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Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT

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The Forest Resources Assessment Programme

Sustainably managed forests have multiple environmental and socio-economic functions important at the global, national and local scales, and play a vital part in sustainable development. Reliable and up-to-date information on the state of forest resources - not only on area and area change, but also on such variables as growing stock, wood and non-wood products, carbon, protected areas, use of forests for recreation and other services, biological diversity and forests' contribution to national economies - is crucial to support decision-making for policies and programmes in forestry and sustainable development at all levels.

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2005 (FRA 2005), which is the most comprehensive assessment to date. More than 800 people have been involved, including 172 national correspondents and their colleagues, an Advisory Group, international experts, FAO staff, consultants and volunteers. Information has been collated from 229 countries and territories for three points in time: 1990, 2000 and 2005.

The reporting framework for FRA 2005 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes more than 40 variables related to the extent, condition, uses and values of forest resources. More information on the FRA 2005 process and the results - including all the country reports - is available on the FRA 2005 Web site (www.fao.org/forestry/fra2005).

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Ministry of Finance of Georgia
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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 *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 (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
Forest Code of Georgia, 1999	H	Forest cover	From 1999 onwards	Includes definitions of forest and other land uses within the State Forest Fund
State Forestry Department of Georgia. State Inventory of the Forest Fund. Tbilisi, 1995.	H	Forest cover and wood volumes	1995	The distribution of the State Forest Fund by forest and land use categories and species composition
Ministry of Forestry and Nature Protection of the Georgian Soviet Socialist Republic (SSR). State Inventory of Forests. Tbilisi, 1988	H	Forest cover and wood volumes	1988*	The distribution of the State Forest Fund by forest and land categories and species composition

*/ According to expert opinions, this inventory can be used as a source of data for 1990.

1.2.2 Classification and definitions

National class	Definition
State Forest Fund (SFF)	The integrity of state forest, land and other resources defined as SFF by the Georgian legislation. Includes the land categories listed below in this table.
Forest	Part of geographic landscape, which includes the unity of trees (defined by the Georgian legislation as parts of forests), lands, bushes, grasses, animals and other objects, which are biologically inter-related and have an impact upon each other as well as environment.

Forest lands	Open plantations, nurseries, clear-cut areas, fire damaged and dead stands, 0.1 ha and larger fields and forest farm yards.
Agricultural lands	Arable lands, meadows, pastures, orchards and wine yards.
Lands of special use	Hard surface roads and passage ways of various purpose, power and communication lines, oil and gas pipelines, areas allocated for mining, ponds and lands of private households.
Idle lands	Swamps, sands, glaciers and rocks.

1.2.3 Original data

National Categories	**Area (1000 hectares)**	
	1990	**1995**
Forest	**2752.3**	**2760.6**
which includes shrub lands	53	52.1
Forest lands	**80.0**	**72.1**
which includes:		
Open plantations	15.6	8.2*
Low-density stands**	43.4	41.7
Fire-damaged and dead stands	0.4	0.5
Clear-cut areas	1.1	1.0
Large openings ***	19.5	20.7
Agricultural lands	**70.1**	**71.7**
Lands of special use	**10.4**	**10.0**
Idle lands	**75.6**	**77.0**
TOTAL***	**2988.4**	**2991.4**

*/ Such a noticeable reduction is the result of annual reclassification into the 'forest' category carried out by the Forestry Department;

**/ Include the stands with canopy cover between 10-30%; from 2000 onwards, these have been re-classified as 'forest' by the Department of Forestry;

***/ Classified as other land. May include small areas of forest nurseries.

****/ Total SFF area.

1.3 Reclassification into FRA 2005 classes

FRA 2005 categories	**National categories**
Forest	Forest (except shrub lands), open plantations, low-density stands, fire-damaged and dead stands*, clear-cut areas*.
Other Wooded Land (OWL)	Shrub lands
Other Land With Tree Cover (OLWTC)	Orchards, urban parks and other green areas within populated areas, which are not included into the SFF

*/ These areas are usually being recovered within 2 years and thus are assigned to the 'forest' category according to the FRA 2005

Based on the reclassification, the following table has been compiled:

FRA 2005 categories	**1990**	**1995**	**Average annual change (ha)**
Forest	2759.8	2759.9	0.02
OWL	53.0	52.1	- 0.18
OLWTC	NDA	NDA	NDA

1.4 Analysis and processing of national data

1.4.1 Calibration

FAOSTAT reports a country area of 6 970 000 hectares and a land area of 6 949 000 hectares. This gives an inland water area of 21 000 hectares. The FAOSTAT land and water areas have been applied directly to the final table and the difference assigned to the "Other land" category.

