

CÔTE D'IVOIRE



*For legend see page 58

Forest resources

Côte d'Ivoire, which is situated on the Gulf of Guinea, has a total land area of 32.2 million hectares and a population of about 17 million people. The tropical moist forest belt extends inland from the coast in the southwest and southeast for more than 250 km; beyond the tropical forest belt lies extensive savanna. The western part of the country is in the Guinea highlands, in which the highest summits rise to more than 1,500 m above sea level. Estimates of forest cover vary from 7.12 million hectares (22% of the land area; FAO 2005a) to 11.7 million hectares^a.

Forest types. Two main forest types can be distinguished in the rainforests of the south: wet evergreen and semi-deciduous. The former is poorly stocked in commercial species but contains *Uapaca*

spp, *Guarea cedrata* (bossé), *Tieghemella heckelii* (makoré), *Tarrietia utilis* (niangon) and *Triplochiton scleroxylon* (samba). The latter, occurring in the central and northern parts of the forested zone, was once rich in valuable timber species, including samba, *Mansonia altissima* (beté), *Nesogordonia papaverifera* (kotibé) and *Khaya ivorensis* (acajou).

Dynamics of forest resource change. FAO (2005) estimated the deforestation rate at 265,000 hectares per year in the period 1990–2000, which as a percentage of remaining forest cover was higher than in most other sub-Saharan tropical African countries. Deforestation is mainly caused by increased rural poverty and the need for subsistence agriculture. Timber theft and illegal logging are widespread and are the primary reasons for the degradation of natural forests^c. Forests of both wet evergreen and semi-deciduous forest types outside protected areas are heavily degraded or in an early secondary stage^c. Bushfires are widespread in the savanna and the transitional forest-savanna, especially in the north at the end of the dry season.

Permanent forest estate. The official PFE comprises the 230 classified forests (*forêts classées*) zoned for production and protection – which officially covered 4.24 million hectares in 2003^a – as well as harvesting zones (*périmètres d'exploitation forestière* – PEFs; see below) in the rural zone (*domaine rural*)^a. However, some of these areas have almost certainly been converted to non-forest uses; for example, an estimated 628,000 hectares of classified forest were cleared for subsistence and industrial agriculture between 1992 and 1997^a. Table 1 shows an ITTO estimate of the actual PFE.

Table 1 PFE

Estimated total forest area, range (million hectares)	Total closed natural forest ('000 hectares) Source: FAO 2001	PFE ('000 hectares) ^{c,d,*}			
		Production		Protection	Total
		Natural	Planted		
7.12–11.7	3,248	3,400**	167	734***	4,301

* Only forests in the southwest and southeast are counted here; savanna forests are omitted

** Production PFE comprises forested areas in forest reserves and the PEF of the *domaine rural*

*** Based on UNEP-WCMC (2004)

Planted forests. According to FAO (2001), Côte d'Ivoire had an estimated 116,000 hectares of planted forest in 2000. On the other hand, the government of Côte d'Ivoire estimated that the plantation estate in 2002 amounted to 167,000 hectares, including 65,000 hectares of *Tectona grandis* (teak)^a. The most important non-forest tree plantations are oil palm (about 159,000 hectares), rubber (68,000 hectares) and coconut (32,000 hectares).

Institutional arrangements

Forest tenure. There are two main categories of natural-forest ownership: (i) public forests, owned by the state, which are divided into two kinds of land-use: the *domaine forestier permanent*, which includes the reserved forest area and protected areas, and the *domaine rural*, which includes forest harvesting areas (PEFs) and forests reserved for agriculture purposes; and (ii) community forests, which are based on traditional customary rights recognized in all forest areas in the country.

SFM policy framework. In 1994, CIFOR conducted a case study on the introduction of C&I in Côte d'Ivoire. Since then, national criteria have been elaborated. In 2002 and 2003, regional workshops were held to introduce ITTO's C&I as an instrument to assess progress towards SFM. A new general forest policy framework was announced in 1999 that emphasizes the contribution of SFM to the sustainable development of the country.

