

Draft Annex to a Decision on ITTO

CRITERIA AND INDICATORS

FOR SUSTAINABLE MANAGEMENT OF NATURAL TROPICAL FORESTS

CRITERIA AND INDICATORS

Criterion 1 : Enabling Conditions for Sustainable Forest Management

This criterion covers the general institutional requirements for sustainable forest management to succeed. It addresses policy, legislation, economic conditions, incentives, research, education, training and mechanisms for consultation and participation. Many of the indicators are necessarily descriptive. Taken together, the information gathered indicates the extent of a country's political commitment to sustainable forest management. It would be useful if countries could supplement the indicators by providing relevant documentation.

Indicator	National	FMU
<i>Policy and Legal Framework</i>		
1.1 Existence of a framework of laws, policies, and regulations to govern:	+	-
(a) national objectives for forest including production, conservation and protection,	+	-
(b) the establishment and security of the permanent forest estate, :	+	-
(c) land tenure and property rights relating to forests,	+	-
(d) the control of forest management	+	-
(e) the control of forest harvesting,	+	-
(f) the control of encroachment, and	+	-
(g) the health and safety of forest workers.	+	-
(h) the participation of local communities '	+	-
<i>Economic Framework</i>		
1.2 Amount of investment and reinvestment in forest management administration research, and human resource development from:		
(a) national and sub-national governmental sources,	+	+
(b) Bali Partnership Fund;	+	-
(c) other international governmental contributions, and	+	+

(d) private sources, domestic and foreign.	+	+
1.3 Existence of economic instruments and other incentives to encourage sustainable forest management.	+	+

Institutional Framework

1.4 Number and adequacy of institutions to support sustainable forest management	+	-
1.5 Number and adequacy of trained professional and technical personnel at all levels to perform and support management implementation. research and extension	+	+
1.6 Existence and application of appropriate. technology to practise sustainable forest :management and the efficient processing and utilisation of forest produce.	+	+
1.7 Capacity and mechanisms for planning sustainable forest management and for periodical monitoring, evaluation and feed-back on progress.	+	+
1.8 Degree of public ^{1[1]} participation in forest management such as in planning, decision making, data collation, monitoring and assessment.	+	+
1.9 Adequacy and timeliness of information to increase public awareness about forest policies, legislation and sustainable forests management practices.	+	+

^{1[1]} This is taken to include an interested parties, individuals, communities. organisations etc.

Criterion 2: Forest Resource Security

This criterion relates to the extent to which a country has a secure and stable forest estate, which could include plantations, to meet the production Protection, biodiversity conservation and other social, cultural, economic and environmental needs of present and future generations. This is essential for long-term sustainable forest management.

Indicator	National	FMU
Description of Resource Base		
2.1 Extent (area) and percentage of total land area under:		
(a) natural forest	+	+
(b) plantation forest,	+	+
(c) permanent forest estate, and	+	+
(d) comprehensive integrated land-use plans.	+	+
2.2 Extent (area) and percentage of total land area under each forest type ^{2[2]} .	+	+
2.3 Length and percentage of external boundaries of the permanent forest estate demarcated or clearly defined..	+	+
2.4 Area of the permanent forest estate converted to permanent non-forest use ^{3[3]} .	+	+
Protection Procedures		
2.5 Existence of procedures to control encroachment fire, grazing and illegal exploitation of forests.	+	+

^{2[2]} Each country should use the classification of forest types available to it which is most suitable for giving an assessment of biological diversity (i.e. a classification based on species composition, if available, is more useful than one based on forest structure; and a classification based on more localised forest communities is more useful than one based on broad regional categories).

^{3[3]} The baseline for this indicator should be the extent of the permanent forest estate at the time of a country's first report. It is only in subsequent reports that changes can be recorded.

Criterion 3: Forest Ecosystem Health and Condition

This criterion relates to the condition of a country's forests and the healthy biological functioning of forest ecosystems. Forest condition and health can be affected by a variety of human actions and natural occurrences, from air pollution fire, flooding and storms to insects and disease.

