Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT

COUNTRY REPORTS

LITHUANIA

The Forest Resources Assessment Programme

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

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

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

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The Global Forest Resources Assessment 2005 Country Report Series is designed to document and make available the information forming the basis for the FRA 2005 reports. The Country Reports have been compiled by officially nominated country correspondents in collaboration with FAO staff. Prior to finalisation, these reports were subject to validation by forestry authorities in the respective countries.

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Introduction

Forest resources assessment FRA-2005 for Lithuania was conducted according to the rules, specifications, terms and definitions, as well as guidelines approved by FAO for global forest resources assessment update 2005.

For FRA-2005, data of regular Lithuanian State Forest assessments of 1988.01.01, 1993.01.01, 1998.01.01, 2001.01.01 and 2004.01.01 were used. Data of forest assessments of 1988.01.01, 1998.01.01 and 2001.01.01 were published, data of other assessments contain national reports. Data of the assessment of 2001.01.01 were directly used for Lithuanian forest resources characteristics in 2000. Data of other assessments were used for interpolation and extrapolation to calculate necessary characteristics for 1990 and 2005.

All state forest assessments are based on standwise forest inventory data base, maintained at the State Forest Survey Service, taking into account changes, registered during forest inventory and afterwards, including forest felling and reforestation activities as well as changes in forest ownership.

During fifteen years, forest land area has increased by 154 thous. ha, which comprises 7.3%. Forest coverage increased from 29,8% to 32,1%. Increased forest land areas include marshlands, wet sites, bogged up meadows and pasturelands as well as other agricultural lands, unused for farming and overgrown by forest. Intensive natural spreading of forests is followed by species substitution in the favour of softwood broadleaves.

Private forests in 2000 made up 22.7% of the total forest land area. It is expected to increase private forest land area up to 34-35% in 2005.

Forest land distribution by functions was done using Lithuanian forest distribution by groups and subgroups, approved by the government. Production forests (72.6%) contain all forests of the IV group. Soil and water protection forests (8.8%) comprise anti-erosion, field protection and water protection forests. Multiple purpose forests (6.5%) include state reserves of the III group, protective zones of state parks, around factories, beside roads and seed stands. Forests for social services (3.9%) cover forest parks, resort forests, city and recreational forests. Forests for the conservation of biodiversity (8.2%) include strict reserves, reserves of the II group, forests with protected nature monuments, forests for the Baltic Sea and Curonian Lagoon protection.

Forest land distribution by naturalness was made assuming its functional distribution and origin of stands. Primary forests (1.0%) contain strict reserves; modified natural (75.3%) – forests of natural origin in groups II-IV; semi natural (16.9%) – mixed, planted and natural origin in groups II-IV; productive plantations (4.7%) – completely (100%) planted mainly pure stands in group IV; protective plantations (2.1%) – completely (100%) planted stands in the III forest group.

Growing stock volume includes all stems from the ground up to the tips of trees with diameter at breast height 2 cm and more. Commercial growing stock volume excludes forests of group I and II as well as forests of Va site index class and less in the III-IV forest group. Stems with diameter at breast height 6 cm and more are usually used during cuttings. The difference between commercial and total growing stock volume comprises 14%.

For the estimation of above ground biomass, the biomass of branches was estimated according to local tables, the biomass of leaves and needles – according to the models by V. A. Usoltsev, 2001, 2002, 2003, adopted to Lithuanian conditions. The above mentioned models were used for below ground biomass estimation. Amounts of dead wood were estimated by NFI data. It was determined, that in coniferous stands every year fall down and remain unused 0.6 m^3/ ha, in broadleaved – 1.2 m^3/ ha of stems, additionally 40% of branches and roots are naturally utilized gradually over 25-35 years for coniferous and over 10-15 years

for broadleaves. In this way, accumulation of dead wood in coniferous stands was estimated to be in volume 25 m^3/ ha, - in broadleaved - 20 m^3/ ha.

Carbon stock in the litter and soil was estimated using default values approved by FAO.

Total biomass stock in Lithuanian forests increased over 15 years from 116 t./ ha up to 133 t./ ha.

Total carbon stock, including living biomass, carbon in dead wood, in the litter and soil to a depth of 30 cm has increased during 15 years from 152 t./ ha up to 160 t./ ha, on an average 0.53 t./ ha annually.

The amount of native tree species in Lithuanian forests equals 24, there are no registered endangered or vulnerable tree species.

Removals from Lithuanian forests of wood for fuel as well as for industrial use increase. Removals during 15 years have increased twice – from 2.3 m^3/ ha in 1990 up to 4.6 m^3/ ha. It is expected that the value of removed wood during the last 5 years will increase from 17.2 USD/ m^3 up to 23.2 USD/ m^3. The main reason of such an increasing are the changes of USD rates.

Data on plant and animal products are less sustainable, especially for the year 1990. The decrease of production of raw materials for medicine, bushmeat was determined.

Employment in forestry has decreased from 7.5 persons per 1000 ha in 1990 down to 6.8 persons per 1000 ha in 2000.

Improvement of forest statistics requires to improve, harmonize and specify forest inventory methods, definitions, models and standards especially for the estimation of characteristics uninventoried directly.

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
1.Лесной Фонд СССР 01.01.1998, Москва, 1990, стр.184, 185 (Forest Fund of USSR 01.01.1988, Moscow, 1990,pp.184, 185	H	Forest	1987	
2.Lietuvos miškų statistika.1998 m. sausio 1 d. valstybinė apskaita (Lithuanian Forest Statistics 1998.01.01). Kaunas, 1998, 72 p.	H	Forest	1997	
3.Lietuvos miškų valstybinė apskaita 2001m. sausio 1d. Lithuanian Forest Assessment. January 1,2001 Kaunas, 2001, 76 p.	H	Forest	2000	
4.Valstybinė miškų apskaita.2004 m. sausio 1 d. (State Forest Assessment, January 1,2004). Kaunas, 2004, 95 p. (manuscript)	H	Forest	2003	
5.Lietuvos Respublikos žemės fondas (Land fund of the Republic of Lithuania) 1998 m.	H	OWL, OL with tree	1997	

