



**Forestry Department**

**Food and Agriculture Organization of the United Nations**

**GLOBAL FOREST RESOURCES  
ASSESSMENT 2005**

**ZAMBIA**

**COUNTRY REPORT**



## The Forest Resources Assessment Programme

Sustainably managed forests have multiple environmental and socio-economic functions important at the global, national and local scales, and play a vital part in sustainable development. Reliable and up-to-date information on the state of forest resources - not only on area and area change, but also on such variables as growing stock, wood and non-wood products, carbon, protected areas, use of forests for recreation and other services, biological diversity and forests' contribution to national economies - is crucial to support decision-making for policies and programmes in forestry and sustainable development at all levels.

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2005 (FRA 2005), which is the most comprehensive assessment to date. More than 800 people have been involved, including 172 national correspondents and their colleagues, an Advisory Group, international experts, FAO staff, consultants and volunteers. Information has been collated from 229 countries and territories for three points in time: 1990, 2000 and 2005.

The reporting framework for FRA 2005 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes more than 40 variables related to the extent, condition, uses and values of forest resources. More information on the FRA 2005 process and the results - including all the country reports - is available on the FRA 2005 Web site ([www.fao.org/forestry/fra2005](http://www.fao.org/forestry/fra2005)).

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The Global Forest Resources Assessment 2005 Country Report Series is designed to document and make available the information forming the basis for the FRA 2005 reports. The Country Reports have been compiled by officially nominated country correspondents in collaboration with FAO staff. Prior to finalisation, these reports were subject to validation by forestry authorities in the respective countries.

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# 1 Table T1 – Extent of Forest and Other wooded land

## 1.1 FRA 2005 Categories and definitions

| Category  | Definition   |
|---|--|
| Forest  | Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds <i>in situ</i> . It does not include land that is predominantly under agricultural or urban land use.   |
| Other wooded land   | Land not classified as “Forest”, spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds <i>in situ</i> ; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use. |
| Other land  | All land that is not classified as “Forest” or “Other wooded land”.  |
| Other land with tree cover (Subordinated to “Other land”) | Land classified as “Other land”, spanning more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity.  |
| Inland water bodies                                       | Inland water bodies generally include major rivers, lakes and water reservoirs.  |

## 1.2 National data

### 1.2.1 Data sources

| References to sources of information   | Quality (H/M/L) | Variable(s)                   | Year(s) | Additional comments  |
|--|-----------------|-------------------------------|---------|--|
| <b>Millington, A., and Townsend, J. (eds.) 1989.</b> Biomass assessment. Woody biomass in the SADC region. Earth scans Publication Ltd. London. UK | H               | Definition and Land use cover | 1969    | The Fanshawe 1967 -1972 detailed vegetation study was summarised and forms the basis of a set of nine 1:100 000 vegetation maps compiled by Edmonds in 1976. These sources were used extensively to compile the biomass classes and data for 1989 using NOAA-7 AVHRR GAC data. |
| <b>Chakanga M, &amp; de Backer M., 1986 .</b> The forest vegetation of Zambia. Wood Consumption and Resource Survey of Zambia.                     | H               | Definitions and land Cover    | 1974    | Basic analytical inputs were from the years 1973-1975. The validity of the tables depended on the basic material of the “vegetation map of Zambia” which was edited in 1976. Back checking was not possible.   |

Notes:

A decision to use the above two reference sources for FRA 2005, was taken because most publications base their references on these studies. Secondly, there is a certain degree of alignment in terms of forest description between the various national classes. In addition the two sources based their updates on the 1969 inventory results.

## 1.2.2 Classification and definitions

### DEFINITIONS FOR 1969 DATA

| National Classes              | Definition  |
|-------------------------------|---|
| Wet Miombo woodland           | <p>The wet Miombo Woodland class is distributed widely throughout Zambia, being found in all provinces. It is the largest biomass class in the country, covering 223, 942 km<sup>2</sup> or 30.9% of the total land area. Wet Miombo is generally two-storey closed semi-evergreen woodland. The main upper-storey dominants are <i>Brachystegia</i> spp. <i>Isoberlinia</i> spp. <i>Julbernardia</i> spp and <i>Marquesia macroura</i>. The lower storey is structurally less well defined but is floristically more diverse. Underneath this can be found either a 0.6-1.3 m grass and suffrutex layer or dense evergreen thickets reaching height of 3.5m. A variety of suffrutices is common in miombo woodlands and the grass-cover varies both in density and height according to season. The occurrence of dense, evergreen, thicket under-storey is indicative of the fact that miombo woodlands have replaced dry evergreen forest in many parts of Zambia. It is an invasive woodland type replacing many types of the dry evergreen forests that covered Zambia in wetter periods. The main woody-thickets species are <i>Canthium burttii</i>, <i>Cassipourea</i> spp and <i>Chrysophllum magalismontanum</i>, as well as many shrubs. Often the only dominant miombo woodland overwood tree is <i>B. speciformis</i>. The “hill miombo” is found on the Muchinga Escarpment and the Bwingmfumu Hills. The woody biomass reserves of the wet miombo Woodland are very high, in terms of both growing stock and levels of productivity. It is an aggressive vegetation type that can withstand quiet large-scale exploitation.</p> |
| Seasonal Miombo Woodland      | <p>Seasonal Miombo Woodland is closely related to the Wet Miombo Woodland, the main difference being its market seasonality. This class occurs on the Zambian Plateau, the Zambezi Escarpment, and extensively along Mozambique and Malawi borders. It is the second largest biomass class in Zambia, accounting for 125, 715 km<sup>2</sup> of the country. The Woodland is similar in structure to the Wet Miombo Woodland but the canopy is more open and there is a far greater proportion of deciduous trees. Consequently, species such as <i>B allenii</i>, <i>B bussei</i>, <i>Burkea african</i>, <i>I.angolensis</i>, <i>J. globiflora</i> and <i>Terminalia sericea</i> appear with more frequency in the canopy. Extensive areas of “hill miombo” woodland occur in this biomass class and are found particularly on the hills along the border of Zaire, the hills along the Mozambique border in North-Western Province and Zambian extension of Nyika Plateau. In these areas, the trees are under severe drought-stress due to the thin, stony soils. Seasonal Miombo woodland is almost as resilient as Wet Miombo Woodland. The areas of dry evergreen thicket do not occur in this more open miombo woodland because of longer dry-season moisture stress period. The canopy is dominated by <i>B. glabrescens</i>, <i>B. microphylla</i>, <i>B. taxifolia</i> and <i>Cryptosepalum exfoliatum</i>. . The growing stock is high as are productivity levels.</p>  |
| Dry Miombo and Munga Woodland | <p>The Dry Miombo Woodland component of this biomass class has both natural and disturbed elements. The canopy is dominated by <i>Erythrophleum africana</i>, usually combined with <i>B. allenii</i>, <i>B. bussei</i>, <i>Burkea Africana</i>, <i>J. globiflora</i> and <i>Terminalia sericea</i>. The woodland has a relatively open canopy of widely spaced deciduous trees. Munga woodland is a type of savannah woodland with open, park-like appearance. There are either one or two woody layers, both deciduous, with emergent reaching 18m in height. Sometimes a dense woody understorey reaching 4.5m is found. The bushes here are diverse or semi-deciduous and , once again, although floristically diverse this under storey is dominated by <i>Acacia</i> spp. and <i>Combretum</i> spp. In some, Munga Woodland areas there are woody thickets.</p>   |
| Degraded Miombo woodlands     | <p>Woodlands are generally destroyed by a type of shifting agriculture practiced by the Bemba. Cultivation is mainly based on cassava, cowpea, maize and millet with groundnuts planted in the second year. Three succession phases are identified:</p> <ol style="list-style-type: none"> <li>i) The field are still dominated by crops but shrubs begin to intrude after the first year</li> <li>ii) Phase two, lasting for 2-6 years after clearance. Shrubs dominate the woody component especially <i>Euphorbia tirucalli</i> and <i>Smilax kraussina</i>. Other shrubs</li> </ol>   |