1.4.2 Estimation and forecasting

Linear extrapolation was applied on the basis of the reclassified data above:

2000
Forest: 2759.8 + (0.02*10) = 2760.
OWL: 53 – (0.18*10) = 51.2

2005
Forest: 2759.9 + (0.02*15) = 2760.1.
OWL: 53 – (0.18*15) = 50.3.

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	2759.8	2760.0	2760.1
Other wooded land	53.0	51.2	50.3
Other land	4136.2	4137.8	4138.6
...of which with tree cover	NDA	NDA	NDA
Inland water bodies*	21	21	21
TOTAL*	**6970**	**6970**	**6970**

*/ Based on FAOSTAT data.

1.6 Comments to National reporting table T1

The difference between these and FRA 2000 values (e.g. 2 988 000 as the total forest area for 1990 and 2000) are mainly caused by different sources of data and the calculation and reclassification methods applied in this report.

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

All forests and other wooded land in Georgia are publicly owned.

2.3 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	0	0	0	0
Public ownership	2759.8	2760.0	53.0	51.2
Other ownership	0	0	0	0
TOTAL	**2759.8**	**2760.0**	**53.0**	**51.2**

2.4 Comments to National reporting table T2

All forests and other wooded land in Georgia are publicly owned.

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
Forest Code of Georgia, 1999	H	Forest cover, forest functions	From 1999 onwards	Includes definitions of forest and other land uses within the State Forest Fund
State Forestry Department of Georgia. State Inventory of the Forest Fund. Tbilisi, 1995.	H	Forest cover and wood volumes	1995	The distribution of the State Forest Fund by forest and land use categories and species composition
Forests of Georgia. A booklet published with the assistance of the World Bank's Forests Development Project in Georgia	H	Distribution of the SFF by categories	2003	

3.2.2 Classification and definitions

National class	Definition
Resort forest	Areas of the State Forest Fund falling in the primary and secondary sanitary protection zones, where forest management mainly implies increasing of health improving capacity, sanitary and hygienic condition of forest.
Green zone forest	Forested areas adjacent to cities and other settlements, recreational areas of the Usable State Forest Fund, where forest management mainly implies improvement of recreational, , sanitary, hygienic and aesthetic properties of forests.
Forest for soil protection and water regulation	Areas of the State Forest Fund with special properties and to the forest edges that are not clustered under a separate category.
Forests of special functions	Areas designated as Nature Reserves and Especially Valuable Forest Stands* (mainly in terms of biodiversity and historical importance) and Species Management Habitats**
Forests within National Parks**	Areas of State Forest Fund designated for the protection of relatively large and especially picturesque ecosystems of national and international importance to promote scientific research, education and recreational activities and protect environment

*/ Applicable for 1990 only;
**/ Applicable for 2000 and 2005 only.

3.2.3 Original data

All of the estimations for T3 are given for forest and OWL together, due to a lack of more detailed information. Major changes such as the establishment of National Parks and reclassification of remote resort forests into soil protection and water regulation forests occurred in the second half of the 1990s (please see Table 3.2.2).

According to the World Bank, in 2003 the State Forest Fund of Georgia covered 3005.3 thousand ha, 2772.4 thousand ha of which were covered by forests. The distribution of the SFF by categories was as follows:

Reserves:	168.9 thousand ha,
National Parks (from 1998 onwards):	61.4 thousand ha,
Species management habitats:	12.4 thousand ha,
Green zone forests:	276.5 thousand ha,
Resort forests:	119.4 thousand ha,
Soil protection and water regulation forests:	2366.7 thousand ha.
TOTAL:	3005.3 thousand ha.

3.3 Analysis and processing of national data

According to the expert estimates, the percentage forest cover is quite similar within all of the above-mentioned categories (i.e. over 90%). Consequently, the total area of each category was multiplied by the coefficient (2772.4/3005.3 = 0.923) to estimate the respective forest-covered areas. Each estimated value was then divided by 2772.4 to identify the relevant proportions. Finally, these proportions were multiplied by the total area of forest and OWL in 2000 and 2005 (see T1) to estimate the forest area within each category in these years. The values for 1990 were estimated in a similar way on the basis of the 1995 data (which

contained much more detailed information), due to the similarity in the distribution of the total forest area by categories.

