Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT

COUNTRY REPORTS

SLOVENIA

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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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Contents

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
Cadastre of Actual Agricultural Land Use. Ministry of Agriculture, Forestry and Food. 2002.	H	Land use / Land cover	1998	Land use photo interpreted in scale 1:5.000 from aerial imagery acquired in years 1994 to 2001; 1998 is the average year; covers also all the forested and urban areas
Spontaneous Afforestation of Abandoned Farmland in Slovenia. Hočevar M. Unpublished manuscript. Slovenian Forestry Institute. 2004.	M	Forest cover change	1975 - 2000	Yearly rate of transition is 5.071 ha during 1975-2000* (computed as a difference between 1975 forest mask scale 1:50.000 and the Cadastre of actual agricultural land use, MAFF 2002)
Forest Cover Inventory. Slovenian Forest Service. 2004.	M	Area of *Pinus mugo* stands	1990 - 2004	Its area of 16.583 ha is considered constant during the 1990-2000 period (taken from forest management plans)
Statistical Office of Republic of Slovenia. 2004.	M	Area of inland water bodies	1997	Water bodies larger than 1 ha and rivers wider than 5 m

* This rate of farmland-to-forest transition was selected as the best estimate, because it is between the two estimates of the Slovenian Forest Service (i.e. 5.723 ha/year during 1990-2000 and 4.756 ha/year during 1980-2002, as computed from forest management plans).

1.2.2 Classification and definitions

The relevant subset of classes of the Cadastre of actual agricultural land use, Ministry of Agriculture, Forestry and Food, 2002:

National class ID	Description*
1221	Intensive orchards
1222	Extensive orchards
1230	Olive groves
1240	Other permanent crops
1322	Other extensive meadows
1410	Overgrown areas
1420	Forest plantations
1500	Trees and bushes
2000	Forest and other overgrowth areas
5000	Dried open areas with special vegetation

* For exact definitions see the attached document or:
http://www.gu.gov.si/gu/projekti/nepremic/Podprojekt3.htm

The yearly rate of spontaneous afforestation of abandoned farmland during 1975 – 2000 (Hočevar M., 2004. Spontaneous afforestation of abandoned farmland in Slovenia. Unpublished manuscript. Slovenian Forestry Institute): map differencing between forest masks of 1975 and 1998. The 1975 map corresponds to the forest layer was digitized of the 1981 topographical map in scale 1:5.000, which is a result of photo interpretation of aerial images dated around 1975. The 1998 mask corresponds to the class 2000 of the Cadastre of actual agricultural land use, Ministry of Agriculture, Forestry and Food, 2002.

The area of Pinus mugo stands during 1990 – 2000 (Slovenian Forest Service, 2004. Forest cover inventory): the total area of forest compartments where *Pinus mugo* dominates, including also *Pinus mugo* stands with individual *Picea abies* or *Larix decidua* trees.

The area of water inland bodies (Statistical Office of Republic of Slovenia, 2004): water inland bodies larger than 1 ha and rivers wider than 5 m.

Forest definition (Slovenian Forest Act, 1993):
(1) Forest means land overgrown with forest trees in the form of stands or other forest trees which provides any of the functions of a forest. Forest according to this Act also includes overgrown plots of land defined as forest in the spatial element of the forest management plan.
(2) The forest infrastructure not allocated into separate lot is an integral part of the forest land.
(3) The following are not forest within the meaning of this act: individual forest trees, groups of forest trees up to an area of 0,05 hectares, non-autochthonous riverine and windbelt trees, avenues, parks, plantations of forest trees, pens for rearing game, and pastures overgrown with forest trees if used for pasturing, irrespective of how they are described in the land register.

1.2.3 Original data

The **structure of actual land use in 1998*** as estimated from the GIS database of the Cadastre of actual agricultural land use, Ministry of Agriculture, Forestry and Food, 2002:

National class ID	Definition	Original Area (ha)
1410	Overgrown areas	25.128
1420	Forest plantations	591
1500	Trees and bushes [1]	17.333
2000 includes Pinus m.	Forest and other overgrowth areas	1.209.033
5000 includes Pinus m	Dried open areas with special vegetation	9.189
	FRA Forest area	
1322	Other extensive meadows [3]	190.546
	Pinus mugo stands [3]	16.583
	FRA Other wooded land	
1221	Intensive orchards	+5.057
1222	Extensive orchards	+19.180
1230	Olive groves	+1.157
1240	Other permanent crops	+44
	FRA Tree cover within Other land [4]	**25.438**
	FRA Other land [5]	**739.719**
	Inland water bodies [6]	**13.237**
	SLOVENIA Total	**2.027.300**

* 1998 is the average year of the aerial imagery that was the basis for the photo interpretation of the cadastre.

The area above are given by the Cadastre of actual agricultural land use (Ministry of Agriculture, Forestry and Food, 2002), which is the most accurate and most precise land use inventory to date in Slovenia. This area is valid for the year 1998.

Footnotes:

[1] The class 1500 contains small patches of forest and other natural areas within farmland matrix. Only patches larger than 5.000 m^2 were taken into account (4.371 ha out of 17.333 ha), and from this only 36,5 % was to be actual forest cover (i.e. 1595 ha). The proportion of 36,5 % is an estimate based on photo interpretation of aerial orthophotos (Slovenian Forest Service and FAO, 2004. Supply and Utilization of Bioenergy to Promote Sustainable Forest Management).

[2] National classes 2000 and 5000 contain both forest and *Pinus mugo* stands (Alenka Rotter, Ministry of Agriculture, Forestry and Food, 2004. Pers. com.), the 16.583 ha of *Pinus mugo* stands are subtracted from the total area of the 2 classes above.

[3] The 16.583 ha of *Pinus mugo* stands are taken into account under the Other wooded land, together with 14,5 % of the class 1322 (Other extensive meadows), which represents mostly abandoned meadows in the initial stages of spontaneous reafforestation, which already show some bush and tree encroachment. The proportion of 14,5 % is an estimate based on photo interpretation of aerial orthophotos (Slovenian Forest Service and FAO, 2004. Supply and Utilization of Bioenergy to Promote Sustainable Forest Management).

[4] The area was computed as the total of the cadastral classes: 1221, 1222, 1230 and 1240.

[5] Other land = Total country area – (Forest + Other wooded land + Inland water bodies).

[6] Including areas larger than 1 ha and rivers wider than 5 m: 13.237 ha (Statistical Office of Republic of Slovenia, 2003)

[7] Correction factors for calculating Corrected area from Original data.

1.3 Analysis and processing of national data

National class ID	Definition	Original Area (ha)	Correction Factor[7]	Corrected Area (ha)	%
1410	Overgrown areas	25.128	1,000	25.128	
1420	Forest plantations	591	1,000	591	
1500	Trees and bushes [1]	17.333		1.595	
2000 includes Pinus m.	Forest and other overgrowth areas	1.209.033	1,000		
5000 includes Pinus m	Dried open areas with special vegetation	9.189	1,000		
2000 + 5000 (Exc. Pinus mungo) [2]				1.201.639	
	FRA Forest area			**1.228.953**	**60,68**
1322	Other extensive meadows [3]	190.546	0,145	27.629	
	Pinus mugo stands [3]	16.583	1,000	16.583	
	FRA Other wooded land			**44.212**	**2,18**
1221	Intensive orchards	+5.057	1,000	+5.057	
1222	Extensive orchards	+19.180	1,000	+19.180	
1230	Olive groves	+1.157	1,000	+1.157	
1240	Other permanent crops	+44	1,000	+44	
	FRA Tree cover within Other land [4]	**25.438**		**25.438**	**1,25**
	FRA Other land [5]	**739.719**			
	Inland water bodies [6]	**13.237**			
	SLOVENIA Total	**2.027.300**			**100,00**

1.3.1 Calibration

A calibration of the cadastral areas was performed to comply with the area of Slovenia of 2.027 (x1000) ha, which is a better estimate of the actual area of the country than the current FAO value. The Slovenian Statistical Office has already applied for this new value to be put in force with FAO before the official publication of the GFRA report (official letter to Mr. Dominic Ballayan, FAO Rome from 14.October 2004).

1.3.2 Estimation and forecasting

The area of Forest is valid for the year 1998. No comparable inventories exist for other dates, so the Forest area in 1990, in 2000 and in 2005 was computed by subtracting or adding yearly rate of forest area enlargement (Hočevar M., 2004).

The **yearly rate of spontaneous afforestation of abandoned farmland during 1975 - 2000**: 5.071 ha/year (Hočevar M., 2004. Spontaneous afforestation of abandoned farmland in Slovenia. Unpublished manuscript. Slovenian Forestry Institute)

It is the expert opinion (Milan Hočevar and Andrej Kobler, Slovenian Forestry Institute; Dragan Matijašić, Slovenian Forest Service) that although in the process of land cover transformation the **Other wooded land** is being geographically shifted, this remains a stationary process during the analyzed period. This means that the overall area of this class does not change during 1990 – 2005.

The area of **tree cover within Other land**, which is valid for 1998, was then proportionately increased/decreased according to the changes in area of Other land.

Summary of estimation and forecasting:

	Year 1998	**Year 2000**	**Year 1990**	**Year 2005**
	Area (hectares)	Area (hectares)	Area (hectares)	Area (hectares)
Forest	1.228.950	1.239.092	1.188.382	1.264.447
Other wooded land	44.155	44.155	44.155	44.155
Other land	740.958	730.816	781.526	705.461
... With trees	25.438	25.090	26.831	24.219
Inland water bodies	13.237	13.237	13.237	13.237
TOTAL	2.027.300	2.027.300	2.027.300	2.027.300

1.4 Reclassification into FRA 2005 classes

See heading 1.3.