|                           |  |
|---------------------------|--|
|                           | <p>begin to invade and grasses become increasingly important as crops are harvested for up to three years</p> <p>iii) Phase 3, lasting from 6 to 25 years. After 25 years, woody species have gained such hold on the plot that canopy woodland has formed. Shrubs are absent, and only grasses and sedges are found under the trees</p> <p>The overall picture is one of declining miombo woodland species and an invasion of savannah woodland species, especially those related to <i>Combretum</i> savannah. Woodlands found in the degraded Miombo Woodlands include Itigi Forests, <i>Lake Basin Chipya</i> Woodland, and Grassland and termirminitary Vegetation associated with highland areas.</p> <p>The grassland in the Northern Province is pure stand grassland with no tree – cover. The only woody biomass in these large grassland areas in Northern Province is associated with old termite mounds</p> <p>With the exception of the grassland, this biomass class has high woody-biomass growing stock and moderates of productivity.</p>  |
| Dry Evergreen Forest      | <p>They are well developed with three tiers. A closed evergreen canopy 25-27m tall, with emergent and dense evergreen shrub scrambler thickets of 1.5-6m in height. Three types have been identified:</p> <ol style="list-style-type: none"> <li>1. <i>Parinari</i> forest is found on the Zambian Plateau and has two main canopy trees, <i>Parinari excelsa</i> and <i>Syzygium guineese</i>. Common under-storey trees are <i>Aidia micrantha</i>, <i>Olea capensis</i> and <i>Teclea nobilis</i></li> <li>2. Marquesia forest is found in the lake Bengweulu Basin.</li> <li>3. <i>Cryptosepalum</i> forest</li> </ol>   |
| Kalahari Woodland         | <p>Two types of woodland: Guibourtia woodland is two-storey open woodland with deciduous to semi –deciduous floristically-rich upper canopy of 18-24 tall which includes <i>G. coleosperma</i>, a variety of deciduous trees and invasive miombo woodland species. The under story is composed of a thicket, 1.3-2.6 m high, of small trees and shrubs The other types of Kalahari Sand vegetation are dealt with in the Scrub Woodland Class.</p>   |
| Mopane Woodland           | <p>Mopane is a single storey woodland of 6-18m tall with an open deciduous nature. The dominant tree is <i>Colophospermum Mopane</i>. Lower trees, shrubs are usually absent, and grass and herb cover is dominant only locally.</p>   |
| Scrub woodland            | <p>Scrub Woodland is restricted to the tributaries of the Zambezi on the Angolan border and has equivalents in the <i>Chanas da borracha</i> grassland in Angola. Elsewhere it probably represents small isolated areas of scrubby thickets. Three elements related to the Scrub Woodland:</p> <ol style="list-style-type: none"> <li>1. The <i>Burkea-Diplorhynchus</i> Scrub is a 4.5-6 metre –high, open woody scrubland dominated by <i>B.africana</i> and <i>D.condylocarpon</i>. It occurs on the highest ground in the river valleys</li> <li>2. At slightest lower elevations, <i>diplohrynchus</i> Scrub is found. This reaches 2m in height and is very open with about 12-25 scrubby trees per hectare</li> <li>3. The final category is Pariniri suffrutex savannah. This is a ground carpet of suffutices reaching 30 cm in height with no emergent trees.</li> </ol> <p>In other areas, along the river valleys, the biomass classes represent grassland and to a lesser extent, scrubby thickets. The grassland is generally floristically diverse but is without woody species. They are usually controlled by flooding, poor soil or burning. The biomass class has very low growing stock and low productivity levels, fuelwood resources are minimal.</p> |
| Swamp and lake vegetation | <p>Swamp and Lake Vegetation is found along the shores of the main lakes-Bengweulu, Kariba, Mweru and Tanzania-and in the large swamps typical of the Zambian Plateau. In many areas, the swamp and lakeside vegetation is grassland with few or no woody plants; however, some areas of swamp forest do occur. These are mainly three storey closed evergreen forest with a canopy that reaches 27m and is dominated by <i>Ilex mitis</i>, <i>Syzygium</i> spp. and <i>Xylophia</i> spp. It is underlain by a discontinuous evergreen under story, 9-18m high, and a dense evergreen shrub layer, which reaches 4.5m. The forest floor is either bare or covered by herb stands. All swamps are controlled by high ground water levels. They are also small in extent, varying from 1 to 120 ha. Fanshawe (1969) estimated that only 380km<sup>2</sup> of swamp forest in Zambia.</p>   |

### 1.2.3 Original data

#### Original Data for 1969

| Area in km <sup>2</sup>       |                |
|-------------------------------|----------------|
| Wet Miombo woodland           | 223 942        |
| Dry Miombo and Munga Woodland | 53 085         |
| Seasonal Miombo Woodland      | 125 715        |
| Dry Evergreen Forest          | 9 798          |
| Degraded Miombo woodlands     | 110 161        |
| Mopane Woodland               | 69 000         |
| Scrub woodland                | 9 800          |
| Swamp and lake vegetation     | 46 140         |
| Kalahari Woodland             | 79 212         |
| Others                        | 16 537         |
| <b>Total</b>                  | <b>743 390</b> |

### 1.3 Analysis and processing of national data

Multiplying by 100 to convert to hectares gives:

| National Category             | Area in hectares |
|-------------------------------|------------------|
| Wet Miombo woodland           | 22 394 200       |
| Dry Miombo and Munga Woodland | 5 308 500        |
| Seasonal Miombo Woodland      | 12 571 500       |
| Dry Evergreen Forest          | 979 800          |
| Degraded Miombo woodlands     | 11 016 100       |
| Mopane Woodland               | 6 900 000        |
| Scrub woodland                | 980 000          |
| Swamp and lake vegetation     | 4 614 000        |
| Kalahari Woodland             | 7 921 200        |
| Others                        | 1 653 700        |
| Total land area               | 74 339 000       |

#### Reclassifying 1969 data

| National Classes                  | Forests | OWL | OL   |
|-----------------------------------|---------|-----|------|
| Wet Miombo woodland               | 100%    |     |      |
| Dry Miombo and Munga Woodland (1) | 67%     | 33% |      |
| Seasonal Miombo Woodland (2)      | 80%     | 20% |      |
| Dry Evergreen Forest              | 100%    |     |      |
| Degraded Miombo woodlands (3)     | 60%     | 10% | 30%  |
| Mopane Woodland (4)               | 100%    |     |      |
| Scrub woodland (5)                |         |     | 100% |
| Swamp and lake vegetation (6)     | 1%      |     | 99%  |
| Kalahari Woodland                 | 100%    |     |      |
| Others                            |         |     | 100% |

**Notes:**

1. The woodland has a relatively open canopy of widely spaced deciduous trees. A dense woody under-storey reaching 4.5 m is found. Bushes are deciduous or semi deciduous. In some Munga Woodlands, there are woody thickets. The more aggressive Munga Woodland increases the woody component of alluvial grassland but in other cases replaces more closed woodland with wooded grassland. 67% was allocated to forests and 33% to bushes and thickets.
2. The woodland is similar in structure to the Wet Miombo Woodland but the canopy is more open and there is far greater proportion of deciduous trees. The shrub and grass layers may be better developed and are floristically different. Extensive areas of "hill Miombo" occur in this biomass class and are found in hills. This was assumed to be open forest (80%) and 20% shrubs.
3. Vegetation found are Itigi forests, Lake Basin Chipya Woodland, grassland and Terminiary vegetation associated with highland areas. In the Northern province, there is mainly pure stands grassland with no tree cover. Itigi forest and Lake Basin Chipya woodlands were allocated 60% forests, Terminiary species were allocated 10% OWL and the Northern Province grassland with no tree cover was allocated 30% other land.
4. Mopane woodland allocated 100% as in the Zimbabwean classification
5. It is equivalent to Chanas da borracha grassland in Angola. The biomass class represent grassland and to a lesser extent scrubby thickets=100% other land.
6. In many areas Swamp and lakeside, vegetation is grassland with few or no woody plants. It is estimated that only 380 00 ha (out of 4614000 swamp and lake side vegetation) of swamp forest exist in Zambia. 1% was allocated to forests and 99% other land.

**1.3.1 Calibration**

No calibration for 1969 data was necessary

**1.4 Reclassification into FRA 2005 classes**

Results after reclassifying 1969 data

| National Classes              | Area in hectares  |                  |                   |
|-------------------------------|-------------------|------------------|-------------------|
|                               | Forest            | OWL              | OL                |
| Wet Miombo woodland           | 22 394 200        |                  |                   |
| Dry Miombo and Munga Woodland | 3 556 695         | 1 751 805        |                   |
| Seasonal Miombo Woodland      | 10 057 200        | 2 514 300        |                   |
| Dry Evergreen Forest          | 979 800           |                  |                   |
| Degraded Miombo woodlands     | 6 609 660         | 1 101 610        | 3 304 830         |
| Mopane Woodland               | 6 900 000         |                  |                   |
| Scrub woodland                |                   |                  | 980 000           |
| Swamp and lake vegetation     | 46 140            |                  | 4 567 860         |
| Kalahari Woodland             | 7 921 200         |                  |                   |
| Others                        |                   |                  | 1 653 700         |
| <b>Total</b>                  | <b>58 464 895</b> | <b>5 367 715</b> | <b>10 506 390</b> |

