



**Forestry Department**

**Food and Agriculture Organization of the United Nations**

**GLOBAL FOREST RESOURCES  
ASSESSMENT 2010**

**COUNTRY REPORT**

**SLOVAKIA**

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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 2010 (FRA 2010).

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

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

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# 1 Table T1 – Extent of Forest and Other wooded land

## 1.1 FRA 2010 Categories and definitions

Category	Definition
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds <i>in situ</i> . It does not include land that is predominantly under agricultural or urban land use.
Other wooded land	Land not classified as “Forest”, spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds <i>in situ</i> ; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.
Other land	All land that is not classified as “Forest” or “Other wooded land”.
Other land with tree cover (Subordinated to “Other land”)	Land classified as “Other land”, spanning more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.

## 1.2 National data

### 1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forest Information Centre (LIC) of Lesoprojekt Zvolen	H	Area of forest stands	1990	Databases of national forest inventory
	L	Other land with tree cover	1990, 2000, 2005	So called “white plots”
Statistical Yearbook of the SR 1991, 2001, 2006	H	Other land, Inland Water Bodies	1990, 2000, 2005	
Konôpka, J. et al. 2001: Report on Forestry in the SR, Green Report.	H	Area of forest land and forest stands	1990, 2000	
Moravčík, M. et al. 2006: Report on Forestry in the SR, Green report.	H	Area of forest land and forest stands	2005	
Moravčík, M. et al. 2007: Prognosis and Vision of development of Slovak Agriculture, Food industry, Forestry and Rural areas – part Forestry.	H	Area of forest land and forest stands	2010	

### 1.2.2 Classification and definitions

National class	Definition
<b>FOREST = FOREST STANDS</b> <sup>2)</sup>	<p>Forest is Forest land spanning more than <u>0.3</u> hectares with trees higher than <u>5</u> meters and a canopy cover of more than <u>30</u> percent, or trees able to reach these thresholds <i>in situ</i>. It does not include land that is predominantly under agricultural or urban land use.</p> <p>Forests are Forest lands:</p> <ul style="list-style-type: none"> <li>▪ covered by forest stands,</li> <li>▪ where forest stands were removed temporarily and shall be regenerated -</li> </ul>

	reforested (clearings after felling); <ul style="list-style-type: none"> <li>▪ skidding roads and dividing lines on forest lands up to 4 m wide;</li> <li>▪ with industrial plantations.</li> </ul>
<b>Forest land</b> <sup>1)</sup>	According to the Article 3 of the Act No. 326/2005 of Coll. on forests Forest Land comprises: <ul style="list-style-type: none"> <li>▪ Forest stands</li> <li>▪ Unstocked forest land (land without forest stands that serves the forestry):             <ul style="list-style-type: none"> <li>○ land with established forest nurseries and seed orchards,</li> <li>○ lands temporarily exempted from fulfillment of forest functions or limited in utilization of forest functions,</li> <li>○ without forest stands serving forestry and necessary for its activities mainly lands with dividing lines and forest roads wider than 4 m, permanent log yards,</li> <li>○ lands that were declared as a forest land by the state forest authority.</li> </ul> </li> </ul>
<b>Other land</b> <sup>3)</sup>	Agricultural lands, residential areas, other built-up lands, barren areas.
<b>Other land with tree cover</b> <sup>4)</sup>	Forest (Forest stands) on other lands.

