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Food and Agriculture Organization of the United Nations

**GLOBAL FOREST RESOURCES
ASSESSMENT**

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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).

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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
1.Kenya Forestry Master Plan 1994	Strategic plan (Reliable)		1994	
2.Kenya Statistical Abstract 1996 (Kenya Bureau of Statistics)	Reliable		1996	
3.Kenya Economic Survey 2003 (Kenya Bureau of Statistics)	Reliable		2003	

1.2.2 Classification and definitions

National class	Definition
Indigenous forests	A group of trees whose crowns are broadleaved and are largely contiguous and includes the ecosystem that makes it up and a tree canopy cover of over 10% and the canopy is essentially of indigenous tree species growing under natural conditions and excludes planted indigenous plantation forests. The forest is delineated through legal gazetment. The area includes Mangroves and bamboo ecosystems.
Public Plantation Forests	All areas of systematically planted, man-managed tree resource composed of primarily exotic species. Categories include both young and mature plantations that have been established for commercial timber production. It includes clear felled areas within plantations and excludes all plantations of non-timber such as tea and coffee. It includes associated land cover/use such as roads, fire-breaks and building infrastructure if they are too small to be clearly mapped off the satellite imagery. The area is also legally delineated through gazetment.
Open Woodlands	Forests spanning over most of the woodlands within the country with tree canopy cover of between 40-70%. It is a closed to open canopy community typically consisting of a single tree canopy layer and a herb layer.
Private Forest Plantations	As in public forest plantations privately owned.
Bush-lands	Communities typically composed of tall, woody self supporting single and multi-stemmed plants branching at or near ground with in most cases no clearly definable structure. Total canopy cover >10% with canopy height between 2-5M
Grasslands	All area of grassland with less than 10% tree and /or shrub canopy cover and greater than 0.1% total vegetation cover. It is dominated by grass-like non-woody rooted herbaceous plants.
Farmlands and settlements	These are trees found on privately owned farmlands and settlements.

1.2.3 Original data

Name of variable	Area('000Ha)		
	1990	2000	2005 (1)
Indigenous closed Canopy	1 240	1 190	1 165
Indigenous Mangroves	80	80	80
Open woodlands	2 150	2 100	2 075
Public Plantation Forests (1)	170	134	119
Private Plantation forests (1)	68	78	83
Bush-land	24 800	24 635	24 570
Grasslands	10 730	10 485	10 350
Settlements	8 256	8 192	8 152
Farms with Trees	9 420	10 020	10 320
Inland water Bodies	1 123	1 123	1 123
Total Area for country	58 037	58 037	58 037

Notes:

1. Forest Plantation data is based on the 1991-1992 plantation survey conducted with the assistance of the FAO Forest Inventory and Statistics Project and adjustments were made to reflect clear-felling in

1992-1993 and increased mortality in plantations established after 1985 due to ban of the Taungya system as a method of establishing forest plantations.

2. 2005 based on expert opinion and on data obtained from source 1.

1.3 Analysis and processing of national data

1.3.1 Calibration

Not needed

1.3.2 Estimation and forecasting

This was done after the reclassification in 1.4 below.

1.4 Reclassification into FRA 2005 classes

Data for national classification was derived from forest inventory and tree resource assessment study undertaken through aerial and satellite imagery while preparing the forestry sector Master plan for the country between 1992-1994.

National Classes	Forests	OWL	OL	OLWTC
Indigenous closed Canopy	100%			
Indigenous Mangroves	100%			
Open woodlands	100%			
Public Plantation Forests	100%			
Private Plantation forests	100%			
Bush-land		100%		
Grasslands		100%		
Settlements			100%	
Farms with Trees				100%

Results after reclassification data for reference year: 1990

National Classes	Area in 1000 hectares			
	Forests	OWL	OL	OLWTC
Indigenous closed Canopy	1 240	0	0	0
Indigenous Mangroves	80	0	0	0
Open woodlands	2 150	0	0	0
Public Plantation Forests	170	0	0	0
Private Plantation forests	68	0	0	0
Bush-land	0	24 800	0	0
Grasslands	0	10 730	0	0
Settlements	0	0	8 256	0
Farms with Trees	0	0	0	9 420
Inland water Bodies	0	0	0	0
Total Area for country	3 708	35 530	8 256	9 420