Indicator	National	FMU
<i>Area of Forest Damaged by Human Activities and Degree of Damage</i>		
3.1 Within the permanent forest estate, the extent and nature of: encroachment	+	+
(a) agriculture,	+	+
(b) roads,	+	+
(c) mining	+	+
(d) dams,	+	+
(e) unplanned fire,	+	+
(f) shifting agriculture,	+	+
(g) nomadic grazing,	+	+
(h) illegal exploitation	+	+
(i) bad harvesting practices,	+	+
(j) harvesting more than once during	+	+
(k) the cutting cycle (re-entry),	+	+
(l) hunting,	+	+
(m) other forms of forest damage such as change in hydrological regime, pollution, introduction of harmful exotic plant and animal species, browsing and grazing. (These should be specified.)	+	+
<i>Area and Degree of Forest Damage by Natural Causes</i>		
3.2 Within the permanent forest estate, the extent and nature of forest damage, caused by:	+	+
(a) wild fire,	+	+
(b) drought	+	+
(c) storms or natural catastrophes,	+	+
(d) pests and diseases, and	+	+
(e) other natural causes.	+	+

Conservation and Protection Procedures^{4[4]}

3.3 Existence and implementation of quarantine and phytosanitary procedures to prevent the introduction of pests and diseases.	+	-
3.4 Existence and implementation of procedures to prevent the introduction of potentially harmful exotic plant and animal species.	+	-
3.5 Availability and implementation of procedures covering:		
(a) use of chemicals in the forest, and	+	+
(b) fire management.	+	+

^{4[4]} Many further procedures are listed under other criteria

Criterion 4: Flow of Forest Produce

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 production are able to fulfil a number of other important forest functions, such as environmental protection and the conservation of biological diversity.

These multiple roles of 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.

Indicator	National	FMU
<i>Resource Assessment</i>		
4.1 Extent and percentage of forest for which inventory and survey procedures have been used to define:		
(a) the quantity of the main forest products, and	+	+
(b) resource rights and ownership.	+	+
4.2 Estimate of level of sustainable harvest for each main wood and non-wood forest product for each forest type.	+	+
4.3 Quantity (volume) of wood and important non-wood forest products harvested Existence for each forest type.	+	+
<i>Planning Procedures</i>		
4.4 Existence and implementation of:		
(a) forest management plans, and	+	+
(b) forest harvesting (operational) plans.	+	+
4.5 Extent and percentage of :		
(a) production forest covered by management plans, and	+	+
(b) compartment / coupes harvested according to harvesting (operational) plans.	+	+
4.6 Existence of long-term projections, strategies and plans for production including the use of tree plantations.	+	+
4.7 Availability of historical records on the extent nature and management of forest.	+	+
<i>Management Guidelines</i>		
4.8 Availability and implementation of management		

guidelines for each of the main wood and non-wood forest products to be harvested, to cover:

(a) the assessment of natural regeneration and	+	+
(b) measures to supplement natural regeneration where necessary.	+	+
4.9 Availability and implementation of procedures to monitor and review the management guidelines.	+	+
4.10 Availability and implementation of guidelines for reduced/low impact logging to minimise damage to residual stand.	+	+

Monitoring and Evaluation

4.11 Availability and implementation of:		
(a) procedures for comprehensive evaluation of the implementation of management guidelines,	+	+
(b) procedures to assess damage to the residual stand, and	+	+
(c) post-harvest surveys to assess the effectiveness of regeneration.	+	+
4.12 Percentage of area harvested for which:		
(a) management guidelines have been completely implemented; and	+	+
(b) post-harvest surveys have been conducted to assess the effectiveness of regeneration.	+	+

Criterion 5: Biological Diversity

This Criterion relates to the conservation and maintenance of biological diversity including ecosystem, species and genetic diversity. At the species level, special attention should be given to the protection of endangered, rare and threatened species. The establishment and management of a geographic system of protected areas of representative forest ecosystems can contribute to maintaining biodiversity. Biological diversity can also be conserved in forests managed for other purposes, such as for production through the application of appropriate management practices.

Indicator	National	FMU
<i>Ecosystem Diversity</i>		
5.1 Statistics of protected areas ^{5[5]} in each forest type.		
(a) number,	+	-
(b) extent	+	-
(c) percentage of forest type covered,	+	
(d) range of sizes and average size of protected area, and	+	-
(e) percentage of boundaries demarcate or	+	-
clearly defined.	+	-
5.2 Percentage of total number of protected areas connected by biological corridors or 'stepping stones' between them.	+	-
<i>Species Diversity</i>		
5.3 Existence and implementation of procedures to identify endangered, rare and threatened species ^{6[6]} of forest flora and fauna	+	+
5.4 Number of endangered, rare and threatened forest dependant species.	+	+
5.5 Percentage of original range occupied by selected endangered, rare and threatened species.	+	+
<i>Genetic Diversity</i>		
5.6 Existence and implementation of a strategy for in situ	+	+

^{5[5]} According to the IUCN protected area categories I to VI, see Appendix 2.