### 1.2.3 Original data

	Area (1 000 ha)			
	1990	2000	2005	2010
Forest lands <sup>1)</sup>	1 977	1 998	2 006	2 017
<b>... of which Forest stands</b> <sup>2)</sup>	<b>1 922</b>	<b>1 921</b>	<b>1 932</b>	<b>1 933</b>
Other wooded land	n. a.	n. a.	n. a.	n. a.
Other land <sup>3)</sup>	2 833	2 812	2 804	2 793
<b>... of which land with tree cover</b> <sup>4)</sup>	26	30	32	275±3.7 <sup>7)</sup>
Inland water bodies <sup>5)</sup>	93	93	93	93
<b>Together</b> <sup>6)</sup>	<b>4 903</b>	<b>4 903</b>	<b>4 903</b>	<b>4 903</b>

<sup>1)-4)</sup> refer to the definitions listed in Table 1.2.2 and sources of information listed in Table 1.2.1

<sup>5) and 6)</sup> Annex 2 of the Guidelines for Country Reporting to FRA 2010, [www.fao.org/forestry/site/fra](http://www.fao.org/forestry/site/fra)

<sup>7)</sup> Information originating from the National inventory and forest monitoring (NIFM).

In 2004-2006, there was carried out National inventory and forest monitoring (NIFM). Main objective of the NIFM in Slovakia is to construct a new comprehensive inventory system that will provide for chosen time moments an objective, actual and complex set of information on the state and development of all components of forest ecosystems on regional and national level as well. There was used combined ground-photo method with systematic allocation of sampling plots (total number: 1422) on the whole territory of the country in the network 4x4 km

This method allowed determination of the area as well as stand characteristics of all forests irrespectively of the land use category, including forests on other lands (other land with tree cover). It was found out that area of forests (corresponding forest definition in table 1.2.2) on other lands is up to 275±3.7 ths. ha.

## 1.3 Analysis and processing of national data

### 1.3.1 Calibration

Not needed.

### 1.3.2 Estimation and forecasting

Forecasting for the year 2010 was done following the source: Moravčík, M. et al. 2007: Prognosis and Vision of development of Slovak Agriculture, Food industry, Forestry and Rural areas – part Forestry.

### 1.3.3 Reclassification into FRA 2010 categories

Forest = Forest Stands.

Other land with tree cover in 2010 = Forests on other lands according to information originating from the NIFM.

Other land with tree cover in 1990, 2000 and 2005 = so called “white plots” found out in the scope of forest management planning.

## 1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
<b>Forest</b>	<b>1922</b>	<b>1921</b>	<b>1932</b>	<b>1933</b>
Other wooded land	0	0	0	0
Other land	2888	2889	2878	2877
...of which with tree cover	26	30	32	275
Inland water bodies	93	93	93	93
<b>Total for country</b>	<b>4903</b>	<b>4903</b>	<b>4903</b>	<b>4903</b>

## 1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	Forest is Forest land spanning more than <u>0.3</u> hectares with trees higher than <u>5</u> meters and a canopy cover of more than <u>30</u> percent, or trees able to reach these thresholds <i>in situ</i> . It does not include land that is predominantly under agricultural or urban land use.	Since the first forest inventory in the years 1949-53, the area of both “Forest lands” and “Forest stands” have increased as a result of: 1) active afforestation of lands not suitable for agriculture, 2) restoration of the timberline and subalpine forests, 3) increase of the area of abandoned agricultural lands naturally colonized by forest trees. Between 1950 and 1995, the area of “Forest lands” as well as of “Forest stands” increased approximately linearly. Since 1990, this trend has been slowed down due to a low interest in re-categorization agricultural lands colonized by forest into the land use category of Forest Land, as well as reduced afforestation.
Other wooded land	There may exist areas of other wooded land within the areas classified as Other land.	
Other land		
Other land with tree cover	Forests on other lands, if their status corresponds with forest definition given in table 1.2.2	Application of National inventory and forest monitoring in 2004-2006 allowed determination of other land with tree cover with much greater

		precision. It was found out that area of forests (corresponding forest definition in table 1.2.2) on other lands is up to 275±3.7 ths. ha.
Inland water bodies		

<b>Other general comments to the table</b>

<b>Expected year for completion of ongoing/planned national forest inventory and/or RS survey / mapping</b>	
Field inventory	It was completed in 2006
Remote sensing survey / mapping	Aerial photography is performed annually for needs of forest management planning and forest mapping for approximately one tenth of forest area.



