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## Acknowledgements

The FRA 2005 main report represents a major effort of FAO's Forestry Department, FAO member countries, donors, partners and individual experts. More than 800 people have been directly involved in the process. National correspondents and their teams provided detailed country reports for the assessment. More than 80 FAO staff members, consultants and volunteers contributed to review of the reports, preparation of desk studies for countries and areas with no national correspondent, and analysis and presentation of the results. Several countries and organizations contributed extra-budgetary financial resources or secondments to FRA 2005: Australia, Finland, Sweden, the United States of America, the International Network for Bamboo and Rattan (INBAR), the International Tropical Timber Organization (ITTO), the Japanese National Land Afforestation Promotion Organization and the Ramsar Center Japan. The United Nations Economic Commission for Europe coordinated the assessment process for European countries. Participants in the expert consultation held in Kotka, Finland, in 2002 provided the initial guidance for FRA 2005, while the FRA advisory group provided continuous support and advice throughout the process.

FAO is grateful for the support of all countries, organizations and experts inside and outside the organization that have made FRA 2005 possible.

Institutional and individual contributors to FRA 2005 are listed in Annex 1. Editing and production of the report were managed by Lynn Ball, and formatting and layout were done by Flora Dicarlo.

## Foreword

We have high expectations of the world's forest resources. They are to provide renewable raw materials and energy, maintain biological diversity, mitigate climate change, protect land and water resources, provide recreation facilities, improve air quality and help alleviate poverty. At the same time, forests are affected by fire, air pollution, pests and invasive species, and are the primary targets in many countries for agricultural and urban expansion. Competing interests in the benefits of forest resources and forest land are omnipresent, and the need for a sound basis for analysis and conflict resolution has never been greater.

The process of global forest resources assessment (FRA) has responded to this challenge. By adopting the concept of sustainable forest management as a reporting framework, FRA is now well placed to provide a holistic perspective on global forest resources, their management and uses. Beyond the conventional production and environmental dimensions of forestry, FRA now includes parameters that are important to forest dwellers and rural poor people, such as the value of non-wood forest products and trends in fuelwood removals. By addressing the thematic elements of sustainable forest management, FRA has evolved into an instrument that is indispensable in international negotiations and arrangements related to forests, and for clarifying the relationship of forestry to sustainable development.

It is through the participation of national experts from virtually all countries that the FRA process ensures that the best and most recent knowledge is applied and that a viable feedback mechanism to national policy processes is in place. The data for FRA 2005 were delivered by national correspondents – nominated by the countries – and their networks of professionals. FAO's role has been to coordinate the process and synthesize this information.

The immediate application of report findings and the associated databases will be in international arrangements addressing biological diversity, climate change, desertification, criteria and indicators for sustainable forest management, environmental outlook studies and the Millennium Development Goals, among others. I trust that these processes will not only make good use of this new knowledge, but will also generate feedback so that FRA can evolve, responding to new information requirements and continually improving global knowledge of forest resources.

Finally, the question that has frequently been asked: are we progressing towards sustainable forest management? This is the question that constituted the base of FRA 2005. Surprisingly, the answer cannot be a definitive one: there are many good signs and positive trends, but many negative trends remain. While intensive forest plantation and conservation efforts are on the rise, primary forests continue to become degraded or converted to agriculture at alarming rates in some regions. As the report also shows, there is a worrying correlation between negative forest resource trends and the size of rural poor populations, which calls for an intensified effort to understand and address the interrelationships of agriculture, forestry and poverty – which could be the overriding theme of a future FRA.



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## Acronyms and abbreviations

<b>CBD</b>	Convention on Biological Diversity
<b>COFO</b>	Committee on Forestry (FAO)
<b>CPF</b>	Collaborative Partnership on Forests
<b>DBH</b>	diameter at breast height
<b>ECOSOC</b>	Economic and Social Council (UN)
<b>FORIS</b>	Forestry Information System (FAO)
<b>FRA</b>	Global Forest Resources Assessment
<b>GBA-2000</b>	Global Burnt Area 2000 Project
<b>GDP</b>	gross domestic product
<b>GFMC</b>	Global Fire Monitoring Center
<b>IFF</b>	Intergovernmental Forum on Forests
<b>INBAR</b>	International Network for Bamboo and Rattan
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>IPF</b>	Ad Hoc Intergovernmental Panel on Forests
<b>IPPC</b>	International Plant Protection Convention
<b>ISDR</b>	International Strategy for Disaster Reduction (UN)
<b>ISPM</b>	International Standards for Phytosanitary Measures
<b>ITTO</b>	International Tropical Timber Organization
<b>IUCN</b>	World Conservation Union
<b>LFCC</b>	low forest cover countries
<b>MCPFE</b>	Ministerial Conference on the Protection of Forests in Europe
<b>MEA</b>	Millennium Ecosystem Assessment
<b>NWFP</b>	non-wood forest product
<b>SIDS</b>	small island developing states
<b>UNCED</b>	United Nations Conference on Environment and Development
<b>UNECE</b>	United Nations Economic Commission for Europe
<b>UNEP</b>	United Nations Environment Programme
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>UNFF</b>	United Nations Forum on Forests
<b>WCMC</b>	World Conservation Monitoring Centre
<b>WDPA</b>	World Database on Protected Areas
<b>WRI</b>	World Resources Institute
<b>WWF</b>	World Wide Fund for Nature

# Executive Summary

FAO has been coordinating global forest resources assessments every five to ten years since 1946. The Global Forest Resources Assessment 2005 (FRA 2005) is the most comprehensive to date. More than 800 people have been involved, including 172 national correspondents and their teams, an advisory group, international experts, FAO and UNECE staff, consultants and volunteers from around the world.

Information was collected and analysed from 229 countries and areas for three points in time: 1990, 2000 and 2005. FAO worked closely with countries and specialists in the design and implementation of FRA 2005 – through regular contact, expert consultations, training for national correspondents and ten regional and subregional workshops. A truly global partnership, resulting in improved knowledge of the world's forests and forestry, a more transparent reporting process and enhanced capacity in data analysis and reporting.

FRA 2005 examines current status and recent trends for about 40 variables, covering the extent, condition, uses and values of forests and other wooded land, with the aim of assessing all benefits from forest resources. In the main section of this report, results are presented according to six themes representing important elements 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

A summary of key findings is presented below, followed by a section attempting to answer the following question:

What does the information contained in FRA 2005 tell us about progress towards sustainable forest management since 1990 on regional and global scales?

