

# NIGERIA



\* For legend see page 58

## Forest resources

Nigeria has a land area of 92.4 million hectares and a population of about 134 million people, making it Africa's most populous country. It is bordered by Benin to the west, Niger to the north, Cameroon to the east and the Atlantic Ocean to the south. The climate is humid in the south and hotter and drier towards the north. A large proportion of the country sits on a plateau, which is divided into several parts by the Niger River and its tributaries. Mountains reaching more than 2,000 m occur in the border area with Cameroon. There are two major vegetation zones: the forest zone, which occurs in

a belt 50 to 250 km wide adjacent to the Atlantic coast; and the savanna zone to the north, which can be divided into the wetter Guinea zone and the drier Sudan zone. Estimates of forest cover range from 9.7 million hectares<sup>c</sup> to 13.5 million hectares (FAO 2005a)<sup>1</sup>.

**Forest types.** About 70% of the natural forest is open tree savanna, with the remaining 30% closed forest. The closed forest includes mangrove and coastal forest (22%), fresh water swamp (38%) and lowland wet forest (40%). The latter type (also called 'high forest') is divided into lowland rainforest in the south and mixed deciduous forest to the north. These forest types, although heavily degraded, are the main remaining sources of hardwood timber but cover only about 2% of the total land area. Meliaceae and Leguminosae species such as *Khaya ivorensis* (Lagos mahogany), *Entandrophragma* spp, *Lovoa trichilioides* (cedar) and *Gosweilerodendron balsamiferum* (agba) are characteristic of the rainforest area, whereas Sterculiaceae, Ulmaceae and Moraceae species such as *Nesogordonia papaverifera* (otutu), *Triplochiton scleroxylon* (obeche), *Celtis* spp and *Chlorophora excelsa* (iroko) characterize semi-deciduous forests. Riparian forests are the only closed forest in the savanna zone, characterized by species such as *Mitragyna ciliata* and *Uapaca* spp. Most of Nigeria's forests are so heavily degraded that in some areas secondary forest succession is impeded. *Elaeis guineensis* (oil palm) regenerates naturally in many degraded areas of the high-forest zone. Important secondary

Table 1 PFE

Estimated total forest area, range (million hectares)	Total closed natural forest ('000 hectares) Source: FAO 2001	PFE ('000 hectares)*			
		Production		Protection	Total
		Natural	Planted		
9.7-13.5	4,456	2,720 <sup>d</sup>	375	1,010	4,105

\* An estimated 2.7 million hectares of heavily degraded forest outside the forest reserves (so-called free areas) are also used for timber production (Okonofua 2005) but are not included here in the PFE

<sup>1</sup> Much of the information contained in this profile has been obtained from secondary sources (most notably FAO's 2003 country report for its African Forest Sector Outlook Study), supplemented by discussions with participants at an ITTO C&I workshop held in December 2005.

forest species in degraded forest and in unmanaged rubber and *Gmelina* plantations are *Trema guineensis*, *Pentaclethra macrophylla*, *Musanga cecropioides* and *Anthocleista* spp.

**Dynamics of forest resource change.** Forest area declined during the 1990s at an estimated annual rate of 2.6% (or 398,000 hectares per year) (FAO 2005a), caused by agricultural expansion, encroachment, over-harvesting, bush burning, illegal harvesting and de-reservations. The Federal Department of Forestry (FDF 2001) suggested that the annual depletion rate to be as high as 3.5%. A detailed analysis of the land-use dynamics of Nigeria shows that even forests contributing to flood-plain agriculture (fadama) and water resources development will eventually be depleted, with potentially catastrophic consequences. The FDF (ibid.) noted that the forest estate of Nigeria is highly depleted and that the Sahara Desert is encroaching southward at a rate of about one kilometre per year. Forest fires are common and caused by deliberate burning. It was estimated that only about 975,000 hectares of forest reserves are productive, while another 2.34 million hectares of free (non-reserve) areas are only partially productive.

**Permanent forest estate.** In the 1960s, the government set aside an area of 9.7 million hectares, about 10% of the country, as forest reserves. These are distributed over some 445 sites, 75% of which are in the savanna and 25% in the high forest. Since many of these forest reserves have been badly depleted of commercial and other timber species, not all can be included in the estimate of production PFE given in Table 1, which includes all FMUs allocated primarily for timber production. More than 60% of the initial forest reserve area had been lost by 2000, due to agricultural encroachment, illegal logging, planned agricultural development and urbanization<sup>c</sup>. The estimate of protection PFE in Table 1 is taken from UNEP-WCMC (2004).