Forest policy and legislation. The forest code dates from 1965 (Law 65-425). Since then, all major decisions on land-use, forest management, forest service organization and the commercialization of products have been taken by decrees or ministerial orders (*arrêtés*), including Decree 78-231 of 1978, which defined the management of the PFE and Decree 94-385 of 1994, which reformed forest harvesting. The basic law on wildlife protection and hunting also dates from 1965 (Law 65-255). A process supported by FAO commenced in 2003 to revise the forest code.

A forestry master plan (*Plan Directeur Forestier*) was formulated in 1988; when it was evaluated in 1998, a number of corrective measures were proposed to be included in the new forest policy.

In 2000, an inter-ministerial working group developed a new policy under the *Programme Cadre de Gestion des Forêts*.

Institutions involved in forests. The ministry in charge of forests has changed five times over the past nine years; since 2003, it has been the Ministry for Water and Forests (*Ministère des Eaux et Forêts* – MINEF). Ten regional offices (*directions régionales*) are in charge of forest protection and law enforcement. Field services are placed under the Society for Forest Development (*Société de Développement des Forêts* – SODEFOR), a government corporation created in 1966 and entrusted today with the management of the forest reserves and with technical advisory functions for planted forests and social forestry. Nearly 2,000 people are employed by MINEF and SODEFOR. By Decree 02/359, a national office for national parks and nature reserves (*Office Ivoirien des Parcs Nationaux et Réserves Naturelles*) was created in 2002 under the Ministry of Environment.

Forest management in the *domaine rural* is exclusively conducted by the private sector. Forest industry is organized in syndicates and is quite effective in defending its interests in the forest sector. A number of national and international NGOs are engaged in forest conservation and village development, including reforestation and agroforestry. Civil society is not actively involved in forest management *per se*.

Status of forest management

Forest for production

Two forest management systems are employed: in forest reserves, management is carried out by the state enterprise SODEFOR while in the permanent forest of the *domaine rural* it is carried out by private concession-holders. Until five years ago, forest harvesting in the *domaine rural* was based on a licence system called the PTE (*permis de transformation et d'exploitation*) system, which allocated areas of up to 2,500 hectares to a large number of concessionaires. With the new forest policy, the PTE system was abolished and replaced by a system based on PEFs. By law, a PEF is at least 25,000 hectares and is allocated for 15–20 years; it can be renewed if management by the concession-

Table 2 Some commonly harvested species for industrial roundwood^c

Timber species
<i>Tectona grandis</i> (teak) – planted
<i>Triplochiton scleroxylon</i> (ayous)
<i>Ceiba pentandra</i> (fromager)
<i>Lophira alata</i> (azobé)
<i>Terminalia superba</i> (fraké)

holder is satisfactory. Concession-holders are obliged to present a forest management plan that includes a reforestation scheme and social investments for the rural population living in or adjacent to the PEF. Management plans for PEFs must also include prescriptions for sustained-yield harvesting, the silvicultural treatment of harvested forests and measures against wildfires.

In the past, timber was mainly harvested in reserved forest areas, but excessive extraction over the past 30 years has led to their depletion. Today, nearly 90% of timber is extracted from the forests of the *domaine rural*^f. By mid 2002, 2.9 million hectares of forests in the *domaine rural* had been allocated as PEF, including 960,000 hectares of productive forests. Thirty-two concessions had so far been allocated, varying between 70,400 and 216,000 hectares in size^c. The potential AAC is about 960,000 m³, but the amount extracted is far less. Management plans are required for PEFs, but few have been prepared and harvesting is still mainly based on high-grading the remaining high-value timber^c.

