



Forestry Department

Food and Agriculture Organization of the United Nations

**GLOBAL FOREST RESOURCES
ASSESSMENT**

COUNTRY REPORTS

UGANDA

FRA2005/223
Rome, 2005



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

DISCLAIMER

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

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

This report has been prepared by:

Name : Mr **Paul Drichi**

Title: Project Manager: Forest Inventory

Organization: forest Department

Address: P.O Box 1613, Kampala, uganda

Tel/Fax: +256 41 251 779

Email: Paul Drichi [pauld@nfa.org.ug]

FAO Secretariat collaborated in preparing the report.

Contents

1	TABLE T1 – EXTENT OF FOREST AND OTHER WOODED LAND	3
1.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
1.2	NATIONAL DATA.....	3
1.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
1.4	RECLASSIFICATION INTO FRA 2005 CLASSES	3
1.5	DATA FOR NATIONAL REPORTING TABLE T1	3
2	TABLE T2 – OWNERSHIP OF FOREST AND OTHER WOODED LAND	3
2.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
2.2	NATIONAL DATA.....	3
2.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
2.4	RECLASSIFICATION INTO FRA 2005 CLASSES	3
2.5	DATA FOR NATIONAL REPORTING TABLE T2	3
3	TABLE T3 – DESIGNATED FUNCTION OF FOREST AND OTHER WOODED LAND	3
3.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
3.2	NATIONAL DATA.....	3
3.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
3.4	RECLASSIFICATION INTO FRA 2005 CLASSES	3
3.5	DATA FOR NATIONAL REPORTING TABLE T3	3
3.6	COMMENTS TO NATIONAL REPORTING TABLE T3	3
4	TABLE T4 – CHARACTERISTICS OF FOREST AND OTHER WOODED LAND	3
4.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
4.2	NATIONAL DATA.....	3
4.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
4.4	RECLASSIFICATION INTO FRA 2005 CLASSES	3
4.5	DATA FOR NATIONAL REPORTING TABLE T4	3
4.6	COMMENTS TO NATIONAL REPORTING TABLE T4	3
5	TABLE T5 – GROWING STOCK	3
5.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
5.2	NATIONAL DATA.....	3
5.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
5.4	RECLASSIFICATION INTO FRA 2005 CLASSES	3
5.5	DATA FOR NATIONAL REPORTING TABLE T5	3
6	TABLE T6 – BIOMASS STOCK.....	3
6.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
6.2	NATIONAL DATA.....	3
6.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
6.4	DATA FOR NATIONAL REPORTING TABLE T6	3
7	TABLE T7 – CARBON STOCK.....	3
7.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
7.2	NATIONAL DATA.....	3
7.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
7.4	RECLASSIFICATION INTO FRA 2005 CLASSES	3
7.5	DATA FOR NATIONAL REPORTING TABLE T7	3
8	TABLE T8 – DISTURBANCES AFFECTING HEALTH AND VITALITY	3
8.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
8.2	NATIONAL DATA.....	3
8.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
8.4	DATA FOR NATIONAL REPORTING TABLE T8	3
9	TABLE T9 – DIVERSITY OF TREE SPECIES.....	3

9.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
9.2	NATIONAL DATA.....	3
9.3	DATA FOR NATIONAL REPORTING TABLE T9	3
9.4	COMMENTS TO NATIONAL REPORTING TABLE T9	3
10	TABLE T10 – GROWING STOCK COMPOSITION	3
10.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
10.2	NATIONAL DATA.....	3
10.3	DATA FOR NATIONAL REPORTING TABLE T10	3
11	TABLE T11 – WOOD REMOVAL	3
11.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
11.2	NATIONAL DATA.....	3
11.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
11.4	DATA FOR NATIONAL REPORTING TABLE T11	3
12	TABLE T12 – VALUE OF WOOD REMOVAL.....	3
12.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
12.2	NATIONAL DATA.....	3
12.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
12.4	RECLASSIFICATION INTO FRA 2005 CLASSES	3
12.5	DATA FOR NATIONAL REPORTING TABLE T12	3
13	TABLE T13 – NON-WOOD FOREST PRODUCT REMOVAL.....	3
13.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
13.2	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
14	TABLE T14 – VALUE OF NON-WOOD FOREST PRODUCT REMOVAL	3
14.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
14.2	DATA FOR NATIONAL REPORTING TABLE T14	3
15	TABLE T15 – EMPLOYMENT IN FORESTRY.....	3
15.1	FRA 2005 CATEGORIES AND DEFINITIONS.....	3
15.2	NATIONAL DATA.....	3
15.3	ANALYSIS AND PROCESSING OF NATIONAL DATA.....	3
15.4	DATA FOR NATIONAL REPORTING TABLE T15	3
15.5	COMMENTS TO NATIONAL REPORTING TABLE T15	3
16	THEMATIC REPORTING TABLES	3

