


Revised ITTO criteria and indicators for the sustainable management of tropical forests *including reporting format*

ITTO Policy Development Series No 15

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The **International Tropical Timber Organization (ITTO)** is an intergovernmental organization promoting the conservation and sustainable management, use and trade of tropical forest resources. Its 59 members represent more than 75% of the world's tropical forests and 90% of the global tropical timber trade.

This publication is one in a series of internationally agreed policy documents developed by ITTO to promote sustainable forest management and forest conservation. ITTO assists tropical member countries to adapt such policies to local circumstances and to implement them through field projects. In addition, ITTO collects, analyses and disseminates data on the production and trade of tropical timber and funds a range of projects and other action aimed at developing industries at both community and industrial scales. All projects are funded by voluntary contributions, mostly from consuming member countries. Since it became operational in 1987, ITTO has funded more than 700 projects, pre-projects and activities valued at more than US$250 million. The major donors are the governments of Japan, Switzerland and the USA. ITTO contact details can be found on the back cover.

This document is a revised and edited version of International Tropical Timber Council (ITTC) document ITTC (XXXVII)/17, which was reviewed and approved by the ITTC in December 2004. It is available in English, French and Spanish.

Cover photos

FRONT COVER, SECOND FROM RIGHT: A member of the Sargento Lorenz Ashaninka community near Puerto Bermudez in the Central Rainforest Region of Peru. His and other nearby communities are benefiting from an ITTO project (PD 14/98 Rev.1 (F)), which is assisting them to acquire the technical capacity to manage their forest resources in conformity with C&I for sustainable forest management. FRONT COVER, FAR RIGHT: Community and project workers plan an inventory of the community forestry in the Ashaninka community of Belén. This forest comprises more than 7,000 hectares of mostly unlogged forest. Photos: R. Guevara

FRONT COVER, THIRD FROM RIGHT: Young Indonesian foresters learn about ITTO's criteria and indicators as part of ITTO project PD 42/00 Rev.1 (F). Photo: Rukmantara

SPINE: A stream in the Condor mountain range, the focus of two ITTO transboundary conservation projects (PD 3/00 Rev. 2 (F) and PD 2/00 Rev.2 (F)) in Ecuador and Peru. BACK COVER, SECOND FROM LEFT: An insect survey in progress in the Condor range under the ITTO projects. Photos: C. Vega/Conservation International

BACK COVER, THIRD FROM LEFT: School children enjoy a lesson in biodiversity monitoring in the buffer zone of the Kaeng Krachan National Park in Thailand. The Thailand Environment Institute and communities are implementing ITTO Project PD 16/97 there with the aim of improving local livelihoods and protecting and restoring forest adjacent to the national park. Photo: A. Compost/ITTO

BACK COVER, FAR LEFT: Instructors from the Wood Industries Training Centre collect data on small-to-medium-sized enterprises in Kumasi, Ghana, part of ITTO Project PD 13/95 Rev.3 (I). Photo: J. Kiuru

ISBN 4 902045 20 6

Printed on recycled paper

Contents

Acronyms

C&I Criteria and indicators

FAO Food and Agricultural Organization of the United Nations

FMU Forest management unit

GDP Gross domestic product

ITTC International Tropical Timber Council

ITTO International Tropical Timber Organization

IUCN World Conservation Union

MCPFE Ministerial Conference on the Protection of Forests in Europe

PFE Permanent forest estate

Foreword

The International Tropical Timber Organization (ITTO) criteria and indicators (C&I) were originally published in 1992 as *Criteria for the measurement of sustainable tropical forest management*. These were revised in 1998 to take into account the numerous developments in ITTO and internationally that followed the United Nations Conference on Environment and Development in 1992; such developments included the publication of a suite of related policy guidelines by ITTO and the development of parallel C&I processes for temperate and boreal forests. Since 1998 ITTO has embarked on an unprecedented initiative to provide training to the government and private sectors in its producer member countries, through national-level workshops and projects, on the use of the C&I for monitoring, assessing and reporting on forest management, with the overall objective of promoting the wide-scale implementation of sustainable forest management in its tropical member countries. These countries now report to ITTO on the status of their forest management using the C&I via reporting formats (at the national and forest management unit [FMU] levels) developed and approved in 2001. ITTO has also co-sponsored, with the Food and Agricultural Organization of the United Nations (FAO) and others, a series of international expert meetings on C&I to help foster the uptake of C&I at a global level.

In 2003 the International Tropical Timber Council (ITTC), taking into account all of these developments, requested the Executive Director through Decision 4(XXXIV) to convene an expert panel to review the outputs of the national training workshops, the international expert meeting and other relevant fora and to make recommendations to the 36th Session of Council for the revision of the C&I and reporting formats.

This document presents the revised C&I and reporting format that resulted from two meetings of that Expert Panel and subsequent consideration of a draft document by Council. This review and revision of the C&I took note of several recent developments, including the work in progress on ITTO's Status of Tropical Forest Management report, expected to be published in late 2005, which had used a simplified set of indicators to structure country profiles. The review process also paralleled similar developments in the Montreal Process and the Ministerial Conference on the Protection of Forests in Europe (MCPFE) Process (the only other C&I processes that have collected data from countries), which were considering (Montreal) or had already undertaken (MCPFE) reviews and the streamlining of indicators. The review process followed expert meetings on C&I convened by ITTO, FAO and others in Guatemala City (Guatemala) and Cebu City (Philippines) in 2002 and 2004 respectively. Key recommendations of these expert meetings were that countries should start reporting with a streamlined set of indicators for which data were already available, and that a global set of common thematic areas of sustainable forest management closely aligned with the seven ITTO criteria should be adopted.

Finally, the review process took note of the many ITTO producer member countries implementing national C&I sets based on the ITTO framework (many through ITTO projects), including the implementation of the harmonized ATO/ITTO *Principles, criteria and indicators for the sustainable management of African natural tropical forests*. ITTO is aware of the potential impacts of revisions to its C&I, which will need to be incorporated into any national sets based on them. The revised C&I and reporting formats therefore do not include wholesale or wide-ranging changes but attempt to reduce duplication, improve conciseness and enhance clarity.

The overall goal of reviewing ITTO's C&I was to improve their effectiveness as a tool for monitoring, assessment and reporting on forest management in ITTO producer member countries, at both the national and forest management unit levels. I believe that this goal has been achieved and urge all ITTO members to incorporate the revised C&I into their forest management frameworks.

Manoel Sobral Filho
Executive Director

1 Introduction

The ITTO C&I were originally published in 1992 as *Criteria for the measurement of sustainable tropical forest management*. These were revised in 1998 to take into account the numerous developments in ITTO and internationally that followed the United Nations Conference on Environment and Development in 1992; such developments included the publication of a suite of related policy guidelines by ITTO and the development of parallel C&I processes for temperate and boreal forests. Since 1998 ITTO has embarked on an unprecedented initiative to provide training to countries, through national-level workshops and projects, on the use of the C&I for monitoring, assessing and reporting on forest management, with the overall objective of promoting the wide-scale implementation of the C&I in its tropical member countries. These countries now report to ITTO on the status of their forest management using the C&I via reporting formats (at the national and forest management unit [FMU] levels) developed and approved in 2001. ITTO has also co-sponsored, with FAO and others, a series of international expert meetings on C&I to help foster the uptake of C&I at a global level.

In Decision 4(XXXIV) in 2003, the ITTC requested ITTO's Executive Director to convene an expert panel to review the outputs of the national C&I training workshops, the international expert meeting and other relevant fora and to make recommendations to the ITTC for the revision of the ITTO C&I and reporting formats. The ITTC duly considered the report of this expert panel during its 36th Session [document ITTC(XXXVI)/11] in July 2004 and provided additional funds for the panel to reconvene to complete a revised draft of the ITTO C&I and reporting format based on the recommendations contained in document ITTC(XXXVI)/11.

The expert panel reconvened in Arbon, Switzerland, on 5–7 November 2004. This document contains the results of the panel's work, which is a substantial revision of the ITTO C&I. The accompanying reporting format has been simplified and shortened and is incorporated within the revised document. The overall goal of the panel was to enhance the effectiveness of the ITTO C&I as a tool for monitoring, assessing and reporting on forest management in producer member countries.

This document presents an overview of the C&I in Chapter 2 and the revised, comprehensive reporting format in Chapter 3. Boxes provide instructions for reporting on various indicators, and tables are given that can be used to facilitate reporting.

The purpose of criteria and indicators

The purpose of the ITTO C&I is to provide member countries with a tool for monitoring, assessing and reporting changes and trends in forest conditions and management systems at the national and FMU levels. By identifying the main elements of sustainable forest management, the C&I provide a means of assessing progress towards sustainable forest management and the ITTO Objective 2000, which is "to enhance the capacity of members to implement a strategy for achieving exports of tropical timber and timber products from sustainably managed sources".

The information generated through the use of these C&I will help communicate more effectively the status of efforts towards sustainable forest management. It will also assist in developing strategies for sustainable forest management, focusing research efforts where knowledge is still deficient and identifying weaknesses.

When the indicators are made operational, a sound basis will be created for assessing, monitoring and reporting on sustainable forest management. The ITTO C&I should serve as a framework within which each country can develop its own system for determining sustainability at the national and FMU levels.

The ITTO C&I should continue to be reviewed and refined to benefit from experience and to reflect new concepts of sustainable forest management. Revision should take into account evolving knowledge about the functioning of forest ecosystems, human impacts on forests, whether planned or unplanned, and the changing needs of society for forest goods and services. Moreover, the capacity to measure indicators will increase and knowledge will improve about the nature of the 'best' indicators with which to assess, monitor and report on forest management.