Results after reclassification for all 3 reference years:

FRA 2005 categories	Area in 1000 hectares		
	1990	2000	2005
Forests	3 708	3 582	3 522
OWL	35 530	35 120	34 920
OI	17 676	18 212	18 472
OLWTC	9 420	10 020	10 320
Inland water	1 123	1 123	1 123
	58 037	58 037	58 037

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	3 708	3 582	3 522
Other wooded land	35 530	35 120	34 920
Other land	17 676	18 212	18 472
...of which with tree cover ¹⁾	9 420	10 020	10 320
Inland water bodies	1 123	1 123	1 123
TOTAL	58 037	58 037	58 037

1.6 Comments to National reporting table T1

(a) In the FRA 2000 main report (Appendix 3 On global Tables Pg 387), the total forest area from Kenya was reported as 17 million hectares. Other schools of thought estimate forest area in the country as less than 3 million.

The reason for this discrepancy is:

1. That most of the data has been sourced from a very rapid extensive appraisal that was done during a four year Forest Master Plan preparation between 1990-1994. During the time, and even now, most experts in the country only consider forests as only those closed canopy and gazetted forests with an additional area from closed canopy private and plantation forests. Little regard had been done on the vast woodlands and bushland that are at the domain of trust land Act or communal land and are located within approximately over 70% of the arid and semi arid areas of the district.

2. Subjective nature of reclassifying the vast woodland and bushland since more or less an expert's opinion was used to reclassify woodland/bushland to fit the FRA definitions. Note that FRA 2000 considered woodlands/bushland/wooded grassland as 10% closed forests, 35% open forests and the rest as OWL. FRA 2005 however used the original definitions whereby bushland was considered to qualify as OWL (less than 5 m in height).

b) Sources of Data:

All data used in this report was quoted from Kenya Forest Master Plan Study done in 1994. The same source was used widely for FRA 2000 together with Kenya Bureau of Statistical Survey.

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
Kenya Forestry Master Plan	M		1994	
Kenya Statistical Abstract	M		1996	

2.2.2 Classification and definitions

National class	Definition
Public Ownership	Forests and other wooded bush-lands legally acquired or reserved for forestry in terms of Forests Act chapter 385 laws of Kenya and designated as demarcated state forests.
Private Ownership	Forests and woodlands not gazetted under forest act or any other law and are privately owned.

2.2.3 Original data

Forest type	Public (000 ha)			Private (000ha)		
	1990	2000	2005	1990	2000	2005
Plantations	170	134	118.5	68	78	83.2
Indigenous closed forests	1 240	1 190	1 165			
Mangroves	80	80	80			
Open woodland	2 150	2 100	2 075			
Total	3 640	3 504	3 438	68	78	83.2

Note:

1. Estimates of ownership are based on projections done by Kenya Forestry Master Plan (1994) Table A2.1 (Pg359) and Table A2.15 (pg) 373. The area of forests under private ownership for other forest types except for Plantations and Mangroves are based on 10% of the area under public forests in each forest type. The 10% assumption is based on Expert's Opinion.

2.3 Analysis and processing of national data

2.3.1 Estimation and forecasting

2.4 Reclassification into FRA 2005 classes

2.5 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	68	78	3 553	3 512
Public ownership	3 640	3 504	31 977	31 608
Other ownership				
TOTAL	3 708	3 582	35 530	35 120

2.6 Comments to National reporting table T2

Forest area includes plantation, indigenous closed canopy and Mangroves. Other wooded land includes woodlands and bushland as shown in table 2.2.3 above. Data for private ownership under other wooded lands is derived from an estimation of 10% of the total area under public land.

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	
Kenya Forestry Master Plan 1996		Primary and semi natural forests		

3.2.2 Classification and definitions

3.2.3 Original data

Protected areas from source 1

Categories	Area in 1000 hectares (2003)
National parks	3 432
Natural monument, Species Management areas and protected landscape and seascape (category III; IV & V)	53
Areas managed for sustainable use and unclassified areas (category IV and others)	
Total	3 485

Original data from Kenya Forestry Master Plan

FRA 2005 Categories	Area in 1000 hectares		
	1990	2000	2005
Productive	238	212	202
Conservation of biodiversity			
Protection of soil and water	3 470	3 370	3 320
Total	3 708	3 582	3 522

3.3 Analysis and processing of national data

The protected area from Source 1 is assumed to be under OWL.

