FIGURE 33 Subregional breakdown used in this report

Caribbean: Antigua and Barbuda, Bahamas, Barbados, Bermuda, British Virgin Islands, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Netherlands Antilles, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, United States Virgin Islands

Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama

South America: Argentina, Bolivia, Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Ecuador, Falkland Islands, French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay

NOTE: Mexico is included in the chapter on North America. For this reason, the regional totals for some of the data in the present chapter do not correspond to the regional totals in the *Forestry Sector Outlook Study for Latin America and the Caribbean* (FAO, 2006g).

Latin America and the Caribbean

EXTENT OF FOREST RESOURCES

The Latin America and the Caribbean region boasts abundant forest resources – about 47 percent of the land – and accounts for 22 percent of the world's forest area (Figure 34). The annual rate of change of forest area from 2000 to 2005 was -0.51 percent, compared with -0.46 percent during the 1990s (Table 20, Figure 35).

From 1990 to 2005, Latin America and the Caribbean lost about 64 million hectares of forest. During this period, forest area increased by 11 percent in the Caribbean and declined by 19 percent in Central America and 7 percent in South America. Forest area declined from 51 to 47 percent of the total land area in Latin America and the Caribbean during 1990–2005. The total area of other wooded land was stable, accounting for 6 percent of total land area.

Globally, forest plantations represent about 4 percent of total forest area. In the Latin America and the Caribbean region, they account for 1.4 percent of total forest area. Although this is a relatively small figure, plantations are increasing at the rate of about 1.6 percent per year (Table 21).

From 2000 to 2005, net forest area continued to decline in Central and South America. The leading cause of deforestation was the conversion of forest land to agriculture. Within the region, the largest area loss was in South America, while the largest percentage loss of forest area was in Central America. Forest area increased in Chile, Costa Rica, Cuba and Uruguay, and forest plantations increased throughout the region.

FIGURE 34 Extent of forest resources

SOURCE: FAO, 2001a.

TABLE 20

Extent and change of forest area

Subregion	Area (1 000 ha)			Annual change (1 000 ha)		Annual change rate (%)	
	1990	2000	2005	1990–2000	2000–2005	1990–2000	2000–2005
Caribbean	5 350	5 706	5974	36	54	0.65	0.92
Central America	27 639	23 837	22 411	–380	–285	–1.47	–1.23
South America	890 818	852 796	831 540	–3 802	–4 251	–0.44	–0.50
Total Latin America and the Caribbean	**923 807**	**882 339**	**859 925**	**–4 147**	**–4 483**	**–0.46**	**–0.51**
World	**4 077 291**	**3 988 610**	**3 952 025**	**–8 868**	**–7 317**	**–0.22**	**–0.18**

TABLE 21

Area of forest plantations

Subregion	Area (1 000 ha)			Annual change (1 000 ha)	
	1990	2000	2005	1990–2000	2000–2005
Caribbean	394	394	451	0	11
Central America	83	211	274	13	13
South America	8 231	10 574	11 357	234	157
Total Latin America and the Caribbean	**8 708**	**11 180**	**12 082**	**247**	**180**
World	**101 234**	**125 525**	**139 466**	**2 424**	**2 788**

FIGURE 35 Forest change rates by country, 2000–2005

Costa Rica is an interesting, apparent success story. It is the only country in Central America that had a negative forest area change rate in the 1990s, but reported an increase in forest area from 2000 to 2005. This turnaround may be related to innovative policies for financing forest management and paying for environmental services, although macroeconomic forces causing a reduction in agricultural land may also play a part.

BIOLOGICAL DIVERSITY

Primary forests account for 70 percent of the region's forest area and 56 percent of the world's primary forests.

Forest area designated for the conservation of biological diversity has increased dramatically over the past 15 years, including an increase of 2 percent per year from 2000 to 2005 (Table 22). This parameter has been increasing in most other regions of the world as well.

The region enjoys extremely rich forest biodiversity: no fewer than ten countries have at least 1 000 tree species (Figure 36). However, Latin America and the Caribbean also leads the world in the number of tree species considered endangered or vulnerable to extinction. For example, the region is home to *Swietenia macrophylla*, commonly known as big leaf mahogany, the tree species listed first in Appendix II of the Convention