## KEY FINDINGS

### Forests cover 30% of the total land area

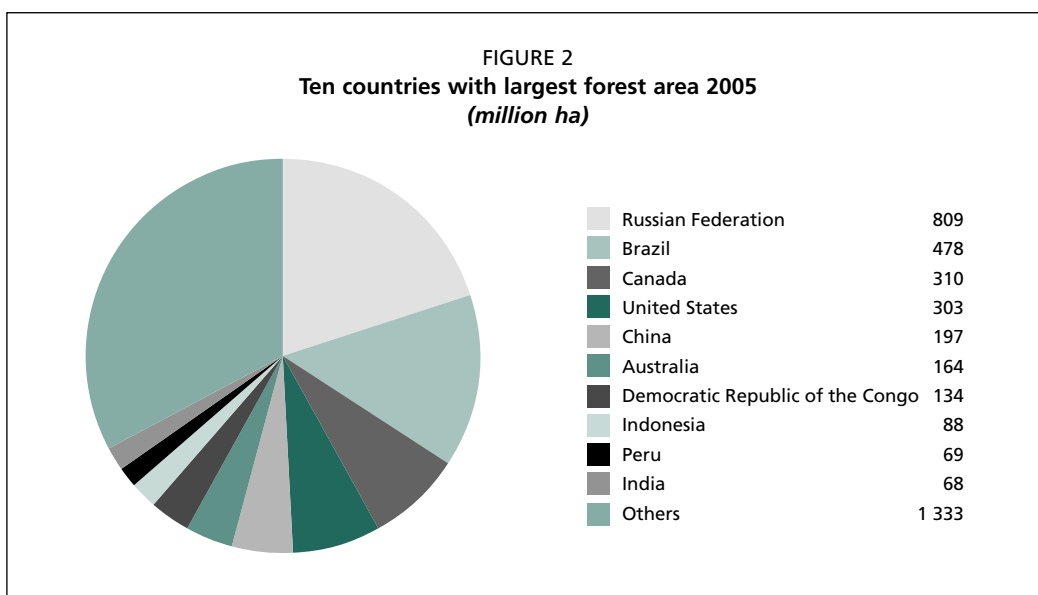
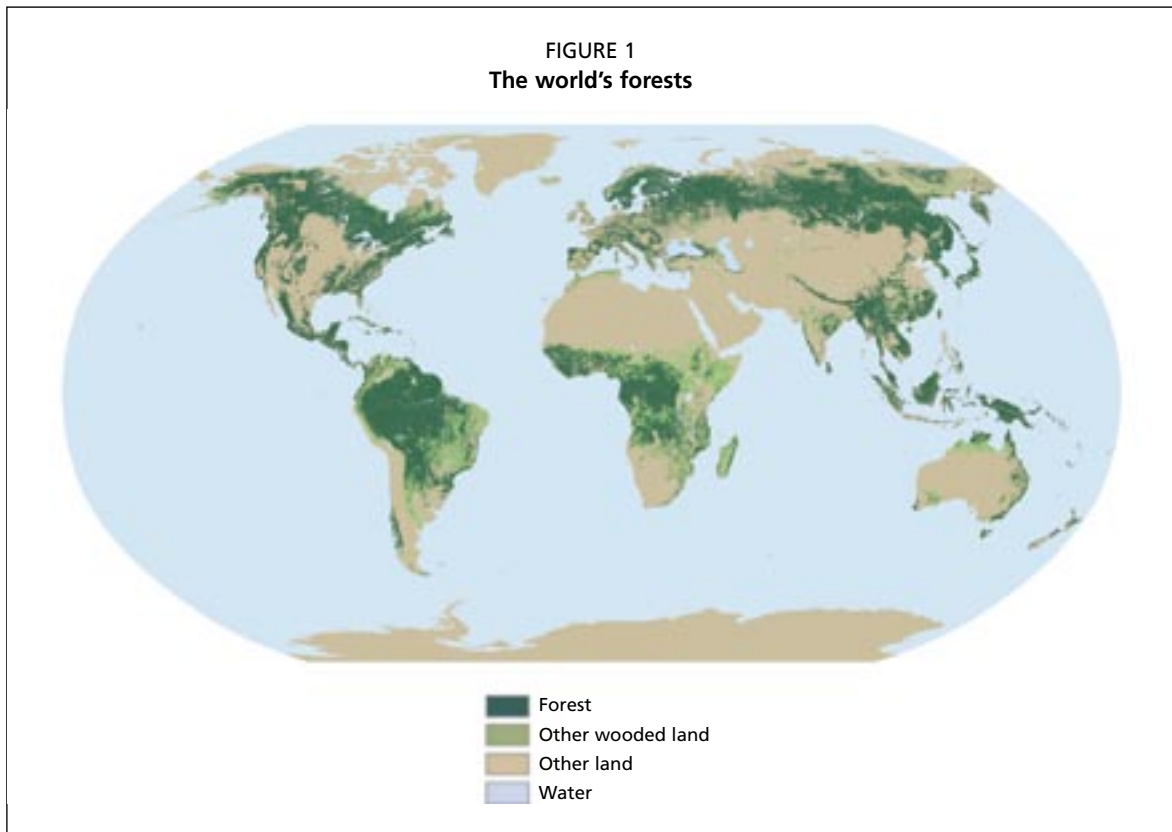
Total forest area in 2005 is just under 4 billion hectares (ha), corresponding to an average of 0.62 ha per capita (Figure 1). However, the area of forest is unevenly distributed. For example, 64 countries with a combined population of 2 billion have less than 0.1 ha of forest per capita. The ten most forest-rich countries account for two-thirds of total forest area (Figure 2). Seven countries or areas have no forest at all, and an additional 57 have forest on less than 10 percent of their total land area.

### Total forest area continues to decrease – but the rate of net loss is slowing

Deforestation, mainly conversion of forests to agricultural land, continues at an alarmingly high rate – about 13 million hectares per year (Box 1). At the same time, forest planting, landscape restoration and natural expansion of forests have significantly reduced the net loss of forest area. Net change in forest area in the period 2000–2005 is estimated at -7.3 million hectares per year (an area about the size of Sierra Leone or Panama), down from -8.9 million hectares per year in the period 1990–2000.

South America suffered the largest net loss of forests from 2000 to 2005 – about 4.3 million hectares per year – followed by Africa, which lost 4.0 million hectares annually (Figure 4).

North and Central America and Oceania each had a net loss of about 350 000 ha, while Asia, which had a net loss of some 800 000 ha per year in the 1990s, reported a net gain of 1 million hectares per year from 2000 to 2005, primarily as a result of large-scale



afforestation reported by China. Forest areas in Europe continued to expand, although at a slower rate than in the 1990s. Countries with large net changes in forest area during 2000–2005 are highlighted in Figure 5.

### **Primary forests account for 36% of forest area – but 6 million hectares are lost or modified each year**

Globally, more than one-third of all forests are primary forests (i.e. forests of native species, in which there are no clearly visible indications of human activity and ecological processes are not significantly disturbed) (Figure 6). About 6 million hectares of these were lost or modified each year since 1990, and there is no indication that the rate of

## BOX 1

**Deforestation and net change in forest area**

Figure 3 is a simplified model illustrating forest change dynamics. It has only two classes: forests and all other land. A *reduction* in forest area can happen through either of two processes. Deforestation, which is by far the most important, implies that forests are cleared by people and the land converted to other uses, such as agriculture or infrastructure. Natural disasters may also destroy forests. When the area is incapable of regenerating naturally and no efforts are made to replant it, it, too, reverts to other land.

An *increase* in forest area can also happen in two ways: either through afforestation, i.e. planting of trees on land that was not previously forested, or through natural expansion of forests, e.g. on abandoned agricultural land – which is quite common in some European countries.

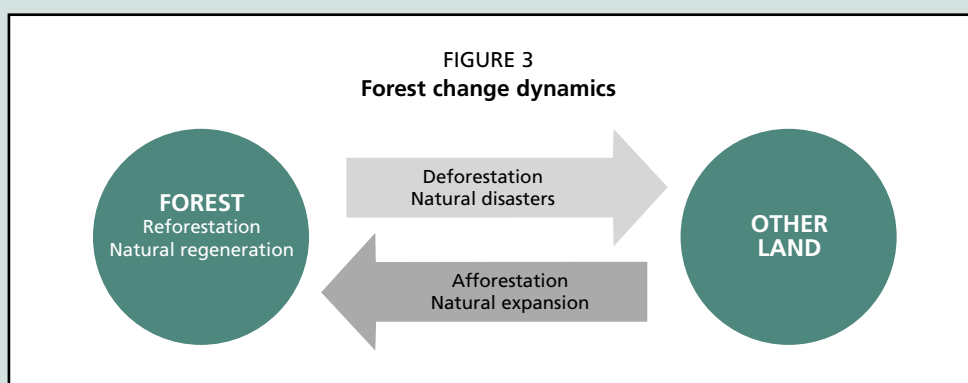
Where part of a forest is cut down but replanted (reforestation), or where the forest grows back on its own within a relatively short period (natural regeneration), there is no change in forest area.

