

# PERU



\*For legend see page 58

## Forest resources

Peru, the third-largest country in South America, has a land area of 129 million hectares and a population of 27.1 million people. It has three distinct biogeographical zones. The desert coastal region covers 13.6 million hectares, the semi-arid Andean mountain range (*sierra*) 39.2 million hectares, and the moist tropical Amazon Basin, including the eastern humid slopes of the Andes, 75.7 million hectares. Ninety-two per cent of Peru's forests lie in the Amazon Basin. Estimates of Peru's forest area include 65.2 million hectares (FAO 2005a), 71.1 million hectares (UNEP-WCMC 2004), 78.6 million hectares<sup>a</sup> and 86.4 million hectares (government of Peru 2000). Peru has the second-largest forest estate in Latin America and the eighth-largest globally.

**Forest types.** The main forest type in Peru is tropical moist forest (rainforest), with subtypes that depend on altitude and the different soils within the Amazon Basin, particularly their position in relation to rivers. The alluvial forests, including those on the lower river terraces, offer some of the best potential for integrated forest management and agroforestry because of their vigorous growth, flat terrain and better accessibility; their upper stories are generally 35–40 m in height. These forests have been used intensively in the past, leaving large expanses of secondary forest (*purma*) dominated by stands of fast-growing, light-demanding pioneer species. Hill forests – on rolling terrain with moderate slopes – are the most widespread forest type in the tropical moist forest area.

**Dynamics of forest resource change.** Annual deforestation in Peru averaged an estimated 0.4% in the period 1990–2000 (FAO 2005a); the current rate is an estimated 269,000 hectares per year<sup>a</sup>. Deforestation is caused mainly by the establishment of new settlements due to migration from the Andes, migratory agriculture, illicit cultivation of coca, and the expansion of urban centres such as Iquitos and Pucallpa.

**Permanent forest estate.** Under the forest law of 2000 (*Ley 27308/2000*), the forest is classified into the following categories:

- production forests (permanent and in reserve);
- forests on protection land;
- forests for future use (forest plantations, secondary forests and degraded forests for restoration);

**Table 1 PFE**

| Estimated total forest area, range (million hectares) | Total closed natural forest ('000 hectares)<br>Source: FAO 2001 | PFE ('000 hectares) <sup>a,d,*</sup> |         |            | Total    |  |
|---|---|--------------------------------------|---------|------------|----------|--|
|   |   | Production                           |         | Protection |          |  |
|   |   | Natural                              | Planted |            |          |  |
| 65.2–86.4   | 64,204  | 24,600                               | 200–300 | 16,300     | 41,150** |  |

\* CIEF pers. comm., December 2005

\*\* Includes 250,000 hectares of plantations

- natural protected areas;
- forests in native and rural communities; and
- local forests.

Permanent production forests are intended for timber production and the conservation of forest resources; an approved forest management plan is required. As of 2005, 24.6 million hectares of permanent production forests had been established in the Amazon Basin in the departments of Loreto (14.8 million hectares), Ucayali (4.09 million hectares), Madre de Dios (2.52 million hectares), San Martin (1.5 million hectares), Huanuco (880,000 hectares), Junin (250,000 hectares), Pasco (180,000 hectares), Cuzco (170,000 hectares), and Ayacucho and Puno (CIEF pers. comm., December 2005).

**Planted forests.** There is some uncertainty about the area of planted forests. According to one estimate, the total forest plantation area was 650,000 hectares in 2001<sup>a</sup>. The planned planting rate since 1997 is reported to be 50,000 hectares per year<sup>a</sup>, but this may not have been fully achieved. Current realistic estimates suggest the total forestry plantation area to be between 200,000 and 300,000 hectares (CIEF pers. comm., December 2005). Most plantations are located in the Andean region, the main species there being *Eucalyptus globulus*. About 70% of all planted forest is privately or community owned, and 30% is owned publicly.