## DEFINITIONS FOR 1974 DATA

| National class          | Definition  |
|-------------------------|---|
| 1. Parinari Forest      | Canopy dominants restricted to <i>Parinari excelsa</i> & <i>Syzygium guineense</i> spp. <i>afromontanum</i> with the old emergent <i>Entandrophragma delevoiyi</i> . <i>Marquesia macroura</i> and <i>Erythrophleum suaveolens</i> are occasional canopy associates.  |
| 2. Marquesia Forest     | Canopy dominants restricted to <i>Anisophyllea pomifera</i> locally and <i>Syzygium guineense</i> spp. <i>Afromontanum</i> .  |
| 3. Lake Basin Chipya    | Three-storeyed woodland with an open evergreen to deciduous canopy 21 to 27 metres high characterised by <i>Albizia antunesiana</i> , <i>Burkea africana</i> , <i>Combretum collinum</i> , <i>Erythrophleum africanum</i> , <i>Parinari curatellifolia</i> , <i>Pericopsis angolensis</i> <i>Pterocarpus angolensis</i> , and <i>Terminalia sericea</i> . Bracken, <i>Aframomum</i> and <i>Smilax</i> are characteristic of the forest floor.   |
| 4. Cryptosepalum Forest | Canopy dominants are restricted to <i>Cryptosepalum exfoliatum</i> spp. <i>Pseudotaxus</i> and <i>Guibourtia coleosperma</i> in the lower rainfall areas of Zambezi, Kabompo and Kaoma Districts but associated with <i>Marquesia acuminata</i> , <i>M. macroura</i> , <i>Parinari excelsa</i> , and <i>Syzygium guineense</i> spp <i>afromontanum</i> in the higher rainfall of Mwinilunga.  |
| 5. Kalahari Sand Chip a | Canopy species are <i>Burkea africana</i> , <i>Combretum collinum</i> , <i>Dialium engleranum</i> , <i>Erythrophleum africanum</i> , <i>Guibourtia coleosperma</i> , <i>Peltophorum africanum</i> , <i>Pterocarpus angolensis</i> , <i>Terminalia sericea</i> , and there is a dense growth of <i>Aframomum</i> and Bracken on the forest floor.  |
| 6. Baikiaea Forest      | Two-storeyed forest with an open or closed, usually deciduous canopy 9 to 18 metres high composed of <i>Baikiaea plurijuga</i> and <i>Pterocarpus antunesii</i> in varying proportions. Invasive <i>Acacia giraffae</i> and <i>Combretum collinum</i> are widespread. <i>Entandrophragma caudatum</i> is a local emergent. Below the canopy is a well-defined deciduous thicket composed of shrubs and scramblers 3 to 6 metres high.   |
| 7. Itigi Forest         | Two-storeyed forest with a very open overwood of deciduous or semi-deciduous emergent 6 to 12 metres high characterised by <i>Baphia massaiensis</i> spp. <i>Floribunda</i> , <i>Boscia angustifolia</i> , <i>Burtia prunoides</i> , <i>Bussea massaiensis</i> , <i>Diospyros mweruensis</i> and the succulent cactus-like <i>Euphorbia candelabrum</i> . Trees are often encrusted with lichens.   |
| 8. Montane Forest       | Tree-storeyed forest with a closed evergreen canopy about 27 metres high without any clear-cut dominants but with <i>Aningeria</i> spp., <i>Cola greenwayi</i> , <i>Myrica salicifolia</i> , <i>Nuxia</i> spp., <i>Olinia usambarensis</i> , <i>Parinari excelsa</i> , <i>Podocarpus milanjanus</i> , <i>Rapanea melanophloea</i> and <i>Trichilia prieuriana</i> as the most abundant species. Ground between forest patches covered by fire derived upland grasslands dotted with gnarled <i>Protea madiensis</i> shrubs.   |
| 9. Swamp Forest         | Three-storeyed forest with a closed evergreen canopy about 27 metres high characterised by <i>Ilex mitis</i> , <i>Mitragyna stipulosa</i> , <i>Syzygium cordatum</i> , <i>S. owariense</i> , <i>Xylopia aethiopica</i> , and <i>X. rubescens</i> . (Delta swamp, Seepage swamp or Seasonal Swamp).  |
| 10. Riparian Forest     | Three-storeyed forest with a closed, evergreen canopy 21 metre high characterised by <i>Diospyros mespiliformis</i> , <i>Khaya nyasica</i> , <i>Parinari excelsa</i> , <i>Syzygium cordatum</i> , associated with <i>Madina microcephala</i> , <i>Bridelia micrantha</i> , and <i>Cleistanthus milleri</i> . <i>Faurea saligna</i> , <i>Homalium africanum</i> , <i>Ilex mitis</i> , <i>Manilkara obovata</i> , <i>Raphia palms</i> . The composition varies from a northern evergreen element and a southern deciduous element. Most riparian forests are secondary. |
| 11. Miombo Woodland     | Two-storeyed woodland with an open or partially closed canopy of semi-evergreen trees 15 to 21 metres high characterised by species of <i>Brachystegia</i> , <i>Isoberlinia</i> , <i>Julbernardia</i> , and <i>Marquesia macroura</i> with <i>Erythrophleum africanum</i> , <i>Parinari curatellifolia</i> and <i>Pericopsis angolensis</i> as frequent associates. The forest floor is covered by a more or less dense grass cover.  |
| 12. Hill Woodland       | Similar to Miombo above but where there is more rock than soil on hills the <i>Brachystegias</i> and their allies almost die out except for <i>B. microphylla</i> in the north and <i>B. glaucescens</i> in the south and their place is taken by characteristic hill shrubs such as <i>Aeschynomene rubrofrarinacea</i> and <i>A. semilunaris</i> , <i>Euphorbia ussanguensis</i> and <i>E. griseola</i> , <i>Myrothamnus flabellifolius</i> , <i>Pentas nobilis</i> , <i>Vellozia equisetoides</i> and <i>V. tomentosa</i> and <i>Vernonia bellinghamii</i> .       |
| 13. Kalahari Woodland   | Derived from destruction of Baikiaea forest, is a two-storeyed woodland with an open or partially closed, deciduous or semi deciduous overwood 18 to 24 metres high characterised by <i>Amblygonocarpus andongensis</i> , <i>Burkea africana</i> , <i>Combretum collinum</i> , <i>Cryptosepalum exfoliatum</i> ssp. <i>Pseudotaxus</i> , <i>Dialium engleranum</i> , <i>Erythrophleum africanum</i> , <i>Guibourtia coleosperma</i> , <i>Parinari</i>   |

|  |  |
|--|--|
|  | <i>curatellifolia</i> , and <i>Terminalia sericea</i> .  |
| 14. Mopane Woodland                    | One-storeyed woodland with an open deciduous canopy 6 to 18 metres high. The dominant <i>Colophospermum mopane</i> is pure or almost pure. Scattered elements of Munga woodland occur here and there represented chiefly by <i>Acacia nigrescens</i> , <i>Adansonia digitata</i> , <i>Combretum imberbe</i> , <i>Kirkia acuminata</i> , and <i>Lansea stuhlmannii</i> . The python vine <i>Fockea multiflora</i> is usually present. |
| 15. Munga Woodland                     | Coined term for Savanna woodland is an open park-like 1 to 2 storeyed deciduous woodland with scattered or grouped emergents to 18 metres high characterised particularly by <i>Acacia</i> , <i>Combretum</i> , and <i>Terminalia species</i> . Occasionally it has a deciduous or semi-deciduous thicket under storey. It is varied into upper valley, lower valley and Kalahari sites.   |
| 16. Termitary Vegetation & Bush Groups | All types of vegetation, i.e. forest, woodland, thicket, scrub, and grassland that can be found on or at the bases of termitaria. They have been classified by habitat rather than by vegetation type, because to some extent one limits the other.  |
| 17. Treeless Grassland                 | All areas dominated by grass with very few scattered or no trees   |
| 18. Inland Water                       | All streams, river, s swamps, dams and lakes   |

### Original Data for 1974

| National Classes                     | Area in 1000 ha |
|--------------------------------------|-----------------|
| 1. <i>Parinari</i>                   | 42              |
| 2. <i>Marquesia</i>                  | 43              |
| 3. Lake basins ( <i>Chipya</i> )     | 1 625           |
| 4. <i>Cryptosepalum</i>              | 1 764           |
| 5. Kalahari Chipya                   | 142             |
| 6. <i>Baikiae</i>                    | 843             |
| 7. <i>Itigi</i>                      | 155             |
| 8. <i>Montane</i>                    | 4               |
| 9. <i>Swamp</i>                      | 153             |
| 10. <i>Riparian</i>                  | 92              |
| 11. <i>Miombo</i>                    | 35 286          |
| 12. Hill Woodland                    | 366             |
| 13. Kalahari                         | 9 761           |
| 14. Mopane                           | 4 428           |
| 15. Munga                            | 3 727           |
| 16. Termitaria vegetation and groups | 2 773           |
| 17. Treeless grasslands              | 13 016          |
| <b>Total country area</b>            | <b>74 220</b>   |

### Calibration

|                               |             |
|-------------------------------|-------------|
| National land area in 1000 ha | 74 220      |
| FAO stats in 1000 ha          | 74 339      |
| Calibrating factor            | 1.001603341 |

| National Classes                                 | Calibrated area in 1000 ha |
|--|----------------------------|
| 1. <i>Parinari</i>                               | 42 067                     |
| 2. <i>Marquesia</i>                              | 43 069                     |
| 3. Lake basins ( <i>Chipya</i> )                 | 1 627 605                  |
| 4. <i>Cryptosepalum</i>                          | 1 766 828                  |
| 5. Kalahari <i>Chipya</i>                        | 142 228                    |
| 6. <i>Baikia</i>                                 | 844 352                    |
| 7. <i>Itigi</i>                                  | 155 249                    |
| 8. <i>Montane</i>                                | 4 006                      |
| 9. <i>Swamp</i>                                  | 153 245                    |
| 10. <i>Riparian</i>                              | 92 148                     |
| 11. <i>Miombo</i>                                | 35 342 576                 |
| 12. Hill Woodland                                | 366 587                    |
| 13. <i>Kalahari</i>                              | 9 776 650                  |
| 14. <i>Mopane</i>                                | 4 435 100                  |
| 15. <i>Munga</i>                                 | 3 732 976                  |
| 16. <i>Termitaria</i> vegetation and bush groups | 2 777 446                  |
| 17. <i>Treeless grasslands</i>                   | 13 036 869                 |
| Total  | 74 339 000                 |

