**ABNT NBR 14789:2021 - Sustainable forest management — Principles, criteria, and indicators for planted forests**

**Introduction**

Sustainable forest management is the holistic administration of forests to obtain economic, social, and environmental benefits while respecting the mechanisms that permit resilience and support of the ecosystem that is being managed. This process considers, additionally or as alternatives, the use of multiple wood-producing species, multiple non-timber products and sub-products, and utilization and preservation of other tangible and intangible benefits that exist there.

Sustainable forest management techniques are used to reduce impacts and ensure that the forest project is sustainable through meticulous planning of operations and interactions with local and traditional communities as well as indigenous peoples.

Additionally, considering that no activity that disrespects applicable legislation can be sustainable, sustainable forest management also respects and follows all relevant laws and regulations.

# Sustainable forest management — Principles, criteria, and indicators for planted forests

## Scope

This Standard specifies the principles, criteria, and indicators for sustainable management of planted forests.

## Terms and definitions

The following terms and definitions are utilized in this document.

#### 2.1

**top management**

trained person or group of people responsible for management of the organization (or part of it) who have the power to make decisions, delegate authority, and manage resources within the organization.

#### 2.2

**domesticated animals**

species whose biological, behavioral, and observable traits have been altered by traditional processes of selective breeding and improvement to make them closely dependent on humans; they may exhibit various observable traits that different from those of the species they originate from.

#### 2.3

**areas of relevant ecological and social interest**

places that:

1. contain protected, rare, sensitive, or representative ecosystems.
2. contain endemic species and habitats for threatened species cited in recognized lists.
3. contain *in situ* genetic resources that are endangered or protected.
4. contribute to natural landscapes on a global, national, or regionally significant level.
5. have recognized historical, archaeological, cultural, or spiritual significance, as well as areas that are essential to meet the needs of indigenous peoples and local communities (such as health or subsistence).
6. have important social roles in protecting society, for example in controlling erosion, preventing floods, purifying water, regulating the climate, sequestering carbon, and other services that regulate or support the ecosystem.

[ABNT NBR 15789:2021, 2.4]

#### 2.4

**degraded area**

area of land or vegetation that has partially or entirely lost its ecological function due to natural or man-made phenomena.

#### 2.5

**environmental, social, and economic aspects**

elements of an organization's activities, products, or services that may interact with the environment, society, or the economy.

[ABNT NBR 15789:2021, 2.6]

#### 2.6

**local communities**

groups of humans who live in areas within or neighboring the forest management unit, in rural or urban properties (such as districts, villages, or neighborhoods in the municipality where the forest management unit is located).

#### 2.7

**traditional communities**

groups that recognize themselves as culturally distinct with their own forms of social organization who occupy and use territories and natural resources as an essential part of their cultural, social, religious, ancestral, and economic practices, utilizing traditional knowledge, innovations, and practices.

#### 2.8

**free, prior, and informed consent**

a legal concept that determines that a person or community gave consent for an activity before it began based on a clear understanding of the facts, implications, and future consequences of this activity, and had all the relevant information at the time that consent was given.

NOTE Free, prior, and informed consent includes the right to grant, change, suspend, and revoke

permission or agreement.

#### 2.9

**conversion**

changing soil use by substituting natural ecosystems

#### 2.10

**criterion**

A principle-based parameters or requirements that relates to the state or dynamics of a system.

#### 2.11

**customary rights**

a set of customs, practices, and beliefs accepted as obligatory rules of conduct by indigenous peoples and traditional communities.

NOTE It is an inherent part of their social and economic systems and ways of life. May refer to use of natural resources, rights and obligations related to land, successions and ownership, spiritual life, preserving cultural heritage, and many other issues as well as respective access.

#### 2.12

**use rights**

the right to use forest resources that may be defined by local customs and mutual agreements or dictated by other entities with access rights

#### 2.13

**legal rights**

The right to use and possess acquired land, supported by applicable federal, state, or municipal legislation.

#### 2.14

**ecosystem**

a complex dynamic of plants, animals, microorganisms, and their abiotic environment that interact as a functional unit.

#### 2.15

**endangered species**

species that face a high probability of extinction for a variety of reasons if direct pressure on these species and their habitat continue.

NOTE These species are known and defined on official federal, state, and/or municipal lists.

#### 2.16

**endemic species**

a native species with restricted distribution that only occurs in a single geographical area and specific habitat.

#### 2.17

**rare species**

species with low population density

#### 2.18

**forest**

an ecosystem primarily comprised of tree species in any stage of development, associated communities of animals and microbiota, as well as the physical substrate.

#### 2.19

**severely degraded forests**

forests that have been subjected to natural or man-made disturbances so severe, extensive, or frequent that their original functionalities have been irreversibly affected, along with their associated goods and services.

#### 2.20

**habits and customs**

social activities resulting from frequent practice, according to each specific society and culture.

#### 2.21

**environmental impact**

any change to the physical, chemical, or biological properties of the environment caused by any form of energy or matter resulting from human activities that indirectly or directly have a positive or negative impact on the quality of environmental resources.

#### 2.22

**social impacts**

any changes resulting from a forest management operation's activities, products, or services that indirectly or directly affect the health, safety, or well-being of the population or its social, economic, cultural, or spiritual activities.

#### 2.23

**indicator**

quantitative or qualitative parameter that makes it possible to objectively and unambiguously assess the characteristics of a forest ecosystem or related social system, or which describes elements of forest management and the productive processes conducted within this ecosystem.

#### 2.24

**sustainable forest management**

administration of forests to obtain economic, social, and environmental benefits while respecting the mechanisms that support the ecosystem that is being managed. This process considers, additionally or as alternatives, the use of multiple wood-producing species, multiple non-timber products and sub-products, and utilization and preservation of other tangible and intangible benefits that exist there.

