

COLOMBIA



*For legend see page 58

Forest resources

With a land area of 114 million hectares, Colombia is the fourth-largest country in South America by area; it has a population of 44.2 million people. Colombia is characterized by two well-defined biogeographical zones: the Andean mountain zone of three mountain ranges and three tropical plains – one between the Pacific and the Andes, one fronting the Caribbean coast in the north, and one containing the Amazon and Orinoco basins to the east. Estimates of forest area include 65.6 million hectares (UNEP-WCMC 2000), 53.2 million hectares^a, and 49.6 million hectares (FAO 2005).

Forest types. An estimated 85% of Colombia's closed forests are found in the Amazon Basin and on the Pacific coast (CONIF 2004). In the Amazon, terrace forests contain valuable timber species such as *Virola* spp, *Brosimum utile* and *Humiriastym*

procerum; there are also large tracts of swamp and catival forests characterized by stands of *Mora megistosperma*, *Camptosperma panamensis* and *Prioria copaifeira*. Submontane and montane Andean forests are also extensive and contain patches of *Quercus humboltii* (roble). Colombia also has a significant mangrove resource.

Dynamics of forest resource change. FAO (2005) estimated the average annual rate of deforestation at about 190,000 hectares (0.4%) in the period 1990–2000. Deforestation is highest in the foothills of the Andes in the departments of Chocó, Cesar, Santanderes, Nariño and Putumayo, where colonists are concentrated and the majority of coca is produced.

Natural hazards affecting forests include those associated with the El Niño/Southern Oscillation phenomenon and volcanic activity; hurricanes occasionally affect forests on the Caribbean coast.

Permanent forest estate. Although it is estimated that harvestable forests for timber may cover as much as 38 million hectares, the utilizable potential is limited by accessibility and ecological factors. The Ministry of Environment estimated an area of permanent production forest of about 5.5 million hectares, containing a growing stock of 200 million m³ (CONIF 2004). There is no PFE *per se* classified in Colombia; figures in Table 1 are indicative only.

Planted forests. FAO (2005) estimated that the area of planted forest was 141,000 hectares in 2000; this corresponds closely to the official estimate of 148,000 hectares^a. However, according to the National Forest Development Plan of 2000 (*Plan Nacional de Desarrollo Forestal*), Colombia had 350,100 hectares of planted forest in 1997.

Table 1 PFE

Estimated total forest area, range (million hectares)	Total closed natural forest ('000 hectares) Source: FAO 2001	PFE ('000 hectares) ^d			Total
		Production		Protection	
		Natural	Planted		
49.6–65.6	51,437	5,500*	148 ^a	8,860**	14,508

* The estimate for natural production PFE is derived from CONIF (2004)

** Protection PFE is the sum of forests classified in IUCN protected-area categories I–IV by UNEP-WCMC (2004)

Institutional arrangements

Forest tenure. The 1991 constitution recognizes the ancestral rights to land of indigenous groups and Afro-Colombian traditional communities. Forest ownership is both public and private. Private land is subdivided into private property and collective property, the second of which includes indigenous, Afro-Colombian and farmer groups. Today, 22.1 million hectares of forest, mostly in the Amazon region, are owned by indigenous communities and 5.4 million hectares, mainly in the Pacific region, by Afro-Colombian communities (CONIF 2004). In addition, many forest areas in the Andean region, in particular planted forests, are privately owned.

SFM policy framework. Colombia has developed its own set of C&I for SFM, based on those proposed by ITTO. The country has extensive legislation on forest management, with detailed instructions on the preparation of management plans. However, the degree of control exercised by regional corporations in charge of forest management (see below) is not clear and there may be huge differences in the way in which management standards are applied in different parts of the country. This may also be caused by the generally difficult governance situation in the country: critical portions of Colombia's Andean, Chocó and Amazonian forests are located in municipalities where armed groups (left-wing guerrillas and right-wing paramilitaries) contest political authority. This is perhaps most evident in the case of the Andes, where the largest continuous forest remnants (Serranía de San Lucas, Nudo del Paramillo, Páramo de Las Hermosas and East Andes) lie in municipalities where both armed groups are present (Alvarez 2005).

