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**GLOBAL FOREST RESOURCES
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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).

The Global Forest Resources Assessment process is coordinated by the Forestry Department at FAO headquarters in Rome. The contact person for matters related to FRA 2005 is:

Mette Løyche Wilkie
Senior Forestry Officer
FAO Forestry Department
Viale delle Terme di Caracalla
Rome 00100, Italy

E-mail: Mette.LoycheWilkie@fao.org

Readers can also use the following e-mail address: fra@fao.org

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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.

Report preparation and contact person

Name : S.P. Moshoeshoe
Title: Senior Forestry Officer
Organization :Department of Forestry
Address: P.O. Box 744
Maseru 100
Lesotho
Tel: +266-22323600
Fax: +266-22310515
E-Mail: forestrydepartment@leo.co.ls

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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
1. Millington, A., and Townsend, J. (eds.) 1989. Biomass assessment. Woody biomass in the SADC region. Earthscan Publication Ltd. London. UK	H	Definition and Land use cover	1983	
2. Thompson, M. 1999. A standard land-cover classification scheme for remote sensing application in South Africa. Forestek. CSIR, Pretoria.	H	Land cover classification	1995	
3. Fairbanks <i>et al.</i>, 2000. The South African Land-Cover Characteristics Database: A synopsis of the landscape. SA Journal of Science, 96, February 2000.	H	Land cover description	1995	

1.2.2 Classification and definitions

Source 1 and 3 used different classification. Data will be analysed differently for the two reference year.

1. Classification and definition for reference year 1983:

National classes	Definition
Escarpment and riparian Woodland	<p>Escarpment woodland is found in fragmented north –east to south-west trending strip corresponding to the Western Escarpment of Lesotho. The Riparian Woodlands occurs along most of the large rivers. The few remaining areas with high growing stock and high levels of productivity are classified in this biomass class. In all this class covers 1 371 km² or 4.55 of the country. Most of the area designated as forest land (3 100km²) fall into this category, but a government estimate of the forest and woodland (defined as tree cover greater than 10%) found in this category is actually only 6 km², or about 0.2% of the designated forest land area (Government of Lesotho , undated). The trees are dominated by evergreens such as <i>Diospyros whyteana</i>, <i>Euclea</i> spp., <i>Halleria lucida</i>, <i>Ilex mitis</i>, <i>Maytenus</i> spp., <i>Olinia emarginata</i> and <i>Podocarpus latifolius</i> and a few deciduous and semi-deciduous species. The main woody species in the riparian woodland are <i>Celtis africana</i>, <i>Diospyros lycioides</i>, <i>Rhus lancea</i>, <i>Populus</i> spp., and <i>Salix</i> spp. In well –watered areas, the latter tree can reach heights of 7m but, generally riparian woodland is much lower than this.</p> <p>Areas of Escarpment Woodland are often rarely accessible, and both Escarpment and riparian Woodland are usually publicly or privately reserved. Both of these factors make fuelwood collection difficult.</p>
Escarpment Grassland with Scrub woodland	<p>Escarpment Grassland with Scrub woodland is mainly found along the Western Escarpment of Lesotho that is the Front and Thaba Putsoa ranges, overlooking the western Lesotho Highveld. The land covered by this class is mainly cultivated and is situated in Berea, Butha-Buthe, Leribe, Maseru and Mohale’s Hoek District. Scrub Woodland, often known as <i>shallahalla</i>, is a product of overgrazed, degraded pasture. The main shrub species is <i>Chrysocoma tenuifolia</i> but other important species includes <i>Nestlera acerosa</i> and <i>Pentzia cooperi</i>.</p>
Highveld and Riparian Grassland	<p>Highveld and Riparian Grassland is floristically rich and form 25% cover grass sward about 25 to 75cm in height. Generally the trees are stunted because of the severity of the climate and more, importantly, long-term over exploitation. In dry low-lying and undisturbed or protected areas low bushland and scrubland no higher than 5m can be found.</p>
Alpine /Sub Alpine Grassland and heathland	<p>Fire controlled Themeda –Festuca grassland dominates the sub-alpine belt but its species differ with aspect and latitudes. Another characteristic is the occurrence of grassland dominated by <i>Chrysocoma tenuifolia</i> which covers about 13% of overgrazing. There is very little vegetation in the sub-alpine belt.</p> <p>Alpine vegetation occurs in more severe conditions than the sub-alpine grassland, and is dominated by homogenous, low woody heathlands. Only the heath communities have a high proportion woody-grass species but even in the best of these communities (which are restricted to the summit of Drakensberg woody species are rarely more than 1m tall. Isolated patches of scrub are often only 2m in height.</p>

2. Classification and definitions for data for reference year 1995:

Standard land-cover classification for RS applications in South Africa: Detailed review and class definitions.

