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Food and Agriculture Organization of the United Nations

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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

This report has been prepared by:

Mr. Mohamed Ahmed Mustafa, (officially nominated National Correspondent to FRA)
Head of Afforestation Directorate
Ministry of Agriculture
Dokki Giza
Egypt
Telephone: +202-3345983
Fax: +202-7609323
Email: affor_18@yahoo.com

The following persons have assisted in the preparation of the report

Eng. Hoda Rashid
Dr. Megahed Maorouk Megahed
Dr. El-Sayed Ali Khalifa
Eng. Mohamed Abd El-Satar
Miss Azza Said Zaki

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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
MOALR, Undersecretariat for Afforestation 1996. Afforestation and forestry in Egypt. Country Report.	M	Planted trees	1993	Number of planted trees and their ownership
Undersecretariat for Afforestation and Environment	M	Planted trees	2004	A set of data prepared for FRA 2005
Flora of Egypt, Techolm, 1974	L	Natural woody vegetation	1974	Area of natural woody vegetation in Gebel Elba.
The Report on Surveying Mangrove Forests in Egypt, 1996, Academy of Scientific Research and Technology, The National Authority for Remote Sensing	M	Area of mangroves	1996	Based on remote sensing.

1.2.2 Classification and definitions

National class	Definition
Forest	Same as FRA
OWL	Same as FRA

1.2.3 Original data

No natural forests exist in Egypt. Some natural tree formations can be found either in the form of scattered trees with a crown density of less than 10 percent in Gebel Elba (an estimated 19600 ha) or as mangroves along the Red Sea coast (an estimated 390 ha).

A number of plantations have been established over the years. The table below shows the number of standing trees in 1993 and 2004.

Species	Trees belong to government (1000 trees)		Trees belong to individuals(1000 trees)	
	1993	2004	1993	2004
<i>Casuarinas spp</i>	14788	19400	16788	22390
<i>Eucalyptus spp</i>	1970	2708	1883	2604
<i>Dalbergia sissoo</i>	2485	3401	624	854.44
<i>Salix & Populus</i>	151	207	1700	1655.88
<i>Morus spp</i>	112	153	630	865.11
<i>Acacia spp</i>	517	708	710	972.52
<i>Cypressus spp</i>	215	314	52	68.88
<i>Albizzia lebbek</i>	18	18	20.5	25.42
<i>Khaya senegalensis</i>	10	774	0.5	0.82
Other Species	1984	2715	1184	1495.68
Total	22250	30398	23592	30932.75

- Most of the growing stock in Egypt is linear plantations which are mostly less than 20 rows in width.
- Only few areas are in the form of wood lots irrigated with treated sewage water.

1.3 Analysis and processing of national data

1.3.1 Calibration

No need for calibration since the UN/FAOSTAT data on country area and land area have been used.

1.3.2 Estimation and forecasting

The area of plantations was calculated based on 4X4 m for eucalypt and mahogany (600 trees/ha). For other species the spacing was considered 3X3m (1000 trees/ha). The results are shown in the table below.

Species	Trees belonging to government (1000 trees)		Trees belonging to individuals (1000 trees)		Plantation area belonging to government (ha)		Plantation area belonging to individuals (ha)		Total plantation area (ha)	
	1993	2004	1993	2004	1993	2004	1993	2004	1993	2004
<i>Casuarina spp</i>	14788	19400	16788	22390	14788	19400	16788	22390	31576	41790
<i>Eucalyptus spp</i>	1970	2708	1883	2604	3283	4513	3138	4340	6422	8853
<i>Dalbergia sissoo</i>	2485	3401	624	854	2485	3401	624	854	3109	4255
<i>Salix & Populus</i>	151	207	1700	1656	151	207	1700	1656	1851	1863
<i>Morus spp</i>	112	153	630	865	112	153	630	865	742	1018
<i>Acacia spp</i>	517	708	710	973	517	708	710	973	1227	1681
<i>Cypressus spp</i>	215	314	52	69	215	314	52	69	267	383
<i>Albizia lebbek</i>	18	18	21	25	18	18	21	25	39	43
<i>Khaya senegalensis</i>	10	774	1	1	17	1290	1	1	18	1291
Other Species	1984	2715	1184	1496	1984	2715	1184	1496	3168	4211
Total	22250	30398	23592	30933	23570	32719	24848	32669	48418	65389