### Reclassifying 1974 data

|  |      | OWL  | OL   |
|--|------|------|------|
| 1. <i>Parinari</i>                               | 100% |      |      |
| 2. <i>Marquesia</i>                              | 100% |      |      |
| 3. Lake basins ( <i>Chipya</i> )                 | 100% |      |      |
| 4. <i>Cryptosepalum</i>                          | 100% |      |      |
| 5. Kalahari <i>Chipya</i>                        | 100% |      |      |
| 6. <i>Baikia</i>                                 | 100% |      |      |
| 7. <i>Itigi</i>                                  | 100% |      |      |
| 8. <i>Montane</i>                                | 100% |      |      |
| 9. <i>Swamp</i>                                  | 100% |      |      |
| 10. <i>Riparian</i>                              | 100% |      |      |
| 11. <i>Miombo</i>                                | 100% |      |      |
| 12. Hill Woodland (1)                            | 88%  | 12%  |      |
| 13. <i>Kalahari</i>                              | 100% |      |      |
| 14. <i>Mopane</i>                                | 100% |      |      |
| 15. <i>Munga</i> (2)                             | 40%  | 60%  |      |
|  |      |      |      |
| 16. <i>Termitaria</i> vegetation and bush groups |      | 100% |      |
| 17. <i>Treeless grasslands</i>                   |      |      | 100% |

#### Notes:

1. Classification as in FRA 2000. 88% Forest and 12% OWL where forest are taken by shrubs.
2. An open park like 1 to 2 storeyed deciduous woodland with scattered or grouped emergent with scattered or group emergent to 18m high characterised particularly by *Acacia*, *Combretum* and *Terminalia* species was allocated 40% Forests and 60% OWL.

**Results after reclassifying 1974 data**

| National Classes                          | Area in hectares  |                  |                   |
|---|-------------------|------------------|-------------------|
|   | Forests           | OWL              | OL                |
| 1. <i>Parinari</i>                        | 42 067            |                  |                   |
| 2. <i>Marquesia</i>                       | 43 069            |                  |                   |
| 3. Lake basins ( <i>Chipya</i> )          | 1 627 605         |                  |                   |
| 4. <i>Cryptosepalum</i>                   | 1 766 828         |                  |                   |
| 5. Kalahari <i>Chipya</i>                 | 142 228           |                  |                   |
| 6. <i>Baikia</i>                          | 844 352           |                  |                   |
| 7. <i>Itigi</i>                           | 155 249           |                  |                   |
| 8. <i>Montane</i>                         | 4 006             |                  |                   |
| 9. <i>Swamp</i>                           | 153 245           |                  |                   |
| 10. <i>Riparian</i>                       | 92 148            |                  |                   |
| 11. <i>Miombo</i>                         | 35 342 576        |                  |                   |
| 12. Hill Woodland                         | 322 596           | 43 990           |                   |
| 13. <i>Kalahari</i>                       | 9 776 650         |                  |                   |
| 14. <i>Mopane</i>                         | 4 435 100         |                  |                   |
| 15. <i>Munga (I)</i>                      | 1 493 190         | 2 239 785        |                   |
|   |                   |                  |                   |
| 16. Termitaria vegetation and bush groups |                   | 2 777 446        |                   |
| 17. <i>Treeless grasslands</i>            |                   |                  | 13 036 869        |
| Total land area                           | <b>56 240 909</b> | <b>5 061 222</b> | <b>13 036 869</b> |

**Summary of 1969 and 1974 data**

| FRA 2005 Categories | Area in hectares |            |
|---------------------|------------------|------------|
|                     | 1969             | 1974       |
| Forests             | 58 464 895       | 56 240 909 |
| OWL                 | 5 367 715        | 5 061 222  |
| OL                  | 10 506 390       | 13 036 869 |
|                     | 74 339 000       | 74 339 000 |

**1.4.1 Estimation and forecasting**

| FRA 2005           | Area in hectares |            |            |
|--------------------|------------------|------------|------------|
|                    | 1990             | 2000       | 2005       |
| Forests            | 49 124 154       | 44 676 182 | 42 452 196 |
| OWL                | 4 080 444        | 3 467 458  | 3 160 965  |
| OL                 | 21 134 402       | 26 195 360 | 28 725 839 |
| Inland water       | 922 000          | 922 000    | 922 000    |
| Total country area | 75 261 000       | 75 261 000 | 75 261 000 |

## 1.5 Data for National reporting table T1

| FRA 2005 Categories                       | Area (1000 hectares) |        |        |
|---|----------------------|--------|--------|
|   | 1990                 | 2000   | 2005   |
| Forest                                    | 49 124               | 44 676 | 42 452 |
| Other wooded land                         | 4 081                | 3 468  | 3 161  |
| Other land                                | 21 134               | 26 195 | 28 726 |
| ...of which with tree cover <sup>1)</sup> |                      |        |        |
| Inland water bodies                       | 922                  | 922    | 922    |
| <b>TOTAL</b>                              | 75 261               | 75 261 | 75 261 |

## 1.6 Comments to National reporting table T1

Zambia lacks up to date forest resources inventories as a result, different estimates of forest cover have been quoted in a number of publications. The last national inventory was done in late 1969s, followed by the Southern African biomass study by Millington *et al.* the 1989 and the wood consumption and resource survey by de Backer and Chakanga published in 1986. Both sources used the 1969 inventory and the 1974 update to estimate the change in forest cover over time. Other figures on forest cover are estimates and assumptions based on what has changed over the last 40 years. These estimates, particularly of the land cover are not very reliable. The 1978-weighted average forest cover estimated for FRA 2000 was 53.48 million ha. Using the figure in table 1.5 and extrapolating back in time, the estimate for 1978 would be 54.46 million ha.

The annual deforestation rate, based on table 1.5, is 444 800 ha. This differs from the deforestation rate reported for FRA 2000 (850 823 ha) but is close to the deforestation rate calculated using the 1978 area weighted average of 53.48 million ha and the outlook study for 1997 of 44.6 million ha, which would result in an average annual deforestation rate of 467 368 ha.

Note that the estimated deforestation rate in FRA 2000 was based on the extrapolated figures of an update information undertaken in 1974 and the weighted average of an inventory report of three provinces in 1993.

A National Forest Assessment is currently being undertaken in Zambia with the support of FAO.

## 2 Table T2 – Ownership of Forest and Other wooded land

### 2.1 FRA 2005 Categories and definitions

| Category          | Definition  |
|-------------------|---|
| Private ownership | Land owned by individuals, families, private co-operatives, corporations, industries, religious and educational institutions, pension or investment funds, and other private institutions.          |
| Public ownership  | Land owned by the State (national, state and regional governments) or government-owned institutions or corporations or other public bodies including cities, municipalities, villages and communes. |
| Other ownership   | Land that is not classified either as “Public ownership” or as “Private ownership”.   |

### 2.2 National data

#### 2.2.1 Data sources

Data from T1 will be used.

#### 2.2.2 Original data

All Land in Zambia is vested in the President of the Republic of Zambia and is owned by the State. All Forest Reserves and National Parks are under the Jurisdiction of the State. Therefore they have been classified as Public owned. All other wooded areas have been classified as customary areas.

### 2.3 Data for National reporting table T2

| FRA 2005 Categories | Area (1000 hectares) |               |                   |              |
|---------------------|----------------------|---------------|-------------------|--------------|
|                     | Forest               |               | Other wooded land |              |
|                     | 1990                 | 2000          | 1990              | 2000         |
| Private ownership   |                      |               |                   |              |
| Public ownership    | 49 124               | 44 676        |                   |              |
| Other ownership (1) |                      |               | 4 081             | 3 468        |
| <b>TOTAL</b>        | <b>49 124</b>        | <b>44 676</b> | <b>4 081</b>      | <b>3 468</b> |

Notes:

1) Customary ownership

### 3 Table T3 – Designated function of Forest and Other wooded land

#### 3.1 FRA 2005 Categories and definitions

##### *Types of designation*

| Category                 | Definition   |
|--------------------------|--|
| Primary function         | A designated function is considered primary when it is significantly more important than other functions. This includes areas that are legally or voluntarily set aside for specific purposes. |
| Total area with function | Total area where a specific function has been designated, regardless whether it is primary or not.   |

##### *Designation categories*

| Category / Designated function | Definition   |
|--------------------------------|--|
| Production                     | Forest / Other wooded land designated for production and extraction of forest goods, including both wood and non-wood forest products.   |
| Protection of soil and water   | Forest / Other wooded land designated for protection of soil and water.  |
| Conservation of biodiversity   | Forest / Other wooded land designated for conservation of biological diversity.  |
| Social services                | Forest / Other wooded land designated for the provision of social services.  |
| Multiple purpose               | Forest / Other wooded land designated to any combination of: production of goods, protection of soil and water, conservation of biodiversity and provision of social services and where none of these alone can be considered as being significantly more important than the others. |
| No or unknown function         | Forest / Other wooded land for which a specific function has not been designated or where designated function is unknown.  |

#### 3.2 National data

##### 3.2.1 Data sources

| References to sources of information   | Quality (H/M/L) | Variable(s)                                    | Year(s) | Additional comments |
|--|-----------------|--|---------|---------------------|
| 1. Mulombwa J., Woodfuel review and assessment in Zambia. FA partnership Programme (1998-2002) Project GCP/INT/679/EC      | M               | Percentages of production and protection areas | 1997    |                     |
| 2. Chilese A., 2001 FOSA Country Report – Zambia: Forests Outlook Studies Ministry of Natural Resources and Tourism Zambia | M               | Protected areas                                | 1992    |                     |

### 3.2.2 Original data

There was no second data set available for this table. Percentages will be used to estimate the area under production and protection for 1990, 2000 and 2005.