FIGURE 36 Number of native tree species

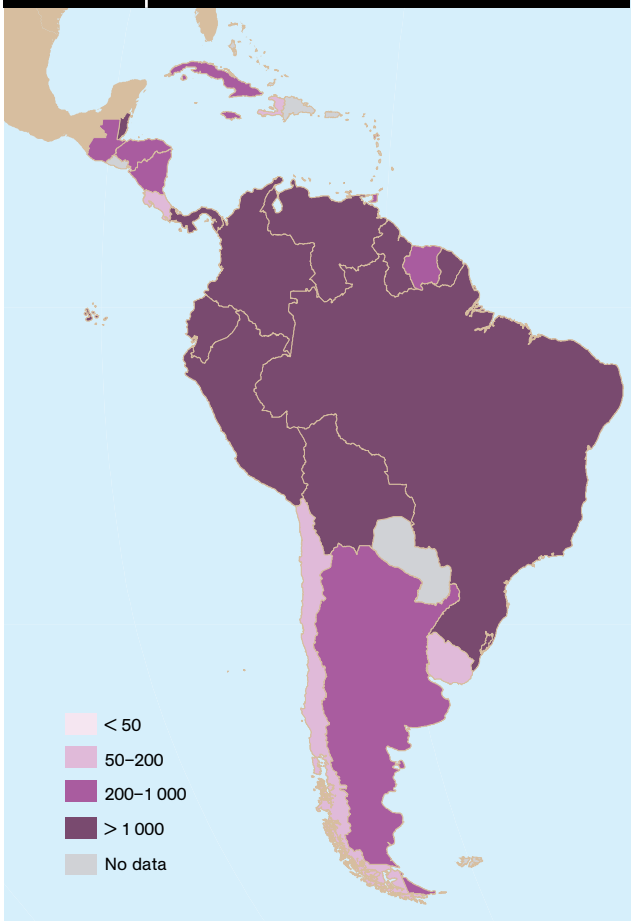


TABLE 22
Area of forest designated primarily for conservation

Subregion	Area (1 000 ha)			Annual change (1 000 ha)	
	1990	2000	2005	1990–2000	2000–2005
Caribbean	622	675	704	5	6
Central America	7 873	8 660	8 482	79	–36
South America	69 463	108 103	119 591	3 864	2 297
Total Latin America and the Caribbean	**77 958**	**117 439**	**128 777**	**3 948**	**2 268**
World	**298 424**	**361 092**	**394 283**	**6 267**	**6 638**

on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and which requires special trade documentation.

FOREST HEALTH AND VITALITY

During 1999–2003, countries in South America reported an average of 26 000 wildland fires per year (FAO, 2006d), burning an average of 5.5 million hectares annually. There is a large, weather-related variation from year to year, with over 66 000 fires reported in 1997 alone, and 13.6 million hectares burned in 1999 (Figure 37). There has been an apparent long-term increase in the average number of fires and area burned, but the absence of consistent data over a long period makes it difficult to conclude with certainty that fire danger is increasing.

In the Caribbean, Cuba, the Dominican Republic and Trinidad and Tobago are the only countries that monitor fires. Their average number of fires ranged from 140 to 325 per year and average area burned ranged from 4 000 to 5 000 ha per year during 2000–2003.

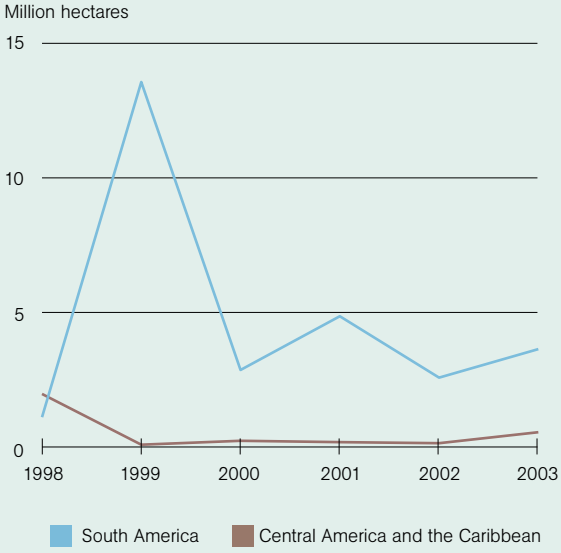
In Central America, data are available for all countries except Belize. Guatemala reports the most serious wildfire problem, with an average of more than 200 000 ha burned during 2000–2003. Honduras has monitored fire activity since 1980, with an average of 2 300 fires burning 70 000 ha/year. Nicaragua reports 5 800 fires per year, affecting an average of 63 000 ha of forest land and 111 000 ha of agricultural land each year. Costa Rica averages 41 000 ha burned per year, of which about 5 000 ha are forest areas. The remaining area is divided among various other categories, for example pasture land at 15 000 ha/year.

Three subregional networks have been formed to address wildfires more effectively through the sharing of resources, expertise and information. A regional strategy for forest fire management and cooperation has been developed, and Latin America and the Caribbean has become a model for other regions considering the development of regional fire strategies.

Regarding non-fire disturbances, the southern pine beetle (*Dendroctonus frontalis*) continues to cause significant problems. It has been credited with the greatest losses of pine forests in Central America in the past 40 years (Vité *et al.*, 1975; Billings and Schmidtke, 2002), and is also the most destructive insect pest of pine forests in the southern United States of America and in parts of Mexico (Payne, 1980). The species attacks both healthy and weakened trees, such as those stressed by fire or severe weather events (for example, the outbreaks that occurred after Hurricane Mitch [1998]), and dead trees may in turn become hosts to secondary infestations and may increase fire risk. A regional bark-beetle strategy has been prepared to respond to this threat.