The area of plantation for 1990, 2000 and 2005 was estimated through linear interpolation and extrapolation, which gave the following results:

1990 (ha)	1993 (ha)	2000 (ha)	2004 (ha)	2005 (ha)
43790	48418	59218	65389	66932

The area of mangroves and other natural forest/OWL is considered to have remained constant.

1.4 Reclassification into FRA 2005 classes

The reclassification in to FRA 2000 categories is based on crown density. All plantations are classified as forests, while mangroves and the natural woody vegetation found in Galal Elba and the plain of the Sinai Peninsula are classified as Other wooded land.

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	44	59	67
Other wooded land	20	20	20
Other land	99481	99466	99458
...of which with tree cover ¹⁾	-	-	-
Inland water bodies	600	600	600
TOTAL	100145	100145	100145

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.

1.6 Comments to National reporting table T1

Other wooded lands are scattered trees with density less than 10% in Gebel Elba (19600 ha) as well as very limited area of mangroves along the Red Sea coast (390 ha).

The estimate of forest area is based on the number of trees planted and includes linear plantations, generally with a width of less than 20 rows

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
MOALR, Undersecretariat for Afforestation 1996. Afforestation and forestry in Egypt. Country Report.	M	Planted trees Ownership	1993	Number of planted trees and their ownership
Undersecretariat for Afforestation and Environment	M	Planted trees Ownership	2004	A set of data prepared for FRA 2005
Flora of Egypt, Techolm, 1974	L	Natural woody vegetation	1974	Area of natural woody vegetation in Gebel Elba.
The Report on Surveying Mangrove Forests in Egypt, 1996, Academy of Scientific Research and Technology, The National Authority for Remote Sensing	M	Area of mangroves	1996	Based on remote sensing.

2.2.2 Classification and definitions

National class	Definition
Private ownership	Same as FRA
Public ownership	Same as FRA

Note: If different national data sources use different classes and definitions, a table such as above is needed for each relevant data source.

2.2.3 Original data

The data from table 1.3 were used as input for this table.

2.3 Analysis and processing of national data

2.3.1 Calibration

2.3.2 Estimation and forecasting

In 1993, a total of 23 570 ha of forest plantations belonged to the Government (see 1.3), equivalent to 48.7 percent of the total plantation forest area, while 51.3 percent belonged to individuals. In 2004, a total of 32 719 ha of forest plantations belonged to the Government, equivalent to 50 percent of the total plantation area, with the other 50.0 percent belonging to individuals. These percentages have been applied to the total forest area in 1990 and 2000 respectively, taken from Table T1.

All areas classified as OWL are owned by the Government.

2.4 Reclassification into FRA 2005 classes

Not needed. The data can be used directly.

2.5 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	22.6	29.5	-	-
Public ownership	21.4	29.5	20	20
Other ownership	-	-	-	-
TOTAL	44	59	20	20

No data available for 1990.

2.6 Comments to National reporting table T2

All trees planted around agricultural fields are private plantations.
All OWL areas are owned by the government.

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
MOALR, Undersecretariat for Afforestation 1996. Afforestation and forestry in Egypt. Country Report.	M	Planted trees Ownership	1993	Number of planted trees and their ownership
Undersecretariat for Afforestation and Environment	M	Planted trees Ownership	2004	A set of data prepared for FRA 2005
Flora of Egypt, Techolm, 1974	L	Natural woody vegetation	1974	Area of natural woody vegetation in Gebel Elba.
The Report on Surveying Mangrove Forests in Egypt, 1996, Academy of Scientific Research and Technology, The National Authority for Remote Sensing	M	Area of mangroves	1996	Based on remote sensing.
Undersecretariat for Afforestation and Environment	M	Area of woodlots for wood production	2000 2005	A set of data prepared for FRA 2005
Egyptian Environment Affairs Agency (EEAA). Personal communications.	L	OWL in protected area	2005	Expert estimate of the area of mangroves and other natural woody vegetation in Protected Area

