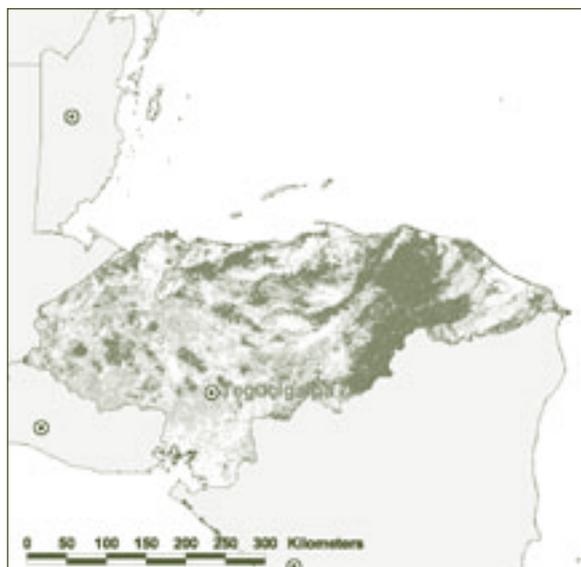


HONDURAS



*For legend see page 58

Forest resources

Honduras, the second-largest country in Central America, has a land area of 11.2 million hectares and a population of 6.9 million people. It comprises three distinct biogeographic regions. The central highlands cover about 60% of the country, with fertile valleys and steep slopes between 700 and 1,900 m above sea level, the highest peak reaching more than 2,800 m. A second region is the vast northern coastal plain abutting the Caribbean Sea, which can be divided into two sub-regions: the central plain, mainly covered by grassland, swamps, secondary palm forests and pine forests; and the northeastern plain, the Mosquito Coast (*La Mosquitia*), which is sparsely populated and covered by pine forests, tropical moist forest and some mangrove forests. The third biogeographic region is a narrow strip of land along the Gulf of Fonseca on the southern

Pacific coast, which mainly comprises agricultural land and some remnant mangroves. In total, forest covers an estimated 5.38 million hectares, or 48% of the Honduran land area (FAO 2005). The central highlands and the *La Mosquitia* savannas are covered by 1.5 million hectares of pine forests, while more than 3 million hectares of rainforest cover much of the Caribbean coast, the Agalta Mountains and the eastern lowlands; these constitute the country's major closed forests.

Forest types. Honduras is one of the few tropical countries with large areas of natural conifer forests, which are composed of one or several of seven *Pinus* species, as well as species of the genus *Abies*. At lower altitudes up to 700 m, *P. caribaea* (pino costanero) dominates; between 700 and 1,400 m, *P. oocarpa* occurs often in pure stands; and above 1,500 m up to 1,900 m a mixture of *P. oocarpa* (pino ocote), *P. maximinoi* (pino llorón) and *P. tecumumanii* (pino rojo) constitutes the major forest layer. Above 2,000 m, *P. pseudostrobus*, *P. ayacahuite* (pino blanco), *P. pseudostrobus* (pinabete), *P. hartwegii* (pino de montaña) and species of the genus *Abies* occur. Natural pine forests are used intensively by local communities and by industry. Tropical moist forests are found mostly in the north. The most common species are *Vochysia hondurensis*, *Virola koschnyi*, *V. sebifera*, *Luehea seemanii*, *Terminalia amazonia*, *Cordia alliodora*, *Cedrela mexicana*, *Ceiba pentandra*, *Tabebuia guayacan* and *Swietenia macrophylla*. The *Acrocomia* palm is common over all these forests.

Dynamics of forest resource change. Deforestation averaged an estimated 59,000 hectares per year between 1990 and 2000, which is about 1% of the forest area (FAO 2005). In the past, deforestation

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		
5.38	3,811	1,590*	48 ^a	1,600 ^d	3,238

* Includes 1.5 million hectares of pine forests and 90,000 hectares of broadleaved tropical rainforests

was due to agro-industrial development, mainly banana plantations. Today, demand for land by small-scale farmers is thought to be the major cause^a, along with a constant expansion of pasture. The growth in the cattle industry was stimulated until recently by subsidized credit schemes favouring cattle ranching over forest management.

The existence of pine forests in Honduras is closely linked to repeated fire and the regeneration of pines. Nevertheless, frequent human-induced fires have led to widespread degradation in these forests. The worst natural disaster in recent years was Hurricane Mitch in October 1999, which killed thousands of people and caused significant damage to forests.