As a result, the following table has been compiled:

National categories	1990	2000	2005
Forest of special functions	148.5	169.5	169.3
National Parks	N/A	57.3	57.1
Resort forest	841.9*	111.6*	111.4
Green zone forest	239.1	258.6	258.5
Forest for soil protection and water regulation	1583.3*	2214.2*	2214.1
TOTAL	**2812.8**	**2811.2**	**2810.4**

*/ Such a drastic change can be explained by the reclassification of the remotely located resort forests into soil protection and water regulation category in the second half of the 1990s.

3.4 Reclassification into FRA 2005 classes

Reclassification for Primary Function

FRA 2005 categories	National categories
Production	N/A
Protection of soil and water	Forests for soil protection and water regulation
Conservation of biodiversity	Forests of special functions, National Parks
Social services	Green zone and resort forests
Multiple purpose	N/A
No or unknown function	N/A

Reclassification for Total Area with Function

All forests in Georgia have biodiversity conservation (except plantations) and soil protection and water regulation functions as either primary or secondary function. A certain proportion of forests (i.e. 550,000 ha) with soil protection and water regulation function is also used for the production of wood. The latter can only be regarded as a secondary function, as harvesting volumes are very limited and protective function of forests is given much higher priority.

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 and Other wooded land						
Production	0	0	0	550	550	550
Protection of soil and water	1583.3	2214.2	2214.1	2812.8	2811.2	2810.4
Conservation of biodiversity	148.5	226.8	226.4	2758.8**	2751.2**	2749.9**
Social services	1081.0	370.2	369.9	1081.0	370.2	369.9
Multiple purpose	0	0	0	not appl.	not appl.	not appl.
No or unknown function	0	0	0	not appl.	not appl.	not appl.
Total - Forest	**2812.8**	**2811.2**	**2810.4**	**not appl.**	**not appl.**	**not appl.**

*/ The values are given for forest and OWL together;
**/ Total forest area minus plantations.

3.6 Comments to National reporting table T3

The figures are given for forest and Other wooded land together

The drastic changes between 1990 and 2000 can be explained by the redesignation of the remotely located resort forests into soil protection and water regulation category in the second half of the 1990s.

It needs to be emphasized that due to the lack of accurate forest inventory information and large number of reclassifications and forest land transfers in the last 10 years, these estimations are very approximate and are largely based on expert estimates.

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
Ministry of Economic Development of Georgia; Department of Statistics. Natural Resources and Environment Protection in Georgia. Statistical Information. Tbilisi, 2005	H	Planted forest area	1995-2004	
State Forestry Department of Georgia. State Inventory of the Forest Fund. Tbilisi, 1995.	H	Forest cover and wood volumes	1995	The distribution of the State Forest Fund by forest and land use categories and species composition
Ministry of Forestry and Nature Protection of the Georgian Soviet Socialist Republic (SSR). State Inventory of Forests. Tbilisi, 1988	H	Forest cover and wood volumes	1990*	The distribution of the State Forest Fund by forest and land categories and species composition

4.2.2 Classification and definitions

Comply with FRA 2005 definitions

4.2.3 Original data

FRA 2005 categories	Forest		Other Wooded Land	
	1990	1995	1990	1995
Primary	500*	500*	0	0
Modified natural	2205.8	2200.4	53	52.1
Semi-natural	0	0	0	0
Productive plantation	0	0	0	0
Protective plantation	54.0	59.5	0	0
TOTAL	**2759.8**	**2759.9**	**53**	**52.1**

*/ Very approximate values based on expert estimates.

4.3 Analysis and processing of national data

According to expert estimates and available statistical data, primary forest area will remain virtually unchanged in 1990, 2000 and 2005, while around 100 ha of forest have been planted each year since 1995. The remaining areas calculated by subtraction from total areas of forest and other wooded land respectively, are classified as Modified natural.