1.5 Data for National reporting table T1

FRA 2005 Categories	**Area (1000 hectares)**		
	1990	**2000**	**2005**
Forest	1188	1239	1264
Other wooded land	44	44	44
Other land	782	731	705
...of which with tree cover [1)]	27	25	24
Inland water bodies	13	13	13
TOTAL	2.027	2.027	2.026

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

1.6 Comments to National reporting table T1

Working group:

- mag. A. Kobler, dr. M. Hočevar (GIS), A. Rotter (MKGP), D. Šabić (SURS), D. Matjašić (ZGS).

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
Annual Report of Slovenian Forest Service. Slovenian Forest Service. 2003.	H	Ownership structure	1990, 2000*	Data based on forest management plans that were made in the period 1994 – 2003 (data collected each year on 1/10 of the total area and then merged into a common database).
Database KRIM. Surveying and Mapping Authority of the Republic of Slovenia. 2003.	M		2003	Data about cadastre. Ownership is taken over land register and is not up to dated. Official data of land ownership in Slovenia. Yearly up to dated only for 1/10 of areas (areas of forest plans in renewal process)

* Annual Report of Slovenian Forest Service, published in 2003, contains data for years 1990 and 2000.

2.2.2 Classification and definitions

National class	Definition
Private ownership	Land owned by individuals, families, private-cooperatives, enterprises, religious institutions and other private institutions.
Public ownership	Land owned by the State (ministries, Farmland and Forest Fund of Slovenia) or by local communities.

2.2.3 Original data

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	675	815	NDA	42
Public ownership	400	343	NDA	2
TOTAL	**1.075**	**1.158**	**44***	**44***

*The data from T1of this report.

Area of other wooded land in private ownership is calculated as 27.629 ha (14,5 % of other extensive meadows as explained in T1 which is assumed to be in private ownership) and 14.311 ha (86,3 % share of *Pinus mugo* stands in private ownership). The rest of 2.060 ha are assumed to be in public ownership.

2.3 Analysis and processing of national data

2.3.1 Calibration

The total area is calibrated with Forest area in T1 and the difference is added to the private ownership.

2.3.2 Estimation and forecasting

The process of denationalisation is not finished yet. Some bigger properties are still in the process of proof serving on the courts. It is estimated that at the end of the process the share of private forests would be larger. On the other hand a government of Slovenia has a policy of purchasing private forest land and an obligation to repurchase protected forest areas.

2.4 Reclassification into FRA 2005 classes

There is no need to reclassify national forest data into FRA 2005 classes.

2.5 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	788	896	42	42
Public ownership	400	343	2	2
Other ownership	0	0	0	0
TOTAL	**1.188**	**1.239**	**44**	**44**

2.6 Comments to National reporting table T2

Past statistics of forest areas in Slovenia are not directly comparable. There is a problem of different definitions of forest areas and also the fact that at least five years old data on average are used for the national statistic reports. This is the reason why data from national statistic – original data for 2000 (1.158.000 ha of forests) are even lower than data from table T1 for the data of forest area 1990 (1.188.000 ha). In the National reporting table all calibrated forest areas has been added to private ownership.

Working group:
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- D. Matijašić (ZGS),
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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
Slovenia Forest Service Database. Slovenian Forest Service. 2001-2004.	M	All	2004	
Regional Plans (2001 – 2010). Slovenia Forest Service. 2001.	M	All	2001	
Funkcije gozdov in gozdovi v prostoru v območnih gozdnogospodarskih načrtih. Pogačnik, J. Analiza ocena in predlogi. Ljubljana, Gozdarski vestnik, 5-6/92, str. 294-303. 1992.	M	All	1991	

3.2.2 Classification and definitions

National class	Definition
Protection of soil and water	Protective forests: Are forests in adverse ecological conditions which protect themselves, their land and lower lying land, and forests in which is a particular stress on any other ecological function.
Social services	A group of social functions (recreation, tourist, educational, defence, aestetic, research, hygiene-health , function of protection of the natural and cultural heritage)
Multiple purpose	Multi purpose forests: All forests are performing one or more forest functions. If there is no protective function on primary level (Protective forests) or no decleared forests with special purpose (with research, hygiene-health , function of protection of the natural or/and cultural heritage) there are Multi purpose forests.
Production	This function have all forests with planned wood extraction.
Conservation of biodiversity	All rare forest ecosystems and forests nearby rare forest ecosystems. These functions also have small forest ecosystems with rare or endangered plant species and ecosystems, which are important for preservation of rare and endangered animal species. Also all small forest patches designed for increasing forest biodiversity.

Each function or group of functions can be overlaid with some other function on primary, secondary or third level. This creates a function unit. Sum of areas of function units gives us forest area (but the sum of functions does not represent the whole forest area).

3.2.3.Original data

Primary function	**Area**	**%-age of area primary function serving total area with function**			
2000	**ha**	**Production**	**Protection**	**Conservation**	**Social Services**
Production	620.300	100	14	12	21
Protection	145.400	70	100	29	60
Conservation	76.600	88	31	100	76
Social Services	159.400	81	31	54	100

FRA 2005 Categories / Designated function	**Area (1000 hectares)**					
	Primary function			**Total area with function**		
	1990	**2000**		**1990**	**2000**	
Forest						
Production	581.784	620.333		992.093	1.057.772	
Protection of soil and water	76.069	145.418		221.083	399.960	
Conservation of biodiversity	4.979	76.620		52.396	253.386	
Social services	50.786	159.401		327.263	397.916	
Multiple purpose	357.533	140.354		not appl.	not appl.	
No or unknown function	0	0		not appl.	not appl.	
Total - Forest	**1.071,151**	**1.142,126**		**not appl.**	**not appl.**	
Other wooded land	**NDA**	**NDA**		**NDA**	NDA	

3.3 Analysis and processing of national data

3.3.1 Calibration

3.3.2 Estimation and forecasting

Linear regression was used for calculating values for some missing fields.

3.4 Reclassification into FRA 2005 classes

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	645	673	687	1.100	1.148	1.171
Protection of soil and water	84	158	161	245	434	443
Conservation of biodiversity	55	83	85	58	275	281
Social services	56	173	176	363	432	441
Multiple purpose	348	152	155	not appl.	not appl.	not appl.
No or unknown function	0	0	0	not appl.	not appl.	not appl.
Total - Forest	1.188	1.239	1.264	not appl.	not appl.	not appl.
Other wooded land						
Production	NDA	NDA	NDA	NDA	NDA	NDA
Protection of soil and water	NDA	NDA	NDA	NDA	NDA	NDA
Conservation of biodiversity	NDA	NDA	NDA	NDA	NDA	NDA
Social services	NDA	NDA	NDA	NDA	NDA	NDA
Multiple purpose	NDA	NDA	NDA	not appl.	not appl.	not appl.
No or unknown function	44	44	44	not appl.	not appl.	not appl.
Total – Other wooded land	44	44	44	not appl.	not appl.	not appl.

3.6 Comments to National reporting table T3

Multiple purpose = All forests minus Protection forests.

Working group:
- D. Matijašić, R. Pisek (ZGS).

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
Slovenia Forest Service Database. Slovenian Forest Service. 2001-2004.	M		1990 2000 2003	

4.2.2 Classification and definitions

National class	Definition
1	Natural tree composition is not modified (max 30%)
2	Natural tree composition is modified (from 31 to max 70%)
3	Natural tree composition is strongly modified (from 71 to max 90%)
4	Natural tree composition is altered (over 90 %)

4.2.3 Original data

Two sources were used. The first one was classes of natural tree composition and the second one were the information on forest reserves, protection forests and virgin forests areas.

SI Categories	Area (1000 hectares)					
	Forest			Other wooded land		
	1990	2000	2003	1990	2000	2005
1	582,696	621,306	629,845	NDA	NDA	NDA
2	349,888	373,072	378,199	NDA	NDA	NDA
3	106,003	113,026	114,580	NDA	NDA	NDA
4	31,953	34,070	34,538	44	44	44
TOTAL	**1.071,151**	**1.142,126**	**1.157,824**	**44**	**44**	**44**

	Area (1000 hectares)					
	Forest			Other wooded land		
	1990	2000	2003	1990	2000	2005
Forest reserves, protection forests, virgin forests	57,000	87,457	109,377	NDA	NDA	NDA

4.3 Analysis and processing of national data

4.3.1 Calibration

Not needed.

4.3.2 Estimation and forecasting

Calculus

Area of Primary forest =

$$Forest\ area\ T1 * \frac{Area\ Forest\ reserves,\ protection\ forest\ and\ virgin\ forest}{\sum_{1}^{4} SI}$$

Area of Modified natural forest =

$$Forest\ area\ T1 * \frac{\left(\sum_{1}^{3} SI\right) \cdot Area\ primary\ forest}{\sum_{1}^{4} SI}$$

Area of Semi-natural forest =

$$Forest\ area\ T1 * \frac{SI\ category\ 4}{\sum_{1}^{4} SI}$$

4.4 Reclassification into FRA 2005 classes

Forest reserves, protection forests and virgin forests areas are in FRA category - PRIMARY and our national class 4 is in FRA category - SEMI NATURAL. We don't have FRA categories PRODUCTIVE PLANTATION and PROTECTIVE PLANTATION (it's not a part of our forest definition).

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	63	95	119	NDA	NDA	NDA
Modified natural	1090	1107	1107	NDA	NDA	NDA
Semi-natural	35	37	38	NDA	NDA	NDA
Productive plantation	0	0	0	NDA	NDA	NDA
Protective plantation	0	0	0	NDA	NDA	NDA
TOTAL	1.188	1.239	1.264	44	44	44

4.6 Comments to National reporting table T4

Working group:
- D. Matijašić, R. Pisek (ZGS).