sausio 1d. Vilnius, 1998, 58 p.				
6.LIETUVOS RESPUBLIKOS ŽEMĖS FONDAS (LAND FUND OF THE REPUBLIC OF LITHUANIA) 2001M. SAUSIO 1D., VILNIUS ,2001, 82 P.	H	OWL, OL with tree, Official country area, Inland water bodies	2000	
7.Lietuvos Respublikos žemės fondas (Land fund of the Republic of Lithuania) 2004 m. sausio 1d, Vilnius, 2004, 94 p.	H	OWL, OL with tree	2003	
8.Vakarų Lietuvos parkų dendrofloros būklės įvertinimas. 1999m. darbų ataskaita. Kauno botanikos sodas, 1999, (manuscript)	H	OL with tree	1997,2000,2003	
9.Vidurio Lietuvos parkų dendrofloros būklės įvertinimas. 2000m. darbų ataskaita.Lietuvos dendrologų draugija, 2000, (manuscript)	H	OL with tree	1997,2000,2003	
10.Rytų Lietuvos parkų dendrofloros būklės įvertinimas. 2001m. darbų ataskaita.Lietuvos dendrologų draugija, 2001, (manuscript)	H	OL with tree	1997,2000,2003	
11.Pietų ir pietvakarių Lietuvos parkų dendrofloros būklės įvertinimas. 2002m. darbų ataskaita.Lietuvos dendrologų draugija, 2002, (manuscript)	H	OL with tree	1997,2000,2003	
12.Lietuvos Respublikos Miškų Įstatymas. Valstybės Žinios, 2001, Nr. 35-1161, 4-13 p(The Law on Forests of Republic of Lithuania)				Definition of **Forest**

1.2.2   Classification and definitions

National class	Definition
Forest	A land area not less than 0.1 hectare in size covered with trees, the height of which in a natural site in the maturity age is not less than 5 meters, other forest plants as well as thinned or vegetation-lost forest due to the acts of nature or human activities (cutting areas, burnt areas, clearings). … Forest pitches, nursery areas, forest seed orchards, raw-material bushings and plantations…forest roads, forest block, technological and fire break lines, areas covered by timber storage houses and other forest-related equipment, recreation grounds, animal feed grounds, and land assigned for afforestation is ascribed to forest land as well. Tree lines up to 10 meters of width in fields, at roadsides, water bodies, in living areas and cemeteries, single trees and bushes, parks planted and grown by man in urban and rural areas are not defined as forests.
Other wooded land (OWL)	The other bushes and tree groups, growing in fields, wetlands or close to water bodies, which are at variance with "forest "definition requirements, and not included into forest assessment and they cover bigger than 0,1 ha are ascribed to other wooded land.
Other land with trees	Urban parks, squares and gardens

1.2.3   Original data

FRA 2005 Categories	Area (1000 hectares)			
	1987	**1997**	**2000**	**2003**
Forest	1931	1978	2020	2069
Other wooded land	No data	82	83	79
Other land	N/d	4208	4165	4120
...of which with tree cover [1] - gardens - urban parks , squares	N/d N/d	60 3	59 3	59 3
Inland water bodies	262	262	262	262
TOTAL	**6530**	**6530**	**6530**	**6530**

Note: The official country area in the UN Statistics has recently been corrected from 6520 thous. ha to 6530 thous. ha ,

inland water bodies from 40 thous. ha to 262 thous. ha as it is presented in the official Lithuanian land survey statistics (1.2.1 Original data sources no. 6 above).

1.3   Analysis and processing of national data

1.3.1   Calibration

Not applied.

1.3.2 Estimation and forecasting

Forest area for the 1990 is derived, by interpolation of data between 1987 and 1997,and forest area for the 2005 is obtained by extrapolation from data of 2000 and 2003.

The data for "other wooded land" and "other land with trees" was received extrapolating from data of 1987 and 1997, and the same data for the 2005, when extrapolating from data of 2000 and 2003.

1.4 Reclassification into FRA 2005 classes

Not applied.

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	1945	2020	2099
Other wooded land	80	83	77
Other land	4243	4165	4092
...of which with tree cover [1]	63	62	62
Inland water bodies	262	262	262
TOTAL	**6530**	**6530**	**6530**

1)   Area of "Other land with tree cover" is included in the area reported under "Other land".

1.6 Comments to National reporting table T1

Forest areas in size of 0,1 – 0,5 ha comprise approximately 7253 ha . This area was not deducted from the figures in table 1.5. Beside that in the period 1990-2000 due to 10 year inventory period we have not inventoried up to 40 thous. ha new forest areas.

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
1.LIETUVOS PRIVATŪS MIŠKAI IR ŪKININKAVIMAS JUOSE. (PRIVATE FORESTS OF LITHUANIA AND THEIR MANAGEMENT), VMI, KAUNAS, 2001, 62 P.	H	Forest	2000	
2.Lietuvos Respublikos žemės fondas (Land fund of the Republic of Lithuania) 2001 m. sausio 1d. Vilnius, 2001, 82 p.	H	OWL	2000	

2.2.2   Classification and definitions

Comply with FRA 2005 definitions.

2.2.3   Original data

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	0	458	0	25
Public ownership	1945	1562	80	58
Other ownership	0	0	0	0

TOTAL	1945	2020	80	83

Note: The first private forests in Lithuania were registered in 1993

2.3 Analysis and processing of national data

2.3.1 Calibration

Not applied.

2.3.2 Estimation and forecasting

Not applied.

2.4 Reclassification into FRA 2005 classes

Not applied.

2.5 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	0	458	0	25
Public ownership	1945	1562	80	58
Other ownership	0	0	0	0
TOTAL	**1945**	**2020**	**80**	**83**

2.6 Comments to National reporting table T2

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
1. Lietuvos miškų statistika.1998 m. sausio 1 d. valstybinė apskaita (Lithuanian Forest Statistics 1998.01.01). Kaunas, 1998, 72 p.	H	Forest	1997	
2. Lietuvos miškų valstybinė apskaita 2001m. sausio 1d. (Lithuanian Forest Assessment. January 1,2001 Kaunas, 2001, 76 p.)	H	Forest	2000	
3.Valstybinė miškų apskaita.2004 m. sausio	H	Forest	2003	

1 d. (State Forest Assessment, January 1,2004). Kaunas, 2004, 95 p. (manuscript).			