4.4 Data for National reporting table T4

FRA 2005 Categories	Area (1000 hectares)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Primary	500	500	500	0	0	0
Modified natural	2205.8	2200.0	2199.6	53	51.2	50.3
Semi-natural	0	0	0	0	0	0
Productive plantation	0	0	0	0	0	0
Protective plantation	54.0	60.0	60.5	0	0	0
TOTAL	**2759.8**	**2760.0**	**2760.1**	**53**	**51.2**	**50.3**

4.5 Comments to National reporting table T4

The values are very approximate and are largely based on expert estimates

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
State Forestry Department of Georgia. State Inventory of the Forest Fund. Tbilisi, 1995.	H	Forest cover and wood volumes	1995	The distribution of the State Forest Fund by forest and land use categories and species composition
Ministry of Forestry and Nature Protection of the Georgian Soviet Socialist Republic (SSR). State Inventory of Forests. Tbilisi, 1988	H	Forest cover and wood volumes	1990*	The distribution of the State Forest Fund by forest and land categories and species composition

5.2.2 Classification and definitions

Comply with FRA 2005 definitions

5.2.3 Original data

FRA 2005 Categories	Volume (million cubic meters over bark)					
	Forest + OWL			Other wooded land		
	1990	1995	Difference per year	1990	1995	Difference per year
Growing stock	421.2	434.8	2.72	1.3	1.2	-0.02

5.3 Analysis and processing of national data

5.3.1 Calibration

Not applied

5.3.2 Estimation and forecasting

Linear extrapolation (between the values in 1990 and 1995) was applied to estimate the values for 2000 and 2005. The commercial growing stock was calculated by multiplying the total area allocated for commercial harvesting (i.e. 550,000 ha) by the average wood volume per hectare typical of these areas (220 m^3, estimated by experts).

5.4 Reclassification into FRA 2005 classes

Not applied

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	419.9	447.3	461	1.3	1.1	1.0
Commercial growing stock	121	121	121	0	0	0

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	cm	4	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	4	
3. Minimum diameter of branches included in Growing stock (W)	cm	4	
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	4	
5. Volume refers to “Above ground” (AG) or “Above stump” (AS)	AG / AS	Both	AG for total growing stock and AS for commercial stock
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		

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
State Forestry Department of Georgia. State Inventory of the Forest Fund. Tbilisi, 1995.	H	Forest cover and wood volumes	1995	The distribution of the State Forest Fund by forest and land categories and species composition

6.2.2 Classification and definitions

Comply with FRA 2005 definitions

6.2.3 Original data

The distribution of the total growing stock of forest by major species are as follows:

FRA 2005 Categories / Species name (Scientific name and common name)	Growing Stock in Forests (million cubic meters)
	1995
Beech- *Fagus orientalis*	224.9
Fir- *Abies nordmanniana*	75.0
Spuce- *Picea spp.*	32.4
Hornbeam- *Carpinus caucasica*	24.8
Oak- *Querqus spp.*	23.9
Pine- *Pinus spp.*	14.5
Alder- *Alnus barbata*	13.9
Chestnut- *Castenae sativa*	12.9
Birch- *Betula litwinowii*	3.4
Oriental Hornbeam- *Carpinus orientalis*	1.4
Remaining	7.7
TOTAL	**434.8**

6.3 Analysis and processing of national data

The calculation of biomass was carried out in accordance with the FRA 2005 Guidelines. The coefficients were taken from relevant appendices of these guidelines.

Tree Species	Growing Stock (million m3)	Basic density (tons/m3)	Stem biomass (mln. tons)	BEF*	AG biomass (mln. tons)	Root/ Shoot Ratio **	BG biomass (mln. tons)
Beech	224.9	0.58	130.4	1.4	182.6	0.24	43.8
Fir	75.0	0.40	30.0	1.3	39.0	0.23	9.0
Spuce	32.4	0.40	13.0	1.3	16.9	0.23	3.9
Hornbeam	24.8	0.63	15.6	1.4	21.8	0.26	5.7
Oak	23.9	0.58	13.9	1.4	19.5	0.35	6.8
Pine	14.5	0.42	6.1	1.3	7.9	0.32	2.5
Alder	13.9	0.45	6.3	1.4	8.8	0.43	3.8
Chestnut	12.9	0.48	6.2	1.4	8.7	0.26	2.3
Birch	3.4	0.51	1.7	1.4	2.4	0.43	1.0
Oriental Hornbeam	1.4	0.63	0.9	1.4	1.3	0.43	0.6
Remaining	7.7	0.50	3.9	1.4	5.5	0.30	1.7
TOTAL	**434.8**		**228.0**		**314.4**		**81.1**

*/ Temperate climatic zone;
**/ Temperate broadleaf and conifer forest.