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
National Forest Inventory. Slovenian Forestry Institute. 2001-2004	H	growing stock[1], commercial growing stock[1]	NFI data since 2000; years applied: 2000	The NFI data permits direct calculation of growing stock according to the FRA categories and definitions.
Official data of the Slovenian Forest Service, based on the inventorying of Forest Management Units. Slovenian Forest Service. 2004 [2]	H	growing stock trend, commercial growing stock trend	Forest management plan data since 1960, years applied: 1990	Forest management plans data permit direct calculation of growing stock according to the FRA categories and definitions.

Remarks:

[1] Calculation of a tree volume is performed by means of tariffs (dbh). A tariff class is chosen using high curves and a forest type.

[2] Prior to 1998, when sampling on permanent sample plots turned an official system to be used for inventorying forest management units, the inventorying of forest management units was worked out by diverse methods (sampling on permanent sample plots, M6 method, 2x6 tree method, Bitterlich method, visual assessments). Since the current inventorying is successive (10% of forest area per year), only about 70% of the forest area has been inventoried by the new method.

5.2.2 Classification and definitions

National class	Definition
Growing stock	All living trees with the dbh>9,99 cm in all forest areas.
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 larger than 9,99.
Growing stock of other wooded lands[3]	All living trees with the dbh>9,99 cm in all forest areas.

Remark:

[3]Growing stock of other wooded lands was assessed by means of sampling as follows: 1. step: interpretation of orthoimages; 2. step: sampling of orthoimages; 3. step: callipering of trees belonging to previously selected areas.

5.2.3 Original data

5.3 Analysis and processing of national data

FRA 2005 Categories	Volume (million cubic meters over bark)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Growing stock (m3/ha)	230,00	270,00	282,50	60,00	60,00	60,00
Area (1000 ha)	1.188	1.239	1.264	44	44	44
Growing stock (.mio m3)	273,33	334,55	357,21	2,65	2,65	2,65
Commercial						
Growing stock (m3/ha)	230,00	270,00	282,50	60,00	60,00	60,00
Area (1000 ha)	1.133	1.130	1.155	44	44	44
Growing stock (.mio m3)	260,59	305,10	326,29	2,65	2,65	2,65

Growing stock (GS)
Forest

- Year **2000**:
  - Estimated growing stock per hectare (EGS00): **270 m3/ha**; source NFI 2000 (4km x 4km), M. Hočevar, estimated growing stock is lower limit of assessment (confidence interval)
  - Forest Area (FA00): **1.239.092 ha**; source Table 1

  Calculation:
  - Total growing stock (GS00) (million cubic metres over bark): EGS00*FA00 = **334,55 mio m3**

- Year **1990**:
  - Estimated accumulation of growing stock (trend) in time period 1990-2000: **4,0 m3/ha/year** or **40 m3/ha/10years**; source Forest management plan data, Slovenian Forest Service. Expert Team (Matijašić, Hočevar, Kovač) assessment
  - Forest Area (FA90): **1.188.382 ha**; source Table 1

  Calculation:
  - Estimated growing stock per hectare (EGS90): 270 m3/ha – 40 m3/ha **= 230 m3/ha**
  - Total growing stock (GS90) (million cubic metres over bark): EGS90*FA90 = **273,33 mio m3**

- Year **2005**:
  - Expected accumulation of growing stock (trend) in time period 2000-2005: **2,5 m3/ha/year** or **12,5 m3/ha/5years**; source Forest management plan data, Slovenian Forest Service. Expert Team (Matijašić, Hočevar, Kovač) forecasting
  - Forest Area (FA05): **1.264.447 ha**; source Table 1

  Calculation:
  - Estimated growing stock per hectare (EGS05): 270 m3/ha + 12,5 m3/ha **= 282,5 m3/ha**
  - Total growing stock (GS05) (million cubic metres over bark): EGS05*FA05 = **357,21 mio m3**

The estimate refers to the net growth rate (according to the sampling on permanent sample plots).

The difference in growth rate between two periods (4,0 and 2,5 m3/ha respectively) is due the changed method of growing stock volume estimation (see 5.2.1 remark 2) and expected increasing of tree cutting in future (2000-2005).

Other wooded land

- Estimated growing stock per hectare (EGSOWL90,00,05): **60 m3/ha**; source Forest management plan data, Slovenian Forest Service. Expert Team (Matijašić, Hočevar, Kovač) assessment
- Other wooded land area (OWLA90,00,05): **44.155 ha**; source Table 1

Calculation:
- Total growing stock of other wooded land (OWLGS90,00,05) (million cubic metres over bark): EGSOWL90,00,05*OWLA90,00,05 = **2,65 mio m3**

Commercial growing stock (CGS)
Forest

- forests area was reduced for the area of Protected forest; source: D. Matijašić.

- Year **2000**:
  - Estimated growing stock per hectare (EGS00): **270 m3/ha**; source NFI 2000 (4km x 4km), M. Hočevar, estimated growing stock is lower limit of assessment (confidence interval)
  - Forest Area (FA00): **1.239.092 ha**; source Table 1
  - Protected forest Area (PFA00): **109.000 ha**; source: D. Matijašić.

  Calculation:
  - Total commercial growing stock (CGS00) (million cubic metres over bark): EGS00*(FA00-PFA00) = **305,10 mio m3**

- Year **1990**:
  - Estimated growing stock per hectare (EGS90): **230 m3/ha**; source Table 5
  - Forest Area (FA90): **1.188.382 ha**; source Table 1
  - Protected forest Area (PFA90): **55.300 ha**; source: D. Matijašić..

  Calculation:
  - Total commercial growing stock (CGS90) (million cubic metres over bark): EGS90*(FA90-PFA90) = **260,59 mio m3**

- Year **2005**:
  - Estimated growing stock per hectare (EGS05): **282,5 m3/ha**; source Table 5
  - Forest Area (FA05): **1.264.447 ha**; source Table 1
  - Protected forest Area (PFA05): **109.000 ha**; source: D. Matijašić.

  Calculation:
  - Total commercial growing stock (CGS05) (million cubic metres over bark): EGS05*(FA05-PFA05) = **326,29 mio m3**

Other wooded land

Calculation:
- Total growing stock of other wooded land (OWLGS90,00,05) (million cubic metres over bark): EGSOWL90,00,05*OWLA90,00,05 = **2,65 mio m3**

5.3.1 Calibration

Not needed.

5.3.2 Estimation and forecasting

Growing stock: Because of data availability estimation for the year 1990 is not needed.
Other wooded land: See heading 5.3.

5.4 Reclassification into FRA 2005 classes

Not needed.

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	273.33	334.55	357.21	2.65	2.65	2.65
Commercial growing stock	260.59	305.10	326.29	2.65	2.65	2.65

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	cm	10	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	-	
3. Minimum diameter of branches included in Growing stock (W)	cm	7	
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	10	
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

- base data for growing stock estimation is NFI 2000 (4km x 4km).
- trends for growing stock accumulation are calculated from the Forest management data plane of Slovenian Forest Service.
- source for Forest Area is Table 1.
- source for Protected forest area D. Matijašić..

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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
Table 1	H	Area	1990, 2000, 2005	
Table 5	H	Growing stock	1990, 2000, 2005	
Table 10	H	Growing stock composition	1990, 2000, 2005	
Guidelines for Country Report to FRA 2005; Appendix 5, Table 5.2-6	M	WD, BEF, R, DWB		

6.2.2 Classification and definitions

6.2.3 Original data

6.3 Analysis and processing of national data

Forest	**Growing Stock**	**Growing Stock**	**Wood Density**	**Stem Biomass**	**Biomass Expansion Factor**	**Above Ground Biomass**	**Root-Shoot Ratio**	**Below-Ground Biomass**	**Total Living Biomass**	**Dead-Live Ratio**	**Dead Wood Biomass**	**Total Biomass**
Year 2000	GS%	GS	WD	SB	BEF	AGB	R	BGB	TLB	DLR	DWB	TB
Species	**%**	**mio m3**	**tonnes/m3**	**mio tonnes**		**mio tonnes**		**mio tonnes**	**mio tonnes**		**mio tonnes**	**mio tonnes**
Spruce	32,31	108,11	0,40	43,24	1,35	58,38	0,32	18,68	77,06	0,20	15,41	92,47
Beech	31,51	105,40	0,58	61,13	1,30	79,47	0,26	20,66	100,14	0,14	14,02	114,15
Fir	7,93	26,52	0,40	10,61	1,35	14,32	0,32	4,58	18,91	0,20	3,78	22,69
Oak	6,33	21,17	0,58	12,28	1,30	15,96	0,26	4,15	20,11	0,14	2,82	22,93
Pine	4,69	15,68	0,42	6,58	1,35	8,89	0,32	2,84	11,73	0,20	2,35	14,08
Hornbeam	2,62	8,77	0,63	5,53	1,30	7,18	0,26	1,87	9,05	0,14	1,27	10,32
Maple	2,58	8,63	0,52	4,49	1,30	5,83	0,26	1,52	7,35	0,14	1,03	8,38
Chestnut	1,78	5,96	0,48	2,86	1,30	3,72	0,26	0,97	4,68	0,14	0,66	5,34
Larch	1,32	4,41	0,46	2,03	1,35	2,74	0,32	0,88	3,61	0,20	0,72	4,34
Hop Hornbeam	1,19	3,97	0,57	2,27	1,30	2,95	0,26	0,77	3,71	0,14	0,52	4,23
Remainder	7,75	25,93	0,45	11,67	1,30	15,17	0,26	3,94	19,12	0,14	2,68	21,79
TOTAL	**100,00**	**334,55**		**162,68**		**214,61**		**60,86**	**275,47**		**45,24**	**320,72**
CALC:		**GS =Total GS * GS%**	**WD - App 5, T.5.2**	**SB = GS * WD**	**BEF - App 5, T.5.4**	**AGB = SB * BEF**	**R - App 5, T.5.5**	**BGB = AGB * R**	**TLB = AGB + BGB**	**DWB - App 5, T.5.6**	**DWB = TLB * DLR**	**TB = TLB + DWB**