Permanent forest estate. Some 53% of the national territory was in forest use in 2002^a. The closed forest area is estimated at 3.8 million hectares, both PFE and non-PFE. The permanent forest land, which includes deforested areas in legally gazetted forest, covers 5.93 million hectares, distributed as follows:

- Closed pine forests (*bosque de pino denso*): 695,000 hectares;
- Open pine forests (*bosque de pino ralo*): 1.82 million hectares;
- Tropical hardwood forests (*bosque latifoliado*): 2.86 million hectares;
- Mixed hardwood/pine forests (*bosque mixto*): 559,000 hectares;
- Mangrove forests (*bosque de mangle*): 54,000 hectares.

Table 1 shows the estimated actual area of closed forest in the PFE.

Planted forests. Planted forest covered about 48,000 hectares in 2000^a. Most is privately owned.

Institutional arrangements

Forest tenure. With the passing of a law on the modernization of agriculture (*Ley de Modernización Agrícola*) in 1992, some state-owned forests were transferred to municipal and private ownership. Today, there are three main types of forest ownership: (i) public (*tierras nacionales*), which is under the direct administration of the forest service; (ii) municipal (*ejidales*); and (iii) privately owned/

community forest. There are many claims for the use of forests, particularly over public lands, and large tracts of moist forest have no clear ownership status.

SFM policy framework. Honduras has adopted the ITTO C&I to monitor its progress towards SFM. The forestry action plan 1996–2015 (*Plan de Acción Forestal – PLANFOR*) adopts the principles of sustainable forest development, the conservation of ecosystems and integrated management of watersheds, forest utilization and industrialization, and forestry extension and research. The plan is complementary to another important development plan, *Plan de Ordenamiento Territorial*, particularly in relation to the reduction of deforestation. Nevertheless, outside the PFE and at the forest frontier there is an almost complete lack of adequate control; illegal timber extraction and land conversion are reportedly widespread, driven partly by an increased flow of money from drug trafficking (Contreras-Hermosilla 2003, EIA 2005).

Forest policy and legislation. There is a great diversity of laws and regulations – at least 38 – referring to forests. The current forest law (*Ley Forestal 85/72*) was promulgated in 1972, while a subsequent regulation (*Acuerdo 634/84*) issued in 1984 established detailed instructions for SFM. This constitutes a framework for SFM. Nevertheless, in general the legal provisions pertaining to forests are weak and have features that encourage illegal action by some actors (*ibid.*). The legal system is perceived by some forest communities as unfair (*ibid.*) A revision of forest-related legislation was started in 2002 as part of the Honduras Forestry Agenda (*Agenda Forestal Hondureña*) and includes laws relating to wildlife and protected areas based on the pillars of sustainability, economic profitability, ecological sustainability and social development. The new law, if enacted, will address the conservation of national forests and introduce provisions to support the management of forests by communities, such as technical support and tree-planting subsidies.

Institutions involved in forests. Twelve agencies are engaged in forest development, the most important being: the Secretariat for Agriculture (*Secretaría de Agricultura y Ganadería*); the Secretariat for Natural Resources and Environment (*Secretaría de Recursos Naturales y Ambiente* –

Table 2 Some commonly harvested species for industrial roundwood*

Timber species	Remarks
<i>Pinus caribaea</i> (pino costanero)	From natural pine forests and plantations
<i>Pinus oocarpa</i> (pino ocote)	From natural pine forests
<i>Calophyllum brasiliense</i> (santa maria)	Mainly for domestic use
<i>Cordia alliodora</i> (laurel)	From off-forest areas, village plantations and natural forests
<i>Ceiba pentandra</i> (ceiba)	Mainly off-forest trees are harvested

* Source: AFE-COHDEFOR website, 2003

SERNA), and the State Forestry Administration (*Administración Forestal del Estado-Corporación Hondureña de Desarrollo Forestal – AFE-COHDEFOR*). AFE-COHDEFOR is responsible for the formulation, implementation and control of norms and rules for forest management in *ejidales* and private forests. AFE-COHDEFOR also manages state forests and organizes the marketing of forest products. In early 2004, there were discussions regarding the reorganization of the institutions surrounding forests and the creation of a national forest service (*Servicio Forestal Nacional – SEFONAC*) to replace AFE-COHDEFOR. Generally the forest administration lacks the finance and staff necessary to adequately enforce the law and manage the forests. Approximately 1,000 professionals work in the twelve agencies involved in forestry^a.