Levels of application

This document provides C&I for both the national level and the level at which the forest is managed. While the overall sustainability of a nation's forests depends substantially on actions taken at the national level (such as decisions on the balance of land-use between forestry and other land-uses and, within forestry, between production, conservation and protection), analysis at the FMU level is the key to assessing, monitoring and reporting on sustainable forest management. Analysis at the national level for many indicators is carried out by aggregating the results of FMU-level indicators. The wide variability of size and administrative/ownership structures of FMUs means that the level and nature of aggregation required will vary greatly between countries. It is therefore important that countries provide a clear description of their systems for defining FMUs.

All the criteria are valid at both the national and FMU levels. In the case of the indicators, the level at which an indicator applies is noted with a '✔'; if it does not apply, a '✘' sign is used.

The criteria

A criterion is defined as an aspect of forest management that is considered important and by which sustainable forest management may be assessed. A criterion is accompanied by a set of related indicators and describes a state or situation which should be met to comply with sustainable forest management. This meaning should be reflected in the way criteria are formulated.

This document specifies seven criteria as essential elements of sustainable forest management. Criterion 1, *Enabling conditions for sustainable forest management*, is concerned with the general legal, economic and institutional framework, without which actions included under the other criteria will not succeed. Criteria 2 and 3 on *Extent and condition of forests* and *Forest ecosystem health* respectively, are concerned with the quantity, security and quality of forest resources. The remaining four criteria deal with the various goods and services provided by the forest, including *Forest production, Biological diversity, Soil and water protection* and *Economic, social and cultural aspects*. The order of presentation of the criteria represents a logical sequence but does not indicate priority or relative importance. They correspond closely with a global set of 'common thematic areas' of sustainable forest management that was agreed at ITTO/FAO-sponsored international conferences on C&I in 2002 and 2004. The common thematic areas are:

- extent of forest resources;
- biological diversity;
- forest health and vitality;
- production functions of forest resources;
- protective functions of forest resources;
- socioeconomic functions; and
- legal, policy and institutional framework.

The seven ITTO criteria and their relationship with the common thematic areas are shown schematically in Annex 1.

The indicators

An indicator is defined as a quantitative, qualitative or descriptive attribute that, when measured or monitored periodically, indicates the direction of change in a criterion.

The indicators identify information needed to monitor change, both in the forest itself (outcome indicators) and as part of the environmental and forest management systems used (input and process indicators). If the values of any indicator are placed in a time sequence, they provide information on the direction of change, either towards or away from sustainable forest management. However, the indicators cannot, by themselves, establish whether management is or is not sustainable.

The indicators presented here have been carefully identified and formulated so that a change in any one of them will give information that is both necessary and significant in assessing progress towards sustainable forest management. They have also been defined so that they are clear, practical and easy to monitor, and are based as much as possible on available knowledge and statistics. It should therefore be possible for countries to provide information on many of the indicators.

Countries face a considerable burden in reporting on aspects of forest management to different international organizations. This burden can be eased by ensuring that the data requested by different institutions are as similar as possible. The indicators given here have therefore been chosen so as to be compatible with internationally agreed standards and definitions to the greatest possible extent.

If the indicators are to give an accurate picture of trends, it is important that comparable methods are used between one assessment and the next, and that there is a way of estimating the degree of accuracy of any data presented. Ideally, countries should use the same methods of measurement and assessment over time. However, data collection and analysis techniques are dynamic. In each report, therefore, countries should give a description of the methods used, an estimate of the accuracy of their figures, and any difficulties encountered in their collection.

Terms and definitions

Definitions of the technical terms and concepts used in this document are contained in Annex 2. A clear understanding of many of these terms (eg FMU, permanent forest estate [PFE], sustainable forest management) is essential to the application of these C&I. If the definitions currently used in any reporting country differ from those in Annex 2, the country should give references or quote its own definitions.

2 The criteria and indicators

Criterion 1: Enabling conditions for sustainable forest management

Policy, legal and governance framework

1.1 Existence and implementation of policies, laws and regulations to govern forest management

1.2 Forest tenure and ownership

Economic framework

1.3 Amount of funding in forest management, administration, research and human resource development

1.4 Existence and implementation of economic instruments and other incentives to encourage sustainable forest management

Institutional framework

1.5 Structure and staffing of institutions responsible for sustainable forest management

1.6 Number of professional and technical personnel at all levels to perform and support forest management

1.7 Existence of communication strategies and feedback mechanisms to increase awareness of sustainable forest management

1.8 Existence of, and ability to apply, appropriate technology to practise sustainable forest management and the efficient utilization and marketing of forest products

Planning framework

1.9 Capacity and mechanisms for planning sustainable forest management and for periodic monitoring, evaluation and feedback on progress

1.10 Public participation in forest management planning, decision-making, data collection, monitoring and assessment

1.11 Existence of forest management plans

Criterion 2: Extent and condition of forests

2.1 Extent (area) and percentage of total land area under comprehensive land-use plans

2.2 Extent (area) of forests committed to production and protection

2.3 Extent (area) and percentage of total land area under each forest type

2.4 Percentage of PFE with boundaries physically demarcated

2.5 Changes in forested area

2.6 Forest condition

Criterion 3: Forest ecosystem health

3.1 Extent and nature of forest encroachment, degradation and disturbance caused by humans and the control procedures applied

3.2 Extent and nature of forest degradation and disturbance due to natural causes and the control procedures applied

Criterion 4: Forest production

Resource assessment

4.1 Extent and percentage of forest for which inventory and survey procedures have been used to define the quantity of the main forest products

4.2 Actual and sustainable harvest of wood and non-wood forest products

4.3 Composition of harvest

4.4 Total amount of carbon stored in forest stands

Planning and control procedures

4.5 Existence and implementation of:

(a) forest harvesting/operational plans (within forest management plans); and

(b) other harvesting permits (small-, medium- and large-scale permits without forest management plans)

4.6 Extent of compartments/coupes harvested according to:

(a) harvesting/operational plans; and

(b) any other harvesting/cutting permit

4.7 Existence of a log-tracking system or similar control mechanisms

4.8 Long-term projections, strategies and plans for forest production

4.9 Availability of historical records on the extent, nature and management of forests

Silvicultural and harvesting guidelines

4.10 Availability and implementation of silvicultural guidelines for timber and non-wood forest products

4.11 Availability and implementation of harvesting guidelines for timber and non-wood forest products

4.12 Area over which silvicultural and harvesting guidelines are effectively implemented

Criterion 5: Biological diversity

Ecosystem diversity

5.1 Protected areas containing forests

5.2 Protected areas connected by biological corridors or 'stepping stones'

Species diversity

5.3 Existence and implementation of procedures to identify and protect endangered, rare and threatened species of forest-dependent flora and fauna

5.4 Number of endangered, rare and threatened forest-dependent species

Genetic diversity

5.5 Measures for in situ and/or ex situ conservation of genetic variation within commercial, endangered, rare and threatened species of forest flora and fauna

Procedures for biodiversity conservation in production forests

5.6 Existence and implementation of procedures for the protection and monitoring of biodiversity in production forests by:

(a) retaining undisturbed areas;

(b) protecting rare, threatened and endangered species;

(c) protecting features of special biological interest (eg nesting sites, seed trees, niches, keystone species, etc); and

(d) assessing recent changes in (a), (b) and (c) above through inventories, monitoring/assessment programs and comparison with control areas

5.7 Extent and percentage of production forest that has been set aside for biodiversity conservation

Criterion 6: Soil and water protection

Extent of protection

6.1 Extent and percentage of total forest area managed exclusively for the protection of soil and water

6.2 Procedures to ensure the protection of downstream catchment values

Protective functions in production forests

6.3 Procedures to protect soil productivity and water retention capacity within production forests

6.4 Procedures for forest engineering, including:

(a) drainage requirements;

(b) conservation of buffer strips along streams and rivers;

(c) protection of soils from compaction by harvesting machinery; and

(d) protection of soil from erosion during harvesting operations

6.5 Extent and percentage of areas in production PFE that have been defined as environmentally sensitive (eg very steep or erodible) and protected

Criterion 7: Economic, social and cultural aspects

Socioeconomic aspects

7.1 Value and percentage contribution of the forestry sector to gross domestic product (GDP)

7.2 Value of domestically produced wood, non-wood forest products and environmental services in:

(a) domestic markets;

(b) export markets; and

(c) informal markets including subsistence and illegal activities (estimate)

7.3 Forest products' industry structure and efficiency

7.4 Existence and implementation of mechanisms for the equitable sharing of the costs and benefits of forest management

7.5 Existence and implementation of conflict-resolution mechanisms for resolving disputes between forest stakeholders

7.6 Number of people depending on forests for their livelihoods

7.7 Training, capacity-building and manpower development programs for forest workers

7.8 Existence and implementation of procedures to ensure the health and safety of forest workers

7.9 Area of forests upon which people are dependent for subsistence uses and traditional and customary lifestyles

7.10 Number and extent of forest sites available primarily for:

(a) research and education; and

(b) recreation

Cultural aspects

7.11 Number of important archaeological, cultural and spiritual sites identified and protected

Community and indigenous peoples' rights and participation

7.12 Extent to which tenure and user rights of communities and indigenous peoples over publicly owned forests are recognized and practised

7.13 Extent to which indigenous knowledge is used in forest management planning and implementation

7.14 Extent of involvement of indigenous peoples, local communities and other forest dwellers in forest management capacity-building, consultation processes, decision-making and implementation

3 C&I reporting format

Criterion 1: Enabling conditions for sustainable forest management

This criterion addresses the general institutional requirements that are necessary to make sustainable forest management possible. Most of the related indicators cover the legal, policy and institutional frameworks and are mainly descriptive in nature. Taken together, the information gathered under this criterion indicates the extent of a country's political commitment to sustainable forest management.

