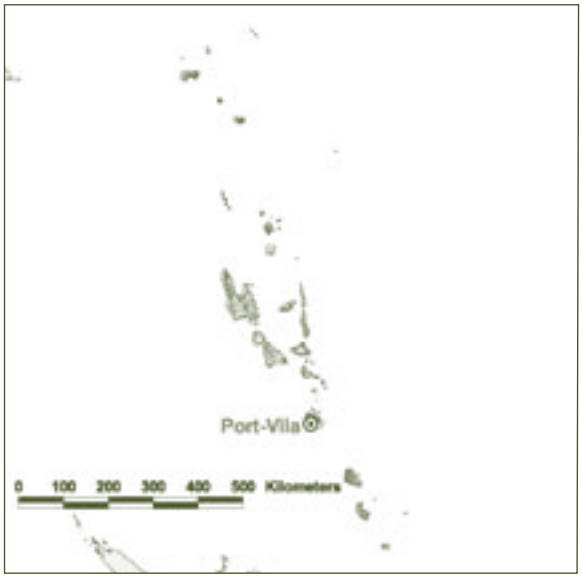
VANUATU



*For legend see page 58

Forest resources

Vanuatu has a land area of 1.21 million hectares across about 80 islands and a population of about 200,000 people. It lies approximately 170 km to the southeast of the southernmost island of the Solomon Islands and about 800 km west of Fiji. The four main islands of Santo, Efate, Malekula and Erromango generally consist of a narrow coastal plain rising through broken foothills to a steep mountainous interior. The majority of the rural population (about 80% of the total) lives in a subsistence economy. The land has not yet been classified according to function or land capability. The area of natural forests and other wooded land is an estimated 902,000 hectares (74% of the land area)[a].

Forest types. A national forest inventory, completed in 1990, estimated that forests and other wooded areas comprised 205,000 hectares of mid-to-high forest, 239,000 hectares of low forest and 2,500 hectares of mangroves; the rest were thickets (434,000 hectares), scrub (45,000 hectares) and woodland (380 hectares). The mid-to-high forest (canopy height ranging from 20–30 m) and low forest (ranging in height from 10–20 m) fall under the broad category of tropical evergreen forests, the main species being of the genera *Calophyllum, Campnosperma, Dillenia, Elaeocarpus, Endospermum* and *Gmelina*. The common species in the mangrove forests belong to the genera *Rhizophora, Avicennia, Lumnitzera, Sonneratia* and *Xylocarpus*.

Dynamics of forest resource change. Despite reported agricultural expansion, FAO (2005a) estimated that Vanuatu's forest area increased slightly in the 1990s.

Vanuatu is subject to frequent cyclones; on average, at least one severe cyclone causing significant forest damage occurs every five years. These open up large gaps in the forest canopy and allow the invasion of the vine *Merremia.*

Permanent forest estate. Vanuatu has no legally defined PFE; since all land is owned by individuals or clans, a future PFE will need to be negotiated with and agreed by the respective landowners. The figures given in Table 1 show the area of forest that could possibly comprise a PFE in the future.

Planted forests. The area of planted forest in Vanuatu is about 2,100 hectares[a,d], including about 300 hectares of privately owned *Endospermum*

Table 1 PFE*

Estimated total forest area (million hectares)	Total closed natural tropical forest ('000 hectares) Source: FAO 2001	PFE ('000 hectares)[a,d]			
		Production		Protection	Total
		Natural	Planted		
0.902	442	117	2.10	8.37	127

* Possible components of a future PFE

medullosum. The annual planting rate in Vanuatu is reported to be 30–40 hectares. Agro-industrial plantations of *Cocos nucifera* (coconut), with an area of 215,000 hectares, are an important non-forest source of wood in Vanuatu.

Institutional arrangements

Forest tenure. In Vanuatu, all lands, including forest lands, are customarily owned. The land may be owned communally, usually by clans (extended family units), or individually[a].

SFM policy framework. Article 7(d) of the 1979 constitution states that "every person has the fundamental duty to … safeguard the natural wealth, resources and environment in the interest of the present generation and of the future generations". This is echoed in the 1997 national forest policy, the principle goal of which is to ensure the sustainable management of Vanuatu's forests to achieve greater social and economic benefits for current and future generations. The ITTO C&I have been adopted as a monitoring tool, and training has been provided.