3.2.2   Classification and definitions

Distribution of forest by groups and subgroups

I group.   *Reserved forests*
10   *strict reserves*
II group. *Special–purpose forests*
A)   forests for protection of ecosystems
21   *reserves*
22   *forests with protected nature monuments*
23   *forests for the Baltic Sea and Curonian Lagoon protection (1 km)*
24   *soil protecting (anti-erosion) forests*
B)   recreational forests
25   *forest parks*
26   *resort forest*
27   *city forests*
28   *forest of recreational sites*
III group. *Protective forests*
31   *reserves*
32   *forests of protective zones in State parks*
33   *forests of buffer zones around State parks*
34   *forest around factories*
35   *forests of protective and aesthetic value near roads*
36   *forests for field protection*
37   *forests of seed stands*
38   *forests of protective zones for water bodies*
IV group. *Exploitable forests*
40   *exploitable forests*

3.2.3   Original data

Distribution of forest area by forest groups and categories

Forest groups and categories	Area, ha		
	1997	**2000**	**2003**
I group Reserved forests, total	21166	21298	24420
strict reserves	13000	13413	
strict reserves in state parks	8040	7796	
small strict reserves	126	89	
II group Special – purpose forests, total	241012	243248	246044
A) forests for protection of ecosystems			
reserves	129524	136679	153061
forests with protected nature monuments	2329	2634	5344
soil protecting (anti-erosion) forests	18038	19381	21156
genetic reserves	2878	3234	
experimental plots	214	214	
forest stands of high productivity	616	672	
protected areas of natural resources	1200	2122	
forests for the Baltic Sea andCuronian Lagoon protection (1 km)	7593	66	518
B) recreational forestsl			
city forests	9669	15312	12940
forest parks	44768	40234	39336
recreational zones in state parks	8579	7538	
resort forest (zones of 1 and 2 regime)	3513	3513	3995
forest of recreational sites	12091	11649	9694
III group Protective forests, total	276576	306660	332506
reserves	47847	58051	82567
forests of buffer zones around state parks	9516	10799	16147
forests of protective zones in state parks	55338	57992	52853
resort forests (zones of 3 regime)	17929	17931	
forests for field protection	11287	14888	20059
forests of recreational and aestheticvalue near roads	606	998	3274
forests of protective zones for water bodies	130466	144326	154413
forest around factories	3400	1475	1744
plus seed stands	150	153	1449
forests for sciense and training	37	49	
IV group Exploitable forests, total	1439681	1449127	1466150
exploitable forests in state parks	83321	88261	
commercial forests	1356360	1360866	

Total	1978435	2020333	2069120

3.3 Analysis and processing of national data

3.3.1 Calibration

Not applied.

3.3.2 Estimation and forecasting

The data for the 1990 were received extrapolating from data of 1997 and 2000, and data for the 2005, derived by extrapolation from data of 2000 and 2003.

3.4 Reclassification into FRA 2005 classes

Reclassification for Primary function
Every forest stand by its primary function is designated to 4 forest groups and 18 subgroups. Adequacy of forests with national primary function to FRA classes is presented in below table.

National class	**Definition**
Production	*40 Exploitable forests*
Protection of soil and water	*24 Soil protecting (anti-erosion) forests* *36 Forests for field protection* *38 Forests of protective zones for water bodies*
Conservation of biodiversity	*10 Forests of strict reserves* *21 Forests of II-d forest group reserves* *22 Forests with protected nature monuments* *23 Forests for the Baltic Sea and Curonian Lagoon protection (1 km)*
Social services	*25 Forest parks* *26 Resort forest* *27 City forests* *28 Forest of recreational sites*
Multiple purpose	*31 Forests of III-d forest group reserves* *32 Forests of protective zones in State parks* *33 Forests of buffer zones around State parks* *34 Forest around factories* *35 Forests of protective and aesthetic value near roads* *37 Forests of seed stands*
No or unknown function	

Reclassification for Total area with function
All forest area provides the function of Conservation and Social services. The total area with function protection of soil and water comprises of 100% (Soil protecting forests, Forests for field protection and Forests of protective zones for water bodies). The total area with function

Production comprises of 100% Exploitable forest , 100% of Forest for field protection, 100% Forests of protective zones for water bodies and 100% of Multiple purpose forests.

FRA 2005 CATEGORIES / DESIGNATED FUNCTION	Area (1000 hectares)					
	Primary function			Total area with function		
	1997	2000	2003	1997	2000	2003
Forest						
Production	1456	1466	1466	1716	1756	1799
Protection of soil and water	160	178	196	160	178	196
Conservation of biodiversity	165	166	183	1978	2020	2069
Social services	78	78	66	1978	2020	2069
Multiple purpose	119	132	158	not appl.	not appl.	not appl.
No or unknown function	-	-	-	not appl.	not appl.	not appl.
Total - Forest	**1978**	**2020**	**2069**	**not appl.**	**not appl.**	**not appl.**
Other wooded land						
Production						
Protection of soil and water	82	83	79	82	83	79
Conservation of biodiversity				82	83	79
Social services						
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function				not appl.	not appl.	not appl.
Total – Other wooded land	**82**	**83**	**79**	**not appl.**	**not appl.**	**not appl.**

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	1412	1466	1476	1695	1756	1823
Protection of soil and water	171	178	206	171	178	206
Conservation of biodiversity	160	166	187	1945	2020	2099
Social services	75	78	67	1945	2020	2099
Multiple purpose	127	132	163	not appl.	not appl.	not appl.
No or unknown function		-	-	not appl.	not appl.	not appl.
Total - Forest	**1945**	**2020**	**2099**	**not appl.**	**not appl.**	**not appl.**
Other wooded land						
Production						
Protection of soil and water	80	83	77	80	83	77
Conservation of biodiversity				80	83	77
Social services						
Multiple purpose				not appl.	not appl.	not appl.
No or unknown function				not appl.	not appl.	not appl.
Total – Other wooded land	**80**	**83**	**77**	**not appl.**	**not appl.**	**not appl.**

3.6   Comments to National reporting table T3

Different system of forest classification into groups and categories was applied in 1990, comparing to classifications, which is used now. Nevertheless, since 1990 were not essential changes in requirements to functional forest classification, so the forest area of 1990 was distributed into groups and categories accordingly to proportions fixed in 2003.

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
STATE FOREST SURVEY SERVICE	H	Forest	1997,2000,2003	

4.2.2   Classification and definitions

National class	Definition
Primary	I group forests
Modified natural	Naturally regenerated forests in II-IV group forests
Semi-natural	Forests, composed of naturally and artificially regenerated trees in II-IV group forests
Productive plantation	100% artificially regenerated in IV group forests
Protective plantation	100% artificially regenerated in II-III group forests

Note: forest distribution by forest groups is equivalent to forest distribution in table 3.2.3. Additionally forest areas of II-IV groups were distributed according to their origin: naturally regenerated, mixed of natural and artificial regeneration and artificially regenerated. Duration

of rotation in plantations is the same as in other forests, what means that in country   exist only conditional plantations.