Forests reserves are designated as follows:

| <b>Forest Reserves</b>       | <b>% allocation</b> |
|------------------------------|---------------------|
| Production                   | 44%                 |
| Protection of soil and water | 26%                 |
| Multipurpose                 | 30%                 |
| Total                        | 100%                |

Source 1

#### **Year 1992**

| <b>National Classes</b>      | <b>Area in Million ha</b> | <b>Percentages</b> |
|------------------------------|---------------------------|--------------------|
| Forest Reserves (1)          | 7.21                      | 16%                |
| National Parks               | 6.35                      | 14%                |
| Game Management Areas        | 15.64                     | 35%                |
| Customary / Traditional Land | 15.35                     | 34%                |
| Total                        | 44.55                     | 100%               |

Source: 2

Notes:

1. Includes plantations

### 3.2.3 Analysis and processing of national data

### 3.2.4 Estimation and forecasting

Applying the above percentages to total forest area obtained from T1

| <b>National Classes</b>          | <b>Area in hectares</b> |                   |                   |
|----------------------------------|-------------------------|-------------------|-------------------|
|                                  | <b>1990</b>             | <b>2000</b>       | <b>2005</b>       |
| Forest Reserves (1)              | 7 950 284               | 7 473 635         | 6 870 490         |
| National Parks                   | 6 350 000               | 6 350 000         | 6 350 000         |
| Game Management Areas            | 15 640 000              | 15 640 000        | 15 640 000        |
| Customary / Traditional Land (2) | 19 183 870              | 15 212 547        | 13 591 706        |
| <b>Total</b>                     | <b>49 124 154</b>       | <b>44 676 182</b> | <b>42 452 196</b> |

Notes

1. Encroachment into the forest reserves has occurred, but no statistical figures on the extent of the encroachment are available

### 3.3 Reclassification into FRA 2005 classes

| Forest                           | Production | Protection of Soil and water (3) | Conservation of biodiversity | Social | multipurpose |
|----------------------------------|------------|----------------------------------|------------------------------|--------|--------------|
| Forest Reserves (1)              | 44%        | 26%                              |                              |        | 30%          |
| National Parks (2)               |            |                                  | 100%                         |        |              |
| Game Management Areas (3)        |            |                                  |                              |        | 100%         |
| Customary / Traditional Land (4) |            |                                  |                              |        | 100%         |

Notes:

1. Forest Reserves mainly function as protection and production forests. Percentages from source 1.
2. National Parks are the only forests set aside for the primary function of biological diversity conservation..
3. Forests that were originally set-aside, as Protection Forests “Protected Forest Areas or PFAs” are no longer functioning as such Timber licences have been issued in the same areas.
4. Open Forests, which are controlled by the Traditional authorities, are multifunctional in status.

#### Results after reclassification of 2005 data

| National Classes             | Production       | Protection of soil and water | Conservation     | Multipurpose      |
|------------------------------|------------------|------------------------------|------------------|-------------------|
| Forest Reserves              | 3 288 399        | 1 943 145                    | 0                | 2 242 091         |
| National Parks               |                  |                              | 6 350 000        |                   |
| Game Management Areas        | 0                |                              | 0                | 15 640 000        |
| Customary / Traditional Land |                  |                              |                  | 15 212 547        |
| <b>Total</b>                 | <b>3 288 399</b> | <b>1 943 145</b>             | <b>6 350 000</b> | <b>33 094 638</b> |

| National Classes             | Area in hectares  |                   |                   |
|------------------------------|-------------------|-------------------|-------------------|
|                              | 1990              | 2000              | 2005              |
| Production                   | 3 498 125         | 3 288 399         | 3 023 016         |
| Protection of soil and water | 2 067 074         | 1 943 145         | 1 786 327         |
| Conservation of biodiversity | 6 350 000         | 6 350 000         | 6 350 000         |
| Social                       |                   |                   |                   |
| Multipurpose                 | 37 208 955        | 33 094 638        | 31 292 853        |
| <b>Total Forest Area</b>     | <b>49 124 154</b> | <b>44 676 182</b> | <b>42 452 196</b> |

Notes: All OWL are for multi purpose

### 3.4 Data for National reporting table T3

| FRA 2005 Categories /<br>Designated function | Area (1000 hectares) |               |               |                          |                  |                  |
|--|----------------------|---------------|---------------|--------------------------|------------------|------------------|
|  | Primary function     |               |               | Total area with function |                  |                  |
|  | 1990                 | 2000          | 2005          | 1990                     | 2000             | 2005             |
| <b>Forest</b>                                |                      |               |               |                          |                  |                  |
| Production                                   | 3 498                | 3 289         | 3 023         |                          |                  |                  |
| Protection of soil and water                 | 2 067                | 1 943         | 1 786         |                          |                  |                  |
| Conservation of biodiversity                 | 6 350                | 6 350         | 6 350         | 10 260                   | 10 260           | 10 260           |
| Social services                              |                      |               |               |                          |                  |                  |
| Multiple purpose                             | 37 209               | 33 094        | 31 293        | not appl.                | not appl.        | not appl.        |
| No or unknown function                       | <b>49 124</b>        | <b>44 676</b> | <b>42 452</b> | not appl.                | not appl.        | not appl.        |
| <b>Total - Forest</b>                        |                      |               |               | <b>not appl.</b>         | <b>not appl.</b> | <b>not appl.</b> |
| <b>Other wooded land</b>                     |                      |               |               |                          |                  |                  |
| Production                                   |                      |               |               |                          |                  |                  |
| Protection of soil and water                 |                      |               |               |                          |                  |                  |
| Conservation of biodiversity                 |                      |               |               |                          |                  |                  |
| Social services                              |                      |               |               |                          |                  |                  |
| Multiple purpose                             | 4 081                | 3 468         | 3 161         | not appl.                | not appl.        | not appl.        |
| No or unknown function                       |                      |               |               | not appl.                | not appl.        | not appl.        |
| <b>Total – Other wooded land</b>             | <b>4 081</b>         | <b>3 468</b>  | <b>3 161</b>  | <b>not appl.</b>         | <b>not appl.</b> | <b>not appl.</b> |

## 4 Table T4 – Characteristics of Forest and Other wooded land

### 4.1 FRA 2005 Categories and definitions

| Category              | Definition   |
|-----------------------|--|
| Primary               | Forest / Other wooded land of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed. |
| Modified natural      | Forest / Other wooded land of naturally regenerated native species where there are clearly visible indications of human activities.  |
| Semi-natural          | Forest / Other wooded land of native species, established through planting, seeding or assisted natural regeneration.  |
| Productive plantation | Forest / Other wooded land of introduced species, and in some cases native species, established through planting or seeding mainly for production of wood or non-wood goods.   |
| Protective plantation | Forest / Other wooded land of native or introduced species, established through planting or seeding mainly for provision of services.  |

### 4.2 National data

#### 4.2.1 Data sources

| References to sources of information   | Quality (H/M/L) | Variable(s)                             | Year(s) | Additional comments |
|--|-----------------|---|---------|---------------------|
| MENR 1998(a). Zambia Forestry Action Plan. Ministry of Environment and Natural Resources             | M               | Plantation area                         | 1992    |                     |
| MENR 1998(b): Country report submitted to the 11 <sup>th</sup> session of Africa Wildlife Commission | M               | Program of new plantation establishment | 2000    |                     |

#### 4.2.2 Original data

Plantation area in 1992: 60,000 ha (Source 1)

Annual planting rate: 1 900 ha (Source 2)

#### 4.2.3 Analysis and processing of national data

### 4.3 Estimation and forecasting

The plantation area in 1990 is assumed to be the same as in 1992 (60,000 ha).

The MENR (1998a) presents a program of new plantations with a target figure. From this the annual planting rate is assumed to be 1 900 ha. Applying this to the 1992 area, the total area of plantations as of 2000 is estimated to be 75 200 ha.

It is assumed there has been no further afforestation since 2000. The assumption is based on the FOSA report that the size of the plantations has been declining every year, as there are no deliberate replanting programmes. Due to lack of other information, the area of plantations for 2005 has thus been assumed to be the same as in 2000.

#### 4.4 Reclassification into FRA 2005 classes

All plantations have been reclassified as productive plantations.

