GLOBAL FOREST RESOURCES ASSESSMENT 2010

COUNTRY REPORT

LIBYAN ARAB JAMAHIRIYA



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 upto-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 2010 (FRA 2010).

The reporting framework for FRA 2010 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes variables related to the extent, condition, uses and values of forest resources, as well as the policy, legal and institutional framework related to forests. More information on the FRA 2010 process and the results - including all the country reports - is available on the FRA Web site (www.fao.org/forestry/fra).

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 2010 is:

Mette Løyche Wilkie Senior Forestry Officer FAO Forestry Department Viale delle Terme di Caracalla Rome 00153, 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 Country Report Series is designed to document and make available the information forming the basis for the FRA 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.

Contents

1	TABLE T1 – EXTENT OF FOREST AND OTHER WOODED LAND	5
2	TABLE T2 - FOREST OWNERSHIP AND MANAGEMENT RIGHTS	7
3	TABLE T3 - FOREST DESIGNATION AND MANAGEMENT	8
4	TABLE T4 - FOREST CHARACTERISTICS	11
5	TABLE T5 - FOREST ESTABLISHMENT AND REFORESTATION	13
6	TABLE T6 - GROWING STOCK	14
7	TABLE T7 - BIOMASS STOCK	
8	TABLE T8 - CARBON STOCK	
9	TABLE T9 - FOREST FIRES	21
10	TABLE T10 - OTHER DISTURBANCES AFFECTING FOREST HEALTH AND VITALITY	21
11	TABLE T11 - WOOD REMOVALS AND VALUE OF REMOVALS	22
12	TABLE T12 - NON-WOOD FOREST PRODUCTS REMOVALS AND VALUE OF REMOVALS	ծ 24
13	TABLE T13 - EMPLOYMENT	24
14	TABLE T14 - POLICY AND LEGAL FRAMEWORK	
15	TABLE T15 - INSTITUTIONAL FRAMEWORK	
16	TABLE T16 - EDUCATION AND RESEARCH	24
17	TABLE T17 - PUBLIC REVENUE COLLECTION AND EXPENDITURE	24

Report preparation and contact persons

The present report is a desk study. The following person(s) has been contacted:

Name (FAMILY NAME, First name)	Institution / address	E-mail	Fax	Tables
Bashir Nwer	Chairman of National Committee to Combat Desertification in Libya	bash_nwer@yahoo.com nccd_libya@yahoo.com	++218 91 327 7908	

1 Table T1 - Extent of Forest and Other wooded land

1.1 FRA 2010 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 in situ. 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 in situ; 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	Land classified as "Other land", spanning more than 0.5 hectares with a
(Subordinated to "Other	canopy cover of more than 10 percent of trees able to reach a height of 5
land")	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
Department of Agriculture and range development	M	Forest area, ownership and characteristics	1990, 2000, 2005	A set of tables prepared for FRA 2005 project based on good estimates.

1.2.2 Original data

Format Code	Area (1000 hectares)				
Forest Categories	1990	2000	2005		
Man-made Forest	217	217	217		
Natural woodland	330	330	330		
TOTAL	547	547	547		

1.3 Analysis and processing of national data

1.3.1 Calibration

Not needed since the UN/FAO figures for country area and land area have been used for this report.

1.3.2 Estimation and forecasting

The same figures have been used for all reporting years

1.3.3 Reclassification into FRA 2010 categories

Reclassification is based on crown density. All man made forests and natural woodlands meet the requirements of height and area. Based on crown density, all man made forests have been re-classified as forest (more than 10%), while all natural woodlands have been classified as Other wooded land (5-10%).

1.4 Data for Table T1

ED 1 2010 1 .	Area (1000 hectares)						
FRA 2010 categories	1990	2000	2005	2010			
Forest	217	217	217	217			
Other wooded land	330	330	330	330			
Other land	175 407	175 407	175 407	175 407			
of which with tree cover	n. d	n. d	n. d	n. d			
Inland water bodies	0	0	0	0			
TOTAL	175 954	175 954	175 954	175 954			

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest		
Other wooded land		
Other land		
Other land with tree cover		
Inland water bodies		

Other general comments to the table

The areas of the natural and man made forests were based on estimations before 2005 taken from the former Department of Forestry.

Expected year for completion of ongoing/planned <u>national</u> forest inventory and/or RS survey / mapping			
Field inventory			
Remote sensing survey / mapping			

2 Table T2 – Forest ownership and management rights

No data are available for this reporting table.

