

GHANA



* For legend see page 58

Forest resources

Ghana has a land area of 23.9 million hectares and a population of about 20.5 million people. It is located on the west coast of Africa, bordered by Togo in the east, Côte d'Ivoire in the west, Burkina Faso in the north and the Atlantic Ocean in the south. Ecologically the country is divided into a high-forest zone in the south, accounting for about a third of the land area (8 million hectares), a savanna zone (14.7 million hectares) mostly in the north, and a transition zone (1.1 million hectares). Estimates of the total area of forests in the country range from 2.72 million hectares^a to 6.34 million hectares (FAO 2005), the former estimate excluding non-PFE savanna.

Forest types. The broad forest types are rainforest (47%), moist tropical forest (32%) and dry tropical forest (21%); specific vegetation types include low

grass savanna, savanna woodland, wet and moist deciduous forest, evergreen forest, coastal savanna and mangrove swamp. The main timber-producing areas are the deciduous and evergreen forests in the southwest. The main species in the deciduous forests are *Triplochiton scleroxylon* (wawa), *Mansonia altissima* (mansonia), *Nesogordonia papaverifera* (danta) and *Khaya ivorensis* (mahogany); and in the evergreen forests *Guarea cedrata* (guarea), *Tieghemella heckelii* (makore), *Tarrietia utilis* (niangon) and *Uapaca* spp (assam).

Dynamics of forest resource change. Deforestation in Ghana usually commences with the degradation of well-stocked forests by excessive (often illegal) logging, slash-and-burn agriculture, mining and quarrying, and fuelwood collection. Degraded forests are then often completely deforested by wildfire, illegal occupation and/or land-use changes. These destructive forces are influenced by population pressure and poverty and also by infrastructure and economic development programs. Road construction near or within forest reserves facilitates encroachment. Internal migration to the western forests for cash-crop cultivation accounts for the high rate of forest degradation in those areas. Almost all forests have suffered depletion, creating eroded hillsides in some cases and destroying genetic diversity in others^c. The average estimated annual rate of deforestation between 1990 and 2000 was 120,000 hectares; the average growing stock in the remaining forest area is only 49 m³ per hectare (FAO 2005).

Forest fires occur regularly and cause severe damage; the annual financial loss due to wildfires is estimated to be about US\$24 million^a. Excessive logging can make the forests more vulnerable to fire by causing the accumulation of residues, which become readily flammable when dry.

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		
2.72–6.34	1,634	1,150 ^c	97 ^a	353	1,600

Permanent forest estate. There are 204 forest reserves in the high-forest zone covering an area of 1.62 million hectares and 62 forest reserves in the savanna zone covering 600,000 hectares^a. The forests in the high-forest zone are functionally classified as: timber production, 762,400 hectares (47%); permanent protection, 352,500 hectares (22%); rehabilitation, 122,000 hectares (7%); conversion, 127,000 hectares (8%); and not inventoried, 270,000 hectares (16%)^a. The area of natural-forest PFE is estimated to be the sum of all these except conversion forests. Since the reserves in the savanna zone are not closed forest, they are not included in the PFE area estimate.

Planted forests. The estimated area of planted forest in 2003 was about 97,000 hectares (PFE only)^a. Ghana began planting *Tectona grandis* (teak) in the Volta region in 1875, and teak is the most dominant species in today's plantation estate. More than 50,000 hectares of new planted forest was established between 2000 and 2004, 60% of it teak^c. Additionally, there are agro-industrial plantations of rubber (19,000 hectares), coconut (40,000 hectares) and oil palm (37,000 hectares).

Institutional arrangements

Forest tenure. Traditionally owned forest lands, known variously as 'stool land' or 'skin land', were, in the past, under the full control of tribal chiefs or kings. Until 1970, usufruct rights over forest resources were totally under their authority based on customary laws. In the early 1970s, all rights for the management and development of natural resources (but not land ownership itself) were transferred to the President of Ghana (as a trust for the 'stools' or 'skins' and their people) to harmonize the various traditional land-tenure systems and reduce political conflicts. The transfer of forests to the national government facilitated central planning and allowed the harmonization of forest management systems and investment procedures. However, members of landholding groups were still allowed full usufruct rights.