3.4 Reclassification into FRA 2005 classes

No reclassification was necessary for forests as the national Classes and FRA 2005 definitions were compatible. All protected areas from source 1 are classified as conservation of biodiversity under OWL.

3.4.1 Estimation and forecasting

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	238	212	202			
Protection of soil and water	3 470	3 370	3 320			
Conservation of biodiversity						
Social services						
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function				not appl.	not appl.	not appl.
Total - Forest	3 708	3 582	3 522	not appl.	not appl.	not appl.
Other wooded land						
Production						
Protection of soil and water						
Conservation of biodiversity	3 485	3 485	3 485			
Social services						
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function	32 045	31 635	31 435	not appl.	not appl.	not appl.
Total – Other wooded land	35 530	35 120	34 920	not appl.	not appl.	not appl.

3.6 Comments to National reporting table T3

There are no designated natural forest functions but most of the indigenous and woodland have more than one function and no delineation has been done at the national level for specific single functions.

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
Kenya Statistical Abstract 1996	Reliable		1996	
Kenya Forestry Master Plan	Reliable		1994	

4.2.2 Classification and definitions

National class	Definition
Indigenous forests	Forests with minimum visible indications of human interference and specifically managed for conservation of water, biodiversity and ecotourism. They well fit within primary , modified natural and semi-natural FRA2005 classification
Plantation	These are forests meant for production purposes.
Woodlands and bushland	They traverse woodlands and can be classified within all the FRA classes.

4.2.3 Original data

The data assumes only 20% of the total indigenous forests have had no indication of human activity. The remaining 80% of the indigenous forests that include bamboo, mangroves, woodlands and bushland are modified natural forests.

4.3 Analysis and processing of national data

4.3.1 Calibration

4.3.2 Estimation and forecasting

4.4 Reclassification into FRA 2005 classes

Assumption:

20% of Natural forests are considered primary and plantations are productive. The rest is considered modified natural. All OWL are considered modified natural. .

FRA 2005 categories	Area in 1000 hectares		
	1990	2000	2005
Primary	742	716	704
Modified Forests	2 728	2 654	2 616
Productive	238	212	202
Total	3 708	3 582	3 522

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	742	716	704			
Modified natural	2 728	2 654	2 616	35 530	35 120	34 920
Semi-natural						
Productive plantation	238	212	202			
Protective plantation						
TOTAL	3 708	3 582	3 522	35 530	35 120	34 920

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
Wass P., 199Kenya's Forest Resource Assessment: EC-FAO PARTNERSHIP PROGRAMME (1998-2002). Tropical forestry Budget line B7-6201/97-15/VIII/FOR	M	Vol/ha	1995	

5.2.2 Classification and definitions

5.2.3 Original data

Notes: The above inventory is the only comprehensive one carried out between 1990-2000 in the natural forests

Reference year: 1995

	m3/ha
Average volume per hectare indigenous forest	176
Average volume per hectare for woodlands (1)	15.2

Notes: Obtained from the KFMP study of woody biomass outside forests Table A2.1

T1 forest area will be used as an input to this table.

Forest type	Total area (000ha)			m3/ha
	1990	2000	2005	
Indigenous Closed Forest	1 320	1270	1245	176
Open woodlands	2 150	2100	2075	15.2
Plantation forests (1)	238	212	202	150
Bushland/grassland (OWL)	35 530	35 120	34 920	NDA

Notes: Volume of plantations is based on expert estimate.

5.3 Analysis and processing of national data

5.4 Reclassification into FRA 2005 classes

Applying Vol/ha to the relevant vegetation class from above gives:

Forest type	Total Growing stock(MillionM3)		
	1990	2000	2005
Indigenous Closed Forest	232.32	223.52	219.12
Open woodlands	32.68	31.92	31.54
Plantation forests	35.7	31.8	30.3
Total	300.7	287.24	280.96

5.5 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	300.7	287.24	280.96			
Commercial growing stock (1)	35.7	31.8	30.3			

Notes: applies only to plantations, no information was available for other forests designated for production

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

T 5 is used as an input

6.2.2 Classification and definitions

6.2.3 Original data

Since no data was available for this table. T5 is used as an input

National Classes	Area (hectares)		
	1990	2000	2005
Indigenous Closed Forest	1 320	1 270	1 245
Open woodlands	2 150	2 100	2 075
Plantation forests	238	212	202
Total	3 708	3 582	3 522