All natural forests have been reclassified as modified natural forests.

| FRA 2005 Categories   | Area in hectares  |                   |                   |
|-----------------------|-------------------|-------------------|-------------------|
|                       | 1990              | 2000              | 2005              |
| Primary               |                   |                   |                   |
| Modified              | 49 064 154        | 44 600 982        | 42 376 996        |
| Productive plantation | 60 000            | 75 200            | 75 200            |
| Protective plantation |                   |                   |                   |
| <b>Total</b>          | <b>49 124 154</b> | <b>44 676 182</b> | <b>42 452 196</b> |

#### 4.5 Data for National reporting table T4

| FRA 2005 Categories   | Area (1000 hectares) |               |               |                   |              |              |
|-----------------------|----------------------|---------------|---------------|-------------------|--------------|--------------|
|                       | Forest               |               |               | Other wooded land |              |              |
|                       | 1990                 | 2000          | 2005          | 1990              | 2000         | 2005         |
| Primary               |                      |               |               |                   |              |              |
| Modified natural      | 49 064               | 44 601        | 42 377        | 4 081             | 3 468        | 3 161        |
| Semi-natural          |                      |               |               |                   |              |              |
| Productive plantation | 60                   | 75            | 75            |                   |              |              |
| Protective plantation |                      |               |               |                   |              |              |
| <b>TOTAL</b>          | <b>49 124</b>        | <b>44 676</b> | <b>42 452</b> | <b>4 081</b>      | <b>3 468</b> | <b>3 161</b> |

## 5 Table T5 – Growing stock

### 5.1 FRA 2005 Categories and definitions

| Category                 | Definition   |
|--------------------------|--|
| Growing stock            | Volume over bark of all living trees more than X cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm. |
| Commercial growing stock | The part of the growing stock of species that are considered as commercial or potentially commercial under current market conditions, and with a diameter at breast height of Z cm or more.  |

### 5.2 National data

#### 5.2.1 Data sources

| References to sources of information   | Quality (H/M/L) | Variable(s) | Year(s) | Additional comments |
|--|-----------------|-------------|---------|---------------------|
| Millington, A., and Townsend, J. (eds.) 1989. Biomass assessment. Woody biomass in the SADC region. Earth scan Publication Ltd. London. UK | M               | Biomass     | 1969    |                     |

#### 5.2.2 Original data

As no growing stock data are available. Table 6 will be used as an input.

### 5.3 Analysis and processing of national data

Table T6 presents the following values on aboveground biomass

|                                | Forest | OWL   |
|--------------------------------|--------|-------|
| Above-ground biomass (tons/ha) | 42.88  | 19.29 |

Growing stock has been estimated from the aboveground biomass figures in T6 by using the following formula and applying default conversion factors.

$$GS = AGB / BEF / WD$$

GS = Growing stock (m<sup>3</sup>/ha)

AGB = Above-ground biomass (tons/ha)

BEF = Biomass expansion factor = 2.4

WD = Wood density = 0.58

|                                    | Forest | OWL   |
|------------------------------------|--------|-------|
| Growing stock (m <sup>3</sup> /ha) | 30.81  | 13.86 |

The growing stock per hectare is then applied to total area for estimating growing stock and to production area for estimating commercial growing stock.

The result of the calculations are presented in the table below which will be used as input to the final reporting table:

| Category                           | Forest     |            |            | Other wooded land |           |           |
|------------------------------------|------------|------------|------------|-------------------|-----------|-----------|
|                                    | 1990       | 2000       | 2005       | 1990              | 2000      | 2005      |
| Total area (from table T1)         | 49 124 154 | 44 676 182 | 42 452 196 | 4 080 444         | 3 467 458 | 3 160 965 |
| Production area (from table T3)    | 3 498 125  | 3 288 399  | 3 023 016  | 0                 | 0         | 0         |
| Growing stock (million m3)         | 1513.4     | 1376.4     | 1307.9     | 56.6              | 48.1      | 43.8      |
| Commercial growing stock (mill m3) | 107.8      | 101.3      | 93.1       |                   |           |           |

#### 5.4 Data for National reporting table T5

| FRA 2005 Categories      | Volume (million cubic meters over bark) |         |         |                   |      |      |
|--------------------------|---|---------|---------|-------------------|------|------|
|                          | Forest                                  |         |         | Other wooded land |      |      |
|                          | 1990                                    | 2000    | 2005    | 1990              | 2000 | 2005 |
| Growing stock            | 1 513.4                                 | 1 376.4 | 1 307.9 | 56.6              | 48.1 | 43.8 |
| Commercial growing stock | 107.8                                   | 101.3   | 93.1    |                   |      |      |

| Specification of country threshold values                                       | Unit       | Value | Complementary information |
|---|------------|-------|---------------------------|
| 1. Minimum diameter at breast height of trees included in Growing stock (X)     | cm         |       |                           |
| 2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock | cm         |       |                           |
| 3. Minimum diameter of branches included in Growing stock (W)                   | cm         |       |                           |
| 4. Minimum diameter at breast height of trees in Commercial growing stock (Z)   | cm         |       |                           |
| 5. Volume refers to “Above ground” (AG) or “Above stump” (AS)                   | AG / AS    |       |                           |
| 6. Have any of the above thresholds (points 1 to 4) changed since 1990          | Yes/No     |       |                           |
| 7. If yes, then attach a separate note giving details of the change             | Attachment |       |                           |

## 6 Table T6 – Biomass stock

### 6.1 FRA 2005 Categories and definitions

| Category             | Definition  |
|----------------------|---|
| Above-ground biomass | All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage.  |
| Below-ground biomass | All living biomass of live roots. Fine roots of less than 2mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.   |
| Dead wood biomass    | All non-living woody biomass not contained either in the litter, standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country. |

### 6.2 National data

#### 6.2.1 Data sources

| References to sources of information   | Quality (H/M/L) | Variable(s) | Year(s) | Additional comments |
|--|-----------------|-------------|---------|---------------------|
| Millington, A. & Townsend, T. 1989. Biomass assessment: Woody biomass in the SADCC Region. London, Earth scan Publications | H               | Biomass     | 1969    |                     |

#### 6.2.2 Original data

##### Year 1969

| National Class                | Area (ha)         | Mill. tons     |
|-------------------------------|-------------------|----------------|
| Wet Miombo woodland           | 22 394 200        | 1 594.6        |
| Dry Miombo and Munga Woodland | 5 308 500         | 50.1           |
| Seasonal Miombo Woodland      | 12 571 500        | 249.5          |
| Dry Evergreen Forest          | 979 800           | 69.8           |
| Degraded Miombo woodlands     | 11 016 100        | 369.6          |
| Mopane Woodland               | 6 900 000         | 255.1          |
| Scrub woodland                | 980 000           | 22.9           |
| Swamp and lake vegetation     | 4 614 000         | 0.0            |
| Kalahari Woodland             | 7 921 200         | 133.0          |
| Others                        | 1 653 700         | 0.0            |
| <b>Total land area</b>        | <b>74 339 000</b> | <b>2 744.6</b> |

Although not specified in the data source, it is assumed that the biomass figures refer to above-ground biomass.

### 6.3 Reclassification into FRA 2005 classes

| National Class                | Forests | OWL | OL   |
|-------------------------------|---------|-----|------|
| Wet Miombo woodland           | 100%    |     |      |
| Dry Miombo and Munga Woodland | 67%     | 33% |      |
| Seasonal Miombo Woodland      | 80%     | 20% |      |
| Dry Evergreen Forest          | 100%    |     |      |
| Degraded Miombo woodlands     | 60%     | 10% | 30%  |
| Mopane Woodland               | 100%    |     |      |
| Scrub woodland                |         |     | 100% |
| Swamp and lake vegetation     | 1%      |     | 99%  |
| Kalahari Woodland             | 100%    |     |      |
| Others                        |         |     | 100% |
| <b>Total land area</b>        |         |     |      |

### Biomass data after reclassification

| National Class                | Above-ground biomass |               |
|-------------------------------|----------------------|---------------|
|                               | million tons         |               |
|                               | Forest               | OWL           |
| Wet Miombo woodland           | 1 594.6              | 0             |
| Dry Miombo and Munga Woodland | 33.4                 | 16.7          |
| Seasonal Miombo Woodland      | 199.6                | 49.9          |
| Dry Evergreen Forest          | 69.8                 | 0             |
| Degraded Miombo woodlands     | 221.76               | 36.96         |
| Mopane Woodland               | 255.1                | 0             |
| Scrub woodland                | 0                    | 0             |
| Swamp and lake vegetation     | 0                    | 0             |
| Kalahari Woodland             | 133                  | 0             |
| Others                        | 0                    | 0             |
| <b>Total land area</b>        | <b>2 507.26</b>      | <b>103.56</b> |

### 6.4 Analysis and processing of national data

|   | Forest     | OWL       |
|---|------------|-----------|
| Total above-ground biomass (million tons) | 2507.26    | 103.56    |
| Area from table T1 (hectares)             | 58 464 895 | 5 367 715 |
| Above ground biomass (tons/ha)            | 42.88      | 19.29     |

Assuming the tons/ha did not change since 1969, the biomass figures in tons/ha were applied to areas for 1990, 2000 and 2005.

| Category                            | Forest     |            |            | Other wooded land |           |           |
|-------------------------------------|------------|------------|------------|-------------------|-----------|-----------|
|                                     | 1990       | 2000       | 2005       | 1990              | 2000      | 2005      |
| Area (hectares) from T1             | 49 124 154 | 44 676 182 | 42 452 196 | 4 080 444         | 3 467 458 | 3 160 965 |
| Above-ground biomass (million tons) | 2 106.7    | 1 915.9    | 1 820.6    | 78.7              | 66.9      | 61.0      |

Applying the conversion factors below, the estimates of below-ground biomass and dead wood biomass were obtained.

|                  |      |                                   |
|------------------|------|-----------------------------------|
| Root/shoot ratio | 0.27 | (tropical/subtropical dry forest) |
| Dead/live ratio  | 0.14 | (deciduous forest)                |