<table>
<tr><th colspan="5">Indicators</th><th>National level*</th><th>FMU level*</th></tr>
<tr><td colspan="5">Policy, legal and governance framework
To ensure sustainable forest management it is important that forest resources, especially the PFE, are secured and protected and that they are managed in accordance with best management practices involving all stakeholders, in particular local communities who are dependent on the forest.</td><td></td><td></td></tr>
<tr><td>1.1</td><td colspan="4">Existence and implementation of policies, laws and regulations to govern forest management</td><td rowspan="12">✔</td><td rowspan="12">✘</td></tr>
<tr><td></td><td colspan="4">Table 1: Presence (✔) or absence (✘) of laws, policies and regulations</td></tr>
<tr><td></td><td>Framework governing:</td><td>Policies</td><td>Laws</td><td>Regulations</td></tr>
<tr><td></td><td>(a) national objectives for forest including production, conservation, protection and investment</td><td></td><td></td><td></td></tr>
<tr><td></td><td>(b) establishment and security of the PFE</td><td></td><td></td><td></td></tr>
<tr><td></td><td>(c) forest tenure and property rights in relation to forests</td><td></td><td></td><td></td></tr>
<tr><td></td><td>(d) participation of local communities and other stakeholders in forest management</td><td></td><td></td><td></td></tr>
<tr><td></td><td>(e) control of illegal activities in forest areas</td><td></td><td></td><td></td></tr>
<tr><td></td><td>(f) control of forest management</td><td></td><td></td><td></td></tr>
<tr><td></td><td>(g) health and safety of forest workers</td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="4">• List all relevant laws, policies and regulations.
• For each of the laws, policies and regulations, give a brief description of any sections that are significant in relation to categories (a) through (g).
• List any significant gaps in the coverage of laws, policies and regulations and indicate how it is proposed that these gaps will be filled.
• List any significant changes that have been made to the laws, policies and regulations listed in your last report and give the date of each change.</td></tr>
</table>

* All the criteria are valid at both the national and FMU levels. In the case of the indicators, the level at which an indicator applies is noted with a '✔'; if it does not apply, a '✘' sign is used.

<table>
<tr><th colspan="2">Indicators</th><th>National level</th><th>FMU level</th></tr>
<tr><td>1.2</td><td>Forest tenure and ownership[1]
Table 2: Extent of forest tenure and ownership of forests
<table>
<tr><th>Class</th><th>Category</th><th>Area (ha)</th></tr>
<tr><td rowspan="3">PFE</td><td>Public
- State/federal (incl. concessions)
- Municipalities (incl. concessions)
- Other public</td><td></td></tr>
<tr><td>Private
- Firms, associations
- Individuals, families</td><td></td></tr>
<tr><td>Indigenous communities</td><td></td></tr>
<tr><td rowspan="3">Non-PFE</td><td>Public
- State/federal (incl. concessions)
- Municipalities (incl. concessions)
- Other public</td><td></td></tr>
<tr><td>Private
- Firms, associations
- Individuals, families</td><td></td></tr>
<tr><td>Indigenous communities</td><td></td></tr>
</table>
• Specify tenure and ownership situation according to the country’s laws.</td><td>✔</td><td>✔</td></tr>
<tr><td colspan="2">Economic framework
One of the most important requirements for sustainable forest management to succeed is the availability of financial resources, as well as the provision of incentives and appropriate economic instruments that promote and support sustainable forest management.</td><td></td><td></td></tr>
<tr><td>1.3</td><td>Amount of funding in forest management, administration, research and human resource development
Table 3: Amount of funding for the latest available year
<table>
<tr><th>Source</th><th>Year</th><th>Funding (US$ ’000)</th><th>Comments</th></tr>
<tr><td>Government sources
- National government
- Sub-national government</td><td></td><td></td><td></td></tr>
<tr><td>International development partners
- Grant
- Loan</td><td></td><td></td><td></td></tr>
<tr><td>Private sources
- Domestic
- Foreign</td><td></td><td></td><td></td></tr>
</table>
• Provide the exchange rate if reported in national currency.
• Indicate if funding is annual or multi-year budget.</td><td>✔</td><td>✔</td></tr>
</table>

[1] Annex 5 provides further details of land ownership categories.

<table>
<tr><th colspan="2">Indicators</th><th>National level</th><th>FMU level</th></tr>
<tr><td>1.4</td><td>Existence and implementation of economic instruments and other incentives to encourage sustainable forest management
• Are economic instruments and other incentives being implemented to encourage sustainable forest management?
• If yes, give the name of each economic instrument/incentive, a short description and explanation of how it is used, and the main institution(s) responsible for its implementation.</td><td>✔</td><td>✔</td></tr>
<tr><td colspan="2">Institutional framework
Besides the availability of financial resources, there must be adequate institutions and personnel to undertake sustainable forest management. These include effective implementing agencies, research institutions and appropriately trained personnel to ensure that management is in accordance with scientific and technical knowledge.</td><td></td><td></td></tr>
<tr><td>1.5</td><td>Structure and staffing of institutions responsible for sustainable forest management
Table 4: Institutions responsible for sustainable forest management
<table>
<tr><th>Name</th><th>Nature of responsibilities</th><th>Staff (number)</th><th>Contact (website/email)</th></tr>
<tr><td>Primary ministry in charge</td><td></td><td></td><td></td></tr>
<tr><td>Other institutions</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table></td><td>✔</td><td>✘</td></tr>
<tr><td>1.6</td><td>Number of professional and technical personnel at all levels to perform and support forest management
Table 5: Personnel implementing and supporting forest management
<table>
<tr><th rowspan="2">Category of personnel</th><th colspan="2">Number</th></tr>
<tr><th>Governmental</th><th>Non-governmental</th></tr>
<tr><td>Professionals (university or technical qualification)</td><td></td><td></td></tr>
<tr><td>Trained forest workers, full- and part-time</td><td></td><td></td></tr>
<tr><td>Others</td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td></td></tr>
</table></td><td>✔</td><td>✔</td></tr>
<tr><td>1.7</td><td>Existence of communication strategies and feedback mechanisms to increase awareness of sustainable forest management</td><td>✔</td><td>✔</td></tr>
</table>

<table>
<tr><th colspan="2">Indicators</th><th>National level</th><th>FMU level</th></tr>
<tr><td>1.8</td><td>Existence of, and ability to apply, appropriate technology to practise sustainable forest management and the efficient utilization and marketing of forest products</td><td rowspan="2">✔</td><td rowspan="2">✔</td></tr>
<tr><td></td><td>• Describe any technology (especially forest engineering and harvesting technology) used to enhance sustainable forest management and the effects of using such technology.
• Describe any recent changes in the technology used.
• Are any improvements proposed?
• Are there any constraints to introducing improvements?</td></tr>
<tr><td colspan="2">Planning framework
Adequate planning, the use of proper technologies and effective monitoring and control are essential for achieving sustainable forest management.</td><td></td><td></td></tr>
<tr><td>1.9</td><td>Capacity and mechanisms for planning sustainable forest management and for periodic monitoring, evaluation and feedback on progress</td><td rowspan="2">✔</td><td rowspan="2">✔</td></tr>
<tr><td></td><td>• Describe the mechanisms used for planning sustainable forest management (including periodic monitoring, evaluation and feedback on progress).
• Describe the capacity available and institutions responsible for these purposes.
• List the major constraints encountered in planning.</td></tr>
<tr><td>1.10</td><td>Public participation in forest management planning, decision-making, data collection, monitoring and assessment</td><td rowspan="2">✔</td><td rowspan="2">✔</td></tr>
<tr><td></td><td>• List the institutions responsible for these processes.
• Describe the processes of public participation, indicating the parties involved and their level of involvement.
• Are any improvements proposed and are there constraints for their introduction?</td></tr>
<tr><td>1.11</td><td>Existence of forest management plans</td><td rowspan="3">✔</td><td rowspan="3">✔</td></tr>
<tr><td></td><td>Table 6: Forest management plans
<table>
<tr><th></th><th>PFE</th><th>Non-PFE</th><th>Total</th></tr>
<tr><td>Production forests
- Number of management plans
- Area (ha)</td><td></td><td></td><td></td></tr>
<tr><td>Protected forests
- Number of management plans
- Area (ha)</td><td></td><td></td><td></td></tr>
</table>
• Describe the effectiveness of implementation of forest management plans.
• Are any improvements proposed, and are there constraints to their introduction?</td></tr>
</table>

Criterion 2: Extent and condition of forests

Sustainable forest management is a long-term enterprise and depends critically upon the stability and security of a nation's forest estate. Hence, this criterion lays the basic foundation for sustainable forest management within production and protection forests. It considers the extent and percentage of land under natural and planted forests, the need for the conservation of biological diversity through the maintenance of a range of forest types, and the integrity and condition of forest resources.

