

VENEZUELA



*For legend see page 58

Forest resources

Venezuela has a land area of 91.2 million hectares and a population of 25.7 million people. It can be divided into three main biogeographical regions: (i) a narrow coastal area; (ii) the Andean mountain range, which reaches 5,000 m above sea level and supports dry, humid-mountain and cloud forests; and (iii) the basins of the Orinoco and Amazon rivers. The Orinoco Plain, 20% of the country, is mainly covered by heavily degraded evergreen and semi-deciduous forests (*llanos*). The Guayana region (the states of Bolivar and Amazonas) occupies about half of the country and contains 70% of its forests. Estimates of forest area vary from 49.5 million hectares (FAO 2005) to 55 million hectares^a.

Forest types. Tropical moist forest, Venezuela's most extensive forest type, is present in the Orinoco delta, the Guayana region and in small areas south and southwest of Lake Maracaibo; the most common

species are *Couroupita guianensis*, *Ceiba pentandra*, *Coumarouna punctata*, *Erismia uncinatum* and *Carapa guianensis*. Tropical mountain forest is found in three mountain zones: the Merida range, the coastal range by the Caribbean and the eastern massif in Sucre and Monagas states. Cloud forest forms in the misty climate of the Andes between 500 and 2,000 m; valuable timber species found there include *Cedrela mexicana*, *Guarea* spp, *Roupala montana*, *Terminalia* spp, *Virola sebifera*, *Rollinia fendleri*, *Calophyllum brasiliense* and, in higher areas, species of *Podocarpus*. The Orinoco Plain was once covered by *llanos* but this has been mostly converted to agriculture and pasture. Once-common species in these forests include *Swietenia macrophylla* (caoba), *Tabebuia pentaphylla* and *Ceiba pentandra*.

Dynamics of forest resource change.

Deforestation in the period 1982–2000 was an estimated 261,000 hectares (0.6%) per year^a; FAO (2005) estimated an average annual rate of deforestation of 218,000 hectares between 1990 and 2000. In the past, deforestation was highest in the *llanos*; for the last 15 years it has been highest in the dry, northwestern Zulia region, which has lost almost two-thirds of its forest cover. Deforestation has also been relatively high (36,000 hectares per year) in the state of Bolivar in the tropical moist forest region, which is also the most important forest development area of the country. Only small areas of secondary forests (*purmas*) remain, since deforested areas have mostly been transformed into pasturelands. Uncontrolled forest fires occur regularly, both in natural and planted forest^a.

Permanent forest estate. The entire forest area is contained within specially designated *Areas Bajo Régimen de Administración Especial (ABRAEs)* –

Table 1 PFE

Estimated total forest area, range (million hectares)	Total closed natural forest ('000 hectares) Source: FAO 2001	PFE ('000 hectares)			Total
		Production		Protection	
		Natural	Planted		
49.5–55.0	49,926	13,000 ^d	863	20,600 ^d	34,463 ^d

land managed for special purposes according to special laws. As of August 2001, 362 ABRAEs had been established in 25 different categories covering approximately 46% of the total land area. It appears that about 13 million hectares of the country's estimated 29.9 million hectares of closed forests are allocated for production as part of the PFE. This is made up of forest reserves (11.8 million hectares) and forest lots (*lotes boscosos* – 1.2 million hectares). Figures for the natural-forest PFE in Table 1 are ITTO estimates based on data from the Ministry of the Environment and Natural Resources (*Ministerio del Ambiente y de los Recursos Naturales* – MARN 2000, 2004).

Planted forests. There has been a tradition of official and private plantations in Venezuela for more than 50 years. In 1998, there were an estimated 727,000 hectares of planted forests (115,000 hectares being private); 53% of these were industrial plantations^a. The plantation rate has declined recently, from 30,000 hectares per year several years ago to less than 5,000 hectares per year; FAO (2001) estimated the total planted forest area at 863,000 hectares. By far the most important plantation species is *Pinus caribaea* (pino caribe).

Institutional arrangements

Forest tenure. It is estimated that more than 90% of the forest is owned by the state^c. There are private forest lots in both natural and planted forest areas, but their extent is not known. The 1999 constitution recognizes the right of indigenous people to the collective ownership of forest territories, access to resources and rights to cultural uses, but there is no demarcation or formal recognition process in place. The extent to which local communities have the right to administer, conserve and manage timber resources in ABRAEs remains unclear.