## Institutional arrangements

**Forest tenure.** Forest lands are classified into public, private and indigenous. Large parts of the forest are owned by communities. In 2002, 8.4 million hectares of forests were classified as public forests reserved for communities and indigenous groups, of which 6.2 million hectares had land titles<sup>a</sup>. In the Peruvian Amazon, 1,192 indigenous communities possess land rights. There is uncertainty regarding the extent of ownership of Amazonian forest by community and indigenous groups. FAO (2003a) estimated that some 22.5 million hectares were so owned; others suggest that clear land titles only cover around 10 million hectares (J. Leigh, pers. comm., December 2005).

**SFM policy framework.** Peru has recently developed standards for forest management. It has adopted national C&I based on the Tarapoto process and has

accepted ITTO's C&I to be used at the FMU level. Specific C&I were prepared for the first permanent production forest in Biabo in 1999. The concession management plans for all other production forests are based on these C&I.

**Forest policy and legislation.** The forest legislation of 1975 was completely revised recently with the support of an ITTO project (PD 42/96 (F)). The current forestry and wildlife law and its regulations (*Ley Forestal y de Fauna Silvestre – Ley 27308 – and Reglamento de la Ley Forestal y de Fauna Silvestre – Decreto Supremo 014/2001-AG*) were approved in 2000 and 2001 respectively, and a new national forest strategy was prepared in 2002. This strategy presents an historic analysis/baseline for the forest sector; defines a vision and strategic principles, strategic objectives, expected outputs, and programs for the development of the sector; and provides indicators to monitor the progress made. The document has been widely discussed in a participatory process and was officially adopted by the Peruvian government in August 2004 (*Decreto Supremo 031-2004-AG*). The new forestry and wildlife law embodies the forest policy of the country (articles 3-7) and prescribes several options for SFM and reforestation, including:

- 40-year concessions for commercial timber, NWFPs, ecotourism and environmental services (Article 10);
- the sustainable management of forests belonging to indigenous communities (Article 12);
- the sustainable management of local forests by local governments and rural populations (Decree 014/2001); and
- the establishment of 40-year reforestation concessions (Article 28).

Forestry is a major part of the changing political context in Peru. Forests have become a major issue in the National Governance Agreement that institutionalizes dialogue between different actors, defines approaches to development and strategies for poverty reduction, and aims to improve food security, employment and social cohesion. The administration of forest resources will also be included in the continuing political decentralization from central to regional governments. Moreover, forestry is an important element in defining a policy for rural development.

**Institutions involved in forests.** The forest sector is overseen by the National Institute for Natural Resources (*Instituto Nacional de Recursos Naturales* – INRENA), which was set up in 1992 under the Ministry of Agriculture. INRENA also runs the state system of natural protected areas (*Sistema Nacional de Áreas Naturales Protegidas por el Estado* – SINANPE). The National Consultative Council for Forest Policy (*Consejo Nacional Consultivo de Política Forestal*) is a legally constituted national consultative council to supervise environmental and forest policy. However, as of December 2005 it had not been physically established. In addition, an independent forest control and supervision agency (*Organismo Supervisor de los Recursos Forestales Maderables* – OSINFOR) was created in 2000 and subsequently incorporated into INRENA with limited autonomy. An independent agency for the promotion of forest-based production and forest industries and the marketing of environmental services of forests (*Fondebosque*) has been created and is supported by several international donors; it provides technical assistance, training and financial services to timber producers. National development institutions such as the Peruvian Amazon Research Institute (*Instituto de Investigación de la Amazonía Peruana* – IIAP) play important roles in the promotion of SFM at the local level. With the assistance of an ITTO project, INRENA has enhanced its forest production statistical capabilities through its Centre for Strategic Forestry Information (*Centro de Información Estratégica Forestal* – CIEF).

National and international NGOs are very active in Peruvian forestry and are influential in the development of policy; WWF Peru, Foro Ecológico, Conservation International Peru, ProNaturaleza (*Fundación Peruana para la Conservación de la Naturaleza*) and Red Ambiental, for example, are important in driving forest conservation and the forest concession reform process. Various private-sector organizations are also involved, the most active being the National Forestry Chamber (*Cámara Forestal Nacional*), the National Timber Corporation (*Corporación Nacional de la Madera del Perú*) and regional forest producer associations, in particular those of Madre de Dios and Ucayali<sup>a</sup>. Indigenous peoples' associations such as the National Development Institute of the Andeans, Amazon People and Afro-Peruvians (*Instituto Nacional de Desarrollo*

*de Pueblos Andinos, Amazónicos y Afroperuanos*) are also strongly involved in forest issues. The University of La Molina has a strong forestry faculty that is actively involved in SFM research. All the aforementioned, together with government institutions and private-sector representatives, are also official members of the National and Regional Forestry Dialogue and Consensus Roundtables (*Mesas de Diálogo y Concertación Forestal Nacional y Regionales*), which meet periodically to discuss the implementation of forest policies.