Forest policy and legislation. In 1991, the government instituted the National Forest Programme, an important outcome of which was the draft national forest policy of 1995, which was later issued as the formal Vanuatu National Forest Policy Statement of 1997. During its preparation the views of stakeholder groups, including national and provincial governments, chiefs, community leaders, churches and the forest industry, were sought. Consultative meetings and workshops were held in each province. The national forest policy contains an indicative program of action in all aspects of the management of Vanuatu's forests which, if fully implemented, would lead to a significant improvement in forest management[a]. It also makes specific recommendations on the management of forests in the different island groups. The policy defines a series of objectives, measures and strategies for implementation under nine major headings: forest management, environment and conservation, landowners and communities, forest industries, afforestation and extension, forest research, forest training and education, forest administration, and forest revenue. The policy advocates giving firm legal effect to a log export ban, establishing the AAC, and instituting licences of a kind that will encourage commitment to value-added processing, etc.

The principal forest law in force is the Forestry Act of 2001, which superseded the Forest Act of 1982. Other laws that support the implementation of the forest policy include the International Trade (Flora and Fauna) Act of 1989, the National Parks Act of 1993 and the Timber Rights Guarantees Act of 2000. Under the provisions of these acts, several rules and regulations have been issued: eg a ban on log exports (1993), a code of logging practice (1996), mobile sawmill regulations (1996) and sandalwood regulations (1997).

Institutions involved in forests. The Ministry of Agriculture, Forestry and Fisheries is responsible for forestry. Within the ministry, the Vanuatu Department of Forests (VDF), established in January 1980, is responsible for the management of natural forests through policy development, planning, protection, silvicultural principles and guidelines. It is also responsible for all reforestation, afforestation and small-scale sawmilling. Total staffing for the implementation of SFM was 51 in 2000, including 18 professionals[a]. This is considered inadequate for policing adherence to forest-related rules and regulations; the VDF and other departments depend largely on the owners of the resource to come forward to report breaches of the regulations by concessionaires[a].

The VDF maintains a policy of open cooperation with NGOs and collaborates closely with some programs carried out by them. NGOs such as the Foundation of the People of South Pacific support and assist in training and extension programs. The Forestry Act provides a mechanism for wider and more consultative planning in forest management.

Status of forest management

Forest for production

Under the system of forest ownership existing in Vanuatu the role of the government through the VDF is to provide guidance and support to customary owners in planning the use and development of their forest resource. The final decision on how to use the forest resource is the prerogative of the owners. The guiding regulations include the following:

Table 2 Some commonly harvested species for industrial roundwood (2001–03)

Timber species	Remarks
Dysoxylum confertiflorum	Used for sawmilling and furniture manufacturing
Pterocarpus indicus (bluwota)	PNG rosewood, high-priced species
Intsia bijuga (natora)	Valuable timber species known as merbau in Southeast Asia
Calophyllum neo-ebudicum	Used for sawmilling and furniture manufacturing
Endospermum medullosum (whitewood)	New Guinea basswood

- harvesting quotas allocated to each of the four main islands (which are regarded as FMUs), based on estimated AAC levels;
- minimum diameter limit set for each timber species;
- periodic closure of harvesting in sandalwood areas;
- licensing of operators to help ensure good logging practice; and
- selection logging to be practised.

Even though the importance of long-term forest management plans is emphasized in the Forestry Act, so far no plans have been prepared for any of the four main FMUs (which correspond to the four main islands) or for individual concessions[a]. According to the Forestry Act, logging companies are required to prepare and submit a coupe harvesting plan, providing details of all operations, which has to be approved by the VDF before logging commences.

The national forest inventory estimated that the total forest area suitable for logging in Vanuatu was around 117,000 hectares, about 25% of the total forest resource, and the total forest growing stock was about 13 million m^3. The remainder of the forest was considered unsuitable due to steep slopes, dissected land forms, low sawlog volumes and cultural reasons. The quality of the natural forest for commercial forestry is low: in over 50,000 hectares of the harvestable natural forests, the expected timber yield is about 20 m^3 per hectare and even in the best parts of it the yield will not be more than 30 m^3 per hectare.

A harvesting plan is normally prepared through consultation involving representatives of the provincial government, the VDF, the Department of Environment, the Lands Department, resource owners' representatives and the logging company. A code of logging practice has been developed in consultation with the industry that is designed to foster the application of sustainable forest harvesting to reduce damage, soil disturbance and canopy openings. Recently, logging has been increasingly observed to be more controlled and damage to the forest is reported to have been reduced (A. Leslie, pers. comm., September 2004); nevertheless, a lack of monitoring and post-harvest surveying of logging operations means limited information on the quality of harvesting is available.

Logging concession agreements are relatively short-term (5–10 years); at present, 7,200 hectares are allocated for logging under eight separate concessions. The largest concessions are foreign-owned (by operators from Malaysia and New Zealand). The estimated annual sustainable timber yield from the 117,000 hectares of natural forest suitable for logging is 68,000 m^3 [a].