LEVEL 1: RS only	Definition	LEVEL 2: RS only	Definition
Forest & Woodland	All wooded areas with greater than 10% tree canopy cover ¹ , where the canopy is composed of mainly self-supporting, single stemmed ² , woody plants >5 m in height. Essentially indigenous tree species ³ , growing under natural or semi-natural conditions (although it may include some localised areas of self-seeded exotic species). Excludes planted forests (and woodlots). Typically associated with the Forest and Savanna biomes in South Africa.	Forest	Tree canopy cover > 70%. A multi-strata community, with interlocking canopies, composed of canopy, subcanopy, shrub and herb layers.
		Woodland	Tree canopy cover between 40-70%. A closed-to-open canopy community, typically consisting of a single tree canopy layer and a herb (grass) layer.
		Wooded Grassland	Tree canopy cover between 10-40%. An open-to-sparse canopy community, typically consisting of a single tree canopy layer and a herb (grass) layer.
Thicket, Bushland, Scrub Forest and High Fynbos	Communities typically composed of tall, woody, self-supporting, single and/or multi-stemmed plants (branching at or near the ground), with, in most cases no clearly definable structure. Total canopy cover > 10%, with canopy height between 2 - 5 m. Essentially indigenous species, growing under natural or semi-natural conditions (although it may include some localised areas of self-seeded exotic species, especially along riparian zones). Typical examples are Valley Bushveld, Mopane bush, and tall Fynbos. Dense bush encroachment areas would be included in this category.	Thicket	Areas of densely interlaced trees and shrub species (often forming an impenetrable community). Composed of multi-stemmed plants with no clearly definable structure or layers, with > 70% cover. A typical example would be Valley Bushveld.
Shrubland and Low Fynbos	Communities dominated by low, woody, self-supporting, multi-stemmed plants branching at or near the ground, between 0.2 - 2 m in height. Total tree cover < 1.0%. Low shrublands and heathlands are combined at Level 1 due to similar overall physiognomic structure and (in	Shrubland	Typically broad-leaved or bushes, frequently deciduous. A typical example would be vegetation from the Karoo biomes. Category also includes dwarf succulent shrublands.