In forest reserves, SODEFOR prepares and implements forest management plans; changes in the law being contemplated would allow forest reserves to be opened to private concession-holders. Forest management plans have been or are being prepared for 88 of the 230 existing forest reserves. In 2002, 25 forest reserves had an approved management plan and 1.5 million hectares were being managed. The size of the units varies, the smallest (Semien) being 3,381 hectares and the largest (Rapids-Grah) 315,000 hectares. Forest reserves are to be managed in perpetuity. In

2001, 232,180 m³ of timber were harvested in forest reserves – far less than the AAC (approximately 1.2 million m³)^c. At the beginning of 2004, nine forest reserves covering 1.11 million hectares were being managed by SODEFOR using the ITTO C&I for monitoring^a. Forest management and law enforcement have been hindered by ongoing civil unrest, and illegal logging and deforestation are thought to be widespread.

Silviculture and species selection. Prescriptions for the silvicultural management of both natural forests and plantations were developed in the 1990s through a forest-sector project supported by the World Bank. They have been fully applied in some forest reserves (Irobo, Tene, Mopri and others), but not yet to the management of the whole PFE. So far, no silvicultural directives have been applied in the permanent forest of the *domaine rural*.

There are more than 700 hardwood species in the country, about fifty of which are utilized and traded. Besides those listed in Table 2, the most valuable species are *Terminalia ivorensis* (framiré), *Entandrophragma candollei* (kosipo), *Milicia excelsa* (iroko), beté, *Entandrophragma angolense* (tiama), *Lovoa trichilioides* (dibetou), bossé, kotibé, *Pterygota macrocarpa* (koto), acajou, *Canarium schweinfurthii* (aiélé), makoré, *Pycnanthus kombo* (ilomba), *Azelia africana* (lingué) and niangon. Côte d'Ivoire has made great efforts to market lesser-known species and these have boosted the sales and exports of previously rarely traded species such as *Copaifera salikounda* (etimoé) and *Chrysophyllum* spp (aniégré).

Planted forest and trees outside the forest. The development of planted forests goes back to 1927 when the first teak plantations were established, although most of the current plantation estate has been established since 1966. By far the most important species is teak, with 65,500 hectares planted in forest reserves. Today, teak is also the main exported timber. More than 35 species have been planted in forest reserves. The most important, after teak, are: fraké, 25,800 hectares; framiré, 11,500 hectares; *Cedrela odorata*, 10,100 hectares; *Gmelina arborea*, 6,500 hectares; samba, 3,600 hectares; acajou, 2,900 hectares; sipo, over 2,200 hectares; and niangon, 2,100 hectares^c. Twenty-seven thousand hectares are

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

Total	Natural			Planted			
	Allocated to concessions/ under licence	With management plans	Certified	Sustainably managed	With management plans	Certified	
3,400	1,870*	1,110 ^{c, **}	0	277 ^{c, d}	167	120 ^c	0

* The sum of PFE areas allocated in 2000 and active in 2002 (960,000 hectares) in the public domain, plus forest reserves intended for production (913,000 hectares)

** Area of forest reserves in 2002 with clear management objectives and multipurpose management plans implemented by SODEFOR since 1997

registered as mixed hardwood plantations. Of the estimated 60,000 hectares or more of planted forest in the *domaine rural*, about 15,000 hectares have been recently created as community forests, often to produce firewood.

Forest certification. There is no forest certification scheme nor any certified forests in Côte d'Ivoire. A national certification working group started in 2002 but little progress has been reported so far.

Estimate of the area of forest sustainably managed for production. It is difficult to ascertain the status of forest management in Côte d'Ivoire. Even in the forests where the necessary elements of good forest management appear to be present, law enforcement is poor and illegal logging and deforestation widespread^c. Nine forest reserves of 1.11 million hectares have been managed since 1997 according to fully-fledged forest management plans for production and protection (Rapides Grah, Scio, Haut Sassandra, Niègre, Haute Dodo, Goin Debe, Cavally, Niouniourou and Okromodou)^a; about one-third of these forest reserves are considered to be managed sustainably^c.