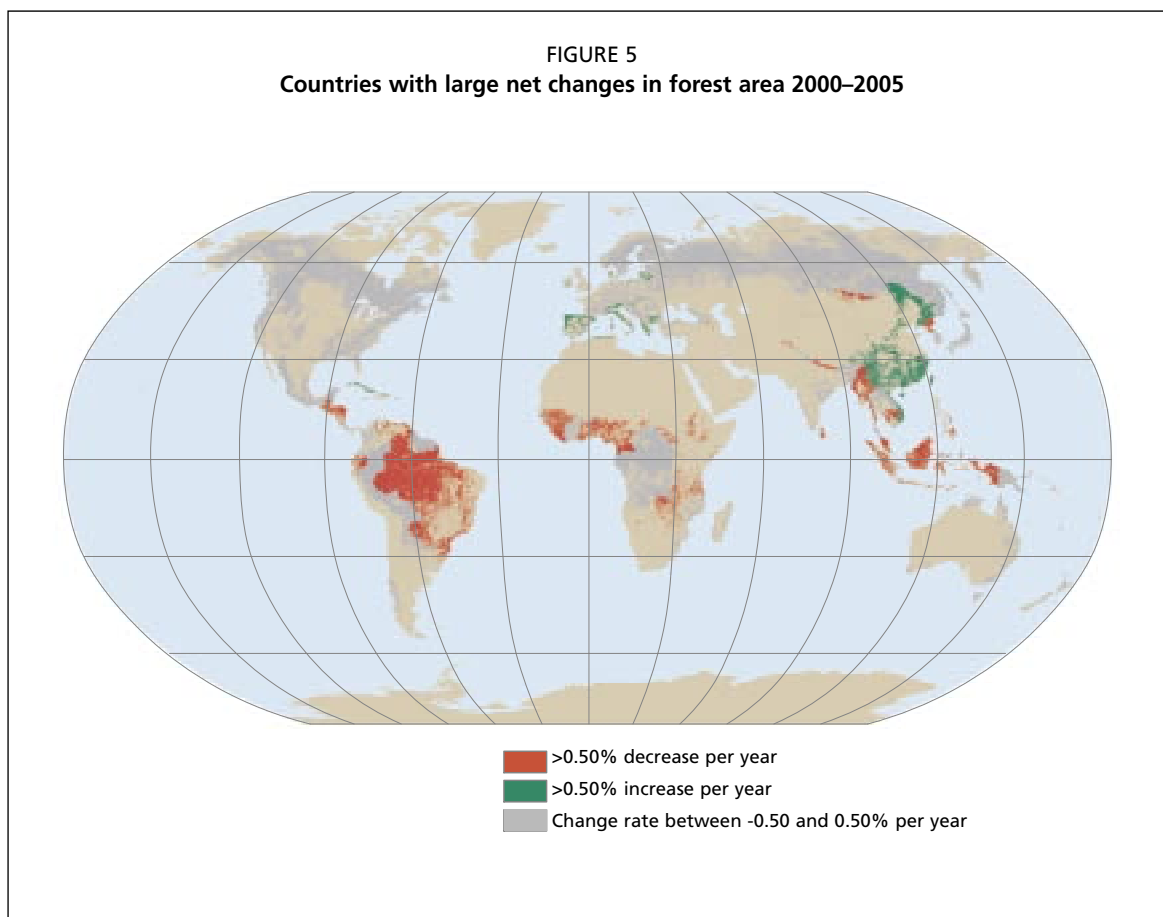
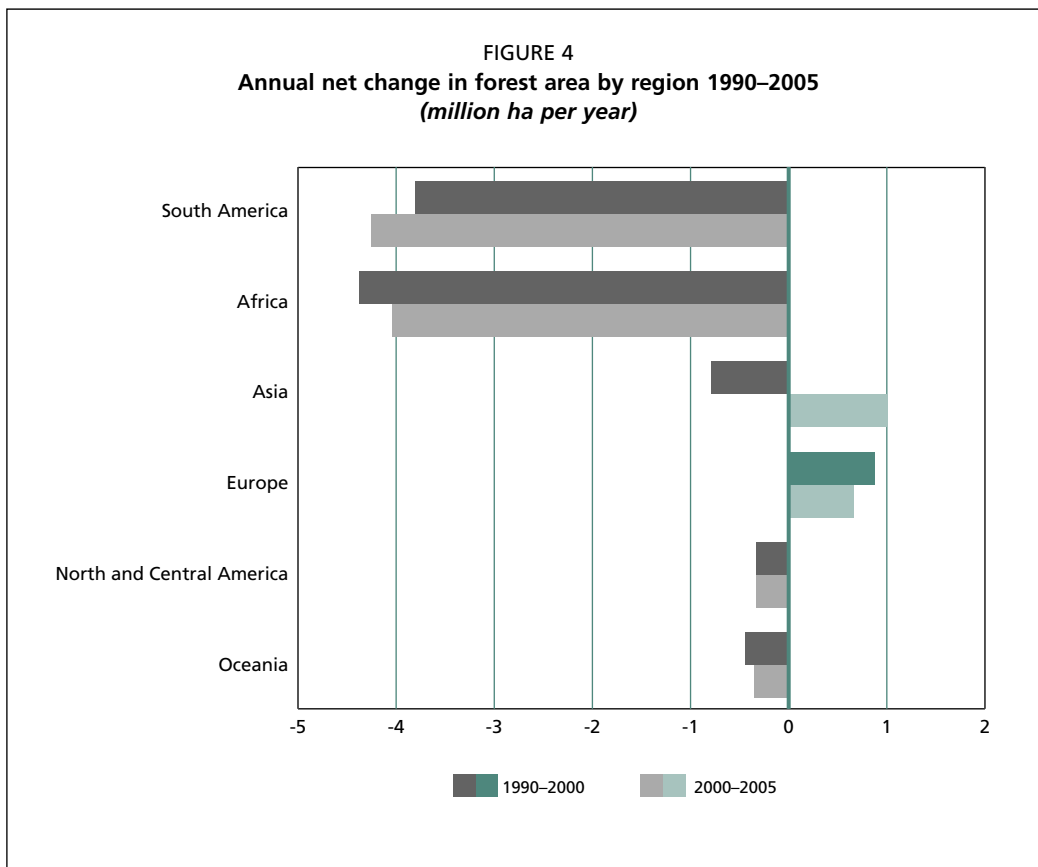
For FRA 2005, countries were asked to provide information on their forest area for three points in time. This allows calculation of the net change in forest area over time. This net change is the sum of all negative changes due to deforestation and natural disasters and all positive changes due to afforestation and natural expansion of forests.

Countries were not requested to provide information on each of the four components of net change, as most countries do not have such information. This makes estimation of the deforestation rate difficult and no attempt has been made to do so at the country level. Rather, an estimate of the global deforestation rate has been made as follows:

The total net loss for countries with a negative change in forest area was 13.1 million hectares per year for 1990–2000 and 12.9 million hectares per year for 2000–2005. Since the net change rate takes into account afforestation efforts and natural expansion of forests, the rate of deforestation might be higher still. On the other hand, Brazil, which accounts for 21 percent of the total net loss in the period 1990–2000 and 24 percent in 2000–2005, calculated its forest area in 2005 and 1990 based on information from 2000 and the sum of annual figures of the area of forests cleared. It did not take into account to what extent the land use of these areas had changed and to what extent cleared lands had been abandoned and had reverted to forest through natural regeneration. Such naturally regenerated secondary forests are thought to be quite extensive, but insufficient information is currently available to estimate the extent. Thus the area of deforestation and the net loss of forests in Brazil are likely overestimated.

Taking these considerations into account, the global deforestation rate was estimated at 13 million hectares per year during the period 1990–2005, with few signs of a significant decrease over time.





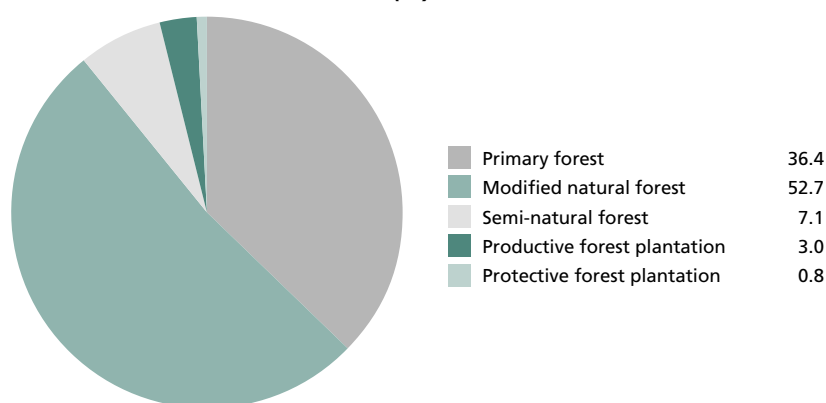
## BOX 2

### Previous figures slightly underestimated total forest area and overestimated net annual loss

For FRA 2005, countries were asked to provide information on their forests for three points in time: 1990, 2000 and 2005. Total forest area figures for 1990 and 2000, revised to take new information provided to FRA 2005 into account, are about 3 percent higher than those estimated in FRA 2000.

Similarly, the net area change for 1990–2000 was revised downwards because of new information (from -9.4 million hectares per year to -8.9 million).

FIGURE 6  
Forest characteristics 2005  
(%)



change is slowing down. This rapid decrease stems not only from deforestation, but also from modification of forests due to selective logging and other human interventions through which primary forests move into the category of modified natural forests.