	many cases) appearance on remotely sensed imagery. Examples would include low Fynbos, Karoo and Lesotho (alpine) communities.		
		Low Fynbos (Heathland)	Typically small-leaved (i.e. nanophyllous ⁴ , sclerophyllous, evergreen plants growing on infertile soils. Proteaceae, Ericaceae and Restionaceae frequently dominate.
Herbland	Communities dominated by low, non-woody, self-supporting, non-grass like plants, between 0.2 - 2 m in height. Total tree cover < 1.0%. Typical vegetation examples are found in Namaqualand, and 'weed' dominated degraded areas.		
Grassland	All areas of grassland with less than 10% tree and/or shrub canopy cover, and greater than 0.1% total vegetation cover. Dominated by grass-like, non-woody, rooted herbaceous plants. Typically associated with the Grassland and Savanna Biomes.		
Forest Plantations	All areas of systematically planted, man-managed tree resources, composed of primarily exotic species (including hybrids). Category includes both young and mature plantations that have been established for commercial timber production, seedling trials, and woodlots/windbreaks of sufficient size to be identified on satellite imagery. Unless otherwise stated, Levels 1 & 2 include clear-felled stands <i>within</i> plantations. Excludes all non-timber based plantations such as tea and sisal, as well as orchards used in the production of citrus or nut crops. Level 1 category will include associated land-cover/use's such as roads, fire-breaks and building infrastructure if these are too small to be clearly mapped off the satellite imagery.		
Waterbodies	Areas of (generally permanent) <i>open water</i> . The category includes natural and man-made water bodies, which are either static or flowing, and fresh, brackish and salt water conditions. This category includes features such as rivers, dams (i.e. reservoirs), permanent pans, lakes, lagoons and coastal waters.		
Wetlands	Natural or artificial areas where the water level is at (or very near the land surface) on a permanent or temporary basis, typically covered in either herbaceous or woody vegetation cover. The category includes both fresh, brackish and salt water conditions. Examples include saltmarsh, pans (with non-permanent water cover), reed-marsh or papyrus-swamp and peat bogs.		
Barren Lands	Non-vegetated areas, or areas of very little vegetation cover (excluding agricultural fields with no crop cover, and opencast mines and quarries), where the substrate or soil exposure is clearly apparent.	Bare Rock / Soil	Natural areas of exposed sand, soil or rock with no, or very little vegetation cover during any time of the year, (excluding agricultural fields with no crop cover, and opencast mines and quarries). Examples would include rock outcrops, dune and beach sand, dry river bed material, and gravel plains.
Degraded Land	Permanent or seasonal, man-induced areas of very low vegetation cover (i.e. removal of tree, bush and/or herbaceous cover) <i>in comparison to the surrounding natural vegetation cover</i> . Category includes major erosion scars (i.e. sheet and gully erosion). Should be sub-divided by Level I vegetation classes i.e. Degraded-Woodland, and Degraded-Grassland wherever possible to allow reconstruction of full class extent. Typically associated with subsistence level farming and rural population centres, where overgrazing of livestock and/or wood-resource removal has been excessive. Often associated with severe soil erosion problems. Characterised on satellite imagery by significantly higher overall reflectance levels (i.e. whiter appearance) and lower NDVI values (in comparison to the surrounding vegetation).		
Cultivated Land	Areas of land that are ploughed and/or prepared for raising crops (excluding timber production). The category includes areas currently under crop, fallow land ⁵ , and land being prepared for planting. Unless mapping scales allow otherwise, physical class boundaries are broadly defined	Permanent crops	Lands cultivated with crops that occupy the area for long periods and are not replanted after harvest. Examples would include tea plantations, vineyards, sugar cane and citrus orchards, hops and nuts. Note: in the case of sugar cane, the growing season is

	to encompass the main areas of agricultural activity, and are not defined on exact field boundaries. As such the class may include small inter-field cover types (i.e. hedges, grass strips, small windbreaks etc), as well as farm infrastructure.		typically 15-18 months per ratoon (i.e. harvest), with 2-3 ratoons possible before the crop is replanted.
Urban / Built-up Land	<p>An area where there is a permanent concentration of people, buildings, and other man-made structures and activities, from large village to city scale.</p> <p>Note: small rural communities are often included within the surrounding land-cover category (i.e. subsistence / semi-commercial agriculture) if mapping scales do not permit identification of such settlements as individual features.</p> <p>Where mapping scales permit, the limits of the urban boundary are delineated to exclude open areas within the built-up region (i.e. vegetated or non-vegetated areas with few or no structures).</p>		
Mines & Quarries	Areas in which mining activity has been done or is being done. Includes both opencast mines and quarries, as well as surface infrastructure, mine dumps etc, associated with underground mining activities.		

¹ Canopy cover refers in all cases to projected canopy cover.

² Or a few definitive trunks branching above ground level.

³ Indigenous refers to in all cases to plant species that occur naturally within southern Africa.

⁴ Nanophyllous - less than 1 cm².

⁵ Fallow - cultivated land that is allowed to lay idle during the cultivation season.

1.2.3 Original data

Original data for reference year 1983

National Classes	Area in km ²	Area in hectares
Escarpment and riparian woodland	1 371	137 100
Escarpment Grassland with Scrub woodland	5 504	550 400
Plantations	35	3 500
Escarpment Grassland with Scrub woodland (on small farms)	2 987	298 700
Highveld and Riparian Grassland	5 995	599 500
Alpine/Sub-alpine Grassland and Heathland	14 463	1 446 300
Total	30 355	3 035 500

