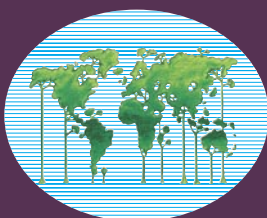




ATO/ITTO principles, criteria and indicators for the sustainable management of African natural tropical forests



ITTO Policy Development Series No 14

A collaboration between the African Timber Organization and the International Tropical Timber Organization



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The **African Timber Organization** (ATO) is an intergovernmental organization created in 1976 for cooperation on forestry issues relating to its 14 member countries, which between them contain over 75% of the tropical natural forests on the African continent. One of the major objectives of the ATO is to promote the production and trade of African timber within the framework of sustainable forest management.

Within the mandate of this objective, the ATO has undertaken several activities and also executed several projects on short-, medium- and long-term bases. Most of the projects and activities have been executed with the kind technical and financial assistance of certain donor agencies and governments, who continue to be ATO's development partners. Such projects and activities include studies, training programs, workshops and seminars designed to support the national efforts of the ATO member countries.

The **International Tropical Timber Organization** (ITTO) is an intergovernmental organization promoting sustainable development through the sustainable management, use and conservation of tropical forests. It has 56 member governments (and the European Community), which collectively represent 90% of the world tropical timber trade and about 80% of the world's tropical forests.

ITTO has developed a series of internationally agreed policy documents for achieving sustainable forest management and forest conservation and assists tropical member countries to adapt these to local circumstances and to implement them in the field. In addition, ITTO collects, analyses and disseminates data on the production and trade of tropical timber and facilitates the development of value-added, forest-based industries at both the community and industrial scales. The Organization has provided about US\$240 million in grants to fund more than 400 projects aimed at promoting sustainable forest management, conservation and sustainable forest use in its member countries. At any one time it employs, through its project program, about 500 field staff in the tropics.

Cover photos

Front left: A. Sarre

Front right, and back: J. Blaser

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Acronyms

ATO	African Timber Organization
C&I	Criteria and indicators for sustainable forest management
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
FMU	Forest management unit
ILO	International Labour Organization
ITTA	International Tropical Timber Agreement
ITTC	International Tropical Timber Council
ITTO	International Tropical Timber Organization
NGO	Non-governmental organization
NTFP	Non-timber forest product
PCI	Principles, criteria and indicators for the sustainable management of African natural tropical forests

Foreword

The world community emerged from the Rio Summit in 1992 with an acute sense of the threats facing the environment and determined to place environmental protection at the forefront of national and international development policies.

For forests, one of the first 'post-Rio' moves was to promote the development and use of criteria and indicators (C&I) for sustainable forest management. This was made easier by the fact that the International Tropical Timber Organization (ITTO) had published the first set of C&I for the sustainable management of natural tropical forests just before the Summit. Since then, many sets have been developed, often with the assistance of international organizations, and almost every country is now covered by at least one set.

The awareness of the need for environment protection raised during the Rio Summit was followed by calls for a boycott of tropical timber by some environmental NGOs, who deemed the harvesting of tropical timber for trade and industrial purposes to be a prime cause of forest degradation in the tropics. The response of the African Timber Organization (ATO) was to develop, with the financial assistance of the European Union and the technical collaboration of the Center for International Forestry Research (CIFOR), a set of principles, criteria and indicators (PCI) to promote the sustainable management of African forests. In the meantime, ITTO had revised and updated its 1992 set of C&I based on experiences acquired in the implementation of sustainable forest management in tropical countries and research advances in this field, publishing a new set in 1998. Thus, African member countries of ATO and ITTO found themselves with two sets of C&I; it made sense to build on these sets to develop a unique and harmonized set applicable to African tropical forests.

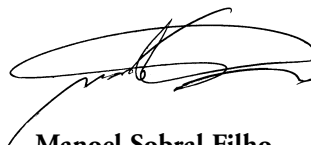
Decision 4(XXIX), adopted during the 29th Session of the International Tropical Timber Council (ITTC) held in Yokohama, Japan in November 2000, called for collaboration between ATO and ITTO in order to refine the ATO PCI and make them consistent with the ITTO C&I. This work was helped by two international consultants, who examined both sets and combined the strengths of each in a draft of harmonized PCI for African tropical forests. During a regional ATO/ITTO workshop in Yaoundé, Cameroon, held just prior to the Thirtieth Session of the ITTC at the same venue, the draft was finalized as the *ATO/ITTO Principles, Criteria and Indicators for the Sustainable Management of African Natural Tropical Forests*.

The ATO/ITTO PCI, presented in this publication, comprises 1 principle, 5 criteria, 33 indicators and 45 sub-indicators at the national level, and 3 principles, 15 criteria, 57 indicators and 140 sub-indicators at the forest management unit (FMU) level. An innovative feature of the ATO/ITTO PCI is the inclusion of sub-indicators, which provide a basis for the development of specific verifiers and standards of performance relevant to the assessment of sustainable forest management at the FMU level in African tropical forests.

We therefore now have a harmonized document that the African member countries of ATO and ITTO can use to guide them in the promotion and implementation of sustainable management in their natural tropical forests. ATO and ITTO, in collaboration with other partners, will continue to assist their members to use this tool for ensuring the sustainability of African tropical forests.



