

## Chapter 1

# Introduction

Global forest resources assessments, coordinated by FAO, have been carried out at five to ten year intervals since FAO was established in 1945.<sup>1</sup> The mandate for these assessments is found in the FAO Constitution, which states that “The Organization shall collect, analyse, interpret and disseminate information relating to nutrition, food and agriculture. In this Constitution, the term ‘agriculture’ and its derivatives include fisheries, marine products, forestry and primary forestry products.” (Article I, Functions of the Organization, paragraph 1) (FAO, 2000).

The Global Forest Resources Assessment 2005 (FRA 2005) was requested by FAO member countries during the sixteenth session of the FAO Committee on Forestry (COFO) in March 2003 (FAO, 2003a). It is the most comprehensive assessment to date, both in terms of contributors and content. More than 800 people have been involved, including 172 national correspondents and their teams, an advisory group, international experts, FAO staff, consultants and volunteers from around the world.

The scope and content of the global assessments have evolved over time to respond to changing information needs. The main concern driving the first FAO-led assessment was well expressed in the first sentence of its report: “The whole world is suffering from shortages of forest products” (FAO, 1948). Studies of timber supply trends dominated FRAs through the 1960s. From the 1970s through FRA 1990, environmental dimensions of forest resources were in focus, in particular the rate of deforestation. FRA 2000 was designed to cover a wider range of forest benefits and functions, but severe information shortages made reporting on key trends difficult. In addition, users and the media still appeared to be primarily interested in forest area and area change (Holmgren and Persson, 2002).

FRA 2005 reflects a more ambitious approach. In line with recommendations made by the FAO expert consultation on Global Forest Resources Assessments – Linking National and International Efforts, held in Kotka, Finland in 2002 (Kotka IV), and COFO in 2003, the reporting framework for FRA 2005 is based on the sustainable forest management concept, encompassing social, economic and environmental dimensions of forest resources. Further, the FRA 2005 process has involved countries to a much higher degree than previous assessments, leading to a higher response rate and quality control of information at the national level.

This broader approach has also led to closer collaboration with other reporting processes, to avoid duplication of effort for variables that are reported to several agencies. For example, the variables related to forest biomass and carbon were harmonized with the specifications of the Intergovernmental Panel on Climate Change (IPCC), variables on endangered species with the *IUCN 2000 red list of threatened species* (World Conservation Union – IUCN, 2000), and quantity of removals with the *FAO Yearbook of Forest Products* (FAO, 2003b). The proportion of land area under forests, reported to FAO as part of FRA 2005, is also used as one of the indicators of progress in reaching the Millennium Development Goals (United Nations, 2005a). Efforts have continued to establish and maintain globally consistent definitions in the FRA process, in order to ensure consistency over time and reduce the overall reporting burden on countries.

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<sup>1</sup> The reporting years have been as follows: 1946-1948, 1953, 1958, 1963, mid-1970s (regional assessments), 1980, 1988, 1990, 1995 and 2000.

The present report provides a comprehensive overview of the results of FRA 2005 grouped according to six themes, covering key aspects of sustainable forest management:

- Extent of forest resources
- Biological diversity
- Forest health and vitality
- Productive functions of forest resources
- Protective functions of forest resources
- Socio-economic functions

Each of these chapters begins with a short overview describing the theme and how it relates to sustainable forest management. Next, the relevant variables included in FRA 2005 are listed, together with the availability of information on these. Key findings are presented, followed by separate sections for each of the variables, highlighting current status and trends.

In Chapter 8, an attempt is made to synthesize the results and key trends that illustrate progress towards sustainable forest management at subregional, regional and global levels.

Chapter 9 states the main conclusions of the FRA 2005 process and its results, including some considerations regarding future assessments. This chapter is followed by the bibliography and by annexes providing country statistics and other background material.

More information on the content and structure of the report and on the FRA 2005 process is provided below.

## **THE REPORTING FRAMEWORK**

### **Sustainable forest management and FRA 2005**

The term 'sustainable forest management' can be traced to the non-binding 'Forest Principles' and Chapter 11 of Agenda 21, which were prominent outputs of the United Nations Conference on Environment and Development (UNCED) in June 1992.