A number of countries registered positive change rates in the area of primary forests, including several European countries and Japan. This is possible because, in the absence of human intervention, forests can evolve over time to meet the above definition of primary forests.

### Forest plantations are increasing – but still account for less than 5% of total forest area

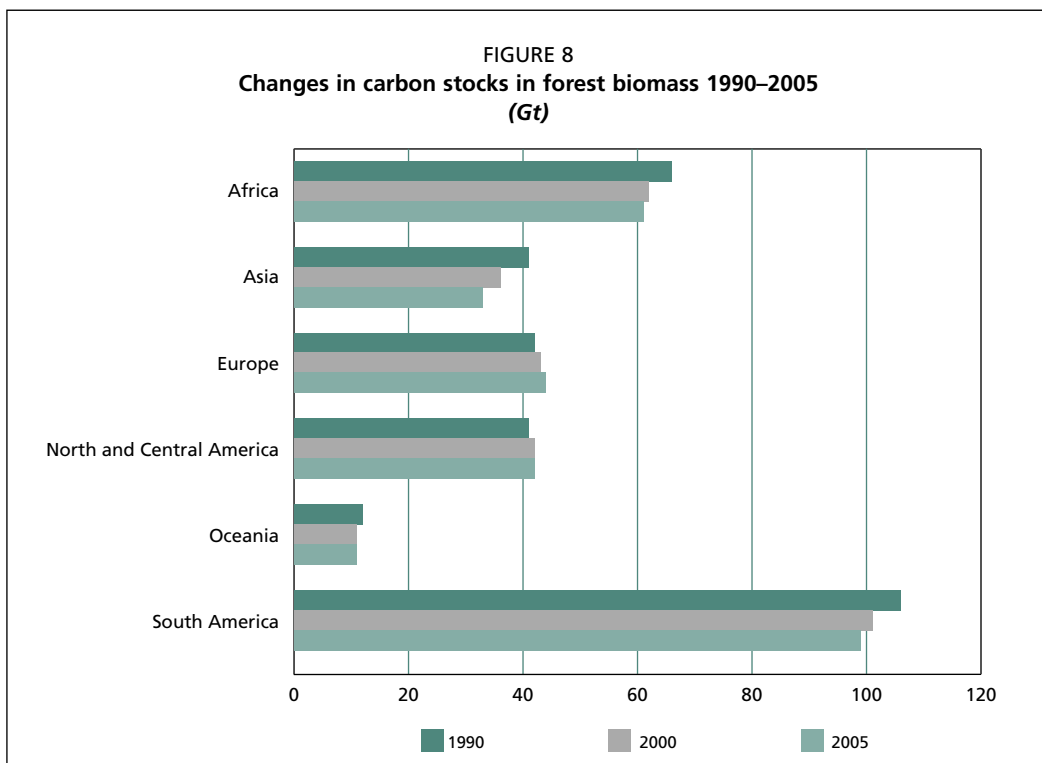
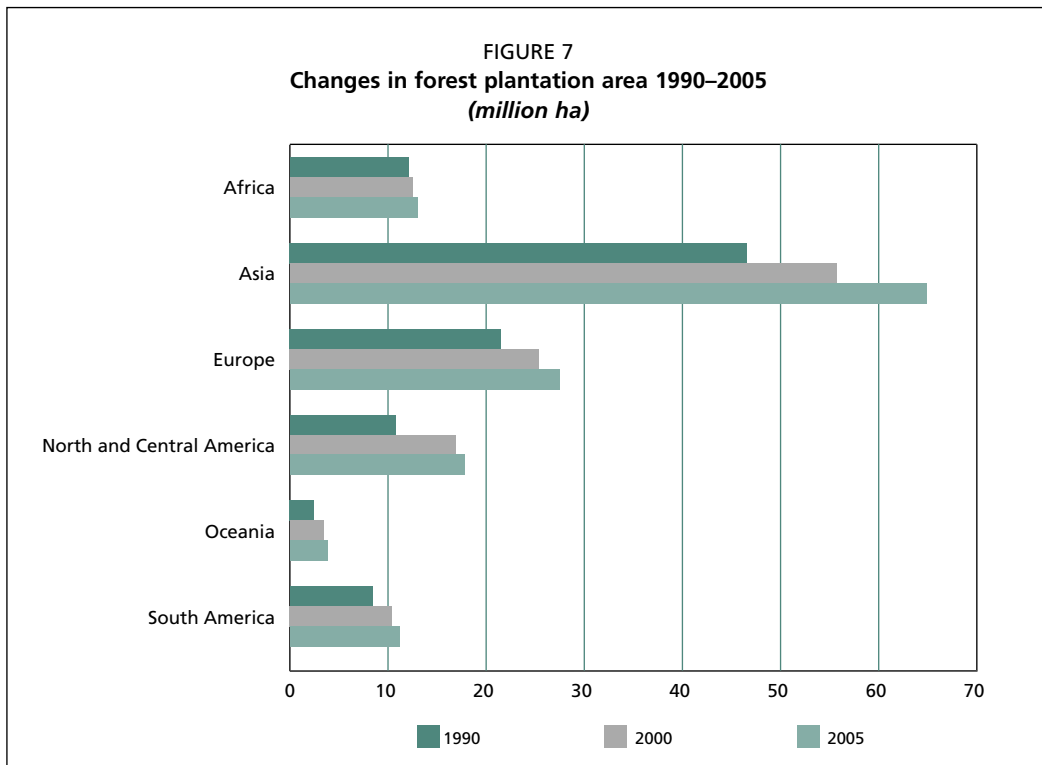
Forests and trees are being planted for many purposes and at increasing rates (Figure 7). Forest plantations – a subset of planted forests consisting primarily of introduced species – make up an estimated 3.8 percent of total forest area, or 140 million hectares. Productive forest plantations, primarily established for wood and fibre production, account for 78 percent of forest plantations, and protective forest plantations, primarily established for conservation of soil and water, for 22 percent. The area of forest plantations has increased by about 2.8 million hectares per year in the period 2000–2005, 87 percent of which are productive forest plantations.

### Forests – a vital carbon sink

While deforestation, degradation and poor forest management reduce carbon storage in forests, sustainable management, planting and rehabilitation of forests can increase carbon sequestration. It is estimated that the world's forests store 283 gigatonnes (Gt) of

carbon in their biomass alone, and that the carbon stored in forest biomass, dead wood, litter and soil together is more than the amount of carbon in the atmosphere.

Carbon in forest biomass decreased in Africa, Asia and South America in the period 1990–2005, but increased in all other regions (Figure 8). For the world as a whole, carbon stocks in forest biomass decreased by 1.1 Gt of carbon annually, owing to continued deforestation and forest degradation, partly offset by forest expansion (including planting) and an increase in growing stock per hectare in some regions.



### Wide variation in number of native tree species – from 3 in Iceland and in Malta to 7 780 in Brazil

Despite the large number of native tree species in many countries, relatively few species account for most of the standing wood volume. In most regions and subregions, the ten most common tree species (by volume) account for more than 50 percent of total wood volume. Exceptions are Central America, South America, South and Southeast Asia and Western and Central Africa, where the tree species diversity is particularly high (Figure 9).

Rare tree species and those highly valued for wood or non-wood forest products are often in danger of becoming extinct within parts of their range. On average, 5 percent of the tree species native to a country are either vulnerable, endangered or critically endangered.