Emile Mokoko Wongolo
Secretary-General, ATO



Manoel Sobral Filho
Executive Director, ITTO

PART 1

National-level Principles, Criteria and Indicators

Principle 1 **Sustainable forest utilization and maintenance of the multiple functions of forests are a high political priority.**

Criterion 1.1 ***The State has clear objectives for the sustainable utilization of the forest heritage and a realistic action program for their achievement.***

Indicator 1.1.1 At the international level, the State has ratified or accepted the treaties, conventions or recommendations related to the sustainable development of forests.

Indicator 1.1.2 In the signatory countries, the clauses of all international agreements relating to the sustainable development of forests, such as the African Timber Organization (ATO), the International Tropical Timber Agreement (ITTA), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the International Labour Organization (ILO), the Convention on Biological Diversity, the Framework Convention on the Climate Change, etc, are respected.

Indicator 1.1.3 There is a forest policy and related forestry laws which are recognized by the various stakeholders. This forest policy and its laws prescribe the norms of forest management, resource allocation and resource use in order to achieve sustainable management.

Indicator 1.1.4 The forest laws and directives and all other national guidelines and norms of forest management are known by all stakeholders.

Indicator 1.1.5 A permanent forest estate exists as a result of negotiation between different stakeholders within the framework of a procedure of coordinated planning for land-use allocation. This land-use allocation is consistent with the objectives of the forest laws.

Indicator 1.1.6 The procedures for access to natural resources are clearly defined and respected.

Indicator 1.1.7 The legal and customary rights of local populations related to the ownership, utilization and management of the land and resources near the permanent forest estate are clearly defined, recognized and respected.

Indicator 1.1.8 At the national level, the definition of the underlying legislative framework for the sustainable management of the forest heritage is based on current information and knowledge of its ecology.

Sub-indicator 1.1.8.1 The results of research are published and placed at the disposal of both administrators and economic operators.

Sub-indicator 1.1.8.2 *The results of research and new scientific findings as well as technical data are taken into consideration for the updating of forest laws and other legal texts on the practices related to forest use.*

Indicator 1.1.9 There is a functional industrial policy favourable to the sustainable management of the forestry sector.

Sub-indicator 1.1.9.1 *The associated laws offer a secure and favourable framework for sustainable industrial investment.*

Sub-indicator 1.1.9.2 *There is a master plan for industrial development.*

Sub-indicator 1.1.9.3 *The processing capacities at the national level recognize the need to respect the regenerative capacity of the forest so as to avoid over-exploitation.*

Sub-indicator 1.1.9.4 *On the basis of the available information, the State fixes the maximum annual allowable cut authorized in natural forests.*

Indicator 1.1.10 The legislative texts relating to the use of non-timber forest products, especially the hunting of wildlife and the harvesting of wild produce, respect as well as ensure the sustainable management of these resources.

Indicator 1.1.11 The State policy for sustainable forest management promotes the development of the local economy and entrepreneurship in the forest zone.

Sub-indicator 1.1.11.1 *The State encourages the full use of local expertise, knowledge and technologies.*

Sub-indicator 1.1.11.2 *Local populations receive a portion of the revenue generated by commercial forest use.*

Sub-indicator 1.1.11.3 *A percentage of forest taxes is paid to local communities.*

Sub-indicator 1.1.11.4 *The populations are involved in the management of tax revenue paid to local communities.*

Indicator 1.1.12 There is a policy for the protection and conservation of forest ecosystems and of sites of archeological interest and cultural value.

Sub-indicator 1.1.12.1 *Adequate procedures and guidelines are in place and are implemented in a manner that identifies, protects and preserves the diversity of habitats and species at appropriate scales and levels:*

- *endangered, rare or threatened species of fauna and flora;*
- *the components of particular biological interest such as sites of reproduction, rare habitats and key species.*

Sub-indicator 1.1.12.2 *Adequate procedures and guidelines are in place to identify and protect sites of archeological interest and cultural value.*

Sub-indicator 1.1.12.3 At the national level, decisions relating to forests of high conservation value are taken within the context of the precautionary principle.

Sub-indicator 1.1.12.4 The areas for the protection and conservation of biodiversity are defined and their limits are marked in the field.

Sub-indicator 1.1.12.5 The management rules for protected areas are defined and known by all stakeholders.

Sub-indicator 1.1.12.6 Environmental and conservation problems related to biodiversity are taken into account in national forestry plans.

Sub-indicator 1.1.12.7 Phyto-sanitation and quarantine procedures are in place and enforced to prevent the introduction of pests and pathogens.

Sub-indicator 1.1.12.8 Adequate procedures are in place and implemented to prevent the introduction of exotic plants and animals that could be ecologically damaging.

Indicator 1.1.13 National forest policies take into account the potential value of the carbon storage functions of forests.

Criterion 1.2 *An institutional framework exists to achieve the objectives of sustainable forest management.*

Indicator 1.2.1 There is an established and functional forestry service/administration to ensure the direct or delegated management of all forests.

Indicator 1.2.2 There is a research institution to develop the necessary scientific and technical knowledge for sustainable forest management.

Indicator 1.2.3 Coordination and negotiation mechanisms exist at different stakeholder levels for discussing the objectives of the sustainable forest management policy, the implementation of modalities for conflict resolution, and the formulation of common rules between them.

Indicator 1.2.4 Mechanisms exist to promote the participation of different stakeholders, particularly rural communities, in the management of forests.

Criterion 1.3 *The State provides the necessary means for the sustainable management of forests.*

Indicator 1.3.1 There is a forestry organizational structure responsible for the direct or delegated management of all forests that has adequate, well-trained, competent and efficient human resources for carrying out its mission.