Non-governmental organizations are mainly involved in rural development activities, agroforestry and the management of protected areas rather than in production forestry. There is an increased interest among civil-society actors in promoting forest certification and, in the private sector, an increase in action to combat illegal activities.

Status of forest management

Forest for production

Forest management plans have been mandatory in production forests since 1992; they span five years and include a yearly operational plan. Management and silvicultural norms were prepared by AFE-COHDEFOR for conifer forests, mixed forests and forest plantations in 1995 and for hardwood

forests in 1996. Before a forest management plan is prepared, the forest owner must clearly establish legal tenure. Management plans are prepared by foresters according to the norms set by AFE-COHDEFOR. Besides directions for silviculture and harvesting, management plans should contain prescriptions covering the protection of soil and water, biodiversity, and measures against fires, pests and diseases. Forest harvesting is based on a contract between AFE-COHDEFOR and the forest owner, which also specifies the silvicultural and conservation measures of the management plan. Before harvesting, the owner must give a bank guarantee in favour of AFE-COHDEFOR; this is cancelled once all silvicultural and conservation measures are complete. Incentives to promote SFM include: exemption from taxes up to a certain amount if a forest owner invests in reforestation; technical assistance to prepare reforestation plans; and the provision of seeds and nursery stock to private investors.

The pine forests are relatively easy to manage sustainably. They have a great capacity for regeneration if fire can be controlled and used effectively to accelerate regrowth and if regenerating seedlings are protected from animals. Pines are fast-growing and, if management guidelines are followed, continuous production is assured. However, in many cases, the harvesting plan is the only component of the management plan applied. Illegal practices are common in FMUs and there is a general problem of non-compliance with management prescriptions (Contreras-Hermosilla 2003). There is little experience in the management of broadleaved rainforests and few management prescriptions to secure sustainable

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

Total	Natural			Planted			
	Allocated to concessions/ under licence	With management plans	Certified	Sustainably managed	With management plans	Certified	
1,590	1,070	671	37	187	48	28	0

management in them. A recently completed ITTO project examined the impacts of intensified harvesting on lesser-used species in the broadleaved rainforest of northeastern Honduras and should result in new management prescriptions.

In 2003, management plans covered 1.0 million hectares of pine forests, most of them privately owned, and 96,000 hectares of tropical moist forests (AFE-COHDEFOR website). In total, 903 FMUs had management plans, 97 of which were in public forests, 78 in the *ejidales* and 728 in private forests (ibid.). The total annual allowable cut in the pine forests was 1.97 million m³ (ibid.).

Silviculture and species selection. Of 400 potential timber species, 25 are commonly used commercially. The two most important species by far are *P. caribaea* (pino costanero) and *P. oocarpa* (pino ocote) (Table 2). Important hardwood species from the tropical moist forest include *Vochysia hondurensis* (san juán), *Virola koschnyi* (palo de sangre), *Terminalia amazonica* (cumbillo), *Swietenia macrophylla*, *Calophyllum brasiliense* (santa maría), *Carapa guianensis*, *Cedrela odorata* and *Tabebuia rosea*.

Planted forest and trees outside the forest.

Because natural pine forests are so abundant, planted forests have not been developed to any great extent. The main plantation species are native pines (up to one-third of all plantations), with an estimated total planted area of 16,000 hectares. Species such as *Gliricidia sepium*, *Leucaena* spp, *Gmelina arborea* and eucalypts are an essential part of agroforestry; another important planted tree is *Tectona grandis* (teak, teca). The Programme for the Development of Commercial Forest Plantations (*Programa para el Desarrollo de Plantaciones Forestales Comerciales* – PRODEPLAN) was launched in 1997 to stimulate the expansion of the plantation estate.

Forest certification. As of December 2005, three forests with a total area of 37,281 hectares had been certified under the FSC umbrella; two of these were *ejidales* in natural broadleaved forest and one was a private *Pinus* forest (FSC 2005). Some of the bigger private timber companies have recently started to reinvest in their own forests through reforestation and integrated management and have shown interest in certification.