Original data for reference year 1995

National Classes	Area in hectares
Forests	144
Forest and woodland	0
Forest plantations	1842.42
Thickets and bushland (etc)	79502.96
Shrubland and low fynbos	297705.35
Cultivated: Permanent-Commercial dry land	0
Cultivated: Permanent-Commercial irrigated	0
Cultivated: Permanent-Commercial sugarcane	0
Cultivated: temporary-Commercial dry land	1949
Cultivated: temporary-Commercial irrigated	772
Cultivated: temporary-semi-commercial/subsistence dry land	691039
Degraded: Herbland	0
Degraded: forest and woodland	29

Degraded: Shrubland and low fynbos	0
Degraded: thickets & bushland (etc)	571
Degraded unimproved grassland	819752
Urban/built up land: residential (small holding: woodland)	0
Urban/built up land: commercial	46
Urban/built up land: Industrial/transport	561
Urban/built up land: residential	10138
Urban/built up land: residential (small holding: bushland)	0
Urban/built up land: residential (small holding: grassland)	0
Urban/built up land: residential (small holding: Shrubland)	0
Dongas and sheet erosion scars	1034
Barren rocks	7569
Herbland	326
Improved Grassland	244
Mines and quarries	292
Unimproved Grassland	1136281
Wetlands	6416
Total land area	3056213

Original plantation area for 1995/96: Note the above table will be adjusted appropriately for plantation area

District	Plantable areas in hectares	Planted areas up to 1993/94 in hectares	Actually stocked area in hectares
MASERU	3 953	2 478	1 591
BERET	1 188	1 112	808
LERIBE	3 186	3 065	1 799
BUTHA BUTHE	1 087	946	507
MOKHOTLONG	143	44	20.5
THABA TSEKA	254	176	49.5
QACHAS NEK	461	211	34
QUTHING	956	925	427
MOHALES HOEK	689	484	441
MAFETENG	1 078	921	4,55
TOTAL	12 996	10 363	6 131

Notes:

According to the forestry outlook study report, out of 10,362 ha of woodlot established until 1992 only 60% or 6,131 ha are stocked at present (60%). Replanting of 4,231 ha is required to re-establish the originally planted area. The currently stocked area of 6,131 consists of: 2,979 ha of eucalypts, 2,786 ha of *Pinus* species and 371 ha of other tree species.

1.3 Analysis and processing of national data

1.3.1 Calibration

Calibrating 1995 data

Land area	3 056 213
FAOSTATS	3 035 000
Calibration factor	0.993059012

Results after calibrating 1995 data

National classes	Calibrated Area in hectares
Forests	143
Forest and woodland	0
Forest plantations (1)	6 131
Thickets and bushland (etc)	78 951
Shrubland and low fynbos	295 639
Cultivated area	688 944
Degraded land	814 658
Urban/built up land: residential (small holding: woodland)	0
Urban/built up land:	10 670
Dongas and sheet erosion scars	1 027
Barren rocks	7 517
Herbland	324
Improved Grassland	242
Mines and quarries	290
Unimproved Grassland	1 124 093
Wetlands	6 372
Total land area	3 035 000

Note: Adjusted to take account of plantation area in 1995/96

1.4 Reclassification into FRA 2005 classes

Reclassifying data for reference year 1983

National Classes	Forests	OWL	OL
Escarpment and riparian woodland	0.44%	99.56%	
Escarpment Grassland with Scrub woodland			100%
Plantations	100%		
Escarpment Grassland with Scrub woodland (on small farms)			100%
Highveld and Riparian Grassland			100%
Alpine/Sub-alpine Grassland and Heathland			100%

Notes: Definition indicate that only 6km² is forest with more than 10% cover

Results after reclassifying data for reference year 1983

National Classes	Area in hectares		
	Forest	OWL	OL
Escarpment and riparian woodland	600	136500	0
Escarpment Grassland with Scrub woodland	0	0	553 900
Plantations	3 500		
Escarpment Grassland with Scrub woodland (on small farms)	0	0	295 200
Highveld and Riparian Grassland	0		599 500
Alpine/Sub-alpine Grassland and Heathland	0	0	1 446 300
	4 100	136 500	2 894 900