3 Table T3 – Forest designation and management

3.1 FRA 2010 Categories and definitions

Term	Definition
Primary designated function	The primary function or management objective assigned to a management unit either by legal prescription, documented decision of the landowner/manager, or evidence provided by documented studies of forest management practices and customary use.
Protected areas	Areas especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.
Categories of primary design	gnated functions
Production	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Protection of soil and water	Forest area designated primarily for protection of soil and water.
Conservation of biodiversity	Forest area designated primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas.
Social services	Forest area designated primarily for social services.
Multiple use	Forest area designated primarily for more than one purpose and where none of these alone is considered as the predominant designated function.
Other	Forest areas designated primarily for a function other than production, protection, conservation, social services or multiple use.
No / unknown	No or unknown designation.
Special designation and ma	anagement categories
Area of permanent forest estate (PFE)	Forest area that is designated to be retained as forest and may not be converted to other land use.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.
Forest area under sustainable forest management	To be defined and documented by the country.
Forest area with management plan	Forest area that has a long-term (ten years or more) documented management plan, aiming at defined management goals, which is periodically revised.

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Department of Agriculture and range development	M	Forest area, ownership and characteristics	1990, 2000 2005	A set of tables prepared for FRA 2005 project based on good estimates.

3.2.2 Original data

No original data exist for this table. Information from Table 1 has been used with the assumptions listed below.

3.3 Analysis and processing of national data

3.3.1 Reclassification into FRA 2010 categories

All man-made forests are designated for the protection of agricultural land and for sand dune fixation, so they have been re-classified as protection of soil and water.

3.4 Data for Table T3

Table 3a – Primary designated function

EDA 2010 Catagories	Forest area (1000 hectares)				
FRA 2010 Categories	1990	2000	2005	2010	
Production	0	0	0	0	
Protection of soil and water	217	217	217	217	
Conservation of biodiversity	0	0	0	0	
Social services	0	0	0	0	
Multiple use	0	0	0	0	
Other (please specify in comments below the table)	0	0	0	0	
No / unknown	0	0	0	0	
TOTAL	217	217	217	217	

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
FRA 2010 Categories	1990	2000	2005	2010
Area of permanent forest estate	n.a	n.a	n.a	n.a
Forest area within protected areas	n.a	n.a	n.a	n.a
Forest area under sustainable forest management	n.a	n.a	n.a	n.a
Forest area with management plan	n.a	n.a	n.a	n.a

Variable /	Comments related to data, definitions,	Comments on the reported trend
category	etc.	
Production		
Protection of soil	All man-made forests are primarily	
and water	designated for the protection of	
	agricultural land and for sand dune fixation.	
Conservation of		
biodiversity		
Social services		
Multiple use		
Wuttiple use		
Other		
No / unknown		
designation		
Area of permanent		
forest estate		
Forest area within		
protected areas		
Forest area under sustainable forest		
management		
Forest area with		
management plan		

Other general comments to the table		

4 Table T4 – Forest characteristics

4.1 FRA 2010 Categories and definitions

Term / category	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural
	regeneration.
Introduced species	A species, subspecies or lower taxon, occurring <u>outside</u> its natural range
	(past or present) and dispersal potential (i.e. outside the range it occupies
	naturally or could occupy without direct or indirect introduction or care
	by humans).
Characteristics categories	
Primary forest	Naturally regenerated forest of native species, where there are no clearly
	visible indications of human activities and the ecological processes are
	not significantly disturbed.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of
	human activities.
Other naturally regenerated forest	Other naturally regenerated forest where the trees are predominantly of
of introduced species	introduced species.
(sub-category)	
Planted forest	Forest predominantly composed of trees established through planting
	and/or deliberate seeding.
Planted forest of introduced species	Planted forest, where the planted/seeded trees are predominantly of
(sub-category)	introduced species.
Special categories	
Rubber plantations	Forest area with rubber tree plantations.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
Bamboo	Area of forest and other wooded land with predominant bamboo
	vegetation.

4.2 National data

The data and information in table 1 was used as a source to this table. All forests are manmade.

4.3 Data for Table T4

Table 4a

EDA 2010 Catagorias	Forest area (1000 hectares)				
FRA 2010 Categories	1990	2000	2005	2010	
Primary forest	0	0	0	0	
Other naturally regenerated forest	0	0	0	0	
of which of introduced species	0	0	0	0	
Planted forest	217	217	217	217	
of which of introduced species	n.a.	n.a.	n.a.	n.a.	
TOTAL	217	217	217	217	

Table 4b

ED A 2010 Cotogories	Area (1000 hectares)				
FRA 2010 Categories	1990	2000	2005	2010	
Rubber plantations (Forest)	0	0	0	0	
Mangroves (Forest and OWL)	0	0	0	0	
Bamboo (Forest and OWL)	0	0	0	0	

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest		
Other naturally regenerating forest		
Planted forest		
Rubber plantations		
Mangroves		
Bamboo		

Other general comments to the table				

5 Table T5 – Forest establishment and reforestation

No data are available for this reporting table.

