| PROPORTION OF LAND AREA COVERED BY FORESTS | | |
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| **Land** | **Forests** | **Core indicator** |

## 1. INDICATOR

**(a) Name:** Proportion of land area covered by forests.

**(b) Brief Definition:** The amount of forest area tracked over time. When possible, the area of primary forest should also be reported on.

**(c) Unit of Measurement:** %.

**(d) Placement in the CSD Indicator Set:** Land/Forests.

## 2. POLICY RELEVANCE

**(a) Purpose:** The purpose of the indicator is to show the area covered by the forest formations of a region/country over time.

**(b) Relevance to Sustainable/Unsustainable Development (theme/sub-theme):** Forests serve multiple environmental, socio-economic, and cultural roles in many countries. They are among the most diverse and widespread ecosystems of the world. Forests provide many significant resources and functions including wood products and non-wood products, recreational opportunities, habitat for wildlife, conservation of biological diversity, water and soil, and play a crucial role in the global carbon cycle. They support employment and traditional uses, and biodiversity. There is general concern over human impact on forest health, and the natural processes of forest growth and regeneration. Combating deforestation to maintain the production of wood and non-wood products and to preserve soils, water, air and biological diversity is explicitly considered in Agenda 21. Primary forests are usually associated with high levels of biological diversity, particularly in tropical regions. The area of primary forest is an important indicator of the status of the forest ecosystem as a whole.
A continuing and fast decreasing forest area in a country might be an alarm signal of unsustainable practices in the forestry and agricultural sector. The availability of accurate data on a country's forest area, which is a basic characteristic of its forest resources, is an essential requirement for forest policy and planning within the context of sustainable development.

**(c) International Conventions and Agreements:** Specific forest agreements include the *Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests* (the Forest Principles of the United Nations Conference on Environment and Development (UNCED)); and the *International Tropical Timber Agreement.* Many other international agreements deal with forests within the context of natural resources and environment conservation, for example, the Convention on International Trade in Endangered Species (CITES), the Convention on the Conservation of Wetlands of International

Importance (Ramsar Convention), the Convention on Biological Diversity, the Convention on Climate Change and the Convention to Combat Desertification. In addition, several regional conventions cover forests.

**(d) International Targets/Recommended Standards:** There are no international targets or standard sets for size of forest, rate of deforestation or area of primary forest. It is, however, understood that the higher the deforestation rate is, the more critical the forestry situation is in a country/region. Several countries have set targets for the extent of their forest area, either in absolute values or as a percentage of total land area of the country. The United Nations Forum of Forests recently developed four global objectives on forests, including an objective to "reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation". Members agreed to work globally and nationally and to make progress toward the achievement of these objectives by 2015.
The indicator is also used to measure progress towards the Millennium Development Goal Nr. 7 (Ensure environmental sustainability) and the associated targets "Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources" and "Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss"

**(e) Linkages to Other Indicators:** The indicator is closely linked with several other environmental indicators, such as land use and land condition change, wood and non-wood products harvesting intensity, protected forest area, arable land, threatened species, sustainable use of natural resources in mountain areas, etc. In some countries, it will also be generally linked to some of the socio-economic indicators, such as population growth and share of natural resource industries in manufacturing.

## 3. METHODOLOGICAL DESCRIPTION

**(a) Underlying Definitions and Concepts:** Definitions are available from the Food and Agriculture Organization of the United Nations (FAO) Forest Resources Assessments. The *forest area* is defined as "land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use. In addition, the definition of *forest* exists in most countries. The comparisons of forest area over time using reference years allows the calculation of change in absolute values, and as a percentage.
The *primary forest area* is defined by the Food and Agriculture Organization of the United Nations (FAO) Forest Resources Assessments as "Naturally regenerating forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed".
Different land uses practices and ranges of ecological condition result in different forest types and characteristics. These differences should be recognized, especially in country comparisons.

**(b) Measurement Methods:** The measurement methods for forest area can be contained in national forest inventories or assessments, and the estimate is obtained by sampling ground surveys, cadastral surveys, remote sensing, or a combination of these. Since forest resources assessments are expensive and thus rarely undertaken annually, the forest area for a given reference years is estimated through inter- or extrapolation. The areas of forest and primary forest are then presented as the percentages of the land area.

**(c) Limitations of the Indicator:** The forest area figure alone does not give any indication of the quality of the forest, its ecosystem context, nor forest values or practices. The indicator does, for instance, not provide information on the degradation of the forest resources in a country. In addition, the total forest area in a country might remain unchanged, but this may conceal sub-national changes such as deforestation in one area compensated by plantation establishment in another area. Due to the definition used, the indicator covers a very diversified range of forests ranging from open tree savanna to very dense tropical forests.

The primary forest areas are often equated with high levels of biodiversity, but this is not always the case. In the temperate and boreal zones, for example, they can be poor in terms of number of plant and animal species, while other forest types and forests bordering agricultural areas may provide additional habitats and thus harbour more species. Nevertheless, the size of the area of primary forest is one of several important indicators of the state of forest ecosystems.

**(d) Status of the Methodology:** Not available.

**(e) Alternative Definitions/Indicators:** A further breakdown of the forest area according to forest types or characteristics may give a more detailed picture of the situation.

## 4. ASSESSMENT OF DATA

**(a) Data Needed to Compile the Indicator:** The total forest area of a country and area of primary forest, at different yearly intervals.

**(b) National and International Data Availability and Sources:** Data on the extent of forest areas are available for most countries, both at national and sub-national scales. The data are often estimates, which are not always comparable because of changes in definitions and assessment methodologies. International data are available from FAO's Global Forest Resources Assessments (FRA). These are based on national data submitted by ministries responsible for forestry and statistics.

**(c) Data References:** Not available.

## 5. AGENCIES INVOLVED IN THE DEVELOPMENT OF THE INDICATOR

**(a) Lead Agency:** The lead agency is the Food and Agriculture Organization of the United Nations (FAO). The contact point is the Assistant Director-General, Sustainable Development Department, FAO; fax no. (39 06) 5705 3152.

**(b) Other Contributing Organizations:** The United Nations Environment Programme (UNEP), the United Nations Forum on Forests (UNFF), the Intergovernmental Panel on Climate Change (IPCC), the Centre for International Forestry Research (CIFOR), the International Tropical Timber Organization (ITTO) and the International Union of Forest Research Organizations (IUFRO) as well as other members of the Collaborative Partnership on Forests (CPF); national agencies responsible for forestry, remote sensing and geographic survey; universities and research institutes have all be involved in a series of Expert Meetings on harmonizing forest-related definitions of relevance to the development of this indicator.

## 6. REFERENCES

**(a) Readings:**

FAO. 2007. *State of the World's Forests* (FAO). / FAO, Rome (Italy). Forestry Dept., 144 pp.

FAO. 2006. *Global Forest Resources Assessment 2005. Progress towards sustainable forest management.* FAO Forestry paper 147. / FAO, Rome (Italy). Forestry Dept., 320 pp.

**(b) Internet sites:**

FAO's Global Forest Resources Assessment Programme.
http://www.fao.org/forestry/fra
FAO's Statistical Databases. http://faostat.fao.org
International data provided by other institutions, for example World Resources Institute, are mostly based on the FAO Forest Resources Assessment information and data.
http://www.wri.org/
The International Tropical Timber Organization (ITTO). http://www.itto.or.jp/
The United Nations Environment Programme (UNEP). http://www.unep.org/
United Nations Forum on Forests (UNFF). http://www.un.org/esa/forests/