Forest	**Growing Stock**	**Growing Stock**	**Wood Density**	**Stem Biomass**	**Biomass Expansion Factor**	**Above Ground Biomass**	**Root-Shoot Ratio**	**Below-Ground Biomass**	**Total Living Biomass**	**Dead-Live Ratio**	**Dead Wood Biomass**	**Total Biomass**
Year 1990	GS%	GS	WD	SB	BEF	AGB	R	BGB	TLB	DLR	DWB	TB
Species	**%**	**mio m3**	**tonnes/m3**	**mio tonnes**		**mio tonnes**		**mio tonnes**	**mio tonnes**		**mio tonnes**	**mio tonnes**
Spruce	32,97	90,13	0,40	36,05	1,35	48,67	0,32	15,57	64,24	0,20	12,85	77,09
Beech	31,35	85,68	0,58	49,70	1,30	64,60	0,26	16,80	81,40	0,14	11,40	92,80
Fir	9,82	26,83	0,40	10,73	1,35	14,49	0,32	4,64	19,12	0,20	3,82	22,95
Oak	5,84	15,97	0,58	9,26	1,30	12,04	0,26	3,13	15,17	0,14	2,12	17,29
Pine	4,88	13,34	0,42	5,60	1,35	7,56	0,32	2,42	9,98	0,20	2,00	11,98
Hornbeam	2,60	7,10	0,63	4,47	1,30	5,81	0,26	1,51	7,32	0,14	1,03	8,35
Maple	2,34	6,40	0,52	3,33	1,30	4,33	0,26	1,13	5,45	0,14	0,76	6,22
Chestnut	1,53	4,18	0,48	2,00	1,30	2,61	0,26	0,68	3,28	0,14	0,46	3,74
Larch	1,25	3,41	0,46	1,57	1,35	2,12	0,32	0,68	2,79	0,20	0,56	3,35
Hop Hornbeam	1,05	2,86	0,57	1,63	1,30	2,12	0,26	0,55	2,67	0,14	0,37	3,05
Remainder	6,38	17,44	0,45	7,85	1,30	10,20	0,26	2,65	12,86	0,14	1,80	14,66
TOTAL	**100,00**	**273,33**		**132,19**		**174,55**		**49,75**	**224,30**		**37,17**	**261,47**

Forest	**Growing Stock**	**Growing Stock**	**Wood Density**	**Stem Biomass**	**Biomass Expansion Factor**	**Above Ground Biomass**	**Root-Shoot Ratio**	**Below-Ground Biomass**	**Total Living Biomass**	**Dead-Live Ratio**	**Dead Wood Biomass**	**Total Biomass**
Year 2005	GS%	GS	WD	SB	BEF	AGB	R	BGB	TLB	DLR	DWB	TB
Species	**%**	**mio m3**	**tonnes/m3**	**mio tonnes**		**mio tonnes**		**mio tonnes**	**mio tonnes**		**mio tonnes**	**mio tonnes**
Spruce	32,31	115,43	0,40	46,17	1,35	62,33	0,32	19,95	82,28	0,20	16,46	98,73
Beech	31,51	112,54	0,58	65,27	1,30	84,85	0,26	22,06	106,92	0,14	14,97	121,88
Fir	7,93	28,32	0,40	11,33	1,35	15,29	0,32	4,89	20,19	0,20	4,04	24,22
Oak	6,33	22,60	0,58	13,11	1,30	17,04	0,26	4,43	21,47	0,14	3,01	24,48
Pine	4,69	16,74	0,42	7,03	1,35	9,49	0,32	3,04	12,53	0,20	2,51	15,03
Hornbeam	2,62	9,37	0,63	5,90	1,30	7,67	0,26	1,99	9,67	0,14	1,35	11,02
Maple	2,58	9,21	0,52	4,79	1,30	6,23	0,26	1,62	7,85	0,14	1,10	8,95
Chestnut	1,78	6,36	0,48	3,05	1,30	3,97	0,26	1,03	5,00	0,14	0,70	5,70
Larch	1,32	4,71	0,46	2,17	1,35	2,92	0,32	0,94	3,86	0,20	0,77	4,63
Hop Hornbeam	1,19	4,24	0,57	2,42	1,30	3,14	0,26	0,82	3,96	0,14	0,55	4,52
Remainder	7,75	27,69	0,45	12,46	1,30	16,20	0,26	4,21	20,41	0,14	2,86	23,27
TOTAL	**100,00**	**357,21**		**173,70**		**229,14**		**64,98**	**294,12**		**48,31**	**342,43**

OWL	**Growing Stock**	**Growing Stock**	**Wood Density**	**Stem Biomass**	**Biomass Expansion Factor**	**Above Ground Biomass**	**Root-Shoot Ratio**	**Below-Ground Biomass**	**Total Living Biomass**	**Dead-Live Ratio**	**Dead Wood Biomass**	**Total Biomass**
Year 2000	GS%	GS	WD	SB	BEF	AGB	R	BGB	TLB	DLR	DWB	TB
Species	**%**	**mio m3**	**tonnes/m3**	**mio tonnes**		**mio tonnes**		**mio tonnes**	**mio tonnes**		**mio tonnes**	**mio tonnes**
Spruce	32,31	0,86	0,40	0,34	1,35	0,46	0,32	0,15	0,61	0,20	0,12	0,73
Beech	31,51	0,83	0,58	0,48	1,30	0,63	0,26	0,16	0,79	0,14	0,11	0,90
Fir	7,93	0,21	0,40	0,08	1,35	0,11	0,32	0,04	0,15	0,20	0,03	0,18
Oak	6,33	0,17	0,58	0,10	1,30	0,13	0,26	0,03	0,16	0,14	0,02	0,18
Pine	4,69	0,12	0,42	0,05	1,35	0,07	0,32	0,02	0,09	0,20	0,02	0,11
Hornbeam	2,62	0,07	0,63	0,04	1,30	0,06	0,26	0,01	0,07	0,14	0,01	0,08
Maple	2,58	0,07	0,52	0,04	1,30	0,05	0,26	0,01	0,06	0,14	0,01	0,07
Chestnut	1,78	0,05	0,48	0,02	1,30	0,03	0,26	0,01	0,04	0,14	0,01	0,04
Larch	1,32	0,03	0,46	0,02	1,35	0,02	0,32	0,01	0,03	0,20	0,01	0,03
Hop Hornbeam	1,19	0,03	0,57	0,02	1,30	0,02	0,26	0,01	0,03	0,14	0,00	0,03
Remainder	7,75	0,21	0,45	0,09	1,30	0,12	0,26	0,03	0,15	0,14	0,02	0,17
TOTAL	**100,00**	**2,65**		**1,29**		**1,70**		**0,48**	**2,18**		**0,36**	**2,54**
CALC:		**GS =Total GS * GS%**	**WD - App 5, T.5.2**	**SB = GS * WD**	**BEF - App 5, T.5.4**	**AGB = SB * BEF**	**R - App 5, T.5.5**	**BGB = AGB * R**	**TLB = AGB + BGB**	**DWB - App 5, T.5.6**	**DWB = TLB * DLR**	**TB = TLB + DWB**

OWL	Growing Stock	Growing Stock	Wood Density	Stem Biomass	Biomass Expansion Factor	Above Ground Biomass	Root-Shoot Ratio	Below-Ground Biomass	Total Living Biomass	Dead-Live Ratio	Dead Wood Biomass	Total Biomass
Year 1990	GS%	GS	WD	SB	BEF	AGB	R	BGB	TLB	DLR	DWB	TB
Species	**%**	**mio m3**	**tonnes/m3**	**mio tonnes**		**mio tonnes**		**mio tonnes**	**mio tonnes**		**mio tonnes**	**mio tonnes**
Spruce	32,97	0,87	0,40	0,35	1,35	0,47	0,32	0,15	0,62	0,20	0,12	0,75
Beech	31,35	0,83	0,58	0,48	1,30	0,63	0,26	0,16	0,79	0,14	0,11	0,90
Fir	9,82	0,26	0,40	0,10	1,35	0,14	0,32	0,04	0,19	0,20	0,04	0,22
Oak	5,84	0,15	0,58	0,09	1,30	0,12	0,26	0,03	0,15	0,14	0,02	0,17
Pine	4,88	0,13	0,42	0,05	1,35	0,07	0,32	0,02	0,10	0,20	0,02	0,12
Hornbeam	2,60	0,07	0,63	0,04	1,30	0,06	0,26	0,01	0,07	0,14	0,01	0,08
Maple	2,34	0,06	0,52	0,03	1,30	0,04	0,26	0,01	0,05	0,14	0,01	0,06
Chestnut	1,53	0,04	0,48	0,02	1,30	0,03	0,26	0,01	0,03	0,14	0,00	0,04
Larch	1,25	0,03	0,46	0,02	1,35	0,02	0,32	0,01	0,03	0,20	0,01	0,03
Hop Hornbeam	1,05	0,03	0,57	0,02	1,30	0,02	0,26	0,01	0,03	0,14	0,00	0,03
Remainder	6,38	0,17	0,45	0,08	1,30	0,10	0,26	0,03	0,12	0,14	0,02	0,14
TOTAL	**100,00**	**2,65**		**1,28**		**1,69**		**0,48**	**2,17**		**0,36**	**2,53**