Forest policy and legislation. The first forest policy was established in 1947; this was revised in line with Ghana's 1992 constitution and approved in 1994 as the Forest and Wildlife Policy. The policy contains five specific objectives related to: the management of the PFE for the conservation of soil, water and biodiversity; the development of

viable and efficient forest-based industries; public awareness and the involvement of rural people in forestry and wildlife conservation; research-based and technology-led forestry and wildlife management; and the development of capacity in SFM. To date this policy has been implemented most effectively within the forest reserves, with off-reserve forests often unregulated and over- or illegally harvested^c. Forests are owned by communities through traditional authorities, managed by government, and logged/utilized by private contractors. These arrangements, specified in the 1992 constitution, are reflected in the 1997 Timber Resource Management Act and the 1999 Forestry Commission Act. In general, Ghana's forest-related laws, policies and regulations are somewhat confusing and fines for breaches are low^a.

A Forestry Development Master Plan (1996–2020) was launched to guide the implementation of the Forest and Wildlife Policy. The master plan is being implemented through a multi-donor-assisted ten-year program called the National Resources Management Programme (NRMP), which has four components: high forest, savanna, wildlife resource management and biodiversity conservation in the high-forest zone.

Institutions involved in forests. The main institution in charge of forests is the Ministry of Lands and Forestry (MLF) supported by the Forestry Commission (FC), which was established in 1980, and the FC divisions of Forestry, Wildlife, and Timber Industry Development. The FC was restructured as a semi-autonomous corporate body in 1999 under Act 571 as a semi-autonomous corporate body to improve its effectiveness. In addition, the public forest-sector agencies responsible for the protection, development, management and regulation of forest and wildlife resources were brought under its purview. Some 580 professional and technical forestry personnel are employed by the government^a.

The main institutions involved in forestry research are the MLF's Forest Plantation Development Centre; the Forestry Research Institute of Ghana (FORIG) under the Ministry of Environment, Science and Technology; the Renewable Natural Resources Institute of Ghana; and the University of Ghana^a.

Community participation in forestry is being facilitated through community forest committees (CFCs) and a collaborative forest management unit of the FC^c; in 2003, there were some 100 CFCs. Local NGOs such as the Green Earth Organisation

and the Ghana Association for the Conservation of Nature and international NGOs such as Friends of the Earth (Ghana), Conservation International and World Vision are active in forestry. The Timber and Wood Workers Union of the Trade Union Congress of Ghana is also an important stakeholder. However, there are often problems of coordination between the trade union, NGOs and government forestry agencies^c.

Status of forest management

Forest for production

The ITTO C&I and ATO/ITTO PCI are incorporated in the FC's various forest-management manuals and guidelines, providing a cornerstone for natural forest management. Holders of timber utilization contracts (see below) and other forest operators are required to follow the Ghana Manual of Procedures for Forest Management and Procedures Relating to Timber Operations in Ghana, prepared under the 1997 Timber Resources Management Act and the 1998 Timber Resources Management Regulations, which together seek to ensure that timber rights are granted in a manner conducive to SFM. The Timber Resources Management (Amendment) Act of 2002 (No 617), which does not encompass private forest plantations, establishes maximum durations and area limits for timber rights and provides incentives for investors; these incentives promote strategic investments in the forest sector (Section 14 C).

Until 1991, the conventional forest concession was the common arrangement for timber harvesting. This system followed basic forest-management requirements such as harvest planning, standards for road-building and tree marking, pre-harvest operations, environmental conservation and enrichment planting. It was based on selection felling using an AAC calculated for a 40-year cycle. However, implementation in the field was not satisfactory and did not always follow the legal requirements for forest management. The maximum area granted to a concession-holder was 50,000 hectares, with the average size of an FMU being 20,000 hectares. AACs were often exceeded. Over-harvesting led to the downward revision of the national AAC in forest reserves from 1.2 million m³ in 1990 to 683,000 m³ in 1995^a. Commercial species were grouped into 'scarlet', 'red' and pink' groupings.

'Scarlet' species were being over-cut at a rate greater than 200% the estimated sustainable yield and were thought to be under threat of economic extinction, 'red' species were being cut at a rate of 50–200% the sustainable yield, and 'pink' species were being harvested at less than 50% the sustained yield^a.