Timber production and trade. Total roundwood production in 2003 was an estimated 11.6 million m³ (FAO 2005b). Industrial log production in Côte d'Ivoire fell from 5.3 million m³ in 1977 (FOSA 2002) to 1.90 million m³ in 2003 (ITTO 2006 in prep.). Sawnwoods like acajou, bété, niangon, makoré, aboudikro, sipo and iroko have become scarce in the past ten years, and plantation production is increasing in importance. Sawnwood production in 2003 was about 503,000 m³, veneer production amounted to 206,000 m³ and plywood to 62,000 m³ (ibid.). In 2003, the country exported 216,000 m³

of sawnwood (ibid.), down from 479,000 m³ in 1999 (ITTO 2004). The country has banned the export of logs of all valuable timber species from natural forests: only teak from planted forests can be exported as logs.

Non-wood forest products. Many NWFPs are traded locally, as well as used for subsistence. Among the most important are bamboo, *Laccosperma* spp (rattan) and *Raphia* spp (raphia palm) for basketry, furniture and housing. More generally, NWFPs directly contribute to the livelihoods of the local population; NWFP extraction is probably increasing due to poor economic conditions.

Forest for protection

Soil and water. A total area of 195,000 hectares is set aside in the nine forest reserves cited above for the protection of soil and water^a.

Biological diversity. An inventory of biological diversity completed in 1999 found over 12,000 forest-dependent species, including 232 mammals, 712 birds, 134 reptiles, 76 amphibians and 3,517 trees^a. Sixteen mammals, eleven birds, four reptiles, one amphibian and 66 plant species are listed as critically endangered, endangered or vulnerable on the IUCN red list of threatened species; of these, 30 mammals, nine birds, 13 reptiles and nine plants are found in forests (IUCN 2004). Fourteen plant species are listed in CITES Appendix II, including one hardwood timber species (*Pericopsis elata*) (CITES 2005).

Protective measures in production forests. Timber harvesting is limited in swampy areas, on steep slopes and along river tributaries; on these, a strip of 100 m to 1 km in width (according to their relative importance) is excluded from

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
734	734	195	345	150 ^c

harvesting. Detailed prescriptions for biodiversity conservation are applied in the nine forest reserves that are managed by SODEFOR.

Extent of protected areas. Côte d'Ivoire's nine national parks, two nature reserves, one wildlife reserve, 17 botanic reserves and those parts of the nine forest reserves that are managed for water and soil conservation cover a total area of 2.02 million hectares (6% of the country's land area); of this, two national parks (Comoé, 1.15 million hectares, and Taï, 344,000 hectares) account for more than 60%. According to UNEP-WCMC (2004), 734,000 hectares of forest are in protected areas conforming to IUCN categories I-IV, including 490,300 hectares of lowland evergreen broadleaved rainforest.

Estimate of the area of forest sustainably managed for protection. Poaching and other illegal activities are thought to be a significant problem in many forested reserves^c, due largely to a lack of sufficient financial resources for field-level enforcement^a. About 345,000 hectares of protection PFE are covered by management plans, comprising the forest managed for soil and water conservation in the nine forest reserves managed by SODEFOR (195,000 hectares) and the Taï national park (150,000 hectares). In the latter, the management plan is being implemented effectively and this area is considered to be under SFM^c.

Socioeconomic aspects

Economic aspects. Until 20 years ago, timber was Côte d'Ivoire's third most important export by value, but the industry has declined as the forests have been logged over and cleared. The formal contribution of the forest sector to GDP was estimated to be 1% in 2002^a.

Livelihood values. Forests are important in sustaining the livelihoods of many people. Edible and medicinal plants are collected in great quantities. Wild meat remains the main source of protein in

rural areas, even though hunting regulations are very restrictive. The volume of wild meat harvested is estimated to be more than 120 tonnes per year^a. The consumption of fuelwood, including charcoal, is estimated to be more than 8 million m³ per year.