#### 2.25

**integrated pest and disease management**

careful consideration of all available pest control techniques and subsequent implementation of appropriate measures that discourage the development of pest populations and maintain pesticides and other interventions at economically justified levels and reduce or minimize risks to human health and the environment.

#### 2.26

**opportunities**

potentially beneficial effects

**2.27**

**genetically modified organism (GMO)**

an organism whose genetic material (DNA/RNA) has been modified by genetic engineering techniques.

NOTE 1 The following techniques are considered genetic modifications that result in genetically modified trees:

* Recombinant nucleic acid techniques involving the creation of new combinations of genetic material to insert nucleic molecules produced by any means outside an organism, in any virus, bacterial plasmid, or other vector system, and their incorporation into a host organism in which they do not naturally occur but can propagate continuously
* Techniques involving direct introduction into an organism of inherited genetic materials prepared outside that organism, including microinjection, macroinjection, and microencapsulation
* Cell fusion (including protoplast or somatic fusion) or hybridization techniques in which live cells with new combinations of inherited genetic material are created via fusion of two or more cells by non-natural methods.

NOTE 2 The following techniques are not considered genetic modifications that result in genetically modified trees:

* *In vitro* fertilization
* Natural processes such as conjugation, transduction, transformation
* Induction of polyploidy

#### 2.28

**organization**

Company, corporation, firm, business, or institution, or any part of combination of these, public or private, anonymous or limited partnership, or with any other type of bylaws, with its own administrative structure and functions.

#### 2.29

**landscape**

socioecological system consisting of a mosaic of natural or anthropically modified natural ecosystems with characteristic configurations of topography, vegetation, soil use, and settlement that are influenced by ecological, historical, economic, and cultural processes and activities.

#### 2.30

**stakeholder**

any person, group of people, or entity that is or may be affected by the activities of a forest management unit.

NOTE Examples include but are not limited to (for example, in the case of owners of land downstream) people, groups of people, or entities located in the areas surrounding a management area. The following are examples of stakeholders:

* + Local communities
  + Indigenous peoples and/or traditional communities
  + Workers
  + Forest dwellers
  + Neighbors
  + Owners of land downstream
  + Local processors
  + Local businesses
  + Those holding land use and land rights
  + Organizations that are authorized to or known to act on behalf of the stakeholders, etc.

#### 2.31

**interested party**

Any person, group of people, or entity that demonstrates interest, or is known to have an interest, in the activities of a forest management unit.

The following are examples of interested parties:

* + Conservation organizations (example: environmental NGOs)
  + Labor (rights) organizations (example: unions)
  + Human rights organizations (example: social NGOs)
  + Local development projects
* Local governments
* National government departments that function in the region
* Regulatory agencies
* Watershed committees
* Offices of accrediting organizations
* Specialists on specific topics (example: high conservation value)

#### 2.32

**pesticide**

any chemical substance or mixture of chemical ingredients intended to repel, exterminate, or control any pest

NOTE This definition includes insecticides, acaricides, larvicides, fungicides, herbicides, and substances meant to exterminate/repel/control rodents, nematodes, and mollusks.

#### 2.33

**sustainable forest management plan**

basic technical document that presents the guidelines and procedures for forest administration according to the principles of sustainable forest management.

#### 2.34

**planted forests**

forests or other wooded land of introduced species, and in some cases native species, established through planting or seeding, mainly for production of wood or non-wood goods and services.

#### 2.35

**ownership**

the exercise of powers inherent to owning a forest management unit, including but not limited to occupation, access, or use of a specific area or its associated resources.

#### 2.36

**Indigenous peoples**

people and groups of people who may be identified or characterized as follows:

1. The main characteristic or criterion is self-identification as indigenous people at an individual level, and acceptance by the community as a member
2. Historical continuity with pre-colonial or pre-conquest societies
3. Strong connection to the surrounding territories and natural resources
4. Different social, economic, or political systems
5. Distinct language, culture, and beliefs
6. Formation of non-dominant groups in society
7. Decide to maintain and replicate their ancestral environments and systems as distinct peoples

and communities.

#### 2.37

**principle**

legislation or fundamental rule that serves a basis for activity and is expressed as an objective or attitude in relation to the function of a forest ecosystem and to relevant aspects of a social system related to this ecosystem.

#### 2.38

**non-wood forest products**

Products of biological origins other than wood that are obtained from forests or trees outside of forests

#### 2.39

**recovery**

management of an ecosystem in order to reestablish one or more of its functions and services

#### 2.40

**risks**

effects of uncertainty on objectives

NOTE 1 An effect is a deviation from what was expected: positive or negative.

NOTE 2 Uncertainty is the lack (even partial) of information, understanding, or knowledge related to an event, its consequences, or its likelihood.

NOTE 3 Risk is often characterized by reference to potential “events” (as defined in ABNT ISO Guide 73:2009, 3.5.1.3) and “consequences” (as defined in ABNT ISO Guide 73:2009, 3.6.1.3), or a combination of these two possibilities.

#### 2.41

**ecosystem services**

aspects of ecosystems that are actively or passively utilized to sustain life and/or produce human well-being, and also include subjective aspects related to psychological and spiritual well-being.

NOTE Can be catalyzed by adequate use and management of natural resources, creating natural capital to sustain human activities.

#### 2.42

**management system**

set of elements that are interrelated or interact within an organization to establish policies and objectives and processes to achieve these objectives.

#### 2.43

**workers**

people employed directly in administrative or operational sectors, or who are self-employed or subcontracted by an organization or by wood purchasers who work in the forest management unit.

[ABNT NBR 15789:2021, 2.40]

#### 2.44

**forest management unit**

an area subject to evaluation of compliance with the requirements of this Standard, defined for the purpose of good management practices in social, environmental, and economic terms.