3.2.2 Classification and definitions

National class	Definition
Productive plantation	It corresponds with FRA 2005
Protective plantation	It corresponds with FRA 2005

3.2.3 Original data

The table in section 1.3 and the final table T2 were used as input to this table in addition to the following information:

2000 ha of OWL are located in protected areas (EEAA pers. com)

Areas of wood lots established for wood production (in feddan)

Location	Year	
	2000	2005
Qena	200	450
Luxor	80	250
Edfu	200	300
Kharga -oasis	200	350
Paris	-	60
El-Rashda	-	30
El-Saff	-	120
Gamassa	-	120
Serabium	-	300
Sadat city	250	450
Wadi El-Natroon	40	80
El-Tour	100	200
West. Suhag	-	100
East.Suhag	-	40
Balana and Nasr El-Nuba	-	100
El-Alakki	-	200
Assuit	-	45
Total	1070	3195

One feddan = 0.42 ha

3.3 Analysis and processing of national data

Total area of wood lots established for wood production: (Total areas in the table above converted to hectares using the conversion factor of One feddan = 0.42 ha)

Year	Area in ha
2000	449
2005	1342

3.3.1 Calibration

Not needed

3.3.2 Estimation and forecasting

It is assumed that all wood lots established for wood production were established after 1990.

It is also assumed that the rate of public/private ownership for 2005 is the same as for 2004 (50/50).

3.4 Reclassification into FRA 2005 classes

All of the above woodlots are classified as Productive forests. All remaining plantations owned by the Government are classified as multiple purpose.

All plantations owned by individuals are classified as protection forests, as their main purpose is the conservation of soil and water.

2000 ha of OWL are located in protected areas and have been classified as conservation and the rest as multiple purpose for all 3 reporting years.

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	0	0.4	1.3	44	59	67
Protection of soil and water	22.6	29.5	33.5	44	59	67
Conservation of biodiversity		-	-			
Social services		-	-			
Multiple purpose	21.4	29.1	32.2	not appl.	not appl.	not appl.
No or unknown function		-	-	not appl.	not appl.	not appl.
Total - Forest	44	59	67	not appl.	not appl.	not appl.
Other wooded land						
Production						
Protection of soil and water				20	20	20
Conservation of biodiversity	2	2	2	20	20	20
Social services						
Multiple purpose	18	18	18	not appl.	not appl.	not appl.
No or unknown function				not appl.	not appl.	not appl.
Total – Other wooded land	20	20	20	not appl.	not appl.	not appl.

3.6 Comments to National reporting table T3

All private plantations are for protection of soil.

Multipurpose trees are planted for environmental protection such as high roads protection, sand dune fixation, and protection of irrigation and drainage canals beside wood production at the end of the rotation.

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
MOALR, Undersecretariat for Afforestation 1996. Afforestation and forestry in Egypt. Country Report.	M	Planted trees Ownership	1993	Number of planted trees and their ownership
Undersecretariat for Afforestation and Environment	M	Planted trees Ownership	2004	A set of data prepared for FRA 2005
Flora of Egypt, Techolm, 1974	L	Natural woody vegetation	1974	Area of natural woody vegetation in Gebel Elba.
The Report on Surveying Mangrove Forests in Egypt, 1996, Academy of Scientific Research and Technology, The National Authority for Remote Sensing	M	Area of mangroves	1996	Based on remote sensing.
Undersecretariat for Afforestation and Environment	M	Area of woodlots for wood production	2000 2005	A set of data prepared for FRA 2005

4.2.2 Classification and definitions

National class	Definition
Productive plantation	It corresponds with FRA 2005
Protective plantation	It corresponds with FRA 2005

Note: If different national data sources use different classes and definitions, a table such as above is needed for each relevant data source.