Estimate of the area of forest sustainably managed for production. About 700,000 hectares of the production PFE are subject to some kind of management, a figure which includes an estimated 265,000 hectares of conifer and mixed forests outside the moist tropical forest zone. It is estimated that an area of at least 187,000 hectares is sustainably managed; this includes certified forest, just under 100,000 hectares of natural pine forest, and about 50,000 hectares of tropical broadleaved forest in the upper Cangrejil River Basin, where an ITTO-funded project (see above) helped local communities improve forest management in some of the areas allocated to them.

Timber production and trade. The total annual roundwood production for 1996–2000 was approximately 7 million m³ (FAO 2003). In 2003, the production of industrial pine logs was an estimated 780,000 m³ and tropical hardwood was 21,000 m³ (ITTO 2005); the remainder was for non-industrial uses, particularly fuelwood. The estimated total sawnwood production in 2003 was 525,000 m³, slightly more than in 1999 (404,000 m³) (ITTO 2004, 2005). Nearly all recorded Honduran wood production serves the domestic market; a small amount of pine sawnwood is exported to other countries in Central America and the Caribbean.

Non-wood forest products. The total number of NWFPs used at the regional and national levels is not known. Firewood is the most important NWFP,

and charcoal is also important in local markets. Internationally tradable NWFPs include pine resin (production in 2002: 15,200 barrels), resin of liquidambar (251 barrels), and pine seed for export (more than 460 kg in 2002 for seed banks) (AFE-COHDEFOR website). Much emphasis is given to valuing environmental services and Honduras participates actively in initiatives to develop markets for them.

Forest for protection

Soil and water. Many municipalities manage micro-watersheds declared for the protection of freshwater sources, as per Article 64 of the 1985 Forest Law. Such micro-watersheds are delimited in the field (generally fenced) and no use is permitted other than the protection of water sources. A total forest area of 352,342 hectares has been classified for the primary purpose of protecting soil and water.

Biological diversity. The forests of Honduras are characterized by flora and fauna representative of both temperate and tropical America. Detailed biological inventories are not available; however, it is known that there are more than 700 breeding bird species and an additional 225 that are migratory. Ten mammals, six birds, eleven reptiles, 53 amphibians and 111 plants are listed as critically endangered, endangered or vulnerable on the IUCN red list of threatened species; of these, five mammals, six birds, four reptiles and 53 amphibians are found in forests (IUCN 2004). Honduras has three plant species in CITES Appendix I and 217 in Appendix II (CITES 2005).

Protective measures in production forests. Forest management plans contain some prescriptions, such as for protection strips along watercourses and RIL, but they are not widely applied in forest harvesting (Contreras-Hermosilla 2003).

Extent of protected areas. The extent and status of protected forest areas are not clear. Some 18% of the national territory has some kind of protected area status^a, which corresponds to a total area of about 2 million hectares. According to UNEP-WCMC (2004), 433,700 hectares of forest are in protected areas conforming to IUCN protected-area categories I–IV, including 88,000 hectares of needleleaf forest and 99,000 hectares of montane forest. The Rio Platano UNESCO Biosphere Reserve in northeastern Honduras is designed to protect the largest intact

lowland tropical and pine forests within Honduras. All cloud forests (*bosques nublados*) are protected in ten national parks, eight wildlife reserves and 18 biological reserves; even so, most are heavily degraded (Contreras-Hermosilla 2003). Honduras is part of the Mesoamerican Biological Corridor.

Estimate of the area of forest sustainably managed for protection. Insufficient information was available for an estimate to be made of the area of protection PFE managed sustainably.

Socioeconomic aspects

Economic aspects. Forestry contributes significantly to Honduras's national income, reaching a peak of 10% of GDP late in the 1990s. Nevertheless, its potential is constrained by such factors as the uncertainty of land tenure, high transaction costs, scarcity of public support and specialized services, and economic distortions that depress the prices that primary producers receive for their timber. It is estimated that, in 1999, about 60,500 people were formally employed in the forest sector: 18,500 in forest operations and 42,000 in forest industry^a.

Livelihood values. Honduras has serious problems of infant mortality, illiteracy and overall poverty, and forests constitute an important supplement to livelihoods – both in the provision of goods and services and for land. Informal harvesting and trade in forest products are important for many in forested areas. Collaborative arrangements still need to be developed to make such informal harvesting compatible with the objectives of SFM.