<table>
<tr><th colspan="2">Indicators</th><th>National level*</th><th>FMU level*</th></tr>
<tr><td>2.1</td><td>Extent (area) and percentage of total land area under comprehensive land-use plans
• Provide the area (ha) and percentage of total land area under comprehensive land-use plans.</td><td>✔</td><td>✔</td></tr>
<tr><td>2.2</td><td>Extent (area) of forests committed to production and protection
Table 7: Extent (area) of natural and planted forests for production and protection*
<table>
<tr><th></th><th>Production (ha)</th><th>Protection (ha)</th></tr>
<tr><td>Natural forests, total
- PFE
- Non-PFE</td><td></td><td></td></tr>
<tr><td>Planted forests, total
- PFE
- Non- PFE</td><td></td><td></td></tr>
<tr><td>Total
- PFE
- Non-PFE</td><td></td><td></td></tr>
</table>
*Indicate reference year and source</td><td>✔</td><td>✔</td></tr>
<tr><td>2.3</td><td>Extent (area) and percentage of total land area under each forest type
Table 8: Area and percentage of total land area under each forest type
<table>
<tr><th>Forest type</th><th>Total (ha)</th><th>%</th><th>PFE (ha)</th><th>Non-PFE (ha)</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td>100</td><td></td><td></td></tr>
</table>
• Describe the forest type classification used.
• Classifications of forest types based on species composition, if available, are more useful than those based on forest structure.</td><td>✔</td><td>✔</td></tr>
<tr><td>2.4</td><td>Percentage of PFE with boundaries physically demarcated
Table 9: External limits of the PFE
<table>
<tr><th>PFE Class</th><th>Area (ha)</th><th>Percentage demarcated (%)</th><th>Comments on effectiveness of demarcation</th></tr>
<tr><td>Production</td><td></td><td></td><td></td></tr>
<tr><td>Protection</td><td></td><td></td><td></td></tr>
</table></td><td>✔</td><td>✔</td></tr>
</table>

* The level at which an indicator applies is noted with a '✔'; if it does not apply, a '✘' sign is used.

Indicators				National level	FMU level
2.5	Changes in forested area			✔	✔
	Table 10: Changes in forested area				
		PFE (ha)	*Non-PFE (ha)*		
	Area at last reporting (give date)				
	Area formally converted to agriculture				
	Area formally converted to settlements and infrastructural development				
	Area formally converted for other purposes (please specify)				
	Area formally added				
	Area converted illegally (estimate)				
	• Periods for which changes are reported should correspond to reporting intervals. For the first report provide details of corresponding periods for all data.				
2.6	Forest condition			✔	✔
	Table 11: Forest condition				
		PFE (ha)	*Non-PFE (ha)*		
	Area of primary forest				
	Area of managed primary forest				
	Area of degraded primary forest				
	Area of secondary forest				
	Area of degraded forest lands				

Criterion 3: Forest ecosystem health

This criterion relates to the healthy biological functioning of forest ecosystems. This can be affected by a variety of human actions such as encroachment, illegal harvesting, human-induced fire and pollution, grazing, mining, poaching, etc, and by natural phenomena such as fire, insect attacks, diseases, severe winds and rainfall, flooding, drought, etc.

<table>
<tr><th colspan="2">Indicators</th><th>National level*</th><th>FMU level*</th></tr>
<tr><td>3.1</td><td>Extent and nature of forest encroachment, degradation and disturbance caused by humans and the control procedures applied
Table 12: The five human activities most damaging to the PFE and non-PFE
<table>
<tr><th>Five major activities</th><th>Area affected (ha)</th><th>Control procedures</th><th>Area of control (ha)</th><th>Estimated effectiveness</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>
• Indicate institutions responsible for implementing control procedures.
• List constraints in implementing control procedures and any proposed improvements.</td><td>✔</td><td>✔</td></tr>
<tr><td>3.2</td><td>Extent and nature of forest degradation and disturbance due to natural causes and the control procedures applied
Table 13: The five natural causes most damaging to the PFE and non-PFE
<table>
<tr><th>Five major causes</th><th>Area affected (ha)</th><th>Control procedures</th><th>Area of control (ha)</th><th>Estimated effectiveness</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>
• Indicate institutions responsible for implementing control procedures.
• List constraints in implementing control procedures and any proposed improvements.</td><td>✔</td><td>✔</td></tr>
</table>

* The level at which an indicator applies is noted with a '✔'; if it does not apply, a '✘' sign is used.

Criterion 4: Forest production

This criterion is concerned with forest management for the production of wood and non-wood forest products. Such production can only be sustained in the long term if it is economically and financially viable, environmentally sound and socially acceptable.

Forests earmarked for timber production are able to fulfil a number of other important forest functions, such as environmental protection, carbon storage and the conservation of species and ecosystems. These multiple roles of the forest should be safeguarded by the application of sound management practices that maintain the potential of the forest resource to yield the full range of benefits to society.

<table>
<tr><th colspan="9">Indicators</th><th>National level*</th><th>FMU level*</th></tr>
<tr><td colspan="9">Resource assessment
Forest resource assessments carried out periodically are vital for ensuring the sustainable production of forest goods and services for society. They provide the necessary information not only on the quantities that may be harvested but also the type and quality of forest produce that may be extracted.</td><td></td><td></td></tr>
<tr><td>4.1</td><td colspan="8">Extent and percentage of forest for which inventory and survey procedures have been used to define the quantity of the main forest products</td><td>✔</td><td>✔</td></tr>
<tr><td></td><td colspan="8">Table 14: Forest areas inventoried by product</td><td></td><td></td></tr>
<tr><td></td><td></td><td colspan="2">PFE</td><td colspan="2">Non-PFE</td><td colspan="2">Total</td><td></td><td></td></tr>
<tr><td></td><td>Product</td><td>ha</td><td>%</td><td>ha</td><td>%</td><td>ha</td><td>%</td><td></td><td></td></tr>
<tr><td></td><td>Industrial roundwood</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Fuelwood</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Non-wood forest products</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Total</td><td></td><td></td><td></td><td></td><td></td><td>100</td><td></td><td></td></tr>
<tr><td>4.2</td><td colspan="8">Actual and sustainable harvest of wood and non-wood forest products</td><td>✔</td><td>✔</td></tr>
<tr><td></td><td colspan="8">Table 15: Harvesting level of the principal forest products</td><td></td><td></td></tr>
<tr><td></td><td></td><td>Entire forest area</td><td colspan="2">PFE</td><td colspan="2">Non-PFE</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Product</td><td>Total number of species harvested</td><td>Annual total harvest</td><td>Annual sustainable harvest</td><td>Annual total harvest</td><td>Annual sustainable harvest</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Industrial roundwood</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Fuelwood</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Non-wood forest products</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="8">• Report average harvest levels over the latest three-year period together with the source of the data and the unit of measurement.
• Describe the method for estimating the sustainable level of harvest (eg annual allowable cut for industrial roundwood).</td><td></td><td></td></tr>
</table>

* The level at which an indicator applies is noted with a '✔'; if it does not apply, a '✘' sign is used.

<table>
<tr><th colspan="2">Indicators</th><th>National level</th><th>FMU level</th></tr>
<tr><td>4.3</td><td>Composition of harvest
Table 16: The most important species or species' groups harvested
<table>
<tr><th rowspan="2">Products</th><th colspan="2">Harvesting quantity</th><th rowspan="2">Forests from which harvested</th></tr>
<tr><th>PFE</th><th>Non-PFE</th></tr>
<tr><td>Industrial roundwood:</td><td></td><td></td><td></td></tr>
<tr><td>1</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td><td></td></tr>
<tr><td>3</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td></tr>
<tr><td>5</td><td></td><td></td><td></td></tr>
<tr><td>Fuelwood:</td><td></td><td></td><td></td></tr>
<tr><td>1</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td><td></td></tr>
<tr><td>3</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td></tr>
<tr><td>5</td><td></td><td></td><td></td></tr>
<tr><td>Non-wood forest products:</td><td></td><td></td><td></td></tr>
<tr><td>1</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td><td></td></tr>
<tr><td>3</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td></tr>
<tr><td>5</td><td></td><td></td><td></td></tr>
</table>
• Report the five most important species or species' groups.
• Report average harvest levels over the latest three-year period together with the source of the data and the unit of measurement.
• Forests from which harvested include natural forest types as specified in Table 8 as well as planted forests.</td><td>✔</td><td>✔</td></tr>
<tr><td>4.4</td><td>Total amount of carbon stored in forest stands
Table 17: Estimate of carbon stock in forests
<table>
<tr><th></th><th>PFE ('000 tonnes)</th><th>Non-PFE ('000 tonnes)</th></tr>
<tr><td>Above-ground (forest vegetation carbon stock)</td><td></td><td></td></tr>
<tr><td>Soil carbon stock</td><td></td><td></td></tr>
</table>
• Describe the methods of measurement. Express in thousands of tonnes of elemental carbon.
• Indicate reference year.</td><td>✔</td><td>✔</td></tr>
</table>

<table>
<tr><th colspan="2">Indicators</th><th>National level</th><th>FMU level</th></tr>
<tr><td colspan="2">Planning and control procedures
Planning procedures have to be sound and effective, as the production of forest goods and services generally requires a long gestation period. It is through proper planning and control that investment in forestry activities will yield the desired returns to society.</td><td></td><td></td></tr>
<tr><td>4.5</td><td>Existence and implementation of:
(a) forest harvesting/operational plans (within forest management plans); and
(b) other harvesting permits (small-, medium- and large-scale permits without forest management plans)
• Describe the procedures and processes for formulating plans and assessing the effectiveness of implementation of:
(a) forest harvesting/operational plans; and
(b) any other type of harvesting/cutting permits within and outside the PFE.</td><td>✔</td><td>✔</td></tr>
<tr><td>4.6</td><td>Extent of compartments/coupes harvested according to:
(a) harvesting/operational plans; and
(b) any other harvesting/cutting permit
Table 18: Average annual harvest area
<table>
<tr><th rowspan="2">Type of permit</th><th colspan="2">PFE</th><th colspan="2">Non-PFE</th><th rowspan="2">Total (ha)</th></tr>
<tr><th>Number of permits</th><th>ha</th><th>Number of permits</th><th>ha</th></tr>
<tr><td>Operational plans (within a FMP)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Permit type 1 (specify)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Permit type 2 (specify)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Permit type 3 (specify)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
• Calculate the average over the most recent three-year period.
• Specify the different types of permits and report on their effect(s) on forest sustainability.</td><td>✔</td><td>✔</td></tr>
<tr><td>4.7</td><td>Existence of a log-tracking system or similar control mechanisms
• Describe type of system(s) and its (their) implementation (including responsible parties).</td><td>✔</td><td>✔</td></tr>
<tr><td>4.8</td><td>Long-term projections, strategies and plans for forest production
• Describe any projections (five years and beyond), strategies or plans for production (including expanded use of planted forest) to bring current management of harvesting practices and patterns into alignment with sustainable forest management objectives.</td><td>✔</td><td>✔</td></tr>
<tr><td>4.9</td><td>Availability of historical records on the extent, nature and management of forests
• Are historical records available about the extent, nature or management of the forests? Describe the type of records.
• Do archives of forest data (eg growth, yield, health, uses, etc) exist and are they accessible for forest planning and management?
• Have such records/data been used? Have they proved useful?</td><td>✔</td><td>✔</td></tr>
</table>

