be important by stakeholders, the consultation net was cast as wide as possible. This also meant that stakeholders could join the process to provide input at any stage, particularly if they were concerned about issues that had not been covered.

### 2.3.3 Information sharing and notification

This process of information sharing and notification is a key element of stakeholder participation (Fell and Sadler 1999). Some stakeholders were contacted telephonically, while others were emailed, and yet others received information by postal communication. The first CSFM and DWAF newsletter (prepared prior to the appointment of this project team) was sent to those who had not yet received it and the second newsletter was then also circulated to all stakeholders on the new updated stakeholder list. Where stakeholders had raised specific queries or concerns during the first phase of the project, the Project Team met with them to clarify and understand their queries. Meetings of this nature were held with Timberwatch, SAAPAWU (SA Agricultural, Plantation and Allied Workers Union) and SA Wattle Growers Union.

In addition to the information sharing process, stakeholders were invited to consultation events, and were provided with a digital version of the draft CI&S via e-mail.
A key element of information sharing was the process of capacitation, which preceded every stakeholder event. The capacitation conducted was made appropriate to the existing levels of understanding of CI&S and of sustainable forest management, within the target group. It is important to note that the capacitation and the consultation events themselves were always conducted in a language appropriate to the stakeholder group.

2.3.4 Stakeholder engagement in case studies

a) Purpose
As stated above, the purpose of conducting the national, provincial and local case studies was to generate a matrix of desired conditions for sustainable forest management (see section 2.2.2). The process of identifying participants mirrored a sector-based approach as discussed in section 2.3.2. While identifying desired conditions for SFM was a primary focus of the case studies, they also fulfilled two additional purposes:
- Introduction of the project and its objectives to a range of stakeholders
- Creation of awareness around the definitions and purpose of principles, criteria, indicators and standards, as well as the objectives of sustainable forest management.

b) Methodology
The Project Team developed a replicable method for introducing the project and engaging the stakeholders during the case studies. The main focus of the case studies was to generate a list of issues that the participants considered to be important in sustainable forest management. The approach used was open-ended interviews, where case study participants provided input based on what they felt were key issues that needed to be addressed by the set of PCI&S. Each case study meeting began with an introduction explaining the process and details of the project (details of this presentation are provided in Milestone Report 3, Appendix A4). Stakeholders were then asked to identify key issues and thereafter, the Team prompted them for comment on other issues that had arisen from the Team review of the core draft indicators (see section 2.2.1). This brainstorming, where stakeholders raise issues built on other ideas emanating from the process of discussion (Higman et al 1999), was widely used in the case studies.

For the sake of time efficiency and understanding, case studies were always held in a single language. Non-English speakers were accommodated in meetings run in their home language.

c) Participants
The national case study involved key government, labour, NGO and business input where stakeholders were identified utilizing purposive sectoral identification techniques. A similar process was utilized at provincial level. The range of participants in the local area case studies differed in that representation was broadened to include traditional leaders and community members with direct interests either in plantation or natural forests.

d) Outputs
The Project Team recorded the issues as they were raised by the stakeholders and noted which organizations or groups had raised the issue (examples are provided in Milestone Report 3, Appendix A5). A table of stakeholder issues was the deliverable output of this process of consultation. These stakeholder issues were then correlated with the core draft
indicators to produce desired conditions which would be further tested and then used to draft the criteria, indicators and standards (see section 2.2.3).

2.3.5 Stakeholder workshops to verify the desired conditions

a) Purpose
A series of workshops were held with the purpose of verifying the desired conditions generated during the case studies. The desired conditions developed from the case studies were presented to stakeholders in order to discuss, critique and verify them.

b) Methodology
Three types of workshops were held:

- **General stakeholder workshop**
  These workshops involved broader, more representative groups of forestry stakeholders than those engaged during the case studies. These workshops were held at national, provincial and local levels. The workshops drew stakeholders together from a range of interest groups and backgrounds. For example, a workshop may have involved representatives from each of the sectors described in section 2.3.2. The purpose of this was to stimulate debate and discussion between stakeholders and to create awareness among stakeholders of the range of agendas and desires for sustainable forest management, which would need to be addressed in the PCI&S.

- **Technical workshops**
  Technical workshops aimed at involving stakeholders who had technical knowledge and understanding of specific aspects of sustainable forest management. The purpose of engaging these stakeholders was therefore to obtain input on more technical issues such as biodiversity conservation, economic sustainability, labour rights, and policy and legislation.

- **Feedback workshops**
  Workshops were also held with stakeholders who had participated in the case studies in order to test whether their issues had been correctly and adequately captured.

In these workshops, the Project Team raised the desired conditions sequentially, giving the stakeholders the opportunity to comment on each one. The stakeholders were also given the opportunity to identify omissions or provide information on the applicability and relevance of the conditions to various forestry contexts.

As far as possible, participants were provided with the table of desired conditions prior to the meeting. In the case of larger groups, the participants were given the opportunity to break away into smaller groups to discuss the desired conditions and make recommendations. In smaller workshops delegates sometimes opted not to break into groups but rather to discuss all the desired conditions together. Comments made by stakeholders were again recorded as in the case studies.

As indicated in Section 2.3.4(b), workshops were always held in a single language, and other language speakers own accommodated in workshops run in their home language if necessary.
c) Participants
As discussed in section (a) above, the three different types of workshops focused on involving a wide range and number of stakeholders. Broader representation was sought from the Government, NGO, labour, academic and business sectors, than that obtained during the case studies.

d) Outputs
A list stakeholder comments on the desired conditions was compiled from the workshops. These comments were reviewed and used to revise the desired conditions, and then to generate a final set of verified desired conditions (see section 2.2.3).