The guiding objective of the Forest Principles is to contribute to the management, conservation and sustainable development of all types of forests and to provide for their multiple and complementary functions and uses. Principle 2b specifically states, "Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations."

The concept of sustainable forest management has continued to evolve since 1992 through international forest policy dialogue within the Intergovernmental Panel on Forests (IPF), the Intergovernmental Forum on Forests (IFF) and the United Nations Forum on Forests (UNFF) – and through a large number of country-led and ecoregional initiatives aimed at translating the concept into practice. These include the development of criteria for and indicators of sustainable forest management supported by international organizations including FAO, the International Tropical Timber Organization (ITTO), the United Nations Environment Programme (UNEP) and other members of the Collaborative Partnership on Forests (CPF).

Sustainable forest management is also the main theme of the FAO Strategic Plan for Forestry (FAO, 1999a), whose mission is "to enhance human well-being through support to member countries in the sustainable management of the world's trees and forests".

Despite, or perhaps because of, the long maturing process of the sustainable forest management concept, it is difficult to define explicitly what sustainable forest management is. However, several recent international meetings have suggested that the seven thematic elements in Box 1.1 are key components.

Following the Kotka IV recommendation to use the sustainable forest management concept as a reporting framework, some basic attributes of FRA 2005 were developed in collaboration with the FRA advisory group and national correspondents:

## BOX 1.1

**Thematic elements of sustainable forest management**

The seven thematic elements of sustainable forest management described below are based on the nine ongoing regional/international processes on criteria and indicators for sustainable forest management<sup>1</sup> and have been acknowledged by FAO member countries and the UNFF.

**1. Extent of forest resources**

The theme expresses an overall desire to have adequate forest cover and stocking, including trees outside forests, to support the social, economic and environmental dimensions of forestry. For example, the existence and extent of specific forest types are important as a basis for conservation efforts. The theme encompasses ambitions to reduce deforestation and to restore and rehabilitate degraded forest landscapes. It also includes the important function of forests and trees outside forests to store carbon and thereby contribute to moderating the global climate.

**2. Biological diversity**

The theme concerns the conservation and management of biological diversity at ecosystem (landscape), species and genetic levels. Such conservation, including the protection of areas with fragile ecosystems, ensures that diversity of life is maintained, and provides opportunities to develop new products in the future, including medicines. Genetic improvement is also a means of increasing forest productivity, for example to ensure high wood production levels in intensively managed forests.

**3. Forest health and vitality**

Forests need to be managed so that the risks and impacts of unwanted disturbances are minimized, including wildfires, airborne pollution, storm felling, invasive species, pests, diseases and insects. Such disturbances may impact social and economic as well as environmental dimensions of forestry.

**4. Productive functions of forest resources**

Forests and trees outside forests provide a wide range of wood and non-wood forest products. This theme expresses the ambition to maintain an ample and valuable supply of primary forest products, while at the same time ensuring that production and harvesting are sustainable and do not compromise the management options of future generations.

**5. Protective functions of forest resources**

The theme addresses the role of forests and trees outside forests in moderating soil, hydrological and aquatic systems, maintaining clean water (including healthy fish populations) and reducing the risks and impacts of floods, avalanches, erosion and drought. Protective functions of forest resources also contribute to ecosystem conservation efforts and have strong cross-sectoral aspects, because the benefits to agriculture and rural livelihoods are high.

**6. Socio-economic functions**

The theme covers the contributions of forest resources to the overall economy, for example through employment, values generated through processing and marketing of forest products, and energy, trade and investment in the forest sector. It also addresses the important forest function of hosting and protecting sites and landscapes of high

cultural, spiritual or recreational value, and thus includes aspects of land tenure, indigenous and community management systems, and traditional knowledge.

#### **7. Legal, policy and institutional framework**

The theme includes the legal, policy and institutional arrangements necessary to support the above six themes, including participatory decision-making, governance and law enforcement, and monitoring and assessment of progress. It also involves broader societal aspects, including fair and equitable use of forest resources, scientific research and education, infrastructure arrangements to support the forest sector, transfer of technology, capacity-building, and public information and communication.