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
National Biomass Technical Report: 2003	H	Forest Cover	1992	
Africover Mapping project	M	Forest Cover	2001	

1.2.2 Classification and definitions

National class	Definition
Hardwood Plantations	Mainly Eucalyptus sp. And indigenous sp. E.g. <i>Maesopsis eminii</i>
Softwood Plantations	Comprising of Pinus and Cypress
Tropical High Forest normally stocked	Without human interference
Tropical High Forest depleted or degraded	affected by human influence
Woodland	More open and single storied than the tropical high forest normally above 5m
Bushland	Crown cover over 40% and below 5m
Grassland	Dominant vegetation type is grass but occasionally there could be scattered trees
Wetland	Permanent covered by wetland grass e.g. papyrus or seasonal
Subsistence farmland	Areas with settlement
Commercial Farmland	Large scale farms e.g. sugarcane and tea plantation
Built-up areas	Urban centres, trading centres etc.
Water bodies	Lakes, ponds and rivers
Impediment areas	Where no biomass is expected such as rock outcrops and bare lands

1.2.3 Original data

Reference year = 1992

National Classes	Gross Area by Land Cover/Use	Public	Private
Plantations Hardwoods	18 682	6 658	12 024
Plantations Softwoods	16 384	15 693	690
THF- Normal	650 150	477 068	173 083
THF - Degraded	274 058	97 011	177 047
Woodlands	3 974 102	875 854	3 098 248
Bushlands	1 422 395	296 111	1 126 285
Grasslands	5 115 266	1 149 967	3 965 299
Wetlands	484 037	32 598	451 439
Subsistence Farmlands	8 400 999	137 931	8 263 068
Commercial Farmlands	68 446	1 287	67 159
Built up areas	36 571	1 982	34 589
Impediments	3 713	745	2 968
Total	20 464 804	3 092 905	17 371 899

Data for Reference year =2001

Notes:

1. The classification system is the one adopted by Africover mapping project
2. There are variations in the classes with that one of National Biomass Study project. However the closed forest is the same as Tropical high Forest (normally stocked)
3. Whereas open to very open trees corresponds with Degraded Tropical Forest high forest and woodlands. Note that this class includes both degraded tropical high forest and woodlands.
4. The data is based on satellites imageries of 2000/001.

Original Data for reference year 2001

National Classes	Area in ha
Closed Forests	693 162
Open to very open trees	3 244 528
Plantation	35 066
Closed to open shrubs and woody vegetation	8 120 200
Total	12 092 956
Other (1)	7 617 044
Total land area	19 710 000

Note: 1. Obtained through subtracting forest cover from total country land area

1.3 Analysis and processing of national data

1.3.1 Calibration

Calibrating 1992 data

National land area in ha	20,464,804
FAO/STATS land area	19,710,000
Calibrating Factor	0.963116981

Land Cover/Use	Calibrated 1992 data in ha
Plantations Hardwoods	17 993
Plantations Softwoods	15 780
THF- Normal	626 171
THF - Degraded	263 949
Woodlands	3 827 526
Bushlands	1 369 933
Grasslands	4 926 599
Wetlands	466 184
Subsistence Farmlands	8 091 145
Commercial Farmlands	65 922
Built up areas	35 222
Impediments	3 576
Total	19 710 000

1.4 Reclassification into FRA 2005 classes

Land Cover/Use	Forests	OWL	OL
Plantations Hardwoods	100%		
Plantations Softwoods	100%		
THF- Normal	100%		
THF - Degraded	100%		
Woodlands	100%		
Bushlands		100%	
Grasslands			100%
Wetlands			100%
Subsistence Farmlands			100%
Commercial Farmlands			100%
Built up areas			100%
Water			
Impediments			100%