Social relations. Despite the fact that the law has made provisions for local communities to own forests, there are great difficulties in practice in protecting these forests from encroachment, timber theft and illegal hunting. For example, the biosphere reserve of *La Mosquitia* as well as the indigenous communities of Miskito, Pech and Garifuna are greatly threatened by unregulated colonization (IC 2004). On the other hand, the involvement of rural people in forest management reportedly increased in 1998–2002; for example, some 30,000 families benefited from increased participation in the management of about 560,000 hectares, 373 agroforestry groups received technical assistance, and 135 capacity-building events were carried out involving 2,025 participants (AFE-COHDEFOR 2002).

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
1,600	434	n.d.	n.d.	n.d.

Summary

Present management of the broadleaved natural forests in Honduras is sometimes more a matter of extracting only the most valuable species than of silvicultural management. Silvicultural and conservation measures described in forest management plans are often not respected and there is a risk that logged-over areas will become degraded. Illegal logging is widespread and nourishes an informal wood sector that competes with legally produced timber and timber products. Protected forest areas are not clearly delimited and there are difficulties in protecting remote forest areas from forest degradation and deforestation. On the other hand, recent efforts have been made to overcome illegal activities and corruption and to strengthen institutions in order to integrate forests into sustainable development; the wider importance of forests for goods and environmental services has been recognized and the forest law is being revised. The challenge will be to translate a good theoretical framework of law and policy into effective implementation in the field.

Key points

- The PFE comprises an estimated 1.59 million hectares of production forest and 1.60 million hectares of protection forest.
- At least 187,000 hectares of production PFE are being managed sustainably. Insufficient information was available to estimate the area of protection PFE so managed.
- The broadleaved moist forest could make a larger contribution to sustainable development in Honduras, although the potential for timber production is not known.
- Management norms for the pine forests have been formulated and are being implemented in some forests; prescriptions for the sustainable management of the moist forests also exist but are less clear.

- Illegal logging is thought to be prevalent.
- The extent and status of protected forest areas are not clear. Few data are available on the level of protection afforded by forested protected areas.
- Many protected areas are threatened by land conversion.
- A revision and modernization of forest legislation was started in 2002 as part of the Honduras Forestry Agenda, but the new law is yet to be enacted.
- Forest tenure, particularly on public land, is subject to dispute; large tracts of moist forest have no clear ownership status.
- Generally, the forest administration lacks the finance and staff necessary to adequately enforce the law and manage the forests.

References and other sources

- ^a AFE-COHDEFOR 2003. Criterios e Indicadores para la Ordenación Forestal Sostenible de los Bosques Tropicales Naturales. Submitted to ITTO, September 2003. Administración Forestal del Estado Corporación Hondureña de Desarrollo Forestal, Tegucigalpa, Honduras. Unpublished.
- ^d ITTO estimate
- AFE-COHDEFOR website. Forestry Administration of Honduras. Available from: <http://www.cohdefor.hn> (accessed July 2004).
- AFE-COHDEFOR 2002. *Informe sobre la Funcionalidad Global e Institucional del Sector Forestal 1998-2002*. AFE-COHDEFOR, Tegucigalpa, Honduras.
- CITES 2005. CITES-listed Species Database. Available from: <http://www.cites.org/eng/resources/species.html> (accessed September 2005).

- Contreras-Hermosilla, A. 2003. Barriers to legality in the forest sectors of Honduras and Nicaragua. Honduran Network for Broadleaf Forest Management (REMBLAH) and the Nicaraguan Natural Conservation and Restoration Society, Tegucigalpa, Honduras.
- EIA 2005. *The Illegal Logging Crisis in Honduras*. Environmental Investigation Agency, Washington, DC, USA.
- FAO 2001. *Global Forest Resources Assessment 2000*. FAO Forestry Paper 140. FAO, Rome, Italy.
- FAO 2003. *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).
- Ferroukhi, L. (ed) 2003. *Municipal Forest Management in Latin America*. CIFOR/IDRC, Bogor, Indonesia.
- IC 2004. *Country Report, Bilateral Aid Programme 2004*. Intercooperation, Bern, Switzerland.
- 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 2004. Spatial analysis of forests within protected areas in ITTO countries. UNEP-WCMC, Cambridge, UK. Data prepared for ITTO, 2004 (see Annex 1).