Sub-indicator 1.3.1.1 The training of executives is adapted to the needs of the forestry administration and various economic operators.

Sub-indicator 1.3.1.2 The number of operational staff at all levels is compatible with the mission of the forestry service/ administration and the extent of forest zones to be monitored.

Indicator 1.3.2 The research institution in charge of the development of the necessary scientific and technical knowledge for the sustainable management of forests has sufficient, well-trained and competent human resources to achieve its mission.

Sub-indicator 1.3.2.1 Research institutes are well financed to function and have the necessary qualified personnel.

Indicator 1.3.3 The State ensures that its partners in the forestry sector have sufficient technical knowledge and capacities to sustainably manage the forest or participate in all activities relating to the management of the forest.

Sub-indicator 1.3.3.1 The State ensures that the personnel of economic operators are trained in the implementation of forest management activities.

Sub-indicator 1.3.3.2 The State implements an adequate program of environmental education.

Indicator 1.3.4 There is an adequate and sustained financing for forest management, including investment and reinvestment.

Sub-indicator 1.3.4.1 The State has a special fund to finance the sustainable management of forests.

Sub-indicator 1.3.4.2 The special fund is partially provided from forestry taxes, with rates determined by law.

Sub-indicator 1.3.4.3 The modalities for the distribution of the funds between different uses (training, research, reforestation, management, sensitization, information, and so on) are determined by statutory regulations.

Sub-indicator 1.3.4.4 The funds assigned to the management of the forest are made available promptly and on time.

Indicator 1.3.5 The State ensures that requisite information for the sensitization of stakeholders on their rights and obligations relating to the management of the forest is in conformity with forestry laws.

Criterion 1.4 ***The economic and fiscal policies of the State ensure the viability of forestry enterprises.***

Indicator 1.4.1 There are financial incentives for the sustainable management of forests and the industrialization of forest products.

Sub-indicator 1.4.1.1 Enterprises shown to be engaging in or pioneering sustainable forest management benefit from financial incentives and advantages.

Sub-indicator 1.4.1.2 The fiscal rules for those operations that are in conformity with the law are established on a negotiated basis and do not penalize enterprises pioneering sustainable management.

Sub-indicator 1.4.1.3 Investment credits are available for the sustainable management of forests and the industrialization of forest products.

Indicator 1.4.2 The functions of the forestry service/administration do not unnecessarily hamper the economic activities of enterprises.

Indicator 1.4.3 The State provides incentives and implements effective measures to encourage the trade of forest products and facilitates the participation of economic operators in the promotion of such products.

Criterion 1.5 ***The forestry service/administration implements effective measures to ensure the monitoring and evaluation of the implementation of its forestry policy in relation to production, the conservation of ecosystems, and social benefits.***

Indicator 1.5.1 The State has a reliable and adequate system for updating forestry information and action plans and for adjusting the available resources as required to implement the action plans.

Sub-indicator 1.5.1.1 There is a national forest inventory that provides the necessary database for the follow-up and evaluation of the State's sustainable forest management policy, which is regularly and promptly updated.

Sub-indicator 1.5.1.2 There is an updated database on the area of forest under exploitation.

Sub-indicator 1.5.1.3 There is an updated statistical database enabling the adequate follow-up and evaluation of all the stages of production, processing and commercialization of forest products.

Sub-indicator 1.5.1.4 Non-timber forest products (NTFPs) and their use are identified and inventoried.

Sub-indicator 1.5.1.5 The necessary knowledge for the sustainable use of NTFPs is available.

Indicator 1.5.2 The forestry service/administration ensures that stakeholders are operating on a basis of a legal title deed, with a duration compatible with the objectives of sustainably managing the forest resource.

Indicator 1.5.3 The forestry service/administration ensures that each forest concessionaire has a complete forest management plan and a 'concession agreement', which sets out the obligations of all parties. Both documents are formally approved by the relevant authorities.

- Indicator 1.5.4** The forestry service/administration ensures that the forestry operations described in the forest management plan are implemented as soon as the plan is approved, and all the clauses in the concession agreement are respected.
- Sub-indicator 1.5.4.1* *The forestry service/administration makes regular and frequent field-monitoring visits.*
- Sub-indicator 1.5.4.2* *The necessary sanctions for non-compliance with forest management prescriptions are enforced.*
- Indicator 1.5.5** The forestry service/administration implements mechanisms recognized by law to limit and control all non-forestry activities in the permanent forest estate.
- Sub-indicator 1.5.5.1* *The clearing of forest for farming and related agricultural activities in and around logging yards is controlled and kept within acceptable limits.*
- Indicator 1.5.6** The forestry service/administration implements mechanisms recognized by law to protect forest under management from illegal occupation and other encroachment activities.
- Sub-indicator 1.5.6.1* *Actions are implemented by the State to reduce any type of pressure exerted on the forest, including that of hunting.*
- Sub-indicator 1.5.6.2* *The procedures for the control of any such pressures exerted on the forest exist and are applied.*
- Indicator 1.5.7** The State ensures that all economic operators are treated equitably.
- Sub-indicator 1.5.7.1* *The State implements incentive measures to channel informal activities to the formal sector.*
- Sub-indicator 1.5.7.2* *All illegal activities are punished in accordance with the law.*
- Sub-indicator 1.5.7.3* *All forms of restrictive or restraining measures are applied without discrimination to stakeholders accused of illegal activities.*
- Indicator 1.5.8** All forms of damage caused to the property of the local populations by forestry activities are compensated according to the norms in force or after negotiation.
- Sub-indicator 1.5.8.1* *Specialized administrative services are consulted for resolving such issues and their decisions are respected.*
- Sub-indicator 1.5.8.2* *The compensation procedure for all forms of damage caused to lands under cultivation is respected.*

Part 2

Forest Management Unit-level Principles, Criteria and Indicators

Principle 2 **The forest management unit (FMU), designated for whatever form of land-use, is sustainably managed with a view to supplying the required goods and services.**

Criterion 2.1 ***Forest management complies with the national policies and legislation in force in the country where it is implemented, and also with all the international treaties the country has ratified.***

Indicator 2.1.1 Forest management respects all local and national laws and meets all administrative requirements.

