TECHNICAL REPORT

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Information to assist forestry organizations in the use of Environmental Management System standards ISO 14001 and ISO 14004

Information pour assister les organismes forestiers dans l'utilisation des normes ISO 14001 et ISO 14004 relatives aux systèmes de management environmental

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Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of Technical Committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an international standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an international standard;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an international standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 14061, which is a Technical Report of type 3, was prepared by Technical Committee ISO/TC 207, *Environmental management,* Working Group 2, *Forestry*.

The following excerpt from Resolution 11/96 of TC 207 identifies the relationship between this Technical Report and other important normative aspects of the subject:

> "The report must be consistent with the following:
>
> It must not specify performance levels for forestry, and therefore the Report in itself cannot form the basis for performance claims.
>
> It must not create a product label."

The Working Group was directed to conduct its work through an open and inclusive consensus process and in liaison with ISO/TC 207/SC 1.

Introduction

Sustainable forest management (SFM) has emerged as a major global issue. Forest management issues came into sharp focus during the 1992 United Nations Conference on Environment and Development (UNCED). A non-legally-binding authoritative statement of principles for a global consensus on the management, conservation, and sustainable development of all types of forests was adopted. Since UNCED, there have been numerous governmental and non-governmental initiatives involving interested parties addressing forest management, including the development of SFM principles, and intergovernmental Criteria & Indicators. Forestry is unique in the degree to which it has been subject to the development of international and domestic principles, criteria, and indicators for sustainable management. All international initiatives define SFM in broad terms that include ecological, social, and economic aspects.

Concurrent with the UNCED process, the ISO Strategic Advisory Group on the Environment (SAGE) recommended the establishment of ISO Technical Committee 207 (TC 207) to develop the ISO 14000 series of International standards addressing environmental management systems and tools, applicable to all kinds of organizations. ISO 14001 provides the requirements, and ISO 14004 the guidance, for implementation of environmental management systems that contribute to better management of an organization's significant environmental aspects and impacts of its activities, products, and services.

In response to the developments outlined above, forestry organizations can implement ISO 14001 while seeking consistency with the various intergovernmental and non-governmental sets of SFM principles and criteria and indicators. This Technical Report seeks to preserve the integrity and applicability of the generic ISO 14001, while providing forestry organizations with informative reference material outlining international and national developments in the forestry sector that can assist forestry organizations in implementing the generic International Standard for an environmental management system.

Information to assist forestry organizations in the use of Environmental Management System standards ISO 14001 and ISO 14004

1 Scope

This Technical Report is designed to be used in conjunction with ISO 14001 and ISO 14004. It provides a link between the management system approach of ISO 14001 and the range of forest policy and forest management performance objectives, including SFM principles and intergovernmental Criteria & Indicators, that a forestry organization can consider. It also provides references to the ISO 14000 series of International Standards, application of forestry laws and regulations, and the other matters that a forestry organization can take into consideration as it implements an environmental management system.

This Technical Report, like ISO 14001, does not propose any forestry-specific requirements. Its content is not normative in any sense, but is intended to be informative. Moreover, it does not establish performance levels for forest management. This Technical Report therefore cannot form the basis for environmental performance claims and does not create a product label.

2 Terms and definitions

For the purposes of this Technical Report, the terms and definitions given in ISO 14050 and the following apply.

2.1
environmental aspect
element of an organization's activities, products or services that can interact with the environment

NOTE A significant environmental aspect is an environmental aspect that has or can have a significant environmental impact.

2.2
environmental impact
any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services

2.3
environmental management system
EMS
the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy

NOTE For the purposes of this Technical Report, the abbreviation EMS is used specifically in reference to ISO 14001:1996.

2.4
forest
generally considered to be a plant community of predominantly trees and other woody vegetation growing together, its land, flora and fauna, their interrelationships, and the resources and values attributed to it

NOTE Forests vary greatly around the world depending on the climate, soil, history and culture of the country involved. Many countries have a definition of forest included in legislation.

2.5
organization
company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration

NOTE For organizations with more than one operating unit, a single operating unit may be defined as an organization.

2.6
principles, criteria and indicators
international, national and private sector initiatives, whether governmental or non-governmental, provide a common hierarchical framework including “Principles, criteria and indicators” for evaluating progress towards achieving SFM

NOTE 1 In some initiatives, the principles are considered to be included in the criteria.

NOTE 2 For the purposes of this report, the term Criteria & Indicators is used specifically in reference to the sets of Criteria & Indicators of Sustainable Forest Management developed through the intergovernmental processes (4.2).

2.6.1
principles
fundamental rules which serve as a basis for reasoning and action

NOTE Principles are explicit elements of a goal such as SFM.

2.6.2
criteria
characteristics that are considered important and by which success or failure can be judged

NOTE The role of criteria is to characterize or define the essential elements or set of conditions or processes by which sustainable forest management may be assessed.

[Source: Intergovernmental Seminar on Criteria and Indicators for SFM (ISCI)]

2.6.3
indicators
quantitative, qualitative or descriptive measures that when periodically evaluated and monitored show the direction of change

[Source: Intergovernmental Seminar on Criteria and Indicators for SFM (ISCI)]

2.7
sustainable development
meeting the needs of the present without compromising the ability of future generations to meet their own needs

[Source: The Brundtland Report]

2.8
Sustainable forest management

NOTE While there is broad agreement on the concept of SFM, there are variations in the definitions developed through the various national and international initiatives. Two definitions of SFM have been included here so that the user of this Technical Report can understand the scope of the concept and the ways it has been defined by people from two different regions of the world.

2.8.1
sustainable forest management
SFM
process of managing permanent forest land to achieve one or more clearly specified objectives of management with regard to the production of a continuous flow of desired forest products and services without undue reduction of its inherent values and future productivity and without undue undesirable effects on the physical and social environment

[Source: International Tropical Timber Organization (ITTO)]

2.8.2
sustainable forest management
SFM
stewardship and use of forests and forest land in a way and at a rate that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic, and social functions, at local, national, and global levels and does not cause damage to other ecosystems

[Source: Pan-European (Helsinki) Process]

3 The ISO 14000 series of standards

3.1 General

The International Organization for Standardization (ISO), comprising more than 110 national standards bodies and many international liaison organizations, is a world-wide non-governmental organization founded in 1946. Its purpose is the development of International Standards to improve international communication and collaboration and to promote the smooth and equitable growth of international trade. All International Standards are developed through an open, consensus-based process and their application is voluntary.

At present, the ISO 14000 series of International Standards addresses environmental management systems, environmental auditing, life cycle assessment, environmental labelling, and environmental performance evaluation. These International Standards have potential application to forestry organizations. Additional background information on four of these standards (other than ISO 14001 and ISO 14004) can be found in annex A.

3.2 ISO 14001 and ISO 14004 environmental management system standards

An environmental management system is a means by which an organization addresses the significant environmental aspects and related impacts of its activities, products and services. It enables consistent management based on the organization's knowledge of its environmental aspects, related impacts, and its legal and other requirements. This is accomplished through the integration of views of interested parties, allocation of resources, training and assignment of responsibilities, and ongoing evaluation and modification of practices, procedures and processes.

There are two EMS International Standards: ISO 14001, *Environmental management systems — Specification with guidance for use*; and ISO 14004, *Environmental management systems — General guidelines on principles, systems and supporting techniques*.

ISO 14001 shares common management system principles with the international quality assurance standards ISO 9001, ISO 9002, and ISO 9003. The ISO 14001 specification provides and describes the required core elements of an EMS, based on the Plan-Do-Check-Act principle (see Figure 1), and thus incorporates the concept of continual improvement. Organizations can use ISO 14001 for internal purposes and self-declaration of conformance with the standard. ISO 14001 is the only standard in the ISO 14000 series against which an organization's environmental management system can be certified following an independent third-party audit.

The ISO 14004 Guideline provides additional background on what an environmental management system comprises, and may also prove useful for organizations that do not have an environmental management system in place, or that wish to improve an existing system. The ISO 14004 Guideline is not a specification document, and is not intended to be used for auditing and certification purposes. However, it may prove to be useful for organizations which choose to go beyond the requirements of ISO 14001.

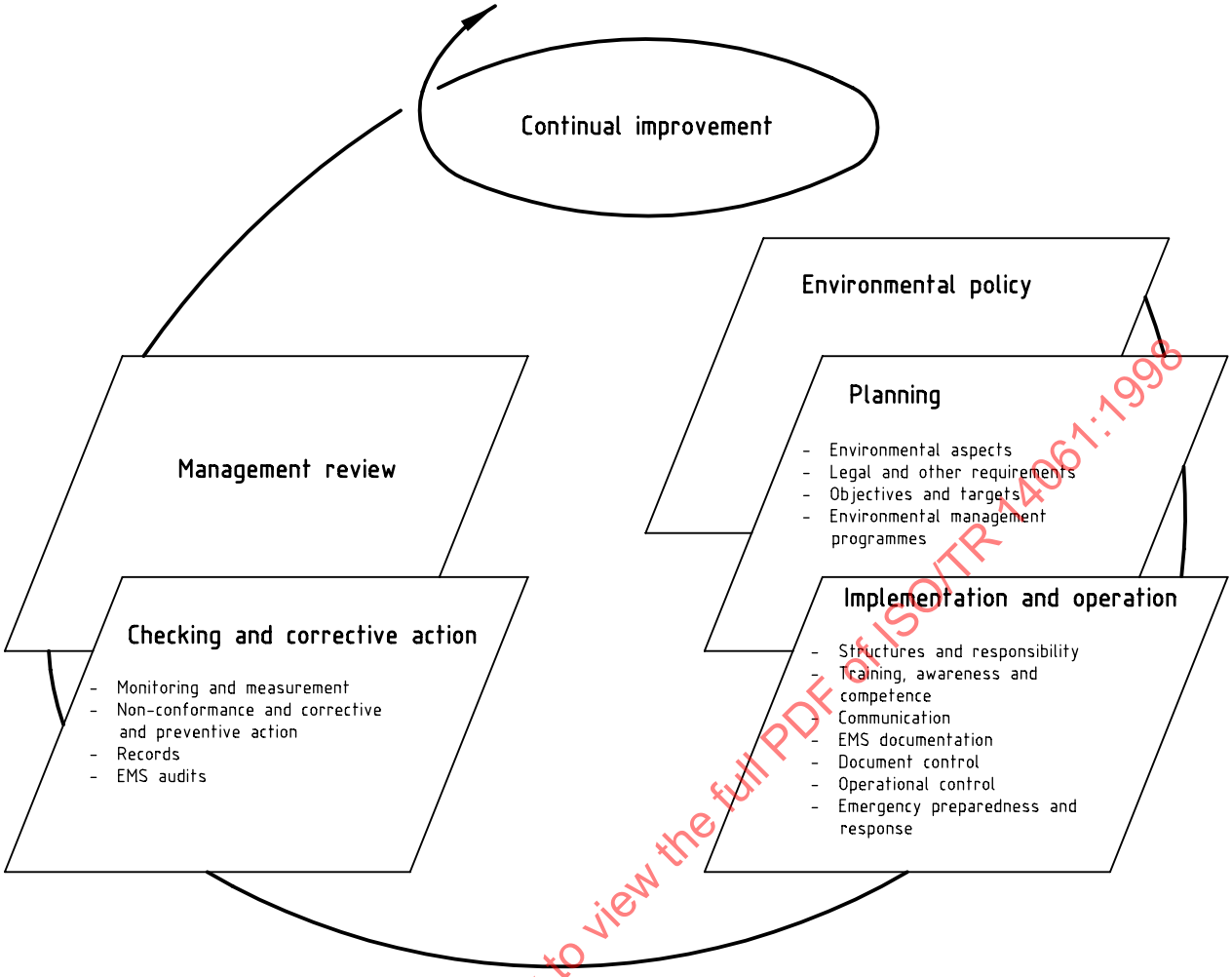

Figure 1 — Environmental management system model from ISO 14001:1996

4 Reference material for forestry organizations

4.1 General

This clause highlights reference material that can assist a forestry organization which has chosen to incorporate SFM principles into its ISO 14001 policy, objectives and targets. Sustainable forest management issues including ecological, social, and economic aspects have developed progressively over the past two decades and have addressed concerns at the global, regional, national and sub-national levels. The reference material in annex B is intended to provide information on a range of policy options for forest managers that are most appropriate for their organization. Annex B presents this information in a manner ranging from general global and intergovernmental forestry initiatives to information appropriate for a specific forest area.

4.2 Intergovernmental initiatives

There has been significant development of multi-lateral agreements among nations addressing environmental issues and the sustainable management of natural resources. The movement gained momentum with the 1980 publication of the World Conservation Strategy and the 1987 report of the Commission on Environment and Development, "Our Common Future," often referred to as the Brundtland Report. The forestry debate came into sharper focus during the UNCED process with "Agenda 21" and a set of "Forest Principles" being adopted at the Earth Summit in June 1992. These documents embrace the concept of sustainable management of the world's forests.

The United Nations Commission on Sustainable Development (UNCSD) has the task of promoting the implementation of Agenda 21. An *ad hoc* Intergovernmental Panel on Forests (IPF) was established in 1995. One of its functions was to facilitate international cooperation in developing Criteria & Indicators for the ecological, social and economic aspects of SFM. The work of the IPF was reported to the UN in February 1997 and will be continued through a new Intergovernmental Forum on Forests (IFF). The IFF will report in 2000.

As part of these initiatives, a number of intergovernmental processes have developed Criteria & Indicators for SFM, most of which are for use in assessing trends in the condition of forests at the national level. The intergovernmental Criteria & Indicators processes are listed below and further details and comparisons are listed in annex B:

- International Tropical Timber Organization
- Pan-European (Helsinki) Process
- Montreal Process
- Tarapoto Proposal
- Dry Zone Africa Initiative
- North Africa and Near East Initiative
- Central American Initiative of Lepaterique
- African Timber Organization Initiative

Criteria define the essential elements of sustainable forest management, while indicators provide a basis for assessing actual forest conditions. When combined with specific national goals, intergovernmental Criteria & Indicators also provide a basis for assessing progress towards SFM. Criteria and indicators can therefore play an important role in establishing the goals of national forestry programs and policies, and evaluating the effectiveness of implementation.