Results after reclassifying 1992 data

Land Cover/Use	Area in hectares		
	Forests	OWL	OL
Plantations Hardwoods	17 993		
Plantations Softwoods	15 780		
THF- Normal	626 171		
THF - Degraded	263 949		
Woodlands	3 827 526		
Bushlands		1369933	
Grasslands			4 926 599
Wetlands			466 184
Subsistence Farmlands			8 091 145
Commercial Farmlands			65 922
Built up areas			35 222
Impediments			3 576
Total	4 751 418	1 369 933	13 588 649

Reclassification of the 2001 data

National Classes	Forests	OWL	OL
Closed Forests	100%		
Open to very open trees	100%		
Plantation	100%		
Closed to open shrubs and woody vegetation (1)		15%	85%
Other			100%

Notes: 1. Expert opinion

Results after reclassifying 2001 data

National Classes	Area in hectares		
	Forest	OWL	OL
Closed Forests	693 162		
Open to very open trees	3 244 528		
Plantation	35 066		
Closed to open shrubs and woody vegetation (1)	0	1 218 030	6 902 170
Other			7 617 044
Water			
Total	3 972 755	1 218 030	14 519 215

National Classes	Area in hectares	
	1992	2001
Forests	4 751 418	3 972 755
OWL	1 369 933	1 218 030
OL	13 588 649	14 519 215
Total land area	19 710 000	19 710 000
Inland Water	4 394 000	4 394 000
Total country area	24 104 000	24 104 000

1.4.1 Estimation and forecasting

FRA 2005 Categories	Area in hectares		
	1990	2000	2005
Forests	4 924 446	4 059 265	3 626 675
OWL	1 403 689	1 234 908	1 150 518
OL	13 381 864	14 415 826	14 932 808
Inland Water	4 394 000	4 394 000	4 394 000
Total	24 104 000	24 104 000	24 104 000

Notes: Estimation and forecasting done through linear inter and extrapolation.

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	4 924	4 059	3 627
Other wooded land	1 404	1 235	1 150
Other land	13 382	14 416	14 933
...of which with tree cover ¹⁾			
Inland water bodies	4 394	4 394	4 394
TOTAL	24 104	24 104	24 104

- 1) Area of “Other land with tree cover” is included in the area reported under “Other land” and should therefore be excluded when calculating the total area for the country.

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

From T1

2.2.2 Original data

Reference year: 1992

Land Cover/Use	Gross Area by Land Cover/Use	Public	Private
Plantations			
Hardwoods	18 682	6 658	12 024
Plantations Softwoods	16 384	15 693	690
THF- Normal	650 150	477 068	173 083
THF - Degraded	274 058	97 011	177 047
Woodlands	3 974 102	875 854	3 098,248
Forests (1)	4 933 376	1 472 284	3 461 092
Bushlands (2)	1 422 395	296 111	1 126 285

Notes: 1. 30% Public and 70% private

2. 21% Public and 79% Private

2.3 Analysis and processing of national data

2.3.1 Calibration

2.3.2 Estimation and forecasting

From T1:

FRA 2005 Categories	Area in hectares	
	1990	2000
Forests	4924446	4059265
OWL	1 403 689	1 234 908

Applying the above percentages to total forest and OWL from T1 gives:

	Area in hectares (1992)			
	Forests		OWL	
	1990	2000	1990	2000
Private	3 454 827	2 847 845	1 111 473	977 828
Public	1 469 619	1 211 420	292 216	257 080
Total	4 924 446	4 059 265	1 403 689	1 234 908

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	3 455	2 848	1 112	978
Public ownership	1 470	1 211	292	257
Other ownership				
TOTAL	4 924	4 059	1 404	1 235

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
F. I. B. Kayanja* and D. Byarugaba 1999, Disappearing forests of Uganda: The way forward. Mbarara University of Science and Technology	M	Designation	1999	

3.2.2 Classification and definitions

3.2.3 Original data

Reference year 1999

National classes	Area in hectares			
	Central and local government reserves	National parks and wild life reserves	Private Customary land	
Tropical High Forests	306 000	267 000	351 000	924 000
Woodlands	411 000	462 000	3 102 000	3 975 000
Plantations	20 000	2 000	11 000	33 000
Total	737 000 (1)	731 000 (2)	3 464 000 (3)	4 932 000