**Planted forests.** The estimated planted forest area of 375,000 hectares in 2000 (FAO 2001) was thought to comprise at least 110,000 hectares of *Gmelina arborea* and an area of about 160,000 hectares of different hardwood species, including 74,000 hectares of teak in forest reserves and in private plantations, an unknown area of other planted hardwood species such as

*Terminalia ivorensis*, *Nauclea diderrichii*, *Triplochiton sceroxylon*, acacias and eucalypts, and about 10,000 hectares of various pines (Okonofua 2005). There were also about 318,000 hectares of *Hevea* (rubber) plantations (FAO 2001), managed as an agricultural crop but used for both rubber and timber production. The annual planting rate in the recent past has been about 23,000 hectares, but there is a general belief that most of the planted area remains low in stock<sup>c</sup>; a National Forestry Development Program designed to encourage community plantation development was extended to 2007 after failing to meet its four-year target in 2003.

## Institutional arrangements

**Forest tenure.** In principle, local people own the forests; the management and control of forest reserves, which cover around three-quarters of the forest area, is vested in the state governments<sup>c</sup>. However, dual ownership of natural forests by local and state governments still exists in some of the 17 northern states<sup>c</sup>. Local governments are responsible for communal forest areas; state governments for forest reserves, game reserves and sanctuaries; and the federal government for national parks. A total of 16 states (Abia, Akwa Ibom, Anambra, Cross River, Delta, Edo, Enugu, Ebonyi, Imo, Lagos, Ogun, Ondo, Ekiti, Osun, River and Bayelsa) contain high forests and have special forest laws to administer their tenure<sup>c</sup>.

**SFM policy framework.** Nigeria is a member of the ATO and, since 2001, ITTO. The C&I frameworks of these two organizations are therefore available for uptake in Nigeria and initial discussions were held in December 2005 to develop such a framework<sup>c</sup>.

**Forest policy and legislation.** Nigeria has had forestry and natural-resource conservation laws since the first half of the 20th century. The first Forestry Act was enacted in 1937, which established a forest reserve system under the state governments. The government established a more comprehensive forest law in 1956, the Law for the Preservation and Control of Forests in Eastern Nigeria. It gives the designated minister responsibility for the protection, control and management of forest reserves and protected areas; at the same time it gives the minister the power to de-reserve forests (ie re-classify them for other uses). Some

states have enacted specific regulations to monitor and control the reserves, but the continuing high rate of deforestation suggests that overall control has not been effective.

Nigeria's National Agricultural Policy, adopted in 1988, sets forth the national policy on forest management and the sustainable use of forest resources. The goal is to achieve self-sufficiency in all aspects of forest production. Major goals are the expansion of the forest estate and its management for sustained yield, the promotion of forest regeneration at rates higher than harvesting, the protection of forest resources from fire and grazing, and the development of forest industry. To achieve these objectives, it aims to expand the forest estate from 10% to 20%. Nevertheless, de-reservation and deforestation have expanded over the past 15 years<sup>c</sup>. As of the end of 2005, Nigeria has started a process of national hearings for a new national forest policy and a new national forest act<sup>c</sup>. The draft policy includes provisions to increase the total area under SFM to 25% of the nation's land area; to develop principles, criteria and indicators for the sustainable management of forest resources; and to improve environmental services of forests for social and economic benefits<sup>c</sup>.

**Institutions involved in forests.** The forestry sector is administered at the federal, state and local government levels; responsibilities, authority and resources are shared among these according to the 1999 constitution of Nigeria, which gives shared control over the development of natural resources to the local governments and the states. However, there is a lack of clarity in the respective mandates of these bodies (there are 36 state forestry departments – some of the states even have ministries of forests<sup>c</sup> – and 774 local councils), which leads to inefficiencies. The FDF, created in 1970, is currently under the Ministry of Environment; it has no authority over forest management and is mainly responsible for international treaties and for providing policy guidelines to the forestry authorities of the states<sup>c</sup>. The National Forestry Development Committee (NFDC) is the body responsible for formulating national forest policy and technical guidelines on forest management<sup>c</sup>. In order to facilitate field operations the FDF fosters forestry and environmental development through six divisions: Forestry Management, Forest Resource Survey,

Forest Resources Utilization, Agroforestry, Support Services and Extension and Environmental Conservation. At the federal level, the Forestry Research Institute of Nigeria (FRIN) has the mandate for research and education on forestry and the utilization of forest products. Forest-sector development has been hindered by a lack of funds and frequent policy changes, despite (or perhaps partly because of) the extensive bureaucracy involved in overseeing the sector.