2.3.6 Key-informant meetings for testing the draft CI&S

a) Purpose
The purpose of the key informant meetings was to test the draft set of criteria, indicators and standards with a range of stakeholders who would be required to implement them, and with stakeholders who had specific technical knowledge on forest management or implementation of PCI&S.

b) Methodology
During the testing the draft CI&S were considered point for point in detail. Comments raised by participants ranged from broad comments on the relevance of specific C&I, to practicality, measurability and cost issues around proposed measures and standards. While participants were given the opportunity to focus on all the CI&S, they were requested to focus particularly on their areas of expertise, for example, natural forest management, plantation management, or small-scale plantation production.

c) Participants
Key informants were selected by virtue of their specific expertise with regard to various aspects of sustainable forest management, by virtue of their knowledge and experience of the use or development of criteria and indicators as a management tool, or because they could add a specific insight to the process. Three types of key-informant meetings were held:

- Meetings with plantation production managers
  - Forestry South Africa
  - Small growers in Thathevondo and KwaMbonambi
- Meetings with natural forest management managers
  - KZN Wildlife
  - Natural forest specialists from NGOs
- Special interest groups
  - Department of Environmental Affairs and Tourism’s Environmental PCI&S Team
  - Academics.

d) Outputs
The outputs from the key-informant meetings were sets of direct comments on the draft CI&S, measures, and aspirational goals. These comments were used to review and revised the draft PCI&S (see section 2.2.5 and 2.2.6).
2.3.7 Testing the draft CI&S through e-broadcast

In addition to the key informant meetings, the draft PCI&S were circulated to all stakeholders who had access to email facilities. The purpose of a broad-based electronic broadcast of the draft PCI&S was to continue the participative and inclusive nature of the process undertaken to date. While there are limitations to an e-broadcast in that some stakeholders do not have access to the medium, it ensured a rapid transmission of the information to a wide number of stakeholders. Stakeholders wishing to make comments on the draft PCI&S were requested to email, fax or post their comments to the Project Team. These comments were also included in the final review and revision of the draft PCI&S (see section 2.2.5 and 2.2.6).
3 STAKEHOLDER PERSPECTIVES

A range of perspectives emerged from stakeholders in relation to a number of key issues. This is as a result of the different and contesting views stakeholders have of sustainable forest management, as well as debates reflected in the literature. The issues that have been debated in the development of the set are:

- The development of a single set of PCI&S to address plantation and natural forest management
- The identification of standards for regulatory benchmarks versus the identification of aspirational goals
- The use of PCI&S for regulation or for monitoring
- The analysis of current conditions or trends
- Whether the indicators should be quantitative or qualitative
- The structuring of the set of PCI&S as a web or a hierarchy
- Influences on the acceptance and implementation of the set.

These issues are discussed in terms of how each of the key stakeholder groups understand and relate to sustainable forest management.

3.1 Introduction

This set of CI&S has been developed in a particular context, which reflects society’s present goals for forestry in South Africa, current legislation and policy, and international and local scientific knowledge. This set therefore represents different ideologies of sustainable forest management that are shaped by theory, stakeholder values and present issues and problems in the environment (both social and physical). The process of developing the set has been stakeholder-driven, and therefore has had to deal with a range of views and ideals about how the set should be developed, what it should contain and how it should be implemented. This section provides insight into the varying perspectives that exist around CI&S in South Africa. It first provides an overview of these views and then presents the positions adopted by the various stakeholder groups in relation to these different perspectives. In most cases the perspectives presented should not be considered as ‘either/or’, but rather as different viewpoints that need to be considered.

The following aspects have been raised and debated by stakeholders during the development of the PCI&S:

- The use of a single set for addressing management of natural forests and plantations
- The use of standards versus aspirational goals as a benchmark for assessment
- Whether the set should be used for regulation or monitoring
- The use of the set for measuring trends versus the current conditions of the forests
- Indicators as quantitative or qualitative measures
- The set as a web or a hierarchy
- Influences on acceptance and implementation of the CI&S.

A wide range of stakeholders participated in the development of the CI&S. Details of these groups, from whom the perceptions have been compiled, are provided in section 2.3.
3.2 A single set of PCI&S to address plantation and natural forest management

There was considerable debate around the issue of whether one set of CI&S can be used for plantation and natural forests. Many stakeholders felt that two sets should be developed due to the very different nature and use of natural forests and plantations. Table 3.1 summarises the range of perspectives raised in this debate.