Social relations. The forest code of 1965, which is still in force, does not specify any direct involvement of local people in forest management, although articles 16 and 20 set forth rights for riverine populations within the classified forest area. Social considerations have been taken into account in various more recent governmental decrees concerning forests. Relationships between concession-holders and local people are difficult in many forest areas; causes include disputes on harvesting, areas for reforestation and money matters. There are 6,705 registered sacred forests (*forêts sacrées*), covering an area of about 37,000 hectares^a. Many more forests may have cultural and spiritual value but are not registered. In some areas, local communities support the protection of forest reserves from encroachment and bushfires. Moreover, local cooperatives and villages engage in reforestation.

Summary

Côte d'Ivoire's 230 state-owned classified forests (*forêts classées*) have been over-harvested and have become depleted of timber; natural forests in the rural zone (*domain rural*) and planted forests are providing an increasing part of the timber supply. Institutional responsibility for forestry administration has changed several times in recent years, with the likely result of reducing administrative effectiveness. The level of enforcement of existing laws and decrees appears to be low in much of the PFE. Forest management plans are under preparation or have been prepared for the forest reserves, but few have been prepared for the *domain rural*. Illegal logging and deforestation are thought to be widespread, exacerbated by civil unrest.

Key points

- Côte d'Ivoire has a relatively low forest cover which continues to diminish.
- The country has an estimated 4.30 million hectares of PFE, comprising 3.40 million hectares of natural production forest, 167,000 hectares of industrial timber plantations and 734,000 hectares of protection forest.
- The estimated area of production PFE under SFM is 277,000 hectares, which is about one-quarter of the forest reserves covered by management plans. About 150,000 hectares of protection PFE are considered to be so managed.
- Forestry administration is currently the responsibility of the Ministry for Water and Forests (MINEF), which operates under a 1965 forest code and subsequent decrees. A process to revise the code is under way.
- Ten regional offices are responsible for forest protection and law enforcement. SODEFOR, a government corporation, manages the forest reserves and provides advisory services.
- MINEF and SODEFOR employ 2,000 people combined.
- Concession-holders are obliged to present a forest management plan that includes a reforestation scheme and social investments for the rural population living in or adjacent to the forest.
- There is a discrepancy between the standards applied in the forest reserves of the PFE and in the *domaine rural*.
- There is conflict between communities and harvesting operators over the use of forests.
- Poaching is believed to be a significant problem.

References and other sources

- ^a SODEFOR 2004. Rapport National 2002 sur les Progrès Réalisés en Vue de la Gestion Durable des Ressources Forestières en Côte d'Ivoire. Submitted to ITTO, May 2004. Société de Développement des Forêts, Abijan, Côte d'Ivoire. Unpublished.
 - ^c Information derived from the report of, and discussions with participants at, a training workshop on ITTO criteria and indicators, held 27–30 August 2002, Abidjan, Côte d'Ivoire, attended by 35 people from government, civil society and the private sector.
 - ^d ITTO estimate
- CITES 2005. CITES-listed Species Database. Available from: <http://www.cites.org/eng/resources/species.html> (accessed September 2005).
- FAO 2001. *Global Forest Resources Assessment 2000*. FAO Forestry Paper 140. FAO, Rome, Italy.
- FAO 2005a. *State of the World's Forests 2005*. FAO, Rome, Italy.
- FAO 2005b. *Yearbook of Forest Products 2003*. FAO, Rome, Italy.
- ITTO 2004. *Annual Review and Assessment of the World Timber Situation 2003*. ITTO, Yokohama, Japan.
- ITTO 2006 in prep. *Annual Review and Assessment of the World Timber Situation 2005* (draft). ITTO, Yokohama, Japan.
- IUCN 2004. 2004 IUCN Red List of Threatened Species. Available from: <http://www.redlist.org> (accessed September 2005).
- MINEF 2003. L'étude prospective du secteur forestier en Afrique - Côte d'Ivoire. FAO, Rome, Italy.
- 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).