Criteria and indicators for sustainable forest management: international processes, current status and the way ahead

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A summary of international processes for the development and global harmonization of criteria and indicators for use at the national and forest management unit levels.

Definitions

Criteria **define the essential elements or principles against which sustainability of forest management is judged, with due consideration paid to the productive, protective and social roles of forests and forest ecosystems. Each criterion is defined by quantitative or qualitative *indicators*, which are measured and monitored regularly to determine the effects of forest management interventions over time.**

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In the past, the focus of forest management was frequently on sustaining the production of wood and timber. More recently, the concept of sustainable forest management has been broadened to include economic, environmental, social and cultural dimensions, in line with the Forest Principles agreed at the United Nations Conference for Environment and Development (UNCED) in Rio de Janeiro, Brazil, 1992.

To ensure the continued availability of goods and environmental services that forests and forest ecosystems provide, based on the implementation of the principles agreed upon at UNCED, countries have acknowledged the need to arrive at a common definition of sustainable forest management and to develop and implement tools by which the sustainability of forest management, in the broad sense, could be assessed, monitored and reported.

Within the framework of a number of international processes, initiated following UNCED, participating countries have defined criteria against which sustainability can be judged, and have specified corresponding indicators which help in monitoring the effects of forest management interventions over time. Criteria and indicators are today commonly recognized as appropriate tools for defining, assessing and monitoring progress towards sustainable forest management.

Efforts towards streamlining action at the global level have included the FAO/International Tropical Timber Organization (ITTO) Expert Meeting on the Harmonization of Criteria and Indicators for Sustainable Forest Management, held in Rome in February 1995, and the Intergovernmental Seminar on Criteria and Indicators, organized by the Government of Finland in Helsinki in August 1996 and supported by FAO. These and other more recent meetings have brought together a range of stakeholders including representatives of ongoing international forestry criteria and indicators processes and of international governmental and non-governmental organizations. From these events has emerged a set of seven globally agreed national level criteria – although the wording may differ from process to process – which serves as the framework for all ongoing international processes (see Box below).

There is no globally agreed set of indicators for those criteria, as indicators need to be adapted to the ecological, economic, social and institutional conditions and needs of each country. Forest policy, rules and regulations, and forest management practices, can be adjusted and gradually improved to take into greater consideration social, economic, environmental, spiritual and cultural requirements as defined by the criteria, to involve and benefit increasingly broad ranges of stakeholder groups.

Globally agreed criteria for sustainable forest management

- **Extent of forest resources**
- **Biological diversity**
- **Forest health and vitality**
- **Productive functions of forests**
- **Protective functions of forests**
- **Socio-economic benefits and needs**
- **Legal, policy and institutional framework**

CRITERIA AND INDICATORS FOR SUSTAINABLE FOREST MANAGEMENT

National level criteria and indicators

Development and implementation of criteria and indicators will help define a

common understanding of the concept of sustainable forest management and will help translate that concept into an operational tool that can be applied in forest management. Criteria and indicators at the national level may be used by decision-makers to guide countrywide policies, regulations and legislation in support of sustainable forest management.

Positive trends in sustainability will be demonstrated by an aggregate in trends of the identified indicators. In other words, the trends corresponding to all criteria must show a positive development over time. Trends in indicators will show whether a country is moving towards, or away from, sustainability. Viewed in this way, criteria and indicators are similar, for example, to economic indicators such as interest rates and inflation rates used by governments to assess the health of an economy. If economic indicators suggest that an economy is moving away from the desired direction, a government can adjust its management policies to achieve the desired outcome. Trends in indicators for sustainable forest management provide similar information to policy-makers, allowing them to intervene and correct undesirable trends.

Information on status and trends at the national level and forecasts for the future based on this information can thus help rationalize and improve policy- and decision-making. The ultimate aim is to promote improved forest management practices over time and to further the development of a gradually healthier and more productive forest estate, which can meet the social, economic and environmental needs of the countries concerned, now and in the future.