Forest policy and legislation. The forest law (*Ley 2 sobre Economía Forestal de la Nación y Conservación de Recursos Naturales Renovables*) dates back to January 1959. It has been complemented by a number of decrees, the most important ones being the forest code of 1974 (*Decreto 2811, Código Nacional de Recursos Naturales Renovables y de Protección al Medio Ambiente*) and the decree of 1996 on forest use (*Decreto 1791 Régimen de Aprovechamiento Forestal*). Regulations that restrict the export of logs from natural forests have been in force for more than ten years; only roundwood coming from planted forests can be exported. A new

forest law was approved by Congress in December 2005 and at the time this report went to press it was awaiting Presidential approval. The new law seeks to: expand the sustainable use of natural forests and make the control of these forests more rigorous; further promote forest plantations and create financial mechanisms for investments; and regulate and further develop forest concessions in the country.

The forest policy (*Política de Bosques*) now in force was approved in 1996; it is being revised and was due to be finalized in 2005. Among the aims of the policy are to: (i) achieve the sustainable use of forests for their conservation; (ii) consolidate the incorporation of the forest sector in the national economy; and (iii) contribute to the improvement of the quality of life of the people. Essential steps include: (i) the modernization of administration; (ii) the conservation, restoration and use of natural forests; and (iii) the strengthening, support and consolidation of the international position of Colombia in forestry matters.

In 1998, the Green Plan (*Plan Verde*) was formulated. This promotes reforestation and, in particular, the restoration and rehabilitation of degraded forest and the management of secondary forests. A National Forestry Development Plan approved in December 2000 has been adopted as official state policy and offers a strategic vision for forest management through 2025. The plan has been developed according to the concepts of the Forests Program of the Convention on Biological Diversity, which takes the ecosystem approach as its conceptual foundation. This approach aims to achieve a balance between conservation, sustainable use and the equitable distribution of benefits. The Forest for Peace (*Bosque para la Paz*) program promotes co-management, reforestation and forest restoration as important elements in social development. Another program is *Familias Guardabosques*, which aims to promote SFM and the substitution of illicit crops such as coca.

Institutions involved in forests. Law 99 created the Ministry of Environment in December 1993, replacing the former forest service (*Instituto de Desarrollo de los Recursos Naturales Renovables – INDERENA*). In 2001, the Ministry of Environment became part of the Ministry of Environment, Housing and Territorial Development (*Ministerio de Ambiente,*

Vivienda y Desarrollo Territorial – MAVDT). MAVDT formulates policy on the environment and renewable natural resources and establishes the broad guidelines, rules and criteria for the environmental regulation of land-use, including forestry. At the national level, the Department of National Planning, the Ministry of Agriculture and Rural Development and the Ministry of Commerce, Industry and Tourism also play roles in forest development and conservation. Technical support and research in natural resource management are confined to a private-public corporation, the National Corporation for Forestry Research and Development (*Corporación Nacional de Investigación y Fomento Forestal – CONIF*), and to universities. The Alexander von Humboldt Institute was created in 1993 to promote, coordinate and perform research on the conservation and sustainable use of biodiversity in Colombia. Fewer than 50 people work on forest management-related activities in the federal government^a.

Colombia is one of the most decentralized countries in Latin America: 40% of total public expenditure is managed locally (by municipalities). The management of forests is part of the National Environmental System (*Sistema Nacional Ambiental – SINA*), which was established by Law 99 and consists of 33 autonomous regional corporations (*corporaciones autónomas regionales y las corporaciones de desarrollo sostenible*). These corporations are responsible for the management and administration of all natural resources in the area of their jurisdiction, including the granting of concessions, permissions and authorizations for forest harvesting.

Local NGOs play an important part in monitoring resource use and in forest development. There are no major industrial associations and support by international donors for forestry is relatively limited. The forestry and agricultural faculties of the various universities in the country also play important roles in forest research and development.

Status of forest management

Forest for production

Colombian law differentiates between permits, concessions and authorizations for timber harvesting, but no forest concession has been allocated in the last 20 years. The present policy is one of 'non-use'

by commercial forestry in natural forests; however, cutting permits are still widely used, which include legal requirements for management procedures. When forests are converted to other land-uses or for the development of infrastructure, the law stipulates compensation measures, generally in the form of afforestation. No information on the area on which timber-harvesting is permitted was made available for this report.

The National Forestry Development Plan proposes that an area of 2 million hectares of forests be identified as potential production forest by 2005, and the government of Colombia is in the process of verifying the management of 3.13 million hectares of production forest^c. Pilot projects have started in different forest areas, including three ITTO-supported field projects – in Guaviare (74,000 hectares, including 2,500 hectares of managed natural forest), Choco (2,000 hectares of protection planted forest) and an area of 64,000 hectares of degraded natural forest and planted forest in San Nicolás/Río Negro. One particular forest production area of several thousand hectares is situated in Atrato, Arenal. In the Amazon region there are a number of pilot areas that include sustained-yield management, totalling about 120,000 hectares. In all these pilot areas, forest management plans have been prepared and are being implemented through a multi-stakeholder approach.