## 2 Table T2 – Forest ownership and management rights

### 2.1 FRA 2010 Categories and definitions

Category	Definition
Public ownership	Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, communities, private co-operatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
Individuals (sub-category of Private ownership)	Forest owned by individuals and families.
Private business entities and institutions (sub-category of Private ownership)	Forest owned by private corporations, co-operatives, companies and other business entities, as well as private non-profit organizations such as NGOs, nature conservation associations, and private religious and educational institutions, etc.
Local communities (sub-category of Private ownership)	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area. The community members are co-owners that share exclusive rights and duties, and benefits contribute to the community development.
Indigenous / tribal communities (sub-category of Private ownership)	Forest owned by communities of indigenous or tribal people.
Other types of ownership	Other kind of ownership arrangements not covered by the categories above. Also includes areas where ownership is unclear or disputed.
<b>Categories related to the holder of management rights of public forest resources</b>	
Public Administration	The Public Administration (or institutions or corporations owned by the Public Administration) retains management rights and responsibilities within the limits specified by the legislation.
Individuals/households	Forest management rights and responsibilities are transferred from the Public Administration to individuals or households through long-term leases or management agreements.
Private institutions	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities, private co-operatives, private non-profit institutions and associations, etc., through long-term leases or management agreements.
Communities	Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.
Other form of management rights	Forests for which the transfer of management rights does not belong to any of the categories mentioned above.

## 2.2 National data

### 2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forest Information Centre of the Lesoprojekt (Institute of Forest Management Planning).	H	Forest ownership and management rights	1990	
Summary information on status of forests in SR as of 31 December 2000	H	Holder of management rights	2000	
Konôpka, J. et al. 2001: Report on Forestry in the SR, Green Report.	H	Forest ownership and management rights	2000	
Moravčík, M. et al. 2006: Report on Forestry in the SR, Green report.	H	Forest ownership and management rights	2005	

### 2.2.2 Classification and definitions

National class	Definition
National classes and definitions are compliant with the FRA 2010	

### 2.2.3 Original data

#### ▪ For Table 2a

*Structure of forest area according to ownership*

Ownership	Forest area (ths ha)		
	1990	2000	2005
<i>State</i>	1 912 905	821 125	807 753
<i>Municipal</i>		185 030	187 816
<b>Public</b>	<b>1 912 905</b>	<b>1 006 155</b>	<b>995 569</b>
<i>Private</i>		287 199	275 243
<i>Shared</i>		476 158	480 160
<i>Church</i>		63 634	65 242
<i>Agricultural co-operatives</i>	8 800 *)	2 770	2 635
<b>Non-public</b>	<b>8 800</b>	<b>829 761</b>	<b>823 280</b>
<i>Unknown</i>	<b>0</b>	<b>85 498</b>	<b>112 796</b>
<b>Total</b>	<b>1 921 705</b>	<b>1 921 414</b>	<b>1 931 645</b>

\*) Till 1991 forests of agricultural co-operatives were in professional care of the state organizations

#### ▪ For Table 2b

*Forest managed by state, municipalities and non-public subjects*

Forests used (managed) by	Forest area (ths ha)		
	1990	2000	2005
State	1 921 705	1 198 665	1 130 786 *)
Municipality	-	162 535	168 770
<b>Public subjects</b>	<b>1 921 705</b>	<b>1 361 200</b>	<b>1 299 556</b>
Non-public subjects	-	560 214	632 089
<b>Total</b>	<b>1 921 705</b>	<b>1 921 414</b>	<b>1 931 645</b>

\*) State subjects (organizations) manage all state forests and part of non-state forests: unknown, those that have not been returned so far to their original owners in the scope of restitution process, and leased non-state forests.