Several NGOs provide inputs to the management of forestry resources. Notable among these are the Nigerian Conservation Foundation, the Nigerian Environmental Study and Action Team, Savannah Conservation Nigeria, the Forestry Association of Nigeria and local initiatives such as the Ekuri Initiative in Cross River State. However, their influence on forest management, particularly in forest reserves, remains small<sup>c</sup>.

## Status of forest management

### Forest for production

While many forest reserves were intensively managed in the past for timber production, a significant number have also been almost completely deforested while retaining the designation, leading to the apparent contradiction of non-forested forest reserves.

Timber concessions are awarded by state governments, which receive all timber royalties. In theory, a proportion of forest revenues should go to the local communal landowners and traditional institutions; in practice, however, the funds often get diverted<sup>c</sup>. For this reason, local communities have little incentive to prevent illegal logging and often collude with illegal loggers because they derive greater benefits that way. According to Sanwo (2005), 70% of the total timber extracted in high-forest states in Nigeria is stolen, with no records kept. The state forestry departments have been unable to protect the forest estate adequately from extensive encroachment. Harvesting of industrial wood is done by mill operators, by independent registered loggers and, in many cases, by poachers<sup>c</sup>. In the past, some operators were awarded five- to 20-year concessions by states, but this has recently been reduced to one to three years in most states to

**Table 2 Some commonly harvested species for industrial roundwood<sup>c</sup>**

Timber species	Remarks
<i>Mansonia altissima</i> (ofun)	Used in sawmilling and veneer production
<i>Tectona grandis</i> (teak)	Valuable plantation species
<i>Terminalia superba</i> (afara)	Commercial species used as sawnwood
<i>Entandrophragma candollei</i> (omu)	All-purpose commercial species
<i>Triplochiton scleroxylon</i> (obeche)	Now the major harvested species for all purposes

improve control<sup>c</sup>. As of December 2005 Nigeria has defined a total of 1,160 FMUs (both within and outside the reserve system), of which 154 currently are producing timber<sup>c</sup>. The total area under forest production is estimated to be 1.06 million hectares (Okonofua 2005).

**Silviculture and species selection.** Initially, the forest resources in the high-forest zone were managed for timber production on a felling cycle of 100 years, with a specified minimum diameter limit for the different species of between 60 and 90 cm (FDF 1996). Forests in the southern and south-central regions were sub-divided into numbered mile-square compartments managed on the basis of working plans prepared by the FDF. In response to harvesting pressures, the felling cycle for natural forests was reduced to 50 years and has since been further lowered. Natural regeneration of the harvested forests was stimulated by the Tropical Shelterwood System (TSS). By the mid 1960s, a total area of 200,000 hectares in the western region of Nigeria was managed under the TSS system (Okonofua 2005). Owing to the low growth rates of the natural forest, the TSS was abandoned in the early 1970s in favour of artificial regeneration under the *taungya* system. The early *taungya* plantations led to subsequent major plantation schemes in the high-forest zone.

More than 300 tree species have been identified as possible timber species; about 40 species are harvested today. In addition to the five species listed in Table 2 and *Gmelina arborea* from planted forests, *Entandrophragma cylindricum* (sapele), *Gossweilerodendron balsamiferum* (agba), *Chlorophora excelsa* (iroko), *Terminalia ivorensis* (edo), *Brachystegia* spp and *Lophira alata* (ekki) are the main species harvested for timber.

#### **Planted forest and trees outside the forest.**

Despite its long forestry history, the large-scale development of planted forests has been recent in Nigeria. By the end of the 1960s, the management of forest reserves in the high-forest zone was assessed by the government and the World Bank to be economically unviable, and many natural stands have been converted to plantation projects, in particular with *Gmelina arborea*<sup>c</sup>. Many other forest reserves, particularly in the Guinea savanna, have also been converted to planted forests of exotic (acacias and eucalypts) and indigenous species. Many of the planted forest areas are harvested today; nevertheless, few of them are adequately managed for long-term production<sup>c</sup>. Trees outside the forest are mainly relics of the pre-existing forest cover, sacred forests, forest patches established by local villagers and home gardens.

**Forest certification.** The creation of a national working group on forest and timber certification has been proposed and discussed for a few years without result<sup>c</sup>. No Nigerian forest has so far been certified.