The Forests and Wildlife Policy of 1994 abolished the concession system and replaced it with a new timber utilization contract (TUC) system (LI 1721), which was intended to promote efficiency, transparency and accountability.

The FC uses manuals for production, management and planning such as the 1998 Manual of Procedures for Forest Resource Management Planning in the High-forest Zone, the Manual of Procedures for Stock Survey and Yield Allocation (1995), and the 1998 timber resources management regulations. According to the 1998 manual for the high-forest zone, logging plans are prepared by the contractor, logging contract licences range from one to 40 years, and the forest reserves are divided into compartments of 128 hectares each (1,600 m x 800 m). The 2002 Law on Timber Resource Auctioning establishes that timber rights will be awarded by tender. The FC allocates the volumes to be harvested annually based on an 'interim yield formula', which depends on the size of the TUC area; a national AAC has been set at 500,000 m³ based on the adoption of a rotation of 40 years. The entire production PFE (1.15 million hectares) is covered by management plans and 100% of the forest boundaries have been demarcated^{a,c}. The management of many forest reserves is thought to be quite good. In others, however, inadequate control of TUCs has allowed over-harvesting. Repeated re-entries take place depending on demand for logs, often facilitated through salvage permits. There is inadequate surveillance to safeguard the integrity and ensure the security of the PFE. There are also inadequacies in survey records, maps and boundary maintenance^c. Landowners often do not show any interest in forest protection and management. Timber royalties have traditionally been poorly collected and inequitably distributed; as a result, forest revenues often do not cover the cost of forest management^c. Moreover, illegal logging is reportedly widespread^c. Illegal chainsaw operators, for example, feed a thriving domestic timber market, often selling their wood from roadside stalls with little

Table 2 Some commonly harvested species for industrial roundwood^c

Timber species	Remarks
<i>Tectona grandis</i> (teak)	Plantation species
<i>Triplochiton scleroxylon</i> (wawa)	All-purpose wood
<i>Ceiba pentandra</i> (fromager)	Off-reserve tree, used by industry for export veneer
<i>Aningeria robusta</i> (asanfina)	Sawnwood, veneer
<i>Terminalia superba</i> (offam)	Good for sawmilling and veneer production

or no government oversight. The formal wood industry has traditionally concentrated on exports. Due partly to over-capacity in export-oriented mills (see below), the volume of timber available for domestic use is much lower than the demand; supplies, therefore, are supplemented by illegal logging. Moreover, farmers who plant in forest openings are generally not adequately compensated for crop damage caused by timber harvesting, leading some of them to destroy trees and/or collaborate with the chainsaw operators to process them, thereby receiving a share of the illegal proceeds^c.

Silviculture and species selection. The silvicultural system used in natural forests is a polycyclic selection felling system using a cutting cycle of 40 years. The AAC in the natural forests is decided on the basis of stock surveys and size limits prescribed for the different commercial species by the Forest Services Division of the FC. Only 20% of the trees above the diameter limit are to be harvested (around three trees per hectare), with the rest retained for the next entry in 40 years. Post-logging silvicultural operations are also prescribed to promote growth and sustainability.

There are many hardwood timber species, but the more commercially valuable are becoming scarce. Table 2 lists some of these commonly harvested timber species. In addition to the species listed in the table, some 30 lesser-used species are classified as 'pink', including *Celtis* spp (esa), *Piptadeniastrum africanum* (dahoma), *Entandrophragma candollei* (kosipo), *Milicia excelsa* (iroko), *Entandrophragma angolense* (edinam), *Pterygota macrocarpa* (koto), makore, *Pycnanthus angolensis* (otie), *Pouteria robusta*, *Chrysophyllum* spp (alcasa), *Khaya anthotheca*, *Entandrophragma cylindricum* (sapele) and *Antiaris africana* (kyenkyen).

Planted forest and trees outside the forest.