Forest management unit level criteria and indicators

National level criteria and indicators are increasingly being complemented by the development and implementation of criteria and indicators developed for the forest management unit level. A number of the ongoing international processes on criteria and indicators for sustainable forest management that started with a focus at the national level have subsequently developed complementary forest management unit level criteria and indicators.

Indicators at the forest management unit level will be influenced by factors such as forest type and topography, in addition to social and economic considerations. Forest management unit level criteria and indicators may thus differ among individual forest areas in any one country, as well as over time, depending on the prevailing conditions, priorities and aims of management of a given forest area. Interventions in individual forest areas should complement each other in space and time to ensure a satisfactory overall development at the national level. There is a need to ensure compatibility and comparability and to provide continuing feedback on the applicability of criteria and indicators at the two levels.

Criteria and indicators developed at the two levels differ in concept and substance. Those developed at the national level can assist in identifying those for use at the forest management unit level. National level indicators contribute towards the development and regular updating of policy instruments (laws, policies, regulations), while trends in indicators at the forest management unit level help in the adjustment of forest management prescriptions over time to meet established national goals. While different in purpose and scope, the criteria and indicators identified at these two levels should be mutually compatible.

FAO'S ROLE

In its capacity as Task Manager among the United Nations agencies in follow-up action to UNCED, including the work programme of the Ad hoc Intergovernmental Panel on Forests (IPF) and the Ad hoc Open-ended Intergovernmental Forum on Forests (IFF) and the chairmanship of the high-level Inter-Agency Task Force on Forests (ITFF), FAO has acted as a facilitator of processes on national level criteria and indicators. FAO's tasks include ensuring information flow among the ongoing, new and emerging processes and between these and other related programmes, such as the global forest resources assessment.

FAO, in collaboration with partner institutions [mainly the United Nations Environment Programme (UNEP), ITTO, the Center for International Forestry Research (CIFOR), the Tropical Agriculture Research and Higher Education Center (CATIE) and the International Union of Forestry Research Organizations (IUFRO)], regional and subregional groups and national governments has catalysed and supported the initiation of criteria and indicators processes in a number of developing regions that did not earlier participate in the debate. These include Dry-Zone Africa, the Near East, Central America and Dry-Forest Asian countries. Such action has ensured that information on ongoing processes becomes available to these new and emerging processes, so that countries concerned can build on experiences from elsewhere and, from the start, aim towards complementarity and compatibility.

RECENT PROGRESS IN DEVELOPMENT AND IMPLEMENTATION

The importance placed on the development and implementation of criteria and indicators for sustainable forest management by countries has resulted during the past several years in the development of nine separate but conceptually linked

initiatives. In all these processes, the definition of sustainability remains virtually the same. This holds great promise for convergence or mutual recognition, so that over time a common approach can be used globally to measure progress in sustainable forest management. The important need, however, is for action taken to improve management – not just measuring of progress.

It is estimated that currently at least 140 countries are participating in at least one of the nine major processes on criteria and indicators (see Table on p. 38). While some countries belong to one or more processes or initiatives, the degree of activity in assessing, measuring and/or implementing their indicators varies considerably among countries. In many cases such activities are limited by lack of trained personnel and weak institutional capacities for collecting, analysing and sharing information. As previously indicated, the main focus of these ongoing initiatives was initially sustainability at the national level, but all have now also developed criteria and indicators to be adapted and applied by participating countries at the forest management unit level.

Main criteria and indicators processes

Pan-European Forest Process on Criteria and Indicators for Sustainable Forest Management. Developed within the framework of the Pan-European Forest Process, this process covers boreal, temperate and Mediterranean forests in 37 European countries. The process is overseen by the Ministerial Conferences on the Protection of Forests in Europe. At the Third Ministerial Conference (Lisbon, Portugal, June 1998), the six national level criteria identified within this process were officially adopted and the corresponding 27 indicators were endorsed in principle. Furthermore, ministers have endorsed the Pan-European Operational Level Guidelines for Sustainable Forest Management for further development and use on a voluntary basis, and the work programme Conservation and Enhancement of Biological and Landscape Diversity in Forest Ecosystems 1997-2000.