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<sup>1</sup> African Timber Organization (FAO, 2001a); Dry-Zone Africa Process on Criteria and Indicators for Sustainable Forest Management; International Tropical Timber Organization; Lepaterique Process of Central America on Criteria and Indicators for Sustainable Forest Management; Montreal Process on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests; Near East Process on Criteria and Indicators for Sustainable Forest Management; Pan-European Forest Process on Criteria and Indicators for Sustainable Forest Management; Regional Initiative for the Development and Implementation of National-Level Criteria and Indicators for the Sustainable Management of Dry Forests in Asia; and the Tarapoto Proposal of Criteria and Indicators for Sustainability of the Amazon Forest.

Source: [www.fao.org/forestry/site/24447/en](http://www.fao.org/forestry/site/24447/en).

- FRA 2005 should only address the first six thematic elements, i.e. it should not address the element related to the legal, policy and institutional framework for sustainable forest management.
- FRA 2005 should focus on forest resources, their management and uses, i.e. it should include primary production of forest products such as removals of wood and non-wood products, but it should not include further processing, marketing or benefits beyond the forest gate. One implication is that, conceptually, not all aspects of thematic elements 4–6 are addressed by FRA 2005.
- FRA 2005 should focus on trends for all included variables, acknowledging that it is the change and change rate, as opposed to a static assessment that will form the basis for determining the level of progress towards sustainable forest management.

In the design phase of FRA 2005, tests were made to incorporate country-specific assessments of progress towards sustainable forest management. The results include a case study for India (FAO, 2003c) using the Delphi methods to assign weights to selected national parameters. However, this approach was not applied in FRA 2005.

#### **FRA 2005 reporting tables**

Fifteen reporting tables were developed to address the thematic elements of sustainable forest management (Table 1.1). The tables, including variables and definitions, were subject to intensive review by the FRA advisory group and national correspondents before finalization (FAO, 2004a). Detailed specifications for the tables, variables and definitions, as well as the guidelines for reporting, were translated into five languages (FAO, 2004b, 2004c, 2004d, 2005b) and are available online. Countries were asked to provide information for the 15 tables for three points in time: 1990, 2000 and 2005 (with the exception of a few variables for which forecasting to 2005 was not indicated). Linkages among the tables and the six thematic elements addressed in FRA 2005 are illustrated in Table 1.2.

TABLE 1.1  
FRA 2005 reporting tables

1 Forest extent	6 Biomass stock	11 Wood removals
2 Ownership	7 Carbon stock	12 Value of wood removals
3 Designated functions	8 Disturbances	13 Non-wood forest product (NWFP) removals
4 Forest characteristics	9 Tree species occurrence	14 Value of NWFP removals
5 Growing stock	10 Composition of growing stock	15 Employment

TABLE 1.2  
Indicative linkages between reporting tables and thematic elements of sustainable forest management

Reporting table	Thematic elements					
	Extent of forest resources	Biological diversity	Health and vitality	Productive functions	Protective functions	Socio-economic functions
1. Forest extent	✓	✓		✓		
2. Ownership	✓					✓
3. Designated functions		✓		✓	✓	✓
4. Forest characteristics	✓	✓	✓	✓	✓	✓
5. Growing stock	✓	✓		✓		✓
6. Biomass stock	✓	✓		✓		✓
7. Carbon stock	✓			✓		✓
8. Disturbances	✓		✓	✓	✓	✓
9. Tree species occurrence	✓	✓		✓		✓
10. Composition of growing stock	✓	✓		✓		✓
11. Wood removals	✓			✓		✓
12. Value of wood removals				✓		✓
13. NWFP removals	✓	✓		✓		✓
14. Value of NWFP removals				✓		✓
15. Employment						✓

### Countries and areas included in FRA 2005

A total of 229 countries and areas are included in FRA 2005, based on the list used by the United Nations Statistics Division (234 countries and areas) (United Nations, 2005b) with the following changes:

The following seven reporting units are excluded:

- Aaland Islands (included under Finland)
- Guernsey (included under Channel Islands)
- Hong Kong (included under China)
- Jersey (included under Channel Islands)
- Macao (included under China)
- Norfolk Island
- Svalbard and Jan Mayen Islands

The following two reporting units are added:

- British Indian Ocean Territory
- South Georgia and the South Sandwich Islands

For each of the 229, a country report has been prepared and issued as an FRA 2005 working paper. A separate working paper (FRA 2005 Country Report 230 – FAO, 2005c) has been prepared for Antarctica and 28 dependent or disputed territories (including Norfolk, Svalbard and Jan Mayen Islands) that have no, or no significant, areas of forest.