Indicator 2.1.2 The taxes, royalties and other fiscal payments established by law are paid.

Criterion 2.2 ***The FMU is managed with well-defined and clearly established objectives compatible with sustainable forest management.***

Indicator 2.2.1 The management of the FMU is implemented on the basis of a legally assigned title deed, for a duration compatible with the defined objectives of the FMU with a view to achieving sustainable forest management.

Indicator 2.2.2 The forest concessionaire demonstrates that it employs labour with certified competence in forest management.

Indicator 2.2.3 The forest concessionaire has a complete and approved forest management document, which includes a forest management plan, a harvesting plan, a wildlife management plan, and other relevant documents, stating the FMU's objectives, which are compatible with sustainable forest management.

Sub-indicator 2.2.3.1 *The preliminary studies (multi-resource inventory, ecological study, socioeconomic study, etc) have been carried out in conformity with national and international guidelines, and are available and correctly documented.*

Sub-indicator 2.2.3.2 *All the uses of the forest and forest products are identified.*

Sub-indicator 2.2.3.3 *The FMU is subdivided in accordance with different management constraints identified during the preliminary studies and in accordance with the adopted objectives.*

Sub-indicator 2.2.3.4 *The maps showing the FMU and its subdivisions, the distribution of resources, the village settlements, etc, have been prepared and are available.*

Sub-indicator 2.2.3.5 The area to be covered and the volume of produce that can be harvested during the management exercise are known and indicated on maps.

Sub-indicator 2.2.3.6 The annual allowable cut, minimum diameter for exploitation and maximum number of trees harvestable per hectare are clearly stated and described in the management document.

Indicator 2.2.4 A concession agreement is annexed to the forest management document which sets the operating modalities and the rights and obligations of the forest concessionaire and sub-contractors operating in the FMU.

Sub-indicator 2.2.4.1 Specific clauses relating to financial, technical and social management as well as measures for the protection of the forest are clearly defined in the concession agreement.

Sub-indicator 2.2.4.2 Sanctions for non-compliance with the management prescriptions outlined in the concession agreement are provided for when not specified by law.

Indicator 2.2.5 The forest management document and the concession agreement are formally approved by the relevant authorities.

Indicator 2.2.6 The forest management document is effectively implemented as soon as it is approved.

Sub-indicator 2.2.6.1 The prescriptions of the forest management document are known by all stakeholders.

Sub-indicator 2.2.6.2 The activities of different stakeholders are in conformity with the prescriptions of the forest management document and the concession agreement.

Sub-indicator 2.2.6.3 All the stakeholders are trained and/or sensitized on the implementation of forest management activities.

Sub-indicator 2.2.6.4 The limits and boundaries of the FMU and different subdivisions are marked in the field.

Sub-indicator 2.2.6.5 The clearing of forest for farming and related agricultural activities in and around logging yards is controlled and kept within acceptable limits.

Sub-indicator 2.2.6.6 All management activities are well documented in a manner that enables their monitoring.

Sub-indicator 2.2.6.7 Regular and frequent field visits for evaluation are undertaken.

Sub-indicator 2.2.6.8 Any non-compliance with management prescriptions is sanctioned.

Indicator 2.2.7 A minimum infrastructure needed for forest use is maintained.

Sub-indicator 2.2.7.1 The main buildings in the forest camps are constructed from durable materials.

Sub-indicator 2.2.7.2 The network of main roads is planned and constructed to last for the duration of the harvesting rotation.

Indicator 2.2.8 While appreciating the need to respect the confidentiality of information, the forest concessionaire provides stakeholders with a summary of the basic components of the forest management document.

Criterion 2.3 ***The sustainable production of timber is ensured both in quantity and quality.***

Indicator 2.3.1 The pre-harvest inventory is carried out efficiently, in conformity with the standards in force, at least three months before harvesting.

Sub-indicator 2.3.1.1 Trees to be harvested are plotted preliminarily on a map and marked in the field.

Sub-indicator 2.3.1.2 Trees to be protected, such as seed-bearing or young trees, are mapped out and visibly marked in the field before harvesting.

Indicator 2.3.2 The felling rotation and yield are clearly determined and respected in accordance with the principles of sustainable production.

Sub-indicator 2.3.2.1 The calculation of yield and the determination of the rotation are verifiable from the forest management document.

Sub-indicator 2.3.2.2 The rotation is based on the growth rates and minimum diameter of trees to be harvested, and on data obtained from the forest management inventory.

Sub-indicator 2.3.2.3 The forest management document provides management options beyond the first rotation.

Indicator 2.3.3 All harvesting is in conformity with the forest management document and the clauses of the concession agreement.