The introduction and subsequent establishment of forest insect pests and diseases, while having a negative impact on the forest industry in South America, has led to agreements by southern cone countries to work together to combat pests that affect regional trade. The collaboration was prompted by the discovery in Uruguay in 1986 of *Sirex noctilio*, the European woodwasp, which has now achieved widespread distribution in Argentina, Brazil and Chile, infesting several species of *Pinus* grown in commercial plantations.

FIGURE 37 Wildland fires



SOURCE: FAO, 2006d.

Examples of recent accidental introductions of forest pests into Latin America include: *Gonipterus* spp., the eucalypt snout beetle, and *Glycaspis* spp. (probably *Glycaspis brimblecombei*, the red gum psyllid), both native to Australia, which affect the growth and vigour of *Eucalyptus* spp.

Of particular significance are reports of the impact of the beaver, *Castor canadensis*, which was intentionally introduced into Argentina in 1947. The beavers are now having a significant impact on the structure of riparian forests in both Argentina and Chile. They fell many trees, and their dams cause flooding of *Nothofagus pumilio* forests, which kills the trees.

Regional plant protection organizations – including the International Plant Protection Convention (IPPC) Comité de Sanidad Vegetal del Cono Sur, Comunidad Andina, Caribbean Plant Protection Commission and Organismo Internacional Regional de Sanidad Agropecuaria – help prevent the spread and introduction of pests and promote appropriate measures for their control.

Consistent data over time are not available with enough reliability to conclude whether the long-term trend in forest health in Latin America and the Caribbean is improving or getting worse.

PRODUCTIVE FUNCTIONS OF FOREST RESOURCES

About 12 percent of all forest area in the region is designated primarily for production, compared with a global average of 32 percent (Table 23). While the difference is significant, not all countries interpret this designation in the same way. Brazil reported only 5.5 percent of its forests in this category, bringing down the regional average. In contrast, Uruguay reports 60 percent of its forest area as designated for production, Chile 45 percent, Honduras 42 percent, the Bolivarian Republic of Venezuela 38 percent and Peru 37 percent. At the other extreme, Bolivia, Costa Rica and Nicaragua reported zero percent forest area designated for production; these countries included their production forests under the category "multiple purpose".

Growing stock as a whole is declining (Table 24), which is to be expected given declining total forest area. However, in the Caribbean it is increasing, along with forest area. Growing stock per hectare is relatively stable in Central and South America, and increasing in the Caribbean. For the region as a whole, growing stock is about 30 percent of the global total (compared with 22 percent of the global forest area), and per hectare it is 29 percent higher than the global average. According to this parameter, Latin America and the Caribbean forests are significantly more productive than those of the world at large.

In Central America and the Caribbean, by far the majority of wood removed from the forest (Figure 38) is used for fuel (90 and 82 percent, respectively).

In South America, the use of wood for fuel declined sharply in the 1990s. It continued to decline, but at a slower rate, from 2000 to 2005, while industrial roundwood continued to increase throughout the entire 15-year period. In 2005, the use of wood for industrial purposes surpassed the use of wood for fuel for the first

FIGURE 38 Wood removals

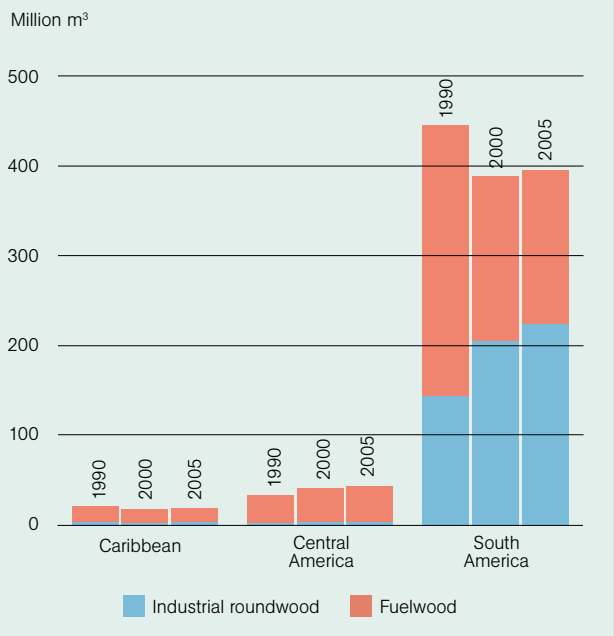


TABLE 23
Area of forest designated primarily for production

Subregion	Area (1 000 ha)			Annual change (1 000 ha)	
	1990	2000	2005	1990–2000	2000–2005
Caribbean	849	828	980	–2	30
Central America	6 325	4 202	3 312	–212	–178
South America	88 216	103 224	91 073	1 501	–2 430
Total Latin America and the Caribbean	**95 390**	**108 254**	**95 364**	**1 286**	**–2 578**
World	**1 324 549**	**1 281 612**	**1 256 266**	**–4 294**	**–5 069**

