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Standard Guide for Evaluating the Attributes of a Forest Management Plan¹

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1. Scope

1.1 This guide provides a list of criteria and indicators that have been shown to be useful in achieving the goals of a sustainable forest management plan. This guide lists a set of criteria considered to be important for the following tasks:

1.1.1 To describe, assess, and evaluate progress toward sustainability of forest management at the national, regional, or individual forest level.

1.1.2 To inform the policy debate at regional, national, and international levels.

1.1.3 To evaluate the attributes of a forest management certification or evaluation system with a specific combination of forest management principles, practices, or adaptations, where such practices are evaluated against a set of prescribed standards. Although this guide provides a qualitative list of criteria for evaluation of forest conditions, it does not purport to recommend any specific forest management certification or evaluation system or subset of overall attributes. The guide does not replace forest certification or verification standards.

1.2 This guide will require compilation of information from multiple sources across various governmental and nongovernmental agencies. For this guide to be useful, it is recommended that the information collected is in alignment with that which is already collected for other purposes; otherwise these indicators may be too great an effort to combine in a timely fashion.

NOTE 1—Although this document provides general guidance applicable to forests and forest products from many countries, its initial application is expected to focus on North America.

1.3 This guide cannot replace education or experience and should be used in conjunction with professional judgment such as that provided by foresters, forest scientists, and wood technologists.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

¹ This guide is under the jurisdiction of ASTM Committee D07 on Wood and is the direct responsibility of Subcommittee D07.08 on Forests.

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1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards*:²

D9 *Terminology Relating to Wood and Wood-Based Products*

3. Terminology

3.1 *Definitions*—Standard definitions of wood terms are given in Terminology D9.

3.2 *Definitions of Terms Related to the Field of Forestry*:

3.2.1 *criterion, n*—category of conditions or processes by which sustainable forest management may be assessed.

3.2.1.1 *Discussion*—A criterion is characterized by a set of related indicators which are monitored periodically to assess change.

Montréal Process³

3.2.2 *ecosystem, n*—dynamic system of plants, animals, and other organisms, together with the non-living components of the environment functioning as an independent unit. **Montréal Process**³

3.2.3 *forest management, n*—branch of forestry concerned with the overall administrative, economic, legal and social aspects and with the essentially scientific and technical aspects, especially silviculture, protection and forest regulation. **Natural Resources Canada**⁴

3.2.4 *forest type, n*—category of forest defined by its vegetation, particularly composition, and/or locality, as categorized by each country in a system suitable to its situation. **Montréal Process**³

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ *Montréal Process Criteria and Indicators*, Fifth Ed., Sept. 2015, Online: <https://bit.ly/3s8kozZ>.

⁴ Forestry Glossary of Natural Resources Canada, Dec. 8, 2020, Online: <https://bit.ly/3mG2zHp>.

TABLE 1 Criteria 1–6

Criterion	Element	Indicator
1. Conservation of biological diversity	1.1 Ecosystem diversity	1.1a Area and percent of forest by forest ecosystem type, successional stage, age class, and forest ownership or tenure 1.1b Area and percent of forest in protected areas by forest ecosystem type and by age class or successional stage 1.1c Fragmentation of forests
	1.2 Species diversity	1.2a Number of native forest associated species 1.2b Number and status of native forest associated species at risk, as determined by legislation or scientific assessment 1.2c Status of on site and off site efforts focused on conservation of species diversity
	1.3 Genetic diversity	1.3a Number and geographic distribution of forest associated species at risk of losing genetic variation and locally adapted genotypes 1.3b Population levels of selected representative forest associated species to describe genetic diversity 1.3c Status of on site and off site efforts focused on conservation of genetic diversity
2. Maintenance of productive capacity of forest ecosystems		2.a Area and percent of forest land and net area of forest land available for wood production 2.b Total growing stock and annual increment of both merchantable and non-merchantable tree species in forests available for wood production 2.c Area, percent, and growing stock of plantations of native and exotic species 2.d Annual harvest of wood products by volume and as a percentage of net growth or sustained yield 2.e Annual harvest of non-wood forest products
3. Maintenance of forest ecosystem health and vitality		3.a Area and percent of forest affected by biotic processes and agents (for example, disease, insects, invasive species) beyond reference conditions 3.b Area and percent of forest affected by abiotic agents (for example, fire, storm, land clearance) beyond reference conditions
4. Conservation and maintenance of soil and water resources	4.1 Protective Function	4.1a Area and percent of forest whose designation or land management focus is the protection of soil or water resources
	4.2 Soil	4.2a Proportion of forest management activities that meet best management practices or other relevant legislation to protect soil resources 4.2b Area and percent of forest land with significant soil degradation
	4.3 Water	4.3a Proportion of forest management activities that meet best management practices, or other relevant legislation, to protect water related resources 4.3b Area and percent of water bodies, or stream length, in forest areas with significant change in physical, chemical, or biological properties from reference conditions
5. Maintenance of forest contribution to global carbon cycles		5.a Total forest ecosystem carbon pools and fluxes 5.b Total forest product carbon pools and fluxes 5.c Avoided fossil fuel carbon emissions by using forest biomass for energy
6. Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies	6.1 Production and consumption	6.1a Value and volume of wood and wood products production, including primary and secondary processing 6.1b Value of non-wood forest products produced or collected 6.1c Revenue from forest based environmental services 6.1d Total and per capita consumption of wood and wood products in round wood equivalents
6. Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies	6.1 Production and consumption	6.1e Total and per capita consumption of non-wood products 6.1f Value and volume in round wood equivalents of exports and imports of wood products 6.1g Value of exports and imports of non-wood products 6.1h Exports as a share of wood and wood products production and imports as a share of wood and wood products consumption 6.1i Recovery or recycling of forest products as a percent of total forest products consumption
	6.2 Investment in the forest sector	6.2a Value of capital investment and annual expenditure in forest management, wood and non-wood product industries, forest-based environmental services, recreation, and tourism 6.2b Annual investment and expenditure in forest-related research, extension and development, and education
	6.3 Employment and community needs	6.3a Employment in the forest sector 6.3b Average wage rates, annual average income, and annual injury rates in major forest employment categories 6.3c Resilience of forest-dependent communities 6.3d Area and percent of forests used for subsistence purposes 6.3e Distribution of revenues derived from forest management