Sub-indicator 2.3.3.1 The annual harvesting plan and work program developed are clear and realistic.

Sub-indicator 2.3.3.2 Each annual harvesting plan is subject to approval before being carried out.

Sub-indicator 2.3.3.3 The order of harvesting is respected and harvesting practice is designed to prevent re-entry into harvested areas before the harvesting cycle is completed.

Sub-indicator 2.3.3.4 The standards of harvesting are explicit and known by all.

Indicator 2.3.4 Wastage is minimized at all stages of production and processing.

Sub-indicator 2.3.4.1 Felling methods are applied to optimize the volume of usable timber.

Sub-indicator 2.3.4.2 The greatest possible utilizable volume of the felled tree is recovered.

Sub-indicator 2.3.4.3 No marketable component of the felled tree is left behind in the forest.

Sub-indicator 2.3.4.4 *There is no evidence of decaying logs in timber stockyards (in the forest and processing mill, and in other stockpiles such as at railway sidings, etc).*

Sub-indicator 2.3.4.5 *The product recovery of processing plants is comparable to national and international standards.*

Sub-indicator 2.3.4.6 *Residue from sawmills or other processing units is utilized or recovered.*

Indicator 2.3.5 The forest concessionaire is able to provide all necessary documentation to monitoring and certification bodies to enable them to follow the chain of custody of each forest product from its origin.

Indicator 2.3.6 The company managing the FMU develops effective mechanisms for the optimal commercialization and promotion of its forest products.

Criterion 2.4 ***The silvicultural techniques implemented in the FMU are compatible with the objectives of sustainable forest management and are well adapted to the needs of management in the FMU and to the expected production.***

Indicator 2.4.1 Adequate efforts are made to define, verify and adjust, where necessary, silvicultural techniques.

Sub-indicator 2.4.1.1 *There is a collection of explicit silvicultural rules, which are easy to implement and monitor.*

Indicator 2.4.2 All appropriate silvicultural treatments are applied at the level of the individual tree rather than at the forest stand level.

Indicator 2.4.3 The harvesting of multi-purpose tree species for timber does not negatively impact on their other forms of utilization.

Sub-indicator 2.4.3.1 *The tree species that produce both timber and non-timber forest products are identified.*

Sub-indicator 2.4.3.2 *The application of any form of silvicultural treatment does not threaten the sustainable production and harvesting of other forest products.*

Sub-indicator 2.4.3.3 *The harvesting modalities of multi-purpose tree species in village settlements are documented in the concession agreement.*

Indicator 2.4.4 The concessionaire develops a staff training policy.

Sub-indicator 2.4.4.1 *Refresher and proficiency training programs for the staff at different working levels and positions are carried out.*

Sub-indicator 2.4.4.2 *Employees have background knowledge in other relevant areas of forestry activities.*

Criterion 2.5 **Within the FMU, NTFPs are harvested on a sustainable basis, in consultation with relevant stakeholders.**

Indicator 2.5.1 NTFPs are in use, and their bases for use are identified.

Sub-indicator 2.5.1.1 *The NTFPs harvested for all types of commercial purpose and the associated type of production are identified.*

Sub-indicator 2.5.1.2 *The list of NTFPs harvested solely to meet the subsistence needs of populations is available.*

Indicator 2.5.2 The necessary knowledge for the sustainable utilization of NTFPs is available.

Sub-indicator 2.5.2.1 *The distribution and density of species harvested for NTFPs are known.*

Sub-indicator 2.5.2.2 *The phenology and productivity of such harvested species are known.*

Indicator 2.5.3 The use of NTFPs is rationalized.

Sub-indicator 2.5.3.1 *No individual tree is needlessly destroyed or damaged during harvesting for NTFPs.*

Sub-indicator 2.5.3.2 *Procedures are in place for monitoring and evaluating the impact of harvesting.*

Sub-indicator 2.5.3.3 *The harvesting is managed according to available monitoring results.*

Sub-indicator 2.5.3.4 *The quantities harvested are effectively marketed or consumed.*

Sub-indicator 2.5.3.5 *The NTFPs in high demand are the subject of conservation management and their potential for domestication has been explored.*

Criterion 2.6 **Forest management is revised periodically, or when necessary due to unforeseen circumstances.**

Indicator 2.6.1 There is a continuous monitoring/evaluation of the implementation of forest management.

Sub-indicator 2.6.1.1 *While respecting the confidentiality of information, the concessionaire provides, upon request, a summary of the monitoring results relating to:*

- *the yield of all products extracted from the forest;*
- *growth and regeneration rates, and the condition of the forest resources;*
- *the composition of and changes observed in the flora and fauna;*
- *the social and environmental impacts of extraction and other operations;*

- *impacts in the areas of costs, productivity and efficiency of actions in relation to the implementation of forest management.*

Sub-indicator 2.6.1.2 *There is a network of permanent sampling plots which is regularly measured and analyzed.*

Sub-indicator 2.6.1.3 *The actual harvest is regularly compared to what was initially projected in the forest management document.*

Indicator 2.6.2 The forest management document is revised according to a pre-determined periodicity defined at the national level.

Sub-indicator 2.6.2.1 *The procedures of regular or exceptional revision are specified in the forest management document or are provided for in the concession agreement.*

Sub-indicator 2.6.2.2 *All relevant monitoring and research results, as well as new scientific findings and technical data, are taken into account during the process of review and revision of the forest management document.*

Sub-indicator 2.6.2.3 *The revisions are approved by the relevant authority.*

Principle 3 **The main ecological functions of the forest are maintained.**

Criterion 3.1 **The sustainable management of the forest resources is based on a dynamic acquisition of knowledge on ecology.**

Indicator 3.1.1 Available knowledge allows an ecological assessment and diagnosis of the forest ecosystems.