TABLE 24
Growing stock

Subregion	Growing stock					
	(million m³)			*(m³/ha)*		
	1990	2000	2005	1990	2000	2005
Caribbean	328	403	441	61	71	74
Central America	3 585	3 097	2 906	130	130	130
South America	138 310	133 467	128 944	155	157	155
Total Latin America and the Caribbean	**142 224**	**136 967**	**132 290**	**154**	**155**	**154**
World	**445 252**	**439 000**	**434 219**	**109**	**110**	**110**

time. It will be interesting to see if this trend continues: there are reports that the use of wood for fuel (including biofuels for motor vehicles) is increasing in response to the rising cost of fossil fuels.

NWFPs are also significant, but the lack of available data at the regional level is such that it is not possible to draw meaningful conclusions regarding trends.

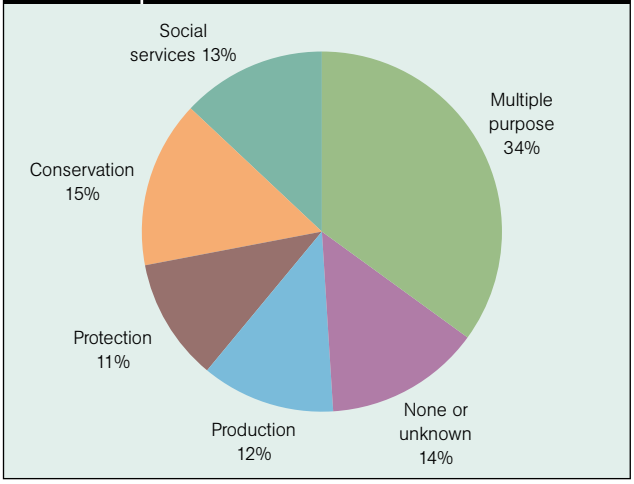
PROTECTIVE FUNCTIONS OF FOREST RESOURCES

The regional trend in area of forest designated primarily for protective functions has been fairly stable over the past five years, after increasing in the 1990s (Table 25). Only the Caribbean showed an increase from 2000 to 2005. Forest area designated for protection represents 11 percent of the forest area in the region, compared with 9 percent globally. Several countries in Latin America and the Caribbean are among the world leaders in exploring innovative approaches to payment for environmental services such as clean water.

Protective function is another parameter that needs to be treated with caution, because many countries do not use this designation, and some protective functions may be included under "multiple purpose" (Figure 39). For example, Bolivia, the Bolivarian Republic of Venezuela, the Dominican Republic, Guatemala and Nicaragua are among the countries that did not report any forest area with this designation, and Costa Rica included only forest plantations. Brazil reported 18 percent, representing the bulk of total area designated for protection in the region.

Most countries reported only a small area of forest plantations designated primarily for protection.

FIGURE 39 Designated primary functions of forests, 2005



SOCIO-ECONOMIC FUNCTIONS

Latin America and the Caribbean represents over 20 percent of the global forest area, but only about 7 percent of the global forest sector's value. Latin America and the Caribbean countries account for 18 percent of the value added in the primary forest sector (roundwood production), but only 3 percent of the value added in

TABLE 25
Area of forest designated primarily for protection

Subregion	Area *(1 000 ha)*			Annual change *(1 000 ha)*	
	1990	2000	2005	1990–2000	2000–2005
Caribbean	850	1 085	1 291	24	41
Central America	1 344	1 178	1 068	–17	–22
South America	90 631	93 632	93 559	300	–15
Total Latin America and the Caribbean	**92 825**	**95 895**	**95 917**	**307**	**5**
World	**296 598**	**335 541**	**347 217**	**3 894**	**2 335**

wood-processing industries and 6 percent in the pulp-and-paper industry. This is an indication that the Latin America and the Caribbean region is a major source of raw materials, but that much of the processing of these materials into finished products is done in other regions. It is also interesting to note that the contribution of the overall forest sector to GDP is higher in Latin America and the Caribbean than in any other major region of the world.

During the 1990s, the value added by the forest sector in Latin America and the Caribbean tended to increase, but the relative contribution of the forest sector to GDP tended to decline, because other sectors were growing faster than the forest sector (Figure 40). However, the trend was reversed in 1999 and 2000, when the contribution of the forest sector to national GDP increased.

The value of forest products trade between countries has increased significantly since 1990 (Figures 41 and 42).