<table>
<tr><th colspan="2">Indicators</th><th>National level</th><th>FMU level</th></tr>
<tr><td colspan="2">Silvicultural and harvesting guidelines
Clear guidelines will ensure that all forestry operations are carried out according to high standards. These can include pre-felling inventories for prescribing sustainable cutting levels, post-felling inventories for assessing the condition of logged-over forests and the types of silvicultural treatments required, harvesting procedures to reduce damage to the forest ecosystem, silvicultural prescriptions for planted forests, and procedures for periodic monitoring and evaluation of management practices.</td><td></td><td></td></tr>
<tr><td>4.10</td><td>Availability and implementation of silvicultural guidelines for timber and non-wood forest products
• Does the country have recommended silvicultural systems and/or guidelines? What are they?
• Are they being implemented?
• Is their effectiveness being monitored? At what geographical scale? Describe post-harvesting surveys to assess the effectiveness of silvicultural activities.
• Are monitoring data being archived to evaluate cumulative effects of silvicultural systems over time?
• Do silvicultural systems include the use of chemicals? If yes, specify and assess risks.</td><td>✔</td><td>✔</td></tr>
<tr><td>4.11</td><td>Availability and implementation of harvesting guidelines for timber and non-wood forest products
• Does the country have recommended harvesting systems and/or guidelines? What are they?
• Are they being implemented?
• Is their effectiveness being monitored? At what geographical scale? Describe post-harvesting surveys to assess the effectiveness of harvesting activities, establishment and monitoring of silvicultural treatments and regeneration plots, etc.
• Are monitoring data being archived to evaluate cumulative effects of harvesting systems over time?</td><td>✔</td><td>✔</td></tr>
<tr><td>4.12</td><td>Area over which silvicultural and harvesting procedures are effectively implemented
Table 19: Implementation of silvicultural and harvesting procedures
<table><tr><th>Silvicultural and harvesting procedures</th><th>PFE (ha)</th><th>Non-PFE (ha)</th><th>Total (ha)</th></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td>Total</td><td></td><td></td><td></td></tr></table></td><td>✔</td><td>✔</td></tr>
</table>

Criterion 5: Biological diversity

This criterion relates to the conservation and maintenance of biological diversity, including ecosystems, species and genetic diversity. The general principles and definitions used here are those established by the Convention on Biological Diversity and the World Conservation Union (IUCN).

<table>
<tr><th colspan="7">Indicators</th><th>National level*</th><th>FMU level*</th></tr>
<tr><td colspan="7">Ecosystem diversity
The conservation of ecosystem diversity can best be accomplished by the establishment and management of a system of protected areas (combinations of IUCN categories I–VI)[2] containing representative samples of all forest types linked as far as possible by biological corridors or ‘stepping stones’. This can be ensured by effective land-use policies and systems for choosing, establishing and maintaining the integrity of protected areas in consultation with and through the involvement of local communities.</td><td></td><td></td></tr>
<tr><td>5.1</td><td colspan="6">Protected areas containing forests</td><td>✔</td><td>✘</td></tr>
<tr><td></td><td colspan="6">Table 20: Forest protected areas</td><td rowspan="8"></td><td rowspan="8"></td></tr>
<tr><td></td><td colspan="2"></td><td colspan="4">IUCN protected area category</td></tr>
<tr><td></td><td colspan="2"></td><td>I–II</td><td>III–IV</td><td>V–VI</td><td>Total</td></tr>
<tr><td></td><td colspan="2">Number of forest protected areas</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="2">Extent (ha)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="2">Range in size (ha)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="2">Boundaries marked (%)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="2">Represented forest types (list)</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="2">Under-represented forest types (list)</td><td></td><td></td><td></td><td></td></tr>
<tr><td>5.2</td><td colspan="6">Protected areas connected by biological corridors or ‘stepping stones’</td><td>✔</td><td>✘</td></tr>
<tr><td></td><td colspan="6">Table 21: Forest protected areas connected by corridors or stepping stones</td><td rowspan="4"></td><td rowspan="4"></td></tr>
<tr><td></td><td>IUCN category</td><td colspan="2">Number connected</td><td colspan="3">% of total number of forest protected areas</td></tr>
<tr><td></td><td>I–II</td><td colspan="2"></td><td colspan="3"></td></tr>
<tr><td></td><td>III–IV</td><td colspan="2"></td><td colspan="3"></td></tr>
<tr><td></td><td>V–VI</td><td colspan="2"></td><td colspan="3"></td></tr>
</table>

* The level at which an indicator applies is noted with a ‘✔’; if it does not apply, a ‘✘’ sign is used.

[2] See Annex 3.

<table>
<tr><th colspan="6">Indicators</th><th>National level</th><th>FMU level</th></tr>
<tr><td colspan="6">Species diversity
Although the conservation of biological diversity is best assured by preventing species from becoming rare, threatened or endangered, it is also important to have national procedures for monitoring and protecting such species effectively.</td><td></td><td></td></tr>
<tr><td>5.3</td><td colspan="5">Existence and implementation of procedures to identify and protect endangered, rare and threatened species of forest-dependent flora and fauna</td><td rowspan="6">✔</td><td rowspan="6">✔</td></tr>
<tr><td colspan="5">Table 22: Forest area surveyed for biodiversity</td></tr>
<tr><td></td><td>Production PFE (ha)</td><td colspan="2">Protection PFE (ha)</td><td>Non-PFE (ha)</td></tr>
<tr><td>Flora</td><td></td><td colspan="2"></td><td></td></tr>
<tr><td>Fauna</td><td></td><td colspan="2"></td><td></td></tr>
<tr><td colspan="5">• Describe procedures to identify, list and protect endangered, rare and threatened species of forest flora and fauna.
• List the institutions responsible.
• Describe any recent changes in the procedures.
• Are there any constraints to introducing improvements?</td></tr>
<tr><td>5.4</td><td colspan="5">Number of endangered, rare and threatened forest-dependent species[3]</td><td rowspan="13">✔</td><td rowspan="13">✔</td></tr>
<tr><td colspan="5">Table 23: Number of endangered, rare and threatened forest-dependent species</td></tr>
<tr><td rowspan="2">Forest-dependent species' group</td><td rowspan="2">Total species (number)</td><td colspan="3">Of which</td><td rowspan="2">List the five most important species</td></tr>
<tr><td>endangered</td><td>legally protected at national level</td><td>endemic species</td></tr>
<tr><td>Trees</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Flowering plants</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Ferns</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Mammals</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Birds</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Reptiles</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Amphibians</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Freshwater fish</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Butterflies</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Others (specify)</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

[3] For many years the extent to which species were endangered was described by three categories: 'endangered', 'rare' and 'threatened'. These are the terms used in Indicator 5.3. Since 1994, however, a new and more exact series of categories has been adopted by IUCN. These are reproduced in Annex 4. Countries should, as far as possible, use the new categories. If any country has not yet adopted the new categories, they should use the pre-1994 categories instead. Where the word 'endangered' is used in the text of these C&I, this should be taken to include the three new categories: 'critically endangered', 'endangered' and 'vulnerable'.

Indicators		National level	FMU level
Genetic diversity The effective conservation of biological diversity requires the maintenance of the genetic diversity of all species of fauna and flora. Although this may be difficult to achieve in practice, it is appropriate to focus limited resources on species that are rare, threatened or endangered, as well as on species with identified commercial value.			
5.5	Measures for in situ and/or ex situ conservation of genetic variation within commercial, endangered, rare and threatened species of forest flora and fauna	✔	✘
	• Describe the measures applied to conserve genetic diversity, both in situ and ex situ, of endangered forest-dependent species.		
Procedures for biodiversity conservation in production forests Management measures in production forests can make an important contribution to the conservation of biodiversity by contributing to forest quality and making conservation in neighbouring protected areas more effective. Detailed guidelines are given in recommended actions 8–17 of the ITTO Policy Development Series No 5 *Guidelines on the conservation of biological diversity in tropical production forests*.			
5.6	Existence and implementation of procedures for the protection and monitoring of biodiversity in production forests by:		
	(a) retaining undisturbed areas;	✔	✔
	(b) protecting rare, threatened and endangered species;	✔	✔
	(c) protecting features of special biological interest (eg nesting sites, seed trees, niches, keystone species, etc); and	✔	✔
	(d) assessing recent changes in (a), (b) and (c) above through inventories, monitoring/assessment programs and comparison with control areas	✔	✘
	• Describe any procedures being implemented. • Is their effectiveness being monitored? At what geographical scale? • Describe procedures for assessing changes in production areas compared to control areas. • Are records kept over time?		
5.7	Extent and percentage of production forest that has been set aside for biodiversity conservation	✔	✔
	Table 24: Area set aside for biodiversity conservation in production forests		
	Area (ha) | *%*		

Criterion 6: Soil and water protection

The importance of this criterion is two-fold. First, it has a bearing on maintaining the productivity and quality of soil and water within the forest and its related aquatic ecosystems (and therefore on the health and condition of the forest – Criterion 3); and, second, it plays a crucial role outside the forest in maintaining downstream water quality and flow and in reducing flooding and sedimentation.