All major intergovernmental initiatives mentioned above include Criteria & Indicators that address the following forestry issues:

- extent of forest resources
- health and vitality
- productive functions
- biological diversity
- protective and environmental functions
- developmental and social needs
- legal, policy and institutional framework

[Source: Intergovernmental Panel on Forests]

The interrelationship of the ecological, social, and economic aspects of sustainable forest management as defined by Criteria & Indicators developed under the Pan-European (Helsinki) Process is presented in Figure 2 as an example. This approach has been applied at the national level within Europe.

National and sub-national efforts are underway in some countries to adopt the criteria and to modify, refine, and adapt the indicators for use at the specific forest area level. Modified intergovernmental Criteria & Indicators are generally more useful at the local level in identifying significant environmental aspects an organization can consider in establishing its policy, objectives, and targets aimed at the goal of SFM.

4.3 Non-governmental initiatives

Non-governmental organizations are active in developing sets of principles, criteria, and indicators for good forest management. These organizations include forest owners, forest product trade associations, environmental groups, certification bodies, and many others. Internationally, the Forest Stewardship Council (FSC) has developed 10 Principles and associated Criteria for “Well Managed Forests”, upon which more detailed forest assessment

standards, for use at the specific forest area level, are based. At the international and national levels, forest industry trade associations have developed “Codes of Practice” to guide the management of forests.

Also, the Center for International Forestry Research (CIFOR) evaluates and tests various intergovernmental Criteria & Indicators of SFM and those developed by a variety of organizations. Local citizens and community groups have also developed forest policies and principles addressing the management of forests.

All of the above non-governmental initiatives provide valuable information about the views of interested parties that forestry organizations can use in the development of their environmental policy, objectives, and targets. These initiatives are referenced in more detail in annex B.

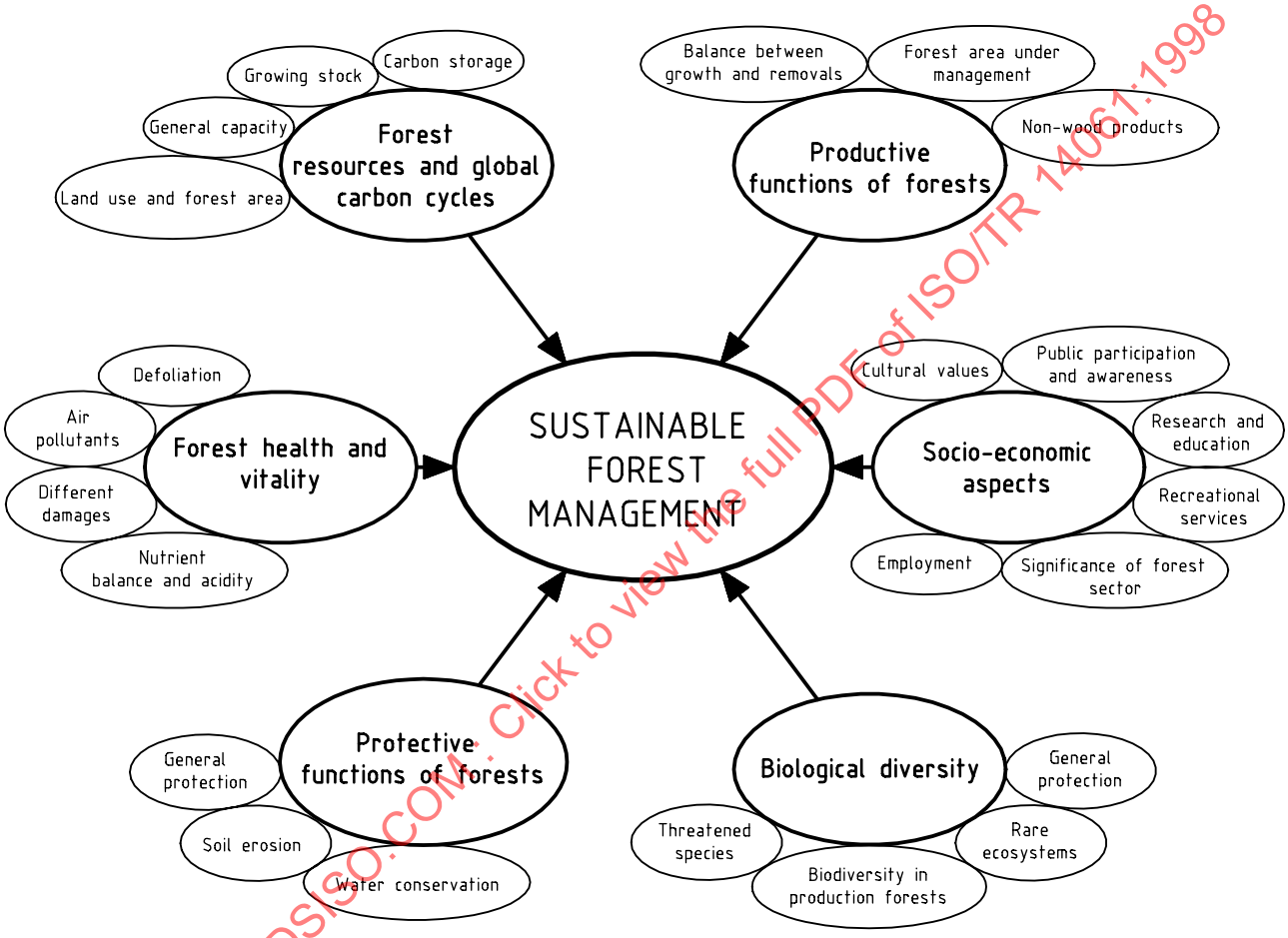

Figure 2 — Pan-European Criteria & Indicators for SFM

5 Relationship between SFM principles, intergovernmental Criteria & Indicators and a forestry organization’s environmental management system

5.1 General

This clause provides information on the relationship between forestry performance measures, including the SFM principles and intergovernmental Criteria & Indicators, and the elements of an ISO 14001-based EMS. Organizations that wish to make a commitment to the goal of SFM can incorporate principles and intergovernmental Criteria & Indicators (see annex B), appropriate to the scope of the environmental management system, into their policy, objectives and targets.

The SFM principles and intergovernmental Criteria & Indicators do not establish what the performance requirements are for a specific forest, nor how these should be achieved. They are intended to provide a common framework for evaluating a country's progress toward achieving sustainability at the national level. Consequently, they will need to be adapted to local conditions in order to be incorporated into the objectives and targets of an organization's environmental management system. Integration of specific forest management performance criteria into an environmental management system provides a framework within which a forestry organization can improve its forest management towards the goal of SFM.

The basic relationship between forestry principles, intergovernmental Criteria & Indicators and the ISO 14001 EMS requirements is provided in Figure 3. More specific examples of this relationship can be found in annexes D, E, G, H, and I.

The various international sets of SFM principles and intergovernmental Criteria & Indicators focus on the broad differences between climatic regions and forest types as shown in annex B. For example, the Montreal Process Criteria and Indicators deal with temperate and boreal forests, while the Tarapoto Proposal covers the tropical forests of the Amazon basin.

There are other major differences between types of forests which will influence the relevance and appropriate application of intergovernmental Criteria & Indicators of SFM. For example, the intensity of forest management and forest use is a continuum from intensively managed forests, including plantations, at one end of the spectrum to reserved areas at the other. Along this continuum there are many categories of forests which are quite different in their species composition, management objectives, ownership structure, and the goods and services they provide to an expanding world population. As a consequence, the nature and application of criteria and indicators may vary.

The management of these various categories of forests, with the application and achievement of appropriate SFM-related objectives and targets, collectively contributes to the overall goal of sustainable development.

5.2 Scope of an environmental management system applied by a forestry organization

ISO 14001 requires that the scope of any environmental management system be clearly identified (see ISO 14001:1996, clause 1). The forestry sector can be highly complex with many different kinds of operations, business units, and geographic locations. These operations may include activities associated with silviculture, harvesting, wood transportation, and the processing of products. A forestry organization may not control or have influence over all of these operations, and will therefore need to specify which of them it intends to include within the scope of its environmental management system.

This Technical Report describes reference material pertaining specifically to a forestry organization's resource management operations. These may involve: silviculture, harvesting of trees, road construction, wildlife habitat management, biodiversity management, and tourism and recreation needs.

Forestry organizations have varying levels of control over forest lands from which their products originate. In some cases, organizations may own and thus have direct control over their own lands and how they are managed. In other cases, a forestry organization may share the use of a forest area with one or more other activities, such as mining, oil extraction, agriculture, hydroelectric generation, or the harvest of non-timber forest products. The needs and rights of those other users may have to be considered within the scope of the organization's management system. Other organizations may have shared responsibility for lands that may be under management contract or agreements. Still other organizations purchase wood on the open market and have little knowledge of the origins of the raw material. In any case, organizations need to meet their own objectives and targets, while communicating their relevant procedures and requirements to their suppliers and contractors.

The following are examples of activities and operations where a forest organization's environmental management system might impact on other parties:

a) the assessment of wood procurement systems to identify suppliers and contractors with which to communicate;

b) the implementation of communication programs involving environmental education and training;

c) the promotion of policy objectives with suppliers and contractors.

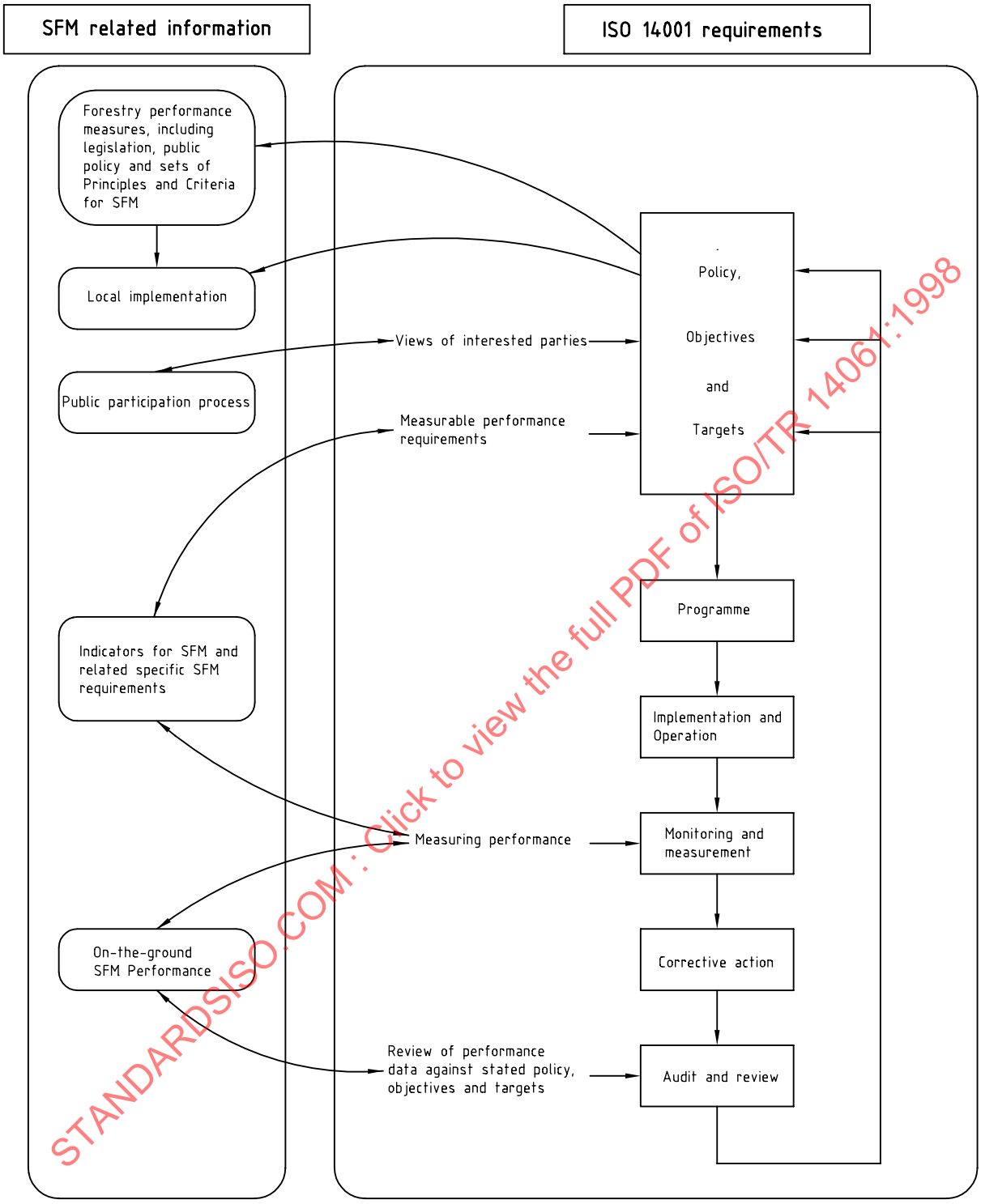

Figure 3 — Application of SFM principles and intergovernmental Criteria & Indicators in the framework of ISO 14001

NOTE Figure 3 illustrates the possible links between the management system approach of ISO 14001 and the range of forest management policy material, including SFM Principles, Criteria & Indicators that a forestry organization can consider.

The right-hand box shows the basic elements of ISO 14001.

The left-hand box shows some important elements related to the concept of SFM. The arrows show possible relationships between these SFM elements and ISO 14001 EMS elements and related requirements. The possible links between the two boxes are explained in clause 5.

ISO 14001 provides the flexibility for an organization to define the scope of its environmental management system and it can choose to implement the standard for the entire organization or for a specific operating unit. Organizations desiring more information on the scope of their environmental management system should refer to ISO 14001:1996, clause 1 and annex A.

5.3 Policy

ISO 14001 requires that an organization's environmental policy include commitments to comply with relevant environmental legislation and regulations and other requirements to which the organization subscribes, as well as to continual improvement and prevention of pollution (ISO 14001:1996, 4.2).

Annex B lists the various policy documents which have been developed since the UNCED meeting in Rio de Janeiro in 1992. These include non-binding Forest Principles and various international, governmental and non-governmental sets of SFM principles, criteria and indicators. These sets of intergovernmental Criteria & Indicators can be further refined at the national and specific forest area level and be included in legislation, voluntary codes of practice and other non-governmental organization (NGO) standards.