Plantations are managed by clearfelling and replanting. The major planted species is teak, with the remaining area under other broadleaved species such as *Cedrela odorata*, *Gmelina arborea*, *Terminalia superba*, *T. ivorensis*, *Triplochiton scleroxylon* and *Khaya* spp. Teak has become the most attractive species for afforestation over the last 15 years. Yields average 8–10 m³ per hectare per year on a 25-year cycle. There is a ready demand for teak timber, both in domestic and export markets. The 2000 Forest Plantation Development Fund Act (and its amendment in 2002) provides financial assistance for the development of private commercial forest plantations. In 2002, the government embarked on a large reforestation program to be implemented by farmers. The FC provides improved planting material and monitors the program. Tree plantations under agroforestry/*taungya* systems are of great importance in Ghana, and off-reserve trees contribute considerably to timber production.

Forest certification. Ghana has been in the process of establishing a forest-management certification system since 1996, when a National Committee on Forest Certification (NCFC) was established. The Ghana Forest Management Certification System Project was initiated in 1997 with the assistance of the EU and the Netherlands to develop draft standards for certification. Field tests on the resulting chain-of-custody and log-tracking systems have been carried out since 2002, as has the development of standards for sustainably managed forests. The concessions of one company, Samartex Timber and Plywood Ltd, amounting to 110,000 hectares in the natural forest production PFE, were certified in 2003 by SGS for compliance with Ghanaian logging and chain-of-custody standards.

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

Total	Natural			Planted			
	Allocated to concessions/ under licence	With management plans	Sustainably managed	Total	With management plans	Certified	
1,150	1,035	1,150	0*	270 ^c	97	97	0

* The certification of Samartex Timber and Plywood Ltd by SGS is not counted here since it is not under the umbrella of a formal certification scheme. The company has committed itself to achieving FSC certification by 2007

In February 2005, Samartex signed an agreement with WWF and Friends of the Earth to become the first participant of the Ghana Forest and Trade Network and commit to achieving FSC certification by 2007 (WWF 2005).

Estimate of the area of forest sustainably managed for production. The area under concessions/TUCs within the PFE is about 1.035 million hectares, divided into 52 FMUs consisting of 719,300 hectares of forest reserves and 315,200 hectares outside reserves. The estimated area of forest under SFM is considered to cover at least 270,000 hectares^c, including the Samartex operation.

Timber production and trade. Total roundwood production in 2003 was 22.1 million m³, of which 93% was fuelwood (FAO 2005b). Official production of industrial roundwood in 2003 was 1.4 million m³, 27% more than in 1999 (1.10 million m³) (ITTO 2004, 2005). Wood-processing consists of sawmilling and the manufacture of wood-based panels (plywood and veneer), with a small secondary-processing industry. Sawnwood production was 496,000 m³ in 2003, compared to 454,000 m³ in 1999 (ibid.); 405,000 m³ of wood-based panel products were produced in 2003 compared to 225,000 m³ in 1999. The timber industry is Ghana's fourth-largest foreign-exchange earner: the export value of primary wood products amounted to an estimated US\$169 million in 2003, comprising sawnwood (US\$84.9 million), veneer (US\$59.5 million) and plywood (US\$24.5 million) (ITTO 2005). The export of round logs has been effectively banned since 1997 and levies imposed on exports of air-dried timber of nine important species. Half of all teak production is exported in sawn form, mainly to India, although Ghana's main export market remains Europe.

Non-wood forest products. Wild meat, wild fruits and tubers, honey, oils, construction materials and medicinal plants are some common NWFPs. The wild-meat sector includes 300,000 hunters at the local community level who produce between 220,000 to 380,000 tonnes of wild meat annually, mainly from forests, valued at between US\$210 million and US\$350 million, for domestic consumption^c. International marketing efforts are being directed to at least two Ghanaian NWFPs: thaumatin, a sweetener from seeds of *Thaumatococcus danielli*, and novella, an oil/margarine from seeds of *Allanblackia parviflora*. The contribution of the forestry sector to tourism promotion has not been quantified, although it is believed to be quite significant.

Forest for protection

Soil and water. The area of forests managed primarily for the protection of soil and water was not reported^a or otherwise available.