Conversion factors used

National Classes	Stem vol.	Density	Stem wood	BEF	R/S ratio	D/L ratio
	m ³ /ha	ton/m ³	ton/ha			
Indigenous Closed Forest	176	0.58	102.08	3.4	0.24	0.11
Open woodlands	15.2	0.58	8.816	3.4	0.24	0.11
Plantation forests	150	0.58	87	2.4	0.34	0.11

1. BEF from IPCC Good Practice guidelines
2. Wood density: Average for Africa (FAO Forestry Paper 134)
3. R/S ratio: Appendix 5 of Guidelines
4. D/L ratio: Appendix 5 of Guidelines

6.3 Analysis and processing of national data

Calculating Biomass for Indigenous Closed Forest

FRA 2005 Categories	Biomass (million tonnes)		
	1990	2000	2005
Aboveground biomass	458.1	440.8	432.1
Belowground biomass	110.0	105.8	103.7
Dead wood biomass	62.5	60.1	58.9

Calculating Biomass for open woodlands

FRA 2005 Categories	Biomass (million tonnes)		
	1990	2000	2005
Aboveground biomass	64.4	62.9	62.2
Belowground biomass	15.5	15.1	14.9
Dead wood biomass	8.8	8.6	8.5

Calculating biomass for plantations

FRA 2005 Categories	Biomass (million tonnes)		
	1990	2000	2005
Aboveground biomass	49.7	44.3	42.2
Belowground biomass	16.9	15.1	14.3
Dead wood biomass	7.3	6.5	6.2

Total Biomass for forests

FRA 2005 Categories	Biomass (million tonnes)		
	1990	2000	2005
Aboveground biomass	572.3	548.0	536.5
Belowground biomass	142.3	135.9	133.0
Total living biomass	714.6	683.9	669.5
Dead wood biomass	78.6	75.2	73.6
Total biomass	793.2	759.2	743.1

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	572.3	548.0	536.5			
Below-ground biomass	142.3	135.9	133.0			
Dead wood biomass	78.6	75.2	73.6			
TOTAL	793.2	759.2	743.1			

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 Data sources

7.3 Analysis and processing of national data

7.4 Data for National reporting table T7

T6 used and a conversion factor of 50% used.

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	286.1	274.0	268.2			
Carbon in below-ground biomass	71.2	68.0	66.5			
Sub-total: Carbon in living biomass	357.3	342.0	334.7			
Carbon in dead wood	39.3	37.6	36.8			
Carbon in litter						
Sub-total: Carbon in dead wood and litter						
Soil carbon to a depth of _____ cm						
TOTAL CARBON	396.6	379.6	371.5			

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 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Kenya Forestry Master plan	H	Fire disturbances		

8.2.2 Classification and definitions

8.2.3 Original data

Number of fires and area burned: Kenya 1980 – 1999

YEAR	AREA BURNT		
	PLANTATION	INDIGENOUS	TOTAL
1990	85	331	416
1991	1 705	236	1 941
1992	6 170	5 494	11 664
1993	1 731	515	2 246
1994	690	69	759
1997	4 726	2 961	7 687
1999	1 449	317	1 766

8.3 Analysis and processing of national data

8.3.1 Estimation and forecasting

The average of the values for 1994, 1997 and 1999 was used for reporting year 2000 and the average of the figures for 1990-1992 for reporting year 1990.

	Area in hectares	
	Avg 1990	Avg 2000
Forest	4 674	3 404

8.4 Reclassification into FRA 2005 classes

8.5 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	5	3		
Disturbance by insects				
Disturbance by diseases				
Other disturbance				

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	CR, EN., VU species		

9.2.2 Classification and definitions

9.2.3 Original data

No original national data exist

9.3 Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species	ID
Critically endangered tree species	3
Endangered tree species	14
Vulnerable tree species	50

9.4 Comments to National reporting table T9

The number of threatened species includes all plant species.