As a result, information from the initiatives referenced in annex B can be incorporated into the organization's ISO 14001 EMS policy, objectives and targets in the following ways:

a) as part of the commitment to comply with legislation;

b) as part of the commitment to comply with other requirements that are subscribed to;

c) as a result of consideration of the views of interested parties.

5.4 Planning

5.4.1 General

Planning relates to the following EMS elements: environmental aspects, legal and other requirements, objectives and targets, and environmental management programs (ISO 14001:1996, 4.3).

5.4.2 Environmental aspects

ISO 14001 requires that an organization identify the environmental aspects of its activities, products and services, in order to determine those which have, or can have, a significant impact on the environment, whether adverse or beneficial. These significant aspects must be considered when setting the environmental objectives and control procedures of the organization. Environmental aspects outside an organization's control and influence are excluded from the scope of the EMS (ISO 14001:1996, 4.3.1)

Some examples of potentially significant environmental aspects and related impacts specific to forest organizations include:

a) harvesting — changes in extent of forest, species composition, and wildlife habitat;

b) site preparation — changes in soil conditions and soil conservation;

c) road construction — changes in water flows, fish habitat, drainage structures;

d) reforestation — changes in species composition and genetic diversity.

Annex B contains a number of references that can help a forestry organization identify its environmental aspects that can have a significant impact on the environment.

5.4.3 Legal and other requirements

ISO 14001 requires an organization to identify and have access to all relevant legal and other requirements to which it subscribes (ISO 14001:1996, 4.3.2).

The scope and complexity of laws, regulatory requirements, permits, and government policy for forest management will vary from country to country. Typical requirements relate to the following matters:

a) water, soil, and air quality;

b) fish and wildlife and their habitat;

c) rare plant and animal species;

d) forest fire;

e) pests and disease;

f) heritage sites;

g) appropriate use of chemicals.

5.4.4 Environmental objectives and targets

ISO 14001 requires an organization to establish and maintain environmental objectives and targets that are consistent with its environmental policy and take into account the significant environmental aspects of the organization's operations (see Figure 4). When establishing and reviewing its objectives and targets, an organization shall consider its legal and other requirements, significant environmental aspects, technological options, financial, operational, and business requirements, and the views of interested parties (ISO 14001:1996, 4.3.3).

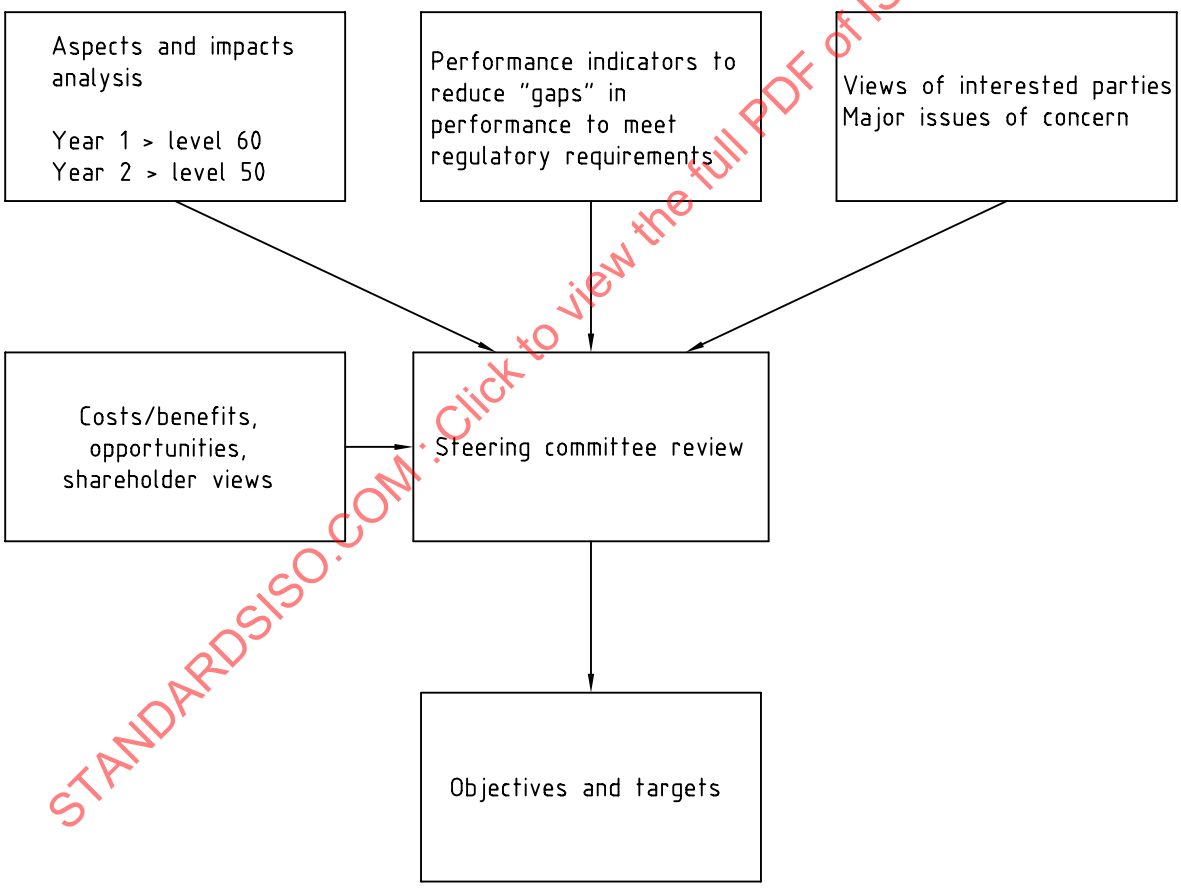

Figure 4 — Criteria used to set objectives and targets

ISO 14001 defines environmental targets as detailed performance requirements, quantified where practicable, that need to be established and attained in order to achieve the environmental objectives. These environmental targets also can be based on externally developed principles, criteria and appropriate indicators that are applicable to a specific forest area.

To fully utilize intergovernmental Criteria & Indicators will require commitment from all interested parties. Many of the international dialogues addressing sustainable forestry stress the importance of public participation in establishing the local criteria and indicators and performance requirements. Beyond the forest owners and managers themselves, parties interested in SFM can include, but are not limited to: forestry workers, indigenous people, scientists, environmental groups, forest-dependent communities, consumers of forest products, governmental agencies, financial institutions, recreational groups and those living in or near the forest.

5.4.5 Environmental management program

ISO 14001 requires that an organization establish and maintain a programme(s) for achieving its objectives and targets (ISO 14001:1996, 4.3.4).

5.5 Implementation and operation

ISO 14001 requires that an organization employ a number of procedural measures to facilitate the implementation and achievement of its environmental policy, objectives, targets, control procedures and programmes (ISO 14001:1996, 4.4).

5.6 Checking and corrective action

ISO 14001 requires that an organization establish procedures for monitoring and measurement, investigating and handling non-conformance, taking corrective and preventative action, as well as conducting and recording environmental management system audits.

5.6.1 Monitoring and measuring

ISO 14001 requires that an organization regularly monitor and measure the key characteristics of its operations and activities that can have a significant impact on the environment, consistent with the policy objectives and targets of the organization (ISO 14001:1996, 4.5.1). Monitoring and measurement can include measuring performance against SFM indicators and related requirements.

Monitoring and measuring a forestry organization's operations and activities include issues that are specific to natural resource management. Examples include:

a) forests as living, dynamic communities;

b) geographic scale and diverse nature of the forest resource and operations;

c) complexity of the resource to be monitored (e.g., biodiversity, wildlife, forest growth, soils and water quality);

d) extended periods of time, with planning horizons frequently covering periods of more than 50 years;

e) different types and uses of the forest;

f) land ownership and tenure systems.

All of these issues may present challenges to forest organizations in monitoring and measuring its operational performance against defined objectives and targets. In particular, the geographic scale and varying nature of a forestry organization's responsibilities and activities tend to greatly influence the monitoring programme undertaken to demonstrate the actual achievement of objectives and targets.

ISO 14031 (to be published) on Environmental Performance Evaluation (EPE) provides additional assistance which can be useful to forest managers in establishing indicators to evaluate an organization's environmental performance against its defined environmental objectives and targets and other environmental performance criteria. Conformance with ISO 14031 is not a requirement of ISO 14001.

ISO 14031 provides a framework for establishing EPE indicators in three areas: management performance, operation, and the condition of the environment. Forestry organizations implementing ISO 14001 can use indicators

appropriate to their significant environmental aspects in these three areas. They can do so by developing their own indicators or by using indicators already developed as part of the initiatives referenced in annex B.

The following are examples of some indicators which could be used to monitor significant environmental aspects:

a) Management performance indicators:
   - cost (both capital and operational) of activities related to environmental performance;
   - number of sites with wildlife programs and reserves;
   - forecast versus actual changes in forest conditions over varying rotations and planning horizons.

b) Operational performance indicators:
   - total land area used for production purposes;
   - quantity of energy used per unit of product;
   - net annual increment of growth.

c) Environmental condition indicators:
   - specific measures of quality of habitat for designated species in the local area;
   - nesting success for certain species of birds regarded as key indicators of a special habitat;
   - stream turbidity.

These indicators are provided for illustrative purposes only. Neither all aspects nor all indicators are applicable to every forestry organization.

5.6.2 Auditing of the environmental management system

ISO 14001 requires that an organization establish and maintain a procedure for periodically auditing its environmental management system (ISO 14001:1996, 4.5.4). The audit will determine whether the environmental management system conforms to the standard and planned arrangements, is properly implemented and maintained, and is capable of achieving the forest management objectives and targets.

Auditing assesses whether an environmental management system is being adequately implemented by checking whether procedural arrangements are present and being followed. The process of auditing an organization's environmental management system normally includes the examination of samples of the organization's monitoring data to determine whether the environmental management system is achieving progress towards its stated objectives.

ISO 14010, ISO 14011 and ISO 14012 Environmental Auditing Guidelines may provide a useful reference for forestry organizations to assist them with establishing principles, procedures and auditor qualifications applicable to their EMS auditing programmes. However, ISO 14001 does not specify their use.

5.7 Management review

ISO 14001 requires that an organization periodically review the environmental management system to ensure its continuing suitability, adequacy and effectiveness (ISO 14001:1996, 4.6). Therefore, forestry organizations will need to monitor changes in legal requirements, advances in science and technology, and changes in the expectations and views of interested parties as an input to the management review process.

6 Small-scale forest ownerships and operations

Small-scale forest ownerships and operations throughout the world number in the tens of millions. They provide important ecological, economic, and social benefits and are significant sources of wood and other forest values. In some countries they are too small to deal with those aspects of SFM which are only effectively achieved at the landscape level. It is often not possible for them to support the cost of developing, implementing, and auditing their own environmental management system or seeking certification on an individual basis.

The definition of “organization” (ISO 14001:1996, 3.12) accommodates a wide range of types and sizes of forestry operations. In addition, ISO 14001 EMS describes requirements in generic rather than prescriptive terms. It does not describe a single type of environmental management system, the amount of detail that must be addressed, or prescribe the level of documentation that will be required. An organization’s environmental management system should be appropriate to the size and scale of the operation and the nature of its activities.

The owners of small-scale forests can choose to implement ISO 14001 by grouping together to obtain the required efficiencies of scale. The size and configuration of the grouping will be influenced by many factors, for example: administrative boundaries, ecological factors, social organization and land tenure. However, under ISO 14001:1996, 3.12, the organizational unit must be able to demonstrate that it has its own functions and administration.

Examples of approaches to such groupings of small-scale forest ownerships and operations are outlined in annexes G, H, and I.

7 Self-declaration, second-party auditing, and third-party certification of a forestry organization's environmental management system

Self-declaration, second-party auditing, and third-party certification to ISO 14001 are options for a forestry organization to demonstrate that it has implemented an effective environmental management system. A decision on which option is most appropriate depends upon the needs of the organization and its customers. Self-declaration can follow an internal determination of conformance to ISO 14001. Second-party auditing refers to audits carried out by a party that has a contractual relationship with the organization, for example: buyers of forest products, forestry trade associations, or a cooperative of forest owners.

Certification requires an independent third-party audit of the environmental management system. Internal assessment or third-party audit of ISO 14001 can also provide valuable feedback on the operation of the Plan-Do-Check-Act system and can assist in improving the environmental management system over time. Certification by an appropriately accredited third party can lend an added measure of confidence.

A forestry organization needs to be aware that third-party certification of its environmental management system is an ongoing process. Certification bodies carry out surveillance and reassessments at periodic intervals to verify that certified organizations continue to comply with ISO 14001 requirements. Certification will normally be given for a specific period of time.

A forestry organization using ISO 14001 and seeking environmental management system certification should understand the costs involved. Costs are related to the establishment of an environmental management system that complies with all requirements of ISO 14001 as well as the audit and certification procedures. A forestry organization should determine how it intends to use ISO 14001 (i.e., improving environmental management, communication with interested parties, motivation of employees, improvement in contracted services, etc.). This will help the organization determine whether self-declaration, second-party audit, or independent certification is most appropriate.

8 Communication

The content of appropriate communication and claims that can be made on the basis of an ISO 14001 EMS certification is addressed by the ISO brochure, *Publicizing your ISO 9000 or ISO 14000 Certification* (see annex A.5).

Additional information and direction is provided by national accreditation bodies, and national consumer protection laws and regulations. Consistent with the above references, organizations should be careful not to make inappropriate or unsupported claims based on certification of their ISO 14001 EMS.

In addition, forestry organizations may wish to externally communicate their environmental performance. The environmental performance evaluation process described in ISO 14031 provides information to which an organization can refer in developing an environmental report or other communications with external audiences.

Annex A
(informative)

Outline of referenced ISO 14000 series of standards and related documents

A.1 ISO 14010:1996, *Guidelines for environmental auditing — General principles*

A.1.1 Excerpt from the Introduction

Environmental auditing has established itself as a valuable instrument to verify and help improve environmental performance.

This International Standard is intended to guide organizations, auditors and their clients on the general principles common to the conduct of environmental audits. It provides definitions of environmental audit and related terms, and the general principles of environmental auditing.

A.1.2 Scope

This International Standard provides the general principles of environmental auditing that are applicable to all types of environmental audits.