Reclassifying data for reference year 1995

National Classes	Area in hectares			
	Forest	OWL	OL	Water
Forest >70%	100%			
Forest 10-70%	100%			
Forest plantations	100%			
Thicket and bushland		100%		
Shrubland and low Fynbos			100%	
Cultivated land			100%	
Degraded land			100%	
Urban/builtup land: Residential/small holding : woodlands			OLWTC	
Urban/builtup land: Other			100%	
Dongas and sheet erosion scars			100%	
Barren rock			100%	
Herbland			100%	
Improved grassland			100%	
Mines and quarries			100%	
Unimproved grassland			100%	
Wetlands			100%	

Results after reclassifying the data for reference year 1995

National Classes	Area in hectares		
	Forest	OWL	OL
Forest >70%	143	0	0
Forest 10-70%	0	0	0
Forest plantations	6 131	0	0
Thicket and bushland (1)	0	78 951	0
Shrubland and low Fynbos	0	0	295 639
Cultivated land	0	0	688 944
Degraded land	0	0	814 658
Urban/builtup land: Residential/small holding : woodlands	0	0	
Urban/builtup land: Other	0	0	10 670
Dongas and sheet erosion scars	0	0	1 027
Barren rock	0	0	7 517
Herbland	0	0	324
Improved grassland	0	0	242
Mines and quarries	0	0	290
Unimproved grassland	0	0	1 124 093
Wetlands	0	0	6 372
Waterbodies	0	0	0
TOTAL	6 274	78 951	2 654 136

Notes: Has been adjusted to take account of plantation area in 1995/1996

Summarising data for reference year 1983 and 1995 after reclassification gives:

FRA 2005 Categories	Area in hectares	
	1983	1995
Forest	4 100	6 274
OWL	136 500	78 951
OL	2 894 900	2 949 775
Total	3 035 500	3 035 000

1.4.1 Estimation and forecasting

FRA 2005 categories	Area in hectares		
	1990	2000	2005
Forest	5 368	7 180	8 086
OWL	102 930	54 972	30 994
OL	2 927 202	2973348	2996421
Total	3 035 208	3 035 000	3 035 000

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	5	7	8
Other wooded land	103	55	31
Other land	2 927	2 973	2 996
...of which with tree cover ¹⁾			
Inland water bodies			
TOTAL	3 035	3 035	3 035

1.6 Comments to National reporting table T1

1. Forestry Outlook Study for Africa (2001) report state of the 10,362 ha of woodlot established until 1992 only 60% or 6,131 ha are stocked at present (60%). Replanting of 4,231 ha is required to re-establish the originally planted area. The currently stocked area of 6,131 consists of: 2,979 ha of eucalypts, 2,786 ha of *Pinus* species and 371 ha of other tree specie.

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

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Maile N., 2001 Country report Lesotho (FOSA)	H	Ownership	All reporting years	

2.2.2 Original data

No original data exist. Reported plantation areas, forest and OWL are assumed to be under government ownership.

2.3 Analysis and processing of national data

2.4 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership				
Public ownership	5	7	103	55
Other ownership				
TOTAL	5	7	103	55

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 to be 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
www.wcmc.org	M	Protected Areas	2003	

3.2.2 Original data

Protected areas	Area in 1000
Natural monument species, Management areas and protected landscape and seascape (Category iii, IV, V)	7

It is assumed that the protected areas all fall in the category other wooded land.

3.3 Analysis and processing of national data

3.3.1 Calibration

3.3.2 Estimation and forecasting

3.4 Reclassification into FRA 2005 classes

Assumptions

1. Plantation areas are for production
2. Protected areas are for conservation
3. The rest unknown

3.5 Data for National reporting table T3

FRA 2005 Categories / Designated function	Area (1000 hectares)					
	Primary function			Total area with function		
	1990	2000	2005	1990	2000	2005
Forest						
Production	4.4	6.4	7.4			
Protection of soil and water						
Conservation of biodiversity						
Social services						
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function	0.6	0.6	0.6	not appl.	not appl.	not appl.
Total - Forest	5	7	8	not appl.	not appl.	not appl.
Other wooded land						
Production						
Protection of soil and water						
Conservation of biodiversity	7	7	7			
Social services						
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function	96	48	24	not appl.	not appl.	not appl.
Total – Other wooded land	103	55	31	not appl.	not appl.	not appl.