4.2.3 Original data

Information from Tables T1 and T3 has been used as input to this table.

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

All woodlots (see 3.3) are classified as productive plantations. All other forests are classified as protective plantations. All multiple purpose plantations in Table T3 are also environment protection plantations.

All OWL are considered to be modified natural.

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	-	-	-	-	20	20
Semi-natural	-	-	-	-	-	-
Productive plantation	0	0.4	1.3	-	-	-
Protective plantation	44	58.6	65.7	-	-	-
TOTAL	44	59	67	-	20	20

4.6 Comments to National reporting table T4

All woodlots established for wood production (see 3.3) are classified as productive plantations. All other forests are classified as protective plantations.

All OWL are considered to be modified natural.

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
Megahed, M.M and M.H. El-lakany	H	Stem volume of young Casuarina plantations	1986	Biomass characteristics of young Casuarina plantations in northwestern region of Egypt
El-Osta M.L.M., M.M.Megahed, M.HEl-Lakany and S.S. Hegazy	H	Stem volume of mature Casuarina windbreaks	1992	Estimates of above-ground biomass and its distribution for casuarinas windbreak trees in northwestern region of Egypt
Saenger, P. 2002. Ecological Assessment of Mangroves in Egypt. Consultancy Report TCP/EGY/0168: Rehabilitation, Conservation and Sustainable Utilization of Mangroves In Egypt. FAO, Rome.	M	Basal area, height and diameter of mangroves	2002	Based on limited field sampling.

5.2.2 Classification and definitions

National class	Definition
Growing stock	Same as FRA

5.2.3 Original data

Estimated volume of *Casuarina glauca*

Type of plantation	Volume (m ³ /ha)	Year of estimation
Woodlots	120	1986
Wind breaks	134	1992

Estimated volume of *Eucalyptus camaldulensis*.

Type of plantation	Volume (m3/ha)	Year of estimation
Woodlots	140	1992

5.3 Analysis and processing of national data

Based on the original data above, the average volume per hectare of forest plantations was estimated at 120 m³ per ha. This figure was then applied to the area of forest according to table T1.

The average volume of OWL is estimated at 11 m³/ha based on estimations done in 2002 for the LULUCF national report of Egypt and the report on mangroves by Saenger.

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	5.28	7.08	8.04	0.22	0.22	0.22
Commercial growing stock						

The crown density of OWL (Gebel Elba) is about 5% or slightly more.

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	cm	15	
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	AG	
6. Have any of the above thresholds (points 1 to 4) changed since 1990	Yes/No	No.	
7. If yes, then attach a separate note giving details of the change	Attachment		

5.6 Comments to National reporting table T5

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
FAO. Working Paper 82. 2004. FAO Forestry Department	M	Dry matter and biomass and root shoot ratio	2004	
FAO. Working Paper 81. 2004. FAO Forestry Department	H	Biomass expansion factor. Root-shoot ratio	2004	
M.M. Megahed and M.L. El-Osta	H	Specific gravity	1990	Properties and utilization of <i>Casuarina</i> wood in Egypt

6.2.2 Classification and definitions

National class	Definition
Above ground biomass	It corresponds to FRA 2005 definition.
Below ground biomass	It corresponds to FRA 2005 definition.
Dead wood biomass	It corresponds to FRA 2005 definition.

6.2.3 Original data

The final data for table T5 were used as input for the biomass estimations

6.3 Analysis and processing of national data

Calculation of living biomass for forest

Year	G. stock (Million m ³)	Basic density (tones/m ³)	Stem biomass (million tones)	Biomass exp. fact	A.G biomass (million tones)	Root-Shoot ratio	B.G biomass (million tones)
1990	5.28	0.7	3.696	2	7.392	0.26	1.922
2000	7.08	0.7	4.956	2	9.912	0.26	2.577
2005	8.04	0.7	5.628	2	11.256	0.26	2.927