A.2 ISO 14011:1996, *Guidelines for environmental auditing — Audit procedures — Auditing of environmental management systems*

A.2.1 Excerpt from the Introduction

This International Standard provides procedures for the conduct of environmental management system audits. It is applicable to all types and sizes of organizations operating an environmental management system.

A.2.2 Scope

This International Standard establishes audit procedures that provide for the planning and conduct of an audit of an environmental management system to determine conformance with environmental management system audit criteria.

A.3 ISO 14012:1996, *Guidelines for environmental auditing — Qualification criteria for environmental auditors*

A.3.1 Excerpt from the Introduction

The aim of this International Standard is to provide guidance on qualification criteria for environmental auditors. Internal auditors need the same set of competencies as external auditors but may not meet in all respects the detailed criteria described in this International Standard, depending upon such factors as

— the size, nature, complexity and environmental impacts of the organization;

— the rate of development of the relevant expertise and experience within the organization.

A.3.2 Scope

This International Standard provides guidance on qualification criteria for environmental auditors and lead auditors and is applicable to both internal and external auditors. Criteria for the selection and composition of audit teams are not included. Reference is made to ISO 14011 for information on these subjects.

A.4 ISO/DIS 14031 — *Environmental performance evaluation*

A.4.1 Excerpt from the Introduction

Environmental performance evaluation (EPE) is an internal process and management tool designed to provide management with reliable and verifiable information on an ongoing basis to determine whether an organization's environmental performance is meeting the criteria set by the management of the organization.

An organization with an environmental management system in place can evaluate its environmental performance against its environmental policy, objectives, targets and other environmental performance criteria. An organization without an environmental management system can use EPE to assist in identifying its environmental aspects, determining which aspects it will treat as significant, setting criteria for its environmental performance, and evaluating its environmental performance against these criteria.

EPE and environmental audits help the management of an organization to assess the status of its environmental performance and identify areas for improvement as needed. EPE is an ongoing process of collection and assessment of data and information to provide a current evaluation of performance as well as trends over time.

A.4.2 Scope

This International Standard gives guidance on the design and use of environmental performance evaluation within an organization. All organizations, regardless of type, size, location and complexity, can use this International Standard. This International Standard does not establish environmental performance levels. It is not intended for use as a specification standard for certification or registration purposes or for the establishment of any other environmental management system conformance requirements.

A.5 *Publicizing Your ISO 9000 or ISO 14000 Certification*

Businesses and other organizations which have invested time, energy and money to obtain an ISO 14000 certification understandably wish to publicize their achievement. The ISO Brochure *Publicizing Your ISO 9000 or ISO 14000 Certification*, published in 1997, is intended to help ISO 14000 certificate holders avoid the pitfalls of false, misleading or confusing claims in advertisements, promotional material, including videos, and other means of letting the market know that they operate an environmental management system assessed and certified to ISO 14001.

A few important reminders include: ISO does not assess or audit environmental management systems to confirm that they conform to ISO 14001; ISO does not issue ISO 14000 certificates; ISO does not carry out approval of ISO 14000 certificates, which are issued by certification (registration) bodies independently of ISO. ISO 14001 is not a label signifying a "green" or "environmentally friendly" product. No product label, advertisement or other promotional material should give the impression that a product is "ISO-certified" or "ISO 14001 registered."

Document available from:

ISO Central Secretariat
1, rue de Varembé
Case postale 56
CH-1211 Geneva 20
Switzerland

National standards bodies.

Annex B
(informative)

Examples of technical references to SFM

B.1 General

The references provided in annex B make specific contributions to the development of information on SFM. This annex is not definitive. SFM references are constantly evolving.

Forestry organizations can obtain copies of relevant documents as information sources to assist in identifying the critical environmental issues that forest management affects and has the potential to influence. Only published documents have been listed.

B.2 International Conventions

a) Convention on Biological Diversity (1992)

b) Convention to Combat Desertification

c) Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973)

d) United Nations Framework Convention on Climate Change

e) Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar), 1971

f) Convention for the Protection of the World Cultural and Natural Heritage

g) Convention on Migratory Species (The Bonn Convention)

B.3 Intergovernmental Processes

a) **United Nations Conference on Environment and Development (UNCED)**

The UNCED in June 1992 resulted in multilateral agreement by over 100 countries on three documents that outline a set of values and objectives for the sustainability of the world's forests, including:

1) the Rio Declaration on Environment and Development;

2) Agenda 21 containing three chapters relevant to forestry in the areas of Combating Deforestation, Integrated Approach to Planning and Management of Land Resources, and Conservation of Biological Diversity; and;

3) a Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests.

b) **Intergovernmental Panel on Forests (IPF)**

The Intergovernmental Panel on Forests was established in 1995 by the Commission on Sustainable Development (CSD) as a follow-up to UNCED to provide a global forum to consider issues requiring international action to implement Agenda 21 and the UNCED Forestry Principles.

c) **Intergovernmental Forum on Forests (IFF)**

The 1997 UN General Assembly Special Session (UNGASS) was specifically devoted to assessing progress in fulfilling UNCED and Agenda 21 commitments five years after the event. There was UN agreement to continue the IPF process through a new Intergovernmental Forum on Forests (IFF), which will specifically address unresolved issues, the possibility of legal instruments, oversee implementation of the IPF recommendations, and monitor and report on country progress. IFF will report in the year 2000.

Relevant document:

The Report of the Ad Hoc Intergovernmental Panel on Forests on its Fourth Session. 11-21 February 1997. CSD. E/CN. 17/1997/12.

Document available from:

Secretariat of the United Nations Intergovernment Forum on Forests
2 United Nations Plaza, 12th Floor
New York, NY 10017, USA
United Nations Department of Economic and Social Affairs
Home URL: http://www.un.org./dpcsd

Table B.1 — Summary of intergovernmental processes for Criteria & Indicators of SFM Initiatives and countries involved

Initiative	Countries	C & I Level(s)
ITTO (May 1992) International Tropical Timber Organization	**Listing of producer countries:** AFRICA: Cameroon, Central African Republic, Democratic Republic of Congo, Republic of Congo, Côte d'Ivoire, Gabon, Ghana, Liberia and Togo. ASIA-PACIFIC: Cambodia, India, Indonesia, Malaysia, Myanmar, Papua - New-Guinea, Philippines, Fiji and Thailand. LATIN AMERICA: Bolivia, Brazil, Colombia, Ecuador, Guyana, Honduras, Panama, Peru and Venezuela.	* National * Forest management unit level.
PAN-EUROPEAN (Helsinki) PROCESS (June 1994) The Follow-up process of the Second Ministerial Conference on the Protection of Forests in Europe (Helsinki, 1993)	Signatories of the Helsinki Resolutions H1 and H2: Austria, Belarus, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom and the European Union. In addition, Albania has reported on activities related to the Helsinki Resolutions	* National level

Initiative	Countries	C & I Level(s)
MONTREAL PROCESS (February 1995) The non-European Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests	Argentina, Australia, Canada, Chile, China, Japan, the Republic of Korea, Mexico, New Zealand, Russia, Uruguay and the USA.	* National level
TARAPOTO PROCESS (February 1995) The non-European Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests	Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela	* National level * Management unit level * Services at global level
DRY-ZONE AFRICA (November 1995) UNEP/FAO Expert Meeting on Criteria and Indicators for Sustainable Forest Management in Dry-Zone Africa	Angola, Botswana, Burkina Faso, Cape Verde, Chad, Djibouti, Eritrea, Ethiopia, the Gambia, Guinea Bissau, Kenya, Lesotho, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Senegal, Somalia, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe	* National level
NORTH AFRICA AND THE NEAR EAST (October 1996) FAO/UNEP Expert Meeting on Criteria and Indicators for Sustainable Forest Management in North Africa and the Near East	Afghanistan, Cyprus, Egypt, Ethiopia, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Pakistan, Quatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, Turkey, United Arab Emirates and Yemen (countries of the FAO/Near East Forestry Commission)	* National level
CENTRAL AMERICA (January 1997) Central American Process of Lepaterique FAO/CCAD Expert Meeting on Criteria and Indicators for Sustainable Forest Management in Central America	Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama.	* Regional * National level
AFRICAN TIMBER ORGANIZATION (1996)	Angola, Cameroon, Central African Republic, Democratic Republic of Congo, Congo, Ivory Coast, Gabon, Ghana, Equatorial Guinea, Liberia, Nigeria, Sao Tome and Principe and Tanzania.	

Acronyms

CCAD Central American Commission for Environment and Development

FAO United Nations Food and Agriculture Organization

UNEP United Nations Environmental Programme

NOTE Table B.2 below has been built in such a way that the Pan-European C & I are listed in their proper numerical order, and the C & I of other initiatives are categorized according to the themes as they appeared in the Pan-European set. This approach may not fully take into consideration all the specific characteristics and conditions of the other initiatives. Furthermore, it should be noted that some elements of sustainable forest management that are addressed in the national level indicators in the Helsinki, Montreal, Dry-Zone Africa and Near East initiatives, may be addressed in the regional/global services or forest management unit level indicators in the other initiatives (ITTO, Tarapoto and Lepaterique).

Table B.2 — Summary of intergovernmental criteria for Sustainable Forest Management

IPF	ATO	ITTO	Helsinki	Montréal	Tarapoto	Dry-Zone Africa	Near East	Central America
Extent of forest resources	C1: Areas devoted to forestry activities or the permanent forest estate are not declining. C2A: Sustainable timber production (in quantity and quality) is guaranteed. C2B: Sustainable production of non-timber forest products is ensured.	C 1: The forest resource base	C 1: Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles	C 1: Conservation of biological diversity C 2: Maintenance of productive capacity of forest ecosystems C 5: Maintenance of forest contribution to global carbon cycles	C 3: Sustainable forest production C 4: Conservation of forest cover and biological diversity	C 1: Maintenance and improvement of forest resources, including their contribution to global carbon cycles C 4: Maintenance and enhancement of production functions of forests and other wooded lands	C 1: Extent of forest resources	C 2: Forest cover C 4: Contribution of forest ecosystems to environmental services
Health & vitality	C1: Areas devoted to forestry activities or the permanent forest estate are not declining. C3: the main ecological functions of the forest are maintained.	Under the forest management unit criterion: The conservation of flora and fauna	C 2: Maintenance of forest ecosystem health and vitality	C 3: Maintenance of forest ecosystem health and vitality	C 4: Conservation of forest cover and biological diversity	C 3: Maintenance of forest ecosystem health, vitality and integrity	C 3: Health, vitality and integrity	C 3: Forest health and vitality
Productive functions	C2A: Sustainable timber production (in quantity and quality) is guaranteed. C2B: Sustainable production of non-timber forest products is ensured.	C 2: The continuity of flow	C 3: Maintenance and encouragement of productive functions of forests (wood and non-wood)	C 2: Maintenance of productive capacity of forest ecosystems	C 1: Socio-economic benefits C 3: Sustainable forest production	C 4: Maintenance and enhancement of production functions of forests and other wooded lands	C 4: Productive capacity and functions	C 6: Productive functions of forest ecosystems
Biological diversity	C3/2: Light demanding (pioneer) species do not form dense stands within the forest.	Under the Forest Management Unit criterion: The conservation of flora and fauna *ITTO has "Guidelines" for biodiversity	C 4: Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems	C 1: Conservation of biological diversity	C 4: Conservation of forest cover and biological diversity	C 2: Conservation and enhancement of biological diversity in forest ecosystems	C 2: Conservation of biological diversity in forest areas	C 5: Biological diversity in forest ecosystems
Protective and environmental functions	C3/3: The function of water filtration (protection of water and soils) of the forest is maintained.	C 3: The level of environmental control	C 5: Maintenance and appropriate enhancement of protective functions in for-est manage-ment (notably soil and water)	C 4: Conservation and maintenance of soil and water resources	C 5: Conservation and integrated management of water and soil resources	C 5: Maintenance and improvement of protective functions in forest management	C 5: Protective and environmental functions	C 4: Contribution of forest ecosystems to environmental services
Developmental & social needs	C4: The rights and duties of all stakeholders should be clearly defined, perceived and accepted by all.	C 4: Socio-economic effects	C 6: Maintenance of other socio-economic functions and conditions	C 6: Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies	C 1: Socio-economic benefits C 3: Sustainable forest production	C 6: Maintenance and enhancement of socio-economic benefits	C 6: Maintenance and development of socio-economic functions and conditions	C 8: Maintenance and enhance-ment of multiple socio-economic and cultural benefits of forest ecosystem to meet the needs of all levels of society C 4: see above

IPF	ATO	ITTO	Helsinki	Montréal	Tarapoto	Dry-Zone Africa	Near East	Central America
Legal, Policy & Institutional Frameworks	C0: (general policy) Sustainability of the forest and its multiple functions is a high political priority.	C 5: Institutional frameworks	The descriptive indicators of the Pan-European (Helsinki) Process: - Legal / regulatory framework - Institutional framework - Financial instruments / economic incentives - Informational means	C 7: Legal, institutional and economic framework for forest conservation and sustainable management	C 1: Socio-economic benefits C 2: Policies and legal-institutional framework for sustainable management of the forests C 7: Institutional capacity to promote sustainable development in Amazonia C 6: Science and technology for the sustainable development of forests	C 7: Adequacy of legal, institutional and policy frameworks for sustainable forest management C 6: see above	C 7: The legal and institutional frameworks	C 1: Existence of a legal, political, institutional, technical and socio-economic framework which promotes and guarantees sustainable forest management and conservation of the resources C 7: Scientific and technological capacities for the development of the forest resource C 8: (see above)

NOTE Sources:

African Timber Organization. 1996. Initiatives on criteria and indicators for sustainable forest management in Africa.

European List of Criteria and Most Suitable Quantitative Indicators. Adopted by the First Expert Level Follow-Up Meeting of the Helsinki Conference. Geneva, Switzerland, 24 June 1994. Liaison Unit. Ministry of Agriculture and Forestry, Helsinki. Finland.

FAO/UNEP Expert Meeting on Criteria and Indicators for Sustainable Forest Management for the Near East. Cairo, Egypt. 15-17 October 1996.

FAO/CCAD Expert Meeting on Criteria and Indicators for Sustainable Forest Management in Central America. Tegucigalpa, Honduras. 20-24 January 1997.

Intergovernmental Seminar on Criteria and Indicators for Sustainable Forest Management. Background Document. Report 1. 1996. Ministry of Agriculture and Forestry, Helsinki, Finland. 131 pages.