Table 3.1: Stakeholder perceptions regarding the development of a single set of PCI&S for the management plantations and natural forests

<table>
<thead>
<tr>
<th>Sector</th>
<th>Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantation Sector</td>
<td>A number of forest industry stakeholders requested that a separate set of PCI&amp;S be developed for the management of plantations. They suggested that the production and management of plantations had more in common with the production of an agricultural crop that with the management of a natural forest. However they also recognized that many of the issues being addressed by the PCI&amp;S, particularly those relating to the social and policy aspects of sustainable forest management were common to both plantations and natural forests. Furthermore, many of the stakeholders themselves pointed out, there are very few forest management units for the production of plantations, that do not include natural forests and indigenous vegetation, and both need to be managed. A request was however made that those PCI&amp;S pertaining specifically to plantations be clearly identified.</td>
</tr>
<tr>
<td>Natural Forest Sector</td>
<td>The natural forest sector initially expressed their reservations about having one set of PCI&amp;S, as many stated that plantations are not forests. However they supported the PCI&amp;S development process on the basis that there was differentiation between PCI&amp;S for plantation versus natural forest management.</td>
</tr>
<tr>
<td>Government Sector</td>
<td>The government sector currently includes those who are involved in the management of both natural forests and plantations, and therefore recognized the need for PCI&amp;S for both. They supported the idea that while a single set was being developed to address SFM of plantations and natural forests that clear differentiation would be made between the relevance of those to plantations versus natural forests.</td>
</tr>
<tr>
<td>NGO Sector</td>
<td>Some NGOs felt that different sets of C&amp;I are required for forests and plantations. However the majority supported the development process on the understanding that there would be clear distinction between those relevant to plantations versus those applicable to natural forests.</td>
</tr>
<tr>
<td>Labour Sector</td>
<td>No specific comments were raised on this issue by this sector.</td>
</tr>
<tr>
<td>Academics</td>
<td>Academics believe strongly that two sets of C&amp;I&amp;S are necessary for natural forests and plantations. They agree however that some C&amp;I&amp;S (social and economic) can be applied to both, and that the simultaneous development of both sets was acceptable as long as distinctions were made between PCI&amp;S relevant to plantations and those relevant to natural forests.</td>
</tr>
</tbody>
</table>

The NFA addresses sustainable management of both natural forests and plantations. The terms of reference provided in the NFA for the development of PCI&S requires that they address the
management of both plantations and natural forests. The Project Team has however recognized that while natural forests and plantations have many management issues in comment, there is a range of issues that are quite distinct. In Section B, a range of supporting information has been provided for each of the criteria, indicators, measures and standards or aspirational goals. Where the PCI&S address management issues that plantations and natural forests have in common, it has been clearly indicated that these PCI&S are relevant to both. Similarly where PCI&S have been developed to address an issue specific to either plantations or natural forests this has also been clearly marked. Furthermore, summaries have been provided at the start of section B clearly indicating which PCI&S are relevant to plantations and which are relevant to natural forest management. It is also proposed that in the final broadcast of the draft PCI&S to stakeholders, the PCI&S with relevance to natural forests are presented in a separate document to those relevant to plantations.

3.3 Standards as regulatory benchmarks

There has been considerable debate around whether the benchmarks or minimum requirements set for management should be standards or aspirational goals (see Section 1.2.2). The primary concern of stakeholders is that the setting of numerous minimum standards may be too rigid, and may increase the costs of managing forests to an unaffordable level. Table 3.2 provides a summary of the range of arguments raised by stakeholders in this regard.

Table 3.2: Stakeholder perceptions regarding the application of standards versus aspirational goals

<table>
<thead>
<tr>
<th>Sector</th>
<th>Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantation Sector</td>
<td>The primary concern expressed at almost every stakeholder event was that the setting of new minimum standards could have a negative effect on the plantation industry. While they agreed with the use of standards currently prescribed in legislation, they feared that the identification of a new set of minimum standards would make the PCI&amp;S too prescriptive and not accommodate the range of environmental and social conditions in which plantations are produced throughout the country. While they supported the idea of differentiating between standards that were regulatory, and aspirational goals defined as voluntary benchmarks towards which managers would strive, they requested that it be clearly documented that the later should be non-regulatory. Concern was also expressed that should the South African set of PCI&amp;S be recognized as the locally appropriate certification standard, auditors may still interpret the aspirational goals as minimum requirements.</td>
</tr>
<tr>
<td>Natural Forest Sector</td>
<td>Some stakeholders questioned the existence of adequate baseline information from which a standard can be determined. This makes aspirational goals more realistic.</td>
</tr>
<tr>
<td>Government Sector</td>
<td>Some government stakeholders are keen for the setting of clear standards to reinforce the existing legislative standards, which many of them are currently struggling to enforce. There was little support for a more extensive set of standards that would require further regulation. The aspirational goals were seen as helpful targets, towards which all officials can strive.</td>
</tr>
<tr>
<td>NGO Sector</td>
<td>While little direct comment was received from NGO representatives on this</td>
</tr>
</tbody>
</table>
issue, they generally supported a mixture of enforceable standards and aspirational goals. They did however support the determination of a number of discretionary standards, linked to incentives or penalties, to force greater environmental and social responsibility in the management of plantations and natural forests.

<table>
<thead>
<tr>
<th>Labour</th>
<th>Labour expressed the hope that the standards would reinforce the minimum requirements with regard to the issues of; health and safety, labour laws, training, and community relations. The notion of management having too much latitude with regard to these areas was not welcomed by labour.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academics</td>
<td>Some academics felt that standards would be used literally by certification organisations. This would mean that the forestry industry would be penalised for not complying with goals that might not be currently achievable.</td>
</tr>
</tbody>
</table>

The Project Team recognized the problems associated with the introduction of a range of new standards with the set of C&I. However it was also believed that it would be advantageous to set a number of benchmarks as pointers for managers, which they should strive towards in an attempt to improve the sustainability of forests and the management of plantations. In order to avoid confusion between the standards currently prescribed in legislation and these benchmarks, the Team specifically introduced the term aspirational goal (see section 1.2.2).