## **Status of forest management**

### **Forest for production**

Up to mid 2002, some 1.85 million hectares of forests were harvested under the old harvesting regime through more than 1,500 harvesting contracts, most of them with an area of less than 1,000 hectares. The total cumulative authorized timber volume under these contracts was 3.64 million m<sup>3</sup>. Concessionaires often worked with subcontractors, who brought in their own equipment and personnel and were paid on volume extracted. However, basic silvicultural and operational measures such as RIL that might ensure sustainable yield were generally not applied. Extraction remained selective, concentrating on the species of high commercial value or wide industrial use. By mid 2003, only 151,000 hectares of forest licences were still operating under this old regime.

The new forestry and wildlife law eliminated the former harvesting contracts and established long-term concessions over larger areas; these are allocated by public auction and carry an obligation to present and comply with a long-term forest management plan and yearly operational plans. Silvicultural treatments and RIL now form part of the terms of reference for management plans and yearly plans of operation and are being applied in at least 40% of the concessions (CIEF pers. comm., December 2005). The public forests so far classified as permanent production forest and registered in public registries have been divided into harvesting units that range in size from 5,000 to 10,000 hectares. The granting of concessions has been organized through public competition with the following conditions: the length of concession

**Table 2 Some commonly harvested species for industrial roundwood (1991–2004)<sup>c,\*</sup>**

| Timber species                             | Remarks**                    |
|--|------------------------------|
| <i>Cedrelinga catenaeformis</i> (tornillo) | 112,441 m <sup>3</sup> /year |
| <i>Swietenia macrophylla</i> (caoba)       | 53,256 m <sup>3</sup> /year  |
| <i>Cedrela odorata</i> (cedro)             | 52,997 m <sup>3</sup> /year  |
| <i>Virola</i> spp (cumala)                 | 42,719 m <sup>3</sup> /year  |
| <i>Hura crepitans</i> (catahua)            | 27,731 m <sup>3</sup> /year  |

\* CIEF pers. comm., December 2005

\*\* Average sawnwood production over the period

is 40 years and renewable; the total area designated for concessions until 2005 was 24.6 million hectares; bidding is open to national and foreign companies under two types of bidding system – public auction (*subasta pública*) for concessions of 10,000–50,000 hectares, and public bidding (*concurso público*) for concessions of 5,000–10,000 hectares; and the maximum cumulative area for a concessionaire is 100,000 hectares under the public auction system and 50,000 hectares under the public bidding system.

By 2005, long-term concessions covering 7.54 million hectares had been allocated as follows (CIEF pers. comm., December 2005):

- Department Madre de Dios:  
85 concessions totalling 1.30 million hectares;
- Department Loreto:  
242 concessions totalling 2.58 million hectares;
- Department Ucayali:  
171 concessions totalling 2.88 million hectares;
- Department San Martín:  
34 concessions totalling 498,000 hectares; and
- Department Huanuco:  
48 concessions totalling 286,000 hectares.

Many of these concessions are in formerly selectively harvested areas such as the flood zone along Amazonian tributaries and constitute what in some areas will be the third intervention within the last 30–40 years. Generally, the species harvested have changed, as many primary species are no longer present in large volumes. It is expected that the new concessions will harvest increasingly

lesser-known species and intensify their logging operations, at least until the silvicultural prescriptions to be implemented as part of the management plans developed under the new forest concessions regime achieve harvestable volumes of the high-value commercial species. The financial viability of the concessions will depend in large measure on their ability to obtain good prices for such species. Concession areas are also generally relatively small, typically 12,000–20,000 hectares. There is some question about whether concessions of such size will encourage substantial capital investment.