## 6.5 Data for National reporting table T6

| FRA 2005 Categories  | Biomass (million metric tonnes oven-dry weight) |               |               |                   |             |             |
|----------------------|---|---------------|---------------|-------------------|-------------|-------------|
|                      | Forest  |               |               | Other wooded land |             |             |
|                      | 1990  | 2000          | 2005          | 1990              | 2000        | 2005        |
| Above-ground biomass | 2 106.7   | 1 915.9       | 1 820.6       | 78.7              | 66.9        | 61.0        |
| Below-ground biomass | 568.8   | 517.3         | 491.6         | 21.3              | 18.1        | 16.5        |
| Dead wood biomass    | 374.6   | 340.7         | 323.7         | 14.0              | 11.9        | 10.8        |
| <b>TOTAL</b>         | <b>3 050.1</b>                                  | <b>2773.9</b> | <b>2635.8</b> | <b>114.0</b>      | <b>96.9</b> | <b>88.3</b> |

## 7 Table T7 – Carbon stock

### 7.1 FRA 2005 Categories and definitions

| Category                       | Definition  |
|--------------------------------|---|
| Carbon in above-ground biomass | Carbon in all living biomass above the soil, including stem, stump, branches, bark, seeds, and foliage.   |
| Carbon in below-ground biomass | Carbon in all living biomass of live roots. Fine roots of less than 2 mm diameter are excluded, because these often cannot be distinguished empirically from soil organic matter or litter.   |
| Carbon in dead wood biomass    | Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country. |
| Carbon in litter               | Carbon in all non-living biomass with a diameter less than a minimum diameter chose by the country for lying dead (for example 10 cm), in various states of decomposition above the mineral or organic soil. This includes the litter, fomic, and humic layers.                     |
| Soil carbon                    | Organic carbon in mineral and organic soils (including peat) to a specified depth chosen by the country and applied consistently through the time series.   |

### 7.2 Analysis and processing of national data

Data from reporting table T6 were used as input to this table. A carbon content of 50% was used.

### 7.3 Data for National reporting table T7

| FRA 2005 Categories                              | Carbon (Million metric tonnes) |                |                |                   |             |             |
|--|--------------------------------|----------------|----------------|-------------------|-------------|-------------|
|  | Forest                         |                |                | Other wooded land |             |             |
|  | 1990                           | 2000           | 2005           | 1990              | 2000        | 2005        |
| Carbon in above-ground biomass                   | 1 053.3                        | 958.0          | 910.3          | 39.4              | 33.4        | 30.5        |
| Carbon in below-ground biomass                   | 284.4                          | 258.7          | 245.8          | 10.6              | 9.0         | 8.2         |
| <b>Sub-total: Carbon in living biomass</b>       | <b>1 337.7</b>                 | <b>1 216.6</b> | <b>1 156.1</b> | <b>50.0</b>       | <b>42.5</b> | <b>38.7</b> |
| Carbon in dead wood                              | 187.3                          | 170.3          | 161.8          | 7.0               | 5.9         | 5.4         |
| Carbon in litter                                 |                                |                |                |                   |             |             |
| <b>Sub-total: Carbon in dead wood and litter</b> |                                |                |                |                   |             |             |
| Soil carbon to a depth of _____ cm               |                                |                |                |                   |             |             |
| <b>TOTAL CARBON</b>                              | <b>1 525.0</b>                 | <b>1 386.9</b> | <b>1 317.9</b> | <b>57.0</b>       | <b>48.4</b> | <b>44.1</b> |

## **8 Table T8 – Disturbances affecting health and vitality**

No data is available for this reporting table.

## 9 Table T9 – Diversity of tree species

### 9.1 FRA 2005 Categories and definitions

| Category                                     | Definition   |
|--|--|
| Number of native tree species                | The total number of native tree species that have been identified within the country.                  |
| Number of critically endangered tree species | The number of native tree species that are classified as “Critically endangered” in the IUCN red list. |
| Number of endangered tree species            | The number of native tree species that are classified as “Endangered” in the IUCN red list.            |
| Number of vulnerable tree species            | The number of native tree species that are classified as “Vulnerable” in the IUCN red list.            |

### 9.2 National data

#### 9.2.1 Data sources

| References to sources of information   | Quality (H/M/L) | Variable(s)                       | Year(s) | Additional comments |
|--|-----------------|-----------------------------------|---------|---------------------|
| 1.Sekeli P.M., Phiri M., 2002. The SADC Regional Workshop on Forest and Tree Genetic Resources 5-9 June 2000, Arusha, Tanzania |                 | Number of species                 | 1971    | No latest inventory |
| 2.UNEP-WCMC Conservation Data. <a href="http://www.unep-wcmc.org">http://www.unep-wcmc.org</a> .                               |                 | Threatened and vulnerable species |         |                     |

## 9.2.2 Original data

| Vegetation types                 | Number of tree species (1) |                      |        |          |          |              |
|----------------------------------|----------------------------|----------------------|--------|----------|----------|--------------|
|                                  | Canopy species             | Under-storey species | Shrubs | Thickets | Climbers | Total        |
| Dry evergreen forest             | 12                         | 19                   | 56     | -        | 22       | 109          |
| Lake basin (Chipya)              | 40                         | 38                   | 114    | -        | 8        | 200          |
| <i>Baikiaea</i> forest           | 21                         | -                    | 20     | 43       | 8        | 92           |
| Itigi Forest                     | 28                         | -                    | 51     | -        | 13       | 92           |
| Montane forest                   | 38                         | 35                   | 41     | -        | 23       | 137          |
| Swamp forest                     | 23                         | 13                   | 31     | -        | 12       | 79           |
| Riparian forest                  | 46                         | 35                   | 63     | -        | 30       | 174          |
| Miombo woodland                  | 23                         | 34                   | 83     | -        | 3        | 143          |
| Kalahari woodland                | 20                         | 23                   | 102    | -        | 9        | 154          |
| Mopane woodland                  | 16                         | 26                   | 38     | -        | 8        | 88           |
| Munga woodland                   | 51                         | 46                   | 110    | -        | 23       | 230          |
| Termitaria                       | 47                         | 31                   | 89     | -        | 41       | 208          |
| <b>Total inventoried species</b> |                            |                      |        |          |          | <b>1706</b>  |
| Total number of species (2)      |                            |                      |        |          |          | <b>2 621</b> |
| Threatened species (3)           |                            |                      |        |          |          | 11           |
| Vulnerable (3)                   |                            |                      |        |          |          | 14           |

Notes:

1. Source 1
2. Source 1
3. Source 2

## 9.3 Data for National reporting table T9

| FRA 2005 Categories                | Number of species (year 2000) |
|------------------------------------|-------------------------------|
| Native tree species                | 2 621                         |
| Critically endangered tree species |                               |
| Endangered tree species            | 11                            |
| Vulnerable tree species            | 14                            |

## 9.4 Comments to National reporting table T9

List of endangered and vulnerable tree species is not available.

## **10 Table T10 – Growing stock composition**

No data is available for this reporting table.

## 11 Table T11 – Wood removal

### 11.1 FRA 2005 Categories and definitions

| Category                | Definition   |
|-------------------------|--|
| Industrial wood removal | The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel). |
| Woodfuel removal        | The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.                |

### 11.2 National data

#### 11.2.1 Data sources

| References to sources of information         | Quality (H/M/L) | Variable(s)                 | Year(s)   | Additional comments |
|--|-----------------|-----------------------------|-----------|---------------------|
| FAO Forestry Statistics Series 171; FAO 2001 |                 | Industrial wood<br>Fuelwood | 1993-2002 |                     |

#### 11.2.2 Original data

| Year | Volume under bark in cubic meters |           |
|------|-----------------------------------|-----------|
|      | Industrial Roundwood              | Wood Fuel |
| 1988 | 546 000                           | 5 775 000 |
| 1989 | 576 000                           | 6 192 000 |
| 1990 | 676 000                           | 6 398 000 |
| 1991 | 733 000                           | 6 604 000 |
| 1992 | 792 000                           | 6 809 000 |
| 1998 | 823 000                           | 7 219 000 |
| 1999 | 834 000                           | 7 219 000 |
| 2000 | 834 000                           | 7 219 000 |
| 2001 | 834 000                           | 7 219 000 |
| 2002 | 834 000                           | 7 219 000 |

### 11.3 Analysis and processing of national data

Multiplying the above table by 1.15 to convert to volume over bark and taking five-year averages gives:

| Year                         | Volume over bark in cubic meters |                  |
|------------------------------|----------------------------------|------------------|
|                              | Industrial Roundwood             | Fuelwood         |
| 1988                         | 627 900                          | 6 641 250        |
| 1989                         | 662 400                          | 7 120 800        |
| 1990                         | 777 400                          | 7 357 700        |
| 1991                         | 842 950                          | 7 594 600        |
| 1992                         | 910 800                          | 7 830 350        |
| <b>5-year average (1990)</b> | <b>764 290</b>                   | <b>7 308 940</b> |
| 1998                         | 946 450                          | 8 301 850        |
| 1999                         | 959 100                          | 8 301 850        |
| 2000                         | 959 100                          | 8 301 850        |
| 2001                         | 959 100                          | 8 301 850        |
| 2002                         | 959 100                          | 8 301 850        |
| <b>5-year average (2000)</b> | <b>956 570</b>                   | <b>8 301 850</b> |

#### 11.3.1 Estimation and forecasting

|                      | Volume over bark in cubic meters |                  |                  |
|----------------------|----------------------------------|------------------|------------------|
|                      | 1990                             | 2000             | 2005             |
| Industrial Roundwood | 764 290                          | 956 570          | 1 052 710        |
| Wood Fuel            | 7 308 940                        | 8 301 850        | 8 798 305        |
| <b>Total</b>         | <b>8 073 230</b>                 | <b>9 258 420</b> | <b>9 851 015</b> |

#### 11.4 Data for National reporting table T11

| FRA 2005 Categories      | Volume in 1000 cubic meters of roundwood over bark |              |              |                   |      |      |
|--------------------------|--|--------------|--------------|-------------------|------|------|
|                          | Forest   |              |              | Other wooded land |      |      |
|                          | 1990   | 2000         | 2005         | 1990              | 2000 | 2005 |
| Industrial roundwood     | 764  | 957          | 1 053        |                   |      |      |
| Woodfuel                 | 7 309  | 8 302        | 8 798        |                   |      |      |
| <b>TOTAL for Country</b> | <b>8 073</b>                                       | <b>9 258</b> | <b>9 851</b> |                   |      |      |

## **12 Table T12 – Value of wood removal**

No data is available for this reporting table.