Silviculture and species selection. Forest harvesting is carried out through timber-licence contracts in the forest areas operated by most of the regional corporations; thus, there is no systematic application of silviculture, even though this is required for continuous logging activities under Decree 2811 of 1974 (Article 213) and Decree 1791 of 1996 (Article 5b). Particularly in the Pacific region, many timber species are subject to uncontrolled salvage logging, among them *Brosimum utile* (sande), *Carapa guianensis* (andiroba), *Cedrela odorata* (cedro), *Prioria copaifera* (cativo), *Campnosperma panamensis* (sajo) and *Tabebuia serratifolia/T.rosea* (cedro rosado). An estimated 250 species are used by industry^a. Table 2 lists five commonly harvested timber species in Colombia.

Planted forest and trees outside the forest. Since 1970, the government has provided incentives for forest plantation development and, since 1994, has exempted from some taxes those who invest in

Table 2 Some commonly harvested species for industrial roundwood^c

Timber species	Remarks
<i>Pinus patula</i> (pino candelabro)	From plantations in mountainous regions
<i>Dialyanthera</i> sp (virola)	Particularly in the Pacific region
<i>Prioria copaifera</i> (cativo)	Often in nearly pure stands, partly over-harvested
<i>Brosimum utile</i> (sande)	Particularly in the Pacific region
<i>Cariniana pyriformis</i> (abarco)	Widely distributed, outdoor and indoor use, furniture

the establishment and maintenance of plantations. Since then, more than 70,000 hectares have been reforested as protection forests, mainly in Antioquia, Córdoba, Magdalena, Santander and the Valle del Cauca. The main plantation species are *Pinus caribaea*, *P. oocarpa* and, in particular, *Pinus patula* (pino candelabro); these comprise 55% of the total planted area, followed by eucalypts (20%, including *Eucalyptus globulus*, *E. camaldulensis* and *E. urophylla*) and *Acacia mangium* and other broadleaved species, in particular *Gmelina arborea* and *Tectona grandis* (teak, teca). Indigenous species planted include *Cordia alliodora* (vara de humo), *Bombacopsis quinata* (ceiba tolúa), *Tabebuia rosea*, *Alnus acuminata* (aliso), *Lafoensia speciosa* and roble. The forest law currently under review intends to further promote forest plantations and raise the area covered by them to about 1.5 million hectares.

Forest certification. Since 1996, certification has gained ground in Colombia. The *Grupo de Certificación Forestal Voluntaria* has developed drafts for national certification schemes for both natural and planted forests. Pilot projects are being implemented in eight forest zones, including the certification of a bamboo plantation. As of December 2005, two planted forest areas covering 58,444 hectares had been certified (FSC 2005).

Estimate of the area of forest sustainably managed for production. Little information is available on the quality of natural forest management in Colombia and it is therefore difficult to make a general assessment of forest management standards. Several pilot areas, partly supported by ITTO projects covering about 200,000 hectares of natural forests, are considered to be sustainably managed^c.

Timber production and trade. The production of industrial roundwood from natural and planted forests in 2003 was 3.14 million m³, compared to 2.40 million m³ in 1999 (ITTO 2004, 2005). Nearly all of this wood served the domestic market. The production of sawnwood in 2003 amounted to about 599,000 m³, compared to 729,000 m³ in 1999. Veneer production in 2003 was very small (9,000 m³) and plywood production in 2003 was estimated at 38,000 m³ (ITTO 2005).

Non-wood forest products. More than 300 NWFP species are known and used in Colombia. *Guadua angustifolia* (guadua), a bamboo native to the coffee belt (*región cafetera*), is one of the country's most important NWFPs. It is used mainly for local housing construction, but also by modern architectural designers and in handicrafts. In the departments of Caldas, Quindío, Risaralda, Tolima and Valle del Cauca the natural area of guadua is about 21,000 hectares, supplemented by 5,100 hectares of plantations; total annual production exceeds 250,000 m³ (CONIF 2004). The principal products harvested in natural forests include rubber; palm fruits, particularly *Mauritia flexuosa* (canangucha) and *Euterpe precatoria* (asahí); fruits from *Theobroma grandiflorum* (copoazu); *Euterpe oleracea* (palm hearts); *Chamaedorea* spp (xate leaves) for ornamental use; and wildlife, especially fish and reptiles. Coca, although illegal, is also widely grown. There is great potential for ecotourism but this cannot be developed at present because of security problems.