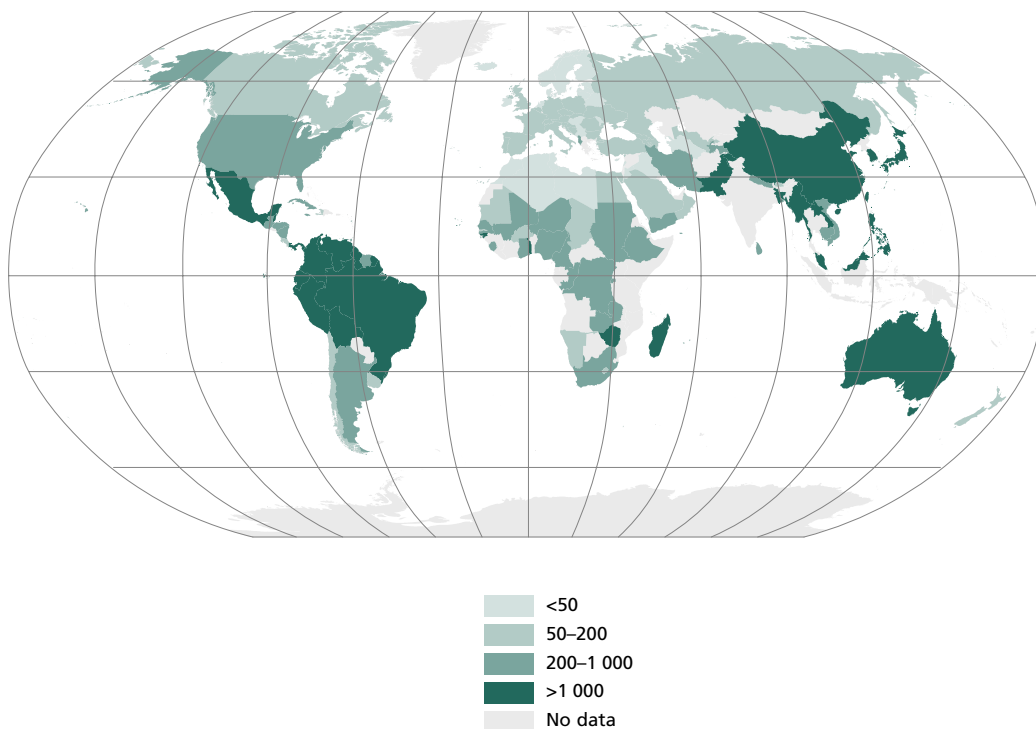
### Forest disturbances can be devastating – but they were severely underreported

On average, 104 million hectares of forest were reported to be significantly affected each year by forest fire, pests (insects and disease) or climatic events such as drought, wind, snow, ice and floods. However, the area of forest affected by disturbances was severely underreported, with information missing from many countries, especially for forest fires in Africa.

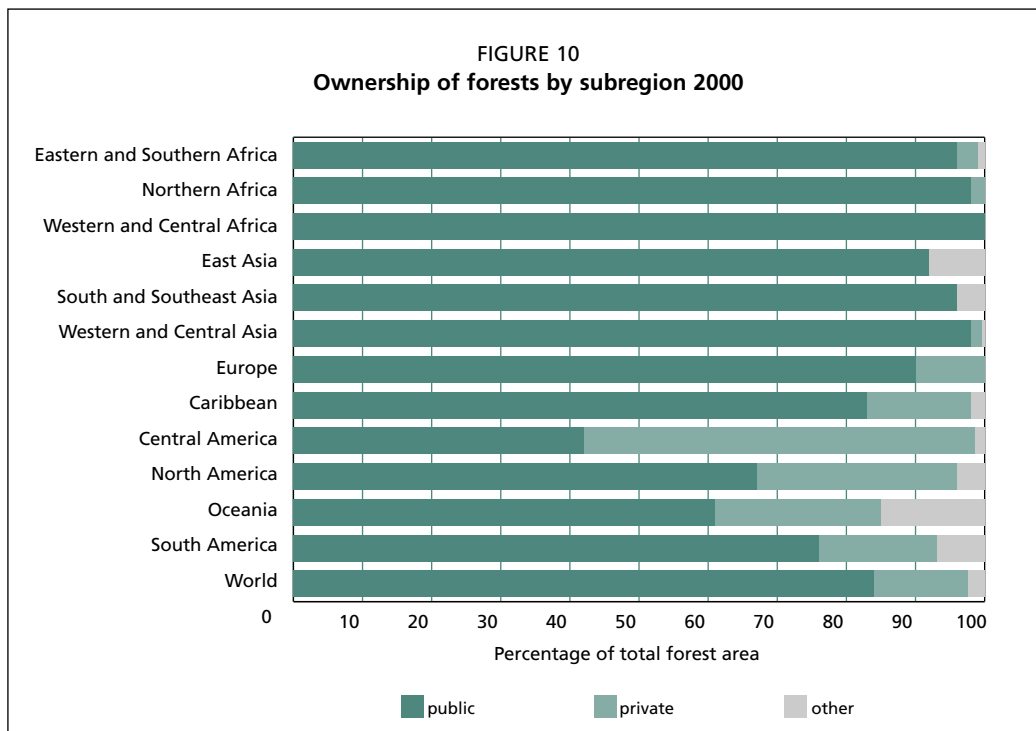
### 84% of the world's forests are publicly owned – but private ownership is increasing

Trends seen over the past 20 years towards community empowerment, decentralized decision-making and increased involvement of the private sector in forest management are reflected in some regions in changes in forest ownership and tenure. However, most of the world's forests remain under public ownership (Figure 10). Differences among regions are considerable. North and Central America, Europe (apart from the Russian Federation), South America and Oceania have a higher proportion of private ownership than other regions.

FIGURE 9  
Number of native forest tree species







### Forest management

Forests are increasingly being managed for a variety of uses and values, often in combination (Figure 11).

#### 11% of the world's forests are designated for the conservation of biological diversity

For FRA 2005, countries reported on the area of forest in which conservation of biological diversity was designated as the primary function (Figure 12). This area has increased by an estimated 96 million hectares since 1990 and now accounts for 11 percent of total forest area. These forests are mainly, but not exclusively, located within protected areas. Conservation of biological diversity was reported as one of the management objectives (primary or secondary) for more than 25 percent of the forest area.

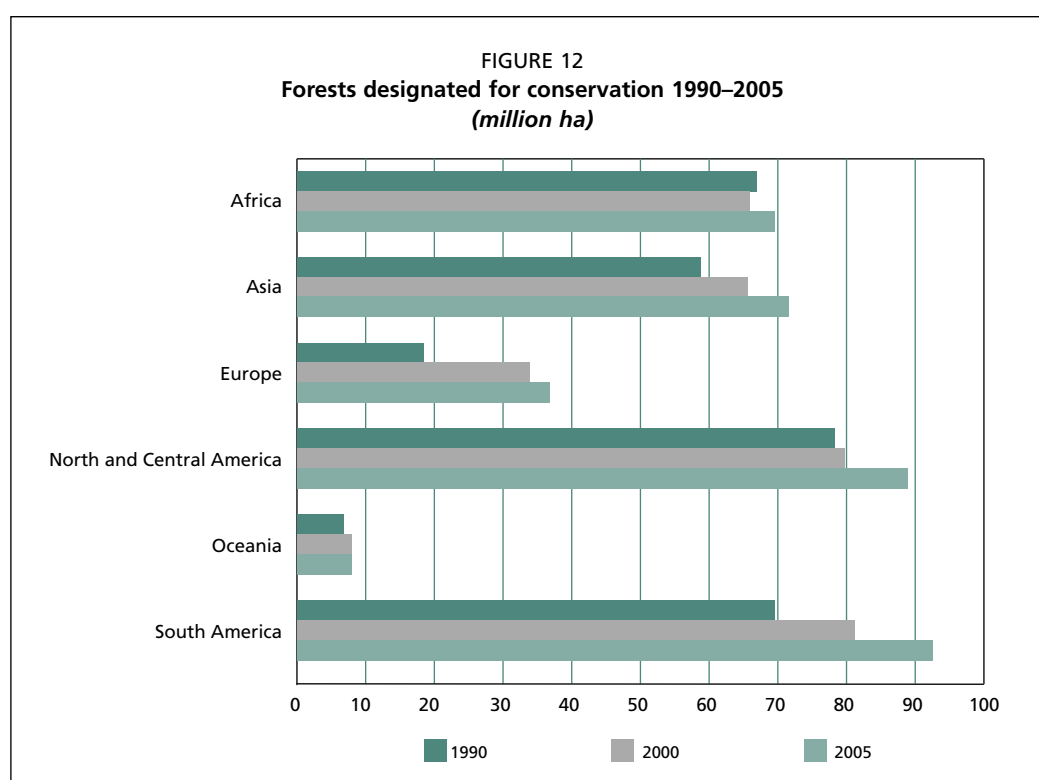
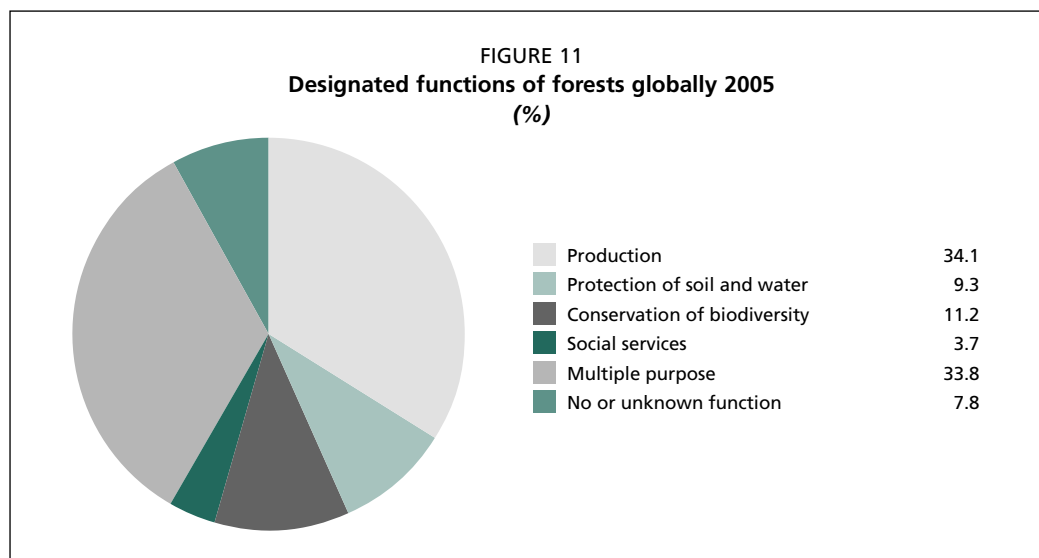
#### One-third of the world's forests are used primarily for production of wood and non-wood forest products