SFM policy framework. Venezuela has a long tradition of forest management and professional foresters are involved at all levels of forest production and conservation activities. The country subscribes to the Tarapoto Process, which developed C&I for SFM for the eight Amazon countries, but also plans to develop its own C&I based on the latest revision of ITTO's C&I^c.

Forest policy and legislation. The notion of SFM dates back to the Forest Law of 1966. In 1992, the Penal Law of the Environment came into force, defining offences against the environment. The national forest policy that applied up to 1998 was reviewed by the General Board of Forest Resources, which concluded that the policy needed to be refocused in order to better integrate social concerns and broader environmental issues into forest management. The new approach includes the use of C&I for assessing SFM and considers the recommendations for action made in the United Nations Forum on Forests process. A new forest law is being drafted that will legislate for, regulate and supervise the management of national forests for single and multiple uses in accordance with principles of sustainability, diversification in the use of community goods and services, and participation. In addition, the Organic Environmental Law and the Organic Territorial Management Law are being revised and amended. Under a 2001 resolution, the commercial harvesting from natural forests of caoba, *Cedrela odorata* (cedro), *Anacardium excelsum* (mijao), *Cordia alliodora* (pardillo) and *Tabebuia spectabili* (pau d'arco) has been banned for six years.

The domestic timber trade is regulated by the 1966 Forest Law for Soil and Water (*Ley Forestal de Suelos y de Aguas*) and the international trade by the Fiscal Law (*Ley de Timbre Fiscal*). The latter includes tariff instruments for the control of imports and exports and stipulates that logs harvested from natural forests cannot be exported. Industrial logging (since 1978; Decree 269) and mining (since 1989; Decree 2,552) are prohibited by legal regulations in the state of Amazonas, the second-largest state after Bolivar.

Institutions involved in forests. Forests are under the jurisdiction of MARN, which was created under the Organic Environmental Law in 1999. Nevertheless, and particularly in the forest area south of Orinoco, there is a lack of clarity in the relative roles and responsibilities of various institutions, in particular between MARN, the Ministry of Agriculture and the Ministry for Energy and Mining (*Ministerio de Energía y Minas*). MARN has established the General Directorate of Forests to look after the administration, classification and sustainable management of forests. The Directorate

is tasked with developing action plans for strengthening the classification of areas for permanent forest production and the control of timber production.

Decentralization is a process that was proposed in the Law of Decentralization in 1989 and reinforced by principles embodied in the 1999 constitution. However, natural resource management and, in particular, forest management, remain under the control of a centrally organized forest service – with the exception of urban forestry, which is managed directly by the municipalities.

The Association of Forest Engineers, the forestry university in Merida and other professional organizations play important roles in the monitoring of forest resources. The Venezuelan Association for the Conservation of Natural Areas (*Asociación Venezolana para la Conservación de Áreas Naturales* – ACOANA), the Foundation for the Defence of Nature (*Fundación para la Defensa de la Naturaleza* – FUDENA) and other conservation NGOs, as well as organizations such as the Federation of Indigenous People and Bioguayana, are national bodies with strong links to international NGOs such as Conservation International, The Nature Conservancy and WWF. They are becoming increasingly engaged in the forest debate.

Status of forest management

Forest for production

Timber harvesting in natural forests is done on a relatively small scale in Venezuela and there is still a great deal of experimentation with forest management regimes. Under the new national forest policy, the integrated co-management of forests will involve multiple land-uses and the production of timber, NWFPs and environmental services. This new approach is being tested through 'integrated community forest management programs' (*programas de manejo integral comunitario del bosque*) in forest reserves such as Ticoporo and Caparo in the Llanos region. Under the term 'territorial management of forest areas' (*manejo territorial de áreas forestales*) SFM for timber production is being tested in the Imataca Forest Reserve in the Guayana region.

Two kinds of permits for timber production are available: forest concessions, granted for areas of more than 5,000 hectares, and annual logging permits, for areas smaller than 5,000 hectares. Forest concessions are granted for 20–40 years in forest reserves and forest lots, the latter established by MARN. Forest lots are special FMUs designated for long-term forest management in those parts of the country where forest reserves have not been classified in the past. The forest concession policy lacks clarity; concessions are officially granted at public auction, but information about the process is not publicly available and the criteria for awarding concessions are not transparent^c. Concessionaires often struggle to comply with the forest law, but there is no public information on how and to what extent they fail to comply^c.