4.2.3   Original data

FRA 2005 Categories	Area (1000 hectares)					
	Forest			Other wooded land		
	1997	**2000**	**2003**	**1997**	**2000**	**2003**
Primary	21	21	25			
Modified natural	1504	1520	1534	82	83	79
Semi-natural	323	342	372			
Productive plantation	89	95	97			
Protective plantation	41	42	41			
TOTAL	**1978**	**2020**	**2069**	**82**	**83**	**79**

Note : Original data were received from State forest survey service data base , classifying them according to requirements of classification presented in Table 4.2.2.

4.3   Analysis and processing of national data

4.3.1   Calibration

Not applied.

4.3.2   Estimation and forecasting

The data for the 1990 were obtained, when extrapolating from data of 1997 and 2000, and data for the 2005, derived by extrapolation from data of 2000 and 2003.

4.4   Reclassification into FRA 2005 classes

Not applied.

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	20	21	26			
Modified natural	1493	1520	1548	80	83	77
Semi-natural	308	342	384			
Productive plantation	84	95	100			
Protective plantation	40	42	41			
TOTAL	**1945**	**2020**	**2099**	**80**	**83**	**77**

4.6   Comments to National reporting table T4

There are no primary (virgin/untouched by forest activities) forests in Lithuania. Forests of strict reserves are assigned to this group, as forest activities are not being carried out there for some decades, except forest assessment and research.

According to expert estimations, "other wooded land" was assigned to "modified natural" group.

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
1.See Table 1	H	Forest, Growing stock	1987-2003	OWL- quality "L" (established by expert)
2. Valstybės Žinios (State News) Nr.27, 2003m. kovo 19d. Lietuvos miškotvarkos taisyklės (Instructions on Lithuanian Forest management), 9 priedas		Forest		Site index classes
3.Lietuvos miškų ištekliai (Lietuvos miškų apskaitos duomenys), (Forest recourses of Lithuania (Data on Lithuanian forest assessment) 1993 m. sausio 1 d. Vilnius, 1994. 27 p.	H	Forest, Growing stock	1992	

5.2.2   Classification and definitions

National class	Definition

Growing stock	Volume of stems over bark of all living trees, which are more than 2 cm in diameter at breast height. Includes the stems from ground level
Commercial growing stock	Growing stock volume in forests of III-IV groups, excluding forests with Va site index class .

Note: 1.Lithuanian forest classification into forest groups – See 3.2.2
2.Site index requirements are presented in the reference 5.2.1. – 2.

5.2.3   Original data

FRA 2005 Categories	Volume (million cubic meters over bark)						
	Forest				**Other wooded land**		
	1987	**1992**	**2000**	**2003**	**1997**	**2000**	**2003**
Growing stock	297,3	334,8	372,5	388,7	2,5	2,5	2,4
Commercial growing stock	255,7	287,9	320,2	334,1	0	0	0

Note:

   1. Commercial growing stock volume include forests of III-IV groups, excluding forests with Va site index class.

   2. Commercial growing stock for 1987 and 1992 was calculated from the total growing stock in 1987 and 1992, using ratio of commercial growing stock to growing stock in 2000 and 2003 (0,86).

   3. Growing stock of "Other wooded land" for 1990, 2000 and 2005 was received when multiplying the adequate area of this category land (table 5) by volume per ha. According to expert evaluation volume per ha of "Other wooded land" is considered the volume of average Lithuanian stand with tree canopy coverage of 10%, i.e.
$$197 \text{ m}^3 /0,72 *0,1=27,4 = 30 \text{ m}^3/ha.$$
It is accepted, that commercial growing stock volume in "Other wooded land " not exist.

5.3   Analysis and processing of national data

5.3.1   Calibration

Not applied.

5.3.2   Estimation and forecasting

   The data for "Forest" for 1990 were derived by interpolation of data between 1987 and 1992, and for the 2005 were received by extrapolation from data of 2000 and 2003.

The data for "Other wooded land for 1990 were derived extrapolating from data of 1997 and 2000, and the same data for the 2005, extrapolating from data of 2000 and 2003.

5.4   Reclassification into FRA 2005 classes

Not applied

5.5   Data for National reporting table T5

FRA 2005 Categories	Volume (million m^3 over bark)					
	Forest			Other wooded land		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Growing stock	319,8	372,5	399,5	2,4	2,5	2,3
Commercial growing stock	275,0	320,2	343,6	0	0	0

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included into Growing stock (X)	cm	2	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	0	
3. Minimum diameter of branches included in Growing stock (W)	cm	0	
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	2	
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

Growing stock volume in forests of III-IV groups (total production forests) excluding forests with Va site index class were accepted as commercial growing stock volume.

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
See Table 1, 1-7;				
1.Усольцев В.А. Фитомасса лесов Северной Евразии.База данных и география. 707с. , Якатеринбург, 2001 (V.A. Usoltsev. Forest biomass of Northern Eurasia. Database and geography. p. 707, Yakaterinburg, 2001.)				Mensuration standards for calculation of biomass
2.Усольцев В.А. Фитомасса лесов Северной Евразии. Нормативы и элементы географии. 762с. Якатеринбург, 2002 (V.A. Usoltsev. Forest biomass of Northern Eurasia. Standards of mensuration and geography. p.762 , Yakaterinburg, 2002.)				-"-
3.Усольцев В.А. Фитомасса лесов Северной Евразии.Предельная продуктивность и география. 405 с., Якатеринбург, 2003 (V.A. Usoltsev. Forest biomass of Northern				-"-

Eurasia. The limits of productivity and their geography. P. 405, Yakaterinburg, 2003.)				
4. Medienos tūrio lentelės. Kaunas, 1997, 158 p. (Yield tables. Kaunas, 1997, 158)				Branch volume

6.2.2 Classification and definitions

Comply with FRA 2005 definitions

6.2.3 Original data

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	167,7	195,4	209,5	1,3	1,3	1,2
Below-ground biomass	38,6	45,6	48,2	0,3	0,3	0,3
Dead wood biomass	19,5	20,3	21,0	0,1	0,1	0,1
TOTAL	**225,8**	**261,3**	**278,7**	**1,7**	**1,7**	**1,6**

6.3   Analysis and processing of national data

6.3.1   Calibration

Not applied.

6.3.2   Estimation and forecasting

Not applied.

6.4   Reclassification into FRA 2005 classes

Not applied.

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	167,7	195,4	209,5	1,3	1,3	1,2
Below-ground biomass	38,6	45,6	48,2	0,3	0,3	0,3
Dead wood biomass	19,5	20,3	21,0	0,1	0,1	0,1
TOTAL	**225,8**	**261,3**	**278,7**	**1,7**	**1,7**	**1,6**

6.6   Comments to National reporting table T6

The biomass of separate tree species was estimated using the Basic Wood Density of Stem wood , presented in FRA 2005, appendix 5.2. The Basic Wood Density of Stem wood (=0,438) for 2000 was estimated using the species composition, presented in the Table T10. The data from Table T5 were used for the estimation of biomass for 1990 and 2005 as well as.

