Illinois Department of Natural Resources

Montreal Process

Sustainable Forest Management-Criteria and Indicators

In 1992, the United Nations Conference on Environment and Development (UNCED) focused world attention on the importance of sustainable forest management as a key component of sustainable development. As a result of this international "Earth Summit," the United States joined 144 other countries in adopting a non-binding Statement of Forest Principles which recognized the importance of sustainably managing all types of forests in order to meet the needs of present and future generations.

Following UNCED, many nations began to consider how they would measure and track their progress toward the goal of sustainability. These discussions focused on the need to establish mutually agreed upon criteria and indicators which would provide a framework for data collection and evaluation and, to the extent possible, standardize reporting on forest management at a national level.

In 1993, a United Nations committee convened an international seminar in Montreal, Canada on the sustainable development of temperate and boreal forest. This conference led the United States and nine other nations to form the Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forest. This working group soon became known as the "Montreal Process."

These 10 original Montreal Process countries met in Santiago, Chile in 1995 to endorse a statement of political commitment, known as the "Santiago Declaration," along with a comprehensive set of seven criteria and 67 indicators for the conservation and sustainable management of temperate and boreal forest. This new set of criteria and indicators added to the growing body of type-specific measurement and assessment systems already underway through the Helsinki Process in Europe and the International Tropical Timber Organization.

There are now 130 countries engaged in activities related to criteria and indicators. Montreal Process countries currently number 12 and include Argentina, Australia, Canada, China, Japan, the Republic of Korea, Mexico, New Zealand, the Russian Federation, the United States of America, and Uruguay. These countries cover five continents and together represent 90 percent of the world's temperate and boreal forests and 60 percent of all forest on the globe.

The United States Forest Service has committed to work with State, local, and other partners to use criteria and indicators to report on the health of all forested landscapes across the nation. In addition, the National Association of State Foresters, in a 1997 resolution passed at their national meeting, endorsed the seven criteria established by the Montreal Process.

The Montreal Process criteria are distinguished from those developed by other processes in that they recognize a fundamental connection between forest and people. The criteria function on the assumption that a nation cannot achieve forest sustainability without the support and understanding of its public.

Taken together, the criteria and indicators provide a mutual understanding and implicit definition of what is meant by sustainable forest management. They are tools for assessing national trends in forest conditions, and they provide a common framework for describing, monitoring and evaluating progress toward sustainability. It is important to note that the criteria and indicators are not performance standards for certifying management or products at any level.

The Montreal Process countries identified the following seven criteria as essential components in the sustainable management of forest ecosystems (67 different indicators specific for each criteria were identified-see below):

- Conservation of biological diversity.
- Maintenance of productive capacity of forest ecosystems.
- Maintenance of forest ecosystem health and vitality.
- Conservation and maintenance of soil and water resources.
- Maintenance of forest contribution to global carbon cycles.
- Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies.
- Legal, institutional and economic framework for forest conservation and sustainable management.

Criteria are envisioned as a large-scale reflection of public values- the big picture that participating countries want to see on their forest. Indicators would then provide the means for measuring these forest conditions and for tracking subsequent changes. The indicators are intended to be flexible elements of resource monitoring which can be adjusted to provide the most accurate assessment of changing environmental, economic and social conditions.

In 1997 the United States Forest Service published the First Approximation Report For Sustainable forest Management based upon the Montreal Process criteria and indicators. Some information was available for most indicators, but data was completely lacking for others. In many cases, data that was availiable had been collected only in recent years making it impossible to determine trends, or data had not been measured in all locations using consistent definitions or methodologies. These data problems made it inappropriate or impossible to draw conclusions.

The Montreal Process criteria and indicators provide a source of reference information for legislators, other policy makers, resource managers, and concerned citizens. This information will present a comprehensive overview of our nation's forest and provide common information for further analysis and discussion about the sustainable use of our forests for present and future generations. In addition, this project will identify shortfalls in resource data and other areas that must be addressed before we can assure the sustainability of our valuable forest resources.

Attachment: Montreal Process Criteria and Indicators

Criterion 1: Conservation of biological diversity

Ecosystem Diversity

1. Extent of area by forest type relative to total forest area.

2. Extent of area by forest type and by age class or successional stage..

3. Extent of area by forest type in protected area categories as defined by IUCNN or other classification systems.

4. Extent of areas by forest type in protected areas defined by age class or successional stage.

5. Fragmentation of forest types.

Species Diversity

6. The number of forest dependent species.

7. The status (rare, threatened, endangered, or extinct) of forest dependent species at risk of not maintaining viable breeding populations, as determined by legislation or scientific assessment.

Genetic Diversity

8. Number of forest dependent species that occupy a small portion of their former range.

9. Population levels of representative species from diverse habitats monitored across their range.

Criterion 2: Maintenance of productive capacity of forest ecosystems

10. Area of forest land and net area of forest land available for timber production.

11. Total growing stock of both merchantable and non-merchantable tree species on forest land available for timber production.

12. The area and growing stock of plantations of native and exotic species.

13. Annual removal of wood products compared to the volume determined to be sustainable.

14. Annual removal of non-timber forest products (e.g. fur bearers, berries, mushrooms, game), compared to the level determined to be sustainable.

Criterion 3: Maintenance of forest ecosystem health and vitality

15. Area and percent of forest affected by processes or agents beyond the range of historic variation e.g. by insects, disease, competition from exotic species, fire, storm, land clearance, permanent flooding, salinization, and domestic animals.