Notes: 1. 15% of total

2. 15% of the total : Remains constant

3. 70% of the total forest area

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

The following assumptions have been made: All Tropical high Forests and woodlands together with plantations in central government and local government reserves are designated for production purpose. Forests in national parks and wild life reserves are for conservation are assumed to remain constant at 731 000 ha. This area is assumed to remain constant at around 15% of the total forest area. Forests in private customary land are of unknown designation. OWL is classified under unknown designation category.

Applying the above percentages to the total area of forests from T1 gives:

FRA 2005 Categories	Area in hectares		
	1990	2000	2005
Production	735 871	606 585	541 942
Conservation	731 000	731 000	731 000
Unknown designation	3 458 695	2 851 033	2 547 202
Total	4 924 446	4 059 265	3 626 675

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	736	607	542			
Protection of soil and water						
Conservation of biodiversity	730	601	538			
Social services						
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function	3 459	2 851	2 547	not appl.	not appl.	not appl.
Total - Forest	4 924	4 059	3 627	not appl.	not appl.	not appl.
Other wooded land						
Production						
Protection of soil and water						
Conservation of biodiversity						
Social services						
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function	1 404	1 235	1 150	not appl.	not appl.	not appl.
Total – Other wooded land	1 404	1 235	1 150	not appl.	not appl.	not appl.

3.6 Comments to National reporting table T3

The Forest Outlook Study in Africa for Uganda (2001) report that natural forests in Uganda supply the bulk of the forest products but plantations are gaining prominence. High Forests in Uganda were in the past degraded so much such that only 100,000 to 200,000 ha can be considered as 'productive' forest. It is estimated that of this only 50,000 ha are exploitable. The rest is so degraded that it will have to be protected for at least another 20 years.

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

From T1

4.2.2 Original data

National Classes	Area in hectares		
	1990	2000	2005
Total Plantations	33 480	34 917	35 635
Tropical High Forest (fully stocked)	611 281	685 715	722 933
Tropical High Forests (degraded)	279 344	202368	163881
Woodlands	4 000 342	3 136 265	2 704 226
Total forests	4 924 446	4 059 265	3 626 675
Bush	1 367 602	1 379 270	1 385 104

4.3 Analysis and processing of national data

4.4 Reclassification into FRA 2005 classes

Natural Forests are considered modified forest and plantation are productive forests

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	4 891	4 024	3 591	1 404	1 235	1 150
Semi-natural						
Productive plantation	33	35	36			
Protective plantation						
TOTAL	4 924	4 059	3 627	1 404	1 235	1 150

4.6 Comments to National reporting table T4

Many of the natural vegetation in the protected areas system has a long history of human occupancy, fire used to maintain grazing, and areas which later became colonized by the present forests. The forest were further modified by the modern forest management practice applied over the last century involved heavy (mechanical) logging and clearance for agricultural settlement.

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

5.2.2 Classification and definitions

5.2.3 Original data

As no growing stock data are available T6 was used as an input

Table T6 presents the following values on above-ground biomass

FRA 2005 Categories	Calibrated area		
	from T1 and T3 (hectares)		
	1990	2000	2005
Forest	4 924 446	4 059 265	3 626 675
OWL	1 403 689	1 234 908	1 150 518
Production Forest	735 871	606 585	541 942

Note:

T3 was used as an input to calculate Commercial growing stock:

5.3 Analysis and processing of national data

5.3.1 Estimation and forecasting

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

$$GS = AGB / BEF / WD / 1000$$

GS = Growing stock (million m³)

AGB = Above-ground biomass (1000 tons)

BEF = Biomass expansion factor = 2.4

WD = Wood density = 0.58

The result of the calculations are presented in the final reporting table below

FRA 2005 Categories	ABG	GS
	(tons/ha)	m3/ha
Forest	60	43.1
OWL	10	7.2

5.4 Reclassification into FRA 2005 classes

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	212.3	175.0	156.3	10.1	8.9	8.3
Commercial growing stock	31.7	26.1	23.4			