OWL	Growing Stock	Growing Stock	Wood Density	Stem Biomass	Biomass Expansion Factor	Above Ground Biomass	Root-Shoot Ratio	Below-Ground Biomass	Total Living Biomass	Dead-Live Ratio	Dead Wood Biomass	Total Biomass
Year 2005	GS%	GS	WD	SB	BEF	AGB	R	BGB	TLB	DLR	DWB	TB
Species	**%**	**mio m3**	**tonnes/m3**	**mio tonnes**		**mio tonnes**		**mio tonnes**	**mio tonnes**		**mio tonnes**	**mio tonnes**
Spruce	32,31	0,86	0,40	0,34	1,35	0,46	0,32	0,15	0,61	0,20	0,12	0,73
Beech	31,51	0,83	0,58	0,48	1,30	0,63	0,26	0,16	0,79	0,14	0,11	0,90
Fir	7,93	0,21	0,40	0,08	1,35	0,11	0,32	0,04	0,15	0,20	0,03	0,18
Oak	6,33	0,17	0,58	0,10	1,30	0,13	0,26	0,03	0,16	0,14	0,02	0,18
Pine	4,69	0,12	0,42	0,05	1,35	0,07	0,32	0,02	0,09	0,20	0,02	0,11
Hornbeam	2,62	0,07	0,63	0,04	1,30	0,06	0,26	0,01	0,07	0,14	0,01	0,08
Maple	2,58	0,07	0,52	0,04	1,30	0,05	0,26	0,01	0,06	0,14	0,01	0,07
Chestnut	1,78	0,05	0,48	0,02	1,30	0,03	0,26	0,01	0,04	0,14	0,01	0,04
Larch	1,32	0,03	0,46	0,02	1,35	0,02	0,32	0,01	0,03	0,20	0,01	0,03
Hop Hornbeam	1,19	0,03	0,57	0,02	1,30	0,02	0,26	0,01	0,03	0,14	0,00	0,03
Remainder	7,75	0,21	0,45	0,09	1,30	0,12	0,26	0,03	0,15	0,14	0,02	0,17
TOTAL	**100,00**	**2,65**		**1,29**		**1,70**		**0,48**	**2,18**		**0,36**	**2,54**

6.3.1 Calibration

6.3.2 Estimation and forecasting

6.4 Reclassification into FRA 2005 classes

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	174.55	214.61	229.14	1.69	1.70	1.70
Below-ground biomass	49.75	60.86	64.98	0.48	0.48	0.48
Dead wood biomass	37.17	45.24	48.31	0.36	0.36	0.36
TOTAL	**261,47**	**320,72**	**342,43**	**2,53**	**2,54**	**2,54**

Thresholds used by the country are the following:

6.6 Comments to National reporting table T6

Input data:
- *Area –Table 1*
- *Growing stock – Table 5*
- *Growing stock composition – Table 10*
- *Wood density (WD) – from Guidelines for country report to FRA 2005; Appendix 5, Table 5.2*
- *Biomass expansion factors (BEF) - from Guidelines for country report to FRA 2005; Appendix 5, Table 5.4*
- *Root-shoot biomass ratio (R) - from Guidelines for country report to FRA 2005; Appendix 5, Table 5.5*
- *Dead-live ratio (DLR) - - from Guidelines for country report to FRA 2005; Appendix 5, Table 5.6*

Methodological aspect:
- *Because of no-available country-specific nor regional or sub-regional (biomass) functions or values of WD, BEF and R, the default values provided by the IPCC-GPG were used for calculations.*
- *Biomass estimation was based on growing stock data (T5, T10) and calculation was simplified by using the estimated growing stock for the reference years from table T5 as input.*

Notes (assumptions):
- *Growing stock composition (share of tree species) for year 2005 is the same as in year 2000*
- *Growing stock composition for Forest and OWL is the same*

Working group:
- G. Kušar, dr. P. Simončič (GIS)

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
Table 1	H	Area	1990, 2000, 2005	
Table 6	H	Biomass stock	1990, 2000, 2005	

7.2.2 Classification and definitions

7.2.3 Original data

7.3 Analysis and processing of national data

Global conversion factor of 50% was used for estimation carbon content in biomass.

Soil carbon included carbon in litter was calculated from area (Table 1) and estimated values of soil carbon included litter: ***70 t/ha****; source: dr. Primož Simončič.*

7.3.1 Calibration

7.3.2 Estimation and forecasting

FRA 2005 Categories	Carbon (million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Area (1000 ha)	1.188	1.239	1.264	44	44	44
Above-ground biomass	87,27	107,31	114,57	0,85	0,85	0,85
Below-ground biomass	24,88	30,43	32,49	0,24	0,24	0,24
Dead wood biomass	18,59	22,62	24,15	0,18	0,18	0,18
TOTAL	130,74	160,36	171,22	1,27	1,27	1,27
Soil carbon included litter	83,19	86,74	88,51	3,09	3,09	3,09
TOTAL	**213,92**	**247,09**	**259,73**	**4,36**	**4,36**	**4,36**

- carbon/biomass factor **0,5;** source dr. P. Simončič
- soil carbon included litter factor: **70 t/ha,** source dr. P. Simončič.

7.4 Reclassification into FRA 2005 classes

7.5 Data for National reporting table T7

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	87.27	107.31	114.57	0.85	0.85	0.85
Carbon in below-ground biomass	24.88	30.43	32.49	0.24	0.24	0.24
Sub-total: Carbon in living biomass	**112,15**	**137,74**	**147,06**	**1,09**	**1,09**	**1,09**
Carbon in dead wood	18.59	22.62	24.15	0.18	0.18	0.18
Carbon in litter						
Sub-total: Carbon in dead wood and litter	**18,59**	**22,62**	**24,15**	**0,18**	**0,18**	**0,18**
Soil carbon to a depth of 20 cm[1]	83.19	86.74	88.51	3.09	3.09	3.09
TOTAL CARBON	**213,92**	**247,09**	**259,73**	**4,36**	**4,36**	**4,36**

Remark:
[1] Soil carbon + carbon in litter

7.6 Comments to National reporting table T7

Global conversion factor of 50% was used for estimation carbon content in biomass.

Soil carbon included carbon in litter was calculated from area (Table 1) and estimated values of soil carbon included litter: 70 t/ha; source: dr. Primož Simončič.

Working group:
- G. Kušar, dr. P. Simončič (GIS)

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
Annual Report of Slovenian Forest Service. Slovenian Forest Service. 2000.	H	m^3 of sanitary felling	1998-2002	In the report there are 11 categories of causes for sanitary felling
Calculation of area from annual report of Slovenian Forest Service	H	ha	1998-2002	

8.2.2 Classification and definitions

National class	Definition
cause - insects	the cause for sanitary felling are insects
cause - diseases	the cause for sanitary felling are tree diseases
other causes	the cause for sanitary felling are other causes

8.2.3 Original data

Sanitary felling in Slovenia for the year 2000, by causes of felling in m3 (Annual report of Slovenian Forest Service):

Causes of felling	Tree species	1998 m^3	1999 m^3	2000 m^3	2001 m^3	2002 m^3	Sum
Insects	Conifers	169.949	100.777	116.798	131.647	165.980	685.150
	Deciduous	1.558	1.814	2.005	1.082	1.111	7.568
	Together	171.506	102.590	118.802	132.729	167.091	692.718
Tree disease	Conifers	71.713	55.590	69.342	67.426	68.857	332.929
	Deciduous	52.874	49.396	60.930	56.568	51.943	271.711
	Together	124.588	104.986	130.272	123.994	120.800	604.640
Wild animals Hoofed animal	Conifers	6.534	4.657	5.528	6.939	7.382	31.041
	Deciduous	253	164	250	148	122	937
	Together	6.787	4.821	5.779	7.086	7.504	31.977
Wind	Conifers	35.433	45.216	37.944	29.491	53.250	201.333
	Deciduous	6.143	9.912	8.953	4.984	10.726	40.717
	Together	41.575	55.128	46.897	34.475	63.975	242.050
Snow	Conifers	40.761	112.339	25.496	11.679	9.457	199.732
	Deciduous	5.079	51.480	12.759	7.166	3.096	79.581
	Together	45.840	163.819	38.255	18.846	12.553	279.313
Ice, sleet	Conifers	70.321	17.125	13.031	7.974	3.742	112.194
	Deciduous	144.319	47.712	29.697	14.975	7.774	244.477
	Together	214.641	64.837	42.728	22.949	11.516	356.670
Avalanche	Conifers	5.499	4.855	2.666	3.134	1.386	17.539

	Deciduous	1.363	1.553	934	1.738	671	6.259
	Together	6.862	6.408	3.599	4.872	2.057	23.798
Imissions (local)	Conifers	12.376	6.704	6.241	5.498	6.727	37.546
	Deciduous	886	697	408	604	501	3.095
	Together	13.262	7.401	6.648	6.102	7.227	40.641
Forest work	Conifers	42.317	46.841	52.379	51.810	46.638	239.986
	Deciduous	20.575	21.574	23.606	20.113	18.981	104.849
	Together	62.893	68.415	75.985	71.923	65.619	344.834
Other	Conifers	70.388	68.647	74.053	69.743	82.193	365.023
	Deciduous	7.896	9.107	9.192	10.703	9.400	46.298
	Together	78.284	77.754	83.245	80.446	91.593	411.321
Together	Conifers	526.338	463.249	404.187	386.126	450.363	2.230.263
	Deciduous	241.276	193.738	149.135	118.431	104.649	807.230
	Together	767.614	656.987	553.322	504.557	555.012	3.037.493

The original data has only number of cut trees and volume of total felling, dividing to the cause of sanitary felling. The damages are dispersed through the forest, so the SFS can just calculate the reduce area from the number of trees and total felling volume. From that data we calculate an average volume tree for conifers and deciduous trees. The area, that is adequate to each tree of definite volume and species, was calculated from the Table values for the spruce SI_{100} = 30 (site index – dominant height for 100 years old stand), the second production class and for beech SI_{100} = 24 (site index – dominant height for 100 years old stand), the second production class. If the volume of average tree is between two classes, we did interpolation. The calculated areas are net areas of affected forest.
The area of forest fires is real area affected by the fire and not calculated.