16. Area and percent of forest land subjected to levels of specific air pollutants (e.g. sulfates, nitrate, ozone) or ultra violet B that may cause negative impacts on the forest ecosystem.

17. Area and percent of forest land with diminished biological components indicative of changes in fundamental ecological processes (e.g. soil, nutrient cycling, seed dispersion, pollination) and/or ecological continuity.

Criterion 4: Conservation and maintenance of soil and water resources

18. Area and percent of forest land with significant soil erosion.

19. Area and percent of forest land managed primarily for protective functions, e.g. watersheds, flood protection, avalanche protection, riparian zones.

20. Percent of stream kilometers in forested catchments in which stream flow and timing has significantly deviated from the historic range of variation.

21. Area and percent of forest land with significantly diminished soil organic mater and/or changes in other soil chemical properties.

22. Area and percent of forest land with significant compaction or change in soil physical properties resulting from human activities.

23. Percent of water bodies in forest areas (e.g. stream kilometers, lake hectares) with significant variation of biological diversity from the historic range of variability.

24. Percent of water bodies in forest areas (e.g. stream kilometers, lake hectares) with significant variation from the historic range of variability in pH, dissolved oxygen, levels of chemicals (electrical conductivity), sedimentation or temperature change.

25. Area and percent of forest land experiencing an accumulation of persistent toxic substances.

Criterion 5: Maintenance of forest contribution to global carbon cycles

26. Total forest ecosystem biomass and carbon pool, and if appropriate, by forest type, age class, and successional stages

27. Contribution of forest ecosystems to the total global carbon budget, including absorption and release of carbon..

28. Contribution of forest products to the global carbon budget.

Criterion 6: Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of the societies

29. Value and volume of wood and wood products production including value added through downstream processing.

30. Value and quantities of production of non-wood forest products.

31. Supply and consumption of wood and wood products, including consumption per capita.

32. Value of wood and non-wood products production as percentage of GDP.

33. Degree of recycling of forest products.

34. Supply and consumption/use of non-wood products.

Recreation and Tourism

35. Area and percent of forest land managed for general recreation and tourism, in relation to the total area of forestland.

36. Number and type of facilities available for general recreation and tourism in relation to population and forest area.

37. Number of visitor days attributed to recreation and tourism in relation to population and forest area.

Investment in the forest sector

38. Value of investment, including investment in forest growing, forest health and management, planted forests, wood processing, recreation and tourism.

39. Level of expenditure on research and development, and education.

40. Extension and use of new and improved technology.

41. Rates of return on investment.

Cultural, social and spiritual needs and values

42. Area and percent of forest land managed in relation to the total area of forest land to protect the range of cultural, social and spiritual needs and values.

43. Non-consumptive-use forest values.

Employment and community needs

44. Direct and indirect employment in the forest sector and the forest sector employment as a proportion of total employment.

45. Average wage rates and injury rates in major employment categories within the fores sector.

46. Viability and adaptability to changing economic conditions, of forest dependent communities, including indigenous communities.

47. Area and percent of forest land used for subsistence purposes.

Criterion 7: Legal, institutional and economic framework for forest conservation and sustainable management

Extent to which the legal framework (laws, regulations, guidelines) supports the conservation and sustainable management of forests, including the extent to which it:

48. Clarifies property rights, provides for appropriate land tenure arrangements, recognizes customary and traditional rights of indigenous people, and provides means of resolving property disputes by due process.

49. Provides for periodic forest-related planning, assessment, and policy review that recognizes the range of forest values, including coordination with relevant sectors.

50. Provides opportunities for public participation in public policy and decision making related to forests and public access to information.

51. Encourages best practice codes for forest management.

52. (Dave Darr) Provides for the management of forests to conserve special environmental, cultural, social and/or scientific values.

Extent to which the institutional framework supports the conservation and sustainable management of forests, including the capacity to:

53. Provide for public involvement activities and public education awareness and extension programs, and make available forest related information.

54. Undertake and implement periodic forest-related planning, assessment, and policy review including cross-sectoral planning and coordination.

55. Develop and maintain human resource skills across relevant disciplines.

56. Develop and maintain efficient physical infrastructure to facilitate the supply of forest products and services and support forest management.

57. Enforce laws, regulations and guidelines.

Extent to which the economic framework (economic policies and measures) supports the conservation and sustainable management of forests through:

58. Investment and taxation policies and a regulatory environment which recognize the long-term nature of investments and permit the flow of capital in and out of the forest sector in response to market signals, non-market economic valuations, and public policy decisions in order to meet long-term demands for forest products and services.

59. Non-discriminatory trade policies for forest products.

Capacity to measure and monitor changes in the conservation and sustainable management of forests, including:

60. Availability and extent of up-to-date data, statistics and other information important to measuring or describing indicators associated with criteria 1-7.

61. Scope, frequency and statistical reliability of forest inventories, assessments, monitoring and other relevant information.

62. Compatibility with other countries in measuring, monitoring and reporting on indicators.

Capacity to conduct and apply research and development aimed at improving forest management and delivery of forest goods and services, including:

63. Development of scientific understanding of forest ecosystem characteristics and functions.

64. Development of methodologies to measure and integrate environmental and social costs and benefits into markets and public policies, and to reflect forest related resource depletion or replenishment in national accounting systems.

65. New technologies and the capacity to assess the socioeconomic consequences associated with the introduction of new technologies.

66. Enhancement of ability to predict impacts of human intervention on forests.

67. Ability to predict impacts on forests of possible climate change.