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
National Biomass Technical Report 2003	H	Biomass	1992	

6.2.2 Classification and definitions

6.2.3 Original data

Land cover (use)	Standing Stock	
	(000, Tons)	Area in ha
Hardwoods Plantations.	1 683	18 682
Conifer Plantations	2 458	16 384
Tropical High Forest (Normally stocked)	136 491	650 150
Tropical High Forest (Depleted)	27 596	274 058
Woodlands	126 014	3 974 102
Total Forests (1)	294 242	4 933 376
Bushlands (2)	14 008	1 422 395

Notes: 1. Ton/ha for forest=60

2. Tons/ha OWL=10

	ABG (tons/ha)	Calibrated area from T1 (hectares)		
		1990	2000	2005
Forest	60.00	4 924 446	4 059 265	3 626 675
OWL	10.00	1 403 689	1 234 908	1 150 518

6.3 Analysis and processing of national data

6.3.1 Estimation and forecasting

The following conversion factors have been used for the calculations

Biomass expansion factor	2.4	(average for temperate broadleaved and tropical broadleaved)
Root/shoot ratio	0.27	(tropical/subtropical dry forest)
Dead/live ratio	0.14	(deciduous forest)

The biomass figures per hectare are multiplied with respective areas and extrapolated for estimating data for 2005.

	Above-ground biomass (1000 tons)		
	1990	2000	2005
Forest	295 466 781	243 555 921	217 600 491
OWL	14 036 894	12 349 082	11 505 176

Applying the conversion factors to the aboveground biomass gives the final data for the reporting table T6

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	295.47	243.56	217.60	14.04	12.35	11.51
Below-ground biomass	79.78	65.76	58.75	6.74	5.93	5.52
Dead wood biomass	52.53	43.30	38.69	2.91	2.56	2.38
TOTAL	427.78	352.62	315.04	23.68	20.84	19.41

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

7.3 Analysis and processing of national data

7.4 Reclassification into FRA 2005 classes

7.5 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	147.73	121.78	108.80	7.02	6.17	5.75
Carbon in below-ground biomass	39.89	32.88	29.38	3.37	2.96	2.76
Sub-total: Carbon in living biomass	187.62	154.66	138.18	10.39	9.14	8.51
Carbon in dead wood	26.27	21.65	19.34	1.45	1.28	1.19
Carbon in litter						
Sub-total: Carbon in dead wood and litter						
Soil carbon to a depth of _____ cm						
TOTAL CARBON	213.89	176.31	157.52	11.84	10.42	9.71

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

8.2.2 Classification and definitions

8.2.3 Original data

No national 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	CR, EN, VU species	2000	

9.2.2 Classification and definitions

9.2.3 Original data

No national data was available for this table

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	4
Vulnerable tree species	33

Notes: Data includes all plant species

9.4 Comments to National reporting table T9

Critically Endangered

- 1 [Afrothismia winkleri](#)
- 2 [Diospyros katendei](#)
- 3 [Encephalartos equatorialis](#)

Endangered

- 1 [Brazzeia longipedicellata](#)
- 2 [Dialium excelsum](#)
- 3 [Dracaena ombet](#)
- 4 [Lovoa swynnertonii](#)

Vulnerable

- 1 [Afzelia africana](#)
- 2 [Afzelia bipindensis](#)
- 3 [Albizia ferruginea](#)
- 4 [Antrocaryon micraster](#)
- 5 [Beilschmiedia ugandensis](#)
- 6 [Cola bracteata](#)
- 7 [Cordyla richardii](#)
- 8 [Crassocephalum bauchiense](#)
- 9 [Deschampsia angusta](#)
- 10 [Encephalartos macrostrobilus](#)
- 11 [Encephalartos whitelockii](#)
- 12 [Entandrophragma angolense](#)
- 13 [Entandrophragma cylindricum](#)
- 14 [Entandrophragma utile](#)
- 15 [Euphorbia bwambensis](#)
- 16 [Guarea cedrata](#)
- 17 [Guarea mayombensis](#)
- 18 [Hallea stipulosa](#)
- 19 [Khaya anthotheca](#)
- 20 [Khaya grandifoliola](#)
- 21 [Khaya senegalensis](#)
- 22 [Lophira alata](#)
- 23 [Lovoa trichilioides](#)
- 24 [Memecylon bequaertii](#)
- 25 [Mikaniopsis vitalba](#)
- 26 [Millettia lacus-alberti](#)
- 27 [Nauclea diderrichii](#)
- 28 [Ocotea kenyensis](#)
- 29 [Pavetta intermedia](#)
- 30 [Prunus africana](#)
- 31 [Secamone racemosa](#)
- 32 [Turraeanthus africanus](#)
- 33 [Vitellaria paradoxa](#)

10 Table T10 – Growing stock composition

10.1 FRA 2005 Categories and definitions

List of species names (scientific and common names) of the ten most common species.