Wood production continues to be an important function of many forests, and reported removals of non-wood forest products (NWFPs) are on the rise. Production of wood and non-wood forest products is the primary function for 34 percent of the world's forests, while more than half of all forests are used for such production in combination with other functions, such as soil and water protection, biodiversity conservation and recreation.

Global wood removals were forecast to amount to 3 billion m<sup>3</sup> in 2005, similar to the total removals recorded for 1990 and averaging 0.69 percent of total growing stock. While Asia reported a decrease in wood removals in recent years, Africa reported a steady increase (Figure 13). It is estimated that nearly half of the removed wood was fuelwood. Informally or illegally removed wood, especially fuelwood, is not usually recorded, so the actual amount of wood removals is undoubtedly higher.

#### More than 300 million hectares of forests are designated for soil and water conservation

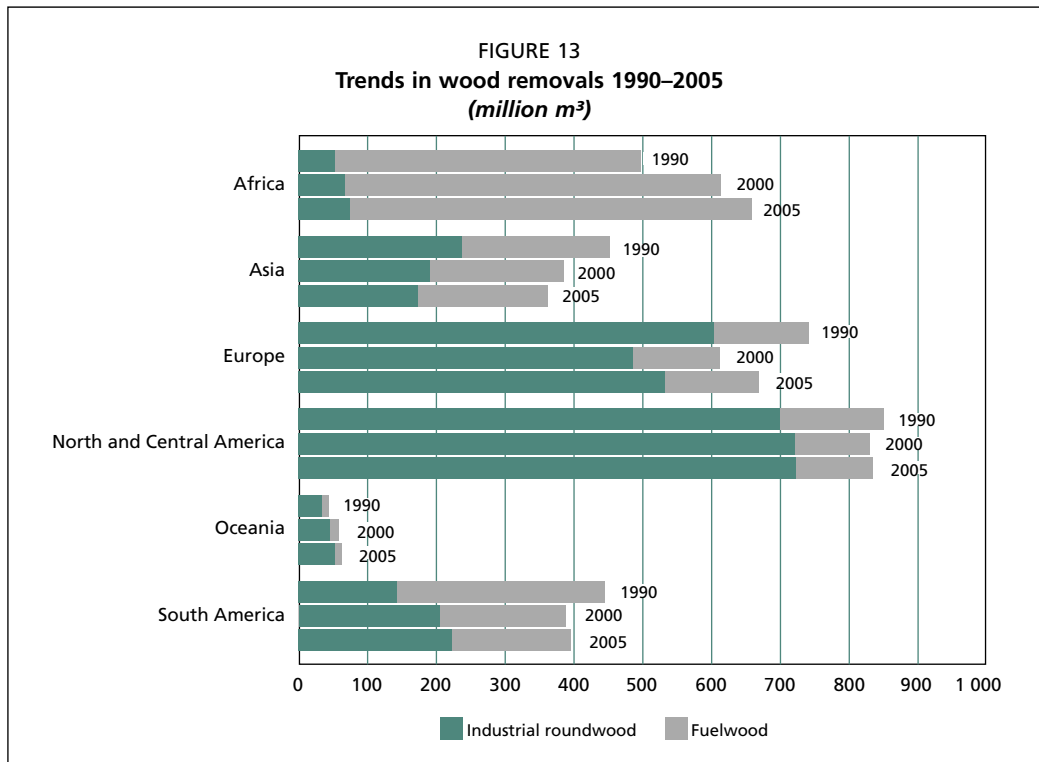
Protective functions of forests range from soil and water conservation and avalanche control to sand-dune stabilization, desertification control and coastal protection. As reported for



FRA 2005, an estimated 348 million hectares of forests have a protective function as their primary objective. Eighteen countries reported that all their forests are designated for protective purposes, as either a primary or secondary function. The overall proportion of forests designated for protective functions increased from 8 percent in 1990 to 9 percent in 2005.

### Use of forests for recreation and education is increasing – but is difficult to quantify

The only region with fairly good data on the use of forests for recreation, tourism, education and conservation of cultural and spiritual sites is Europe, where provision of such social services was reported as the primary management objective for 2.4 percent of total forest area. In all, 72 percent of the forest area of Europe (not including the Russian Federation) provides social services – most frequently in combination with other management objectives.



### The value of wood removals is decreasing, while the value of NWFPs is increasing – and is underestimated

Roundwood removals in 2005 were estimated at US\$64 billion, mainly accounted for by industrial roundwood. The reported trend shows an increase of about 11 percent over the previous 15 years, which is less than the rate of inflation over this period. Thus the reported value of removals in real terms has declined at the global level.

The estimated value of NWFP removals in 2005 is US\$4.7 billion. However, information was missing from many countries, and the reported statistics probably cover only a small fraction of the true total value. Edible plant products and bushmeat are the most significant products in terms of value. Trends at global and regional levels generally show a slight increase since 1990.

### Some 10 million people are employed in forest conservation and management activities

Reported employment in forestry (excluding the wood processing industry) declined by about 10 percent from 1990 to 2000. Most of the decline occurred in the primary production of goods and can probably be attributed to increases in labour productivity. At the regional level, Asia and Europe showed a downward trend, while in the other regions employment increased somewhat – probably because roundwood production was increasing faster than increases in labour productivity. In Europe, the decline in employment can also be attributed to the restructuring of formerly centrally planned economies.

FRA 2005 collected data on formal employment only. However, some country reports did not separate informal and formal employment, so formal employment could be somewhat less than 10 million people. Taking into account the informal sector, the overall importance of forest employment for rural livelihoods and national economies was clearly higher than this number suggests.

## PROGRESS TOWARDS SUSTAINABLE FOREST MANAGEMENT

An analysis based on a subset of 21 variables was undertaken at subregional and regional levels to review progress towards sustainable forest management in the period 1990–2005

(1990–2000 in some cases). The key results globally are summarized below under six main themes and illustrated in Table 1. Table 2 summarizes results at the subregional level. For more information, refer to Chapter 8.

### Progress towards sustainable forest management at the global level

**Extent of forest resources.** Area of forest decreased by an average of 8.4 million hectares per year from 1990 to 2005; the annual change rate is 0.21 percent per year. None of the other variables included under this theme show an annual change rate above 0.50 percent, although they also show a decrease over time.

**Biological diversity.** Area of primary forest decreased by an average of 5.8 million hectares per year (excluding the Russian Federation, where large changes were due to the introduction of a new classification system). On a positive note, the area of forest designated for conservation of biological diversity increased by about 6.4 million hectares per year – or a total of 96 million hectares during the same period.

**Forest health and vitality.** The area of forest adversely affected by insects, disease and other disturbances shows an increase equivalent to 1.1 million hectares per year, while the area adversely affected by forest fires shows a small decrease. However, information was missing from many countries, particularly from Africa.