ITTO. 1992. Criteria for the Measurement of Sustainable Tropical Forest Management. ITTO Policy Development Series 3. Yokohama, Japan.

"Santiago Declaration". 1995. Statement on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests. Santiago, Chile, 3 February 1995.

Tarapoto Proposal. 1995. Proposal of Criteria and Indicators for Sustainability of the Amazon Forest. Results of the Regional Workshop on the Definition of Criteria and Indicators for Sustainability of Amazonian Forests. Tarapoto, Peru, 25 February 1995. Pro Tempore Secretariat, Amazon Cooperation Treaty. Lima, Peru.

UNEP/FAO Expert Meeting on Criteria and Indicators for Sustainable Forest Management in Dry-Zone Africa. Nairobi, Kenya, 21-24 November 1995.

B.4 Intergovernmental Criteria & Indicator processes

a) **African Timber Organization**

The African Timber Organization (ATO) was formed in 1976 to provide a forum for the development of forest management and trade policies for its 13 members countries. The 1996 ATO initiative on Criteria & Indicators includes 7 principles, each supported by Criteria & Indicators for SFM.

Relevant document:

African Timber Organization. 1996. Initiatives on criteria and indicators for sustainable forest management in Africa.

Document available from:

African Timber Organization
B.P. 1077
Libreville, Gabon

b) **Central American Process of Lepaterique**

The 7 participating countries of the Central American Process of Lepaterique, organized by Central American Commission on Environment and Development (CCAD), have developed a set of 4 criteria and 40 indicators for use at the regional level and 8 criteria and 52 indicators for use at the national level.

Relevant document:

FAO/OCCAD Expert Meeting on Criteria and Indicators for Sustainable Forest Management in Central America.

Document available from:

Forestry Department Food and Agriculture Organization (FAO)
Via delle Terme di Caracalla
00100 Rome, Italy

c) **Dry Zone Africa**

The Dry-Zone Africa Initiative was launched by FAO/UNEP in 1995 and includes the sub-Saharan dry-zone African countries. Some 7 criteria and 47 indicators for monitoring SFM at the national level were developed.

Relevant documents:

UNEP/FAO Expert Meeting on Criteria and Indicators for Sustainable Forest Management in Dry-Zone Africa .Nairobi, Kenya, 21-24 November 1995.

FAO/African Forestry and Wildlife Commission. 10th Session. Sanbonani, South Africa, 27 November - 1 December 1995.

Documents available from:

Forestry Department Food and Agriculture Organization (FAO)
Via delle Terme di Caracalla
00100 Rome, Italy

d) **International Tropical Timber Organization**

Prior to UNCED, in May 1992, the International Tropical Organization (ITTO) had adopted 5 criteria and 27 example indicators for use at the national level and 6 criteria and 23 example indicatory for the forest management unit level as a basis for determining and demonstrating SFM. ITTO has set the year 2000 as the target date for sustainable management of all tropical forests.

Relevant documents:

ITTO. 1992. Criteria for the Measurement of Sustainable Tropical Forest Management. ITTO Policy Development Series 3. Yokohama, Japan.

ITTO. 1992. Guidelines for the Sustainable Management of Natural Tropical Forests. ITTO Policy Development Series 1. Yokohama, Japan.

ITTO. 1993. Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests. ITTO Policy Development Series 4. Yokohama, Japan.

ITTO. 1993. Guidelines on the Conservation of Biological Diversity in Tropical Production Forests. ITTO Policy Development Series 5. Yokohama, Japon.

ITTO. 1995. Review of Experiences Gained in Applying the Criteria and Indicators for and Measurement of Sustainable Tropical Forest Management. Report by the Executive Director. Eighteenth Session of the ITTO. Accra, Ghana. 10-18 May 1995.

Documents available from:

International Tropical Timber Organization
International Organizations Centre, 5th Floor
Pacifico-Yokohama 1-1-1 Minato Mirai
Nishi-Ku Yokohama 220 Japan

e) **Montreal Process**

The Montreal Process consists of the Non-European Working Group on Criteria & Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests. The 12 participating countries have endorsed 7 criteria and 67 indicators for the conservation and sustainable management of temperate and boreal through the Santiago Declaration.

Relevant documents:

"Santiago Declaration". 1995. Statement on Criteria & Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests. Santiago, Chile, 3 February 1995.

Progress Report. The Montreal Process. 1997. Liaison Office of the Montreal Process. Canadian Forest Service. Natural Resources Canada, Ottawa, Canada.

f) **North Africa and Near East**

In October 1996 the FAO organized an expert meeting on Criteria & Indicators for the representatives of Near East Countries. Its results were later reported to the Near East Forestry Commission which in principle endorsed the Criteria & Indicators preliminarily identified by the expert meeting.

Relevant documents:

FAO/UNEP Expert Meeting on Criteria and Indicators for Sustainable Forest Management for the Near East. Cairo, Egypt. 15-17 October 1996.

FAO/Near East Forestry Commission. 12th Session. Cairo, Egypt, 21-24 October 1996.

Documents available from:

Forestry Department, Food and Agriculture Organization (FAO)
Via delle Terme di Caracalla
00100 Rome, Italy

g) **Pan-European (Helsinki) Process**

The Pan-European (Helsinki) Process is the name for the follow up of the second Ministeria Conference on the Protection of Forests held in Helsinki, Finland in June, 1993. During the conference, several resolutions addressing SFM and biological diversity were signed by 39 European Countries and the European Union. Agreement has been achieved on 6 criteria and 27 indicators for SFM as the national level. In June, 1995 descriptive indicators were added describing policy instruments for implementing SFM.

Relevant documents:

European List of Criteria and Most Suitable Quantitative Indicators. Adopted by the First Expert Level Follow-Up Meeting of the Helsinki Conference. Geneva, Switzerland, 24 June 1994. Liaison Unit. Ministry of Agriculutre and Forestry, Helsinki, Finland.

Interim Report on the Follow-up of the Second Ministerial Conference. 1995. Ministerial Conference on the Protection of Forests in Europe, June 1993, Helsinki. Liaison Unit. Ministry of Agriculture and Forestry, Helsinki, Finland.

Progress report. Ministerial Conference on the Protection of Forests in Europe. 1996. Liaison Unit. Ministry of Agriculture, Rural Development and Fisheries, Lisbon, Portugal.

Documents available from:

Ministry of Agriculture and Forestry
P.O. Box 232
FIN 00171-Helsinki, Finland

Liaison Unit. Ministry of Agriculture, Rural Development and Fisheries. Lisbon, Portugal.

h) **Tarapoto Proposal**

The Tarapoto Proposal was launched in 1995 by the Amazonian Cooperation Treaty representing 8 Amazonian Basin countries. The proposal includes 12 criteria and 77 indicators organized into three categories at the national, management unit, and global levels.

Relevant documents:

Regional Workshop on the Definition of Criteria and Indicators for Sustainability of Amazonian Forests, Final Document. Tarapoto, Peru, 25 February 1995. Ministry of Foreign Affairs of Peru, Pro Tempore Secretariat, Amazon Cooperation Treaty.

Tarapoto Proposal. 1995. Proposal of Criteria and Indicators for Sustainability of the Amazon Forest. Results of the Regional Workshop on the Definition of Criteria and Indicators for Sustainability of Amazonian Forests. Tarapoto, Peru, 25 February 1995. Pro Tempore Secretariat, Amazon Cooperation Treaty. Lima, Peru.

Documents available from:

Secretaria Pro-Tempore del Tratado de Cooperación Amazonica
Ministerio de Relaciones Exteriores
Caracas, República de Venezuela

B.5 International non-governmental organizations and initiatives

a) **Center for International Forestry Research (CIFOR)**

CIFOR evaluates and tests various criteria and indicators of SFM. reports are then published to help organizations select appropriate indicators to measure progress toward sustainability.

Relevant document:

CIFOR — Testing Criteria and Indicators for the Sustainable Management of Forests. Phase 1. Final Report. CIFOR Special Publication, Bogor, Indonesia.

Document available from:

CIFOR
P.O. Box 6596 JKPWB
Djakarta 10065, Indonesia

b) **Forest Stewardship Council (FSC)**

The FSC is an international organization that provides a system for standard setting, accreditation of forest management certifiers and harmonization of forest certification and tracking the chain of custory, resulting in the labelling of wood products. FSC has developed a set of principles and criteria integrating both management system and on-the-ground performance components, upon which more specific national and regional certification standards are subsequently based. There are several certifying bodies accredited by FSC.

Relevant documents:

FSC A.C. Statutes, ratified September 1994, editorial revision, October, 1996. FSC document 1.1 Oaxaca.

Principles and Criteria for Forest Stewardship, Revised March, 1996, edited October, 1996. FSC document 1.2, Oaxaca.

FSC Protocol for Endorsing National Initiatives, August 1995. FSC document 4.1, Oaxaca.

FSC Accreditation Programme. FSC Accreditation Manual by M.G. Wenban-Smith, T.J. Synnott and J.R. Palmer. First Edition, 2nd proof, January, 1997. FSC document 3.1, Oaxaca.

Using the FSC Logo. Regulations and Guidelines for its Application. Volume 1, April 1997. Published by the FSC AC in association with the FSC accredited certification bodies.

Documents available from:

Forest Stewardship Council, A.C.
Avenida Hidalgo 502
68000 Oaxaca
Mexico

c) **Nordic Forest Certification Project**

The Nordic Forest Certification Project has the objective of acquiring more knowledge and understanding about the process of certification, developing suitable for Nordic Countries, and harmonizing the standards for SFM.

Relevant documents (available also in Finnish, German and Swedish):

Nordic Forest Certification. Report No. 1. February 1996. Stockholm, Sweden;

Nordic Forest Certification. Report No. 2. October 1996. Stockholm, Sweden.

Documents available from:

Nordic Forest Certification Project
S-10533 Stockholm, Sweden

d) **World Wide Fund for Nature: Criteria for Forest Quality (WWF)**

WWF has drawn up 4 criteria and 25 specific elements for assessment of the condition of forest ecosystems. They are intended to apply to all types of forests and address “good forest management”.

Relevant document:

Criteria for Forest Quality, by Nigel Dudley. WWF & IUCN. 1997

Document available from:

World Wide Fund for Nature
Avenue du Mont-Blanc
CH-1196 Gland, Switzerland

B.6 Examples of country-level initiatives

Initiatives are under way in many countries. Some of the initiatives are listed below:

a) **Australia**

National Forest Policy Statement:

A New Focus for Australia's Forests (1992).

Forest Practices Related to Wood Production in Native Forests — National Principles (Australian Forestry Council, 1991).

Forest Practices Related to Wood Production in Plantations — National Principles (Standing Committee on Forestry, 1996).

b) **Austria**

A mark of origin has been created by the forestry sector and the relevant wood users for wood and wood products from forests that are managed according to Austrian or other compatible environmental requirements.

Relevant documents:

Statutes and Directions of Timber from Austria Programme; Vergabegrundlagen Wald und Holz in Österreich

Documents available from:

Präsidentenkonferenz der Landwirtschaftskammern Österreichs
Lowelsstrasse 12
A-1014 Vienna, Austria

c) **Brazil**

The Brazilian Association for Standardization (ABNT) is implementing the Brazilian Certification System of forest of origin (CERFLOR) which includes a set of 5 principles and 18 criteria developed for SFM, associated with ISO 14000 series standards.

Relevant documents:

ABNT/CTC-05-A-N3. General Regulation of Certificate of Forest Origin

ABNT/CTC-05-A-N5. Forest Origin Certificate — Principles, Criteria and Indicators for Plantations

Documents available from:

ABNT - Associação Brasileira de Normes Técnicas
Rue 13 de Maio, 23/27° andar
20003-900 Rio de Janeiro RJ Brazil

d) **Canada**

In 1996 the CSA completed the development of management system standards for SFM. These standards are based on ISO 14001 EMS and include a requirement to develop environmental performance targets based on intergovermental Criteria & Indicators for SFM.

Relevant documents:

Canadian Council of Forest Ministers: National Forest Strategy 1992 and 1997

Development of national C & I for SFM based on Montreal Process C & I

CAN/CSA-Z808-96, *A Sustainable Forest Management System: Guidance Document*.

CAN/CSA-Z809-96, *A Sustainable Forest Management System: Specifications Document*.

Documents available from:

Canadian Forest Service
Natural Resources Canada
580 Booth Street
Ottawa, Ontario K1A 0E2 Canada

Canadian Standards Association
178 Rexdale Boulevard
Etobicoke, Ontario M9W 1R3 Canada

e) **Czech Republic**

Relevant documents:

Basic Principles of Forest Policy 1994

Sustainable Forest Management in the Czech Republic 1995

Documents available from:

Ministry of Agriculture of the Czech Republic
Department of Forestry
Teš nov 17
117 05 Praha 1
Czech Republic

f) **Denmark**

In 1994, the Danish parliament adopted a Strategy for Sustainable Forest Management. The core of the strategy consists of 18 national criteria for SFM. The strategy forms the base of the national forest policy. In 1996, the Forest Act was revised to comply with the strategy.

Relevant document:

Strategy for Sustainable Forest Management, issued by the Ministry of the Environment, Denmark, 1994. The document is available in English and Danish.

Document available from:

The National Forest and Nature Agency
Haraldsgade 53
DK-2100 Copenhagen
Denmark

g) **Finland**

Finland is in the process of developing standards and institutional arrangements for certification and labelling. The purpose is to develop arrangements which

— would be compatible with ISO EMS standards, FSC and possible EU-level requirements,

— consider the national socio-economic and ecological requirements,

— could be integrated into the existing forest management organization and information systems, and

— could draw on both foreign and local certification bodies in implementation.

Relevant documents:

Development of Forest Certification System in Finland. Ministry of Agriculture and Forestry. 1997. Helsinki, Finland.

Proposal for a Certification Scheme for the Sustainable Management of Forests in Finland. Forest Certification Standards Working Group. April 16, 1997. Helsinki, Finland.

National Implementation of Criteria and Indicators for Sustainable Forest Management in Finland. Ministry of Agriculture and Forestry, March 25, 1996, Helsinki, Finland.