The biomass of foliage, needle and root was estimated as percentage from the total stem volume using the models, designed by V.Usolcev for separate tree species and adopted to Lithuanian stands. The biomass of branches was estimated, using native tables and the models, designed by V.Usolcev and adopted to Lithuanian stands. Weighted percentages of over ground biomass were estimated as weighted percentages of stem volume of separate tree species (2000).

Tree species	Needle and foliage biomass %	Branch biomass %	Stump and root over the ground biomass %	Stem volume mill.m^3
Pine	5	13	26	156,1
Spruce	11	17	26	86,2
Birch	3	14	18	65,3
Aspen	3	12	24	12,0
Black Alder	2	12	18	22,0
Grey Alder	3	12	17	13,4
Oak	3	15	25	6,8
Ash	3	18	20	8,5
Total:				
coniferous	**21,6**		**26,0**	
broadleaves	**16,4**		**19,0**	

For estimation of above-ground biomass, were used such factors: for coniferous - 1,216, for broadleaves – 1,164 from the stem biomass. It was drawn mean weighted factor for all tree species (1,197) what was applied also in calculations for 1990 and 2005 year.

For estimation of below-ground biomass were used such factors: for coniferous - 0,26, for broadleaves – 0,19 from the above-ground biomass. The calculated below-ground mean factor for all tree species for 2000 was 0,23 from the above-ground biomass. The same factor was used for below-ground biomass calculations for 1990 and 2005.

The volume of dead wood was estimated, using the data of national forest inventory. It was estimated that every year in coniferous stands due to self-thinning in the forest remains and are not consumed 0,6 m^3 of stems, 0,24 m^3 roots and branches ,what decay during 25-35 years. The estimated average volume of dead wood per ha is 25 m^3. In the broad-leaved stands in average 1,2 m^3 of stems and 0,4 m^3 of branches and roots remains in forests every year due to self-thinning. This volume decays during 10-15 years. The estimated average volume of dead wood per ha in broad-leaved stands is 20 m^3/ha.

The same average factors were used for estimation of biomass in "Other wooded lands" as well as for calculations of biomass in "Forest".

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
Lietuvos miškų valstybinė apskaita 2001m. sausio 1d. (Lithuanian Forest Assessment. January 1,2001 Kaunas, 2001)	H	Forest	1900,2000,2005	Forest distribution according to site index (for the estimations of carbon in the litter and soil layers).

7.2.2   Classification and definitions

Comply with FRA 2005 definitions.

7.2.3   Original data

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Carbon in above-ground biomass	83,9	97,7	104,8	0,65	0,65	0,6
Carbon in below-ground biomass	19,3	22,8	24,1	0,15	0,15	0,2
Sub-total: Carbon in living biomass	**103,2**	**120,5**	**128,9**	**0,8**	**0,8**	**0,8**
Carbon in dead wood	9,8	10,2	10,5	0.1	0,1	0,1
Carbon in litter	46,7	48,5	50,4	1,9	2,0	1,8
Sub-total: Carbon in dead wood and litter	**56,5**	**58,7**	**60,9**	**2,0**	**2,1**	**1,9**
Soil carbon to a depth of 30 cm	140,0	145,4	151,1	5,8	6,4	5,5
TOTAL CARBON	**299,7**	**324,6**	**340,9**	**8,6**	**9,3**	**8,2**

7.3   Analysis and processing of national data

7.3.1   Calibration

Not applied.

7.3.2   Estimation and forecasting

Not applied.

7.4   Reclassification into FRA 2005 classes

Not applied.

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	83,9	97,7	104,8	0,65	0,65	0,6
Carbon in below-ground biomass	19,3	22,8	24,1	0,15	0,15	0,2
Sub-total: Carbon in living biomass	**103,2**	**120,5**	**128,9**	**0,8**	**0,8**	**0,8**
Carbon in dead wood	9,8	10,2	10,5	0.1	0,1	0,1
Carbon in litter	46,7	48,5	50,4	1,9	2,0	1,8
Sub-total: Carbon in dead wood and litter	**56,5**	**58,7**	**60,9**	**2,0**	**2,1**	**1,9**
Soil carbon to a depth of 30 cm	140,0	145,4	151,1	5,8	6,4	5,5
TOTAL CARBON	**299,7**	**324,6**	**340,9**	**8,6**	**9,3**	**8,2**

7.6 Comments to National reporting table T 7

1. The calculations of carbon in biomass were carried out, according FRA 2005 methods. It was accepted that carbon makes 50 % of biomass (rate 0,5).

2. The amount of carbon in litter was estimated according to standard presented in appendix 5.7 of FRA 2005 and actual distribution of Lithuanian forest sites by their humidity. There were estimated that in 2000 62,05 % of all Lithuanian coniferous forests grow in dry soils and 37,95 % - in moist soils.

    According to that, carbon amount in litter is:

$$((27*62,05)+(26*37,95))/100=26,62 \text{ t/ha}$$

25,22 % of broadleaved forests grow in dry and 74.78 % - in moist soils.
Carbon amount in the broadleaved forests is:

$$((28*25,22)+(16*74,78))/100=19,03 \text{ t/ha}$$

Coniferous forests cover 61,16 % of total forest area of Lithuania and broadleaved forests cover the rest 38,84 %. According to that, the average carbon amount in all Lithuanian forest is:

$$((26,62*61,16)+(19,03*38,84))/100= \textbf{24 t/ha}$$

The estimated amount of carbon (24 t/ha) was used for calculations of carbon amount stored in "Forests" and "Other wooded land" for the year of 1990, 200 and 2005.

3. The calculations of carbon storage in the soil was done according to standard presented in appendix 5.8 of FRA 2005 and actual distribution of Lithuanian forest by humidity and fertility. According to experts, the distribution of soils in Lithuania is:

                dry HAC soils   – 21,9 %
                dry sandy soils   - 24,5 %
                moist HAC soils   - 26,2 %
                moist spondic soils – 13.3 %
                wetlands soils   - 14,1 %

Applying the carbon amount for "Cold temperate" conditions, the amount of carbon, stored in 1 ha of soils in Lithuania is:

$$((21,9*50)+24,5*34)+(26,5*95)+(13,3*115)+(14,1*87))/100=\textbf{72 t/ha}$$

The following amount of carbon (72 t/ha) was used in calculations for carbon amount in soils for both "Forest" and "Other wooded land " for the year of 1990, 2000 and 2005.