[ABNT NBR 15789:2021, 2.42]

#### 2.45

**customary use**

a long series of continuously repeated habitual or customary activities, which because of their repetition and uninterrupted approval have acquired force of law within a certain geographical or social unit.

NOTE Customary use is acquired at the same time by self-recognition, external recognition, adding to a set of characteristics that differentiate the community from its surrounding.

#### 2.46

**environmental value**

values comprised of biological, physical, environmental, and human elements such as ecosystem services (including sequestering and storing carbon) biological diversity, water resources, soils, the atmosphere, and landscape values.

NOTE The value attributed to these elements is derived from the needs of animal, vegetation, and/or human populations.

#### 2.47

**social value**

self-attributed elements and practices that are crucial to the cultural, social, or spiritual identity of a

community.

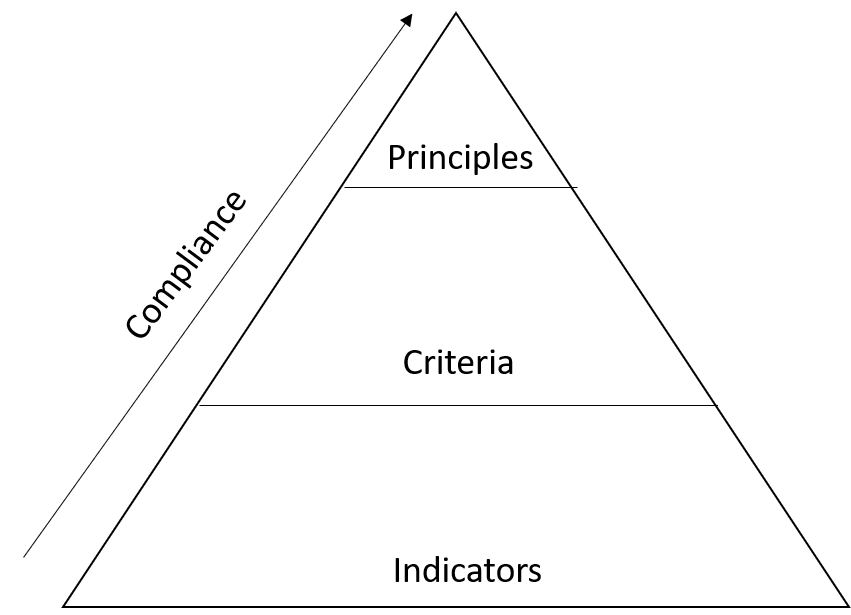
## Principles, criteria, and indicators

The principles established in this Standard provide a reference for sustainable forest management.

The principles are broken down into criteria, which express the conditions describe the states or dynamics of a forest ecosystem and the social system associated with it.

Compliance with each criterion is determined by assessing compliance with a group of specific indicators, which can be quantitative or qualitative.

In this way, a hierarchy of the principles, criteria, and indicators is defined (see Figure 1) that establishes monitoring and demonstrates good forest management and serves as a reference for assessing the quality of forest management.



#### Figure 1 – Hierarchy

A criterion is considered to be implemented when compliance with its respective indicators is demonstrated. A principle is considered to be implemented when all of its respective criteria are

confirmed to have been met. Finally, sustainable forest management according to this Standard is considered to be implemented when all the principles are confirmed to have been implemented.

Depending on the location and the final use of the forest management unit, indicators may have a different relative importance, since certain indicators may not be applicable. However, all indicators relevant to that location must be assessed.

### Principle 1 – Compliance with laws

The organization shall be guided by attitudes and actions that ensure compliance with federal, state, and municipal laws and international agreements, treaties, and conventions ratified by the country that are applicable to forest management, as well as applicable requirements for assessing compliance.

The organization shall comply with laws applicable to forest management issues such as protecting nature and the environment, threatened and protected species, rights of ownership, use of land and forest resources and/or land tenure rights by the organization, as well as the legal, customary, and traditional rights of indigenous peoples and traditional and local communities and other affected stakeholders. Laws related to labor, social security, taxes, and workplace health and safety shall be complied with, along with collective and/or individual agreements, collective conventions, and fundamental ILO conventions.

The organization shall protect the forest in order to prevent illegal or unauthorized activities.

The criteria and indicators to be met are described in items 3.1.1 to 3.1.5.

#### Criterion 1.1

The organization shall carry out activities related to establishing and managing its forests in accordance with laws, agreements, treaties, and conventions applicable to forest management.

Indicators:

1. Existence of procedures to identify and access laws, agreements, treaties, and conventions applicable to forest management and determine how these obligations apply to the organization
2. Existence of records providing compliance with legislation, agreements, treaties, and conventions applicable to forest management
3. Evidence that the organization respects human rights as defined in the Universal Declaration of Human Rights
4. Existence of anti-corruption mechanisms in line with existing legislation, as well as evidence of implementation and corrective measures (when necessary)

#### Criterion 1.2

The organization's rights of ownership and of the use of land and forest resources and/or land tenure rights shall be clearly defined, documented, and established for the forest management unit. Similarly, legal, customary, and traditional rights related to the forest management unit

shall be identified, recognized, and respected according to current legislation and applicable treaties and international agreements ratified by the country.

Indicators:

1. Evidence that legal, customary, and traditional rights related to the forest management units are identified, recognized, and respected according to current legislation and applicable treaties and international conventions ratified by the country
2. Evidence that forestry practices and operations are carried out in compliance with the established structure of legal, customary, and traditional rights, as described in ILO Convention 169 and UN Declaration on the Rights of Indigenous Peoples
3. Evidence that the organization does not impact customary and traditional rights within the forest management unit without free, prior, and informed consent from rights holders, inducing compensation, when applicable
4. Evidence that local communities are identified and their legal rights are respected by forest management
5. Evidence that the organization's rights of ownership, land use, and use of forest resources and/or land tenure rights are long-term (lasting at least one full rotation or harvesting cycle) and are documented and established for the forest management unit according to current legislation
6. Existence of suitable mechanisms to resolve complaints, conflicts, and litigation related to the organization's rights of ownership, use of land and forest resources, and/or land tenure rights
7. Evidence that areas customarily used for recreation within the forest management unit are recognized, and when present, that public access is permitted, respecting rights of ownership, safety limits, rights of third parties, and the effects on forest resources and ecosystems, as well as compatibility with the forest's other functions.