Calculation of living biomass for OWL

Year	G. stock (Million m3)	Basic density (tones/m3)	Stem biomass (million tones)	Biomass exp. fact	A.G biomass (million tones)	Root-Shoot ratio	B.G biomass (million tones)
1900	0.22	0.76	0.167	2	0.334	0.43	0.144
2000	0.22	0.76	0.167	2	0.334	0.43	0.144
2005	0.22	0.76	0.167	2	0.334	0.43	0.144

For tropical arid zones deciduous and broadleaved forests:

Basic wood density for *Casuarina* is 0.7 and for *Eucalyptus* is 0.7 Basic wood density for *Acacias* is 0.76

The average was considered 0.7

R for broadleaf forest 75-125 ton/hectare =0.26 for forest and 0.43 for OWL

BEF = 2

Dead-live ratio = 0.14

6.4 Reclassification into FRA 2005 classes

Not needed. The data can be used directly.

6.5 Data for National reporting table T6

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	7.392	9.912	11.256	0.334	0.334	0.334
Below-ground biomass	1.922	2.577	2.927	0.144	0.144	0.144
Dead wood biomass	1.304	1.748	1.986	0.067	0.067	0.067
TOTAL	10.618	14.237	16.169	0.545	0.545	0.545

6.6 Comments to National reporting table T6

- Basic wood density from the local studies is 0.7 on the average for *Casuarina spp* and *Eucalyptus spp*.
- Basic wood density for acacia is 0.76. An overall average of 0.7 has been used for this table.

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

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
FAO. Working Paper 82. 2004. FAO Forestry Department	M	Dry matter and biomass and root shoot ratio	2004	
FAO. Working Paper 81. 2004.FAO Forestry Department	H	Biomass expansion factor. Root-shoot ratio	2004	

7.2.2 Classification and definitions

National class	Definition
Carbon in above-ground biomass	It corresponds to FRA 2005 definition.
Carbon in below-ground biomass	It corresponds to FRA 2005 definition.
Carbon in dead wood biomass	It corresponds to FRA 2005 definition.
Carbon in litter and Soil carbon.	It corresponds to FRA 2005 definition.

7.2.3 Original data

The final data for table T6 were used as input for the carbon estimations.

7.3 Analysis and processing of national data

The default factor of 50% was used to convert biomass stock from table T6 to carbon stock.

The default value for carbon stock of litter in tropical forests (2.1 ton C/ha) has been used.

For calculation of soil carbon, the following assumptions were made:

Forest: 2000 ha are sandy soils (sand dune plantations). Remaining area are HAC soils

OWL: All area are sandy soils

HAC soils 38 ton C/ha

Sandy soils 31 ton C/ha

7.4 Reclassification into FRA 2005 classes

Not needed. The data can be used directly.

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	3.696	4.956	5.628	0.167	0.167	0.167
Carbon in below-ground biomass	0.961	1.289	1.464	0.072	0.072	0.072
Sub-total: Carbon in living biomass	4.657	6.245	7.092	0.239	0.239	0.239
Carbon in dead wood	0.652	0.874	0.993	0.034	0.034	0.034
Carbon in litter	0.092	0.124	0.141	0.042	0.042	0.042
Sub-total: Carbon in dead wood and litter	0.744	0.998	1.134	0.075	0.075	0.075
Soil carbon to a depth of 30 cm	1.650	2.236	2.529	0.620	0.620	0.620
TOTAL CARBON	7.051	9.479	10.754	0.934	0.934	0.934

7.6 Comments to National reporting table T7

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
Undersecretariat for Afforestation and Environment	M		2005	A set of data prepared for the FRA 2005

8.2.2 Classification and definitions

National class	Definition
Disturbance by insects	Same as FRA
Disturbance by diseases	Same as FRA

Note: If different national data sources use different classes and definitions, a table such as above is needed for each relevant data source.

8.2.3 Original data

8.3 Analysis and processing of national data

8.3.1 Estimation and forecasting

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	-	-	-	-
Disturbance by insects	ID	0.5	ID	-
Disturbance by diseases	ID	0.2	ID	-
Other disturbance	-	-	ID	0.2

8.6 Comments to National reporting table T8

Data is based on estimates. The figures refer to the annual affected area.