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 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
1.Lietuvos miškų ūkio statistika 2003. Kaunas, 2003, 112 p. (Lithuanian statistical Yearbook of forestry 2003. Kaunas, 2003, p.112)	H	Forest	1989-1992, 1998-2003 2001-2003	Disturbance by insects, diseases, game, abiotic. Disturbance by fire
2.Lietuvos miškų metraštis XX amžius. Vilnius, 2003. p.264-273 (The chronicle of Lithuanian forests XX Century. Vilnius, 2003. p.264-273)	H	Forest	1989-1992, 1998-2000	Disturbance by fire

8.2.2   Classification and definitions

National class	Definition
Abiotic agents	Forest areas damaged by windthrows, windbreaks, snowbreaks, affected by flood droughts and industrial pollution

8.2.3   Original data

FRA-2005 Categories	Average annual area affected (1000 hectares)								
	Forests								
	1989	**1990**	**1991**	**1992**	**1998**	**1999**	**2000**	**2001**	**2002**
Disturbance by fire	0,058	0,134	0,064	0,971	0,054	0,494	0,352	0,111	0,746
Disturbance by insects	9,032	7,791	8,177	32,497	13,953	13,058	48,981	51,798	27,82
Disturbance by diseases	6,339	3,539	5,478	3,561	4,680	9,189	9,940	22,412	21,520
Other disturbance,total	64,127	40,674	36,525	106,821	24,230	107,126	114,782	37,972	94,574
- abiotic agents	45,655	12,221	9,96	80,495	6,619	87,968	97,255	21,163	80,46
- game	18,53	25,587	26,629	27,297	17,665	19,652	17,879	16,92	14,86

8.3   Analysis and processing of national data

8.3.1   Estimation and forecasting

The average for 1990 was obtained, using the data of 1989-1992, and the average for the 2000 was calculated respectively using data of 1998-2000.

8.4   Reclassification into FRA 2005 classes

Not applied.

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	0,3	0,4	No data	No data
Disturbance by insects	14,4	31,1		
Disturbance by diseases	4,7	13,5		
Other disturbance	62,0	75,7		

8.6   Comments to National reporting table T8

The data on damages in "Other wooded land" is absent.

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
1.LIETUVOS DENDROFLORA (DENDROFLORA OF LITHUANIA), KAUNAS, LUTUTĖ, 2003, PP.48, 59,60.	H	Forest, OWL native tree species	2000	
HTTP://WWW.REDLIST.ORG	H	Critically endangered, endangered and vulnerable native tree species		

9.2.2   Classification and definitions

Comply with the FRA 2005 definitions.

9.2.3   Original data

FRA 2005 Categories	Number of species (year 2000)
Native tree species	24
Critically endangered tree species	0
Endangered tree species	0
Vulnerable tree species	0

9.3   Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species	24
Critically endangered tree species	0
Endangered tree species	0
Vulnerable tree species	0

9.4   Comments to National reporting table T9

Native tree species of Lithuania are:

1.Acer platanoides L.
2.Alnus glutinosa (L.) Gaertn.
3.Alnus incana (L.) Moench
4.Betula pendula Roth.
5.Betula pubescens Ehrh.
6.Carpinus betulus L.
7.Fraxinus excelsior L.
8.Malus sylvestris (L.) Mill.
9.Padus avium Mill.
10.Picea abies (L.) H. Karst.
11.Pinus sylvestris L.
12.Populus tremula L.
13.Pyrus pyraster (L.) Burgsd.
14.Quercus robur L.
15.Quercus petraea (Matt.) Liebl.
16.Salix alba L.
17.Salix caprea L.
18.Salix fragilis L.
19.Salix pentandra L.
20.Sorbus aucuparia L.
21.Tilia cordata Mill.
22.Ulmus glabra Huds.
23.Ulmus laevis Pall.
24.Ulmus minor Mill.

10 Table T10 – Growing stock composition

FRA 2005 Categories and definitions

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

Pine	Pinus sylvestris
Spruce	Picea abies
Birch	Betula pendula
Aspen	Populus tremula
Alder black	Alnus glutinosa
Alder grey	Alnus incana
Oak	Quercus robur
Ash	Fraxinus excelsior
Lime	Tilia cordata
Hornbeam	Carpinus betulus

10.1 National data

10.1.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
1.Lietuvos miškų statistika.1998 m. sausio 1 d. valstybinė apskaita (Lithuanian Forest Statistics 1998.01.01). Kaunas, 1998	H	Forest	1997	
2.Lietuvos miškų valstybinė apskaita 2001m. sausio 1d. (Lithuanian Forest Assessment. January 1,2001 Kaunas, 2001	H	Forest	2000	
STATE FOREST SURVEY SERVICE	H	Lime, Hornbeam	1997,2000	Growing stck is calculated directly from SFSS data base

10.1.2 Original data

FRA 2005 Categories / Species name (Common name and scientific names)	**Growing Stock in Forests (million m³)**	
	1997	**2000**
Pine Pinus sylvestris	145,0	156,1
Spruce Picea abies	85,1	86,2
Birch Betula pendula	60,9	65,3
Aspen Populus tremula	11,2	12,0
Alder black Alnus glutinosa	19,8	22,0
Alder grey Alnus incana	10,8	13,4
Oak Quercus robur	6,2	6,8
Ash Fraxinus excelsior	7,6	8,5
Lime Tilia cordata	0,6	0,7
Hornbeam Carpinus betulus	0,4	0,5
Other	0,8	1,0

TOTAL	348.4	372,5

10.2 Analysis and processing of national data

10.2.1 Calibration

Not applied.

10.2.2 Estimation and forecasting

The data for the 1990 is obtained, when extrapolating the data of 2000 and 1997.

10.3 Data for National reporting table T10

FRA 2005 Categories / Species name (Common and scientific name)	Growing Stock in Forests (million m³)	
	1990	**2000**
Pine Pinus sylvestris	129,1	156,1
Spruce Picea abies	85,4	86,2
Birch Betula pendula	54,5	65,3
Aspen Populus tremula	10,3	12,0
Alder black Alnus glutinosa	17,7	22,0
Alder grey Alnus incana	9,4	13,4
Oak Quercus robur	5,4	6,8
Ash Fraxinus excelsior	6,4	8,5
Lime Tilia cordata	0,6	0,7
Hornbeam Carpinus betulus	0,4	0,5
Other	0,6	1,0
TOTAL	**319.8**	**372,5**

10.4 Comments to National reporting table T10

The distribution of volume by to tree species was calculated according to forest types.