### Regions and subregions

The FRA 2005 breakdown into six regions is the same as that used in other FAO publications, including FRA 2000, and follows well-established delineations. However,

owing to the difference in size of individual countries, this breakdown means that, in some regions, one or a few countries dominate the regional results. The Russian Federation is included in Europe and dominates those statistics; the Caribbean and Central America are combined with North America and tend to be overshadowed by Canada and the United States; and Australia dominates the regional results for Oceania.

A breakdown was created to provide more detail for three of the regions: Africa, Asia and North and Central America. Each of these was divided into three subregions, bringing the total number of reporting areas to 12. The subregional divisions are somewhat arbitrary, but are intended to represent areas with similar environmental and socio-economic conditions. Table 1.3 summarizes key statistics for the regions and subregions and Figure 1.1 provides a graphic illustration of the countries included in each.

### THE PROCESS

FRA 2005 started with the Kotka IV expert consultation in July 2002 (FAO, 2002a) and has taken three and a half years to implement (Figure 1.2). The delivery of outputs includes the release of global statistics, key findings and the 229 country reports (November 2005); launch of the present report in February 2006; and subsequent releases of the thematic studies during 2006. It will be officially closed at the Kotka V expert consultation, scheduled for June 2006, with an evaluation of the project.

FRA 2005 involved more than 800 people (Annex 1) and was coordinated by the Forest Resources Development Service at FAO headquarters in Rome. Eight staff members and consultants were engaged full time throughout the project, including focal points for each region who facilitated communications between the national correspondents and FAO.

Besides the core staff, a large number of FAO staff, consultants and volunteers were engaged in various phases of FRA 2005 as specialists within specific subjects, as assistants in the preparation of reports for countries and areas without a national correspondent, as regional staff in decentralized offices and as developers of thematic studies.

The United Nations Economic Commission for Europe (UNECE) in Geneva was a key institutional partner, handling communications and support to European countries.

TABLE 1.3  
Key statistics for regions and subregions used in FRA 2005<sup>1</sup>

Region/subregion	No. of countries and areas	Total area (million hectares)	Population (million)	Rural population (% of population)	Rural poor population (% of rural population)	Population increase (%/year)
Eastern and Southern Africa	20	834	235	63	43	1.8
Northern Africa	16	1 550	315	62	34	2.3
Western and Central Africa	22	647	318	57	27	2.5
<b>Total Africa</b>	<b>58</b>	<b>3 031</b>	<b>868</b>	<b>61</b>	<b>34</b>	<b>2.2</b>
East Asia	5	1 176	1 528	56	4	0.7
South and Southeast Asia	18	898	1 963	68	32	1.6
Western and Central Asia	25	1 103	347	41	13	4.3
<b>Total Asia</b>	<b>48</b>	<b>3 177</b>	<b>3 838</b>	<b>61</b>	<b>21</b>	<b>1.5</b>
<b>Total Europe</b>	<b>47</b>	<b>2 298</b>	<b>723</b>	<b>27</b>	<b>14</b>	<b>-0.1</b>
Caribbean	25	23	39	35	38	0.9
Central America	7	52	39	47	60	2.3
North America	5	2 197	429	21	0	1.1
<b>Total North and Central America</b>	<b>37</b>	<b>2 273</b>	<b>508</b>	<b>24</b>	<b>14</b>	<b>1.2</b>
<b>Total Oceania</b>	<b>24</b>	<b>856</b>	<b>33</b>	<b>27</b>	<b>23</b>	<b>1.2</b>
<b>Total South America</b>	<b>15</b>	<b>1 784</b>	<b>365</b>	<b>18</b>	<b>52</b>	<b>1.4</b>
<b>World</b>	<b>229</b>	<b>13 419</b>	<b>6 335</b>	<b>51</b>	<b>23</b>	<b>1.4</b>