### 3.4 PCI&S for regulation versus monitoring

The issue of whether the PCI&S should be used for regulation or monitoring has been extensively debated. C&I for regulation would, to a large extent, focus on determining the current condition of a forest. Monitoring C&I would primarily focus on establishing trends, which would indicate whether forest management is resulting in improved conditions, or the converse. If the key aim of implementing a set of PCI&S is to monitor forest management, then the set needs to assess and provide information on trends or changes over time, rather than just the condition of forests. By assessing trends it is possible to determine whether we are moving in the direction of sustainability or not. The analysis of data over time therefore becomes a fundamental part of the process of evaluation and forest managers and owners will need to develop methods and skills to use the data they collect in a meaningful way. This issue is explored further in section 4.3.

Table 3.3 presents the range of stakeholder perceptions regarding preferences for monitoring or regulatory PCI&S. Most stakeholders indicated that the set should be used as a monitoring tool, with regulation only occurring where standards were already in place. Many stakeholders doubted whether there would ever be the manpower necessary to implement the PCI&S as a regulatory tool, and suggested that a greater contribution could be made to sustainable forest management if the PCI&S were rather developed and applied as a tool for monitoring and continual improvement through adaptive management.

**Table 3.3:** Perceptions regarding the use of PCI&S for monitoring or regulation

<table>
<thead>
<tr>
<th>Sector</th>
<th>Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantation Sector</td>
<td>The value of the PCI&amp;S as a monitoring tool was appreciated and...</td>
</tr>
</tbody>
</table>
supported, however concern was expressed that the implementation of the PCI&S as a regulatory tool would result in an over-regulation of the plantation industry. This sector expressed the concern that even when implemented as a monitoring tool, the PCI&S would significantly increase costs, raising the question of “who should meet these costs?”. The opinion was expressed that any additional costs to forestry without consequential returns would further detract from the financial sustainability of their operations. Some stakeholders felt that forestry was being targeted with the development of PCI&S and other sectors, such as agriculture, were not being dealt with in the same way. They also expressed concern regarding the time it would take to meet all the monitoring and reporting requirements implicit in the PCI&S, and argued that the requirements of the PCI&S for SFM, in addition to all the other audits they are currently complying with would not be achievable.

**Natural Forest Sector**

These stakeholders questioned the capacity of, for example conservation authorities responsible for managing natural forests, to implement the PCI&S as a regulatory requirement. Agencies responsible for the management of natural forests reported experiencing severe financial and human resource shortages. This would significantly affect their ability to comply with the PCI&S, which would have implications if used as a regulatory tool. They did however recognise the usefulness of the PCI&S as a monitoring tool.

**Government Sector**

The value of the PCI&S as a means of strengthening existing and proposed monitoring and reporting requirements in terms both of national laws and international obligations is widely acknowledged among government stakeholders. Of significance is DEAT’s programme to develop indicators for environmental sustainability to inform their State of the Environment report. The Forestry Chief Directorate of DWAF also has an obligation to periodically present a State of the Forest Report, and the PCI&S could provide much up to date information on which this report should be based. Further, the obligation to ensure that State Forests leased to private companies and other bodies, are sustainably managed remains the responsibility of DWAF. In this regard the PCI&S will effectively provide the means to monitor their activities and performance.

**NGO Sector**

A range of perceptions was expressed by NGOs, with support indicated for both the aspects of regulation and monitoring in the CI&S set.

**Labour Sector**

Labour expressed the hoped that setting standards for issues relating to health and safety, employment policies and training would result in better labour practices within the sector.

**Academics**

Some academics expressed the concern that there are already more regulations in place governing the plantation industry than any of the other land uses such as agriculture. There was therefore the concern that regulatory C&I would discriminate even further against the plantation industry. They supported the use of PCI&S for monitoring.
3.5 Developing quantitative or qualitative indicators

Indicators tend to be measured using quantitative methods. However certain criteria, particularly those that reflect social issues, can best be measured using qualitative methods. The tendency is that these indicators are seen as ‘soft’ indicators and are considered difficult to measure or analyse. However, qualitative indicators that are well designed play a very important role in providing insight into sustainable forest management, and qualitative measures can give meaning to the conditions being measured quantitatively. Table 3.4 provides an overview of stakeholders regarding the use of qualitative and quantitative indicators and measures.

Table 3.4: Perceptions regarding the use of qualitative and quantitative indicators

<table>
<thead>
<tr>
<th>Sector</th>
<th>Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantation Sector</td>
<td>The stakeholders recognized the need to have both quantitative and qualitative indicators. They did however note that it was often more difficult to measure and record qualitative indicators. There was an appreciation of how these fitted into the overall set of indicators and why for some issues it was preferable to have one or the other.</td>
</tr>
<tr>
<td>Natural Forest Sector</td>
<td>Stakeholders commented on the difficulty they would have in measuring and recording some of the more qualitative indicators, but recognized the need for them.</td>
</tr>
<tr>
<td>Government</td>
<td>No specific comments were raised in this regard, however some noted the shortage in capacity within much of the government sector to undertake the data collection tasks required by the CI&amp;S.</td>
</tr>
<tr>
<td>NGOs</td>
<td>Many NGO stakeholders agreed with the need for a mix of quantitative and qualitative indicators.</td>
</tr>
<tr>
<td>Labour</td>
<td>Labour lent tacit support to the inclusion of qualitative measures, partially due to the fact that many of their concerns are largely social in nature. They did however note that many social issues such as health and safety in the workplace are quantifiable.</td>
</tr>
<tr>
<td>Academics</td>
<td>Some academics felt that the more qualitative indicators would be difficult to assess. There was also a feeling that other land uses are not measuring these indicators and that this is another discriminatory measure against forestry.</td>
</tr>
</tbody>
</table>

3.6 A network or a hierarchy

The set of PCI&S are designed to form a network (or web) to capture key information on management activities and trends, rather than a complete dataset of every aspect related to the management of forests. The web also indicates the connections between the criteria and indicators, and viewing each one in isolation would not provide a holistic impression. The objective is for the CI&S to paint an overall picture of the outcomes of forest management rather than measure all inputs. Table 3.5 presents an overview of stakeholder comments regarding the effectiveness of a web versus hierarchy of PCI&S.