11 Table T11 – Wood removal

11.1 FRA 2005 Categories and definitions

Category	Definition
Industrial wood removal	The wood removed (volume of round wood over bark) for production of goods and services other than energy production (wood fuel).
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
1.Lietuvos miškų ūkio statistika 2003. Kaunas, 2003, 112 p. (Lithuanian statistical Yearbook of forestry 2003. Kaunas, 2003, p.112)	H	Wood removal	1990-2003	
2. Lebedys A. and D. Vižlianskas. Forest utilisation and its structure in 1980-1999. In: Brukas, V., F. Helles, P. Tarp and A. Tebera. (Eds.) 2000. Potentials and Perspectives for Balanced development in Lithuanian forestry. Lithuanian University of Agriculture, The Royal Veterinary and Agricultural University, Unit of Forestry, Forestry Discussion paper. pp 30-37	H	Wood removal	1988-1989	
3.Medienos tūrio lentelės. Kaunas, 1997, 158 p. (Yield tables. Kaunas ,1997, 158p.)				Percentage of bark volume

11.2.2 Classification and definitions

Comply with FRA 2005 definitions.

11.2.3 Original data

FRA 2005 Categories	Volume in 1000 cubic meters of round wood under bark										
	Forest										
	1988	1989	1990	1991	1992	1998	1999	2000	2001	2002	2003
Industrial roundwood	2478	2412	2312	2513	2511	3709	3800	3935	4220	4862	4523
Woodfuel	778	758	726	789	788	1170	1124	1411	1480	1441	1938
TOTAL for Country	3256	3170	3038	3302	3299	4879	4924	5246	5700	6303	6461

Wood volume over bark is found, by dividing wood volume under bark by 0,88.. Bark volume amounts to 12 % from the wood volume over bark.

FRA 2005 Categories	Volume in 1000 cubic meters of round wood over bark										
	Forest										
	1988	1989	1990	1991	1992	1998	1999	2000	2001	2002	2003
Industrial roundwood	2816	2741	2627	2856	2855	4215	4318	4472	4795	5525	5140
Woodfuel	884	861	825	897	895	1330	1277	1603	1682	1638	2202
TOTAL for Country	3700	3602	3452	3753	3750	5545	5595	6075	6477	7163	7342

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

The data for 2005 were obtained by extrapolating the data of 1999-2003.

11.4 Reclassification into FRA 2005 classes

Not applied.

11.5 Data for National reporting table T11

FRA 2005 Categories	Volume in 1000 cubic meters of round wood over bark					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	2779	4665	5881			
Woodfuel	872	1506	1846			
TOTAL for Country	3651	6171	7727	No data	No data	No data

11.6 Comments to National reporting table T11

1. The data in the Tables 3.1 and 3.2 of FRA 2005, of Appendix 3 is presented only from 1992, and the amounts of fuel wood in some years were given together with wood for technological needs. It is reason that for this report were used data from 11.2.1/1 and 11.2.1/2. Amounts of fuel wood for 1988-1994 were calculated, using the average percentage of fuel wood estimated in 1995-2003 - 23,9% from total removed wood.

2. The fuel wood received by owners from their own estates and used for their own needs, is not included in this assessment due to the absence of such data.

3. High increase of removals during 15 years can be explained by gradual increasing of private forest areas in the period of 1992-2003. Private forests in 2004 contain 29,7% while reserved for restitution – 20,5%. Cuttings in reserved for restitution forests are forbidden up to their restitution.

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 (wood fuel).
Value of woodfuel removal	Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
MEC naujienos. 1999 sausis. Vilnius, 1999. (News of MEC. January, 1999.)	H	Price of round wood	1998	
MEC naujienos. 2000 sausis. Vilnius, 2000. (News of MEC. January, 2000.)	H	Price of round wood	1999	
MECnaujienos.2001sausis. Vilnius, 2001. (News of MEC. January, 2001.)	H	Price of round wood	2000	
MEC naujienos. 2002 sausis. Vilnius, 2002. (News of MEC. January, 2002.)	H	Price of round wood	2001	
MEC naujienos. 2003 sausis. Vilnius, 2003. (News of MEC. January, 2003.)	H	Price of round wood	2002	

12.2.2 Classification and definitions

Comply with FRA 2005 definitions.

12.2.3 Original data

FRA 2005 Categories	Forest										
	1988	**1989**	**1990**	**1991**	**1992**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Volume in 1000 m^3 of roundwood over bark Industrial round wood	2816	2741	2627	2856	2855	4215	4318	4472	4795	5525	5140
Volume in 1000 m^3 of roundwood over bark Wood fuel	884	861	825	897	895	1330	1277	1603	1682	1638	2202
Price of Industrial roundwood, m^3/LTL	No data	No data	No data	No data	No data	107	103	93	85	85	85
Price of Woodfuel, m^3/LTL I	No data	No data	No data	No data	No data	24	23	21	21	23	26
Value of Industrial roundwood, LTL						451005	444754	415896	407575	469625	
Value of Woodfuel, LTL						31920	29371	33663	35322	37674	
Rate LTL/USD						4,0	4,0	4,0	4,0	3,311	2,762
Value of Industrial roundwood, USD						112751	111189	103974	101894	141838	
Value OF WOODFUEL, USD						7980	7343	8416	8831	11378	

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

The volumes of timber for the 2005 were used from the table T 11.5. Industrial wood prices in the period 1999-2003 decrease. In the 2004 year wood prices started to increase. It was reasonable for 2005 year to use average prices of 1999-2003 period instead of 2003 year prices. Prices for fuel wood in 2005 were predicted according prices of 2003 year as more

reasonable. The value of wood was estimated, using the exchange rate of 2003, which was 1USD= 2,762 LTL.

12.4 Reclassification into FRA 2005 classes

Not applied.

12.5 Data for National reporting table T12

FRA 2005 Categories	Value of round wood removal (1000 USD)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial round wood		114329	191633			
Wood fuel		8790	17377			
TOTAL for Country	**No data**	**123119**	**209010**	**No data**	**No data**	**No data**

12.6 Comments to National reporting table T12

It was impossible to estimate the value of timber for 1988-1992, as wood prices were unstable and currency exchange rates were constantly changing, due to restitution of independence in Lithuania and its economical crisis.

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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
Plant products / raw material
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
Animal products / raw material
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
1.Lietuvos miškų ūkio statistika 2003. Kaunas, 2003, 112 p. (Lithuanian statistical Yearbook of forestry 2003. Kaunas, 2003, p.112)	M	Mushrooms, Berries, Raw material for medicine, Game, Bush meat	1996-2003 2003	
2.Lietuvos miškų metraštis XX amžius. Vilnius, 2003, p.197-199,407-430 (The chronicle of Lithuanian forests XX Century. Vilnius, 2003, p.197-199,407-430)	M H	Game, Bush meat, Pine resin	1990-2000 1990-2000	

13.2.2 Classification and definitions

The national data is presented in Table 13.2.3. The data is distributed according to FRA requirements.