Documents available from:

Ministry of Agriculture and Forestry
P.O. Box 232
FIN-00171 Helsinki, Finland

h) **France**

The following actions are underway:

— rewriting the French Forest Act (work in progress), underlining sustainable forest management as main priority;

— national campaign of periodic revision for all “Orientations Régionales Forestières” (regional forest policies) run in 1997-1998;

— national working group for the definition of sustainable forest management in France (in progress);

— national working-group for the definition of the possible French scheme of certification (in progress);

— national definition of criteria of SFM (in progress).

Documents available from:

Conseil supérieur de la forêt et du bois
AFNOR
Tour Europe
92049 Paris La Défense Cedex, France

i) **Germany**

1) The German Forestry Council has introduced a mark of origin: Holz aus nachhaltiger Forstwirtschaft gewachsen in Deutschlands Wäldern (Wood from Sustainable Forestry Grown in German Forests). The main target is to illustrate that wood marketed under this label has been produced sustainably. The mark of origin is based on proven forest legislation and administrative control which ensures the implementation of SFM.

The mark can be used by any forest owner that commits to the legal requirements set out in the relevant forest laws. In addition, documentation at the national level has been prepared showing the compliance of the German forestry situation with the six criteria defined in the Pan-European (Helsinki) Process.

Relevant document:

Position Paper of the German Forestry Council. June 1997.

Document available from:

German Forestry Council
Münstereifeler Straße 19
53359 Rheinbach, Germany

2) The Initiative to Promote Sustainable Forest Management (IFW) is a successor organization of the Initiative Tropenwald (ITW) which was founded in 1992 from the umbrella organizations of the german timber trade, timber processing industry and timber worker unions. The task of IFW was to elaborate a practical system for certification and labelling in the forestry sector. IFW completed its work in early 1997 and the IFW is now working as a trademark association, which labels timber and timber products with its own trademark “pro silva”.

The IFW has a double function as a service agency:

— for traders and processors in Germany or Europe, which will be provided with simpler and cheaper access to certified timber, and

— for certifiers, who will gain access to the Central European market without having to make large investments in their own monitoring organizations.

The IFW supports efforts towards the establishment of a unified, internationally recognized accreditation body. It is keeping all options open. In the introductory phase the supporting organizations have relied on FSC-accredited certifiers.

Relevant documents:

IFW statutes

various IFW publications

Documents available from

Initiative zur Förderung nachhaltiger Waldbewirtschaftung (IFW)
Am Köllnischen Park 2
D-10179 Berlin, Germany

j) **Ghana**

A national working group led by the Government in 1996 has developed a draft certification standard, National Standard for Quality Forest Management, including both systems and performance standards.

Relevant document:

A System for Quality Management for Ghanian Forests. Draft. Ghana Standards Board

Document available from:

Ghana Standards Board (GSB)
P.O. Box M245
Accra, Ghana

k) **Hungary**

The Hungarian forest sector is ready to analyse possibilities for the certification of forest management and forest products on the basis of Pan-European (Helsinki) Criteria & Indicators. Hungarian forestry organizations are also ready to analyse the application of the ISO 14000 standards.

Relevant documents:

Act LIII of 1995 on the general rules of the environmental protection;

Act LIII of 1996 on the conservation of nature;

Act LIV of 1996 on forests and the protection of forests;

Act LV of 1996 on the game protection, game management and hunting.

Documents available from:

Ministry of Agriculture, Forestry Office
Kossuth L. tér 11
Budapest, Hungary H-1055

l) **Indonesia**

Indonesia has been developing a comprehensive National Certification and Labelling System since 1993. The scheme will be run by an independent body, the National Eco-labelling Institute, LEI (Lembaga Ekolabel Indonesia). It will be the governing body, recognizing assessor companies, reviewing assessment reports and issuing certificates.

A working group has been preparing elements for the establishment of a national forest management certification and labelling scheme. The group has developed a draft standard.

Relevant document:

Indonesian Eco-label Institute Certification Scheme of Sustainable Forest Management Practices, by Adiwoso Suprapto. 1996.

Document available from:

Lembaga Ekolabel Indonesia
Gedung Patra Jasa Lantai, Kamar 1H
Jl. Jend Gatot Subroto
KAV 32 - 34
Jakarta 12950, Indonesia

CIFOR
P.O. Box 6596 JKPWB
Jakarta 10065, Indonesia

m) **Malaysia**

Malaysia Criteria & Indicators are ITTO-based with improvements in the environmental and biodiversity indicators.

Relevant document:

Criteria, Indicators and Activities for Sustainable Forest Management, Malaysia (MC&I)

Document available from:

Committee on Sustainable Forest Management
Malaysia Ministry of Primary Industries, Malaysia
6-8th Floor, Menara Dayabumi
Jalan Sultan Hishamuddin
50654 Kuala Lumpur
Malaysia

n) **Netherlands**

The Stichting Keurhout — Netherlands Hallmark System organization operates a hallmarking system for wood originating from sustainably managed forests to provide clients/consumers with clear information about the origin of wood. Keurhout does not certify forest management and chain-of-custody itself, but instead, determines whether certificates of origin and sustainable production satisfy the requirements of Keurhout.

Relevant document:

The Keurhout Verification procedure, October 1997, Keurhout, Weesp, Netherlands.

Document available from:

Stichting Keurhout
Van Houten Industrie Park 11
1381 MZ Weesp
The Netherlands

o) **New Zealand**

The New Zealand Forest Owners, environmental and recreation organizations have agreed on a “Forestry Accord” and a set of principles for the sustainable management of plantation forestry in New Zealand.

Relevant documents:

Forest Accord

Principles for Sustainable Management of Forestry

Documents available from:

New Zealand Forest Owners Association
P.O. Box 1208
Wellington, New Zealand

p) **Norway**

The Living Forest project for SFM is a broadly based project running the process for sustainable forestry in Norway. All groups participate in the project, including forest owners, forest industry, government, trade unions, consumers, recreational, environmental and women's organizations.

Documents presenting possible standards for SFM are prepared, based on results from test areas and research projects. The documents describe the current situation and possible performance levels for the future, including analyses of consequences to the economy, ecology, and social interests and suitability for practical management. Negotiations about performance level will take place during spring 1998. As part of the project work a separate Certification Committee is preparing their recommendations on how to organize certification, based on these standards, dealing with either ISO or FSC, or a combination of these systems. The recommendation is to be finished by July 1998.

Relevant documents:

Living Forests, The road to sustainable forestry, brochure 1997.

Living Forests test area at Brøttum. Guidelines for forest management, brochure January 1996.

Status for the work with criteria and documentation-systems, Report No. 2, June 1996.

Documents available from:

Living Forests
Box 1438 Vika
N-0115 Oslo, Norway

q) **Portugal**

The “Iberian Declaration on the Principles for Sustainable Forest Management,” was signed by 33 forestry associations and institutions in Portugal and Spain in the beginning of 1997. Under the auspices of the National Council for Quality, a document was proposed for approval by several forest owner's associations, forest industries and forest institutions, concerning “Good Practices for Sustainable Forestry in Portugal”.

Relevant documents:

Iberian Declaration on the Principles for Sustainable Forest Management, Lisbon/Madrid 1997.

Negras de Boa Practice para Uma Condita Forestall Sustentive em Portugal - Versa E.

Documents available from:

Conselho Nacional da Qualidade
Comissao Sectorial 08/Grupo de Trabalho 02
Floresta
Lisbon, Portugal

r) **South Africa**

The document below is a practical guideline to best management practices in forestry, covering matters such as silvicultural practices (site preparation, residue disposal, species selection, planting restrictions, control of weeds and pests and visual impacts), roads, fire protection and management, harvesting (planning, felling, extraction), environmental impact assessments, management of natural areas, wildlife management, recreational facilities and information and education. The guidelines were formally adopted by the Forestry Council of South Africa and have voluntarily been adopted by the majority of timber producing organizations, cooperatives and associations/unions.

Relevant document:

Guidelines for Environmental Conservation Management in Commercial Forests in South Africa

Document available from:

Forest Industry Environmental Committee
Forest Owners Association
P.O. Box 1553
2128 Rivonia, Republic of South Africa

s) **Sweden**

A proposed standard from an FSC Working Group where forest enterprises were represented by large forest companies was endorsed by the Board of FSC in January 1998. This performance level standard is now being used by large forestry companies in combination with ISO 14001 and/or EMAS which all companies are implementing.

The private forest owners are developing criteria and indicators within their forest owners associations. These performance level standards will also be used in combination with ISO 14001 and/or EMAS.

Criteria and indicators for family forests are being developed in different forest owners associations.

Relevant documents:

Preliminary Criteria for Environmental Certification of Swedish Forestry

Richer Forest Program

Documents available from:

The Swedish Forest Industries Association
Box 5518
11485 Stockholm, Sweden

The Swedish Federation of Forest Owners
10533 Stockholm, Sweden

t) **Switzerland**

In October 1997, the Swiss Forest and Timber Organizations conference adopted a National Forest and Wood Certification System for the certification of organizations and of wood products (based on ISO 14001 and ISO 14020).

Relevant documents:

Richtlinie (Wald- und Holzzertifizierung)

Grundlagenbericht zur Richtlinie

Documents available from:

Waldwirtschaft-Verband Schweiz
Solothurn, Switzerland

u) **United Kingdom**

1) The Forest Industry Council of Great Britain (FICGB) has developed the FICGB Woodmark, a timber tracking scheme. The FICGB Woodmark is a registered certification trade mark which indicates that the wood product bearing the label is derived from British grown timber. The operation of the FICGB Woodmark is independently audited to ensure compliance with the rules of the scheme.

Information available from:

The Forestry Industry Council of Great Britain
Stirling Business Centre
Wellgreen, Stirling FK8 2DZ
UK

2) The signatories to The UK Forestry Accord share common aims for the future management and development of forestry in the United Kingdom. It is intended to establish a consensus about the future values and directions for UK forestry and to forge a wide-ranging partnership for developing the accord.

Information available from:

The Institute of Chartered Foresters
7A St. Colme Street
Edinburgh, EH3 6AA
UK

3) The UK forestry standard is the “The Government's Approach to Sustainable Forestry” which was published in January 1998.

Relevant documents:

The Government's Approach to Sustainable Forestry

Sustainable forestry - The UK Programme 1995.

Documents available from:

Forestry Practice
Forestry Commission
231 Corstorphine Road
Edinburgh EH127 7AT
UK

v) **USA**

1) Members of the American Forest & Paper Association have committed to the Sustainable Forestry Initiative (SFI[SM]) which contains a set of principles and implementation guidelines for sustainable forest management. The objective is to achieve a broader practice of sustainable forestry throughout the United States.

Relevant documents:

Sustainable Forestry Initiative; Principles and Implementation Guidelines

Reforestation: Growing Tomorrow's Forest Today

Best Management Practices to Protect Water Quality

Sustainable Forestry for Tomorrow's World: 2nd Annual Report

Forestry Aesthetics Guide: Image and Opportunity

Documents available from:

American Forest and Paper Association
Sustainable Forestry Initiative
1111 19th St. NW, Suite 800
Washington, D.C. 20036
USA

2) The American Tree Farm System was created in 1941 to educate, encourage and recognize private forest landowners who are committed to the sustainable production of timber under a multiple-use approach. Today, there are nearly 70 000 certified nonindustrial private landholdings that total 25 million acres. A volunteer corps of 9 000 foresters and other natural resource professionals lend their expertise in forest management, and undertake initial certification visits and regular five yearly inspections.

Information available from:

The American Forest Foundation
1111 19th St. NW, Suite 780
Washington, D.C. 20036
USA

3) The National Forestry Association, in cooperation with the National Woodland Owners Association and professional foresters, has developed a forest management certification system under the name: “Green-

Tag Forestry". The objective of the programme is to offer forest landowners the opportunity to have their forestry operations inspected and certified by a professionally trained forester.

Information available from:

National Forestry Association
374 Maple Ave. East, Suite 310
Vienna, Virginia 22180
USA

w) **Zimbabwe**

The Timber Producers' Federation has developed practical guidelines covering all aspects of plantation forests. The guidelines, which are endorsed by natural resources and environmental organizations, have been adopted by timber producers as a self-regulating instrument for environmental management in plantation forests.

Relevant document:

Guidelines for Environmental Conservation Management in Plantation Forests in Zimbabwe

Document available from:

Timber Producers' Federation
PO Box 1736
Mutare, Zimbabwe

Annex C
(informative)

Introduction to case studies

Several forestry organizations and interested parties around the world have begun to accumulate practical experience in developing an ISO 14001 EMS, and in identifying and incorporating SFM principles and intergovernmental Criteria & Indicators into their EMS. The accounts of their experiences given in annexes D to I have been provided by the forestry organizations concerned. The inclusion of these accounts is informative and in no way implies that the approaches described are models that should be followed by others, or that they make the best or most effective use of ISO 14001. The case studies illustrate the variety of approaches that have been taken so far to the implementation of ISO 14001 by forestry organizations.

Annex D
(informative)

Brazilian case study — Implementation of an ISO 14001 EMS in a eucalyptus plantation

D.1 Background

This case study deals with a pulp and paper manufacturer based in the south of the state of Bahia in Brazil. The company began production in March 1992 and currently produces approximately 500 000 tonnes of cellulose and 210 000 tonnes of paper on an annual basis.

To maintain this production, the mill requires 2 200 000 m^3 of wood per year which is provided by short-rotation eucalyptus plantations belonging to, and managed by, the company which is self-sufficient in wood supply.

In February 1995 the organization was certified to ISO 9002 and BS 7750. In September 1996 it became the first forestry company in the world to be certified to ISO 14001.

In November 1996 a Forest Management Certification Pre-Assessment was carried out against the FSC Principles and Criteria, with no major non-conformities found.

The company manages 115 000 ha of which 112 000 ha is owned by the company and 3 639 ha is rented. Approximately 58 % of the area (66 715 ha) is planted with eucalyptus. A further 36 % (41 232 ha), mainly situated along rivers, is under native vegetation. The remaining 6 % (7 748 ha) is infrastructure including 7 360 km of roads.

The area is very flat and located from 6 m to 60 m above sea level. The soils are mainly podzolic and the climate is tropical. Rainfall is about 1 200 mm per annum, falling during 150 rainy days. Mean temperature is 26 °C.

The trees are grown on a 7-year rotation, at the end of which they are either coppiced or replanted. Planting is done using minimum cultivation techniques. Single lines are ripped into the soil to a depth of approximately 60 cm and the seedlings planted in these strips. Silviculture involves weed control after planting and the control of ants and other pests.