Because nearly all forest reserves north of the Orinoco River are deforested, all forest concessions are now south of the Orinoco in the Guayana region. As of mid 2003, 14 forest concessions were operating in forest reserves and in forest lots over a total of 1.21 million hectares^c. All concessionaires are Venezuelan nationals. Concession management is based on fully-fledged forest management plans (*planes de ordenación y manejo forestal* – POMFs) that include an inventory of commercial timber species; high-grading, in which only the most valuable species are extracted, is commonplace (GFW 2002). By law, all concessions must be managed by professional forest engineers and trained foresters. Harvesting in concessions is carried out on the basis of an annual cutting plan approved by MARN. Concessionaires are required to establish line enrichment planting after harvesting at a distance between strips of 30–50 m. Annual logging permits require a simplified management plan prepared by a forest engineer.

Silviculture and species selection. The minimum cutting diameter for all cutting permits in natural forests is 40 cm at breast height. At least 20 species are harvested from natural forests in volumes exceeding 50,000 m³ per year; some of the most commonly harvested species include those shown in Table 2. Others include *Copaifera officinalis* (aceite), *Tabebuia rosea* (apamate), *Hymenaea courbaril* (algarrobo), *Catostemma commune* (baramán), *Sterculia apetala* (camoruco),

Table 2 Some commonly harvested species for industrial roundwood (2001–2003)^c

Timber species	Remarks
<i>Pinus caribaea</i> (pino caribe)	From plantations, 53% of the total harvest
<i>Pithecellobium saman</i> (samán)	From open forests, about 13% of total harvest
<i>Bombacopsis quinata</i> (saqui saqui)	From the Llanos region, about 10% of total harvest
<i>Erismia uncinatum</i> (moreillo)	From the Guayana region, about 9% of total harvest
<i>Hymenaea courbaril</i> (algarrobo)	From the Guayana region, about 8% of total harvested

Carapa guianensis (carapa), cedro, *Simarouba amara* (cedro blanco), *Ceiba petandra* (ceiba), *Brosimum alicastrum* (charo), *Pterocarpus officinalis* (drago), *Hura crepitans* (jabillo), *Qualea dinizii* (guarapo), *Spondias mombin* (jobo), *Nectandra* spp (laurel), *Anacardium excelsum* (mijao), *Mora excelsa* (mora), *Erismia uncinatum* (moreillo), *Piptadenia* spp (palo blanco), *Cordia alliodora* (pardillo), *Manilkara bidentata* (purguo), *Tabebuia serratifolia* (puy) and *Peltogyne pubescens* (zapatero). *Pithecellobium saman* (samán) and *Bombacopsis quinata* (saqui saqui) are the main species remaining from the scattered forests north of the Orinoco region.

Planted forest and trees outside the forest.

Plantations were mainly established in the 1980s; today the management of existing planted forest is more important than the establishment of new plantations. Pino caribe plantations provide more than 50% of the country's total roundwood production^c. Besides these and various tropical eucalypts and teak, hardwood species are planted mainly in natural forest in enrichment lines using, among others, teak, moreillo, pardillo, mijao, cedro and caoba.

Forest certification. As of December 2005, Venezuela had one certified planted forest of pino caribe; this covered an area of 139,650 hectares and belongs to the multinational Terranova Company (FSC 2005). Natural-forest certification has not yet attracted much interest because the entire production is used to satisfy the high-price domestic market, which is not demanding certified timber at this point.

Estimate of the area of forest sustainably managed for production. MARN (2000) estimated that 77% of the volume of timber harvested – 40% from areas under POMFs and 37% from plantations

of pino caribe – was derived from sustainably managed sources and therefore met the ITTO Year 2000 Objective. The estimate of sustainably managed natural-forest PFE given in Table 3 is more conservative and corresponds to timber concessions that have been managed according to forest management plans for more than 20 years. Detracting from the overall status of forest management is the generally weak enforcement of forestry regulations, particularly given that commercial logging is far from the centres of control; illegal logging, hunting and encroachment are reportedly widespread (GFW 2002).