Table 3.5: Perception of the effectiveness of a web versus a hierarchy of PCI&S

<table>
<thead>
<tr>
<th>Sector</th>
<th>Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantation Sector</td>
<td>The comment was made that the web or net could be overly fine. However,</td>
</tr>
</tbody>
</table>
concept of a web as opposed to a hierarchy was appreciated as it was 
recognized that the relationships between issues challenging sustainable 
forest management are not always linear, and are often networked.

Natural Forest Sector  
As in the plantation sector, natural forest stakeholders also recognized the 
need for inter-related PCI&S rather than a simple hierarchical relationship. 
For example, in the case of monitoring resource use it was considered 
essential that a range of indicators is necessary to manage associated 
impacts.

Government  
No views were expressed by government representatives in this regard.

NGOs  
In interaction with NGO groups, this was not distilled out as a particular 
issue.

Labour  
Labour expressed no views on this.

Academics  
No clear views were expressed.

### 3.7 Support and implementation of CI&S

The development of the CI&S has been based on extensive stakeholder consultation. Stakeholders 
have engaged in debates and have defined what they see as their goals for sustainable forest 
management. During the stakeholder consultation process many stakeholders expressed views and 
perceptions regarding the potential for implementing the PCI&S (Table 3.6). These perceptions have 
been incorporated into recommendations for implementation (see in section 4).

#### Table 3.6: Perceptions regarding the implementation of the PCI&S

<table>
<thead>
<tr>
<th>Sector</th>
<th>Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantation Sector</td>
<td>Feedback indicates that most stakeholders in this sector support the implementation of the PCI&amp;S as a monitoring tool. They have however expressed concerns regarding the lack of capacity among many individuals and within sectors to implement the PCI&amp;S effectively.</td>
</tr>
<tr>
<td>Natural Forest Sector</td>
<td>Stakeholders have widely recognized the potential usefulness of the PCI&amp;S and generally support the implementation of the set. However severe reservations have been expressed regarding the lack of both resources and capacity to widely implement the PCI&amp;S.</td>
</tr>
<tr>
<td>Government</td>
<td>While government stakeholders who took part in the consultation process generally supported the PCI&amp;S, many expressed reservations that implementation may be very difficult due to the lack of both resources and capacity.</td>
</tr>
<tr>
<td>NGOs</td>
<td>Interest and support were expressed, and requested that a system be put in place to make the PCI&amp;S accessible to public. This would include, for example, a set of guidelines and a checklist that can be used by public forest users to evaluate forests.</td>
</tr>
<tr>
<td>Labour</td>
<td>Labour felt that the PCI&amp;S set would assist them in improving the conditions of workers in the workplace.</td>
</tr>
<tr>
<td>Academics</td>
<td>Some concerns were expressed regarding the lack of resources for the effective implementation of the PCI&amp;S.</td>
</tr>
</tbody>
</table>
4 RECOMMENDATIONS FOR IMPLEMENTING CRITERIA AND INDICATORS

SUMMARY
During the course of the stakeholder participation process and project research, a number of key recommendations emerged and are listed below:

- South Africa should formally adopt C&I due to international market and governance trends
- The NFA should adopt two additional principles, namely to promote participation and to implement a policy review process
- Landscape level forums should be established to facilitate C&I implementation which would:
  - Develop appropriate local standards
  - Promote information transfer
  - Provide incentives for participation in the C&I process
- Criteria and indicators should be packaged to specifically match the activities of the different stakeholder interests
- A toolbox should be developed to facilitate and standardise the implementation of the C&I
- A training programme should be developed to support the implementation of C&I
- A communication programme should be established to distribute the C&I
- Discussions should commence with stakeholders regarding the potential for widespread certification in South African forestry.

4.1 International trends in implementing criteria and indicators

Growing concern about the state of the world’s forests has led to widespread calls for changes in the way forests are managed. A high point in international interest was reached at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro during 1992 (FAO 1996). Two major sets of principles on forests were adopted at UNCED: “The non-legally binding, authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests” (referred to as the “Forest Principles”); and Chapter 11 of Agenda 21 (“Combating Deforestation”). Chapter 11 of Agenda 21 and the Forest Principles both propose general principles and programmes for action, but do not provide precise guidance on topical issues. For this reason, several international meetings addressing sustainable forest management have resulted in declarations and recommendations being made, which are related to the development of more specific criteria and indicators.

The importance accorded by various countries to developing criteria and indicators for sustainable forest management has been significant, and consequently during the past ten years seven major sets of PCI&S have emerged. These include the ITTO, the Pan-European, Montreal, Tarapoto, Dry Zone Africa, Near East and Central American Processes. These approaches aim to develop a common framework in the participating countries, to enable them to collect aggregate data to describe, measure and assess progress towards achieving forest sustainability at a national level, as committed to at UNCED (Crossley 1996).
It is estimated that at least 140 countries are participating in at least one of the major processes on criteria and indicators. While some countries belong to one or more of these initiatives, the degree of activity in assessing, measuring and/or implementing their indicators varies considerably among countries (Castaneda 2000).