## 13 Table T13 – Non-wood forest product removal

### 13.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

| Category   |
|--|
| <u>Plant products / raw material</u>                     |
| 1. Food  |
| 2. Fodder  |
| 3. Raw material for medicine and aromatic products       |
| 4. Raw material for colorants and dyes                   |
| 5. Raw material for utensils, handicrafts & construction |
| 6. Ornamental plants                                     |
| 7. Exudates  |
| 8. Other plant products                                  |
|  |
| <u>Animal products / raw material</u>                    |
| 9. Living animals  |
| 10. Hides, skins and trophies                            |
| 11. Wild honey and bee-wax                               |
| 12. Bush meat  |
| 13. Raw material for medicine                            |
| 14. Raw material for colorants                           |
| 15. Other edible animal products                         |
| 16. Other non-edible animal products                     |

### 13.2 National data

#### 13.2.1 Data sources

| References to sources of information  | Quality (H/M/L) | Variable(s)       | Year(s)   | Additional comments |
|---|-----------------|-------------------|-----------|---------------------|
| Mulombwa J., Non-wood Forest Products in Zambia. EC – FAO Partnership Program (1998-2001) | H               | Honey and Bee wax | 1987-1992 |                     |

#### 13.2.2 Original data

|      | Honey production |            | Bee Wax     |            |
|------|------------------|------------|-------------|------------|
|      | Quantity kg      | Value \$US | Quantity kg | Value \$US |
| 1987 | 165 757          |            | 17 292      |            |
| 1988 | 180 782          | 180 780    | 14 765      | 38 393     |
| 1989 | 95 000           | 95 000     | 19 894      | 51 730     |
| 1990 | 205 305          | 203 300    | 56 395      | 146 630    |
| 1991 | 95 714           | 10 014     | 24 633      | 64 050     |
| 1992 | 90 000           | 171 850    | 28 000      | 74 140     |

### 13.3 Analysis and processing of national data

#### 13.3.1 Estimation and forecasting

Three-year averages and extrapolating for 2000 and 2005

| Category                         | 1988-1992 kg |
|----------------------------------|--------------|
|                                  |              |
| Honey                            | 666 801      |
| Bee wax                          | 143 687      |
| Total                            | 810 488      |
| 5 -year Average (Honey and bees) | 162 098      |

#### 13.4 Reclassification into FRA 2005 classes

#### 13.5 Data for National reporting table T13

| FRA 2005 Categories                                      | Scale factor | Unit | NWFP removal |      |      |
|--|--------------|------|--------------|------|------|
|  |              |      | 1990         | 2000 | 2005 |
| <u>Plant products / raw material</u>                     |              |      |              |      |      |
| 1. Food  |              |      |              |      |      |
| 2. Fodder  |              |      |              |      |      |
| 3. Raw material for medicine and aromatic products       |              |      |              |      |      |
| 4. Raw material for colorants and dyes                   |              |      |              |      |      |
| 5. Raw material for utensils, handicrafts & construction |              |      |              |      |      |
| 6. Ornamental plants                                     |              |      |              |      |      |
| 7. Exudates  |              |      |              |      |      |
| 8. Other plant products                                  |              |      |              |      |      |
|  |              |      |              |      |      |
| <u>Animal products / raw material</u>                    |              |      |              |      |      |
| 9. Living animals  |              |      |              |      |      |
| 10. Hides, skins and trophies                            |              |      |              |      |      |
| 11. Wild honey and bee-wax                               |              | tons | 162          | n/a  | n/a  |
| 12. Bush meat  |              |      |              |      |      |
| 13. Raw material for medicine                            |              |      |              |      |      |
| 14. Raw material for colorants                           |              |      |              |      |      |
| 15. Other edible animal products                         |              |      |              |      |      |
| 16. Other non-edible animal products                     |              |      |              |      |      |

## 14 Table T14 – Value of non-wood forest product removal

### 14.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

| Category   |
|--|
| <u>Plant products / raw material</u>                     |
| 1. Food  |
| 2. Fodder  |
| 3. Raw material for medicine and aromatic products       |
| 4. Raw material for colorants and dyes                   |
| 5. Raw material for utensils, handicrafts & construction |
| 6. Ornamental plants                                     |
| 7. Exudates  |
| 8. Other plant products                                  |
| <u>Animal products / raw material</u>                    |
| 9. Living animals  |
| 10. Hides, skins and trophies                            |
| 11. Wild honey and bee-wax                               |
| 12. Bush meat  |
| 13. Raw material for medicine                            |
| 14. Raw material for colorants                           |
| 15. Other edible animal products                         |
| 16. Other non-edible animal products                     |

### 14.2 National data

#### 14.2.1 Data sources

Same as in T 13

#### 14.2.2 Original data

From T13:

| Category | Value in \$US |         |        |         |        |         | 5 year average |
|----------|---------------|---------|--------|---------|--------|---------|----------------|
|          | 1987          | 1988    | 1989   | 1990    | 1991   | 1992    |                |
| Honey    |               | 180 780 | 95 000 | 203 300 | 10 014 | 171 850 | 132 189        |
| Bee Wax  |               | 38 393  | 51 730 | 146 630 | 64 050 | 74 140  | 74 989         |
| Total    |               | 219 173 | 146 30 | 349 930 | 74 064 | 245 990 | 207 177        |

### 14.3 Data for National reporting table T14

| FRA 2005 Categories                                      | Value of the of NWFP removed<br>(1000 USD) |      |      |
|--|--|------|------|
|  | 1990                                       | 2000 | 2005 |
| <u>Plant products / raw material</u>                     |  |      |      |
| 1. Food  |  |      |      |
| 2. Fodder  |  |      |      |
| 3. Raw material for medicine and aromatic products       |  |      |      |
| 4. Raw material for colorants and dyes                   |  |      |      |
| 5. Raw material for utensils, handicrafts & construction |  |      |      |
| 6. Ornamental plants                                     |  |      |      |
| 7. Exudates  |  |      |      |
| 8. Other plant products                                  |  |      |      |
|  |  |      |      |
| <u>Animal products / raw material</u>                    |  |      |      |
| 9. Living animals  |  |      |      |
| 10. Hides, skins and trophies                            |  |      |      |
| 11. Wild honey and bee-wax                               | 207  | n/a  | n/a  |
| 12. Bush meat  |  |      |      |
| 13. Raw material for medicine                            |  |      |      |
| 14. Raw material for colorants                           |  |      |      |
| 15. Other edible animal products                         |  |      |      |
| 16. Other non-edible animal products                     |  |      |      |
| <b>TOTAL</b>   |  |      |      |

## 15 Table T15 – Employment in forestry

### 15.1 FRA 2005 Categories and definitions

| Category                        | Definition   |
|---------------------------------|--|
| Primary production of goods     | Employment in activities related to primary production of goods, like industrial roundwood, woodfuel and non-wood forest products. |
| Provision of services           | Employment in activities directly related to services from forests and woodlands.  |
| Unspecified forestry activities | Employment in unspecified forestry activities.   |

### 15.2 National data

#### 15.2.1 Data sources

| References to sources of information   | Quality (H/M/L) | Variable(s)                               | Year(s)       | Additional comments                  |
|--|-----------------|---|---------------|--------------------------------------|
| Trends and current status of the contribution of the forest sector to national economies”(FAO, 2003) | L               | Employment in primary production of goods | 1990 and 2000 | No country information was available |

#### 15.2.2 Classification and definitions

### 15.3 Data for National reporting table T15

| FRA 2005 Categories             | Employment (1000 person-years) |      |
|---------------------------------|--------------------------------|------|
|                                 | 1990                           | 2000 |
| Primary production of goods     | ID                             | ID   |
| Provision of services           | ID                             | ID   |
| Unspecified forestry activities | ID                             | ID   |
| <b>TOTAL</b>                    | ID                             | ID   |

### 15.4 Comments to National reporting table T15

No country information was available, however “trends and current status of the contribution of the forest sector to national economies”(FAO, 2003 estimate that 1 864 persons and 2 036 persons were employed in th forestry, logging and related services in 1990 and 2000 respectively.