D.2 Environmental policy

The organization published an environmental policy in national Brazilian newspapers with an invitation for comment. There are monthly steering committee meetings with directors on quality, environmental and social issues, as a mechanism to review and update the policy. A quality policy was also developed.

Because the organization subscribed to the ICC Business Charter for Sustainable Development, the policy includes a commitment to comply with the requirements of ISO14001:1996, 4.2 c).

Environmental Policy

Our commitment is to operate our business based on the concept of sustainable development [ISO 14001 item 4.2 c)] and supported by the following principles:

Recognition that the environment is one of our priorities;

Contributing so that mankind may act in an environmentally responsible fashion;

Continual improvement of processes, products and services for constant environmental enhancement and the prevention of pollution [ISO 14001 item 4.2 b) cross-reference ICC/1991, principle 3];

Compliance with environmental legislation [ISO 14001 item 4.2 c) cross-reference ICC/1991, principle 16].

The Environmental Management System encompasses industrial production including all stages of manufacturing pulp and paper, as well as the area of forestry.

The objectives and targets of the organization are updated annually and published in an official publication of the company, available for consultation by interested parties in the areas of Communication and Quality Assurance [ISO 14001 item 4.2 d)].

D.3 Regulatory framework

The company developed a register of legislation and regulations which is kept up to date by the company's legal officer who gets information about laws from government gazettes and periodic summaries (ISO 14001:1996, 4.3.2)

Reference copies of all important laws are kept on file. Meetings are held twice per month to give notice of new laws together with an analysis of their applicability. For new laws an internal communication is produced jointly by the company lawyer and the planning manager which translates the law into language familiar to foresters. A report on legal compliance is produced every three months. (ISO 14001:1996, 4.5.1, ICC/1991 principle 16, FSC principle 1)

The company has legal tenure to all the land it owns and rents. There are not, and never were, indigenous people living in the area occupied by the plantations. (FSC principles 2 and 3)

Conversion of the remaining natural forest within the company's plantation area is prohibited by law. The company is only planting on areas which were already planted with eucalyptus or which were in pasture.

D.4 Environmental aspects and impacts

The organization developed criteria to evaluate impacts on the environment related to its environmental aspects. General guidance on such criteria is given in 4.2.2 of ISO 14004:1996.

Each environment aspect is evaluated by using a so-called Significance Index. This index is calculated by considering the factors in tables D.1 and D.2.

Table D.1 indicates the **magnitude of the impact**, consisting of the **frequency** (low, medium, high) of its occurrence and the **severity** (low, medium, high).

Table D.2 indicates the **importance of the impact**, consisting of the **intensity** and the **extent** of the impact. The impacts associated with each aspect must be measured. However, in forestry the accuracy of such measurements

is sometimes rather low (e.g. water evaporation, cycle of nutrients); in such cases the professional judgement of specialists could be used to evaluate the intensity factor.

Significance factors such as:

a) whether or not legal or regulatory requirements exist for the impact that is considered;

b) whether or not other requirements that the organization subscribes to exist for the impact that is considered;

c) whether or not the impact is related to the organization's policy commitments;

d) the views of interested parties (determined in workshops);

e) whether or not the impact is related to the organization's strategy on the short/medium or long term.

For each of these factors, numerical values on a relative scale have been established. The calculated **Significance Index** results in an overall relative score for each environmental aspect:

$$I_S = [(f \cdot sev) + (in \cdot ext)]\ (a_1 + a_2 + a_3 + a_4 + a_5)$$

where

I_S is the Significance Index;

f is the frequency factor;

sev is the severity factor;

in is the intensity factor;

ext is the extent factor;

a is a significance factor.

Table D.1 — Magnitude of the impact

Frequency	Scale
Low	< 2 occurrences per year
Medium	Other
High	Continual or 1 occurrence per week
Severity	**Scale**
Low	Changes reversible immediately
Medium	Changes reversible in the medium/long term
High	Changes not reversible

Table D.2 — Importance of the impact

Intensity	Scale
Low	5 % of emissions based on mass flow analysis
Medium	20 % - 75 % of emissions based on mass flow analysis
High	> 75 % of emissions based on mass flow analysis
Extent	**Scale**
Low	Confined within companies bounds or local
Medium	Regional
High	Global

In the table below two examples of the calculation of the Significance Index are given:

Table D.3 — Examples of calculation of Significance Index

Calculation factors	Example 1	Example 2
Environmental aspect	Water usage in nursery	Harvester/Forwarder machines in harvesting
Potential impact	Depletion of natural resources	Soil compaction
Frequency factor	3 (continual use of water)	3 (trucks in continual moving)
Severity	2 (reversible at long term)	2 (reversible at medium term)
Magnitude	$3 \times 2 = 6$	$3 \times 2 = 6$
Intensity	2 (medium)	1 (low)
Extent factor	2 (regional)	2 (regional)
Importance	$2 \times 2 = 4$	$1 \times 2 = 2$
a_1 (legal requirements)	1,3 (covered by law)	1,3 (covered by law)
a_2 (other requirements)	0,8 (covered by other req.)	0 (not covered)
a_3 (policy)	1,3 (covered by policy)	0 (not covered)
a_4 (views of interested parties)	0,6 (found in workshop)	1,3 (found in workshop)
a_5 (strategy)	1,0 (part of short term strategy)	0,5 (part of medium term strategy)
Overall Significance Index	**50**	**28,4**

NOTE 1 Maximum Significance Index is 100.

NOTE 2 The maximum sum for the factors a_1, a_2, a_3, a_4, a_5 is 5,56. The factors have been weighted by the judgement of our specialists and may vary from company to company. For some factors, however, only a yes or no response is possible. For example, the legal requirements score 1,3 if there is applicable legislation and 0 if it is not covered by legislation. On the other hand, the factor views of interested parties is weighted subjectively depending on the judgement of specialists, and may vary from 0 to 1,3.

D.5 Environmental performance

The identification, evaluation and registration of the environmental aspects served as a basis for the definition of our performance indicators and the related measurement methods. The company classified the selected indicators as operational, tactical and strategic.

a) **Operational indicators:** Indicators that represent the behaviour or impact of atmospheric emissions, water discharges and the disposal of solid residues.

b) **Tactical indicator:** Indicators that have a preventive character and that support the tools for environmental control, such as evaluation of environmental responsibilities and commitments of suppliers.

c) **Strategic indicators:** Indicators that contribute to the improvement of environmental performance in a planned and systematic way (social actions, projects and new technologies).

EXAMPLES

a) Volume of irrigation water used at the nursery per number of produced plants:
1995: 14,341 m^3 1996: 12,741 m^3 Target 1997: 8,501 m^3

b) Eucalyptus: average area burned by accident
1995: 7,94 ha 1996: 7,11 ha Target 1997: Maximum 7,0 ha

c) Management training of contracted companies in environmental aspects and impacts
1995: 97,3 % 1996: 100,0 % Target 1997: 100 %

The performance indicators, the significant environmental aspects and the views of interested parties are major inputs to set the objectives and targets (see figure 4), which are critically reviewed on a yearly basis.

The objectives and targets and related indicators are published after each revision in a national newspaper (FSC principle 8).

Table D.4 — Criteria used to set objectives and targets

Criteria used to set objectives and targets
Performance indicators to improve lack of performance or to achieve regulations View of interested parties: major issues of concern Aspects and impacts analysis year 1 > level 60 year 2 > level 50
Steering Committee review
Costs/benefits, opportunities, shareholder views
Objectives and Targets

D.6 Biodiversity

One of the most critical issues related to the organization's environmental aspects is the concern of interested parties about monoculture and biodiversity. The company established as one of its objectives to start studies into genetic preservation of plants, animals and microorganisms in its various aspects, such as:

a) improvement of the variability of the available genetics;

b) *in situ* preservation;

c) promotion of the use of the species in an ecologically sustainable way; and

d) inhabitant characterization.

The Phytosociological and Faunal Surveys were both carried out in two parts of the Atlantic Forest covering an area of approximately 100 ha each, which are part of the 41 000 ha considered as preservation area, or about 35 % of 115 000 ha owned or managed by the company.

As part of the target for 1995, eight visits to the areas were made and 261 species of birds were scientifically registered through visual and audio contact. Some of them are endemic to the Atlantic Forest, such as the “jacu” (*Penelope obscura*), the “cabure” (*Glacidium minutissimum*) and the “papagaio-chau” (*Amazona rhodocorytha*).

In the two parts of the Atlantic Forest that were investigated, 359 arboreal species were found, belonging to 196 classes of 57 botanical families. Among the rare species found: the “ipê-amarelo” (*Tabebuia riodocensis*), the “sapucaia vermelha” (*Lecythis pisonis*), the “cedro-rosa” (*Cedrela odorata*) and the “pequi-vinagreiro” (*Caryocaredule*).

The targets for 1996 as the first step of the Mussununga Project have been achieved: Entomofauna and Phytosociological Surveys.

The Mussununga areas, which represent about 10 % of the Company’s preservation area, are ecosystems characterized by sandy soil and low vegetation (gramineous, epiphyteous, pteridophytas).

Despite its apparent fragility in regards to its floristic composition, the Mussununga are rich in terms of biodiversity. Countless species of insects, birds and small mammals use these areas as their habitat, and we often see beautiful bromelias, heliconias and orchids blooming.

The Mussununga areas, along with the Atlantic Forest type in its several stages of succession, contribute to the maintenance of the ecological balance from the company's area, where the eucalyptus plantations are made in "mosaic". This technique allows the mixture of the permanent reservation and preservation area within the eucalyptus plantation.

D.7 Internal audits

The implementation of the environmental management system is verified by conducting environmental management system audits. In the audit programme of the organization the compliance with the policy, the achievement of objectives and targets, compliance with legal requirements, and the implementation of all environmental management system elements are evaluated with the support of the existing documentation (250 procedures and instructions) by a competent team of auditors that followed an extensive 300 h education training programme.

Main training programmes include the development of personnel skills to perform the audit tasks, major environmental forestry concepts and community concerns, principles of environmental management systems and Quality Systems, audit protocols, inspection and calibration of instruments.

Each audit programme initiates a new cycle that starts with the steering committee's review of the previous cycle. The company invests, on a yearly basis, almost 500 h of auditing, which include the subcontractor's activities and the full range of forestry operations.

Annex E
(informative)

South African case study — Implementation of an ISO 14001 EMS into a plantation forestry company

E.1 Background

This case study deals with a South African-based commercial forestry company that plants fast-growing exotic trees in grasslands. The company currently manages over 400 000 ha of largely pines and gums and a small proportion of Australian acacias.

Between 1987 and 1993, the company developed a number of environmental programmes that were initiated by foresters concerned about that company's environmental performance and image. In 1993 when the environment was incorporated into the company's business plan as a strategic objective, it became clear that a system that allowed the organization to implement successful environmental management through a formal structure, with designated responsibilities, standardized practices and procedures, and the appropriate resources, was necessary.

Thus in 1995, in accordance with its vision to be a growing, world-class timber supply company, the organization accepted the implementation of the draft (at that stage) International Standard for environmental management systems, viz. ISO 14001.

E.2 What is an environmental management system?

Management systems are developed and implemented for the purpose of accomplishing the environmental objectives set out in a company's polices or strategies.

E.3 Getting started

E.3.1 Environmental aspects and impacts

The organization adopted three approaches to identify its activities, products and services which could have an impact on the environment.

E.3.1.1 Internal review

A team with skills representative of the activities, products and services of the company was formed to critically analyse the environmental aspects and impacts of these activities, products and services. Some of the more significant aspects and impacts identified were:

a) reduction in grasslands by replacing them with an exotic forest, with implications for conservation of biodiversity;

b) reduction in mean annual runoff, resulting in low river flows;

c) a changed landscape (grasslands to exotic trees);

d) invasion by exotic commercial tree species and associated weeds into neighbours' lands;

e) soil compaction resulting from the use of heavy harvesting machinery;

f) effects of the use of biocides, herbicides and fertilizer on quality of water in the rivers;

g) effects of roads on silt load in rivers;

h) effects on job creation on local communities;

i) effects on arable land (replacing monoculture food crops with monoculture timber crops); and

j) sustainable production of timber on the same site.

E.3.1.2 Legal review

The requirement of ISO 14001 for compliance with the law is very explicit. In order to ensure timely response to rapidly changing environmental legislation in South Africa, the organization selected a reputable law firm with a dedicated environmental law unit to determine the organization's compliance with applicable environmental law. A total of 26 acts or ordinances were identified, the more important ones being:

a) Forest Act (commercial forestry requires a permit to plant trees because of adverse impacts on stream flow);

b) Conservation of Agricultural Resources Act (commercial forestry requires authority to break virgin ground or plant on steep slopes);

c) Environment Conservation Act (waste disposal in villages requires a permit for a registered waste disposal site);

d) National Roads Act (use of heavy timber transport trucks may cause damage to a national road); and

e) Occupational Health and Safety Act (for application of fertilizers, herbicides, biocides, transportation, storage and use of hazardous chemicals, felling, debarking, extracting, loading, transporting and stacking of timber).

E.3.1.3 External review

When considering the impacts of the organization's operations on the environment, the team identified that one of the gaps in the assessment process was consultation with outside parties to ensure that the process was comprehensive and inclusive. An external environmental contractor was appointed to run a process of public consultation with interested and affected parties. The concerns of these parties had a strong influence on the establishment of the subsequent environmental policy. Clause E.8 lists the external stakeholders consulted.

ISO 14001 requires that an organization ensure that the aspects related to the significant impacts are considered in setting the environmental objectives. Aspects and impacts were therefore quantified in order to determine their degree of significance. Only those aspects and impacts having high and very high significance (as apposed to nil, low and medium significance) were included in the organization's objectives.

E.4 Environmental policy

ISO 14001 defines the environmental policy as the "statement by the organization of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for setting of its environmental objectives and targets". The environmental policy needs to recognize that all activities, products or services can have an impact on the environment. It needs to be proactive and to commit the organization to go beyond requirements. It should not contain statements or targets which the organization cannot hope to achieve.

In taking cognizance of the requirements of ISO 14001 and recognizing that it needs to be implementable, practical and aimed at improving environmental performance, the team produced a draft policy based on the data base of its environmental aspects and impacts. The draft policy was reviewed internally, as well as seeking views from external interested and affected parties. A final policy was approved in March 1997 (see Table E.1).