<sup>1</sup> Population figures from World Bank, 2005

FIGURE 1.1  
Regional and subregional breakdown used in FRA 2005

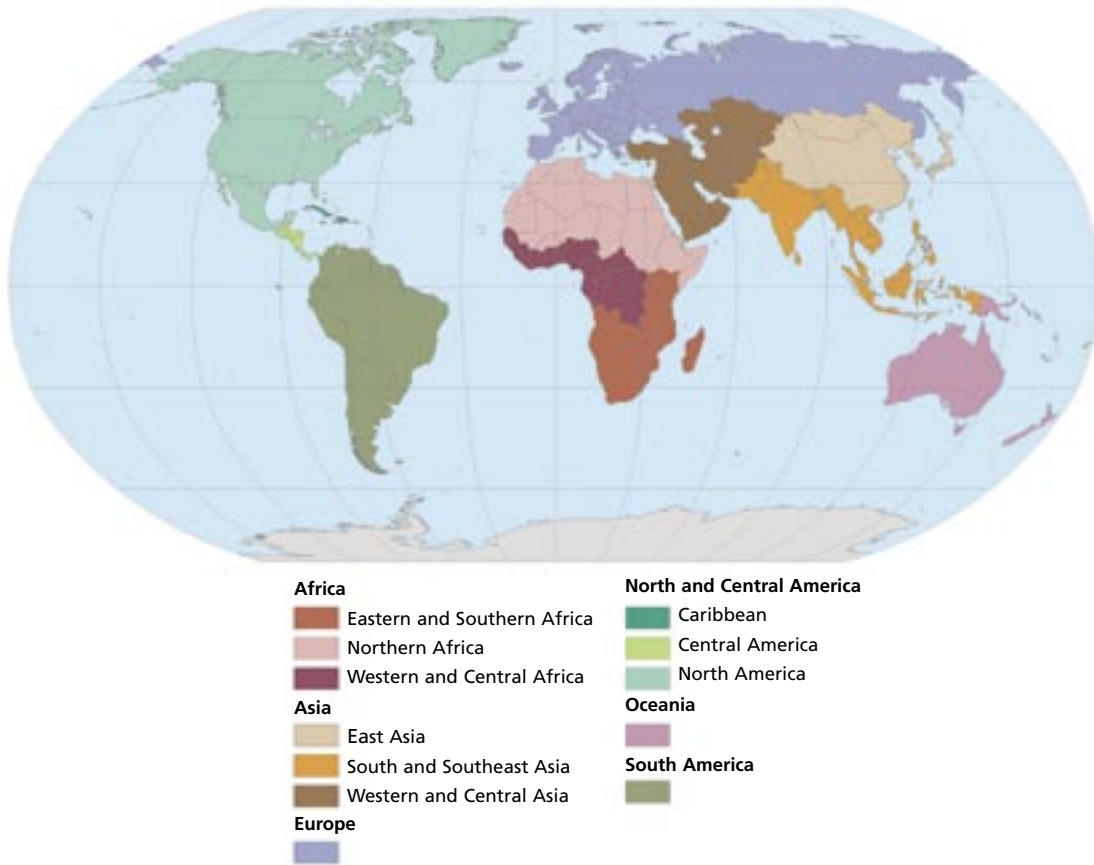
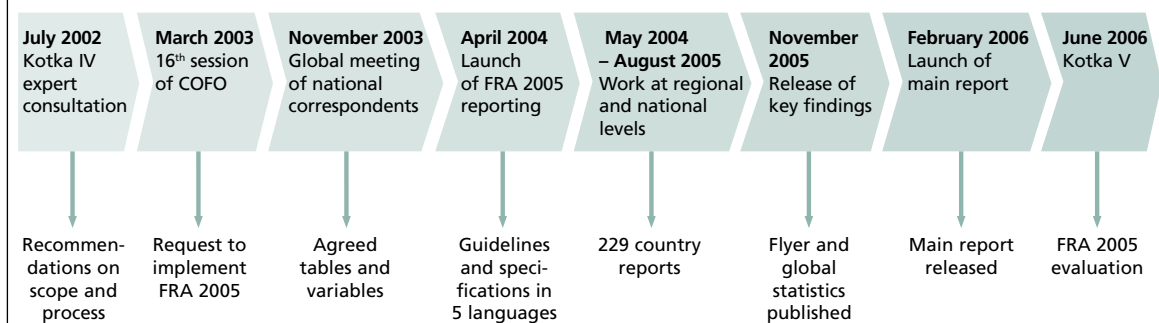