TABLE 1  
Trends towards sustainable forest management at the global level

Thematic element	Trends in FRA 2005 variables or derivatives	Data availability	1990–2005 Annual change rate (%)	1990–2005 Annual change	Unit
Extent of forest resources	● Area of forest	H	-0.21	-8 351	1 000 ha
	● Area of other wooded land	M	-0.35	-3 299	1 000 ha
	● Growing stock of forests	H	-0.15	-570	million m <sup>3</sup>
	● Carbon stock per hectare in forest biomass	H	-0.02	-0.15	tonnes/ha
Biological diversity	● Area of primary forest	H	-0.52	-5 848	1 000 ha
	● Area of forest designated primarily for conservation of biological diversity	H	1.87	6 391	1 000 ha
	● Total forest area excluding area of productive forest plantations	H	-0.26	-9 397	1 000 ha
Forest health and vitality	● Area of forest affected by fire	M	-0.49	-125	1 000 ha
	● Area of forest affected by insects, disease and other disturbances	M	1.84	1 101	1 000 ha
Productive functions of forest resources	● Area of forest designated primarily for production	H	-0.35	-4 552	1 000 ha
	● Area of productive forest plantations	H	2.38	2 165	1 000 ha
	● Commercial growing stock	H	-0.19	-321	million m <sup>3</sup>
	● Total wood removals	H	-0.11	-3 199	1 000 m <sup>3</sup>
	● Total NWFP removals	M	2.47	143 460	tonnes
Protective functions of forest resources	● Area of forest designated primarily for protection	H	1.06	3 375	1 000 ha
	● Area of protective forest plantations	H	1.41	380	1 000 ha
Socio-economic functions	● Value of total wood removals	L	0.67	377	million US\$
	● Value of total NWFP removals	M	0.80	33	million US\$
	● Total employment	M	-0.97	-102	1 000 pers. yrs
	● Area of forest under private ownership	M	0.76	2 737	1 000 ha
	● Area of forest designated primarily for social services	H	8.63	6 646	1 000 ha

H = High (reporting countries represent 75–100% of total forest area)  
M = Medium (reporting countries represent 50–75% of total forest area)  
L = Low (reporting countries represent 25–50% of total forest area)

● = Positive change (greater than 0.50%)  
● = No major change (between -0.50 and 0.50%)  
● = Negative change (less than -0.50%)  
– = Insufficient data to determine trend

**Productive functions of forest resources.** The most prominent changes over the last 15 years were a decrease in the area of forest designated primarily for productive purposes by an average of 4.6 million hectares per year, and an increase in the area of productive forest plantations of almost 2.2 million hectares per year. This indicates that substantial areas of natural forests previously allocated for productive purposes were designated for other uses, while the proportion of wood removals coming from forest plantations increased significantly.

**Protective functions of forest resources.** Both variables included under this theme show an increase since 1990. The area of forest primarily designated for protective purposes increased by close to 3.4 million hectares per year or more than 50 million hectares during the last 15 years, indicating an increased awareness of the important role forests play in soil and water conservation, avalanche control, combating desertification and coastal protection.

**Socio-economic functions.** The total values of removals of wood and non-wood forest products increased, but by less than the average rate of inflation. Employment in forest conservation and management decreased by about 1 percent per year. The area of privately owned forests increased by an average of 2.7 million hectares per year in the period 1990–2000 (2005 data not requested from countries), while the area of forest designated for provision of recreation, education and other social services increased by more than 6.6 million hectares per year – or a total of 100 million hectares since 1990 – primarily due to a large increase in Brazil and partly offset by a much smaller decrease in the Russian Federation due to reclassification.

**Conclusions.** Overall, the situation at the global level remained relatively stable. Negative trends included decreases in primary forests and in employment, and an increase in the area of forest adversely affected by insects, disease and other disturbances. Positive trends were reported for the area of forest designated for biological diversity and social services, as well as for areas of productive and protective forest plantations, value of wood removals and amount and value of NWFP removals, and area of forest under private ownership.

### Progress at regional and subregional levels

**Africa.** Overall, progress towards sustainable forest management in Africa appears to have been limited during the last fifteen years. There are some indications that net loss of forest area has slowed down and that area of forest designated for conservation of biological diversity has increased slightly. However, the continued, rapid loss of forest area – the largest of any region during this 15-year period – is particularly disconcerting.

**Asia.** Forest area in Asia is almost the same in 2005 as it was in 1990 (572 million hectares versus 574 – or a decrease of 0.03 percent per year), owing to large-scale afforestation efforts during the last 7-8 years – particularly in China. Forest health deteriorated, but forest fires, pests and disease were still affecting a relatively small proportion of total forest area in Asia. The rapid decrease in the area of primary forest is cause for concern, while the increase in areas designated for conservation of biodiversity and for protective purposes is commendable. In short, there was mixed progress over the last 15 years.

**Europe.** Data availability was high for most of the variables. The status of forest resources was essentially stable, although forests in Europe suffered from occasional storms. The severe storms of 1999 were the main reason for the apparently negative trend in forest health and vitality. The focus of forest management in Europe clearly shifted away from productive functions towards conservation of biological diversity, protection and multiple use, and the area of forest under private ownership increased.

**North and Central America.** Progress towards sustainable forest management was generally positive in North and Central America as a whole during the period 1990–2005, with none of the annual rates of decreasing trends being more than 0.20 percent – with the exception of the area adversely affected by insects, disease and other disturbances. There was, however, considerable variation among subregions as can be seen in Table 2.

TABLE 2  
Trends towards sustainable forest management by subregion

Themes and variables	Africa			Asia		
	Eastern and Southern	Northern	Western and Central	East	South and Southeast	Western and Central
<b>Extent of forest resources</b>						
Area of forest	● H	● H	● H	● H	● H	● H
Area of other wooded land	● M	● L	● H	● H	● M	● H
Growing stock of forests	● H	● H	● H	● H	● H	● H
Carbon stock per hectare in forest biomass	● H	● H	● H	● H	● H	● H
<b>Biological diversity</b>						
Area of primary forest	● H	● H	● L	● H	● H	● H
Area of forest designated primarily for conservation of biological diversity	● H	● H	● L	● H	● H	● H
Total forest area excluding area of productive forest plantations	● H	● H	● L	● H	● H	● H
<b>Forest health and vitality</b>						
Area of forest affected by fire	–	–	–	● H	● H	● H
Area of forest affected by insects, disease and other disturbances	–	–	–	● H	● L	● M
<b>Productive functions of forest resources</b>						
Area of forest designated primarily for production	● H	● H	● L	● H	● H	● H
Area of productive forest plantations	● H	● H	● L	● H	● H	● H
Commercial growing stock	● H	● L	● L	● H	● M	● H
Total wood removals	● H	● H	● H	● H	● H	● H
Total NWFP removals	–	–	–	● H	● L	● M
<b>Protective functions of forest resources</b>						
Area of forest designated primarily for protection	● H	● H	● L	● H	● H	● H
Area of protective forest plantations	● H	● H	● L	● H	● H	● H
<b>Socio-economic functions</b>						
Value of total wood removals	–	● L	–	● H	● H	● H
Value of total NWFP removals	–	● M	–	–	● L	● M
Total employment	● L	● M	● L	● H	● M	● H
Area of forest under private ownership	● H	● H	● H	● H	● H	● H
Area of forest designated primarily for social services	● H	● H	● L	● H	● H	● H

H = High (reporting countries represent 75–100% of total forest area)

M = Medium (reporting countries represent 50–75% of total forest area)

L = Low (reporting countries represent 25–50% of total forest area)

● = Positive change (greater than 0.50%)

● = No major change (between -0.50 and 0.50%)

● = Negative change (less than -0.50%)

– = Insufficient data to determine trend

*Oceania.* The status of information for Oceania was generally very weak, and low data availability was a serious issue in the region. For two-thirds of the variables, there was insufficient data to determine regional trends. Thus it is difficult to assess progress towards sustainable forest management.