Sanitary felling in Slovenia for the year 2000, by causes of felling, in number of trees (Annual report of Slovenian Forest Service)

Causes of felling	**Tree species**	**1998** number	**1999** number	**2000** number	**2001** number	**2002** number	**Sum**
Insects	Conifers	154.078	102.558	114.577	133.540	141.201	645.954
	Deciduous	2.016	3.610	2.375	1.650	1.453	11.104
	Together	156.094	106.168	116.952	135.190	142.654	657.058
Tree disease	Conifers	67.656	51.615	72.086	62.082	62.275	315.714
	Deciduous	91.275	86.658	103.836	90.218	86.954	458.941
	Together	158.931	138.273	175.922	152.300	149.229	774.655
Wild animals Hoofed animal	Conifers	31.844	22.180	24.838	32.494	31.181	142.537
	Deciduous	602	428	641	459	238	2.368
	Together	32.446	22.608	25.479	32.953	31.419	144.905
Wind	Conifers	36.659	34.593	31.433	28.477	40.893	172.055
	Deciduous	8.345	13.821	14.652	6.923	10.008	53.749
	Together	45.004	48.414	46.085	35.400	50.901	225.804
Snow	Conifers	108.046	207.961	50.165	24.370	17.510	408.052
	Deciduous	14.145	96.694	29.444	17.826	8.477	166.586
	Together	122.191	304.655	79.609	42.196	25.987	574.638
Ice, sleet	Conifers	179.444	45.151	28.500	11.626	5.717	270.438
	Deciduous	399.895	144.018	88.112	48.896	26.664	707.585
	Together	579.339	189.169	116.612	60.522	32.381	978.023
Avalanche	Conifers	6.061	4.293	2.702	2.823	1.151	17.030
	Deciduous	1.737	2.345	1.313	2.515	836	8.746
	Together	7.798	6.638	4.015	5.338	1.987	25.776
Imissions (local)	Conifers	13.101	7.412	7.031	6.590	8.684	42.818
	Deciduous	948	612	361	545	986	3.452
	Together	14.049	8.024	7.392	7.135	9.670	46.270
Forest work	Conifers	36.393	37.579	44.087	40.328	37.773	196.160

	Deciduous	27.210	27.198	31.062	24.406	21.921	131.797
	Together	63.603	64.777	75.149	64.734	59.694	327.957
Other	Conifers	45.183	44.571	46.786	49.594	48.331	234.465
	Deciduous	10.228	12.275	10.979	14.612	10.638	58.732
	Together	55.411	56.846	57.765	64.206	58.969	293.197
Together	Conifers	685.211	558.645	423.130	393.683	418.583	2.479.252
	Deciduous	557.300	388.532	283.662	209.271	169.299	1.608.064
	Together	1.242.511	947.177	706.792	602.954	587.882	4.087.316

Conifers SI = 30		
No. of trees	Volume m3	Average tree volume m3
2140	361	0,17
1850	402	0,22
1623	442	0,27
1442	479	0,33
1295	513	0,40
1173	547	0,47
1071	578	0,54
984	607	0,62
910	634	0,70
846	661	0,78
790	685	0,87
741	709	0,96
679	731	1,08
659	752	1,14
624	772	1,24
593	791	1,33
565	809	1,43
539	826	1,53
516	843	1,63

Deciduous SI = 24		
No. of trees	Volume m3	Average tree volume m3
1645	310	0,19
1425	334	0,23
1253	355	0,28
1115	375	0,34
1002	395	0,39
908	414	0,46
830	431	0,52
764	448	0,59
706	464	0,66
657	479	0,73
613	494	0,81
575	509	0,89
542	522	0,96
512	535	1,04
485	548	1,13
461	560	1,21
439	572	1,30

Sanitary felling in Slovenia for the year 2000, by causes of felling, in average tree volume (Annual report of Slovenian Forest Service)

Causes of felling	Tree species	1998 m^3	1999 m^3	2000 m^3	2001 m^3	2002 m^3	Sum	Calculated area ha
Insects	Conifers	1,10	0,98	1,02	0,99	1,18	1,06	184,03
	Deciduous	0,77	0,50	0,84	0,66	0,76	0,68	3,95
	Together	1,10	0,97	1,02	0,98	1,17	1,05	187,98
Tree disease	Conifers	1,06	1,08	0,96	1,09	1,11	1,05	92,00
	Deciduous	0,58	0,57	0,59	0,63	0,60	0,59	178,41
	Together	0,78	0,76	0,74	0,81	0,81	0,78	270,41
Wild animals Hoofed animal	Conifers	0,21	0,21	0,22	0,21	0,24	0,22	15,46
	Deciduous	0,42	0,38	0,39	0,32	0,51	0,40	0,82
	Together	0,21	0,21	0,23	0,22	0,24	0,22	16,28
Wind	Conifers	0,97	1,31	1,21	1,04	1,30	1,17	52,26
	Deciduous	0,74	0,72	0,61	0,72	1,07	0,76	18,54
	Together	0,92	1,14	1,02	0,97	1,26	1,07	70,80
Snow	Conifers	0,38	0,54	0,51	0,48	0,54	0,49	71,58
	Deciduous	0,36	0,53	0,43	0,40	0,37	0,48	68,42
	Together	0,38	0,54	0,48	0,45	0,48	0,49	140,01
Ice, sleet	Conifers	0,39	0,38	0,46	0,69	0,65	0,41	42,32
	Deciduous	0,36	0,33	0,34	0,31	0,29	0,35	230,84
	Together	0,37	0,34	0,37	0,38	0,36	0,36	273,16
Avalanche	Conifers	0,91	1,13	0,99	1,11	1,20	1,03	5,33
	Deciduous	0,78	0,66	0,71	0,69	0,80	0,72	3,11
	Together	0,88	0,97	0,90	0,91	1,04	0,92	8,44
Imissions (local)	Conifers	0,94	0,90	0,89	0,83	0,77	0,88	10,80
	Deciduous	0,93	1,14	1,13	1,11	0,51	0,90	0,92
	Together	0,94	0,92	0,90	0,86	0,75	0,88	11,72
Forest work	Conifers	1,16	1,25	1,19	1,28	1,23	1,22	62,49
	Deciduous	0,76	0,79	0,76	0,82	0,87	0,80	44,85
	Together	0,99	1,06	1,01	1,11	1,10	1,05	107,34
Other	Conifers	1,56	1,54	1,58	1,41	1,70	1,56	88,13
	Deciduous	0,77	0,74	0,84	0,73	0,88	0,79	20,08
	Together	1,41	1,37	1,44	1,25	1,55	1,40	108,21
Together	Conifers	0,77	0,83	0,96	0,98	1,08	0,90	627,56
	Deciduous	0,43	0,50	0,53	0,57	0,62	0,50	571,54
	Together	0,62	0,69	0,78	0,84	0,94	0,74	1.199,10

Sanitary felling in Slovenia for the year 1994, by causes of felling (Annual report of Slovenian Forest Service)

Causes of felling	Tree species	Together average 1994 m^3	Average tree average 1994 m^3	Calculated area ha
Insects	Conifers	236.278	1,02	328,16
	Deciduous	6.619	0,84	13,65
	Together	242.897	1,02	341,81
Tree disease	Conifers	59.896	0,96	84,48
	Deciduous	40.187	0,59	89,70
	Together	100.083	0,74	174,18
Wild animals Hoofed animal	Conifers	2.410	0,22	6,00
	Deciduous	198	0,39	0,50

	Together	2.608	0,23	6,50
Wind	Conifers	90.077	1,21	117,59
	Deciduous	23.257	0,61	51,34
	Together	113.334	1,02	168,93
Snow	Conifers	75.294	0,51	133,03
	Deciduous	7.630	0,43	18,79
	Together	82.924	0,48	151,82
Ice, sleet	Conifers	889	0,46	1,64
	Deciduous	672	0,34	1,79
	Together	1.561	0,37	3,43
Avalanche	Conifers	2.022	0,99	2,82
	Deciduous	939	0,71	1,96
	Together	2.961	0,9	4,79
Imissions (local)	Conifers	49.399	0,89	71,59
	Deciduous	1.580	1,13	2,88
	Together	50.979	0,9	74,48
Forest work	Conifers	26.149	1,19	34,32
	Deciduous	10.078	0,76	20,78
	Together	36.227	1,01	55,10
Other	Conifers	141.270	1,58	169,19
	Deciduous	25.252	0,84	50,50
	Together	166.522	1,44	219,69
Together	Conifers	690.907	0,96	948,82
	Deciduous	117.212	0,53	251,90
	Together	808.119	0,78	1.200,72

For the year 1994, which is the nearest year to 1990, we can get reliable data, we used for the calculation the same average tree volume as in the year 2000. The year 1994 is the first year after establishment of Slovenian Forest Service, so from that year we follow the data and we can see that the average tree volume is practical the same through that years.

Data about forests affected by fire in ha, (Annual report of Slovenian Forest Service)

Year	1998	1999	2000	2001	2002
Forests	725,10	321,1	124,14	240,36	77,47
Other wooded land	528,53	112,00	141,24	99,73	83,32

Data about forests affected by fire in ha, (Annual report of Slovenian Forest Service)

Year	1988	1989	1990	1991	1992
Forests	181,75	120,00	615,77	624,90	319,37
Other wooded land	15,50	0,00	51,00	52,20	106,90

8.3 Analysis and processing of national data

8.3.1 Estimation and forecasting

The damage cause by insects and fogies will rise in the next years. The basic source is in the climate changes. The average temperatures rise and the dry periods in the growing season are more frequently. Other damages will stay at the same level.