The FRA 2005 Guidelines (Section 4.8) were used to estimate biomass stock for 1990, 2000 and 2005 on the basis of 1995 data.

AGB (Above Ground Biomass)/GS (Growing Stock) = 314.4/434.8 = 0.723
BGB (Below Ground Biomass)/GS = 81.1/434.8 = 0.187

These coefficients were applied to the Growing stock figures of forest and OWL together (see Table 5.5).

The dead/live ratio of 0.14 was used to estimate the deadwood stock.

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	305	324	334			
Below-ground biomass	79	84	86			
Dead wood biomass	54	57	59			
TOTAL	**437**	**465**	**479**			

The information about thresholds for thin roots, standing deadwood and wood lying on the surface is not available. The biomass of Other wooded land are included under Forest, but account for only about 0.25% of the total biomass.

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, fumic, 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
Gigauri, G. Forests of Georgia. Tbilisi, 2004.	H	The number of native tree species	2004	
State Forestry Department of Georgia. State Inventory of the Forest Fund. Tbilisi, 1995.	H	Forest cover and wood volumes	1995	The distribution of the State Forest Fund by forest and land use categories and species composition
Kordzakhia, M. Georgian Climate. Tbilisi, 1961	H	Soil types influenced by climate	1961	The information given in this book is also valid for present

7.2.2 Classification and definitions

Comply with FRA 2005 definitions

7.2.3 Original data

Data from T6 were used

7.3 Analysis and processing of national data

a) Calculation of carbon stock in living biomass and deadwood

The calculation was done by multiplying the default values suggested by IPCC-GPG for the carbon content in biomass of growing trees (50%) by the biomass data in table T6.

b) Calculation of carbon stock in soil

Soil type	Areas, 1000 ha			Carbon stock in soil, tonnes/ha	Carbon stock million tonnes		
	1990	2000	2005		1990	2000	2005
HAC, warm-temperate moist region*	1687.9	1686.7	1686.2	88	148.5	148.4	148.4
HAC, warm-temperate dry region**	963.8	963.4	963.1	38	36.6	36.6	36.6
Volcanic soils, warm-temperate dry region***	161.1	161.1	161.1	70	11.3	11.3	11.3
TOTAL	**2812.8**	**2811.2**	**2810.4**		**196.4**	**196.3**	**196.3**

*/ Western Georgia;
**/ Eastern Georgia;
***/ Southern Georgia.

c) Calculation of carbon stock in litter

Climatic sub-region, forest type	Areas, 1000 ha			Carbon stock in litter, tonnes/ha	Carbon stock million tonnes		
	1990	2000	2005		1990	2000	2005
Warm-temperate moist, broadleaf	1687.9	1686.7	1686.2	13	21.9	21.9	21.9
Warm-temperate dry, broadleaf	1124.9	1124.5	1124.2	28.2	31.7	31.7	31.7
TOTAL	**2812.8**	**2811.2**	**2810.4**		**53.6**	**53.6**	**53.6**

7.4 Data for National reporting table T7

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	152	162	167	NDA	NDA	NDA
Carbon in below-ground biomass	39	42	43	NDA	NDA	NDA
Sub-total: Carbon in living biomass	**191**	**204**	**210**	**NDA**	**NDA**	**NDA**
Carbon in dead wood	27	29	29	NDA	NDA	NDA
Carbon in litter	54	54	54	NDA	NDA	NDA
Sub-total: Carbon in dead wood and litter	**81**	**83**	**83**	**NDA**	**NDA**	**NDA**
Soil carbon to a depth of _____ cm	196	196	196	NDA	NDA	NDA
TOTAL CARBON	**468**	**483**	**489**	**NDA**	**NDA**	**NDA**

7.5 Comments to National reporting table T7

The values in Table 7.3.2 (b) are very approximate due to the application of global default values (because of the lack of relevant national data). Nevertheless, according to expert opinions, they give a realistic picture about carbon storage potential of the Georgian forests.

The figures presented under Forest also contain carbon stocks of Other wooded land, however it amount only to about 0.25% of the presented figures.