Timber production and trade. Nearly the entire volume of timber production serves the domestic market. Total industrial roundwood production in 2003 was 1.06 million m³, of which 638,000 m³ came from conifers (ITTO 2005); in 1999, conifers accounted for 910,000 m³ of the 1.66 million m³ total log production (ITTO 2004). In the last decade, there has been a shift in production from natural forest to plantations and to regulated forest concessions with POMFs. In 1993, nearly 55% of production came from cutting licences in natural forests, 35% from forest concessions and 15% from plantations; in 2000, 40% of wood production came from plantations, 40% from concessions and only 20% from cutting licences^a. Production of sawnwood is between 240,000 m³ and 300,000 m³ per year. The bulk of industrial roundwood production (about 65%) is used for pulp and paper. Exports of primary timber products are negligible, but imports of forest products have grown to over US\$20 million per year recently, mostly comprising sawnwood, plywood and particleboard. Hardwood from Roraima state in the Brazilian Amazon is increasingly important because of a new and well-maintained road system.

Table 3 Management of the production PFE ('000 hectares)^{c,d}

Total	Natural			Planted			
	Allocated to concessions/ under licence	With management plans	Certified	Sustainably managed	With management plans	Certified	
13,000	3,120	1,480	0	480	863	727	140

Non-wood forest products. Between 30 and 50 NWFPs are important and used at local, regional and national levels. Among them are different palm products for food, construction, medicine and handicrafts, including the fruits of *Bactris gasipaes* (pejibaye), *Mauritia flexuosa* (morrache palm) and *Dipteryx odorata* (sarrapia). Other products are pepper, cinnamon, bamboo, nutmeg, aniseed, cumin, ginger, cucumber and resins. Many of them enter the national market and, ultimately, international trade. Mamure, a local liana (*Heteropsis spruceana*), has been used for a long time as a raw material for furniture but is now threatened by overuse. Palm heart (palmito) from *Euterpe oleracea* is an important export product; it is now increasingly planted. The value of palm hearts exported in 2002 exceeded US\$150,000^a.

Forest for protection

Soil and water. A significant area of forest is set aside for the protection of soil and water within the ABRAEs. These forests are classified under 'normative protection' (*protección normada*) and include:

- protection zones (*zonas protectoras*): 12.7 million hectares;
- watershed reserves (*reservas hidráulicas*): 1.17 million hectares;
- reserves for dams and reservoirs (*zonas de reserva para construcción de presas y embalses*): 7,800 hectares;
- protected areas for public infrastructure (*áreas de protección de obras públicas*): 133,400 hectares;
- critical areas for restoration (*áreas críticas con prioridad de tratamiento*): 4.5 million hectares; and

- environmental rehabilitation and protection areas (*áreas de protección y recuperación ambiental*): 2,350 hectares^a.

Forests in the Guayana region help to regulate the flow of water for the Guri Dam, which provides 70% of the nation's electricity. The most extensive protected areas are located in the Andean mountain belt, where forest is important in watershed protection. Some attention has recently been accorded to payments for environmental services, but so far there has been no real action.

Biological diversity. Venezuela harbours a significant portion of the world's biodiversity, ranking in the top 20 countries in the number of endemic plants, birds, amphibians and reptiles. More than 8,000 plant species have been recognized as endemic, as have some 122 amphibians, 66 reptiles, 40 birds and 15 mammals. Twenty-eight mammals, 25 birds, 13 reptiles, 68 amphibians and 69 plants are listed as critically endangered, endangered or vulnerable on the IUCN red list of threatened species; of these, 14 mammals, 21 birds, 61 amphibians and one plant are found in forests (IUCN 2004). Six plants are listed in CITES Appendix I and 221, including *Swietenia macrophylla* and *S. humilis*, in Appendix II (CITES 2005).

Protective measures in production forests. The draft new forest law would require that 10% of the managed production forest be protected as a preservation zone, with emphasis on areas along watercourses and swamps. So far, there are no prescriptions for RIL.

Extent of protected areas. The estimated total area contained in reserves compatible with IUCN categories I-IV is 17.9 million hectares, as follows:

- national parks (*parques nacionales*): 13.6 million hectares;

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
20,600	20,600	1,740	7,210*	n.d.

* Extrapolation based on the estimated 35% of protected areas in IUCN categories I-IV that have management plans or instructions for use (Bevilacqua et al. 2004)

- natural monuments (*monumentos naturales*): 4.27 million hectares; and
- wildlife refuges (*refugios de fauna silvestre*): 53,500 hectares; (Bevilacqua et al. 2004).