**Estimate of the area of forest sustainably managed for production.** The lack of detailed information makes it difficult to assess the quality of forest management. Around 1.06 million hectares of forest reserves were allocated in mid 2005 to concessions and licences (Okonofua 2005). About 650,000 hectares of forest reserves are reported to be covered by management plans, including planted forests<sup>c</sup>. No estimate of the area under SFM was possible (Table 3)<sup>c</sup>.

**Timber production and trade.** The estimated total roundwood production in 2003 was 69.9 million m<sup>3</sup>, of which 60.4 million m<sup>3</sup> (86%) was for fuelwood

**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	
2,720	1,060	650	0	n.d. <sup>c</sup>	375	175	0

(FAO 2005b). Nigeria's total production of industrial roundwood was an estimated 7.10 million m<sup>3</sup> in 2003. It produced 2.0 million m<sup>3</sup> of sawnwood and 55,000 m<sup>3</sup> of plywood and exported about 100,000 m<sup>3</sup> of logs and 41,000 m<sup>3</sup> of sawnwood (ITTO 2005). The wood-processing sector is run-down; most mills are fully depreciated, obsolete and not properly maintained. The sector runs at 30–40% of installed capacity and recovery rates are generally low. There is also a critical shortage of raw material for the timber industry, which is unable to process small-dimension plantation materials. Once a significant exporter, Nigeria is now a net importer of primary forest products: in 2002 imports of forest products were valued at an estimated US\$123 million, compared to exports of US\$18.5 million (of which US\$14 million was accounted for by sawnwood) (FAO 2005b).

**Non-wood forest products.** Marketed NWFPs include *Acacia senegal* (gum arabic), rattan and fibres such as *Raphia* spp, *Garcinia afzelii* (chewsticks), and sheabutter from nuts of *Vitellaria paradoxa* (syn. *Butyrospermum parkii*). Many NWFPs are locally traded and consumed by rural communities, including leaves (eg *Abura* spp), fruit, bark, nuts, honey, mushrooms, resins, canes and medicinal plants such as *Garcinia* spp. Wild meat is perhaps the most important NWFP, providing a source of protein for the rural population in isolated high-forest areas and in the savanna zone<sup>c</sup>. Some important plants providing edible products include: *Irvingia gabonensis*, the most important fruit tree in the forest zone; *Spondias mombin* and *Dacryodes edulis*; *Gnetum africanum* leaves as vegetables; the seeds of *Parkia biglobosa* (dawa-dawa); and the nuts of *Cola* spp. Fruits of oil palm and *Raphia* spp are used widely for palm wine. In 2005, *Alamblackia* seeds in degraded forest stands were collected for the first time in Cross River State for margarine production<sup>c</sup>.

## Forest for protection

**Soil and water.** Programs dealing with environmental management have been in constant flux, with negative consequences. For example, the Federal Ministry of Environment (2001) stated that efforts to combat desertification "have been adversely affected by frequent shifts in policy by government. Such policy shifts have been observed to be dictated by the country's economic fortune or misfortune." No information on effective measures to conserve soil and water was available for this report.

**Biological diversity.** Thirty mammals, ten birds, four reptiles, 13 amphibians and 172 plants are listed as critically endangered, endangered or vulnerable on the IUCN red list of threatened species; of these, 17 mammals, six birds, twelve amphibians and 69 plants are found in forests (IUCN 2004). *Gossweilerodendron balsamiferum*, a tree species that is endemic to the region and harvested in Nigeria, is listed as endangered on the IUCN red list due to over-harvesting and habitat loss (ibid.). Two plant species are listed in CITES Appendix I and 44 in Appendix II (CITES 2005).

**Protective measures in production forests.** The principal constraints on conservation in the production PFE include poaching, over-harvesting, illegal burning, grazing and deforestation<sup>c</sup>. Few protective measures are undertaken in many forest reserves<sup>c</sup>.

**Extent of protected areas.** According to UNEP-WCMC (2004), 1.01 million hectares of forest are in protected areas conforming to IUCN protected-area categories I–IV, including about 418,000 hectares of lowland evergreen broadleaved rainforest and 512,000 hectares of unclassified forest. The federal government controls the eight national parks through the National Parks Service. Nature conservation laws include the 1916 Wild Animals Preservation

**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
1,010	1,010	n.d.	n.d.	n.d.

Act (consequently modified and adopted by the states<sup>c</sup>), the 1985 Endangered Species Decree and the 1976 Land Use Act. The first National Park, Kainji Lake, was established in 1973; the Chad Basin, Cross River, Gashaka-Gumti, Old Oyo and Yankari national parks in 1993; and the Kamuku and Okomu national parks in 1999. Five of these national parks are located close to borders with neighbouring countries, suggesting potential for transboundary conservation. Some national parks have been degraded due to illegal hunting and logging, the smuggling of primates, grazing and illegal burning.