Montreal Process on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests. This process covers temperate and boreal forests outside Europe. The 12 participating countries have agreed on a set of seven non-legally binding national level criteria and 67 indicators that were set in the Santiago Declaration of February 1995. Participating countries recently agreed to review and consider possible elements for criteria and indicators at the forest management unit level; these are currently under discussion and development.

Tarapoto Proposal for Criteria and Indicators for Sustainability of the Amazon Forest. The eight signatory countries of the Amazon Cooperation Treaty (ACT) have identified seven national level criteria and 47 indicators within the Tarapoto Proposal for Criteria and Indicators for Sustainability of the Amazon Forest, launched in Tarapoto, Peru in 1995. Four criteria and 20 indicators were also identified for the forest management unit level and one criterion and seven indicators for the global level. National consultations for validation have been conducted in each of the eight participating countries to evaluate the relevance and applicability of these criteria and indicators in light of national conditions and needs. The consultations, which were supported by ACT and a Netherlands-funded FAO project, provided a forum for consolidated analysis and systematic evaluation of the relevance and applicability of the identified criteria and indicators.

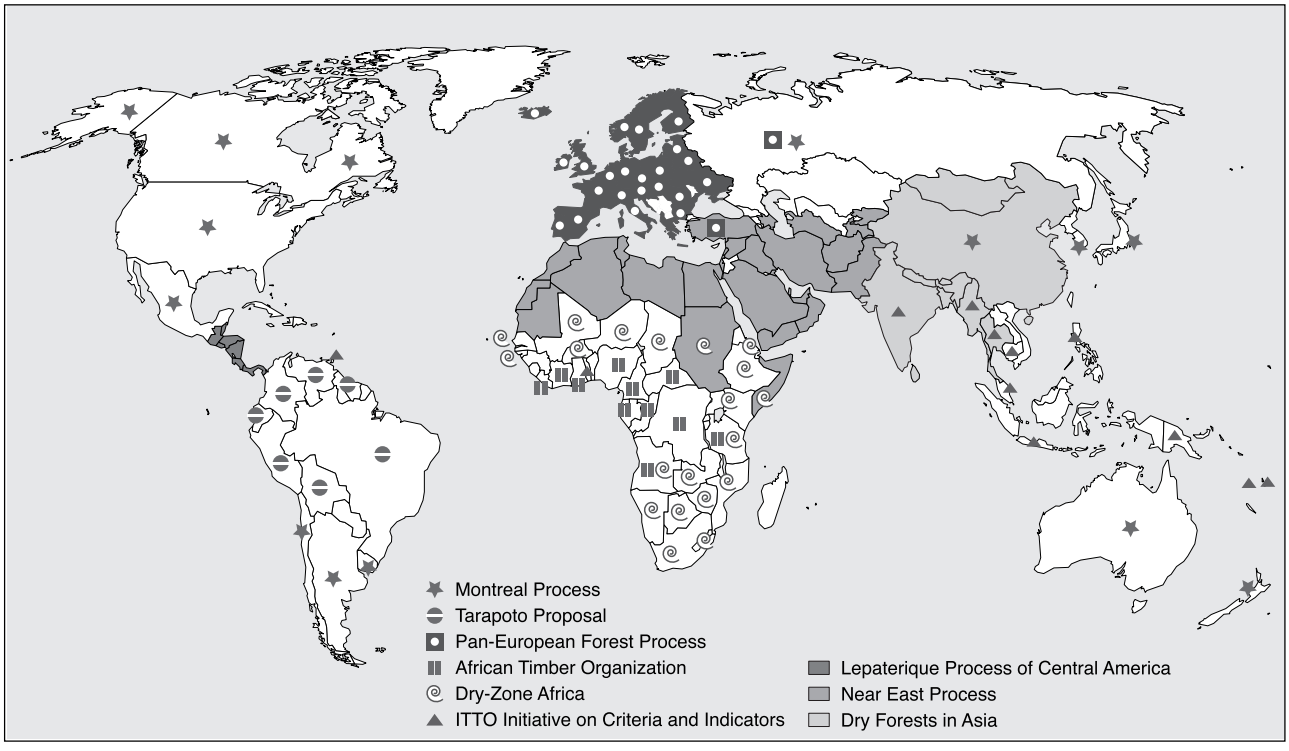
Dry-Zone Africa Process. The 28 countries participating in the Dry-Zone Africa Process, which originated in a UNEP/FAO Expert Meeting on Criteria and Indicators for Sustainable Forest Management (Nairobi, Kenya, November 1995) have identified seven national level criteria and 47 indicators. The African Forestry and Wildlife Commission and the Secretariats of three subregional groupings – the Permanent Interstate Committee for Drought Control in the Sahel (CILSS), the Intergovernmental Authority on Development (IGAD) and the Southern African Development Community (SADC) – endorse and closely follow the work of this process. A number of national and regional workshops and expert meetings have been held to review the applicability of the criteria and indicators in the countries concerned, to discuss the availability of information and national capacities for collection and analysis of data, and to elaborate a plan of action for implementation. Two subregional follow-up meetings of national coordinators have also been held, covering countries in SADC and CILSS countries. Following recommendations of the former, *Practical guidelines for the assessment and measurement of criteria and indicators for sustainable forest management in dry-zone Africa* have been published (FAO, 2000).