^{6[6]} IUCN categories should be used where possible.

and/or ex situ conservation of the genetic variation within commercial endangered rare and threatened species of forest flora and fauna Management Guidelines

5.7 Existence and implementation of management guidelines to:

- | | | |
|--|---|---|
| (a) keep undisturbed a part of each production forest | + | + |
| (b) protect endangered; rare and threatened species of forest flora and fauna, and | + | + |
| (c) protect features of special biological interest, such as seed trees, nesting sites, niches and keystone species. | + | + |

Monitoring and Evaluation

5.8 Existence and implementation of procedures for assessing changes of biological diversity of the production forests, compared with areas in the same forest type kept free from human intervention.	+	+
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Criterion 6: Soil and Water

This criterion deals with the protection of soil and water in the forest. The importance of this is two-fold. First it has a bearing on maintaining the productivity and quality of forest and related aquatic ecosystems (and therefore on the health and condition of the forest, Criterion 3); secondly, it also plays a crucial role outside the forest in maintaining downstream water quality and flow and in reducing flooding and sedimentation. The environmental and social effects of mismanagement (landslides, flooding, water pollution) can be enormous and restoration very costly. National-level data for indicators will normally be derived from the aggregation of data collected periodically at the forest management unit level.

Indicator	National	FMU
<i>Extent of Protection</i>		
6.1 Extent and percentage of total forest area managed primarily for the protection of soil and water.	+	+
6.2 Extent and percentage of area to be harvested for which off-site catchment values have been defined, documented and protected before harvesting.	+	+
6.3 Extent and percentage of area to be harvested which has been defined as environmentally sensitive (e.g. very steep or erodible) and protected before harvesting.	+	+
6.4 Extent and percentage of area to be harvested for which drainage systems have been demarcated or clearly defined and protected before harvesting.	+	+
6.5 Percentage of length of edges of watercourses, waterbodies, mangroves and other wetlands protected by adequate buffer strips.	+	+
<i>Conservation and Protection Procedures</i>		
6.6 Existence and implementation of procedures to identify and demarcate sensitive areas for the protection of soil and water.	+	+
6.7 Availability and implementation of guidelines for forest road lay-out, including drainage requirements and conservation of buffer strips along streams and rivers.	+	+
6.8 Availability and implementation of harvesting procedures:		
(a) to protect the soil from compaction by harvesting machinery, and	+	+

(b) to protect the soil from erosion during harvesting operations. + +

Monitoring and Evaluation

6.9 Existence and implementation of procedures for assessing changes in the water quality of streams emerging from production forests as compared with streams emerging from the same forest type kept free from human intervention. + +

Criterion 7: Economic, Social and Cultural Aspects

This criterion deals with the economic, social and cultural aspects of the forest, besides those mentioned under Criteria 4, 5 and 6. As a renewable resource, the forest has the potential, if sustainably managed, to make an important contribution to the sustainable development of the county.

Indicator	National	FMU
Socio-Economic Aspects		
7.1 Value and percentage contribution of the forestry sector to the Gross Domestic Product	+	-
7.2 Quantity (volume) and value of wood and non-wood forest products traded in:		
(a) the domestic market and	+	+
(b) the international market	+	+
7.3 Quantity (volume) and value of wood and non-wood forest products for subsistence use, including fuelwood.	+	+
7.4 Ratio of domestic log production to the processing capacity of wood-based industries.	+	-
7.5 Efficiency of utilisation in terms of the percentage of felled volume processed	+	+
7.6 Existence and implementation of mechanisms for the effective distribution of incentives and the fair and equitable sharing of costs and benefits among the parties involved.	+	+
7.7 Existence and implementation of procedures to ensure the health and safety of forest workers.	+	+
7.8 Employment in the forestry sector:		
(a) number employed,	+	+
(b) percentage of total work force,	+	-
(c) average wage rate, and	+	-
(d) injury rate.	+	+
7.9 Number and extent of forest sites available primarily, for		
(a) research.	+	-
(b) education	+	-
(c) the direct use and benefit of local communities, and	+	+
(d) recreation	+	+

7.10	Number of people dependent on the forest for subsistence uses and traditional and customary lifestyles..	+	+
7.11	Area of forest upon which people are dependent for subsistence uses and traditional and customary lifestyles.	+	+
7.12	Number of visitors to forest for recreational purposes. ,	+	+
7.13	Total amount of carbon stored in forest stands.	+	+

Cultural Aspects

7.14	Number of important archaeological. and cultural sites identified mapped and protected.	+	+
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Community Participation

7.15	Extent to which tenure and user rights over the forest are documented and recognised	+	+
7.16	Extent to which forest planning and management practices and processes consider and recognise legal or customary rights with respect to indigenous people and local communities, forest dwellers and other forest-dependent communities.	+	+
7.17	Extent of participation by indigenous people and local communities, forest dwellers and other forest dependent communities in forest-based economic activities.	+	+
7.18	Number of agreements involving local communities in co-management responsibilities.	+	+

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