6 Table T6 - Growing stock

6.1 FRA 2010 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.
Growing stock of commercial species	Growing stock (see def. above) of commercial species.

6.2 National data

6.2.1 Data sources

References to sources of	Quality	Variable(s)	Year(s)	Additional comments
information	(H/M/L)			
Department of	M	Forest area,	2005	A set of tables prepared for FRA
Agriculture and range		ownership		2005 project based on good
development		and		estimates.
		characteristics		

6.2.2 Classification and definitions

National class	Definition
Growing stock	Same as FRA

6.2.3 Original data

Man-made Forest	Mean annual increment (m³ / ha)	Estimated area (ha)
Eucalyputs spp.	3.5	120 000
Acacia spp.	2.5	80 000
Pinus spp.	1.0	17 000
Natural other woodland		
Cupressus spp. Juniperus phoeniceia Arbutus pavarii	0.5	330 000

6.3 Analysis and processing of national data

6.3.1 Estimation and forecasting

Man-made Forest	MAI (m³/ha)	Area (1000 ha)	Total annual increment (1000 m³)	Average age (years)	Total volume (1000 m³)
Eucalyptus spp.	3.5	120	420	12	5040
Acacia spp.	2.5	80	200	12	2400
Pinus spp.	1.0	17	17	25	425
Sub-total Forest		217	637		7865
Natural woodland					
Cupressus spp. Juniperus phoeniceia Arbutus pavarii	0.5	330	165	25	4125
Total		547	802		11990

The volume of the growing stock was calculated based on 12 years average age for fast growing species (*Eucalyptus* and *Acacia* spp) and 25 years average age for pines and OWL. The average age is calculates as half of the expected rotation (25 years for *Eucalyptus* and *Acacia* spp and 50 years for Pines and natural woodlands)

6.4 Data for Table T6

Table 6a – Growing stock

			Volume (r	nillion cub	ic meters (over bark)				
FRA 2010 category		For	rest		Other wooded land					
	1990	2000	2005	2010	1990	2000	2005	2010		
Total growing stock	7.865	7.865	7.865	7.865	4.125	4.125	4.125	4.125		
of which coniferous	n. d	n. d	n. d	n. d	n. d	n. d	n. d	n. d		
of which broadleaved	n. d	n. d	n. d	n. d	n. d	n. d	n. d	n. d		
Growing stock of commercial species	0	0	0	0	0	0	0	0		

Table 6b – Growing stock of the 10 most common species

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)			
Rank	Scientific name	Common name	1990	2000	2005	
1 st						
2 nd						
3 rd						
4 th						
5 th						
6 th						
7 th						
8 th						
9 th						
10 th						
Remaining						
TOTAL						

Note: Rank refers to the order of importance in terms of growing stock, i.e. 1st is the species with the highest growing stock. Year 2000 is the reference year for defining the species list and the order of the species.

$Table\ 6c-Specification\ of\ threshold\ values$

Item	Value	Complementary information
Minimum diameter (cm) at breast height ¹ of	10 cm	
trees included in growing stock (X)		
Minimum diameter (cm) at the top end of		
stem for calculation of growing stock (Y)		
Minimum diameter (cm) of branches included		
in growing stock (W)		
Volume refers to "above ground" (AG) or	AG	
"above stump" (AS)		

Variable /	Comments related to data, definitions,	Comments on the reported trend
Total growing stock	etc.	
Growing stock of broadleaved / coniferous		
Growing stock of commercial species		
Growing stock composition		

Other general comments to the table	

 $^{^{1}}$ Diameter at breast height (DBH) refers to diameter over bark measured at a height of 1.30 m above ground level or 30 cm above buttresses if these are higher than 1 m.

7 Table T7 – Biomass stock

7.1 FRA 2010 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 biomass of live roots. Fine roots of less than 2mm diameter are excluded					
	because these often cannot be distinguished empirically from soil organic matter of					
	litter.					
Dead wood	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.					

7.2 National data

The data of table 6 was used as input to this table

7.3 Analysis and processing of national data

The following conversion factors were used:

Basic wood density for *Eucalyptus* is 0.65 and 0.76 for acacias. The average was considered 0.7 Basic wood density for Pine and Natural woodland is 0.5 R/S ratio for broadleaf forest =0.2. For pine and Natural woodland = 0.32 BEF = 2.0 for deciduous forest and 1.3 for pine and natural woodland Dead-live ratio = 0.14 for deciduous forest and 0.2 for pine and Natural woodland.