Quantitative indicators of the effects of forest management on soil and water include such measures as soil productivity within the forest and data on water quality and average and peak water flows for streams emerging from the forest. This information is difficult and expensive to obtain and is seldom available for more than a limited number of sites, as each site has its own specific characteristics (eg slope, geological structure and the inherent erodibility of the soil type).

The protection of soil and water is therefore best ensured by specific guidelines for different situations; these can only be based on experience and research. Valid national indicators can only be derived from the aggregation of data from indicators at the FMU level, or from the fact that adequate national guidelines exist and are properly enforced in conformity with variations in local conditions.

<table>
<tr><th colspan="4">Indicators</th><th>National Level*</th><th>FMU Level*</th></tr>
<tr><td colspan="4">Extent of protection</td><td></td><td></td></tr>
<tr><td>6.1</td><td colspan="3">Extent and percentage of total forest area managed exclusively for the protection of soil and water</td><td rowspan="7">✔</td><td rowspan="7">✘</td></tr>
<tr><td colspan="3">Table 25: Forest area managed exclusively for soil and water protection</td></tr>
<tr><td>Forest</td><td>Area (ha)</td><td>%</td></tr>
<tr><td>Total forest area (PFE and non-PFE)</td><td></td><td></td></tr>
<tr><td>Forest area managed exclusively for the protection of soil and water</td><td></td><td></td></tr>
<tr><td>– of which protection PFE</td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
<tr><td>6.2</td><td colspan="3">Procedures to ensure the protection of downstream catchment values</td><td rowspan="2">✔</td><td rowspan="2">✔</td></tr>
<tr><td colspan="3">• Are there procedures to ensure protection of downstream catchment values?
• Are they being implemented?
• Is their effectiveness being monitored? At what geographical scale?</td></tr>
<tr><td colspan="4">Protective functions in production forests</td><td></td><td></td></tr>
<tr><td>6.3</td><td colspan="3">Procedures to protect soil productivity and water retention capacity within production forests</td><td rowspan="2">✔</td><td rowspan="2">✔</td></tr>
<tr><td colspan="3">• Are there procedures to protect soil productivity and retain water within production forests?
• Are there provisions to prevent contamination of forest soil and water?
• Are they being implemented?
• Is their effectiveness being monitored? At what geographical scale?</td></tr>
</table>

* The level at which an indicator applies is noted with a '✔'; if it does not apply, a '✘' sign is used.

<table>
<tr><th colspan="2">Indicators</th><th>National Level</th><th>FMU Level</th></tr>
<tr><td>6.4</td><td>Procedures for forest engineering, including:
(a) drainage requirements;
(b) conservation of buffer strips along streams and rivers;
(c) protection of soils from compaction by harvesting machinery; and
(d) protection of soil from erosion during harvesting operations
• Are there recommended forest engineering procedures in regard to the protection of soil and water?
• Are they being implemented?
• Is their effectiveness being monitored? At what geographical scale?</td><td>✔</td><td>✔</td></tr>
<tr><td>6.5</td><td>Extent and percentage of areas in production PFE that have been defined as environmentally sensitive (eg very steep or erodible) and protected
Table 26: Area defined as ecologically vulnerable
<table>
<tr><th>Area Characteristic</th><th>Area (ha)</th><th>%</th></tr>
<tr><td>Slopes > x%*</td><td></td><td></td></tr>
<tr><td>Poor drainage</td><td></td><td></td></tr>
<tr><td>Buffer strips</td><td></td><td></td></tr>
<tr><td>Other characteristics, to be specified</td><td></td><td></td></tr>
</table>
* According to the norms specified in the country</td><td>✔</td><td>✔</td></tr>
</table>

Criterion 7: Economic, social and cultural aspects

This criterion deals with the economic, social and cultural aspects of forests. A well-managed forest is a self-renewing resource producing a host of benefits, which might include supplying high-quality timber and satisfying the basic needs of people living in and around the forest. It also contributes to the quality of life of the population by providing opportunities for recreation and ecotourism, as well as by generating employment and investment in processing industries. If sustainably managed, the forest therefore has the potential to make an important contribution to the overall sustainable development of the country.

<table>
<tr><th colspan="5">Indicators</th><th>National level*</th><th>FMU level*</th></tr>
<tr><td colspan="5">Socioeconomic aspects
In addition to its ability to provide employment and other social and environmental benefits to society, the very existence of a forest is often dependent on its capacity to generate sufficient financial resources to make it an economically viable land-use.</td><td></td><td></td></tr>
<tr><td>7.1</td><td colspan="4">Value and percentage contribution of the forestry sector to GDP</td><td rowspan="5">✔</td><td rowspan="5">✘</td></tr>
<tr><td colspan="4">Table 27: Contribution of the forestry sector to GDP</td></tr>
<tr><td colspan="2"></td><td>GDP total (US$ ’000)</td><td>% forestry sector</td></tr>
<tr><td colspan="2">Reference year (specify)</td><td></td><td></td></tr>
<tr><td colspan="2">Reference year minus five years</td><td></td><td></td></tr>
<tr><td colspan="4">• Indicate/describe the extent to which the informal forestry sector contributes to GDP.
• Indicate sources used.</td></tr>
<tr><td>7.2</td><td colspan="4">Value of domestically produced wood, non-wood forest products and environmental services in:
(a) domestic markets;
(b) export markets; and
(c) informal markets including subsistence and illegal activities (estimate)</td><td rowspan="11">✔</td><td rowspan="11">✔</td></tr>
<tr><td colspan="4">Table 28: Estimated market value of forest products and services</td></tr>
<tr><td rowspan="2">Goods and services</td><td colspan="3">Market (US$ ’000)</td></tr>
<tr><td>Domestic</td><td>Export</td><td>Informal</td></tr>
<tr><td>Timber products</td><td></td><td></td><td></td></tr>
<tr><td>Fuelwood</td><td></td><td></td><td></td></tr>
<tr><td>Non-wood forest products</td><td></td><td></td><td></td></tr>
<tr><td>Water</td><td></td><td></td><td>N/A</td></tr>
<tr><td>Carbon</td><td></td><td></td><td>N/A</td></tr>
<tr><td>Others (specify)</td><td></td><td></td><td></td></tr>
<tr><td colspan="4">• Provide the exchange rate if reported in national currency.
• Indicate reference year.
• Timber products should be calculated as the sum of primary and secondary products, including wood furniture and other secondary wood products.</td></tr>
</table>

* The level at which an indicator applies is noted with a ‘✔’; if it does not apply, a ‘✘’ sign is used.

<table>
<tr><th colspan="2">Indicators</th><th>National Level</th><th>FMU Level</th></tr>
<tr><td>7.3</td><td>Forest products' industry structure and efficiency
Table 29: Forest production capacities
<table>
<tr><th>Processing sector</th><th>Number of companies</th><th>Log input (m^3)</th><th>Conversion efficiency (%)</th><th>Installed capacity</th><th>Employment</th></tr>
<tr><td>Timber harvesting</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Primary transformation</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Secondary transformation</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Tertiary transformation</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
• Indicate units and sources.</td><td>✔</td><td>✔</td></tr>
<tr><td>7.4</td><td>Existence and implementation of mechanisms for the equitable sharing of the costs and benefits of forest management
• List any mechanisms for the distribution of incentives and the fair and equitable sharing of costs and benefits among the parties involved.[4]
• Are they being implemented?
• Are there obstacles to their implementation?
• Are improvements proposed?</td><td>✔</td><td>✔</td></tr>
<tr><td>7.5</td><td>Existence and implementation of conflict-resolution mechanisms for resolving disputes between forest stakeholders
• List any mechanisms for conflict resolution.
• Are they being implemented?
• Are there obstacles to their implementation?
• Are improvements proposed?</td><td>✔</td><td>✔</td></tr>
<tr><td>7.6</td><td>Number of people depending on forests for their livelihoods
Table 30: Forest-dependent people
<table>
<tr><th></th><th>Total number</th><th>Male</th><th>Female</th><th>Migrants</th></tr>
<tr><td>Employed in forest operations</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Employed in forest products' industry</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Other indirect employment</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Subsistence</td><td></td><td></td><td></td><td></td></tr>
</table></td><td>✔</td><td>✔</td></tr>
</table>

[4] Matters which may be taken into account include:

(a) the equitable treatment of interested parties in activities related to the use and management of forests;

(b) the opportunity for interested parties to be employed under comparable conditions to those in other economic sectors;

(c) the existence of effective mechanisms for communication and the resolution of conflicts between interested parties;

(d) the possession by the public of an effective voice in decisions relating to forest management;

(e) the share of the profits received by forest companies to be reasonable in relation to benefits received by other parties; and

(f) the ability of forest landowners or right-holders (government, private, community, etc) to receive a fair return for the use of their forest lands.