#### Criterion 1.3

Laws related to labor, social security, taxes, and workplace health and safety shall be complied with, along with collective and/or individual agreements, collective conventions, and fundamental ILO conventions.

Indicators:

1. Evidence that social security/pension for all workers is in compliance with current legislation. When there are pending issues related to social security/pension, the organization shall prove it is monitoring these pending issues and working to correct them.
2. Evidence that all aspects related to labor legislation are in compliance with current legislation including collective or individual agreements, collective conventions, and regulatory labor standards.
3. Evidence of compliance with fundamental ILO conventions, as well as other ILO conventions ratified by the country.

NOTE When conflicts exist between legislation and fundamental conventions (causing compliance with a convention to lead to illegality in forest management), legislation shall prevail.

1. Evidence that the organization promotes equal opportunities without discrimination, including a workplace free of harassment and promotion of gender equality.
2. Existence of effective mechanisms to report and eradicate cases of harassment and discrimination that include confidentiality in order to avoid problems and potential penalties to affected parties.
3. Evidence that worker wages meet or exceed the legal minimum or existing workplace wage agreements or minimum wage agreements in the region, when applicable.
4. Evidence that the organization is in compliance in terms of payment of royalties and appliable taxes and tributes. When payments are pending, a plan to pay off the debts shall be made with the creditor or institution.
5. Existence of appropriate mechanisms to resolve complaints, conflicts, and litigation related to working conditions, labor and social security/pension issues, and labor-related taxes.
6. Evidence that measures are taken with service providers to comply with labor, tax, and social security and pension legislation, collective or individual agreements, collective conventions, and regulatory labor standards.
7. Existence of a workplace health and safety program in line with legal requirements, implemented in such a way that risks to health and accidents can be identified and measures can be implemented to protect workers from work-related risks.

#### Criterion 1.4

The organization shall implement measures to ensure the production of the forest management unit against illegal or unauthorized activities such as extraction of wood or other products, land use, hunting, fishing, fires, etc.

Indicators:

1. Existence of mechanisms to protect the forest management unit and control illegal or unauthorized activities there according to the size of the organization and intensity of management activities.
2. Existence of records of illegal or unauthorized activities within the forest management unit and measures taken to avoid or minimize such activities.

#### Criterion 1.5

The organization shall possess a public commitment to perform sustainable forest management according to the applicable requirements for assessing compliance.

Indicators:

1. Existence of a formal commitment by the organization to perform sustainable forest management and improve it continuously in line with the applicable requirements for assessing compliance.
2. Evidence that the commitment cited in the previous indicator is available to the public.

### Principle 2 – Rational use of forest resources in the short, medium, and long terms, in search of its sustainability

Forest management planning shall focus on the health and vitality of forest ecosystems in order to maintain and expand the economic, environmental, cultural, and social value of the forest. Forest shall be managed so that activity helps preserve renewable natural resources. The criteria and indicators to be met are described in items 3.2.1 to 3.2.5.

#### Criterion 2.1

Forest operations shall be based on a sustainable forest management plan drafted according to applicable legislation, documented, and updated, which includes management activities or references associates documentation considering different land use, organization size, intensity of management activities, and function of the managed forest area.

Indicators:

1. Evidence that the risks and opportunities related to compliance with the requirements of this Standard are continuously identified and considered in forest management according to the size, intensity of management activities, and scale of operations, considering changes in the current scenario.
2. Evidence that management planning is intended to maintain, preserve, or improve biodiversity in the landscape, ecosystem, species, and genetic levels.
3. Existence of a documented sustainable forest management plan that encourages diversified production of goods and services over the long term, and is compatible with the size of the forest management unit and scale of operations at the institution, containing:
   * The objectives of the sustainable forest management plan, including those related to maintaining and protecting the social, environmental, and economic functions of the forests
   * Management conditions as a function of specific regional and local characteristics
   * Forest management scheme to be implemented
   * Justification of the economic viability of the management
   * Roadway/transport system
   * Estimated age at harvest according to the type of management
   * Estimated growth and production by type of product to be harvested
   * Where non-wood products are commercially utilized, document the permitted annual rate of use, when this might affect long-term sustainability
   * Description and mapping of resources managed by the organization, with descriptions of land use and occupation
   * Surveys of topography, soil classes or types, vegetation typologies, as well as available water resources
     + Existence of a multi-annual program for planting or reform, harvesting, and maintenance
     + Plans to prevent, combat, and mitigate damage from fires and other incidents which are appropriate to the risk that these events might occur
     + Environmental safeguards that specify how to minimize risks of degradation and damage to forest ecosystems
     + Specific measures to protect and preserve wild flora and fauna, particularly rare, threatened, endemic, and protected species
     + Inventory of the managed forest resources
     + Recommendations for alternative raw material sources for the sustainable forest management plan
4. Evidence that the sustainable forest management plan was drafted and is monitored by a qualitied professional
5. Evidence that the parties responsible for the sustainable forest management plan are clearly defined and identified
6. Evidence that the sustainable forest management plan is reviewed periodically, at intervals compatible with the frequency of monitoring and modifications in the organization' management
7. Evidence that the monitoring data are incorporated into the sustainable forest management plan
8. Evidence that a summary of the sustainable forest management plan that is appropriate for the scope, organization's size, and intensity of forest management activities is available to the public and contains information about the overall objectives and principles of forest management. Confidential information, or sensitive information related to the protection of cultural sites or natural resources may be omitted.
9. Existence of documented procedures for the following activities in order to ensure that they are carried out as described in the sustainable forest management plan:
   * Selection and location of areas for plantations and transport network
   * Seedling production
   * Establishment
   * Reform
   * Forestry activities
   * Clearing and maintenance of roadways
   * Harvesting and transport of forest production
10. Evidence that the documented procedures are kept up to date.