13.2.3 Original data

NWF products	Unit	1990	1996	1998	1999	2000	2001	2002
1. Mushrooms	1000 kg.	No data	1933	3386,6	840,6	2187,1	3989,3	449,8
2. Berries		No data	1615	2162,8	202,9	838,5	1938,9	2175,6
Sum. 1 Food	**1000 kg**	**No data**	**3548**	**5549,4**	**1043,5**	**3025,6**	**5928,2**	**2625,4**

NWF products	Unit	1990	1994	1998	1999	2000	2001	2002
Raw for medicine	1000 kg	No data	53,6	68,0	56,9	59,3	26,6	35,4
Sum. 3 Raw for medicine	**1000 kg**	**No data**	**53,6**	**68,0**	**56,9**	**59,3**	**26,6**	**35,4**

NWF products	Unit	1990	1994	2000
Christmas trees	1000 pcs.	No data	280	300
Sum. 6 Ornamental plants	**1000**	**No data**	**280**	**300**

NWF products	Unit	1990	1994	2000
Pine resin	1000 kg	983	146	0
Sum. 7 Exudates	**1000 kg**	**983**	**146**	**0**

NWF products	Unit	1990	2000	2003
1. . Grey hare *Lepus europaeus*	1000 pcs.	5,250	14,621	8,346
2. Beaver *Castor fiber*		2,968	2,064	3,907
3. Wolf *Canis lupus*		0,120	0,087	0,076
4. Red fox *Vulpes vulpes*		4,530	14,726	13,018
5. Racoon dog *Nyctereutes procyonoides*		1,200	3,642	4,525
6. Marten *Martes martes*		0,487	0,361	0,473
Sum. 10 Skins	**1000 pcs**	**14,555**	**35,501**	**30,345**

NWF products	Unit	1990	2000	2003
1. Moose *Alces alces*	1000 kg	399,3	66,3	75,6
2. Red deer *Cervus elaphus*		399,4	202,8	128,8
3. Fallow deer *Dama dama*		0	2,9	1,6
4. Roe deer *Capreolus capreolus*		240,8	125,2	289,2
5. Wild boar *Sus scrofa*		1644,4	756,7	721,0
Sum. 12 Bush meat	**1000 kg**	**2683,9**	**1153,9**	**1216,2**

Note: The national data are not available for other years, than presented in table 13.2.3

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

The amounts for 2005 are obtained when extrapolating the data of 2000 and 2003.

13.4 Reclassification into FRA 2005 classes

Not applied.

6. Ornamental plants
1 Christmas Tree   =   10 kg

13.5 Data for National reporting table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990	2000	2005
Plant products / raw material					
1. Food		1000 kg	3400	3634	3800
2. Fodder					
3. Raw material for medicine and aromatic products		1000 kg	55	49	50
4. Raw material for colorants and dyes					
5. Raw material for utensils, handicrafts & construction					
6. Ornamental plants		1000 kg	2800	3000	3000
7. Exudates		1000 kg	983	0	0
8. Other plant products					
Animal products / raw material					
9. Living animals					
10. Hides, skins and trophies		1000 pcs	14,6	35,5	30,0
11. Wild honey and bee-wax					
12. Bush meat		1000 kg	2684	1154	1250
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

The data on mushrooms, berries and raw material for medicine for 2000 are given as mean data during 1998-2002. The weight of bush meat is given of disembowelled animal, including skin.

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
Plant products / raw material
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
Animal products / raw material
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

14.2.2 Classification and definitions

Comply with FRA 2005, definitions.

14.2.3 Original data

FRA 2005 Categories	Value of the NWFP removed (1000 USD)		
	1990	**2000**	
Plant products / raw material 6. Ornamental plants	No data	750	
Animal products / raw material 12. Bush meat	No data	620	

14.3 Analysis and processing of national data

14.3.1 Estimation and forecasting

The data of 2005 are derived, when extrapolating the data of 2000.

14.4 Reclassification into FRA 2005 classes

Not applied.

14.5 Data for National reporting table T14

FRA 2005 Categories	Value of the NWFP removed (1000 USD)		
	1990	**2000**	**2005**
Plant products / raw material 1. Food	No data	No data	No data
2. Fodder			
3. Raw material for medicine and aromatic products	No data	No data	No data
4. Raw material for colorants and dyes			
5. Raw material for utensils, handicrafts & construction			
6. Ornamental plants	No data	750	1086
7. Exudates	No data	No data	No data
8. Other plant products			
Animal products / raw material 9. Living animals			
10. Hides, skins and trophies	No data	No data	No data
11. Wild honey and bee-wax			
12. Bush meat	No data	620	973
13. Raw material for medicine			
14. Raw material for colorants			
15. Other edible animal products			
16. Other non-edible animal products			
TOTAL			

14.6 Comments to National reporting table T14

Prices for bush meat were taken in 2000 year. Exchange rate for 2000 is 1USD=4LTL. Exchange rate for 2003-2005 is 1USD =2,762 LTL;

The price and weight of Christmas tree were determined in the expert way. Price is 10 LTL and weight is 10 kg per tree. When converting the currency, the same exchange rate was used as it was used for bush meat.

Due to different reasons, it was impossible to estimate the value of other forest products.

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 round wood, wood fuel 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
1. 1.Lietuvos miškų ūkio statistika 2003. Kaunas, 2003, 112 p. **(LITHUANIAN STATISTICAL YEARBOOK OF FORESTRY 2003. KAUNAS, 2003, P.112**)		Employment in forestry	1990,2000	

15.2.2 Classification and definitions

Comply with FRA 2005 definitions.

15.2.3 Original data

FRA 2005 Categories	Employment (1000 person-years)	
	1990	**2000**
Primary production of goods	No data	No data
Provision of services	No data	No data
Unspecified forestry activities	14,6	13,7
TOTAL	**14,6**	**13.7**

15.3 Analysis and processing of national data

15.3.1 Estimation and forecasting

Not applied.

15.4 Reclassification into FRA 2005 classes

Not applied.

15.5 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	**2000**
Primary production of goods	No data	No data
Provision of services	No data	No data
Unspecified forestry activities	14,6	13,7
TOTAL	**14,6**	**13.7**

15.6 Comments to National reporting table T15

The data on more detailed distribution of employees is absent.