Other disturbance refers to grazing of small plants and mangroves by camels and goats.

Insects and host plants

- Red spider (*Khaya senegalensis*).
- *Stromatium fulvum* (*casuarinas* sp).
- *Macrotoma palmata* (many tree species).
- *Phoracantha* spp. (*Eucalyptus* spp).
- *Zeuzera pyrina* (*Populus* spp).
- Dry wood termites (*Cryptotermes brevis*), (*calotermes siniacus* and *calotermes flavicollis*).
- *Hymenoptera* gall maker (*Aprostectus* spp).

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
Department of forestry Alexandria university	M	Tree species	2002	Identification of tree species grown in Egypt
Red Book	H	endangered tree species, vulnerable tree species	2004	Research Institute on Forests and Range Lands

9.2.2 Classification and definitions

National class	Definition
Native species	Same as FRA
Endangered species	Same as FRA

Note: If different national data sources use different classes and definitions, a table such as above is needed for each relevant data source.

9.2.3 Original data

The IUCN Red Book lists *Medemia argun* as critically endangered and *Dracaena ombet* as endangered. However, none of them can be classified as trees.

The national Red Book lists the following seven tree species as endangered: *Ficus sycamorus*, *zizyphus spina christi*, *Acacia seyal*, *Acacia ihrenbergina*, wild source of olive in Gebel Elba *Balanites aegyptiaca* and *salvadora presica*.

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	0

9.4 Comments to National reporting table T9

None of the species mentioned in the IUCN Red Book (*Medemia argun* and *Dracaena ombet*) can be classified as a trees.

The national Red Book lists the following seven tree species as endangered: *Ficus sycamorus*, *zizyphus spina christi*, *Acacia seyal*, *Acacia ihrenbergina*, wild source of olive in Gebel Elba *Balanites aegyptiaca* and *salvadora presica*.

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.

Casuarina spp (Gasuarina)
Eucalyptus spp (Kafour)
Dalbergia sisoo (Sarsoa)
Salix & populus (safsaf and Hoor)
Morus spp(Tout)
Acacia spp (sunt)
Cypressus sempervirens (sarw)
Albizzia lebbeck (labbakh)
Khaya senegalensis *(Mahogany afriki)

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
MOALR, Undersecretariat for Afforestation 1996. Afforestation and forestry in Egypt. Country Report.	M	Planted trees	1993	Number of planted trees and their ownership
Undersecretariat for Afforestation and Environment	M	Planted trees	2004	A set of data prepared for FRA 2005

10.2.2 Original data

(From 1.3)

FRA 2005 Categories / Species name (Scientific name and common name)	Total planted area	
	(ha)	
	1993	2004
<i>Casuarina</i> spp (Gasuarina)	31576	41790
<i>Eucalyptus</i> spp (Kafour)	6422	8853
<i>Dalbergia</i> sisoo (Sarsoa)	3109	4255
<i>Salix & populus</i> (safsaf and Hoor)	1851	1863
<i>Morus</i> spp(Tout)	742	1018
<i>Acacia</i> spp (sunt)	1227	1681
<i>Cypressus sempervirens</i> (sarw)	267	383
<i>Albizzia</i> lebbeck (labbakh)	39	43
<i>Khaya senegalensis</i> *(Mahogany afriki)	18	1291
Remainder of species	3168	4211
TOTAL	48418	65389

* Young plantations

10.3 Analysis and processing of national data

The Growing Stock per ha is 125 m³ for *Casuarina* spp, 140 m³ *Eucalyptus* spp and *Dalbergia* sisoo ,120 m³ for *Morus* spp and *Albizia lebbek*, 100 m³ for *Acacia* spp , 80 m³ for *Salix & populus* and 85 m³ for the remainder of species.