The above discussion illustrates a growing international trend of using criteria and indicators to direct and guide national (including local) forestry activities. These criteria and indicators are increasingly influencing the international market for forest products. The implications for South Africa are:

- C&I are becoming the norm for monitoring and reporting on forest-based activities within markets and government
- International support for forest management and conservation activities will be using C&I for assessing the success of their support within recipient countries
- Forest products exported from or consumed in South Africa will increasingly be influenced by international benchmarks such as C&I
- South African forest activities could be measured by inappropriate international C&I in the absence of a local set.

In view of the growing international trend to adopt C&I, it is recommended that South Africa establish a widely accepted set of C&I that would form the basis for locally relevant monitoring and evaluation.

### 4.2 Additional NFA principles to support C&I implementation

As described in section 1.5.1, the principles set out in section two of NEMA guide the interpretation, administration and implementation of laws concerned with the protection or management of the environment. The NEMA principles therefore clearly apply in the context of decisions taken in terms of the NFA and in particular, in this case, to the establishment of indicators, criteria and standards for sustainable forest management.

During the review process it was evident that two aspects raised by stakeholders are not directly addressed by the NFA. These two aspects are:

- The participation of stakeholders in the management of forests and forest-related policy-making processes
- The development and regular review of appropriate and effective policy governing natural forest and plantation protection and management.

These two aspects are seen as important for sustainable forest management and have been addressed by the draft criteria and indicators. While the NFA has no principles addressing policy review and development, or stakeholder participation, NEMA includes a principle addressing participation, which states:

> “The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured’ (principle [f] of section 2)”

In relation to the question of regular policy review the Constitution (Act 108 of 1996) alludes to the issues in the following places:
“The RSA is one, sovereign, democratic state founded on the following values: ... (d) universal adult suffrage, a national common voters roll, regular elections and a multiparty system of democratic government, to ensure accountability, responsiveness and openness.” (section 1)

“Public administration must be governed by the democratic values and principles enshrined in the Constitution, including the following principles .... (e) people’s needs must be responded to, and the public must be encouraged to participate in policy-making; (f) public administration must be accountable; (g) transparency must be fostered by providing the public with timely, accessible and accurate information…” (section 195)

“All spheres of government and all organs of state within each sphere must - .... (c) provide effective, transparent, accountable and coherent government for the Republic as a whole …” (section 41)

The inclusion of these aspects as criteria and indicators of sustainable forest management is therefore justified. In view of the above, it is recommended that two principles addressing participation and policy review are added to the existing NFA list to support the C&I developed to promote sustainable forest management.

4.3 Implementing criteria and indicators in South African forestry

The successful implementation of C&I will depend on the extent to which C&I enable forestry stakeholders to achieve their forestry objectives. Whether it be the Minister of Forestry, a corporate CEO, a forest manager or a small scale timber grower, the C&I will only be widely adopted if the C&I help make their job easier. A key driver in successful implementation of the C&I is the positive incentives associated with implementing the C&I.

One may consider applying penalties for non-compliance with C&I. However, this is likely to only impact on large-scale commercial producers who can easily be targeted for policing. As the sector is greater than just the large commercial growers, this approach is likely to be unsuccessful in promoting sustainable forestry in South Africa.

The C&I should support forestry activities in being economically efficient, socially equitable and ecologically sustainable so that forestry is able to optimize the opportunities in the market place and/or in society as a whole. The first challenge is to make the C&I a really useful set of ‘directions’ that can guide forestry practitioners towards sustainable forestry management in South Africa.

Before attempting to make C&I really attractive/useful to the forest sector we need to know who the role players are that should be using C&I. They include:

- The Minister
- DWAF national and provincial officials
- Multinational corporations
- Indigenous forest and plantation managers
- Small scale independent and scheme growers
- Forestry contractors
• Civil society including environmental, labour, consumer and community interests.

A diverse group of potential users of C&I exist. Importantly, the C&I must work for all these groups and there needs to be large scale buy-in. Without the participation of the above groups in the C&I process, the C&I will fail to provide a complete picture of forestry and may not promote sustainable forestry management in South Africa. The information necessary to promote sustainable forestry needs to emerge from all levels within the sector, from the forests and the surrounding community right up to national and international issues and concerns.

Generating and sharing information at and between all levels (local, provincial, national and international) and interests groups (community, public sector, private sector and NGO’s) is critical to sustainable forestry management.

The second challenge is to get useful information generated and shared at, and between, the various levels and interests.

4.4 Institutions for implementing C&I

Forestry needs a mechanism for promoting the implementation of C&I - a mechanism that will address the above challenges by providing:

• Practical guidance for the implementation of C&I, especially at the forestry management unit level
• Regular communication between all levels and interest groups.

The stakeholder consultation process suggested the need to develop landscape-level working groups or forums for directing the implementation of C&I at a local level.

While a national set of C&I have been developed, the standards or aspirations need to be locally oriented. A major stakeholder concern of national standards is the impracticalities in their implementation for local environmental conditions. With unique local ecological, social and economic conditions, it has emerged that local landscape conditions are fundamental to making standards and aspirations relevant to forestry management. By developing landscape levels goals and standards, local interests are addressed and may promote greater acceptance and adoption of the C&I. Furthermore, by providing opportunities for local institutions to define appropriate standards and aspirations, stakeholders are more likely to participate in the C&I process. The basis of this approach is that if people are supported in developing their local rules and aspirations, they are more likely to invest in the generating information that can be used to shape local standards and aspirations.