Sub-indicator 3.1.1.1 *Updated maps are available for vegetation type, growth stages and intensity of harvest.*

Sub-indicator 3.1.1.2 *There are topographical, soil, hydrological network and infrastructure maps.*

Sub-indicator 3.1.1.3 *Databases on forest fauna and flora and other uses are available.*

Sub-indicator 3.1.1.4 *Maps are available on the distribution of fauna showing zones of high density and any migration routes.*

Sub-indicator 3.1.1.5 *There are updated maps or data on the distribution of species to be harvested and those that are endangered, rare or endemic.*

Indicator 3.1.2 Impact studies are carried out, in relation to the scale of harvesting, in accordance with the level and extent of scarcity of any resources of concern. These studies are incorporated into the forest management document.

Sub-indicator 3.1.2.1 *Permanent sampling plots of intact and harvested forests are regularly monitored and documented (growth, phenology, regeneration, etc).*

Sub-indicator 3.1.2.2 The impacts of the harvesting methods and their intensities on the forest stand are monitored.

Sub-indicator 3.1.2.3 The impacts of the harvesting activity on key or sensitive species are monitored and documented.

Indicator 3.1.3 New scientific and technical data are synthesized periodically.

Indicator 3.1.4 The results of monitoring and new scientific findings or technical data are taken into account to improve forest management and harvesting practices.

Criterion 3.2 ***The impact of harvesting activities on the structure of the forest is minimized.***

Indicator 3.2.1 Reduced impact logging techniques are defined at the national level and implemented.

Sub-indicator 3.2.1.1 Directional felling is employed in order to spare young and emergent trees as far as possible.

Sub-indicator 3.2.1.2 The topping and lopping of treetops and branches, and the skidding of logs, do not contribute to the needless destruction of trees.

Sub-indicator 3.2.1.3 Haulage/skidding machines keep their blades above the soil and do not create significant ruts on the roads and trails as they move around the forest.

Sub-indicator 3.2.1.4 The dimensions of all infrastructure (primary and secondary roads, quarries, timber yards, skid trails) are reduced to a minimum.

Sub-indicator 3.2.1.5 Timber harvesting to provide services and construction material in villages and logging camps is regulated.

Indicator 3.2.2 The harvesting methods do not impair the original structure and diversity of the forest.

Sub-indicator 3.2.2.1 The conversion of forest to plantations or to non-forest forms of land-use is not encouraged, except in circumstances where the conversion:

- is related to a seriously degraded area/zone or a tiny part of the FMU;*
- does not take place in areas of the forest with high conservation value; and*
- will ensure a clearly defined, substantial and additional conservation benefit to the FMU in the long term.*

Sub-indicator 3.2.2.2 The area of artificial openings does not exceed those of natural openings.

Sub-indicator 3.2.2.3 The forest structure is similar before and after harvesting.

Sub-indicator 3.2.2.4 Post-harvest species composition and density of undergrowth do not show increased abundance of populations of lianas in the families Marantaceae and Zingiberaceae.

Sub-indicator 3.2.2.5 Pioneer and light-demanding tree species do not crowd out important forest-floor habitats.

Criterion 3.3 **The impact of harvesting activities on biodiversity is minimized.**

Indicator 3.3.1 At the forest concession level, decisions concerning forests with high conservation value are taken within the context of the precautionary principle.

Indicator 3.3.2 Adequate procedures and guidelines exist and are implemented to identify and protect, in a manner which is representative of the diversity of habitats and at a scale adapted to the subject to be preserved:

- endangered, rare or threatened species of fauna and flora; and
- other biological components of the forest of particular interest, such as reproduction sites, rare habitats and key species.

Sub-indicator 3.3.2.1 Sensitive areas selected during the ecological survey and assessment are included in the protected zones.

Sub-indicator 3.3.2.2 There is a map showing the protected zones and other forest areas where harvesting is excluded.

Sub-indicator 3.3.2.3 The limits of protected zones are clearly defined and marked in the field.

Sub-indicator 3.3.2.4 Standardized data on fauna and flora are available.

Indicator 3.3.3 The diversity and relative abundance of fauna species do not change significantly.

Sub-indicator 3.3.3.1 National and international regulations on the protection and hunting of, and trade in, animal species or parts of animal species are known and respected.

Sub-indicator 3.3.3.2 There is an internal rule forbidding and also penalizing the transportation and trade of bush meat, and also the transport of guns and weapons for hunting in the vehicles of the forest concessionaire.

Sub-indicator 3.3.3.3 Access to the forest concession is controlled and reserved for use only by authorized vehicles.

Sub-indicator 3.3.3.4 Secondary roads/paths are closed after harvesting, except those required for forest monitoring or for local development.

Sub-indicator 3.3.3.5 The non-fragmentation of tree populations is ensured by the maintenance of a continuous canopy, which may be broken to a minimal extent by the network of primary and secondary paths/roads.

Sub-indicator 3.3.3.6 *There is no noted or recorded scarcity in the availability, supply and consumption of bush meat for subsistent living in the village settlements.*

Sub-indicator 3.3.3.7 *Commercial hunting and non-selective hunting methods are forbidden in the forest concession.*

Sub-indicator 3.3.3.8 *The inappropriate hunting, collection and trapping of bush meat is controlled.*

Indicator 3.3.4 The diversity and density of flora species are not significantly modified by harvesting.