Each commitment in the policy has been expanded (see Table E.2 for an example), while objectives were set for each of the expanded policies identified in Table E.2 (see Table E.3 for an example).

Table E.1 — Case study example of an environmental policy

FOREST ENVIRONMENTAL POLICY

We will be a world leader in managing our tree farms on a sustainable basis.

1. We will comply with applicable legal requirements and with ISO 14001 — the International Standard for environmental management systems.
2. We will optimize the use of scarce resources, such as water and land, on a sustainable basis, (see Table E.2).
3. We will manage our social impacts, and encourage social and economic development.
4. We will consult with interested and affected parties.
5. We will monitor and continually improve our environmental performance.
6. We will take preventative action in managing our environmental impacts.
7. We will encourage and expect our suppliers and contractors to comply with environmental standards acceptable to our organization.
8. We will ensure that all employees whose work can have a significant impact on the environment have received appropriate training.

_____
Managing Director

_____
Managing Director

_____
Date

Our organization practices tree farming using introduced species. We do not harvest timber from natural forests.

Table E.2 — Example of a statement in the environmental policy (Table E.1)
(see Table E.3 for Objectives and Targets)

2. We will optimize the use of scarce resources, such as water and land, on a sustainable basis.

POLICY

On the planted lands we will manage our resources on a sustainable basis by **not wasting resources**. This means:

- Optimizing the use of land by maximizing timber yield e.g.:
  - not planting in areas which are not suitable for our trees;
  - producing timber which meets the customer's specifications;
  - complying with relevant best-operating practices.

This will be achieved while at the same time:

- Minimizing the impact of trees on water, e.g.:
  - not planting trees within a specified distance from rivers and wetlands;
  - clearing of alien invasive vegetation from riverine areas;
  - initiating/supporting research into forest hydrology.
- Optimizing the amount of timber removed, e.g.:
  - not leaving marketable timber in the field;
  - monitoring compartment timber yields on an ongoing basis.
- Minimizing soil erosion, e.g.:
  - carrying out road construction and harvesting so as to avoid soil erosion;
  - minimizing the risk of uncontrolled fires;
  - initiating/supporting research into sustainable forest management.
- Promoting the planted lands as habitat for indigenous wildlife that is adapted to forest environments, e.g.:
  - protecting nest sites for raptors;
  - providing corridors of natural vegetation for wildlife;
  - initiating/supporting research on the impacts of tree farming on biodiversity.

In the natural areas we will

- manage our water, soil and biotic diversity;
- restore previously planted or infested riverine areas and wetlands to natural vegetation;
- develop a set of guidelines to cover the management of natural areas.

In both the planted lands and natural areas we recognize that the management of our tree farms for benefits other than fibre, e.g. hiking trails, mushroom-collecting, bee-keeping, thatch grass-harvesting (known as multiple resource use), has been a low priority. In this regard we will:

- develop a set of guidelines governing multiple resources use on our tree farms.

Our organization subscribes to the South African Forestry Industry's Guidelines for Environmental Conservation Management in Commercial Forests in South Africa.

Table E.3 — Objectives and targets for the example set out in Table E.2

2. We will optimize the use of scarce resources, such as water and land, on a sustainable basis. **We will initiate/support research into:** **Forest hydrology** **Sustainable forest management** **The impacts of tree farming on biodiversity**			
Targets	**Target date** (by end of)	**Responsibility**	**Resources**
Forest hydrology: Lectureship in Forest Hydrology	5-year programme: December 2002	Divisional Environmental Manager (DEM)	Department of Agricultural Engineering, University of Natal, Pietermaritzburg
Sustainable forest management: Lectureship in Nutrient Recycling	5-year programme March 2001	DEM	Department of Botany, University of the Witwatersrand, Johannesburg
The impacts of tree farming on biodiversity:			
Forest biodiversity Program	3-year programme December 1999	DEM	Department of Zoology and Entomology, University of Natal, Pietermaritzburg
Black Sparrowhawk Project	1-year programme July 1998	DEM	Percy Fitzpatrick Institute of African Ornithology, University of Cape Town
Forest Raptor Project	4-year programme July 1998	DEM	Endangered Wildlife Trust
Karkloof Blue Butterfly Project	3-year programme February 2000	DEM	Department of Zoology and Entomology, University of Natal, Pietermaritzburg
Other environmental research:			
Impacts of commercial afforestation and other land uses on streamflow in the Mgeni Catchment	Completed October 1994	DEM	Department of Agricultural Engineering, University of Natal, Pietermaritzburg
Patch occupancy dynamics in indigenous forests fragmented by exotic plantations	Completed October 1995	DEM	Department of Zoology and Entomology, University of Natal, Pietermaritzburg
Species-area relationships in small forest patches surrounded by plantations	Completed October 1995	DEM	Department of Zoology and Entomology, University of Natal, Pietermaritzburg
Timber transport options — Environmental economic assessment	Completed February 1995	DEM	Envirobiz Africa

We will develop a set of guidelines to cover the management of natural areas:			
Targets	**Target date** (by end of)	**Responsibility**	**Resources**
Classify all natural areas	December 1997	DEM	
Develop a set of procedures to cover the management of natural areas	December 1997	DEM	Environmental Officer, Natal
We will develop guidelines governing multiple resource use on our tree farms:			
Targets	**Target date** (by end of)	**Responsibility**	**Resources**
Establish an inventory of existing multiple resource use activities including: natural Heritage Sites; cultural and historical sites; Sites of Conservation Significance; mushroom harvesting; cattle/goat grazing; hiking trails; overnight huts; picnic sites; dams; medicinal plant harvesting; bird watching facilities.	Completed May 1997	Regional Environmental Manager/Officer	
Develop a set of guidelines to cover multiple resource use on our tree farms	December 1998	DEM	Required

E.5 Implementation and operation

The first step in the implementation phase was to determine whether an activity (e.g. harvesting, road construction) was covered by an existing procedure that identified and mitigated negative / positive environmental impacts, and whether there was an applicable legal requirement. This is because the ISO 14001 requirement for operational control (4.4.6) requires that the organization identify those operations and activities that are associated with significant environmental aspects and plan those activities to ensure they are carried out in an appropriate fashion by establishing and maintaining documented procedures to cover situations where their absence could lead to deviations from the environmental policy.

From the analysis, it emerged that the organization had 16 manuals, standards, codes of practice, best operating practices, procedures, policies or guidelines that covered environmental aspects and impacts either specifically, directly or indirectly. It was also discovered that many of the environmental impacts were not covered at all by any procedure. For example, the silvicultural code of practice was procedurally correct, but did not adequately address environmental aspects and impacts; the environmental code of practice was detailed but did not satisfy ISO 14001 requirements, e.g. legal compliance, monitoring, corrective action; while environmental aspects associated with impacts on biodiversity were not specifically dealt with.

None of the manuals already held by the company met the standards required by ISO 14001 for either document control or operational control (4.4.5 and 4.4.6 respectively). Champions for all aspects having a significant environmental impact were therefore selected from the team to address the ISO 14001 requirements either by preparing new procedures or referencing/ modifying existing procedures to ensure compliance.

ISO specifies requirements for an environmental management system — it does not specify environmental performance criteria. The organization itself specifies which environmental standards they will meet, with the minimum requirement being the commitment to comply with relevant environmental legislation and regulations and with other requirements to which the organization may subscribe (e.g. Forestry Industry Code of Practice, sustainable forestry management principles and criteria and indicators which the organization may choose as being appropriate to its local environmental, social and economic conditions).

Procedures for all significant aspects were addressed and combined into a number of modules (e.g. harvesting module, road construction module, silvicultural module, etc.). An example detailing the procedure to be followed for the management of a timber depot is given in Table E.4.

The organization undertook a training needs analysis to meet the ISO 14001 requirements that “all personnel whose work may create a significant impact on the environment, have received appropriate training” and be competent in performing such tasks. Failure to meet the ISO 14001 requirements for training has been identified as a major stumbling block for any organization seeking certification to ISO 14001.

Because of the unskilled and semi-skilled nature of many of the personnel involved, training programmes using picture forms were developed by an outside consultancy skilled in training needs for illiterate workers. At a higher level, environmental training becomes a mix of training *per se* or environmental awareness.

E.6 Checking and corrective action

ISO 14001 requires an organization to monitor and measure the key characteristics of its operations and activities that can have a significant impact on the environment. For example, the impact of trees on stream flow can be measured either directly through the construction of a gauging weir, or indirectly through the use of sophisticated hydrological models. Where these key characteristics are unknown, the organization can elect to set objectives and targets within its environmental policy to initiate or support research to determine the key characteristics. For example, the impact of exotic plantation trees on the biodiversity of the indigenous grasslands which they replace is recognized, but there is little information on the key characteristics of these indigenous grasslands that quantitatively expresses a cause and effect relationship of the negative impacts of the trees.

Monitoring and measurement need not necessarily be a complicated procedure. Some environmental aspects can be monitored very simply. For example, was an environmental impact assessment done for a new road? Monitoring the existence of the report during the annual performance audit is simple, and if not completed, then corrective action is implemented.

Table E.4 — Example of Procedure

Harvesting: Management of Depots

1. Environmental aspect of this activity

Logs are stored at depots prior to being loaded onto road trucks or rail trucks. Currently 85 % of all timber harvested is stored at a depot at some stage (road or rail).

2. Purpose of the procedure

To manage the depot in a manner that minimizes the environmental impact on the site.

3. Potential impact

	Significance	**+ or –**	**Impact on**
Depot use may result in:			
untidy piles of timber and debris;	High	–	aesthetic environment
poor/dangerous timber stacks;	High	–	social (safety) environment
disturbance to neighbours if working at night.	High	–	aesthetic (noise) environment

4. Procedure

	Training requirements
The Area Manager must ensure that all new depots include an initial Environment Impact Assessment to be conducted by the regional environmental officer/manager.	AM EM
The Contractors Manager must ensure that (adapted from FESA Harvesting Code of Practice):	
operators and workers have been adequately trained;	CM
only equipment and machinery specifically designed or equipped for stacking is used;	
stacks are on level terrain or suitably supported;	
stacks are of a safe and convenient height;	
drainage routes are kept open;	
debris is removed from the stacking area.	

5. Monitoring and Corrective Action

The forester must check the active depot sites once a month;	
The Contractors Manager must audit a selection of depots during the annual Harvesting Audit;	CM
If the depot is poorly managed, the Contractors Manager must introduce corrective action to comply with this procedure;	CM
The Environmental Manager must audit a selection of depots during the annual Environmental Audit;	EM
If the depot is poorly managed, the Environmental Manager must include corrective action in the Action Plan to comply with the procedure.	

6. Legal requirements

In terms of the Environment Conservation Act, the Minister is empowered to make regulations concerning noise. It is therefore necessary in any area in which depots are managed for the Area Manager to establish whether or not the noise regulations apply and if the noise generated by this activity exceeds any specified maximum levels.	AM

7. Audit marks

Training requirements

7.1 Procedure followed: max. 10

7.2 Negative points for:

no debris removed	2
drainage routes closed	2
stacks untidy and dangerous	2
non-designated machinery and equipment used	4

8. Appendices

Nil.

9. Legal references

Section 25 of the Environment Conservation Act 73 of 1989.

10. Approval register

Role	Designation	Names	Signature	Date
Originator				
Reviewer No. 1				
Reviewer No. 2				
Procedure coordinator				

E.7 Conclusion

The aim of an environmental management system is improved performance over time. This needs to be done in a planned, systematic and well-documented way in order to create an organizational culture that ensures that environmental improvement is firmly embedded at all levels of the organization. Of central importance is commitment (particularly at the top level), a proactive stance and an adaptive approach. The attraction of ISO 14001 is that it can be used by any sized organization that, as a minimum, must meet legal compliance but which can then set objectives and targets appropriate to the scale of its operations. This makes it attainable and more likely to be successful than a prescriptive approach.

E.8 List of external interested and affected parties/organizations consulted

Wildlife and Environment Society of Southern Africa

Endangered Wildlife Fund

Forest Owners Association of South Africa

South African Wattle Growers Union

Association for Rural Advancement

Earthlife Africa

Zululand Environmental Alliance

Land and Agriculture Policy Centre

Avian Demography Unit, University of Cape Town

Botany Department, University of Pretoria

Department of Nature Conservation, Faculty of Forestry, University of Stellenbosch

Afforestation Interest Group, Botanical Society of South Africa

Environmentek, Council for Scientific and Industrial Research

Office of Strategic Forestry Planning, Department of Water Affairs and Forestry

Department of Local Government and Housing, KwaZulu Natal Provincial Administration

Institute for Commercial Forestry Research, University of Natal

Department of Transport, KwaZulu Natal Provincial Administration

Natal Parks Board

National Botanic Institute

Natal Museum

Department of Agriculture and Forestry, KwaZulu Natal Provincial Administration

Natal Agricultural Union (through various local farmer's associations)

South African Timber Growers Association

Organization staff (largely staff involved in manual work)

Neighbouring local communities (not firm's employees)

Annex F
(informative)

Organization of small-scale forest ownerships and operations

There are at least three approaches that some small-scale forest ownerships are using in the development and implementation of an environmental management system including:

a) Forest owners may collectively develop and implement an environmental management system through associations or cooperatives which have their own functions and administration (see Finnish Example, annex G);

b) A public authority may develop an environmental management system for the forest properties within its administrative boundary (see French Example, annex H);

c) Cooperative action among forest owners to develop a model environmental management system which can be implemented by individual forest owners (see Austrian Example, annex I);

An association or cooperative may decide through the association's governing body to establish an environmental management system consistent with the ISO 14001 and make a commitment to implementation. A public authority may base an environmental management system on the legislated framework of public policy, laws and regulations which they administer and implement within their administrative boundaries.

It is understood that sustainable forest management must be practiced at the national, regional and landscape levels. If the forest landscape is comprised of a large number of small properties, the mosaic of their management practices and stands create the forest conditions at the landscape level.

Associations, cooperatives, and public authorities may implement programmes to improve education, training and provide incentives to promote continual improvement of the environmental management system. The environmental management system may also provide a useful tool to improve the performance of individual forest owners, and to strengthen the capabilities of their organization.