Silviculture and species selection. There are no comprehensive guidelines for the silvicultural management of the production forests, although the broad suggestion is to follow selective logging with minimum diameter cutting limits. Around 20 species are generally recognized as marketable but the timber industry in Vanuatu concentrates on just a few species, mainly for domestic sale. Many species cut elsewhere in the Pacific are not used in Vanuatu. Besides the species listed in Table 2, commonly used species are: *Syzygium* spp*, Myristica fatua, Elaeocarpus angustifolius, Antiaris toxicaria* and *Castanospermum australe.* In addition, *Agathis macrophylla* (kauri) is much

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

Natural					Planted		
Total	Allocated to concessions/ under licence	With management plans	Certified	Sustainably managed	Total	With management plans	Certified
117	n.d.	0	0	0	2.1	2.1	0

sought-after for timber and has been an important export in the past. Easily accessible stands are now exhausted. *Santalum austrocaledonicum* (sandalwood), valued for the essential oil in its heartwood, is a major silvicultural challenge, in particular regarding its regeneration.

Planted forest and trees outside the forest. Forest plantations tend to be established in small woodlots, generally of less than one hectare. *Pinus caribaea* and *Cordia alliodora* are the most important plantation species, and *Swietenia macrophylla* and *Tectona grandis* have been tried out in the recent past together with agroforestry tree species. Currently, there is little logging for commercial purposes in planted forests. Plantation development in Vanuatu has been short on planning and proper implementation. Considering the inadequacies of Vanuatu's natural forests for production purposes because of their quality, composition and distribution, forest plantations will have to play a much larger role if future timber needs are to be met. The national forest policy suggested an initial target of 20,000 hectares of forest plantations by 2020. Trees outside the forest are mainly coconut and fruit trees in home gardens. Trees on farms and cattle ranches are important for meeting local needs for timber.

Forest certification. No certification initiatives have yet been taken.

Estimate of the area of forest sustainably managed for production. In the absence of long-term management plans and post-harvest care, production forests in Vanuatu cannot be considered to be managed sustainably (Table 3). Encouragingly, though, the current annual industrial log harvest of about 30,000 m^3 is well below the estimated sustainable yield (68,000 m^3 – see above).

Timber production and trade. Total roundwood production in 2003 was 119,000 m^3, of which about 76% was used as fuelwood (FAO 2005b). The production of industrial logs was an estimated 30,000 m^3 in 2003, down from 41,000 m^3 in 1999 (ITTO 2004, 2005). An estimated 1,000 m^3 of logs and 11,000 m^3 of sawnwood were exported in 2003 (ITTO 2005). The wood-processing industry is not well developed; processing units are small and of low technology. The exploitable forest resource is probably too limited and geographically dispersed to encourage the establishment of competitive international-scale mills. There are two significant-sized, fixed-site mills and several smaller mills, plus around 50 portable sawmills; the average recovery of logs processed for export is a low 35%[a]. The fixed-site mills generally have some form of wood-preservation treatment facilities.

The government of Vanuatu has operated a log export ban intermittently to assist the development of a domestic processing industry.

Non-wood forest products. Being the raw material to produce sandalwood oil, sandalwood (*Santalum album, S. austrocaledonicum*) is the most important NWFP in Vanuatu; about 52 tonnes were exported in 2000, much of it to Taiwan Province of China. The estimated sustainable yield of sandalwood is 80 tonnes. An oil-extraction facility has recently been constructed for the domestic production of sandalwood oil. Other important NWFPs that are locally processed and exported include sago fruit shells, *Canarium* nuts and *Barringtonia* nuts. Bamboo, palm fibres, medicinal plants and live birds are important locally. Forest recreation is an emerging activity. There is an ecotourism facility in one of the forest protected areas.

Forest for protection

Soil and water. Much of the natural forest in the mountainous interiors has a primarily protective role. However, some of these forests have been degraded by grazing and, in places, by burning.

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
8.37[a]	0	n.d.	n.d.	n.d.

In some areas, erosion and soil degradation are significant problems. No data are available on the extent or percentage of forest managed primarily for the protection of soil and water, although some areas are reserved for this purpose in coupe harvesting plans[a].

Biological diversity. Vanuatu's forests are relatively species-poor and structurally less complex than the forests of the Solomon Islands and PNG due to the geological youth of the archipelago, its isolation and frequent cyclones. The degree of endemism in the Vanuatu flora is not as great as in neighbouring countries, either; around 15–20% of trees and shrubs are thought to be endemic. Five mammals, eight birds, two reptiles and ten plants are listed as critically endangered, endangered or vulnerable on the IUCN red list of threatened species; of these, two mammals and seven birds are found in forests (IUCN 2004). Forty-three plants are listed in CITES Appendix II (CITES 2005). Vanuatu has national conservation strategies for six commercial tree species (*Endospermum medullosum*, *Agathis macrophylla*, *Agathis silbae*, *Intsia bijuga*, *Pterocarpus indicus* and *Santalum austrocaledonicum*)[a].