Sub-indicator 3.3.4.1 *Rare and endemic species with a confined area of distribution are protected.*

Sub-indicator 3.3.4.2 *The species' diversity of plants in the undergrowth of forests restored after harvesting is similar to that noted in intact forests.*

Sub-indicator 3.3.4.3 *The use of biological control agents is documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. The use of genetically modified organisms is prohibited.*

Sub-indicator 3.3.4.4 *The use of exotic species is carefully controlled and actively monitored to avoid adverse ecological impacts.*

Criterion 3.4 **The natural regeneration capacity of the forests is ensured.**

Indicator 3.4.1 The conditions for natural regeneration are fulfilled and regeneration processes are maintained.

Sub-indicator 3.4.1.1 *The phenology and dispersal mechanisms of flora species are not disrupted.*

Sub-indicator 3.4.1.2 *The number of seed-producing trees is sufficient for adequate regeneration.*

Sub-indicator 3.4.1.3 *The populations of pollen producers and dispersers are comparable in density and distribution with what can be found in non-exploited forests.*

Sub-indicator 3.4.1.4 *Seedlings of all harvested species exist under the forest canopy and in natural and artificial openings.*

Sub-indicator 3.4.1.5 *There is no abnormal change in the size-class distributions of such harvested species.*

Sub-indicator 3.4.1.6 *The regeneration of secondary vegetation occurs on disused paths and tracks.*

Indicator 3.4.2 Measures are taken to promote natural regeneration whenever necessary.

Sub-indicator 3.4.2.1 *Appropriate steps are taken to protect degraded areas in order to foster their regeneration.*

- Sub-indicator 3.4.2.2* Healthy mother trees or seed-bearing trees are protected and preserved within stands of forest to be harvested in the future, in order to maintain, as far as possible, the structure of the forest and the pattern of species' distribution characteristic of that structure.
- Sub-indicator 3.4.2.3* The harvesting of forest products/produce (fruits, kernels, bark, wood for service, and ornamental plants) ensures the maintenance of adequate stocks of seed-bearing trees and fruits.
- Sub-indicator 3.4.2.4* For enrichment planting in harvested natural forests or in agroforestry systems, the use of indigenous species with proven commercial value is preferred.

Criterion 3.5 **The impact of harvesting activities on water, soils and slopes is minimized.**

Indicator 3.5.1 The flow rate and quality of water are maintained.

- Sub-indicator 3.5.1.1* No water retention areas are created and there is no disruption to drainage in the FMU.
- Sub-indicator 3.5.1.2* The formation of sandbanks and any form of in-fill in watercourses and swamps does not significantly disrupt water flows.
- Sub-indicator 3.5.1.3* Used oils are recovered.
- Sub-indicator 3.5.1.4* There is no sign of chemical contamination of food chains or aquatic ecosystems (eg sick or dead invertebrates, fish or mammals, abnormal invasion of seaweeds).

Indicator 3.5.2 The impact of harvesting activities on the biological, physical and chemical characteristics of soils and on hillslopes is minimized.

- Sub-indicator 3.5.2.1* Harvesting and its related infrastructure avoid buffer zones and other sensitive areas on slopes (low relief, river sides, steep slopes).
- Sub-indicator 3.5.2.2* Erosion due to harvesting and related infrastructure is within acceptable limits.
- Sub-indicator 3.5.2.3* Disused secondary infrastructure (skid trails, timber yards, quarries) is covered again by vegetation.
- Sub-indicator 3.5.2.4* Management systems promote the development and adoption of environmentally friendly, non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides, pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use, and any pesticides banned by international agreement, are prohibited. If chemicals are used, proper equipment and training is provided to minimize health and environmental risks.

Sub-indicator 3.5.2.5 Chemicals, containers and liquid and solid non-organic wastes including fuel and oil are disposed of in an environmentally appropriate manner.

Sub-indicator 3.5.2.6 The setting up of necessary infrastructure for harvesting is optimized in relation to the topography of the sites and the location of the resource.

Indicator 3.5.3 Water and soil restoration programs are implemented whenever necessary.

Sub-indicator 3.5.3.1 Old infrastructure still in use is upgraded and maintained so as to meet current standards.

Sub-indicator 3.5.3.2 All sites showing signs of severe erosion or other types of important water and soil degradation are restored.

Principle 4 According to the importance and intensity of forest operations, the FMU manager contributes to the improvement of the economic and social well-being of workers in the FMU and of local populations.

Criterion 4.1 *The rights and responsibilities of workers in the FMU and local populations are clearly defined, acknowledged and respected.*

Indicator 4.1.1 The legal and customary rights of local populations in respect to the ownership, use and tenure of the forest land and resources are clearly defined, acknowledged and respected.

Sub-indicator 4.1.1.1 The provisions of the forestry law on rights of use and ownership are known and respected.

Sub-indicator 4.1.1.2 The rights of use within village boundaries are respected.

Sub-indicator 4.1.1.3 As much as possible, local populations have control over the forestry operations on their forest land and resources, unless they freely delegate this control to a third party.

Sub-indicator 4.1.1.4 Sites of religious, cultural or particular economic value are clearly identified in collaboration with local populations and protected by those in charge of forest management.