FIGURE 40 Trends in value added in the forest sector, 1990–2000

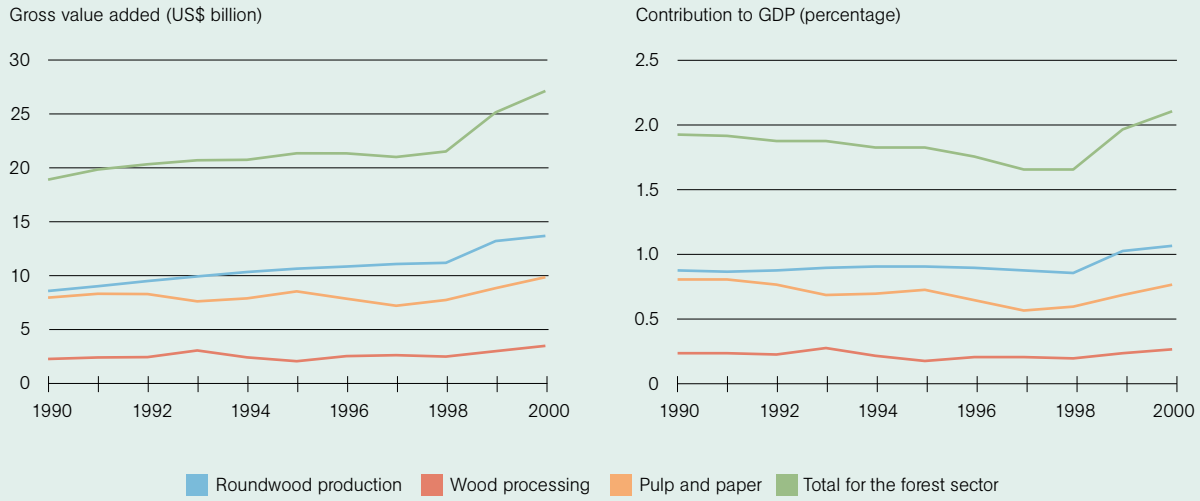
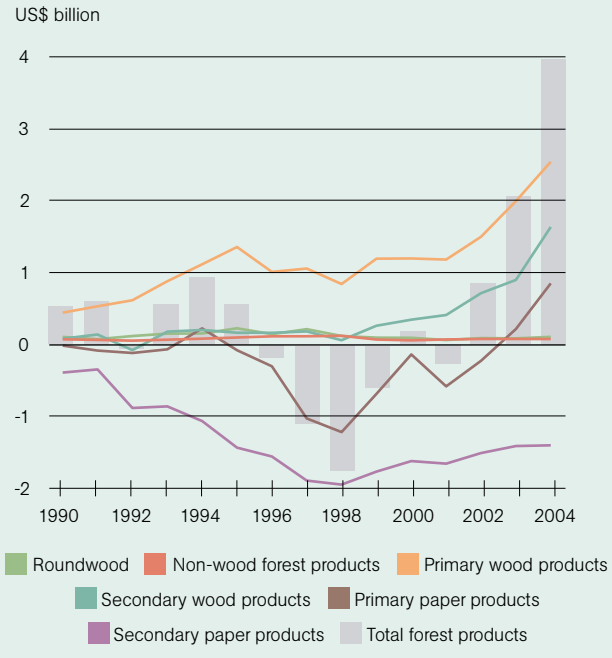
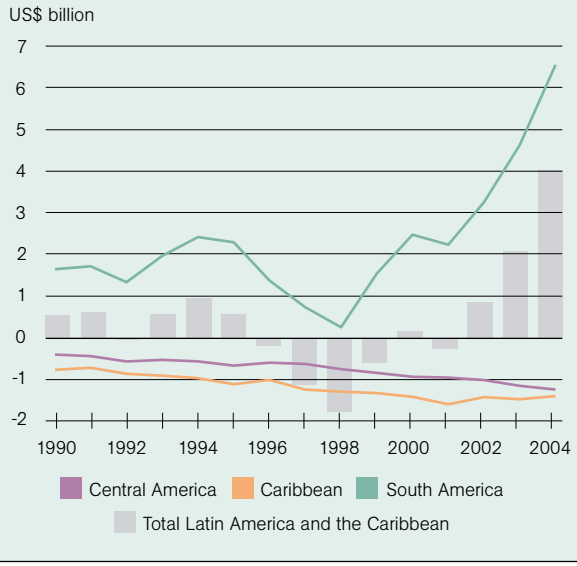


FIGURE 41 Trends in net trade of forest products by subsector



NOTE: A positive value indicates net export. A negative value indicates net import.

FIGURE 42 Trends in net trade of forest products by subregion



NOTE: A positive value indicates net export. A negative value indicates net import.

Exports have tripled in value for the region as a whole, mainly in South America. However, the import of forest products greatly exceeds exports in the Caribbean and Central America.

For Latin America and the Caribbean as a whole, the share of forest products exports as a percentage of total trade has continued to increase, from 3.7 percent in 1990 to 4.7 percent in 2004. Imports into the region accounted for 3.7 percent of total imports, equal to the global average.

Latin America and the Caribbean faced a declining trade balance in forest products from 1994 to 1998, followed by a positive trend from 1999 to 2004 led by strong increases in the export of primary and secondary wood products. The fact that the region is a net importer of secondary paper products suggests that there is potential to invest in the secondary paper industry.