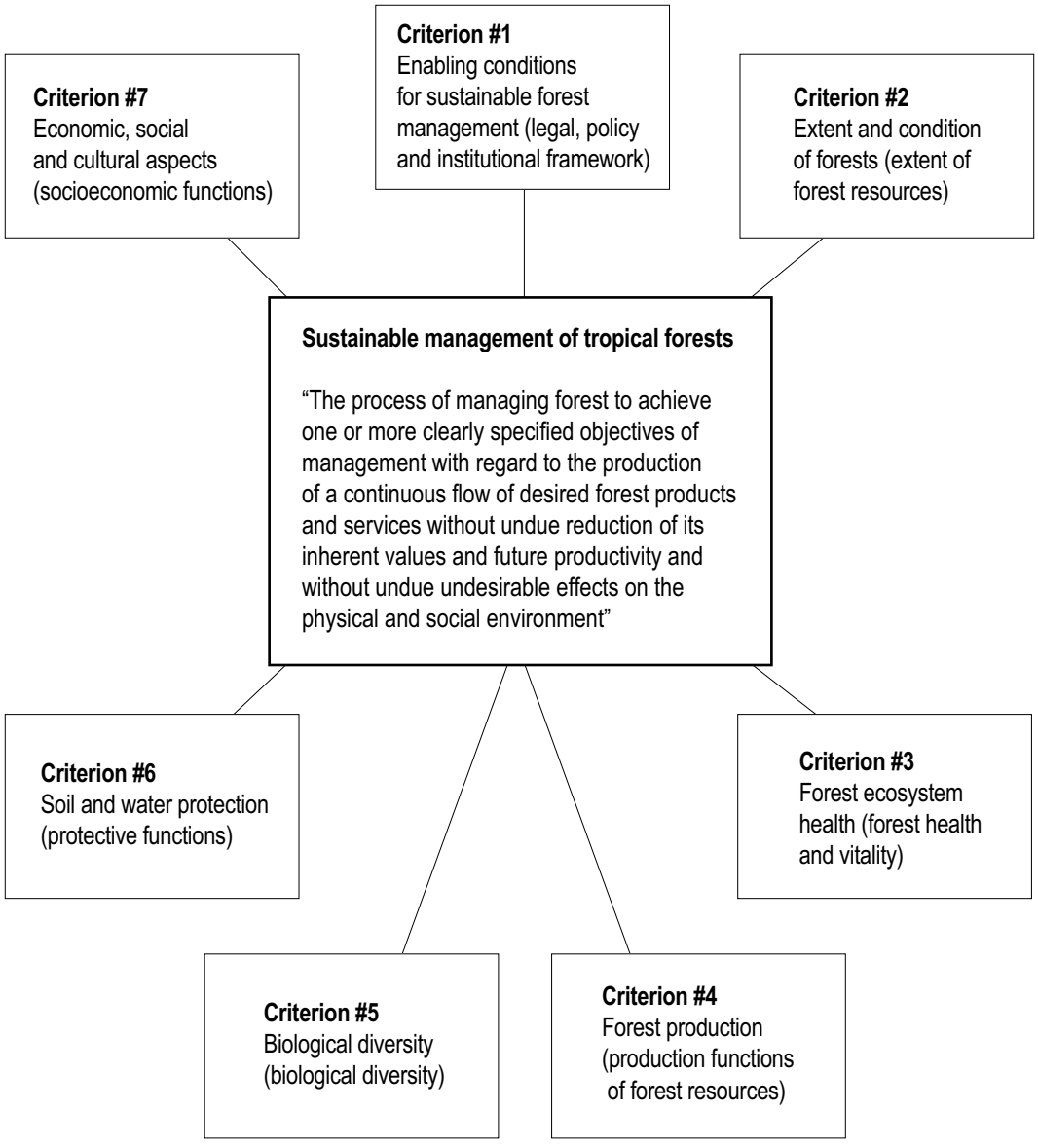
<table>
<tr><th colspan="2">Indicators</th><th>National Level</th><th>FMU Level</th></tr>
<tr><td>7.7</td><td>Training, capacity-building and manpower development programs for forest workers
• Indicate the number and main focus of universities, technical institutions, etc, with a formal program on sustainable forest management.
• List short- and medium-term training programs for forest managers over the last year.
• List short- and medium-term training programs for concessionaires over the last year.</td><td>✔</td><td>✔</td></tr>
<tr><td>7.8</td><td>Existence and implementation of procedures to ensure the health and safety of forest workers
• What mechanisms are in place to ensure the health and safety of forest workers?
• Are these mechanisms being implemented? Identify any constraints.
• Are mechanisms in conformity with International Labour Organization Resolution 169?
• Indicate the number of serious accidents (death, serious injury) in forest management operations over the past three years. Specify the causes.</td><td>✔</td><td>✔</td></tr>
<tr><td>7.9</td><td>Area of forests upon which people are dependent for subsistence uses and traditional and customary lifestyles
Table 31: Forest areas for subsistence and traditional uses
<table>
<tr><th></th><th>PFE (ha)</th><th>Non-PFE (ha)</th><th>Total (ha)</th></tr>
<tr><td>Indigenous peoples' reserves</td><td></td><td></td><td></td></tr>
<tr><td>Community forests</td><td></td><td></td><td></td></tr>
<tr><td>Other reserved areas</td><td></td><td></td><td></td></tr>
<tr><td>Other forested areas</td><td></td><td></td><td></td></tr>
<tr><td>Other (specify)</td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td></td><td></td><td></td></tr>
</table>
• Specify the types of forests used for subsistence, traditional and/or customary lifestyles if different from those listed in Table 31.</td><td>✔</td><td>✔</td></tr>
<tr><td>7.10</td><td>Number and extent of forest sites available primarily for:
(a) research and education; and
(b) recreation
Table 32: Forest areas for research and recreation
<table>
<tr><th></th><th>Number of sites</th><th>Area (ha)</th><th>Average annual number of users (most recent three years)</th></tr>
<tr><td>Research and education</td><td></td><td></td><td></td></tr>
<tr><td>Recreation</td><td></td><td></td><td></td></tr>
</table></td><td>✔</td><td>✘</td></tr>
</table>

<table>
<tr><th colspan="2">Indicators</th><th>National Level</th><th>FMU Level</th></tr>
<tr><td colspan="2">Cultural aspects
Forests often contain natural, archaeological or cultural features of outstanding or unique value. In many countries, forests also play significant spiritual roles (eg sacred forests).</td><td></td><td></td></tr>
<tr><td>7.11</td><td>Number of important archaeological, cultural and spiritual sites identified and protected
Table 33: Forests with cultural and spiritual value
<table>
<tr><th>Type</th><th>Number of forests</th><th>Area (ha)</th><th>Protection status</th></tr>
<tr><td>Archaeological</td><td></td><td></td><td></td></tr>
<tr><td>Cultural</td><td></td><td></td><td></td></tr>
<tr><td>Sacred forests</td><td></td><td></td><td></td></tr>
<tr><td>Others (specify)</td><td></td><td></td><td></td></tr>
</table>
• Provide an overall assessment of whether the integrity of such areas is protected and how.</td><td>✔</td><td>✔</td></tr>
<tr><td colspan="2">Community and indigenous peoples' rights and participation
Community participation is vital at all levels of forestry operations to ensure transparency and accountability in forest management, conservation and development and that all interests and concerns are taken into account. This requires openness from forest agencies, forest owners and concessionaires.</td><td></td><td></td></tr>
<tr><td>7.12</td><td>Extent to which tenure and user rights of communities and indigenous peoples over publicly owned forests are recognized and practised
• Are such tenure and user rights recognized and practised?
• If so, how?
• Describe any constraints and proposals for improvements.</td><td>✔</td><td>✔</td></tr>
<tr><td>7.13</td><td>Extent to which indigenous knowledge is used in forest management planning and implementation
• Is indigenous knowledge used?
• If so, how?
• Describe any constraints and proposals for improvements.</td><td>✔</td><td>✔</td></tr>
<tr><td>7.14</td><td>Extent of involvement of indigenous peoples, local communities and other forest dwellers in forest management capacity-building, consultation processes, decision-making and implementation
• Describe the extent of involvement in forest management of:
- capacity-building;
- consultation processes;
- decision-making; and
- implementation (eg financial and economic aspects of forest utilization).
• Indicate the legal basis of this involvement.
• Describe shortcomings and proposals for improvement.</td><td>✔</td><td>✔</td></tr>
</table>

Annex 1

Schematic representation of the revised ITTO criteria for the sustainable management of tropical forests

The text in parentheses refers to the corresponding internationally agreed common thematic areas of sustainable forest management.