#### Criterion 2.2

The organization shall adopt strategies oriented toward sustainable use and management of forest resources.

Indicators:

1. Evidence that forest species are suited to the local soil and climate conditions and the planned end uses
2. Evidence that suitable practices for planting, reform, or coppicing are adopted to ensure the quality and quantity of forest resources
3. Evidence that practices which indicate efficient utilization of the forest resources produced are adopted
4. Existence of environmentally suitable explanations for determining the destination of forest harvesting byproducts, such as reducing, reuse, or disposal
5. Evidence that the harvest levels of wood and non-wood forest products that are commercially utilized by the organization do not exceed the long-term replacement rates, according to the plan

#### Criterion 2.3

The organization shall determine and provide the resources needed to establish, implement, maintain, and continuously improve the sustainable forest management system.

Indicators:

1. Existence of a budget plan with planned environmental, social, and operational investments and costs that ensure implementation of the sustainable forest management plan.
2. Evidence that the organization has human resources compatible with the activities described in the sustainable forest management plan
3. Evidence that the forest management is economically viable, considering the possibilities of new markets and economic activities related to all the relevant forest goods and services, when applicable.

#### Criterion 2.4

A procedure shall be implemented to track the flow of forest production from the assessed forest management unit, from its origin until transfer of ownership.

Indicators:

1. Existence of an updated register for the forest management unit, identifying areas under assessment.
2. Existence of procedures to identify, store, separate, and track forest production from the assessed forest management unit, from its origin until transfer of ownership
3. Existence of movement records, inventory control, and sale of products from the assessed forest management unit
4. Existence of sales and/or delivery documentation for commercialized goods from the assessed forest management unit that includes the following data
   * Client identification
   * Supplier identification
   * Identification of each product, including common name and scientific (species) name
   * Quantity delivered for each product covered by the documentation
   * Date document was issued
   * Claim for each product from the assessed forest management unit included in the aforementioned documentation
   * Code pertaining to the supplier’s forest management unit certification
5. Evidence that only products from the assessed forest management unit were commercialized with the respective claim.

#### Criterion 2.5

The organization shall ensure that forest managers, service providers, workers, and forest owners are trained and updated with regard to sustainable forest management as a prerequisite for planning and for the forest management practices described in this Standard.

Indicators:

1. Existence of an ongoing training program for management and workers in order to ensure that the sustainable forest management plan, procedures, and operational guidelines are correctly understood and carried out, including:
   * Operational procedures and guidelines
   * Safe working practices and guidelines related to the risks involved in work and preventive measures
   * Environmental concerns related to activities
2. Existence of records of trainings held according to the established program.

### Principle 3 – Concern for environmental, cultural, and social aspects

The organization shall manage the forest in order to minimize negative effects from management activities on environmental value. Native ecosystems, areas of ecological and social interest, and biodiversity shall be maintained or improved. The criteria and indicators to be met are described in items 3.3.1 to 3.3.5.

#### Criterion 3.1

The organization shall identify and assess environmental value and impacts, including defining and implementing measures to avoid, minimize, mitigate, and (when necessary) compensate for these impacts

Indicators:

1. Evidence that environmental values present in the forest management unit and surround areas that may be potentially affected by management activities are identified and assessed. This assessment should be realized at a detail level and frequency compatible with the scale, intensity, and risk of management activities.
2. Evidence that the significance of the potential impacts from management activities on the identified environmental values have been identified and assessed.
3. Evidence that measures have been defined and implemented to avoid, minimize, and (when necessary) compensate for these impacts on the environmental values.
4. Evidence that the documented operational procedures consider recommendations to avoid, minimize, and mitigate negative impacts on environmental values.

#### Criterion 3.2

The integrity of native ecosystems and biodiversity shall be maintained or improved. Degraded areas within a forest management unit shall be recovered, with best use of the structures and natural processes.

Indicators:

1. Evidence that the species diversity and ecosystems in the forest management unit are identified and recognized.
2. Existence of measures to maintain or improve biodiversity.
3. Evidence of actions to maintain or improve ecosystem services, such as potential to control erosion, prevent floods, purify water, regulate the climate, sequester carbon, and other services that regulate or support the ecosystem.
4. Evidence that the layout or demarcation of the planted forests helps maintain or improve ecological connectivity, considering the context of the landscape. The size and distribution of areas with naturally occurring vegetation shall be identified during the preparation phase of establishing new planted forests, based on the social and environmental assessments, and shall also be reviewed during subsequent phases of new replanting efforts.
5. Evidence that protective measures are taken to minimize the impact of domesticated animals on soil and biodiversity (when applicable).
6. Evidence of activities to recover degraded areas identified in the forest management unit, based on techniques adapted to the local conditions. In activities to recover degraded areas in natural remnants found within the plantations, the use of native species should be prioritized. Areas undergoing recovery shall be protected from forest operations, including pressure from domestic and wild animals.

#### Criterion 3.3

Measures to identify and protect endemic, rare, threatened, or endangered species and their habitats are implemented in the forest management unit.

Indicators:

Evidence of measures to identify and list endemic, rare, threatened, or endangered species that occur in the forest management unit which are appropriate to the scale of the organization.

Existence of mapping or demarcation of habitats of endemic, rare, threatened, or endangered species.

Evidence that endemic, rare, threatened, or endangered species are not exploited for commercial purposes, except when permitted by law.