This gives the following results:

Species	Growing stock (1000 m3)		Growing stock (%)	
	1993	2004	1993	2004
<i>Casuarina</i> spp	3947	5224	66.46	65.27
<i>Eucalyptus</i> spp	899	1239	15.14	15.49
<i>Dalbergia</i> sisoo	435	596	7.33	7.44
<i>Salix & Populus</i>	148	149	2.49	1.86
<i>Morus</i> spp	89	122	1.50	1.53
<i>Acacia</i> spp	123	168	2.07	2.10
<i>Cypressus</i> spp	23	33	0.38	0.41
<i>Albizia lebbek</i>	5	5	0.08	0.07
<i>Khaya senegalensis</i>	1	110	0.03	1.37
Other Species	269	358	4.53	4.47
Total	5939	8004	100.00	100.00

The above percentages are applied to the total growing stock of 1990 and 2000 respectively, taken from Table T5.

10.4 Data for National reporting table T10

FRA 2005 Categories / Species name (Scientific name and common name)	Growing Stock in Forests (million cubic meters)	
	1990	2000
<i>Casuarina</i> spp (Gasuarina)	3.509	4.621
<i>Eucalyptus</i> spp (Kafour)	0.799	1.096
<i>Dalbergia</i> sisoo (sarsoaa)	0.387	0.527
<i>Acacia</i> spp (sunt)	0.109	0.149
<i>Salix & populus</i> (safsaf and Hoor)	0.132	0.132
<i>Morus</i> spp(Tout)	0.079	0.108
<i>Khaya senegalensis</i> (Mahogany afriki)	0.001	0.097
<i>Cypressus sempervirens</i> (sarw)	0.020	0.029
<i>Albizia lebbek</i> (labbakh)	0.004	0.005
Remainder of species	0.239	0.317
TOTAL	5.28	7.08

Khaya senegalensis trees are 10 years old or less.

10.5 Comments to 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
Undersecretariat for Afforestation and Environment	M		2005	A set of tables prepared for FRA 2005

11.2.2 Classification and definitions

National class	Definition
Industrial wood	Same as FRA
Woodfuel	Same as FRA

Note: If different national data sources use different classes and definitions, a table such as above is needed for each relevant data source.

11.2.3 Original data

National annual wood removed year 2004

Item	Amount (1000 m3)
Wood fuel ¹	120
Particle board ¹	20
Industrial wood ²	80
<i>Casuarina</i> wood posts ³	20

1- Branches and stems of diameter less than 20 cm over bark.

2- Logs of diameter more than 20 cm over bark.

3- Small diameter sticks (7- 10 cm diameter) of about 3m height of thinned young casuarinas used as posts for supporting fruit trees (Banana and Mango).

Note: Particle board production has been greatly reduced in the last five years.

The removal of wood fuel from OWL is estimated to be around 11 000 m3 per year (expert estimate).

11.3 Analysis and processing of national data

The data for year 2004 has been used directly for the reporting year 2005. There is not sufficient data available for giving estimates for 1990 and 2000. Industrial round wood from Other wooded land is assumed to be zero.

11.3.1 Estimation and forecasting**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 round wood	ID	ID	120	0	0	0
Wood fuel	ID	ID	120	ID	11	11
TOTAL for Country			240		11	11

11.6 Comments to National reporting table T11

Industrial round wood includes particle board and the raw material for industrial wood and wood posts. Data on wood fuel, particle board and industrial wood are estimates based on statistics from the Ministry of Industry.

Data for *Casuarina* sticks are estimates based on the area of banana and mango orchards (Ministry of Agriculture year book).

Data of wood fuel from OWL is based on estimations

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 wood fuel 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
Undersecretariat for Afforestation and Environment	M		2005	A set of tables prepared for FRA 2005

12.2.2 Classification and definitions

12.2.3 Original data

Value of wood removals from forests in million L.E. (year 2005)

Item	Amount (1000 m3)	Weight of green wood (1000 tons)	Average price of tones (L.E)	Total Price (Million L.E.)
Wood fuel	120	120	250	30
Particle board	20	20	220	4.4
Industrial wood	80	80	350	28
Casuarina wood posts	20	18	800	1.44
Total	240	238		63.84

The average weight density (green weight / green volume) is 1 for fuel wood, particle board and industrial wood and 0.9 for *Casuarina sticks*.