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
Ministry of Economic Development of Georgia; Department of Statistics. Statistical Yearbook of Georgia. Tbilisi, 2004	H	Forest areas affected by fire	1990, 2000	
Ministry of Economic Development of Georgia; Department of Statistics. Natural Resources and Environment Protection in Georgia. Statistical Information. Tbilisi, 2005	H	Forest areas affected by fire	1990	

8.2.2 Classification and definitions

Comply with FRA 2005 definitions

8.2.3 Original data

	1998	1999	2000	2001	2002	Average 1998-2002
Disturbance by fire, 1000 ha	0.308	0.037	0.085	0.148	0.607	**0.237**

In 1990 disturbance by fire was 14 ha. The information for 1988-1992 was not available. Disturbance by insects: 1990 – 750 ha, 2000 – 1200 ha. The information for 1988-92 and 1998-02 was not available.

8.3 Analysis and processing of national data

8.3.1 Estimation and forecasting

Please see Table 8.2.3

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	0.014	0.237	NDA	NDA
Disturbance by insects	0.750	1.200	NDA	NDA
Disturbance by diseases	NDA	NDA	NDA	NDA
Other disturbance	NDA	NDA	NDA	NDA

8.5 Comments to National reporting table T8

The data are given for forest and OWL together.

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
Red Data Book of the Georgian SSR. Tbilisi, 1982.	H	The list of the tree species threatened by extinction	1982*	As many Georgian experts deem, although largely outdated, this book can still be used as a basis for the description of current situation.
The Order of the Minister of Environment and Natural Resource Protection of Georgia #76 [05.08.2003]	H	The list of the tree species threatened by extinction	2003	Largely based on the Red Data Book of the Georgian SSR issued in 1982
Gigauri, G. Forests of Georgia. Tbilisi, 2004.	H	The number of native tree species	2004	

9.2.2 Classification and definitions

No information was found in the IUCN Red List (online). Consequently, the national definition taken from the Red Data Book (1982) was applied – *Species Threatened by Extinction.*

9.2.3 Original data

Please see Table 9.2.1 and Section 9.4.

9.3 Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species	153
Critically endangered tree species	0
Endangered tree species	0
Vulnerable tree species	0

9.4 Comments to National reporting table T9

Below is the national list of tree species threatened by extinction:

1. *Pinus eldarica;*
2. *Pinus Pithyusa;*
3. *Taxus baccata;*
4. *Acer ibericum;*
5. *Pistacia mutica;*
6. *Betula medwedevii;*
7. *Betula megrelica;*
8. *Betula raddeana;*
9. *Buxus colchica;*
10. *Celtis caucasica;*
11. *Celtis glabrata;*
12. *Diospyros lotus;*
13. *Castanea sativa;*
14. *Quercus dschorochensis;*
15. *Quercus hartwissiana;*
16. *Quercus imeretina;*
17. *Quercus macranthera;*
18. *Quercus pedunculiflora;*
19. *Quercus pontica;*
20. *Juglans regia;*
21. *Pterocarya pterocarpa;*
22. *Punica granatum;*
23. *Amigdalus georgica;*
24. *Pyrus demetrii;*
25. *Pyrus sachokiana;*
26. *Populus euphratica;*
27. *Ulmus elliptica;*
28. *Ulmus georgica;*
29. *Ulmus glabra;*
30. *Ulmus minor;*
31. *Ulmus suberosa;*
32. *Zelcova carpinifolia.*

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

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
State Forestry Department of Georgia. State Inventory of the Forest Fund. Tbilisi, 1995.	H	Forest cover and wood volumes	1995	The distribution of the State Forest Fund by forest and land categories and species composition

10.2.2 Original data

FRA 2005 Categories / Species name (Scientific name and common name)	Growing Stock in Forests (million cubic meters)	
	1995	%
Beech- *Fagus orientalis*	224.9	51.7
Fir- *Abies nordmanniana*	74.9	17.2
Spuce- *Picea spp.*	32.4	7.5
Hornbeam- *Carpinus caucasica*	24.8	5.7
Oak- *Querqus spp.*	23.9	5.5
Pine- *Pinus spp.*	14.5	3.3
Alder- *Alnus barbata*	13.9	3.2
Chestnut- *Castenae sativa*	12.9	3.0
Birch- *Betula litwinowii*	3.4	0.8
Oriental Hornbeam- *Carpinus orientalis*	1.4	0.3
Remaining	7.7	1.8
TOTAL	**434.8**	**100**

10.3 Analysis and processing of national data

10.3.1 Estimation and forecasting

The percentages (proportions) related to the species were multiplied by the total growing stock in 1990 and 2000 in order to obtain growing stock composition by species for these years.