FIGURE 1.2  
FRA 2005 Timeline



An FRA advisory group was established and has had four meetings since early 2003 (see Annex 5 for details). Members of the group represent partner institutions, including ITTO, the Ministerial Conference for the Protection of Forests in Europe (MCPFE), UNEP, the UNEP-World Conservation Monitoring Centre (WCMC) and the World Resources Institute (WRI), as well as a range of countries from all regions. The advisory group has been instrumental in the development of FRA 2005, as well as fulfilling a valuable oversight and review function.

In line with recommendations from Kotka IV and COFO 2003, FAO requested countries to officially nominate a national correspondent to the FRA process. The response to this request has been very strong from practically all countries. At present, 172 national correspondents are confirmed. These correspondents, and their respective professional networks in the countries, represent a tremendous strength of the FRA 2005 process, and were responsible for coordinating inputs and preparing country reports according to a standard format in English, French or Spanish. A training session attended by more than 100 national correspondents was held in November 2003 in Rome, and detailed guidelines, specifications and reporting formats were provided.

The reporting format required countries to provide the full reference for original data sources and an indication of the reliability of the data for each of these, as well as definitions of terminology. Separate sections in these reports deal with analysis of data (including any assumptions made and the methodologies used for estimates and projections of data to the three reference years, 1990, 2000 and 2005); calibration of data to the official land area as held by FAO; and reclassification of data to the classes used in FRA 2005. Comments to the tables yield additional information, particularly where countries have experienced difficulty in matching national classes to those used in FRA 2005.

Regional focal points at FAO headquarters and its regional and subregional offices were in regular contact with national correspondents throughout the process. An electronic discussion forum and a list of frequently asked questions were provided on the FRA 2005 Web site to further facilitate the reporting process.

Once received, the draft country reports underwent detailed reviews to ensure completeness and correct application of definitions and methodologies – including the reclassification of national data into the FRA 2005 classification system. Internal consistency was checked and a comparison made with information provided for FRA 2000, the FAO/EUROSTAT/ITTO/UNECE Joint Forest Sector Questionnaire and other published sources of information.

A total of ten regional and subregional workshops were held to review the draft reports (see Annex 5 for details). These workshops provided an opportunity to share experiences and to address specific questions and issues related to data availability and interpretation. The final reports are thus the result of an iterative process and a collaborative effort.

The data were then entered into FAO's Forestry Information System (FORIS) and global tables were generated. Subject specialists at FAO analysed these tables and prepared subregional, regional and global overviews for each topic of the main report. Before publishing the key findings and the global tables, all country reports were sent to the head of forestry in the respective country for final validation.

### Main outputs from FRA 2005

In addition to the present report, other major outputs of FRA 2005 include:

- **Country reports.** A total of 229 detailed country reports have been prepared, listing the data sources and original data and describing the methodologies used for estimation, forecasting and reclassification, as well as any assumptions made. These reports are available on the FRA 2005 Web site ([www.fao.org/forestry/site/fra2005/](http://www.fao.org/forestry/site/fra2005/)) in English, French or Spanish. Hard copies are available upon request.
- **Global tables.** A set of 20 global tables have been compiled based on the country information provided. These can be found in Annex 3 and are also available on the above Web site.
- **Key findings.** Fifteen key findings of FRA 2005 were released in November 2005. A flyer describing these is available in English, French, Spanish, Arabic, Chinese and Russian on the FRA 2005 Web site or in hard copy upon request.



- ***Thematic studies.*** Seven thematic studies provide complementary information on specific topics: planted forests, mangroves, bamboo, wildland fires, forest pests, forests and water, and forest ownership and resource tenure. Each of these studies is being published separately.
- ***Working papers.*** A number of FRA working papers have been prepared as part of the FRA 2005 process. They are listed in Annex 4.