7.4 Data for Table T7

		Bio	mass (mill	million metric tonnes oven-dry weight)						
FRA 2010 category		For	rest		Other wooded land					
	1990	2000	2005	2010	1990	2000	2005	2010		
Above-ground biomass	10.69	10.69	10.69	10.69	2.68	2.68	2.68	2.68		
Below-ground biomass	2.17	2.17	2.17	2.17	0.86	0.86	0.86	0.86		
Dead wood	1.82	1.82	1.82	1.82	0.71	0.71	0.71	0.71		
TOTAL	14.68	14.68	14.68	14.68	4.25	4.25	4.25	4.25		

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass		
Below-ground biomass		
Dead wood		

8 Table T8 – Carbon stock

8.1 FRA 2010 Categories and definitions

Category	Definition
Carbon in above-	Carbon in all living biomass above the soil, including stem, stump, branches, bark,
ground biomass	seeds, and foliage.
Carbon in below-	Carbon in all biomass of live roots. Fine roots of less than 2 mm diameter are excluded,
ground biomass	because these often cannot be distinguished empirically from soil organic matter or
	litter.
Carbon in dead wood	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 the minimum diameter for dead wood (e.g. 10 cm), lying dead in various states of decomposition above the mineral or organic soil.
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.

8.2 National data

Table 7 was used as input to this table. The same figures refer to all four reporting years.

8.3 Analysis and processing of national data

The default factor 0.47 was used to convert the biomass stock to carbon stock for the table 7 according to 2006 IPCC guidelines. The carbon stock of litter in forest under tropical climate is 2.1 tonnes C/ha for broadleaved forest

8.4 Data for Table T8

FRA 2010			Carb	on (Millio	lion metric tonnes)						
Category	Forest				Other wooded land						
Category	1990	2000	2005	2010	1990	2000	2005	2010			
Carbon in aboveground biomass	5.03	5.03	5.03	5.03	1.26	1.26	1.26	1.26			
Carbon in below- ground biomass	1.02	1.02	1.02	1.02	0.4	0.4	0.4	0.4			
Sub-total: Living biomass	6.05	6.05	6.05	6.05	1,66	1,66	1,66	1,66			
Carbon in dead wood	0.86	0.86	0.86	0.86	0.34	0.34	0.34	0.34			
Carbon in litter	0.46	0.46	0.46	0.46	NDA	NDA	NDA	NDA			
Sub-total: Dead wood and litter	1.32	1.32	1.32	1.32	NDA	NDA	NDA	NDA			
Soil carbon	NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA			
TOTAL	NDA	NDA	NDA	NDA	NDA	NDA	NDA	NDA			

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in		
above-ground		
biomass		
Carbon in		
below-ground		
biomass		
Carbon in dead		
wood		
Carbon in litter		
Soil carbon		
L		

Other general comments to the table		
The		

9 Table T9 - Forest fires

No data are available for this reporting table

10 Table T10 – Other disturbances affecting forest health and vitality

No data are available for this reporting table

11 Table T11 - Wood removals and value of removals

11.1 FRA 2010 Categories and definitions

Category	Definition
Industrial roundwood	The wood removed (volume of roundwood over bark) for production of goods and
removals	services other than energy production (woodfuel).
Woodfuel removals	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	Quality	Variable(s)	Year(s)	Additional comments
information	(H/M/L)			
		Removals of		
		industrial		
FAOSTAT		roundwood		
		and		
		woodfuel		

11.2.2 Original data

	Industrial	
Year	Roundwood	Wood Fuel
	m3 u.b.	m3 u.b.
1988	104 000	536 000
1989	105 000	536 000
1990	107 000	536 000
1991	107 000	536 000
1992	108 000	536 000
Average	106 200	536 000
1998	115 000	536 000
1999	116 000	536 000
2000	116 000	536 000
2001	116 000	536 000
2002	116 000	536 000
Average	115 800	536 000
2003	116 000	536 000
2004	116 000	536 000
2005	116 000	536 000
2006	116 000	901 191
2007	116 000	913 600
Average	116 000	684 558

11.3 Analysis and processing of national data

The five-year averages were multiplied by 1.15 to get volume over bark.

11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m ³ o.b.)	122	133	133	616	616	787
of which from forest	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Unit value (local currency / m ³ o.b.)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total value (1000 local currency)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Note: The figures for the reporting years refer to the averages of annually affected areas for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.

	1990	2000	2005
Name of local currency			

Variable /	Comments related to data, definitions,	Comments on the reported trend
category	etc.	
Total volume of		
industrial		
roundwood		
removals		
Total volume of		
woodfuel		
removals		
Unit value		
T 1		
Total value		

Other general comments to the table	

12 Table T12 – Non-wood forest products removals and value of removals

No data are available for this reporting table.

13 Table T13 - Employment

No data are available for this reporting table.

14 Table T14 - Policy and legal framework

No data are available for this reporting table.

15 Table T15 – Institutional framework

No data are available for this reporting table.

16 Table T16 – Education and research

No data are available for this reporting table.

17 Table T17 - Public revenue collection and expenditure

No data are available for this reporting table.