Near East Process. The Near East Process originated in an FAO/UNEP Expert Meeting on Criteria and Indicators for Sustainable Forest Management (Cairo, Egypt, 1996). The 30 participating countries identified seven national level criteria and 65 indicators, focusing mainly on the management of dry-zone forests and woodlands in the region. The Near East Forestry Commission has endorsed

and is closely following the work of this process. A number of regional workshops and expert meetings have been held to review the applicability of the criteria and indicators in the countries concerned and to discuss the availability of information and national capacities for collection and analysis of data. In June 2000, National Coordinators for Criteria and Indicators for the Near East participated in an FAO meeting in Teheran, Islamic Republic of Iran, to discuss and comment on the draft practical guidelines for assessment and measurement of criteria and indicators. Comments were incorporated and the guidelines have been published (2000). These guidelines, which are the product of the recommendations made in the Meeting of Experts for Criteria and Indicators for Sustainable Forest Management in Near East Countries (Damascus, Syrian Arab Republic, December 1998), are intended to assist countries in assessing and measuring the sustainability of forest management activities.

Lepaterique Process of Central America. The Lepaterique Process was initiated following the recommendations of an Expert Meeting on Criteria and Indicators for Sustainable Forest Management organized by the Central American Council of Forests and Protected Areas (CCAB-AP) in collaboration with FAO in Tegucigalpa, Honduras in January 1997. Experts from the seven Central American countries identified eight national level criteria and 53 indicators, as well as four criteria and 40 indicators at the regional level. The expert meeting was followed by two subregional training workshops and seven national seminars, which reviewed applicability and availability of data and made recommendations on future implementation. The countries concerned are at present carrying out national validation exercises to review the criteria and indicators identified. In a move to support the Lepaterique Process further, the forestry directors of all Central American countries recently participated in a video conference between CATIE, Turrialba, Costa Rica; Helsinki, Finland; and FAO, Rome. The event was organized and supported by Finland through the Finland-funded regional project PROCAFOR, based in Honduras. During this conference, Central American forestry directors reported on progress achieved towards the implementation of criteria and indicators for sustainable forest management in the region and offered their support to the Lepaterique Process.