8.4 Reclassification into FRA 2005 classes

8.5 Data for National reporting table T8

FRA-2005 Categories	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
Year	**1990**	**2000**	**1990**	**2000**
Disturbance by fire	0.372	0.298	0.045	0.193
Year	**1994**	**2000**	**1994**	**2000**
Disturbance by insects	0.341	0.188	NDA	NDA
Disturbance by diseases	0.174	0.270	NDA	NDA
Other disturbance	0.697	0.736	NDA	NDA

8.6 Comments to National reporting table T8

The Slovenian Forest Service collects data about sanitary felling just in the forest. So we can't report about affected areas in other wooded land.

Working group:
- J. Jakša (ZGS).

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
Drevesne vrste na Slovenskem. R. Brus. 2004.	H	Number of native tree species	2004	
http://www.redlist.org	H	Number of critically endangered, endangered and vulnerable tree species	2004	

9.2.2 Classification and definitions

9.2.3 Original data

9.3 Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species	73
Critically endangered tree species	0
Endangered tree species	0
Vulnerable tree species	0

9.4 Comments to National reporting table T9

The following species are on the list of native tree species: Abies alba, Acer campestre, Acer monspessulanum, Acer obtusatum, Acer platanoides, Acer pseudoplatanus, Acer tataricum, Alnus glutinosa, Alnus incana, Arbutus unedo*, Betula pendula, Betula pubescens, Carpinus betulus, Carpinus orientalis, Castanea sativa, Celtis australis*, Cercis siliquastrum*, Crataegus laevigata, Crataegus monogyna, Fagus sylvatica, Fraxinus angustifolia, Fraxinus excelsior, Fraxinus ornus, Ilex aquifolium*, Juglans regia, Juniperus communis, Juniperus oxycedrus*, Laburnum alpinum, Laburnum alschingeri*, Laburnum anagyroides, Larix decidua, Laurus nobilis*, Malus sylvestris, Ostrya carpinifolia, Phillyrea latifolia*, Picea abies, Pinus cembra, Pinus mugo, Pinus nigra, Pinus sylvestris, Pistacia terebinthus*, Populus alba, Populus nigra, Populus tremula, Prunus avium, Prunus mahaleb, Prunus padus, Pyrus pyraster, Pyrus spinosa*, Quercus cerris, Quercus crenata*, Quercus ilex*, Quercus petraea, Quercus pubescens, Quercus robur, Salix alba, Salix caprea, Salix daphnoides, Salix eleagnos, Salix fragilis, Salix purpurea, Salix triandra, Salix viminalis, Sorbus aria, Sorbus aucuparia, Sorbus domestica, Sorbus torminalis, Taxus baccata*, Tilia cordata, Tilia platyphyllos, Ulmus carpinifolia, Ulmus glabra, Ulmus laevis.*

In the Country report to the FAO international technical conference on plant genetic resources for Slovenia of 1996 species Crataegus laevigata, Crataegus monogyna, Juniperus communis and Juniperus oxycedrus were not considered as tree species.

Although no species natives to Slovenia were found on the IUCN red list at the global level, 13 species indicated by asterisk are on the national red list of endangered species.

Working group:
- mag S. Golob (MOP).

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.
Picea abies / Spruce
Fagus sylvatica / Beech
Abies alba / Fir
Quercus petraea / Oak
Pinus sylvestris / Pine
Carpinus betulus / Hornbeam
Acer pseudoplatanus / Maple
Castanea sativa / Chestnut
Larix decidua / Larch
Ostrya carpinifolia / Hop Hornbeam

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Slovenia Forest Service Database. Slovenian Forest Service. 1996, 2003	H		1996 and 2003	The data is 5 years old on average; so the date from year 1996 is adequate for year 1990 and the data from year 2003 is for year 2000.

10.2.2 Original data

The source of the original data is the databases of Slovenian Forest Service for the year 1996 and 2003.

10.3 Analysis and processing of national data

10.3.1 Calibration

One tenth (10%) of the database of Slovenian Forest Service is renewed every year, which means, that the data are in average 5 year old. We therefore used the data from the year 1996 to estimate the tree composition for the year 1990 and the newest data from the year 2003 to estimate the tree composition for the year 2003.

FRA 2005 Categories / Species name (Scientific name and common name)	Growing Stock in Forests %	
	1990	2000
Picea abies / Spruce	32,974%	32,314%
Fagus sylvatica / Beech	31,348%	31,505%
Abies alba / Fir	9,816%	7,928%
Quercus petraea / Oak	5,841%	6,327%
Pinus sylvestris / Pine	4,879%	4,686%
Carpinus betulus / Hornbeam	2,596%	2,622%
Acer pseudoplatanus / Maple	2,342%	2,579%
Castanea sativa / Chestnut	1,528%	1,781%
Larix decidua / Larch	1,247%	1,318%
Ostrya carpinifolia / Hop Hornbeam	1,048%	1,188%
Remainder of species	6,382%	7,752%
TOTAL	100,000%	100,000%

10.3.2 Estimation and forecasting

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**
Picea abies / Spruce	90.13	108.11
Fagus sylvatica / Beech	85.68	105.40
Abies alba / Fir	26.83	26.52
Quercus petraea / Oak	15.97	21.17
Pinus sylvestris / Pine	13.34	15.68
Carpinus betulus / Hornbeam	7.10	8.77
Acer pseudoplatanus / Maple	6.40	8.63
Castanea sativa / Chestnut	4.18	5.96
Larix decidua / Larch	3.41	4.41
Ostrya carpinifolia / Hop Hornbeam	2.86	3.97
Remainder of species	17.44	25.93
TOTAL	273,33	334,55

10.5 Comments to National reporting table T10

Working group:
- D. Matijašić, R. Pisek (ZGS).

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
Statistical yearbook of the Republic of Slovenia Years 1993, 2003. Statistical Office of Republic of Slovenia.1993, 2003	M	Production of raw wood categories	1988 - 1990 1998 - 2002	Data on removals was gathered from the annual reports submitted by forest management organisations until 1990. In the period of transition (1991 to 1993) the data was insufficient. Since 1994 reporting has been entirely the responsibility of the Slovenian Forest Service.

11.2.2 Classification and definitions

According to FRA 2005 definition.

11.2.3 Original data

Production of raw wood categories 1000 m^3 (u.b.)								
	1988[1]	1989[1]	1990[1]	1998	1999	2000	2001	2002
Total	**2.486**	**2.427**	**1.790**	**2.132**	**2.068**	**2.253**	**2.257**	**2.283**
Conifers	1.602	1.499	637	1.187	1.147	1.209	1.240	1.272
Non-conifers	884	928	1.153	945	921	1.044	1.017	1.011
Logs	**1.339**	**1.258**	**979**	**1.001**	**992**	**1.120**	**1.144**	**1.164**
Conifers	1.006	901	720	736	727	786	819	844
Non-conifers	333	357	259	265	265	334	325	320
Pulpwood	**421**	**390**	**281**	**451**	**434**	**396**	**410**	**414**
Conifers	353	328	238	356	329	302	310	323
Non-conifers	68	62	43	95	105	94	100	91
Other industrial wood	**537**	**540**	**335**	**142**	**137**	**205**	**408**	**425**
Conifers	243	270	194	95	91	121	112	105
Non-conifers	294	270	141	47	46	84	296	320
Fuelwood	**189**	**239**	**195**	**539**	**505**	**532**	**295**	**280**

Note:
1) Data on removals was gathered from the annual reports submitted by forest management organisations until 1990. This data do not include wood for private/domestic use. In order to get yearly volumes of total removals the factor 1,3333 was used in further calculations. This factor is not real conversion factor. It includes also calibration in order to include private/domestic use of wood.

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

Conversion factors for the period 1998-2002 used for transformation of the volumes from under bark to over bark are for conifers 1,1765 and for non-conifers 1,1364.

Combined transformation factor for year 1991 is 1,3333. It includes conversion factors (conifers 1,1765 and non-conifers 1,1364) and factor representing the proportion of domestic wood use (1,1533).

The data for years 1991 and 1992 are incomplete and not applicable. The average for year 1990 is calculated according to data for years 1988, 1989 and 1990.

Forecast for reference year 2005 is based on linear extrapolation based on data for years 1999-2003.

11.4 Reclassification into FRA 2005 classes

	Industrial wood removal	Woodfuel removal
	%	%
Logs	100	0
Conifers	100	0
Non-conifers	100	0
Pulpwood	100	0
Conifers	100	0
Non-conifers	100	0
Other industrial wood	100	0
Conifers	100	0
Non-conifers	100	0
Fuelwood	0	100

11.5 Data for National reporting table T11

FRA 2005 Categories	**Volume in 1000 cubic meters of roundwood over bark**					
	Forest			**Other wooded land**		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Industrial roundwood	2701	2058	2622	ID	ID	ID
Woodfuel	277	489	531	ID	ID	ID
TOTAL for Country	**2.978**	**2.547**	**3.153**	**ID**	**ID**	ID

Note:
ID: Insufficient data: Data were not collected or were not collected separately. No objective data available for forecast.