Forest for protection

Soil and water. Colombia is one of the ten most productive countries worldwide in terms of freshwater yield. It has 19 major irrigation districts

Table 3 Management of the production PFE ('000 hectares)

Total	Natural				Planted		
	Allocated to concessions/ under licence	With management plans	Certified	Sustainably managed	Total	With management plans	Certified
5,500	2,150 ^{c,d}	n.d.	0	200 ^c	148	80	58

and more than 500 small irrigation areas. Many environmental campaigns have been launched in the cities to inform communities about the importance of water conservation. Fifty-two protection forest areas have been classified, covering about 312,000 hectares; regulations exist for the use and protection of these areas but they are not being implemented^a. CONIF (2004) reports an area of 650,000 hectares in *reservas forestales protectoras de orden nacional* and *distritos de conservación de suelos*. Water shortages could eventually affect more than 14 million people in some parts of the country, particularly in Magdalena and Cauca (CONIF 2004). Through its system of regional corporations, the country emphasizes watershed reforestation projects. Over the past nine years, about 120,000 hectares of new protection plantations have been established (ibid.).

Biological diversity. Colombia is a country with great physical contrasts, resulting in a great variety of ecosystems, a richness of species and many endemics. It has one of the highest levels of species diversity in the world, boasting some 55,000 plant species, of which one-third are endemic (one of the top 20 countries in the world in this respect), 1,721 bird species and 205 reptile species. Thirty-nine mammals, 88 birds, 16 reptiles, 208 amphibians and 225 plants are listed as critically endangered, endangered or vulnerable on the IUCN red list of threatened species; of these, 21 mammals, 79 birds, 194 amphibians and five plants are found in forests (IUCN 2004). Colombia has listed nine plant species in CITES Appendix I, 338 plant species in Appendix II and one species in Appendix III (CITES 2005). Timber species listed in Appendix II include *Swietenia macrophylla*, *Guaiacum officinale* and *Tachigali versicolor*; *Cedrela odorata* is the sole listing in Appendix III.

Protective measures in production forests. Timber licences are not granted in critical watershed

protection areas and on steep slopes (government of Colombia 1999). There are no specific provisions for RIL.

Extent of protected areas. Colombia has 49 forest protected areas (national parks, nature reserves, sanctuaries for flora and fauna, and one unique natural area, *Unica Area Natural*), covering 10.3 million hectares; there are no data on connectivity^a. Under Law 2 of 1959, seven zones of forest reserves have been set up for sustainable management and for watershed and biodiversity protection. Today, these areas cover 53.6 million hectares, including 38.2 million hectares in the Amazon Basin (CONIF 2004).

According to UNEP-WCMC (2004), 8.86 million hectares of forest are in protected areas conforming to IUCN protected-area categories I-IV, of which more than 5 million hectares are lowland evergreen rainforest. The integrity of protected areas is threatened, however, by a lack of control, guerrilla activities and drug trafficking^c.

Estimate of the area of forest sustainably managed for protection. Insufficient information was available to estimate the area of protection PFE that is sustainably managed.

Socioeconomic aspects

Economic aspects. When including downstream industries (manufacture of pulp, paper, cardboard, processed wood and furniture), the contribution of the forest sector to GDP is 1.8% (CONIF 2004). The trade balance in forest products is negative because of the import of pulp and paper, although the gap declined from US\$280 million in the 1990s to US\$39 million in 2001 and 2002. It is estimated that the forestry sector provides employment to 54,000 people, comprising 24,000 in forest industry and 30,000 in reforestation^a.

Table 4 Management of the protection PFE ('000 hectares)

Total	Attributed to IUCN categories I-IV	Allocated for soil and water	With management plans	Sustainably managed
8,860	8,860	312	n.d.	n.d.

Livelihood values. It is estimated that more than 2,000 plants are used by local communities for medicinal purposes. Domestication of wild animals (*zoocría*) is another important economic activity, including species as different as crocodiles and butterflies. The gathering of ornamental plants, particularly orchids, is important in the low-level cloud forest and contributes locally to livelihoods. Illegal coca production and trade remain financially the most attractive economic activities for many colonists living in the Amazon and Orinoco basins.

Social relations. The main forest zones of the country are inhabited nearly exclusively by indigenous communities or Afro-Colombian communities (*Chocó*). Their traditional lifestyles are closely linked to the use of forest resources through shifting cultivation and the gathering of forest products, including hunting and fishing. The constitution of 1991 and laws 99 and 70 of 1993 recognize this and make specific reference to such traditional forest uses. There are conflicts over timber resources and illegal crops between local forest-users and the armed forces of different factions.