The new forest law specifies forest audits every five years and the renewal or suspension of concession agreements depends absolutely on the results of such audits, which are based on the application of a set of C&I for SFM derived from ITTO and the Tarapoto process. In addition, extraordinary inspections are being carried out in the forest concessions as part of the country's CITES-Appendix II mahogany observation strategy. Through CIEF, INRENA has the capacity to track the volumes and species of all legally harvested timber from concessions and other permits.

**Silviculture and species selection.** At least 90 species are used for timber and timber products; about 20 meet 80% of the demand<sup>c</sup>. In the past, the major timber species harvested in the Peruvian Amazon was *Swietenia macrophylla* (caoba), and this is still an important species; Peru became the largest single exporter of it after Brazil banned its harvesting and export. Its high value also encourages illegal activities: INRENA has reported that, in 2003, 90% of illegally traded logs were of caoba; there are also indications that caoba and other high-value

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

| Natural |  |                          |           | Planted             |         |                          |           |
|---------|--|--------------------------|-----------|---------------------|---------|--------------------------|-----------|
| Total   | Allocated to concessions/<br>under licence | With management<br>plans | Certified | Sustainably managed | Total   | With management<br>plans | Certified |
| 24,600  | 8,000                                      | 5,000                    | 59.5*     | 560                 | 200–300 | 8                        | 0         |

\* Includes 32,600 hectares of semi-natural and mixed plantation and natural forest

species are being obtained illegally from protected and indigenous areas<sup>c</sup>. *Guazuma* spp (bolaina) and *Calycophyllum spruceanum* (capirona) are the species most traded in the domestic market. Other important species include *Virola* spp (cumala), *Amburana cearensis* (ishipingo), *Dipteryx micrantha* (shihua-huaco), *Hura crepitans* (catahua), and *Cariniana decandra* (cachimbo). Table 2 shows the five most commonly harvested species, ranked by average sawnwood production for the period 1991–2004.

**Planted forest and trees outside the forest.** 1997 was declared the 'Year of Reforestation' in Peru and in 1999 an ambitious reforestation scheme was started under the name *Sierra Verde*. Between 1997 and 2000 *Prosopis* was sown over more than 400,000 hectares to thicken sparse woody formations and to establish new woody cover where there was none before. However, it is estimated that only 10% survived. In 2005, reforestation was declared of national interest by Supreme Decree 003-2005-AG; a national reforestation plan has been developed and is to be launched shortly. A considerable number of long-term reforestation and enrichment-planting trials of native species such as *Cedrelina catenaeformis* (tornillo), *Simarouba amara* (marupa), *Parkia velutina* (pashaco) and others in the Peruvian Amazon (eg in Jenaro Herrera, Bosque Von Humboldt and Tingo Maria) have been established, with good results. However, these trials have not yet been expanded to an operational scale.

**Forest certification.** According to FSC (2005), one natural forest covering 26,936 hectares was certified as of December 2005, and one semi-natural and mixed plantation and natural forest area covering about 32,600 hectares. Both belong to indigenous communities in Ucayali. A national working group on forest certification, coordinated by WWF Peru, is working on the establishment of an FSC-accredited

system for the voluntary certification of forest products, and several companies have commenced a pre-certification process<sup>c</sup>.

**Estimate of the area of forest sustainably managed for production.** It is difficult to estimate the area of forest that is sustainably managed. The system of forest concessions is very new and there is little information on how that part of the PFE with management plans is being managed. An estimated 500,000 hectares of concessions are undergoing certification processes and, with the already-certified forest, form the minimum set of sustainably managed forest shown in Table 3.