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**
Beech- *Fagus orientalis*	217.8	231.8
Fir- *Abies nordmanniana*	72.4	77.1
Spuce- *Picea spp.*	31.6	33.6
Hornbeam- *Carpinus caucasica*	24.0	25.6
Oak- *Querqus spp.*	23.2	24.7
Pine- *Pinus spp.*	13.9	14.8
Alder- *Alnus barbata*	13.5	14.3
Chestnut- *Castenae sativa*	12.6	13.5
Birch- *Betula litwinowii*	3.3	3.6
Oriental Hornbeam- *Carpinus orientalis*	1.3	1.4
Remaining	7.6	8.0
TOTAL	**421.2**	**448.4**

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
Annual Reports of the State Forestry Department of Georgia regarding the volumes of wood allocated for harvesting	M*	Wood volumes	1998-2002	Over-bark volume
Committee of Forestry of the Republic of Georgia. Annual Report. Tbilisi, 1992.	M	Wood volumes	1992	Over-bark volume
Department of Forestry of the Republic of Georgia. Annual Report. 1991	M	Wood volumes	1991	Over-bark volume
State Committee of Nature Protection and Forestry of the Republic of Georgia. Annual Report. Tbilisi, 1990.	M	Wood volumes	1990	Over-bark volume
Ministry of Forestry and Nature Protection of the Georgian SSR. Annual Report. Tbilisi, 1988	M	Wood volumes	1988	Over-bark volume

11.2.2 Classification and definitions

Comply with FRA 2005 definitions

11.2.3 Original data

Volumes of removed industrial roundwood and woodfuel (1000 m3, overbark)

	1988	1990	1991	1992	1998	1999	2000	2001	2002	Avr. 4 yr - 1988-92	Avr. 5 yr - 1998-02
Industrial roundwood	162.9	104	90	55.4	92.4	99.1	110	70.4	80.9	103.1	90.6
Woodfuel	340.7	239.2	236.6	174.6	257.3	280.2	321.5	273.2	360.2	247.8	298.5
TOTAL	**503.6**	**343.2**	**326.6**	**230**	**349.7**	**379.3**	**431.5**	**343.6**	**441.1**	**350.9**	**389.1**

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

Please see Table 11.2.3. The values for 2005 are expert estimates.

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	103.1	90.6	140.1	NDA	NDA	NDA
Woodfuel	247.8	298.5	478.5	NDA	NDA	NDA
TOTAL for Country	**350.9**	**389.1**	**618.6**	NDA	NDA	NDA

11.5 Comments to National reporting table T11

It should be emphasized that illegal harvesting of wood is a very serious problem in Georgia. To date, no accurate or reliable information has been available about the volumes of illegally harvested wood. For instance, expert estimates vary between 2.5 million m3 and 8.0 million m3 per year. Official information about illegally harvested wood is much lower – around 700-800 thousand m3 per year, which is regarded as very far from being realistic by overwhelming majority of experts and even some of the public officials. Consequently, only the information about officially harvested wood volumes is given.

The information is given for State Forestry Department (SFD) forests only. There is a lack of accurate information regarding the volumes of wood harvested in other forests (for instance, former collective farm forests managed by local authorities). However, these volumes are very minor in comparison to the volumes harvested in SFD forests.

12 Table T12 – Value of wood removal

No data are available for this reporting table

Unfortunately, there is no sufficient information about the prices and species composition of the actually removed industrial roundwood in recent 10-15 years. In addition, the prices of fuelwood are the subjects of very drastic and hardly predictable fluctuation (depending on multiple factors such as the availability of natural gas supply). Consequently, it was regarded too risky to make any expert assumptions or judgements.

13 Table T13 – Non-wood forest product removal

No data are available for this reporting table

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

No data are available for this reporting 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
Ministry of Economic Development of Georgia; Department of Statistics. Natural Resources and Environment Protection in Georgia. Statistical Information. Tbilisi, 2005	H	The number of employees in the forestry sector	1990, 2000	The total number of officially employed people is given without further details

15.2.2 Classification and definitions

Comply with FRA 2005 definitions

15.3 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods	NDA	NDA
Provision of services	NDA	NDA
Unspecified forestry activities	11.7	7.4
TOTAL	11.7	7.4

15.4 Comments to National reporting table T15

The sharp decrease in the total number of the employed people in the forestry sector is attributable to the post-socialist economic crisis and the collapse of the sector. The numbers continued to decrease after 2000.