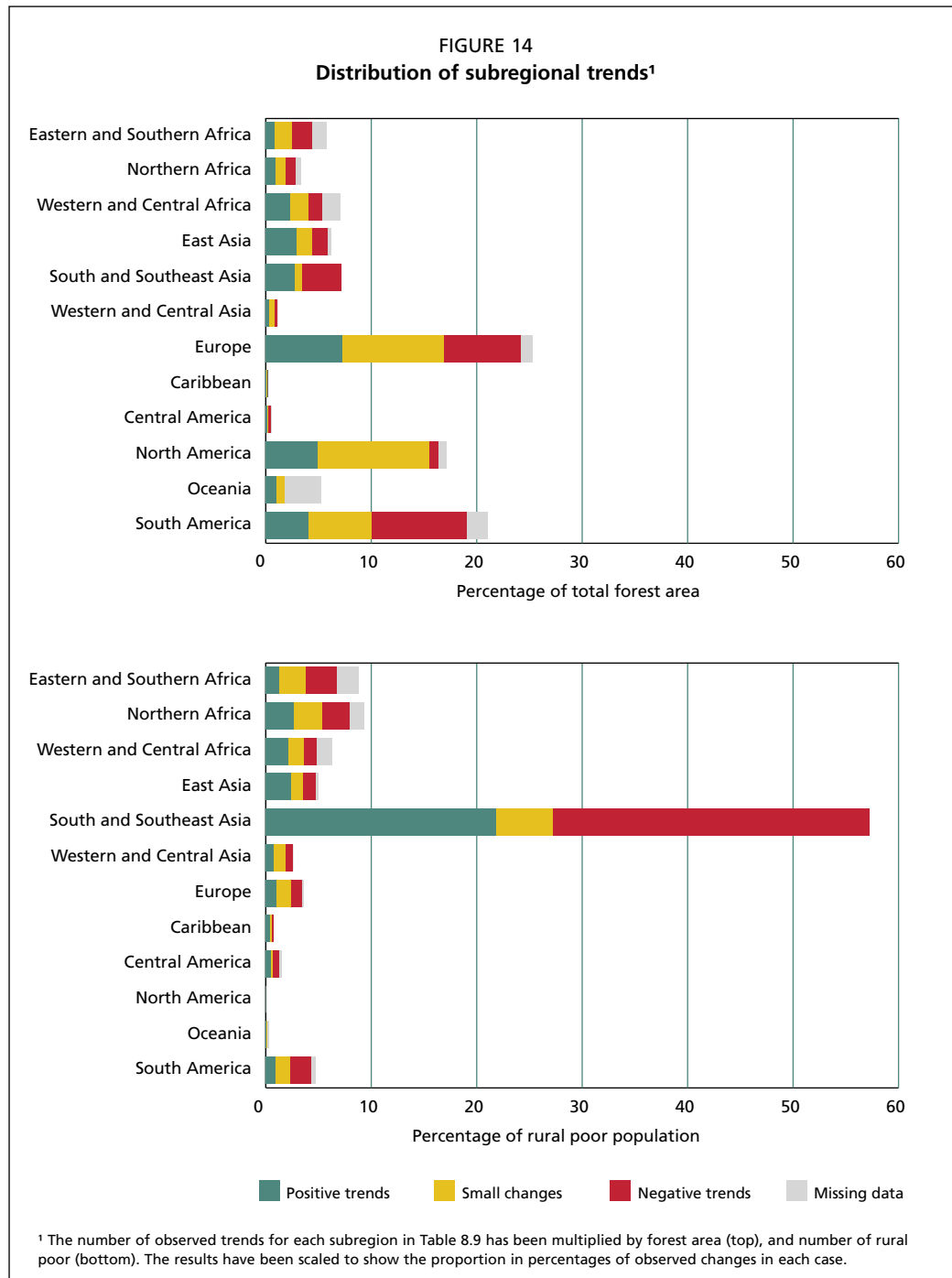
*South America.* Overall, progress towards sustainable forest management was fairly mixed. The increasing trend of net forest loss in the area is disturbing, as is the current rate of loss of primary forests. Yet there were also some positive signs in the significant increases in area of forest designated for conservation of biodiversity and for social services. The decrease in removals of fuelwood reflects a reduced demand for this product in the region, but was partly offset by an increase in removals of industrial wood. The area of productive forest plantations increased and may meet more of the demand for wood in the future.

Europe	North and Central America			Oceania	South America	Themes and variables
	Caribbean	Central	North			
<b>Extent of forest resources</b>						
● H	● H	● H	● H	● H	● H	Area of forest
● H	● H	● H	● M	–	● L	Area of other wooded land
● H	● H	● H	● H	–	● M	Growing stock of forests
● H	● L	–	–	–	● M	Carbon stock per hectare in forest biomass
<b>Biological diversity</b>						
● H	● M	● H	● H	● H	● H	Area of primary forest
● H	● M	● H	● H	–	● H	Area of forest designated primarily for conservation of biological diversity
● H	● M	● H	● H	● H	● H	Total forest area excluding area of productive forest plantations
<b>Forest health and vitality</b>						
● H	● M	–	● H	–	● H	Area of forest affected by fire
● H	–	–	● H	–	● M	Area of forest affected by insects, disease and other disturbances
<b>Productive functions of forest resources</b>						
● H	● M	● H	● H	–	● H	Area of forest designated primarily for production
● H	● M	● H	● H	● H	● H	Area of productive forest plantations
● H	● M	● M	● H	–	● M	Commercial growing stock
● H	● H	● H	● H	● H	● H	Total wood removals
● H	● L	–	–	–	● M	Total NWFP removals
<b>Protective functions of forest resources</b>						
● H	● M	● H	● H	–	● H	Area of forest designated primarily for protection
● H	● M	● H	● H	● H	● H	Area of protective forest plantations
<b>Socio-economic functions</b>						
–	● L	● H	● M	–	● H	Value of total wood removals
● H	● L	–	● M	–	● M	Value of total NWFP removals
● H	● H	● M	● H	● H	–	Total employment
● H	● M	● M	● H	–	–	Area of forest under private ownership
● H	● M	● H	● H	–	● H	Area of forest designated primarily for social services

### Forest or poverty perspective?

In considering progress towards sustainable forest management, the very large differences in size and population structure must be taken into consideration. Two parameters – forest area and the number of rural poor people – were selected and applied as arbitrary weights to indicate the relative significance of the observed trends (Figure 14).

When weighting by forest area, Europe, North America and South America dominate the picture. It is also clear that Europe and North America contribute considerably to the positive trends and less to the negative ones, whereas the opposite is true for South America. Overall, there seems to be a balance between positive and negative trends, assuming that the selected variables are valid, that they are all weighted equally and that a weighting by forest area of each subregion is relevant.



When weighting by rural poor population, the picture becomes dramatically different. Some of the African subregions are more prominent, and the subregion of South and Southeast Asia dominates. Obviously, the developed regions become less significant as there are relatively few rural poor in these areas. Compared with the weighting by forest area, there is a higher proportion of negative trends from this poverty perspective.

### Is there progress towards sustainable forest management?

Given the complexity of this question, the answer cannot be a definitive one. There are many good signs and positive trends, but many negative trends remain. While intensive forest plantation and conservation efforts are on the rise, primary forests continue to become degraded or converted to agriculture at alarming rates in some regions. As the analyses above illustrate, the answer also depends on the scale and perspective applied.



## CONCLUSIONS

FRA 2005 is the most comprehensive assessment to date, in terms of both the content and the number of contributors. It tells us that forests cover 30 percent of the land area of planet Earth. They range from boreal and temperate forests to arid woodlands and tropical moist forests. And from undisturbed primary forests to forests managed and used for a variety of purposes.

FRA 2005 also tells us that deforestation continues at an alarmingly high rate, but that the net loss of forest area is slowing down thanks to forest planting, landscape restoration and natural expansion of forests on abandoned land.

Forests are increasingly being conserved and managed for multiple uses and values, and they play a crucial role in climate change mitigation and in the conservation of biodiversity and of soil and water resources. If managed sustainably, forests also contribute significantly to local and national economies and to the well-being of current and future generations.

By providing new information on forest area change – one of the 48 indicators of the Millennium Development Goals – FRA 2005 allows assessment of the important role of world forest resources in meeting the targets for reducing poverty and ensuring a sustainable global environment.

By also providing data on carbon, biological diversity, forests' contribution to national economies and many more variables, FRA 2005 aims to support decision-making for policies and programmes in forestry and sustainable development at all levels.

## NEXT STEPS

An in-depth evaluation of FRA 2005 will be carried out in early 2006, and readers are encouraged to provide inputs. FAO will also continue to work actively with countries to identify and address information gaps for continuous improvement of knowledge of forests and forestry. Joint planning for the next global assessment (FRA 2010) will begin in 2006, and an expert consultation (Kotka V) is planned for June 2006 to provide inputs to this next assessment.