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 Original data

From T1 and T3

4.3 Analysis and processing of national data

4.4 Reclassification into FRA 2005 classes

Plantation area are classified as productive, Natural forest as primary (see definition in T1) and the rest are modified

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 (1)	0.6	0.6	0.6			
Modified natural				103	55	31
Semi-natural						
Productive plantation	4.4	6.4	7.4			
Protective plantation						
TOTAL	5	7	8	103	55	31

Notes: Found in inaccessible mountains

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. Earthscan Publication Ltd. London. UK	H	AGB	1983	

5.2.2 Original data

No original data exist. T6 will be used as input for this table.

Data from T6 used as input

	OWL
Above-ground biomass (tons/ha)	14.09

Growing stock /ha calculated by applying:

$$GS = AGB / BEF / WD$$

GS =Growing stock

AGB=Above-ground biomass

BEF=Biomass expansion factor = 2.4 (average temperate and tropical broadleaved forest)

WD=Wood density = 0.58

	Forest
Growing stock (m3/ha)	10.09

5.3 Analysis and processing of national data

5.3.1 Estimation and forecasting

The growing stock per hectare is then applied to total area for estimating growing stock. Commercial growing stock was not calculated as the vol/ha for plantations was not available.

5.4 Reclassification into FRA 2005 classes

5.5 Data for National reporting table T5

FRA 2005 Categories	Volume (million cubic meters over bark)					
	Forests			Other wooded land		
	1990	2000	2005	1990	2000	2005
Growing stock	ID	ID	ID	1.04	0.55	0.31
Commercial growing stock	ID	ID	ID			

Notes: Growing stock data is considered to be very weak.

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 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.

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., and Townsend, J. (eds.) 1989. Biomass assessment. Woody biomass in the SADC region. Earthscan Publication Ltd. London. UK	H	AGB	1983	

6.2.2 Original data

There was no reliable information for forest. Biomass will only be calculated for OWL

National Class	Area (ha)	1000.tons
Escarpment and riparian woodland (1983)	137100	1924.9

6.3 Analysis and processing of national data

Calculating biomass per hectare

	OWL
Total above-ground biomass (1000 tons)	1925
Area in 1000 ha (from table T1)	137
Above ground biomass (tons/ha)	14.04

Applying biomass per hectare to OWL areas for 1990, 2000 and 2005

	Other wooded land		
	1990	2000	2005
Area in 1000 (hectares) from T1	103	55	31
Above-ground biomass (1000 tons)	1445	771.84	435.19

Applying conversion factors

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

...gives the data for the reporting table T6

FRA 2005 categories	Forests			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass (million tons)	ID	ID	ID	1.45	0.77	0.44
Below-ground biomass (million tons)	ID	ID	ID	0.39	0.21	0.12
Living biomass	ID	ID	ID	1.84	0.98	0.55
Dead wood biomass (million tons)	ID	ID	ID	0.26	0.14	0.08
TOTAL	ID	ID	ID	3.93	2.10	1.18

6.4 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	ID	ID	ID	1.45	0.77	0.44
Below-ground biomass	ID	ID	ID	0.39	0.21	0.12
Dead wood biomass	ID	ID	ID	0.26	0.14	0.08
TOTAL	ID	ID	ID	2.1	1.1	0.6

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 National data

7.2.1 Original data

T6 was used as input

7.3 Analysis and processing of national data

Applying a carbon content of 50% gives the data for table T7:

7.4 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	ID	ID	ID	0.72	0.39	0.22
Carbon in below-ground biomass	ID	ID	ID	0.20	0.10	0.06
Sub-total: Carbon in living biomass	ID	ID	ID	0.92	0.49	0.28
Carbon in dead wood	ID	ID	ID	0.13	0.07	0.04
Carbon in litter						
Sub-total: Carbon in dead wood and litter						
Soil carbon to a depth of _____ cm						
TOTAL CARBON	ID	ID	ID	1.96	1.05	0.59

8 Table T8 – Disturbances affecting health and vitality

8.1 FRA 2005 Categories and definitions

Category	Definition
Disturbance by fire	Disturbance caused by wildfire, independently whether it broke out inside or outside the forest/OWL.
Disturbance by insects	Disturbance caused by insect pests that are detrimental to tree health.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as a bacteria, fungi, phytoplasma or virus.
Other disturbance	Disturbance caused by other factors than fire, insects or diseases.