Employment is another important socio-economic indicator. In much of the world, the 1990s was a period of declining forest-sector employment, but in Latin America and the Caribbean there was an upward trend from 1993 to 2000 (Figure 43). The percentage of forest-sector employment to total employment also increased from 1995 to 2000.

The Latin America and the Caribbean region's percentage of the world's forest area and growing stock are some three times higher than key economic indicators for the region, such as value of wood removals or value added. This suggests that the region has an underutilized potential for increased forest production. Some observers have suggested that a higher rate of economic development in the forest sector would lead to increased deforestation. However, a strong forest sector in terms of economic activity does not imply deforestation. On the contrary, the regions where the market value of forest products is high are the regions in which forest area is stable or increasing, i.e. Europe and North America.

In summary, the Latin America and the Caribbean region has several positive socio-economic indicators. At the end of the 1990s, the last period for which good data are available, value added and employment in the forest sector were both increasing. Subsequently, exports of forest products have continued to grow at a higher rate than imports, leading to a strong positive trade balance for the region as a whole (despite a negative trade balance in the Caribbean and Central America). In general, the economic situation in the region has more positive than negative trends.

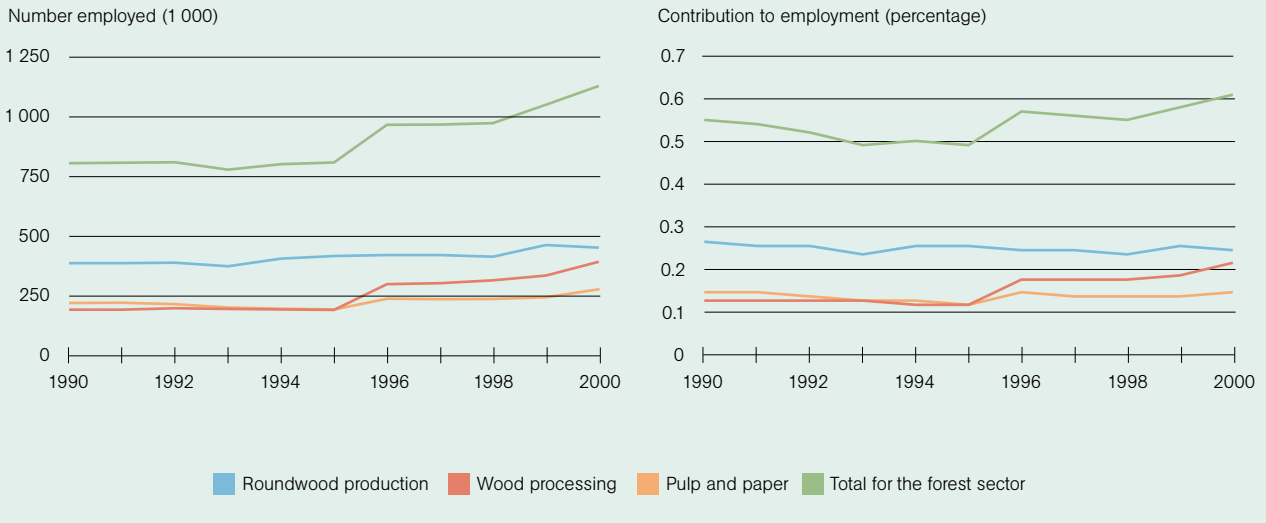
LEGAL, POLICY AND INSTITUTIONAL FRAMEWORK

Throughout the region, there is considerable evidence of increasing political commitment to achieve sustainable forest management. First and foremost, a majority of countries have enacted new forest laws or policies in the past 15 years, or have taken steps to strengthen existing legislation or policies. Among countries that have enacted new forest legislation (FAO, 2006e) are:

- Caribbean: Cuba, Dominican Republic, Jamaica, Saint Vincent and the Grenadines;
- Central America: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama;
- South America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Suriname.

Latin America has a number of active regional processes that promote collaboration among members, including the Amazon Treaty Cooperation Organization,

FIGURE 43 Employment in the formal forest sector



the Central American Commission on Environment and Development, the Caribbean Natural Resources Institute and the Centro Agronómico Tropical de Investigación y Enseñeanza.

Active regional networks in Latin America and the Caribbean include:

- fire management networks in South America, Central America and the Caribbean;
- a regional technical cooperation network in watershed management (Red Latinoamericana de Cooperación Técnica en Manejo de Cuencas Hidrográficas – REDLACH);
- a regional technical cooperation network in national parks and protected flora and fauna and other protected areas (Red Latinoamericana de Cooperación Técnica en Parques Nacionales, otras Áreas Protegidas, Flora y Fauna Silvestres – REDPARQUES);
- a network of national forest programme focal points.

Countries also participate in several processes that promote the use of criteria and indicators for sustainable forest management, including the Lepaterique, Montreal and Tarapoto processes and the criteria and indicators of the International Tropical Timber Organization (ITTO).