Calculations are based on average density and average moisture content of green wood.

1 US \$ = 5.78 L.E.

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

12.4 Reclassification into FRA 2005 classes

The value of industrial round wood removal includes the value of raw material for particle board and industrial wood and wood posts. The value of wood fuel is used directly.

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	5854	ID	0	0
Woodfuel	ID	ID	5190	ID	810	810
TOTAL for Country	-		11044	-	810	810

12.6 Comments to National reporting table T12

No data is available for 1990.

The value was calculated based on the average price per ton and on average density and average moisture content of green wood.

The average wood density for the industrial round wood for the year 2000 was considered 1 and the average price was 250 L.E for industrial wood and 180 L.E for fuel wood.

The conversion rate for the year 2000 was 3.4 L.E for 1US\$ and 5.78 for the year 2005

Data of wood fuel removal from OWL is based on estimations.

13 Table T13 – Non-wood forest product removal

13.1 FRA 2005 Categories and definitions

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

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

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Undersecretariat for Afforestation and Environment	M	fruits fodder	2000 2005	A set of data prepared for the FRA

13.2.2 Classification and definitions

National class	Definition
Food	Same as FRA
Fodder	Same as FRA

13.2.3 Original data

Item	Amount in tonnes	
	Year 2000	Year 2005
Food	50000	50000
Fodder	10500	10200

Includes fruits of mulberry and *Ficus sycamorus*.

Includes leaves of mulberry for silk worm and leaves of acacias for animals.

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

The figures from 2000 and 2005 have been used directly.

13.4 Reclassification into FRA 2005 classes

13.5 Data for National reporting table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990*	2000	2005
<u>Plant products / raw material</u>					
1. Food	Mass	Tonne		50000	50000
2. Fodder	Mass	Tonne		10500	10200
3. Raw material for medicine and aromatic products					
4. Raw material for colorants and dyes					
5. Raw material for utensils, handicrafts & construction					
6. Ornamental plants					
7. Exudates					
8. Other plant products					
<u>Animal products / raw material</u>					
9. Living animals					
10. Hides, skins and trophies					
11. Wild honey and bee-wax					
12. Bush meat					
13. Raw material for medicine					
14. Raw material for colorants					
15. Other edible animal products					
16. Other non-edible animal products					

13.6 Comments to National reporting table T13

Data for the year 2000 is based on estimations.

Most of the mulberry and *Ficus sycamores* fruits are consumed by the local communities. A small part is sold in the market.

The total amount of mulberry fruits was calculated based on the number of trees and annual production of 20 kilograms/tree on the average.

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

14.1 FRA 2005 Categories and definitions

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

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

14.2 National data

14.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Undersecretariat for Afforestation and Environment	M		2000 2005	A set of data prepared for the FRA

14.2.2 Classification and definitions

Not available.

14.2.3 Original data

Item	Price in 1000 LE	
	2000	2005
Food	4385	7450
Fodder	320	530

14.3 Analysis and processing of national data

Exchange rates of 1 US\$ = 5.78 LE for the year 2005 and 3.4 LE for the year 2000 have been used to convert the original data into US\$.

Values of food and fodder as calculated above were too low if compared with the removals on table 13 and thus it was decided not to report them in table 14.5.

14.3.1 Estimation and forecasting

14.4 Reclassification into FRA 2005 classes

14.5 Data for National reporting table T14

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

14.6 Comments to National reporting table T14

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
Undersecretariat for Afforestation and Environment	M		2005	Set of data prepared for the FRA

15.2.2 Classification and definitions

National class	Definition
Primary production of goods	It is consistent with FRA
Provision of services	It is consistent with FRA

Note: If different national data sources use different classes and definitions, a table such as above is needed for each relevant data source.

15.2.3 Original data

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	-	-
Provision of services	-	-
Unspecified forestry activities*	ID	10
TOTAL	-	-

15.6 Comments to National reporting table T15

Data is based on estimates.

Include mainly nursery activities and seedling production, planting in the permanent site, irrigation and maintenance.