Participating countries in the various ongoing international processes on criteria and indicators for sustainable forest management



Brief description and countries participating in the major international processes on criteria and indicators

Process	No. of criteria	No. of indicators	Applicability	Place of adoption	Date of adoption	No. of countries[a]	Participating countries/regions
ITTO Initiative on Criteria and Indicators[b]	7	66	National and forest management unit levels in humid tropical forests of member tropical countries	Yokohama, Japan	March 1992	12	Cambodia, Fiji, India, Indonesia, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, Togo, Trinidad and Tobago, Vanuatu
Dry-Zone Africa Process	7	47	National level	Nairobi, Kenya	November 1995	28	CILSS[c] (9 countries): Burkina Faso, Cape Verde, Chad, Gambia, Guinea-Bissau, Mali, Mauritania, Niger, Senegal IGADD (7): Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, Uganda SADC (12): Angola, Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe
Pan-European Forest Process	6	27 quantitative; 101 descriptive	Boreal, temperate and Mediterranean-type forests in Europe; regional and national levels[d]	Helsinki, Finland Lisbon, Portugal	June 1993 June 1998	37	Albania, Austria, Belarus, Belgium, Bullgaria, Croatia, Czech Republic, Denmark, Estonia, European Community, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom
Montreal Process	7 (non-legally binding)	67	Temperate and boreal forests in countries outside Europe; national level	Santiago, Chile	February 1995	12	Argentina, Australia, Canada, Chile, China, Japan, Republic of Korea, Mexico, New Zealand, Russian Federation, Uruguay, United States
Tarapoto Proposal	1 (global) 7 (national) 4 (forest management unit)	7 (global) 47 (national) 22 (forest management unit)	Sponsored by the Amazon Cooperation Treaty	Tarapoto, Peru	February 1995	8	Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, Venezuela
Near East Process	7	65	Regional and national levels	Cairo, Egypt	October 1996	30	Afghanistan, Algeria, Azerbaijan, Bahrain, Cyprus, Djibouti, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Kyrgyz Republic, Lebanon, Libya, Malta, Mauritania, Morocco, Oman, Pakistan, Qatar, Kingdom of Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tadjikistan, Tunisia, Turkey, Turkmenistan, United Arab Emirates, Yemen
Lepaterique Process of Central America	4 (regional) 8 (national)	40 (regional) 53 (national)	Forest management level criteria and indicators also identified at subregional meetings and national seminars	Tegucigalpa, Honduras	January 1997	7	Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama
African Timber Organization	28	60	ATO member countries; regional and national levels; also identified 5 principles and 2 subprinciples	Libreville, Gabon	January 1993	13	Angola, Cameroon, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gabon, Ghana, Liberia, Nigeria, Sao Tome and Principe, United Republic of Tanzania
Regional Initiative for Dry Forests in Asia	8	49	Dry forests in Asia; national level	Bhopal, India	December 1999	9	Bangladesh, Bhutan, China, India, Mongolia, Myanmar, Nepal, Sri Lanka, Thailand

[a] The totals in this column add up to more than 140 (the total number of countries participating in international processes) because many countries are members of more than one process.
[b] Of the 55 member countries of ITTO, only the 12 listed countries participate in ITTO's criteria and indicators process. The rest of the ITTO member countries participate in other process. India, Myanmar and Thailand are also members of the Regional Initiative for Dry Forests in Asia.
[c] CILSS: Permanent Interstate Committee for Drought Control in the Sahel; SADC: Southern Africa Development Community; IGADD: Intergovernmental Authority on Drought and Development.
[d] Operational Level Guidelines for application at the subnational level have also been developed.