Biological diversity. Of Ghana's estimated 1,844 forest-dependent trees, mammals, birds and amphibians, 69 are considered endangered^a. Seventeen mammals, nine birds, four reptiles, ten amphibians and 117 plants are listed as critically endangered, endangered or vulnerable on the IUCN red list of threatened species; of these, 13 mammals, six birds, ten amphibians and nine plants are found in forests (IUCN 2004). One plant species is listed in CITES Appendix I and 29 in Appendix II (CITES 2005). Ghana has recently formulated a national biodiversity strategy which seeks to ensure the development and implementation of a well-coordinated biodiversity conservation policy^a.

Protective measures in production forests. Environmental provisions in the TUCs and guidelines have been set to maintain representative or special parts of each production forest as undisturbed.

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
353	174	n.d.	n.d.	108 ^c

An area of about 465,000 hectares of production forest has been demarcated for catchment values, of which over 100,000 hectares are considered environmentally sensitive^a.

Extent of protected areas. The estimated area of protection PFE is 353,000 hectares. The FC reports 31 protected areas of IUCN categories I-II covering a total area of 1.11 million hectares, of which 1.06 million hectares are grass savanna. According to UNEP-WCMC (2004), 174,000 hectares of forest are in protected areas conforming to IUCN protected-area categories I-IV; the majority of this area (135,000 hectares) is unclassified as to forest type.

Estimate of the area of forest sustainably managed for protection. Table 4 shows the estimated area of protection PFE managed sustainably based on information provided at a recent workshop on the ITTO C&I .

Socioeconomic aspects

Economic aspects. Forests accounted for 2.3% of GDP in 1999^a and about 10% of export earnings. The formal sector employed about 104,000 people in 1999^a. Many more people (including illegal chainsaw operators, NWFP harvesters, etc) make at least some of their income from forests (see below).

Livelihood values. An estimated 2 million people depend on forests for subsistence uses and traditional and customary lifestyles^a. Major activities in which forest-adjacent communities are involved include wild-meat production, fuelwood and charcoal production, wood-carving and canoe-carving, rattan production, chewstick-gathering, chainsaw lumber production (an illegal activity), and hunting (often also illegal)^a. Alternative livelihood strategies are being tested as part of Ghana's poverty reduction strategy^a.

Social relations. The constitution provides for the sharing of royalties between government and traditional owners as follows: 40% to stools and 60%

to the state in reserve forests and 60% to stools and 40% to the government in off-reserve forests. Social-responsibility agreements are reached between TUC-holders and the communities where timber extraction takes place for the provision of agreed social services and amenities. Donor-assisted projects are also supporting community participation in forestry; for example, an ITTO project on participatory tropical forest development by women in indigenous communities has been ongoing since 1999. The FC will gradually divest itself of responsibility for the forest resources in the North Savanna Zone and hand it over to the local communities.

Eight forest sites covering 21,500 hectares have been set apart for research and education and 21 sites covering 1.12 million hectares for recreation^a.

Summary

Ghana has favourable conditions for the achievement of SFM, such as impressive human resources – including a strong Forestry Commission – and a long history of forest management. Nevertheless, many challenges must be met. For example, fire plays an influential and – in some forests – destructive ecological role and is difficult to control. Some forest reserves are well-managed, but others may have been over-harvested and off-reserve forests are often unregulated. Moreover, illegal activities such as chainsaw lumber production and poaching are thought to be widespread.

Key points

- The area of PFE is an estimated 1.60 million hectares, comprising 1.15 million hectares of natural-forest production PFE, 353,000 hectares of protection PFE and 97,000 hectares of plantations.
- At least 270,000 hectares of natural-forest production PFE are considered to be managed sustainably; an estimated 108,000 hectares of protection PFE are so managed.

- The silvicultural system used in natural forests is a polycyclic selection felling system using a cutting cycle of 40 years; a national AAC has been set at 500,000 m³.
- There are manuals for production, management and planning, which set out the obligations of logging contractors.
- Ghana is establishing a sizeable plantation estate of teak.
- Community participation in forestry is being facilitated through community forest committees (CFCs) and a collaborative forest management unit of the Forestry Commission; in 2003 there were some 100 CFCs.
- An estimated 2 million people depend on forests for subsistence uses and traditional and customary lifestyles.
- Ghana has introduced a new timber utilization contract system to improve efficiency, transparency and accountability in forestry, particularly in forest production activities.
- There is limited information about the condition of protected areas.

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