10.2 National data

No data was available for this table

10.3 Data for National reporting table T10

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	H	Industrial wood and Fuel wood	1988-2002	

11.2.2 Classification and definitions

11.2.3 Original data

Year	Wood Removals under bark in cubic meters	
	Industrial roundwood	Wood Fuel
1988	1 652 000	28 573 012
1989	1 693 000	28 856 856
1990	1 739 000	29 265 482
1991	1 813 000	29 865 918
1992	1 992 000	30 679 212
5 year Avg(1990)	1 777 800	29 448 096
1998	3 041 000	33 368 100
1999	3 175 000	33 726 320
2000	3 175 000	34 090 320
2001	3 175 000	34 611 016
2002	3 175 000	35 141 824
5 Year Avg(2000)	3 148 200	34 187 516

11.3 Analysis and processing of national data

Converting the above table to wood removal over bark by multiplying by 1.15 gives:

FRA 2005 category	Wood Removal over bark in cubic meters		
	1990	2000	2005
Industrial Fuelwood	2 044 470	3 620 430	4 408 410
Fuel Wood	33 865 310	39 315 643	42 040 809

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	2 044	3 620	4 408			
Woodfuel	33 865	39 316	42 041			
TOTAL for Country	35 910	42 936	46 449			

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
Investing in Uganda's Forestry Industry: www.ugandainvest.com/forestry.pdf	H	Value of forest products		

12.2.2 Classification and definitions

12.2.3 Original data

Value of wood	Million shilling					
	1990	1992	1994	1998	1999	2000
Charcoal	6 843	13 464	18 312	28 981	30 957	34 070
Fuelwood-households	14 702	27 428	35 037	48 663	52 119	55 383
Fuelwood-Commercial	3 902	7 354	9 488	13 372	14 401	15 822
Fuelwood industrial	1 531	3 312	4 448	6 790	7 736	10 902
Total	26 978	51 558	67 285	97 806	105 213	116 177

	1990	2000
Exchange rate	\$US= 1217.15 Shillings	\$US=1766.68 shillings

	Wood Fuel removal in Million \$US		
	3 year Avg 1990	3 year Avg 2000	2005
Industrial Roundwood	ID	ID	ID
Wood fuel	39.94	60.23	70.37

Notes: 1992 for 1990 and 1999 for 2000

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

Converting the average for 1992 and 1999 to \$US and extrapolating for 2005 gives:

12.4 Reclassification into FRA 2005 classes

12.5 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	39.94	60.23	70.37			
TOTAL for Country	39.94	60.23	70.37			

13 Table T13 – Non-wood forest product removal

13.1 FRA 2005 Categories and definitions

No data was available for this table.

13.2 Analysis and processing of national data

13.2.1 Estimation and forecasting

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

14.1 FRA 2005 Categories and definitions

14.2 Data for National reporting table T14

No data was available for this Table.

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
Isooba. M: 2002 An analysis of the Uganda Implementation of the Convention on Biological diversity with a focus on forests	H	Employment	2002	Assumption is that the same number of people were employed in 2000
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 Classification and definitions

15.2.3 Original data

Category	Number Employed
Firewood and charcoal production	89000
Household fire wood production	71000
Commercial and industrial firewood production	36000
Plantation establishment and management	1400
Institutions	2600
Pole production	1000
Total	201000

Notes: It is not clear whether the above includes self employment

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	1.3	2.4
Provision of services		
Unspecified forestry activities		
TOTAL	1.3	2.4

15.5 Comments to National reporting table T15

As it was not clear whether the original national table includes self employment, FAO statistics was used for the final reporting table.

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).