Evidence that measures are taken to protect or maintain the presence of endemic, rare, threatened, or endangered species and their *habitats* in the forest management unit.

#### Criterion 3.4

Areas of relevant ecological and social interest which are recognized for their exceptional natural, social, cultural, or environmental attributes shall be identified, protected, maintained, or improved.

Indicators:

1. Evidence of assessment to identify areas of relevant ecological and social interest (see 2.3) in the forest management unit, including characterization and mapping
2. Evidence that stakeholder and/or specialists were consulted in the process of assessing areas of relevant ecological and social interest in the forest management unit
3. Existence of measures to protect, maintain, or improve relevant areas of ecological and social interest in the forest management unit
4. Identification of conservation units present in the area influenced by the operations, including assessment of the existence of operational and/or legal restrictions and how they apply to the forest management unit, when applicable.

#### Criterion 3.5

Conversion of land use by replacing natural ecosystems shall not occur except when justified. If severely degraded forests are converted into planted forests, this shall meet prior conditions established to add economic, ecological, social, and/or cultural value.

Indicators:

1. Evidence of no conversion except for in justified circumstances.

NOTE 1 Planted forest established in areas that were converted after December 31, 2010 without justification are not eligible for assessment of compliance.[10]

NOTE 2 Conversion to install the infrastructure necessary to implement and execute the sustainable forest management plan (such as main and secondary roadways, log yards, and other infrastructure elements) are not considered conversions in the context of this indicator.

1. Evidence that conversion after December 31, 2010 only occurred in justified circumstances in which:
   * It is in compliance with national, regional, and local policy and legislation related to land use and forest management, including stakeholder consultations, offering them chances to participate in making the decision on conversion;
   * It represents a small portion (no greater than 5%) of the total area;
   * There are no significant negative impacts on threatened species, threatened ecosystems (including vulnerable, rare, or endangered ecosystems) culturally and socially important areas, and important habitats for threatened species or other protected areas;
   * Makes a contribution to long-term conservation, economic, and social benefits. .
2. Evidence that, if conversion of severely degraded forests into planted forests is under consideration, this process will add economic, ecological, social, and/or cultural value. Prerequisites to add this value are circumstances in which the conversion:
   * Is in compliance with national, regional, and local policy and legislation applicablefor land use and forest management, including stakeholder consultations, offering them chances to contribute to the decision-making on conversion;
   * does nothave significant negative impacts on threatened species, threatened ecosystems (including vulnerable, rare, or endangered ecosystems) culturally and socially important areas, and important habitats of threatened species or other protected areas;
   * safeguards protective functions of forests for society and other regulating or supporting ecosystem services ;
   * Safeguards socio-economic functions of forests, including the recreational function and aesthetic value of forests and other cultural services;
   * Provides evidence that the degradation did not result from improper forest management processes by the same organization;
   * is based on credible evidence demonstrating that the area is neither recovered nor in the process of recovery.b.

### Principle 4 – Respect for natural resources in implementing management operations

Implementation of forest management operations shall consider the conservation and maintenance of native ecosystems, water, soils, and the air, and incorporate research findings. The criteria and indicators to be met are described in items 3.4.1 to 3.4.6.

#### Criterion 4.1

Forest management shall incorporate scientific and technical information and also be appropriate for local characteristics.

Indicators:

1. Evidence that the forest management employed is based on the findings of research, scientific studies, and the like conducted with relation to conditions similar to those in the forest management unit
2. Evidence that the procedures incorporate findings from experiences, tests, or research appropriate for the region
3. Evidence that the forest management contributes to research activities and data collection required for sustainable forest management, or monitors relevant research activities conducted by other organizations.

#### Criterion 4.2

Genetic diversity (species and structural) shall be improved, encouraged, or maintained. Introduction and utilization of genetic material shall take place in a controlled manner and following biosafety standards. Prior experience with the material is required, proving its potential for forest production in the region and permitting potential environmental impacts to be assessed.

Indicators:

1. Evidence that the genetic base is continuously maintained or improved, according to the scale and objectives of forest management
2. Evidence that new species, provenances, or exotic varieties will only be planted on a commercial scale if local experiments and/or results of scientific research demonstrate that they are ecologically suited to the site and that negative impacts (such as invasive characteristics) can be controlled, when applicable
3. Existence of measures to control invasive exotic species planted by the organization and those that naturally regenerate in areas set aside for conservation that could alter the balance between the occurring species.

NOTE The guiding principles of the Convention on Biological Diversity (CBD) to prevent, introduce, and diminish the impacts of exotic species that threaten ecosystems, habitats, or species are recognized guidelines for preventing invasive species.

1. Existence of measures to control other invasive exotic species planted by the organization and those that naturally regenerate in areas set aside for conservation that could alter the balance between the occurring species, whenever possible.
2. Evidence that structural diversity is maintained or intensified by varying the size and layout of stands, species, genetic, diversity, and age class.
3. Evidence of compliance with biosafety standards and techniques when genetically modified organisms are used in research areas. Genetically modified organisms cannot be used in commercial planted forests.

NOTE This restriction on the use of genetically modified trees was adopted as a precautionary measure until sufficient scientific data on genetically modified trees indicate that the impacts on human, animal, and environmental health are the same as or more beneficial than those presented by trees that have undergone improvement processes via traditional genetic improvement methods.

#### Criterion 4.3

Integrated pest and disease management techniques shall be adopted to protect the planted forests.

Indicators:

1. Existence of an Integrated pest and disease management plan
2. Existence of records of pest and disease occurrences
3. Evidence of measures to minimize the use of chemical products to control pests and diseases that consider natural biological control agents, silvicultural, physical, or mechanical techniques, and genetic improvement
4. Existence of a system to prevent, monitor, and control forest fires, specific for the organization or in partnership. In the exceptional case of fire used for silvicultural purposes, legal requirements shall be observed and effective methods shall be adopted to control and minimize negative impacts.