Summary

The overall forest management situation in Colombia is not clear. On the one hand, advances have been made at the policy level in the priority activities identified under ITTO's Objective 2000, including the approval of a forest policy, new forestry legislation and the formulation of forest management plans. Forests are administered within the wider context of environmental management, and existing policy goals emphasize protection and conservation functions as well as forest restoration and forest land rehabilitation. However, there is as yet no clear designation of the PFE and inadequate control of forest resources on the ground, in particular in the Amazon region; nor are silvicultural methods applied in natural production forests.

Key points

- Colombia has a rich and largely unexploited forest resource in the Amazon Basin.
- Indigenous communities own 22.1 million hectares of forest, mostly in the Amazon, and Afro-Colombians about 5.4 million hectares, mainly in the Pacific region.
- The PFE is estimated to be 14.5 million hectares – although this has not been designated officially – of which 5.65 million hectares is production PFE and 8.86 million hectares protection PFE.
- The estimated area of natural-forest production PFE under SFM is at least 200,000 hectares. Little information is available on the status of forest management in the protection PFE.
- There is a well-established and well-developed program to establish planted forests. A new forest law awaiting presidential approval would promote an increase in plantations to about 1.5 million hectares.
- There is a lack of forest law enforcement and transparency in the application of laws that deal with forest management. Because of armed conflict, there is little long-term management of or control over resources.
- No specific standards have been established for large-scale production forestry and there are no concession policies.
- However, the new forest law awaiting presidential approval seeks to make major reforms to the management of natural forests.
- National institutions appear to be under-resourced and unable to maintain an effective presence in the field.
- There is a well-established protected area system and a well-established system to monitor biodiversity.
- The wider role of forests in providing environmental services is recognized.

References and other sources

- ^a Government of Colombia 2002. Desarrollo del Cuestionario sobre la Evaluación de los Criterios e Indicadores para la Ordenación Sostenible de los Bosques Tropicales Naturales a Nivel Nacional. Submitted to ITTO, January 2002. Ministerio del Medio Ambiente, Bogotá, Colombia. Unpublished.
- ^c Information derived from the report of, and discussions with participants at, a training workshop on ITTO criteria and indicators, held 11–14 February 2003, Rio Negro, Colombia, attended by 45 people from government, civil society and the private sector.
- ^d ITTO estimate
- Alvarez, M. 2005. Guerrillas in the midst. *Conservation Biology* 19: 2040-2043.
- CITES 2005. CITES-listed Species Database. Available from: <http://www.cites.org/eng/resources/species.html> (accessed September 2005).
- CONIF 2004. *Sector Forestal Colombiano*. Fuente de trabajo y bienestar social. Corporación Nacional de Investigación y Fomento Forestal. Serie política No 50. CONIF, Bogota, Colombia.
- FAO 2001. *Global Forest Resources Assessment 2000*. FAO Forestry Paper 140. FAO, Rome, Italy.
- FAO 2003b. *State of Forestry in the Latin American and Caribbean Region 2002*. FAO Regional Office for Latin America and the Caribbean, Santiago, Chile.
- FAO 2005. *State of the World's Forests 2005*. FAO, Rome, Italy.
- FSC 2005. FSC – Certificates Worldwide. FSC International Center & Working Group, Germany. Available from: <http://www.fsc-info.org> (accessed December 2005).
- Government of Colombia 1999. Informe de Progreso para Lograr el Objetivo del Año 2000 de la OIMT. Submitted to ITTO, November 1999. Ministerio del Medio Ambiente, Bogotá, Colombia. Unpublished.
- Government of Colombia 2005. Articulado Aprobado Proyecto de ley Numero 264/04 Camara “Por la Cual se Expide la Ley Forestal”. Sesiones Comisión Quinta. August 2005.
- ITTO 2004. *Annual Review and Assessment of the World Timber Situation 2003*. ITTO, Yokohama, Japan
- ITTO 2005. *Annual Review and Assessment of the World Timber Situation 2004*. ITTO, Yokohama, Japan.
- IUCN 2004. 2004 IUCN Red List of Threatened Species. Available from: <http://www.redlist.org> (accessed September 2005).
- UNEP-WCMC 2000. Statistical Analysis of Forests & Protection V3.1, July 2000. Available from: <http://www.unep-wcmc.org> (accessed June 2005).
- UNEP-WCMC 2004. Spatial analysis of forests within protected areas in ITTO countries. UNEP-WCMC, Cambridge, UK. Data prepared for ITTO, 2004 (see Annex 1).