These landscape-level working groups could be a regional unit of national bodies such as FSA but would focus on landscape-level interests.

Similar institutions have been established before to address landscape levels concerns. For example, fire management associations have been shown to be effective landscape level managers of local fire conditions. These associations are empowered to define local standards and to direct the implementation thereof. By providing the opportunity or power to develop locally relevant rules and aspirations, effective participation in the associations has emerged. This may be a model for the forestry landscape level working groups.
A landscape level forum would be an effective conduit for channeling information between the forests and provincial and national institutions. Landscape forums would be able make sense of the information and diverse C&I originating from government and corporate national offices – identifying what is relevant and developing local level standards and aspirations for particular conditions. These working groups could also take the leadership in integrating local activities of PFM, CMAs, IDPs, Soil Conservation Committees and Fire Management Associations.

It is recommended that landscape forums are developed in collaboration with regional stakeholders to include a wide a range of role players such as public, private and NGO interests. There should be several landscape forums per province, catering for diverse environmental (ecological, social and economic) conditions.

### 4.5 Packaging the C&I

The stakeholder participation process has identified the need to package the C&I for particular user groups. The current C&I list is considered to be too bulky for stakeholders to work with. Consequently, it is recommended that the C&I be packaged for:
- National activities
- Provincial activities
- Local plantation activities
- Local natural forest activities
- Small scale growers activities

### 4.6 A toolbox for using C&I

#### 4.6.1 Collecting data

The measures used for each indicator provide information about how the data should be collected. However, the correctness of this data collection process and the recording of the data will fundamentally influence the value of the C&I. A wide range of stakeholders will be collecting data through the implementation of the C&I and the Department of Water Affairs and Forestry will need to ensure that this process is correct and reliable. It is therefore advisable that guidelines are developed for the collection and recording of data. There must be some flexibility in the guidelines as different systems will exist within the forest sector for the collection and recording of data. The guidelines should therefore not be prescriptive, but rather provide examples and suggested methods for data management. The development of these guidelines should be done in partnership with stakeholders, using and adapting systems currently in use so as to streamline the process. Guidelines would also be useful for forest owners who operate smaller businesses and activities and who may not as yet have methods for collecting and recording data. The guidelines would need to take the needs of this wide range of users into account. Data recording templates would also be key tools in generating accurate information.

#### 4.6.2 Analysis of data

The data collected using the indicators and measures needs to be analysed so that trends or changes over time are reflected. In most cases, simple descriptive statistics will be able to provide insight into the changing condition of forests. However, a more detailed assessment may be necessary to
determine if the changes identified by frequency graphs and measures of central tendency represent a real improvement or decline in the state of the forest. A range of hypothesis tests such as t-tests and chi-squared tests, may be used in this instance. Multi-variate analysis, such as ANOVA, may provide further insight into the relationships between variables and whether the differences identified over time are significant or not. For example, in a study on the monitoring of the effluent released from Sappi Saiccor into the marine environment in KwaZulu-Natal a methodology was developed for analysing subjective local data using statistics (McPherson, Oelofse and Scott 2001).

So as to facilitate the monitoring of forests over time and to make efficient and wise use of the data collected through the C&I, it is recommended that a toolbox approach be adopted, where statistical methods can be developed for those implementing and using the C&I. Spreadsheets with all the necessary formulas could be developed and users simply type the required data into the appropriate blocks and the statistical analysis is automatically completed. A supporting guide would need to accompany the statistical analysis to promote accurate interpretation of results.

These guidelines and tools for analysis would also be very useful for the Department of Water Affairs and Forestry as they would be able to standardize the collection and analysis of data and so would be able to streamline the way in which they interpret the information being generated by the C&I process.

4.7 Training

Once the C&I and supporting toolbox have been developed, then it is recommended that training courses be developed for the forest sector. The training would address the following issues:

- The role of, and reasons for, implementing C&I
- Understanding the set of C&I
- Using the set of C&I in management (especially in streamlining C&I into management processes, using C&I in planning, integrating monitoring activities)
- Applying the toolbox for data collection and analysis
- Using C&I to influence governance
- Communicating C&I effectively to generate positive results

4.8 Effectively communicating C&I

For C&I to be effectively implemented, a communication process should be established to:

- Distribute the final version of the C&I which stakeholders are expecting to see and to complete the project obligations in terms of the stakeholder involvement and participation programme.
- Communicate the potential roles that the application of the C&I set can play in SFM – monitoring, informing regulations and policy, and complementing certification.
- Begin the process of informing forestry stakeholders who have not yet been involved in the project.
- Provide a framework from which the implementing institutions can develop operational objectives.

An integrated communications process should be designed which capitalises on the outputs of the PCI&S project. The project process has been characterised by inclusiveness, and one of the outputs of the process has been the identification of the significant stakeholders in the natural and plantation...
forest sectors nationally. Furthermore the establishment of a database greatly facilitates the communication of the C&I. The communications media should be developed as soon as possible, and should be accessible and in appropriate languages. The communications media should include:

- E-mail communication
- Posting of pamphlets to identified stakeholders
- Providing pamphlets to government, labour, business and non-government organisations for internal distribution
- Other forms of communication can also be pursued such as national radio, regional radio, and television spots.