**Timber production and trade.** Roundwood production in 2003 was estimated to be 10.3 million m<sup>3</sup>, of which 9.10 million m<sup>3</sup> was fuelwood (FAO 2005b). National production of industrial timber in 2003 was an estimated 1.29 million m<sup>3</sup> of logs, 528,000 m<sup>3</sup> of sawnwood and about 101,000 m<sup>3</sup> of plywood (ITTO 2006 in prep.). It is estimated that the maximum sustainable harvest under a 40-year polycyclic system is in the range 25–40 m<sup>3</sup> per hectare<sup>b</sup>; current offtake would appear to be well below that. It is estimated that there are 250 sawmills in Peru, the majority with a small installed capacity (averaging 2,900 m<sup>3</sup>/yr)<sup>b</sup>. About 25% of them have bandsaws and a capacity of 10,000 m<sup>3</sup> per year or more. There are also five veneer mills, twelve plywood mills, 20 parquet plants and 80 small workshops producing fruit boxes, etc (FAO 2003a). Almost all the wood is used domestically; only a very small amount is exported. The export of logs is not permitted; only processed products may be exported.

**Non-wood forest products.** The use of NWFPs is widespread in Peru, particularly in the Peruvian Amazon, where over 130 products have been identified for major local consumption and national and international trade. Important products for

**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 |
|--------|------------------------------------|------------------------------|-----------------------|---------------------|
| 16,300 | 3,130                              | 390                          | n.d.                  | 1,540 <sup>d</sup>  |

the international market include *Prosopis juliflora* (algarroba) from dry zones (6.5 million kg per year), *Uncaria tomentosa* (uña de gato or cat's claw, 500,000 kg per year), *Bertholletia excelsa* (castaña or Brazil nut, 1 million kg per year), *Caesalpinia tara* (tara fruit, 3.9 million kg per year), palmito (palm heart, 200,000 kg per year), *Croton lechleri* (sangre de grado), caña brava and caña hueca (1.1 million units per year), and a great number of medicinal and aromatic plants<sup>a</sup>. Trade in NWFPs in 2000 earned more than US\$14 million<sup>a</sup>.

### Forest for protection

**Soil and water.** Soil and watershed conservation is important, particularly in the Andes. The National Program for the Management of Water Catchments and Soil Conservation (*Programa Nacional de Manejo de Cuencas hidrográficas y de Conservación de Suelos*) has been carrying out the most extensive forestry program in the country; it aims to use participatory programs of social development to contribute to soil and water conservation based on reforestation. A total of 390,000 hectares of forest are classified as exclusively for soil and water protection<sup>a</sup>. The total forest carbon stock is estimated at 6.4 billion tons, 95% of which is in Amazonian forests<sup>a</sup>.

**Biological diversity.** Peru has a great range of geographical conditions and is very biodiverse. It contains 10% of the global total of flowering plants (40,000–50,000 plant species), 462 mammals, 1,816 birds, 360 reptiles, 332 amphibians, 2,000 sea fish and 797 fresh water fish. Forty-eight mammals, 97 birds, eight reptiles, 78 amphibians and 276 plants are listed as critically endangered, endangered or vulnerable on the IUCN red list of threatened species; of these, 19 mammals, 70 birds, 62 amphibians and two plants are found in forests (IUCN 2004). Twelve plants are listed in CITES Appendix I; 463, including caoba, in Appendix II; and one in Appendix III (CITES 2005).

### Protective measures in production forests.

Management-plan prescriptions for forest concessions give clear guidance on leaving protection strips along streams; they specify species to be protected and refer to wildlife protection in concession areas. There are also prescriptions for RIL.

**Extent of protected areas.** In 2001, new natural protected areas were defined and existing protected areas were reclassified. The well-developed and relatively well-funded system of protected areas, SINANPE, now contains 61 protected areas covering an area of 17.7 million hectares, or 14% of the country. Protected areas include national parks, national reserves, national sanctuaries, historic sanctuaries, hunting reserves, communal reserves, reserved zones and protection forests. Their main purpose is to protect representative ecosystems and their biodiversity. According to UNEP-WCMC (2004), 3.13 million hectares of forest are in protected areas conforming to IUCN protected-area categories I–IV, including 1.9 million hectares of lowland evergreen broadleaved rainforest. Based on provisions in the new forestry and wildlife law, in July 2001 INRENA granted an area of 135,832 hectares as a 'conservation concession' for a period of 40 years to a private association (the Amazon Watershed Conservation Association – *Asociación para la Conservación de la Cuenca Amazónica – ACCA*). In such concessions, protection activities, ecotourism and the sustainable use of NWFPs may be carried out, but not logging. It is expected that more concessions will be granted in the future for NWFPs and conservation.