8.2 National data

8.2.1 Original data

No data was available

8.3 Analysis and processing of national data

8.4 Data for National reporting table T8

FRA-2005 Categories	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990	2000	1990	2000
Disturbance by fire	ID	ID	ID	ID
Disturbance by insects	ID	ID	ID	ID
Disturbance by diseases	ID	ID	ID	ID
Other disturbance	ID	ID	ID	ID

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
www.iucn.org	M	Endangered and vulnerable species	2000	
Expert opinion	M	no of native tree species	2000	

9.2.2 Original data

Number of native tree species=60

9.3 Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species	60
Critically endangered tree species	0
Endangered tree species	0
Vulnerable tree species	1

9.4 Comments to National reporting table T9

Vulnerable species according to the IUCN Red List: [Prunus africana](#)

10 Table T10 – Growing stock composition

No data available

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 Year book	L	fuelwood	1990, 2000	

11.2.2 Original data

Year	Wood Fuel Removal under Bark in cubic meters
1988	1 873 572
1989	1 871 503
1990	1 262 000
1991	1 329 000
1992	1 366 000
Avg (1990)	1 540 415
1998	1 594 000
1999	2 004 030
2000	2 022 018
2001	2 028 134
2002	2 034 269
Avg (2000)	1 936 490

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

Converting to fuelwood removal by multiplying by 1.15 and extrapolating for 2005 gives

	Wood Fuel removal over bark in cubic meters		
	1990	2000	2005
wood fuel	1 771 477	2 226 964	2 454 707

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						
Woodfuel	1 771	2 227	2 455			
TOTAL for Country	1 771	2 227	2 455			

Notes: Data on wood removal is very weak. Most probably the wood removal may include data from trees outside the forests (i.e. OWL)

12 Table T12 – Value of wood removal

12.1 FRA 2005 Categories and definitions

Category	Definition
Value of industrial wood removal	Value of the wood removed for production of goods and services other than energy production (woodfuel).
Value of woodfuel removal	Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1. Masilo N.L., 2002. An update of the Lesotho Woodfuel database: Data Collection and Analysis for Sustainable Forest Management in ACP Countries - Linking National and International Efforts. EC-FAO PARTNERSHIP PROGRAMME (1998-2002)	M	Unit cost for wood Fuel	2000	

12.2.2 Original data

Type	Units	Quantity	Cost / Unit (Maloti)
Firewood*	tonne	384,452	28.5

Notes: * The consumption data were determined in the rural component of the National energy Survey 1986. The difference between "firewood" and "shrubs" in response in the Survey was generally based on stem diameter. There was no clear and consistent differentiation between "firewood" and "shrubs". Young shoots and small branches of exotic tree species were usually called "Shrubs" whereas thick pieces of firewood from indigenous trees were usually called "firewood". Essentially, "firewood" and "shrubs" should be grouped (Source 1 above)

Exchange rate

	Maloti		
	1990	2000	2005
\$US	2.563	7.568	7.568

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

Multiplying unit cost by total wood fuel removal from T11 gives:

	1990	2000	2005
Wood Fuel Removal in cubic from T11	1 771 477	2 226 963	2 454 707
Value in Maloti	50 487 102	63 468 466	69 959 149

Converting to \$US by applying the exchange rate gives:

	Value in US\$		
	1990	2000	2005
Wood Fuel	19 698 440	8 386 425	9 244 074

12.4 Data for National reporting table T12

FRA 2005 Categories	Value of roundwood removal (1000 USD)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood						
Woodfuel	19 698	8 386	9 244			
TOTAL for Country	19 698	8 386	9 244			

13 Table T13 – Non-wood forest product removal

No data is available

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

No data is available

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	

15.2.2 Original data

No country original data was available

15.3 Analysis and processing of national data

15.3.1 Estimation and forecasting

15.4 Reclassification into FRA 2005 classes

15.5 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods	0.2	0.4
Provision of services		
Unspecified forestry activities		
TOTAL	0.2	0.4

15.6 Comments to National reporting table T15

16 Thematic reporting tables

If countries would like to submit additional reporting tables, these should be included here.
(See the chapter on thematic reporting in the Guidelines for Country Reporting).