#### Criterion 4.4

Construction of infrastructure and forest operations shall be planned and carried out in a way that preserves and maintains native ecosystems and water and soil resources.

Indicators:

1. Evidence that construction of infrastructure and forest operations are carried out as planned in the planning stages and in the operational procedures and guidelines
2. Evidence that the infrastructure is planned and constructed and the forest operations are carried out in a way that minimizes damage to ecosystems, particularly rare, sensitive, or representative ecosystems and genetic reserves, and also considers the existence of endemic, rare, threatened, or endangered species or other key species, particularly their identified migration patterns
3. Evidence that silviculture and forest procedures and harvest operations are carried out in a way that does not cause irreversible damage to ecosystems
4. Evidence that forest operations are carried out in a way that prevents, minimizes, and mitigates (when necessary) soil degradation. Areas susceptible to erosion shall be considered, and the techniques and machinery utilized in the operations shall be adapted to the soil, topography, and local climate conditions.
5. Evidence that adequate infrastructure such as roadways, skid trails, and bridges is planned, constructed, and maintained in a way that minimizes exposed soil, avoids erosion, and preserves the level and natural function of bodies of water and riverbeds.
6. Evidence that forest operations are carried out in a way that prevents, minimizes, and mitigates (when necessary) adverse effects on water resources The water balance and water quality downstream cannot be significantly affected by forest operations
7. Evidence that when fertilizers are applied, procedures exist based on technical justifications that consider environmental concerns
8. Evidence that fertilizer use is controlled, when used.
9. Evidence that vehicles, machinery, and equipment that use oil-based fuels are maintained in a good state of repair to control emission of atmospheric pollutants.

#### Criterion 4.5

The organization shall establish adequate measures for storage, transport, and use of pesticides, oils, and fuels.

Indicators:

1. Evidence that except for under government order, the organization does not use highly toxic pesticides that:
   * Are prohibited by current legislation
   * Are prohibited by international agreements such as the Stockholm Convention, Rotterdam Convention, and Montreal Protocol
   * Contain chlorinated hydrocarbons, the derivatives of which remain biologically active and accumulate in the food chain well beyond the intended use
   * Are included in the WHO pesticide classifications 1a or 1b
2. Evidence that the pesticide manufacturer's technical recommendations for handling, preparation, and application are followed
3. Existence of procedures for pesticide use that consider climatic, soil, and topographic conditions
4. Existence of records of pesticide use, including but not limited to:
   * Trade name and active ingredient
   * Quantity of product applied
   * Dates of application
   * Location and area of application
   * Reason for/target of application
   * Method of application
   * Workers involved in application
5. Evidence that the equipment utilized to apply pesticides is maintained in suitable conditions
6. Evidence that pesticides, oils, and fuels are stored in accordance with manufacturer recommendations and current legislation
7. Evidence that pesticides, oils, and fuels are transported between the storage location and the field in accordance with manufacturer recommendations and current legislation
8. Evidence that the workers who handle or apply pesticides are trained and carry out these tasks while utilizing appropriate personal protective equipment
9. Existence of emergency procedures in case of worker accidents involving pesticides, oils, or fuels

#### Criterion 4.6

The organization shall adopt and implement an environmentally appropriate management plan for solid waste and effluents/wastewater in accordance with applicable legislation.

Indicators:

1. Existence of an environmentally appropriate waste management plan in place that includes collection, separation, transport, storage, redirection, and/pr final disposal, according to current legislation
2. Existence of records of environmentally appropriate redirection and/or final disposal of hazardous liquid and solid waste in accordance with current legislation
3. Evidence that other liquid and solid waste is treated and disposed of in an environmentally appropriate manner, in accordance with current legislation
4. Existence of emergency procedures to address spills or leaks of hazardous products in order to minimize environmental damage.

### Principle 5 – Environmental, social, and economic development in regions where forest activity occurs

The organization shall have a relationship policy with workers, local and traditional communities, and other stakeholders related to forest management, as well as evidence of the benefits of forest activity on social, environmental, and economic aspects. The criteria and indicators to be met are described in items 3.5.1 to 3.5.3.

#### Criterion 5.1

The organization shall identify and assess the environmental, social, and economic values for stakeholders. Impacts on these values shall be identified and assessed, and measures to avoid, minimize, mitigate, and (when necessary) compensate for these impacts shall be defined and implemented.

Indicators:

1. Evidence that stakeholders affected by forest management are identified and mapped
2. Evidence that the environmental, social, and economic values for stakeholders that could possibly be affected by the forest management are identified and assessed, considering stakeholder needs and expectations. This assessment shall be realized at a detail level and frequency compatible with the scale, intensity, and risk of management activities.
3. Evidence that the potential environmental, social, and economic impacts of forest management on stakeholders are identified and assessed via a participatory process.
4. Evidence that measures have been defined and implemented to avoid, minimize, and (when necessary) compensate for negative impacts on the environmental, social, and economic values for stakeholders as a result of forest management
5. Evidence that operational planning includes recommendations to avoid, minimize, and mitigate negative impacts on the environmental, social, and economic values for stakeholders.
6. Evidence of measures to maintain or improve positive impacts on the environmental, social, and economic values for stakeholders
7. Evidence that non-predatory habits and customs of relevant interest indicated by local and traditional communities and indigenous peoples are respected, in accordance with relevant legislation.

#### Criterion 5.2

The organization's relationships with local and traditional communities and indigenous peoples shall value traditional knowledge and raise awareness about sustainable use of natural resources.

The organization shall consider the role of its activities in local economies and promote activities that contribute to the health, well-being, and environmental education of its workers, and when viable, of local and traditional communities and indigenous peoples.