Annex 2

Definitions

Annual allowable cut	The amount of timber that is permitted to be harvested annually from a given area
Biodiversity	See *biological diversity*
Biological diversity	The variability among living organisms from all sources including, *inter alia,* terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems
Criterion	An aspect of forest management that is considered important and by which sustainable forest management may be assessed
Degraded forest land	Former forest land severely damaged by the excessive harvesting of wood and/or non-wood forest products, poor management, repeated fire, grazing or other disturbances or land-uses that damage soil and vegetation to a degree that inhibits or severely delays the re-establishment of forest after abandonment
Forest degradation	The reduction of the capacity of a forest to produce goods and services. 'Capacity' includes the maintenance of ecosystem structure and functions
Forest-dependent species	Species unable to complete at least one part of their life cycle outside the forest
Forest management unit (FMU)	A clearly defined forest area, managed to a set of explicit objectives according to a long-term management plan
Forest stakeholders	Any individuals or groups who are directly or indirectly affected by, or interested in, a given forest and that have a stake in it
Forest type	A naturally occurring community of trees and associated plant species of definite botanical composition with uniform physiognomy (structure) and growing in uniform ecological conditions whose species composition remains relatively stable over time
Indicator	A quantitative, qualitative or descriptive attribute that, when measured or monitored periodically, indicates the direction of change in a criterion
Landscape	A cluster of interacting ecosystem types
Native species	A species that occurs naturally in a region
Non-wood forest products	All forest products except timber and wood, including products from trees, plants and animals in the forest area
Permanent forest estate (PFE)	Land, whether public or private, secured by law and kept under permanent forest cover. This includes land for the production of timber and other forest products, for the protection of soil and water, and for the conservation of biological diversity, as well as land intended to fulfil a combination of these functions
Planted forest	A forest stand that has been established by planting or seeding

Primary forest	Forest which has never been subject to human disturbance, or has been so little affected by hunting, gathering and tree cutting that its natural structure, functions and dynamics have not undergone any changes that exceed the elastic capacity of the ecosystem
Production PFE	That part of the PFE assigned to the production of timber and/or other extractive uses
Protected area	An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means
Protection PFE	That part of the PFE in which the production of timber (or other extractive uses) is prohibited
Rehabilitation	A management strategy applied in degraded forest lands that aims at restoring the capacity of a forest to produce products and services
Restoration	A management strategy applied in degraded primary forest areas. Forest restoration aims to restore the forest to its state before degradation (same function, structure and composition)
Secondary forest	Woody vegetation regrowing on land that was largely cleared of its original forest cover (ie carried less than 10% of the original forest cover). Secondary forests commonly develop naturally on land abandoned after shifting cultivation, settled agriculture, pasture, or failed tree plantations
Silvicultural	Pertaining to the art and science of producing and tending forests by manipulating their establishment, species' composition, structure and dynamics to fulfill given management objectives
Stakeholders	Any individuals or groups who are directly or indirectly affected by, or interested in, a given resource and that have a stake in it. Also *forest stakeholders*
Sustainable forest management	The process of managing forest 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
Sustained yield	The production of forest products in perpetuity, ensuring that the harvesting rate does not exceed the rate of replacement (natural and/or artificial) in a given area over the long term
Tenure	Agreement(s) held by individuals or groups, recognized by legal statutes and/or customary practice, regarding the rights and duties of ownership, holding, access and/or usage of a particular land unit or the associated resources (such as individual trees, plant species, water or minerals) therein
User rights	The rights to the use of forest resources as defined by local custom or agreements or prescribed by other entities holding access rights. These rights may restrict the use of particular resources to specific harvesting levels or specific extraction techniques

Annex 3

Definitions of IUCN protected area management categories

IUCN has defined the following six protected area management categories based on management objective:

CATEGORY Ia: Strict Nature Reserve: protected area managed mainly for science Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.

CATEGORY Ib: Wilderness Area: protected area managed mainly for wilderness protection Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

Category I sites are typically remote and inaccessible, and are characterized by being 'undisturbed' by human activity. They are often seen as benchmark, or reference sites, and access is generally restricted or prohibited altogether. They range in size from vast areas to very small units (typically a 'core' of a larger protected area). Selection should be on the basis of quality and significance.

CATEGORY II: National Park: protected area managed mainly for ecosystem protection and recreation Natural area of land and/or sea, designated to: (a) protect the ecological integrity of one or more ecosystems for present and future generations; (b) exclude exploitation or occupation inimical to the purposes of designation of the area; and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

Category II covers national parks and equivalent reserves. Category II sites are characterized by the experience of 'naturalness'. While managed to protect ecological integrity, Category II sites tend to serve as areas that facilitate appreciation of the features protected, and typically include provisions for human visitors. Selection should be on the basis of representativeness and/or special significance, and sites should be large enough to contain one or more (relatively intact) ecosystems.

CATEGORY III: Natural Monument: protected area managed mainly for conservation of specific natural features Area containing one or more specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities, or cultural significance.

Category III covers areas that are typically not of the scale of Category II sites, but can be important as protected components within a broader managed landscape for the protection of particular forest communities or species. Selection should be on the basis of the significance of the features, and should be of a scale that protects the integrity of that feature and its immediately related surroundings.

CATEGORY IV: Habitat/Species Management Area: protected area managed mainly for conservation through management intervention Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

Category IV covers areas managed mainly for conservation through management intervention; habitats and other features may be manipulated to enhance the presence of species or communities of species, through, for example, artificial wetlands or the cultivation of preferred food crops. Category IV sites do not include production units primarily for exploitation, such as forest plantations. Category IV sites should be selected on the basis of importance as habitats to the survival of species of local or national significance, where conservation of the species or habitat may depend upon its manipulation.

CATEGORY V: Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biodiversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

Category V areas are characterized by a long-term socioecological interaction commensurate with high biodiversity values. Category V areas should be selected on the basis of diversity of habitats of high scenic quality combined with manifestations of unique or traditional land-use patterns and opportunities for public enjoyment through recreation and tourism.

CATEGORY VI: Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems Area containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biodiversity, while at the same time providing a sustainable flow of natural products and services to meet community needs.

Category VI areas are characterized by predominantly unmodified 'natural systems' that are managed to provide both maintenance of biological diversity and a sustainable flow of natural products and services. The expression 'natural system' can be interpreted many different ways. For purposes of the IUCN categories it can be taken to mean ecosystems where, since the industrial revolution (1750), human impact (a) has been no greater than that of any other native species, and (b) has not affected the ecosystem's structure. Climate change is excluded from this definition. For an area to qualify for Category VI designation, not only must the site meet the definition of a protected area, but at least two-thirds of the site should be, and is planned to remain, in a natural condition. Large commercial plantations must not be included, and, as in all categories, a management authority must be in place. Category VI sites should also be large enough to absorb sustainable resource uses without detriment to sites' overall long-term natural values.

Because many protected areas, particularly forest areas, are established for multiple objectives, at least three-quarters of a designated area must be managed primarily for one of the above management objectives in order for it to be listed under the corresponding category. The management of the remaining area must not be in conflict with that primary purpose. In cases where parts of a single management unit are classified by law as having different management objectives or where one area is used to 'buffer' or surround another, they would be listed separately.

All protected areas must meet a test of management responsibility and ownership. Management authority may be through national government, local authority, informal community group, non-governmental organization or private ownership, provided that it provides the capacity to achieve the given management objective. In general more strictly protected sites require state power for full protection, but recent experiments in vesting legal power in private entities for nature conservation objectives leave open the possibility of exceptions. Ownership of a unit must also be compatible with achievement of management objectives in order for the site to be listed.

Annex 4

IUCN endangerment status categories

Extinct (Ex)

A taxon[1] is extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

Extinct in the Wild (EW)

A taxon is extinct in the wild when it is known only to survive in cultivation, in captivity or as a naturalised population (or populations) well outside the past range. A taxon is presumed extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual) throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

Critically Endangered (CR)

A taxon is critically endangered when the best available evidence indicates that it meets any of the criteria specified in the *IUCN Red List Categories and Criteria* for critically endangered and is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered (EN)

A taxon is endangered when the best available evidence indicates that it meets any of the criteria specified in the *IUCN Red List Categories and Criteria* for endangered and is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU)

A taxon is vulnerable when the best available evidence indicates that it meets any of the criteria specified in the *IUCN Red List Categories and Criteria* for vulnerable and is therefore considered to be facing a high risk of extinction in the wild.

Near Threatened (NT)

A taxon is near threatened when it has been evaluated against the criteria but does not qualify for critically endangered, endangered or vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

Least Concern (LC)

A taxon is least concern when it has been evaluated against the criteria and does not qualify for critically endangered, endangered, vulnerable or near threatened. Widespread and abundant taxa are included in this category.

Data Deficient (DD)

A taxon is data deficient when there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied and its biology well known but appropriate data on abundance and/or distribution are lacking. Data deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases, great care should be exercised in choosing between data deficient and threatened status. If the range of a taxon is suspected to be relatively circumscribed, or if a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

Not Evaluated (NE)

A taxon is not evaluated when it is has not yet been evaluated against the criteria.

[1] IUCN uses the term 'taxon' to mean species or lower taxonomic level, including forms that are not yet formally described.

Annex 5

Land ownership categories

Land ownership	Definition
Public ownership	Belonging to the state or other public bodies
• State ownership	Owned by national, state and regional governments or by government-owned corporations
• Owned by other public institutions	Belonging to cities, municipalities, villages and communes. Includes any publicly owned forest and other wooded land not elsewhere specified
Owned by indigenous peoples and/or local communities	Owned by indigenous and tribal peoples in independent countries, defined as those who: 1. are regarded as indigenous on account of their descent from the populations that inhabited the country, or a geographical region to which the country belongs, at a time of conquest or colonization or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions; and 2. are tribal peoples whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partly by their own customs or traditions or by special laws and regulations. For both categories (1) and (2), self-identification as indigenous or tribal shall be regarded as the fundamental criterion for determining the groups (Source: ILO Convention No. 169 on 'indigenous and tribal peoples')
Private ownership	Forest and other wooded land owned by individuals, families, co-operatives or corporations engaged in agriculture or other occupations including forestry; private forest (wood-processing) industries; private corporations; and other institutions (religious and educational institutions, pension or investment funds, etc)
• Owned by individuals	Forest and other wooded land owned by individuals and families, including those who have formed themselves into companies, including companies that combine forestry and agriculture (farm forests). Includes cases where owners do not live on or near their forest holdings (absentee owners)
• Owned by forest industries	Forest and other wooded land owned by private forestry or wood-processing industries
• Owned by other private institutions	Forest and other wooded land owned by private corporations, cooperatives or institutions (religious, educational, pension or investment funds, nature conservation societies, etc)

Source: Adapted from FAO Forest Resources Assessment 2000 Terms and Definitions

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Printed by Hakushudo Printing Inc, Japan