**Estimate of the area of forest sustainably managed for protection.** According to state and federal officials<sup>c</sup>, about 500,000 hectares of protection PFE could potentially be managed sustainably. However, due to a lack of clear information on what is happening in the field, the generally widespread problems of degradation, illegal logging, poaching and encroachment, and the lack of data on management plans and their implementation, the area of protection PFE currently being managed sustainably is not estimated here (Table 4).

### Socioeconomic aspects

**Economic aspects.** The forest sector contributed only 0.5% to Nigeria's GDP in 2001 (FAO 2003). Although forests do provide a major part of domestic energy, food and medical supplies, these are not fully reflected in formal national accounts. A major problem facing Nigerian forestry is inadequate funding. In 1993, the federal government urged state governments to pay 10% of forestry revenues into a trust fund for forest management. However, only a few state governments have implemented this proposal<sup>c</sup>. The setting and collection of forest revenues is at the discretion of state governments and sometimes local communities<sup>c</sup>, so there are large variations in the fees charged in different regions; for instance, the stumpage rate

for *Mansonia altissima* varies from 1,000 Nigerian naira in the state of Ekiti to 225 naira in Kogi. This ad hoc administrative setting of royalties causes many problems in the Nigerian forest sector.

**Livelihood values.** Forest products, particularly NWFPs, support the subsistence of local communities. An estimated 25 million people are greatly dependent on forest resources for their livelihoods<sup>c</sup>. Hunting and fishing are important activities. No information was available on the extent of sustainable rural-based programs to stabilize ecosystems and diversify products in order to meet the continuing needs and livelihoods of forest-dependent communities.

**Social relations.** The sharing of benefits from forestry activities between state governments and local communities varies from state to state. State governments are supposed to share a percentage of any revenues collected from forestry activities outside forest reserves (on average 25–40% in the savanna and 30–35% in the closed forest<sup>c</sup>) with local communities, but this is often not done in practice. The continuing decline and degradation of forest resources in Nigeria suggest that the relationship between local communities and forest administrations is not conducive to forest conservation and SFM in most of the high-forest states of Nigeria<sup>c</sup>.

### Summary

There are several obstacles to SFM in Nigeria. These include the discretionary power of government to de-reserve or harvest the forests; the lack of a coherent forest policy; the prevalence of illegal logging and harvesting of NWFPs in most of the high-forest states; chronic under-resourcing of forestry programs and forest management; overlapping responsibilities among federal, state and local governments and excessive bureaucracy; the lack of inter-sectoral coordination; and the overall absence of reliable data on which to base forestry planning and development. Nigeria has a

long history of forest management and the formal goal is to achieve self-sufficiency in all aspects of forest production; however, the country, once a significant exporter, is now a net importer of primary forest products and considerable work must be done to achieve this goal.

## Key points

- Nigeria has an estimated PFE of 4.11 million hectares, comprising 2.72 million hectares of natural production forest, 1.01 million hectares of protection forest and 375,000 hectares of planted forest. The PFE covers less than 5% of Nigeria's total land area.
- Data are generally weak and the federal government cannot confirm the accuracy of the data presented herein<sup>c</sup>.
- A forest reserve system was created in 1937 covering 9.7 million hectares (10% of the land area), but much of this is no longer forested.
- The goal of the 1988 forest policy is to expand the forest estate from 10% to 20%, but this has not occurred.
- Insufficient information was available to estimate the area of PFE under SFM.
- The forestry sector is administered at the federal, state and local government levels according to the Nigerian constitution. However, there is a lack of clarity in the mandates of the three levels.
- The main concerns of the federal government are to provide an adequate policy framework for the states and to support afforestation and conservation programs.
- State governments are solely responsible for the management of forest resources and the coordination of forest development activities with local communities.
- Forest production has fallen, creating an imbalance between supply and demand. From its previous status as a significant exporter of forest products, Nigeria has become a net importer.
- The wood-processing industry is characterized by outdated technology, poor recovery and inefficiency.

- A National Forestry Development Program designed to encourage community plantation development is in place.
- A proportion of revenues from timber should go to local communal landowners but, in practice, funds are often diverted, reducing the incentive for local people to protect forests.

## References and other sources

- <sup>c</sup> Information derived from a background paper and discussions with participants at a training workshop on ITTO criteria and indicators, held 12–16 December 2005, Abeokuta, Nigeria, attended by 49 people from government, civil society and the private sector.
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