11.6 Comments to National reporting table T11

Working group:
- *M. Piškur, dr. M. Medved (GIS),*
- *D. Matijašić (ZGS).*

12 Table T12 – Value of wood removal

12.1 FRA 2005 Categories and definitions

Category	Definition
Value of industrial wood removal	Value of the wood removed for production of goods and services other than energy production (woodfuel).
Value of woodfuel removal	Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Statistical yearbook of the Republic of Slovenia Years 1993, 2003. Statistical Office of Republic of Slovenia. 1993, 2003	M	Purchase prices	1991, 1992, 1998, 1999, 2000, 2001, 2002	Purchase of wood from private forests bought via cooperatives and forest management organisations Reports on the purchase of wood from private forests are submitted by co-operatives and forest management organisations
Farmland and Forests Fund of Slovenia	M/H	Selling prices at roadside (excluding transport)	2005	Forecast for year 2005 according to prices in year 2004

12.2.2 Classification and definitions

According to FRA 2005 definition.

12.2.3 Original data

Assortment of Stemwood		1991	1998	1999	2000	2001	2002	2005[1]
Fuelwood	SIT/m^3 (u.b.)	764,65	3.426,94	3.234,31	3.407,15	3.414,00	3.466,00	3.807,00
Technical wood	SIT/m^3 (u.b.)	2.180,69	9.766,94	9.844,01	10.228,80	10.730,00	10.847,10	9.923,00
Pulpwood	SIT/m^3 (u.b.)	915,50	3.140,55	3.012,81	3.050,75	2.967,10	2.997,00	3.267,00
Exchange rates	SIT/USD	56,69	161,20	196,77	227,38	250,95	221,07	184,01[2]
Fuelwood	USD/m^3 (u.b.)	13,49	21,26	16,44	14,98	13,60	15,68	20,69
Technical wood	USD/m^3 (u.b.)	38,47	60,59	50,03	44,99	42,76	49,07	53,93
Pulpwood	USD/m^3 (u.b.)	16,15	19,48	15,31	13,41	11,82	13,56	17,75

Notes:

1. Purchase prices according to data from Farmland and Forests Fund of Slovenia calibrated with factors to converge selling prices to purchase prices (0,8696-0,8000).
2. Exchange rate according to IMF (November 2004) and Bank of Slovenia currency exchange rates no. 225 from 17.11.2004

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

Purchase prices for year 1990 are based on prices related to year 1991. No exchange rates are available for years 1988-1990. Any linear interpolation would give unrealistic prices so it is not used as a method.

12.4 Reclassification into FRA 2005 classes

Compatible with FRA 2005 categories.

12.5 Data for National reporting table T12

FRA 2005 Categories	Value of roundwood removal (1000 USD)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	80512	72174	93947	ID	ID	ID
Woodfuel	3236	7226	9660	ID	ID	ID
TOTAL for Country	**83.748**	**79.401**	**103.607**	**ID**	**ID**	**ID**

Note:
ID: Insufficient data: Data were not collected or were not collected separately. No objective data available for forecast.

12.6 Comments to National reporting table T12

Working group:
- *M. Piškur, dr. M. Medved (GIS),*
- *D. Matijašić (ZGS).*

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
Annual Report of Slovenian Forest Service. Slovenian Forest Service. 1994, 2000	H	Christmas trees	1994, 2000	
Slovenia Beekeeping Association and Agriculture Institute	M	Honey	1995, 2000	
Environment Agency of Republic of Slovenia	M	Mushrooms	1994, 2000	
Statistical yearbook of the Republic of Slovenia Years 1995, 2000. Statistical Office of Republic of Slovenia. 1995, 2000	M	Chestnut	1990, 1998 - 2002	
Slovenian Hunting Organization	H	Game meat	1990, 1998 - 2002	

13.2.2 Classification and definitions

13.2.3 Original data

Item	Ref. year	tons	
Chestnut	1990a	25	Sold by private producers on food markets
Chestnut	1998	52	"
Chestnut	1999	47	"
Chestnut	2000	70	"
Chestnut	2001	60	"
Chestnut	2002	49	"
Mushroom	1994	1307	Purchase
Mushroom	1998	839	"
Mushroom	1999	447	"
Mushroom	2000	505	"
Mushroom	2001	317	"
Mushroom	2002	104	"

Honey	1995a	1296	Purchase
Honey	2000a	2300	"
Game meat	1990	1180	Purchase
Game meat	1998	917	Purchase
Game meat	1999	906	Purchase
Game meat	2000	911	Purchase
Game meat	2001	970	Purchase
Game meat	2002	1804	Purchase
Trophies	1990a	25361 pieces	Estimate based on the costs of shooting permits
Trophies	2000a	19025 pieces	Estimate based on the costs of shooting permits
Christmas trees	2000a	118.000 pieces	Based on the number of legal permits (stamps)
Christmas trees	1994	150.000	

a) valid data for the cited year. Time series for the reference years (1988-1992) are unavailable

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

13.4 Reclassification into FRA 2005 classes

13.5 Data for National reporting table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990	2000	2005
Plant products / raw material					
1. Food		tonns	1350a	498	550
2. Fodder			NDA	NDA	NDA
3. Raw material for medicine and aromatic products			NDA	NDA	NDA
4. Raw material for colorants and dyes			NDA	NDA	NDA
5. Raw material for utensils, handicrafts & construction			NDA	NDA	NDA
6. Ornamental plants (pieces x 10 kg)		tonns	1.50b	1.18d	1.20
7. Exudates			NDA	NDA	NDA
8. Other plant products			NDA	NDA	NDA
Animal products / raw material					
9. Living animals					
10. Hides, skins and trophies		pieces	25.361c	19.025d	20.000
11. Wild honey and bee-wax		tonns	NDA	2.300d	2.400
12. Bush meat		tonns	1.180c	1102	1000
13. Raw material for medicine			NDA	NDA	NDA
14. Raw material for colorants			NDA	NDA	NDA
15. Other edible animal products			NDA	NDA	NDA
16. Other non-edible animal products			NDA	NDA	NDA

Ornamental plants (piece->mass): a scale factor of 10 kg per Christmas tree.
a) estimate, based on the 1990 and 1994 data respectively,
b) estimate based on the 1994 data,
c) valid data for the year 1990,
d) valid data for the year 2000,

13.6 Comments to National reporting table T13

Working group:
- dr. M. Kovač, R. Mavsar (GIS)

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
Annual Report of Slovenian Forest Service. Slovenian Forest Service. 2000	L	Christmas trees	2000	Average price per piece on the food market
Slovenian Beekeeping Association and Agriculture Institute	H	Honey	2000	Average price per 1 kg
Environment Agency of Republic of Slovenia	L	Mushrooms	2000	Average price per 1 kg on the food market
Statistical yearbook of the Republic of Slovenia Years 1995, 2000. Statistical Office of Republic of Slovenia. 1995, 2000	M	Chestnut	2000	Price per 1 kg on the food market
Slovenian Hunting Organization	M	Game meat	2000	Average price per 1 kg
Slovenian Hunting Organization	M	Game trophies	2000	Estimate

14.2.2 Classification and definitions

14.2.3 Original data

The prices are taken from the Slovenia's annual statistical report and other sources. We can't provide Original data on price per unit in national currency.

14.3 Analysis and processing of national data

14.3.1 Estimation and forecasting

14.4 Reclassification into FRA 2005 classes

14.5 Data for National reporting table T14

FRA 2005 Categories	Value of the of NWFP removed (1000 USD)		
	1990	2000	2005
Plant products / raw material			
1. Food	4700	3000	3100
2. Fodder	NDA	NDA	NDA
3. Raw material for medicine and aromatic products	NDA	NDA	NDA
4. Raw material for colorants and dyes	NDA	NDA	NDA
5. Raw material for utensils, handicrafts & construction	NDA	NDA	NDA
6. Ornamental plants	1800	2760	2880
7. Exudates	NDA	NDA	NDA
8. Other plant products	NDA	NDA	NDA
Animal products / raw material			
9. Living animals			
10. Hides, skins and trophies	9000*	12600	13920
11. Wild honey and bee-wax	NDA	5456	10970
12. Bush meat	9900	12900	11000
13. Raw material for medicine	NDA	NDA	NDA
14. Raw material for colorants	NDA	NDA	NDA
15. Other edible animal products	NDA	NDA	NDA
16. Other non-edible animal products	NDA	NDA	NDA
TOTAL	**25.400**	**36.716**	**41.870**

Ornamental plants: the structure (according to height) of sold Christmas trees for the required years is unknown.
Game meat: the prices of game meat for the required time series are unknown. The estimate of the value has been calculated upon the prices in 2004.
Trophies: the structure of game taken in the required time series is unknown. The estimate of the value of trophies has been calculated upon the prices and the structure of game taken in 2004.

14.6 Comments to National reporting table T14

Working group:
- dr. M. Kovač, R. Mavsar (GIS)

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
Statistical yearbook of the Republic of Slovenia Year 2001. Statistical Office of Republic of Slovenia. 2001	H	Persons in employment by activity, 2000 Forestry, logging and services	2000	
Statistical yearbook of the Republic of Slovenia Year 1991. Statistical Office of Republic of Slovenia. 1991.	H	Persons in paid employment in enterprises and other organizations by activity Forestry and hunting	1990	
Annual Report of Slovenian Forest Service. Slovenian Forest Service. 2001	H	Number of employees	2000	Formally established in 1993.

15.2.2 Classification and definitions

15.2.3 Original data

Source Information	1990	2000
Persons in employment by activity (Forestry)	6.061	1.970
Slovenian Forest Service	NDA	800

15.3 Analysis and processing of national data

15.3.1 Estimation and forecasting

The process of estimation is not needed since data is available for current years.

15.4 Reclassification into FRA 2005 classes

Not applicable.

15.5 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	6	3
TOTAL	**6**	**3**

15.6 Comments to National reporting table T15

Working group:
- dr. M. Medved, M. Piškur (GIS).

16 Thematic reporting tables

If countries would like to submit additional reporting tables, these should be included here. (See the chapter on thematic reporting in the Guidelines for Country Reporting).