Critically endangered

- 1 Combretum tenuipetiolatum
- 2 Euphorbia tanaensis
- 3 Ficus faulkneriana
- 4 Holmskioldia gigas
- 5 Sorindeia calantha

Endangered

- 1 Bauhinia mombassae
- 2 Bucea macrocarpa
- 3 Cola octoloboides
- 4 Cola porphyrantha
- 5 Croton alienus
- 6 Cynometra lukei
- 7 Diospyros shimbaensis
- 8 Encephalartos kisambo
- 9 Euphorbia wakefieldii
- 10 Gigasiphon macrosiphon
- 11 Lovoa swynnertonii
- 12 Synsepalum subverticillata
- 13 Vepris glandulosa
- 14 Ziziphus robertsoniana

Vulnerable

- 1 Allophylus zimmermannianus
- 2 Aloe ballyi
- 3 Angylocalyx braunii
- 4 Aristogeitonia monophylla
- 5 Baphia keniensis
- 6 Baphia kirkii
- 7 Buxus obtusifolia
- 8 Camptolepis ramiflora
- 9 Canthium keniense
- 10 Canthium kilifiensis
- 11 Canthium robynsianum
- 12 Cephalosphaera usambarensis
- 13 Chytranthus obliquinervis
- 14 Coffea fadenii
- 15 Coffea pseudozanguebariae
- 16 Colpodium chionogeiton
- 17 Colpodium hedbergii
- 18 Commiphora chaetocarpa
- 19 Cynometra suaheliensis
- 20 Cynometra webberi
- 21 Dalbergia vacciniifolia
- 22 Dasylepis integra
- 23 Deschampsia angusta
- 24 Dialium holtzii
- 25 Dicraeopetalum stipulare
- 26 Diospyros amaniensis
- 27 Diospyros greenwayi
- 28 Diphasiopsis fadenii
- 29 Entandrophragma angolense
- 30 Erythrina sacleuxii
- 31 Euphorbia cussonioides
- 32 Gardenia transvenulosa

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- 33 [Julbernardia magnistipulata](#)
 - 34 [Kraussia speciosa](#)
 - 35 [Lagynias pallidiflora](#)
 - 36 [Lettowianthus stellatus](#)
 - 37 [Macaranga conglomerata](#)
 - 38 [Memecylon teitense](#)
 - 39 [Micrococca scariosa](#)
 - 40 [Mildbraedia carpinifolia](#)
 - 41 [Mimusops riparia](#)
 - 42 [Mkilua fragrans](#)
 - 43 [Moringa arborea](#)
 - 44 [Multidentia sclerocarpa](#)
 - 45 [Newtonia paucijuga](#)
 - 46 [Ocotea argylei](#)
 - 47 [Ocotea kenyensis](#)
 - 48 [Ouratea schusteri](#)
 - 49 [Oxystigma msou](#)
 - 50 [Pachystela subverticillata](#)

10 Table T10 – Growing stock composition

No national data exist

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	Industrial roundwood and Fuelwood removal	1990 and 2000	

11.2.2 Original data

Year	Wood removal in cubic meters (under bark)	
	Industrial Roundwood	Wood Fuel
1988	1 672 000	16 050 412
1989	1 714 000	16 420 361
1990	1 743 000	16 792 606
1991	1 775 000	17 247 700
1992	1 804 000	17 753 655
Avg 1990	1 741 600	16 852 947
1998	1 956 000	19 386 779
1999	1 977 000	19 520 854
2000	1 977 000	19 658 247
2001	1 977 000	19 826 903
2002	1 977 000	20 001 528
Avg 2000	1 972 800	19 678 862

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

FRA 2005 categories	Wood Removal over bark in cubic meters		
	1990	2000	2005
Industrial Roundwood	2 002 840	2 268 720	2 401 660
Wood fuel	19 380 889	22 630 692	24 255 593
Total	21 383 729	24 899 412	26 657 253

11.4 Reclassification into FRA 2005 classes

11.5 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	2 004	2 269	2 402			
Woodfuel	19 381	22 631	24 256			
TOTAL for Country	21 384	24 899	26 657			

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

12.2.2 Original data

No data is available

12.3 Analysis and processing of national data

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	ID	ID	ID			
Woodfuel	ID	ID	ID			
TOTAL for Country	ID	ID	ID			

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 national data exist for this table.

15.3 Analysis and processing of national data

15.3.1 Estimation and forecasting

15.4 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods	1.9	1.7
Provision of services		
Unspecified forestry activities		
TOTAL	1.9	1.7

15.5 Comments to National reporting table T15