This area amounts to about 20% of the national territory, making Venezuela one of the world's leading conservation nations. Aside from forests, it includes high mountain ecosystems and other non-forested areas. UNEP-WCMC (2004) estimated the total area of forests in protected areas conforming to IUCN protected-area categories I-IV to be 20.6 million hectares (even higher than the Bevilacqua et al. 2004 estimate of the total area in such reserves), of which 14.0 million hectares are lowland evergreen broadleaved rainforest.

Although the declared protected area is huge, only about 15% has land-use and zoning plans. In addition, many conservation sites are subject to unresolved land claims by indigenous groups who may have been living there before the reserves were officially declared.

Estimate of the area of forest sustainably managed for protection. Of the 265 special areas with protection status, 70 have a forest management plan (Bevilacqua et al. 2004). Thirty-five per cent of the protected areas in IUCN protected-area categories I-IV have a management plan or instructions for its use (*reglamentos de uso*) (ibid.); however, insufficient information was available to estimate the area of protection PFE sustainably managed (Table 4), although a large part of the estate is intact and faces little development pressure.

Socioeconomic aspects

Economic aspects. Forests provide less than 0.5% of GDP^a. Data on the number of people employed in the forest sector were not available for this report.

Livelihood values. NWFPs are essential for the livelihood of all indigenous peoples living in the Guayana and Amazonas regions. Wildlife and fish still supplement the protein needs of a large part of the population in the states of Bolivar and Amazonas. Wildlife also provides raw material for handicrafts and medicine. Intensified hunting and fishing with new techniques and in-migration into frontier areas may well increase pressure on some animal species.

Social relations. The development of natural forests has a great social effect in the Guayana region, characterized by a relatively small and mainly indigenous population. The two main economic activities are logging and mining for gold and diamonds. These have brought improved health and education services to local people and induced a trend towards settlement. Logging and mining have also brought non-indigenous settlers (*colonos*) into the region, who use natural resources to supplement their subsistence needs and cash income. This has increased the likelihood of conflicts and pressure on the existing forest resources, especially along access roads and around settlements. North of the Orinoco River, particularly in the Province of Barninas bordering Colombia, nearly all forest reserves have been encroached by *colonos*. It is not yet clear how such illegal occupation will be handled or if the concept of forest reserves in these areas will be abandoned.

Summary

Venezuela still possesses vast unexploited forest resources in its two largest states of Bolivar and Amazonas. Relatively modest logging concessions and cutting permits have been granted over the past 35 years. Instead of increasing the harvesting of natural forests, plantation forestry has been developed for many years. Today, much of the

domestic need for industrial wood is met by planted forest. The country's forest-related laws contain strong environmental provisions, and a large proportion of its territory is in designated protected areas (although in some places under tenurial dispute by indigenous communities). However, there is a gap between the legal provisions and their implementation in the field. SFM for production and conservation has not yet been fully achieved; the enforcement of forestry regulations is considered to be far from optimal, and illegal logging, hunting and encroachment are reportedly widespread. Nevertheless, a basis has been laid for the development of SFM and effective forest conservation.

Key points

- The PFE comprises an estimated 13 million hectares of natural production forest and 20.6 million hectares of protection forest. There is also a substantial plantation estate (about 863,000 hectares).
- It is estimated that at least 480,000 hectares of the natural-forest production PFE is managed sustainably; insufficient information was available to estimate the extent of the protection PFE so managed.
- The forests north of the Orinoco River are heavily degraded and encroached. South of the Orinoco River, Venezuela still has extensive and timber-rich forest resources with good potential for SFM.
- The monitoring of forest resources and implementation of forest management are both deficient, particularly in more remote areas.
- There is a lack of clarity in administrative roles and responsibilities for forests, in particular between MARN, the Ministry of Agriculture and the Ministry for Energy and Mining.
- The new national forest policy is not yet finalized or backed up with effective legislation, and the forest concession policy lacks clarity.
- Wood production is shifting from natural forest to plantations and to regulated forest concessions with management plans.
- Despite regulations to the contrary, logging in natural forests concentrates on the most valuable timber species.

- The long-term viability of the protection PFE depends on the continuous provision of financial resources and acceptance by local stakeholders.

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 - ^c Information derived from the report of, and discussions with participants at, a training workshop on ITTO criteria and indicators, held 30 August – 4 September 2004, Ciudad Bolívar, Venezuela, attended by 47 people from government, civil society and the private sector.
 - ^d ITTO estimate
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