Dry Zone Asia Initiative. This process originated in a workshop on National Level Criteria and Indicators for the Sustainable Management of Dry Forests in Asia/South Asia, held in Bhopal, India in December 1999 and supported by FAO, UNEP and ITTO. Nine countries participated and identified eight national level criteria and 49 indicators for the sustainable management of dry forests in the region. Participating countries are proceeding with implementation based on a two-year plan of action elaborated during the meeting. The action plan also commits participating countries to seek political and technical support from national forestry authorities for its implementation.

International Tropical Timber Organization. ITTO recently revised its criteria for sustainable forest management of tropical moist forests, originally published and endorsed by its member countries in 1992. The ITTO document *Criteria and indicators for the measurement of sustainable management of natural tropical forests*, endorsed in 1999, identifies seven criteria and 66 indicators applicable at both the national and forest management unit levels.

At its twenty-eighth session (May 2000, Lima, Peru), ITTO's International Tropical Timber Council recognized the need to continue field testing of criteria and indicators in order better to promote and assist countries and initiatives to implement these forest management tools.

African Timber Organization (ATO). The 13 member countries of ATO, in a meeting held in 1993, identified five principles, 28 criteria and 60 indicators for sustainable forest management, for application at the regional, national and forest management unit levels.

Criteria and indicators and certification

Since criteria and indicators – at any level – are neutral assessment tools for monitoring trends, they should not be used as standards for evaluating management practices. However, it may be possible to draw on criteria and indicators when developing standards or guidelines for performance at the management unit level, as has been done in many cases. There are clearly linkages between national and forest management unit level criteria and indicators for sustainable forest management, but there may or may not also be linkages between forest management unit level criteria and indicators and forest product certification standards.

Criteria and indicators provide a means for measuring, assessing, monitoring and demonstrating progress towards achieving the sustainability of forests in a given country or in a specified forest area, over a period of time. On the other hand, certification is a means of certifying the achievement of certain predefined standards of forest management in a given forest area, at a given point in time, agreed on by producers and consumers. Many countries have used national and forest management unit level criteria and indicators as the basis or starting-point for their certification activities.

Other efforts

The work of further developing and implementing criteria and indicators has also received support and assistance from other organizations. CIFOR, for example, has concentrated largely on research at the forest management unit level by assisting a number of countries in field testing of criteria and indicators. CIFOR continues to coordinate field testing in collaboration with a number of national institutes, notably in Brazil, Cameroon, Côte d'Ivoire, Zimbabwe, India and Indonesia. In support of this work, CIFOR published the *Criteria and Indicators Tools Series* in 1999.

Many of the ongoing processes have established technical and scientific committees to ensure soundness of approach. At the international level, FAO has collaborated with IUFRO and CATIE in the organization of three international conferences on indicators for sustainable forest management (Australia, 1998; Costa Rica, 1999, France, 2000).

FUTURE OF CRITERIA AND INDICATORS

Since the first FAO/ITTO coordinated expert meeting (Harmonization of Criteria and Indicators for Sustainable Forest Management) in February 1995, the number of international processes on criteria and indicators has increased from three to nine. All processes have undergone important changes as they have evolved. Some have validated the original set of criteria and indicators developed through expert meetings, while all have decided to go a step further and have developed and have started to implement such tools also at the forest management unit level. Validation of criteria and indicators and testing of these forest management tools at the latter level should continue in order for countries to arrive at a given number of indicators by which they can monitor and

report on progress to the international community.

It is evident that there is a need for international dialogue to continue involving all stakeholders. On this note, FAO, together with other partner organizations (ITTO, UNEP, CIFOR, IUFRO), is organizing an Expert Consultation on Criteria and Indicators for Sustainable Forest Management, to be held from 15 to 17 November 2000 in Rome. This meeting and others like it are necessary to take stock of present situations and progress achieved, to review challenges and to discuss the need and possibilities for further enhanced collaboration. Dialogue is also necessary to ensure compatibility and complementarity in ongoing work on criteria and indicators in the forestry and related fields. Furthermore, international dialogue among processes will ensure the sharing of experiences, problems and successes of implementation. ◆

Suggested reading

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