Indicators:

1. Evidence that when natural resources from the forest management unit are utilized by local and traditional communities and indigenous peoples, the organization promotes or collaborates in activities to raise awareness about the sustainable use of these resources in order to minimize environmental impacts
2. Evidence that the intellectual property of these traditional communities and indigenous peoples, when utilized by the organization in forest management, is compensated as agreed between the parties and in accordance with legal requirements
3. Evidence that local communities, including indigenous peoples, are considered when employment and training opportunities are available in various forest management activities, in accordance with specific legislation
4. Evidence of activities that prioritize and stimulate the local economy
5. Existence of activities that encourage worker health, literacy, safety, and hygiene, which can also be accessed by their direct dependents
6. Existence of activities that preserve the long-term health and well-being of local and traditional communities and indigenous peoples, defined through engagement with these communities and local governments in developing and in accordance with the scale of the organization
7. Existence of activities that encourage the development of environmental education programs together with local and traditional communities and indigenous peoples, in accordance with the scale of the organization
8. Existence of environmental education programs implemented with the workers, in accordance

With the scale of the organization

#### Criterion 5.3

The organization shall implant mechanisms to communicate, disseminate, and resolve complaints, conflicts, and litigation with stakeholders.

Indicators:

1. Existence of programs implemented for consultations, dissemination, and dialog channels that allow effective communication with local and traditional communities, indigenous peoples, and other stakeholders related to forest management
2. Existence of appropriate mechanisms to resolve complaints, conflicts, and litigation related to forest management operations
3. Existence of records that protests by stakeholders were received and analyzed, decisions made, and responses provided.

### Principle 6 – Assessing performance and continuous improvement

The organization shall have a system for assessing performance, monitoring, measuring, and analyzing the management system that includes environmental, social, and economic aspects The criteria and indicators to be met are described in items 3.6.1 to 3.6.4.

#### Criterion 6.1

The forest organization shall implement a monitoring and measurement plan to assess its performance that is in line with the scale, intensity, and objectives of management.

Indicators:

1. Existence of a monitoring plan indicating environmental, social, and economic aspects to be monitored.
2. Existence of indicators and goals related to environmental, social, and economic aspects, with frequency and intensity that are in line with the scale, intensity, and objectives of management.
3. Existence of monitoring for pending administrative and legal issues related to the organization's compliance with legislation, including planned and executed activities as well as time frames for execution
4. Existence of monitoring (of documents and in the field) related to compliance with labor law, including collective or individual agreements and collective conventions, which apply to the workers that carry out activities in the forest management unit
5. Existence of monitoring (of documents and in the field) related to compliance with legislation and regulatory standards related to workplace health and safety which apply to the workers that carry out activities in the forest management unit
6. Existence of workplace accident monitoring
7. Existing of monitoring of illegal or unauthorized activities in the forest management unit
8. Existence of monitoring of growth, production, and productivity of the wood products managed by the organization
9. Existence of monitoring of productivity of non-wood products managed by the organization
10. Existence of monitoring of the efficacy of measures to avoid, minimize, mitigate, or compensate for significant environmental impacts caused by the forest management activity
11. Existence of flora and fauna monitoring that makes it possible to assess the effectiveness of conservation and restoration activities
12. Existence of monitoring of measures to protect, maintain, or improve areas of relevant ecological and social interest
13. Existence of monitoring of invasive exotic species in areas set aside for conservation that could alter the balance between the occurring species.
14. Existence of monitoring of pests and diseases
15. Existence of monitoring of meteorological conditions and fires
16. Existence of monitoring of qualitative and quantitative parameters for relevant water resources that are related to management
17. Existence of physical and chemical monitoring of relevant soil resources that are related to management
18. Existing of monitoring and control of gas emissions of vehicles and forest equipment powered by oil-based fuels
19. existence of monitoring of the efficacy of measures to avoid, minimize, mitigate, or compensate for significant negative social impacts caused by the forest management activity

#### Criterion 6.2

The organization shall plan, implement, and maintain an internal auditing program in order to verify compliance with the requirements of this Standard

Indicators:

1. Existence of an internal auditing program in order to verify compliance with this Standard that is in line with the scale of the organization and the intensity of management activities, including:
   * frequency
   * methods
   * responsibilities
   * criteria and scope
2. evidence that the internal auditing program is planned, implemented, and maintained
3. evidence that the results of previous audits are considered
4. evidence that the audit process is conducted in an objective and impartial manner
5. evidence that the results of the internal audits are documented and reported to the relevant management

#### Criterion 6.3

The organization shall implement activities to address any non-conformities identified in order to minimize their impacts and avoid recurrence

Indicators:

1. Evidence that appropriate measures are taken to control, correct, and mitigate (when applicable) damage caused by any identified non-conformities
2. Evidence that the identified non-conformities are analyzed in order to:
   * determine causes
   * determine whether similar non-conformities exist or could occur
   * determine appropriate corrective measures to eliminate the identified causes in order to avoid recurrence of the non-conformity
3. Evidence that corrective measures defined to eliminate the identified causes were implemented and their effectiveness analyzed.
4. Documented evidence of the non-conformities identified, the corrective measures implemented, and their results.

#### Criterion 6.4

The organization shall promote annual management review and incorporate the results of this practice to improve sustainable forest management and the management system.

Indicators:

1. Evidence that the organization's top management promotes annual management review
2. Evidence that the management review consider:
   * The *sta*tus of activities in prior management review
   * Changes in external and internal issues that are relevant for the management system
   * Information about the organization's performance, including trends in
     + Non-conformities and corrective measures
     + Results of monitoring and measurement
     + Audit findings

* Opportunities for continuous improvement

1. Evidence that the results of management review include decisions related to continuous improvement and the need for changes in the management system
2. Evidence that documented data showing the findings of management review by top management are maintained
3. Evidence that compliance, improvement, and efficacy of the sustainable forest management system are continuously improved.

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