Several forestry administrations are integrating planning processes and policies so that forest-sector planning is less isolated from other planning processes, including a greater focus on forest-sector development. A number of countries are also moving towards decentralization of activities and policies affecting forests, including more integration with other sectors, development of new national forest plans with broader stakeholder participation and more emphasis on effective forest law enforcement.

The National Forest Programme Facility is supporting participatory forest processes through grants to more than 50 local and national NGOs in nine countries and three subregional organizations. Regional and national projects supported by a variety of donors, including Germany, the Netherlands and the United States of America, are also actively working to strengthen local and national capabilities for forest policies and planning.

It is difficult to quantify changes in policies and institutions, but there is strong evidence of an increasing commitment to sustainable forest management in many countries, with the result that most of the trends in this theme are positive. In addition, more countries are experimenting with innovative financial mechanisms, decentralization and participatory processes in the forest sector.

SUMMARY OF PROGRESS TOWARDS SUSTAINABLE FOREST MANAGEMENT

The continuing high rates of conversion from forests to other land uses in many countries in Latin America and the Caribbean is a matter of great concern to decision-makers in the region as well as to external observers. Macroeconomic forces resulting in lower market prices for forest products than for products of other sectors make it difficult to manage forests with a long-term perspective.

A limiting factor for some countries that are striving to improve forest management is a shortage of financial resources. Most forests in the region are publicly owned, but public resources are increasingly scarce, or the allocated share of the public budget is inadequate. The forest sector must do a better job of making the benefits of forests known to political decision-makers, as well as promoting sustainable private-sector investment in forests.

Costa Rica is an apparent success story. It is the only country in the region that reported a negative forest area change rate in the 1990s and an increase in forest area from 2000 to 2005. It is not clear to what extent this turnaround is related to a reduction in agricultural land or to innovative policies.

The positive trend in forest area in the Caribbean is also very encouraging, although the lack of good information about forest resources is such that not too many conclusions can be drawn about trends, especially among some of the smaller island states.

The large increase in forest area designated for biodiversity conservation is a positive trend indicating that countries are taking steps to try to stop the loss of primary forests. In addition, the region is among the world leaders in innovative approaches to international cooperation on forest issues.

Although the forest sector is declining in relative economic importance in several other regions, in Latin America and the Caribbean the forest sector is on the rise. Employment and trade are increasing. The challenge in the region will be to maintain this positive momentum and find innovative ways to channel investments towards sustainable forest management and away from non-sustainable forest practices that result in large-scale forest loss.

BOX 3 ITTO study on the state of tropical forest management

Status of tropical forest management 2005 (ITTO, 2006) evaluates forest status in producer member countries of the International Tropical Timber Organization.[1] It complements the Global Forest Resources Assessment 2005 (FAO, 2006a) and the *Annual review and assessment of the world timber situation 2005* (ITTO, 2005). Together they provide a comprehensive picture of the changing condition of the world's forests.

A 1988 survey by ITTO found that less than 1 million hectares of tropical forest was being managed in accordance with good forestry practices. The new ITTO report considers changes in the subsequent 17 years in the 33 ITTO member countries, which are producers of tropical timber.

ITTO urges countries to undertake land-use planning, in which land is assigned as "permanent forest estate" for the sustainable production of timber and other forest goods and services. On this land, ITTO encourages countries to adopt sustainable forest management, through which the inherent values of the forest are maintained (or at least not unduly reduced), while revenues are earned, people are employed and communities are sustained by the production of timber and other forest products and services. ITTO also developed criteria and indicators for the monitoring, assessment and reporting of sustainable forest management, and these formed the basis of the assessments carried out for the report.

The forest management situation was analysed in all 33 producer member countries. The results are summarized by region (table).

Results

Despite difficulties and some notable deficiencies, the report found that there has been significant progress towards sustainable forest management in the tropics since 1988. Countries have established and are starting to implement new forest policies that contain the basic elements of such management. More forests have been given some security by commitment as permanent forest estate, or a similar concept, for production or protection, and more are actually being managed sustainably. Moreover, some of the permanent forest estate is certified – a new development since 1988. This is encouraging, but the proportion of natural, production forest under sustainable management is still very low and is distributed unevenly across the tropics and within countries.

At present, the natural permanent forest estate in Africa, Asia and the Pacific, and Latin America and the Caribbean is estimated to cover 110, 168 and 536 million hectares respectively, a total of 814 million hectares in the 33 ITTO member producer countries. Of the permanent forest estate in Latin America and the Caribbean, nearly half (271 million hectares) is made up of protection permanent forest estate in Brazil. Estimates of total forest area vary according to source. At the high end of the range of estimates, Africa has 274 million hectares of forest (40 percent of which is in the permanent forest estate); at the low end, 234 million hectares (47 percent of which is in it). In Asia and the Pacific, the figures are 316 million hectares (65 percent) and 283 million hectares (73 percent), respectively; in Latin America and the Caribbean, they are 931 million hectares (58 percent) and 766 million hectares (71 percent).