Sub-indicator 4.1.1.5 Local populations receive compensation for the use and application of their traditional knowledge and techniques in the forest area. This compensation is freely and formally accepted prior to the commencement of operations.

Indicator 4.1.2 The modalities of access to natural resources are clearly defined and respected by all.

Sub-indicator 4.1.2.1 The provisions of the forestry law on the modalities of access to resources are known and respected.

- Indicator 4.1.3** All relevant labour code regulations are applied.
- Sub-indicator 4.1.3.1* *The labour code and other related regulations (collective agreements, rules of procedure, memoranda, etc) are respected.*
- Sub-indicator 4.1.3.2* *Wages and social benefits are comparable to national norms.*
- Indicator 4.1.4** Information is provided on and all stakeholders are fully informed of their rights and duties.
- Sub-indicator 4.1.4.1* *Targeted sensitization campaigns are conducted.*
- Indicator 4.1.5** Damages caused are compensated according to the norms in force or after negotiation.
- Sub-indicator 4.1.5.1* *Specialized services are consulted and their decisions respected.*
- Sub-indicator 4.1.5.2* *The procedure to compensate for the damage caused to cultivated crops is respected.*
- Criterion 4.2** ***The concessionaire encourages the participation of local populations present in the FMU in the management of forest resources.***
- Indicator 4.2.1** The concessionaire sets up ad hoc bodies for consultation and negotiation with local populations.
- Indicator 4.2.2** The procedure for dialogue and the resolution of conflicts is functional both between stakeholders and within each stakeholder body.
- Sub-indicator 4.2.2.1* *There is efficient and effective communication between stakeholders.*
- Indicator 4.2.3** All stakeholders participate in the control of natural resources management on the basis of a protocol accepted by all.
- Indicator 4.2.4** Procedures for consultation with populations during the establishment and demarcation of forest concession boundaries are respected.
- Indicator 4.2.5** Mechanisms for applying sanctions in the case of rule violations are in place and agreed by stakeholders.
- Criterion 4.3** ***All stakeholders consider the share of benefits derived from forests to be satisfactory.***
- Indicator 4.3.1** The forest concessionaire ensures that the populations living within or near the FMU receive a portion of the revenue generated by the exploitation of the FMU.
- Indicator 4.3.2** Local communities living in or near the harvested forest area benefit preferentially from opportunities in employment, training and other services.

- Sub-indicator 4.3.2.1* *The percentage of local people recruited is higher than that of non-locals, given equal competence.*
- Sub-indicator 4.3.2.2* *The concessionaire maintains a recruitment and training policy for young people originating from local communities.*
- Sub-indicator 4.3.2.3* *The concessionaire makes provision for and accepts trainees in its production units.*

Indicator 4.3.3 In accordance with the importance and impact of the forest operations at the local level, the concessionaire contributes to the development of the local economy.

- Sub-indicator 4.3.3.1* *The concessionaire encourages the creation of small and medium-sized enterprises related to its forestry activities.*
- Sub-indicator 4.3.3.2* *The concessionaire encourages local sub-contracting activities.*
- Sub-indicator 4.3.3.3* *With the support of the concessionaire, local populations develop food-crop farming activities (gardening, stock-breeding, fish-breeding, etc).*

Criterion 4.4 **According to the importance and impact of the forestry operations, the concessionaire contributes to improving the health and education of local populations.**

Indicator 4.4.1 The concessionaire takes preventive measures to minimize any professional hazards in relation to forestry activities.

- Sub-indicator 4.4.1.1* *Working conditions are in accordance with the labour code and/or ILO recommendations.*
- Sub-indicator 4.4.1.2* *There are rules of procedures and memoranda that are widely circulated to remind employees about the observance of safety norms.*
- Sub-indicator 4.4.1.3* *Appropriate safety gear and equipment are distributed and worn by employees in their various working environments.*
- Sub-indicator 4.4.1.4* *Employees are regularly submitted to medical examinations in accordance with national norms.*

Indicator 4.4.2 Health-related aspects of living conditions are improved for employees and their families.

- Sub-indicator 4.4.2.1* *The concessionaire takes measures to ensure adequate public hygiene and health (eg the provision of safe drinking water and hygienic latrines, the disposal of household refuse, etc).*
- Sub-indicator 4.4.2.2* *Health centres exist, have qualified staff living on-site, and function at a satisfactory level.*

Sub-indicator 4.4.2.3 The provision of medicines to dispensaries is ensured.

Sub-indicator 4.4.2.4 There is a store well-stocked with canned and fresh foodstuffs (particularly those high in proteins to substitute for bush meat).

Indicator 4.4.3 The health conditions of local populations are improved as a result of the forestry activities.

Sub-indicator 4.4.3.1 Local populations have access to dispensaries.

Sub-indicator 4.4.3.2 Educational programs on nutrition, including for pregnant or breast-feeding women, are organized.

Sub-indicator 4.4.3.3 The concessionaire sponsors programs on vaccination and sensitization campaigns on AIDS and sexually transmitted diseases.

Indicator 4.4.4 The concessionaire contributes to the basic education of local populations and workers present in the FMU, in accordance with the contractual provisions established consistent with national norms.

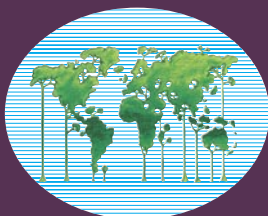
Sub-indicator 4.4.4.1 Children in local communities have access to the concessionaire's school infrastructure.



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