Protective measures in production forests. The Code of Logging Practice has provisions for exclusion zones (eg steep slopes, environmentally sensitive and unstable soils, stream buffers, etc), guidelines for establishing infrastructure (eg road standards) and operational controls.

Extent of protected areas. There are five forest protected areas totalling 8,366 hectares, falling within the mid-to-high forest (6,349 hectares – 3% of all mid-to-high forest), low forest (1,717 hectares – 0.7% of all low forest) and mangrove forest (300 hectares – 12% of all mangroves)[a]. According to UNEP-WCMC (2004), however, no forests are in protected areas conforming to IUCN protected-area categories I–IV, although 5,900 hectares are reported in IUCN Category VI. The boundaries of the protected areas are not demarcated on the ground but are mapped using customary land boundaries, which usually use physically prominent features such as trees, coastline, ridges and rivers; they are therefore known to most people living near the area[a]. There is a limited capacity in the country to implement the National Parks Act for the protection of these areas. Although the system of customary landownership makes it difficult to create new protected areas, more than 50% of existing protected areas were either initiated or supported by landowners and surrounding communities[a].

Estimate of the area of forest sustainably managed for protection. No information on the status of management in protected areas was available for this report (Table 4).

Socioeconomic aspects

Economic aspects. Forestry's contribution to GDP was about 7.7% (US$2.84 million) in 2000[a]. An estimated 500 people are employed directly in the logging sector[a].

Livelihood values. According to a recent national census, 80% of the Vanuatuan population is engaged in some form of small-scale commercial or subsistence forestry activities[a]. In addition to commercial forestry operations, fuelwood, herbal medicines, wild meat, edible nuts, thatch grass, and plants used for ceremonial purposes and the manufacture of musical instruments are all part of the subsistence needs of the rural community. The value of forest products for subsistence use could be as high as US$14 million per year[a].

Social relations. The Forestry Act (2001) provides a mechanism for a broad consultative planning process. This mechanism comprises a management committee involving a provincial/state representative, a representative of the resource owner, and representatives of the VDF, the Environment Department and the Lands Department. The low level of literacy in Vanuatu makes it difficult for forestry officers to fully explain forestry issues and terminology to landowners[a].

Summary

No formal PFE has been created in Vanuatu because all forests are under customary ownership. The role of the national government in forest management is in policy development, planning, protection, silvicultural principles and guidelines, and the supervision of logging companies. However, to date it has not been possible to implement a forestry regime that operates on the basis of long-term forest management plans.

Key points

- All lands, including forests, are customarily owned.
- There is, therefore, no formal PFE. Theoretically, a future PFE could amount to 127,000 hectares, of which 117,000 would be natural-forest production PFE and 8,340 protection PFE; there are about 2,100 hectares of plantations.
- Production forests are not covered by long-term management plans and therefore cannot be considered sustainably managed. No estimate could be made of the area of protection PFE under SFM.
- The current annual harvest of about 30,000 m^3 is well below the estimated sustainable yield (68,000 m^3) from the 117,000 hectares of natural forest deemed suitable for production forestry.
- The national forest policy contains an indicative program of action in all aspects of the management of Vanuatu's forests which, if fully implemented, would lead to a significant improvement in forest management.
- The Department of Forestry under the Ministry of Agriculture, Forestry and Fisheries has responsibility for administering and managing the forest. The personnel, funds and facilities available to it are inadequate to carry out these functions.
- The four FMUs (corresponding to the four main islands) are not covered by long-term management plans, although coupes are usually covered by harvesting plans based on the Code of Logging Practice.
- The protected-area system of Vanuatu is very small; about 3% of the mid-to-high forest and 0.7% of the low forest are represented in protected areas.

References and other sources

[a] VDF 2002. Report on the Application of ITTO Criteria and Indicators for Assessing Sustainable Management of Natural Tropical Forests in Vanuatu. Submitted to ITTO, April 2002. Vanuatu Department of Forests, Port Vila, Vanuatu. Unpublished.

[d] ITTO estimate

Brown, C. 1997. *Asia-Pacific Forestry Sector Outlook Study: Regional Study – The South Pacific.* Working Paper APFSOS/WP/01. FAO, Rome, Italy/Bangkok, Thailand.

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 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).