**Estimate of the area of forest sustainably managed for protection.** The area of protection PFE managed sustainably is estimated to be at least 1.54 million hectares, which includes the core water protection forests of about 60,000 hectares<sup>c</sup>; the totally protected portion of the Peruvian part of the transboundary protected areas of Tambopata (1.09 million hectares) and El Condor (253,000

hectares), which are supported by ITTO projects; and the ACCA conservation concession (136,000 hectares). Moreover, large areas of the protection PFE, even if not formally under SFM, are under no imminent threat due to their remoteness.

### Socioeconomic aspects

**Economic aspects.** The contribution of the forest sector to GDP is around 1%<sup>a</sup>. An estimated 250,000 jobs are generated directly by forestry activities, over 50% of them in the Peruvian Amazon<sup>b</sup>. The forest industry and small- to medium-sized enterprises are mostly located in Lima, Trujillo, Chiclayo, Cuzco, Iquitos, Pucallpa and Tarapoto and employ more than 82,000 people. The contribution of forestry, however, is not only made through direct employment but also through the provision of a wide range of goods for consumption, handicrafts and small commerce. Fuelwood collection is still the main extractive use of the country's natural forests. Small-scale logging is important both economically and socially in the Amazon; nearly all forest areas close to the main rivers have been heavily harvested.

**Livelihood values.** Many NWFPs are used and traded locally, such as fruits and vegetables like *Mauritia flexuosa* (aguaje), camu-camu and palmito, local bamboo (*Guadua angustifolia*), palms and fibres. Wildlife, particularly fish, is an important source of protein throughout the Amazon.

**Social relations.** The Peruvian Amazon remains a frontier for settlers from other parts of Peru, many of whom engage in small-scale and often illegal logging. The social impacts of the new concession system are unknown. Illegal harvesting of the two most important species, caoba and cedro, is widespread<sup>c</sup>. Logging by outsiders of indigenous and community lands can cause intra-community conflicts, including over the distribution of payments. Narcotic crops, particularly coca, are planted by shifting cultivators in fields and small openings in the forest<sup>c</sup>.

### Summary

Over the past three years, Peru has taken significant steps towards integrating the forest sector into the broader macroeconomic objectives of sustainable development. The new forestry and wildlife law

embodies the forest policy of the country and prescribes several options for SFM and reforestation. An independent forest-control mechanism has been established and a broad coalition of stakeholders from the public and private sectors and civil society works together to develop joint approaches to SFM. Nevertheless, Peru still faces some major challenges in enforcing and applying regulations and planning instruments in the country's vast Amazon forests.

### Key points

- Peru has a large forest resource with good potential for sustainable management.
- The PFE comprises an estimated 24.6 million hectares of natural production forest, 200,000–300,000 hectares of plantations and 16.3 million hectares of protection forest. A further 19.1 million hectares of forest have not yet been allocated.
- At least 560,000 hectares of production PFE and 1.54 million hectares of protection PFE are being managed sustainably. Moreover, large areas of the protection PFE, even if not formally under SFM, are under no imminent threat due to their remoteness.
- 59,600 hectares of natural forests have been certified in indigenous territories.
- The deforestation rate of about 269,000 hectares per year is one of the highest in the region; it is caused largely by the influx of settlers to the Amazon region and subsequent clearance for agriculture.
- A new forestry and wildlife law and its regulations were approved in 2000/2001, a national forest strategy was adopted in 2004 and a national reforestation plan was prepared in 2005.
- The forestry and wildlife law is a bold initiative to promote SFM; its effective implementation will probably require substantial investments in human resources in both the public and private sectors.
- Among other things, the new law sets out the parameters of a new concession system.
- An independent forest control and supervision agency has been created to oversee the implementation of this new system.

- The financial viability of SFM will depend in large measure on the prices that can be obtained for a range of lesser-known species.
- There are many informal forest operations, especially linked to caoba and cedro, but these species are becoming economically scarcer. Harvesting pressure for such timbers is increasing both in protected areas and in forests belonging to indigenous communities.
- The capacity to implement SFM at the field level is low, although considerable efforts are being made to address this through training and technical assistance.

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