Management status in the tropical permanent forest estate *(1 000 ha)*

Region	Production							Protection			All	
	Natural				Planted							
	Total area	With management plans	Certified	Sustainably managed	Total area	With management plans	Certified	Total area	With management plans	Sustainably managed	Total area	Sustainably managed
Africa	70 461	10 016	1 480	4 303	825	488	0	39 271	1 216	1 728	110 557	6 031
Asia and the Pacific	97 377	55 060	4 914	14 397	38 349	11 456	184	70 979	8 247	5 147	206 705	19 544
Latin America and the Caribbean	184 727	31 174	4 150	6 468	5 604	2 371	1 589	351 249	8 374	4 343	541 580	10 811
Total	**352 565**	**96 250**	**10 544**	**25 168**	**44 778**	**14 315**	**1 773**	**461 499**	**17 837**	**11 218**	**858 842**	**36 386**

[1] Africa – Cameroon, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Gabon, Ghana, Liberia, Nigeria and Togo; Asia and the Pacific – Cambodia, Fiji, India, Indonesia, Malaysia, Myanmar, Philippines, Papua New Guinea, Thailand and Vanuatu; and Latin America and the Caribbean – Bolivia, Bolivarian Republic of Venezuela, Brazil, Colombia, Ecuador, Guatemala, Guyana, Honduras, Mexico, Panama, Peru, Suriname and Trinidad and Tobago.

It is always possible for a country to unprotect areas of permanent forest estate for purposes that it considers important. Some countries have still not clearly identified one (some have not even adopted the term or a concept equivalent to it), and some have undergone political changes that have acted to obfuscate forest ownership. And there are still frequent conflicts over tenure that engage governments, local communities and private owners – issues that must be resolved if the forest is to be rendered more secure. Taking the tropics as a whole, however, there has been great improvement in the legal security of both production and protection forests in the last two decades. In addition, security has now been increased in many countries through better delimitation of boundaries.

The area of natural, production permanent forest estate in ITTO producer member countries is estimated at 353 million hectares. Of this, an estimated 96.3 million hectares (27 percent of the total) are covered by management plans, 10.5 million hectares (3.0 percent) are certified by an independent certification organization, and at least 25.2 million hectares (7.1 percent) are managed sustainably. The area of protection permanent forest estate in ITTO producer member countries is estimated to be 461 million hectares, of which an estimated 17.8 million hectares (3.9 percent) are covered by management plans and at least 11.2 million hectares (2.4 percent) are being managed sustainably. A much larger but unestimated area of the forest estate is not under immediate threat from anthropogenic destructive agents, being remote from large human settlements and projected roads.

Thus the proportion of the tropical, production permanent forest estate managed sustainably has grown substantially since 1988, from less than 1 million hectares to more than 25 million – and to more than 36 million hectares if the area of protection permanent forest estate so managed is included. Despite this significant improvement, the overall proportion known to be sustainably managed remains very low, at less than 5 percent of the total.

Constraints to sustainable forest management

The report identified several constraints on the diffusion of sustainable forest management. Probably the most important, and the most generally applicable, is that sustainable management for the production of timber is less profitable to landowners and users than many other possible ways of using the land.

Another constraint is related to land tenure. There have been advances in many countries in committing forest for either production or protection and in establishing a permanent forest estate. However, without the security provided by long-term government resolve and credible arrangements for tenure, sustainable forest management is unlikely to succeed.

Illegal logging and the illegal movement of timber have become pressing issues in many countries, exacerbated by local warfare and by drug smuggling and other criminal activities. These have not only made forest management in the field a hazardous business and prejudiced the security of many permanent forest estates, but they have also undermined legitimate markets for timber and reduced the profitability of legitimate producers.

There is an almost universal lack of the resources needed to manage tropical forests properly. There are chronic shortages of staff, equipment, vehicles and facilities for research and training. The pay and conditions of service are rarely sufficiently favourable to attract and keep skilled staff in the field.

In the preparation of the report it became clear that, in most countries, information on the extent of forests and the status of management in the permanent forest estate is still very poor. The report should encourage ITTO member countries and forest-related institutions and organizations to continue to improve their data-collection systems, as reliable information is the cornerstone of both practising and assessing sustainable forest management.

Conclusion and recommendations

Despite the progress made since 1988, significant areas of tropical forest are still lost every year, and unsustainable (and often illegal) extraction of tropical forest resources remains widespread. However, with most countries now attempting widespread implementation of sustainable forest management, it is hoped that the pace of progress will accelerate in coming years.

The report made three recommendations to help quicken the pace: that regular reporting on the status of tropical forest management be instituted at the international level; that the international community make resources available to improve the capacity of countries to collect, analyse and make available comprehensive data on the status of tropical forest management; and that the international forest-related community set as its first priority the development of a system for ensuring that sustainable forest management is a financially remunerative land use.