### 4.9 Certification and C&I

While criteria and indicators provide a means to measure, assess and demonstrate progress towards sustainability of forest management activities in a given country or in a specified forest over time, certification is a means to assess the achievement of specified standards of forest management in a given forest area, at a given point in time, agreed upon between producers and consumers (Bourke and Wijewardana, 1999).

Since criteria and indicators are neutral assessment tools for monitoring trends, they cannot be used as standards for certifying management practices. However, it may be possible to draw on criteria and indicators when developing certification standards for performance at the management unit level, as has been done in many cases.

Judgments about the desirability of doing this, who would do it, how it would be done, and whether there is a role for government, would need to be considered in the forest sector as a whole. Whether or not the step should be taken to proceed to certification is an individual decision. In some cases the step is taken because it is felt that this will strengthen the efforts of sustainable forest management. In most cases though, the decision seems to be taken for marketing reasons – for protecting access to foreign markets (Bourke and Wijewardana 1999). In South Africa a large number of plantations have been certified.

While the development of certification standards could follow on to the development of the national C&I it must be emphasised that the current set of national principles, criteria and indicators is NOT a certification standard.
5 DESCRIPTION OF CI&S AND SUPPORTING INFORMATION

Section B presents the CI&S that have been developed during the course of this project. A number of summaries are presented at the start of the section (B.1-4), with the draft C&I arranged according to a number of themes:

- Complete list of all criteria and indicators
- List of indicators and measures summarized by forest type
  - Indicators and measures relevant to natural forests
  - Indicators and measures relevant to plantations
- List of indicators and measures summarized by scale of application
  - National
  - Provincial
  - Landscape
  - FMU
- List of indicators and measures summarized by time frame for application
  - Now
  - Medium term
  - Long term

Section B.5 contains the complete set criteria (and associated principles), indicators, measures, standards and aspirational goals. The supporting information is presented in a profile for each of the indicators, according to the following descriptors:

- Rationales
  The rationales provide background and detail to clarify the selection of the criteria and indicators.

- Scale of application
  The terms of reference for this project involved the simultaneous development of CI&S at the various scales of application. The support information provided with the CI&S (in the profiles in Section B) differentiates between indicators and measures that are applicable at a national, provincial, landscape, or forest management unit scale.

- Application to forest type
  The NFA requires the development of CI&S to address sustainable forest management in both natural forests and plantations. The information provided in support of the CI&S (in the profiles in Section B) differentiates between indicators and measures that are applicable to natural forests, those that are applicable to plantations, and those that are applicable to both.

- Method for measurement
  The support information provided with the CI&S (in the profiles in Section B) provides information on the method for measurement. This provides a proposed technique for undertaking the measure described in association with the indicator.

- Time frame for application
  The profiles (provided in Section B) provide an indication of the anticipated time required to get baseline information and systems in place for the application and implementation of the indicators, measures, and standards or aspirational goals. Three time frames are suggested:
  - Now: This time frame is proposed when it is anticipated that the required information is currently available and the techniques for, and capacity, currently exist. It is therefore proposed that the implementation of these indicators could be possible in the next 18 months.
Medium term: This time frame is anticipated when either baseline information or capacity is lacking. However the research techniques already exist for the collection of the data, and the research or information collection could be conducted if resources are allocated. Alternatively the capacity of relevant people does not currently exist but could, through relatively simple and cost effective techniques, be developed. It is therefore anticipated that the implementation of these indicators could be possible within the next five years.

Long term: This time frame has been suggested where neither the data nor research techniques exist for the collection of the information required. These indicators and measures have nevertheless been included as they provide very useful tools for monitoring and guiding sustainable forest management in the long term. It is therefore anticipated that the implementation of these indicators could be possible within the next ten years.

Despite not being practical for implementation now, these medium and long term indicators have been included in the C&I set for a number of reasons:

- Many good indicators of forest sustainability have not been adequately researched, and there is therefore, for example, a lack of baseline data for the interpretation of measurement results. However setting these indicators and identifying medium to long term objectives, could assist in highlighting information gaps and directing research for the generation of the necessary information.

- In certain cases there may be a lack of capacity among certain forest managers and stakeholders, which limits them in undertaking the necessary measurements or management activities. Similarly, there may be a lack or shortage of financial or human resources in order for the undertaking of the activities associated with the implementation of certain indicators. However these shortcomings may be reasonably easily overcome by training or a re-allocation of resources in the medium term.

The inclusion of the medium- and long-term indicators also provides for adaptability in the set in the long term, by not constraining the set to those indicators which are only immediately measurable and whose effect is short term. Medium and long term indicators encourage the aspiration towards continuous improvement, which is key to the concept of sustainability.

- Links with other criteria and indicators
  As described in section 1.3, the C&S are designed to form a network to capture a range of information and present an integrated picture of the outcomes of forest management activities and the condition of forests. It is therefore useful to view some of the indicators in association with others to gain specific overviews of certain outcomes or conditions. These linkages are identified in this section.

- Research and development requirements
  Recommendations are made regarding research requirements that might be required to generate the baseline information needed for the implementation of the indicators or the identification of appropriate standards or aspirational goals.
6 REFERENCES


http://www.forestry.ubc.ca/concert/crossley.html


Scott, D and Oelofse, C 2000: Social impact assessment of a large general landfill in the North Zone of the DMA, Prepared for Durban Solid Waste, Durban.