## 2.3 Analysis and processing of national data

### 2.3.1 Calibration

Not needed

### 2.3.2 Estimation and forecasting

Not needed

### 2.3.3 Reclassification into FRA 2010 categories

The category “Public ownership” includes the ownership categories “state” and “municipal”.

The category “private ownership” includes the ownership categories “private”, “shared”, “church” and “agricultural co-operatives”.

The category “owned by individuals” includes category “private”.

The category “owned by local communities” includes category “shared ownership”.

The category “owned by private business entities and institutions” includes categories “church” and “agricultural co-operatives”.

## 2.4 Data for Table T2

**Table 2a - Forest ownership**

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	1922	1006	996
Private ownership	0 <sup>*)</sup>	830	823
...of which owned by individuals	-	287	275
...of which owned by private business entities and institutions	-	67	68
...of which owned by local communities	-	476	480
...of which owned by indigenous / tribal communities	0	0	0
Other types of ownership	0	85	113
<b>TOTAL</b>	<b>1922</b>	<b>1921</b>	<b>1932</b>

<sup>\*)</sup> Before the year 1991 all forests were held and managed by state organizations and agricultural co-operatives

Note: If other types of ownership is reported, please specify details in comment to the table.

Does ownership of trees coincide with ownership of the land on which they are situated?	<input checked="" type="checkbox"/>	Yes
	<input type="checkbox"/>	No
If <b>No</b> above, please describe below how the two differ:		

**Table 2b - Holder of management rights of public forests**

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public Administration	1922	1 006	996
Individuals	0	0	0
Private corporations and institutions	0	0	0
Communities	0	0	0
Other	0	0	0
<b>TOTAL</b>	<b>1 922</b>	<b>1 006</b>	<b>996</b>

## 2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership		The area of forests used by state subjects has fallen since 2002 by 6.8 percent (from 62.3 to 55.5 per cent). <b>State entities also manage 14.1 percent of forests pending restoration of ownership rights, forests of unknown owners and leased forests.</b>
Private ownership		The process of forest ownership rights restitution is still open and thus more changes are due. The largest area of unresolved forests is in private hands. Majority of these forests are of a very limited size, of individual or shared ownership, and impossible to identify in the field. In addition, there is a group of forest owners who still have not applied for their ownership rights.
Other types of ownership	There are included forests with unknown ownership into this category. Nearly all these forests are managed by those state organizations that managed them before starting the restitution process in 1991; that is their obligation appointed by respective law.	
Management rights	According to respective appointments of the act on forests the state forests can be managed by only state organizations established for this purpose. Municipal forests are managed by business entities and institutions established by respective municipalities (joint-stock companies, limited companies and so on).	

### Other general comments to the table

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### 3 Table T3 – Forest designation and management

#### 3.1 FRA 2010 Categories and definitions

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

#### 3.2 National data

##### 3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forest Information Centre (LIC) of the Lesoprojekt	H	Area of functional types	1990	
Konôpka, J. et al. 2002: Report on Forestry in the SR, Green Report.	H	Area of functional types Forest area within protected areas (also for 1990)	2000	
Moravčík, M. et al. 2006: Report on Forestry in the SR, Green report.	H	Area of functional types Forest area within protected areas	2005	
Moravčík, M. et al. 2008: Report on Forestry in the SR, Green report.	H	Area of functional types Forest area within protected areas	2007	Estimation of the year 2010

### 3.2.2 Classification and definitions

National class	Definition
Production	Includes wood production and other productive functions.
Erosion-control	If a forest protects soil against destruction by surface water runoff causing area or rill erosion.
Water-management	If a forest improves runoff conditions either „qualitatively“ by balancing fluctuating water courses or „quantitatively“ by increasing the amount of water in water courses.
Avalanche-control	If a forest serves to prevent avalanches.
Bank-protection	If a forest protects banks of water courses and water bodies against water erosion and/or protects the water quality.
Deflation-control	If a forest protects soil against wind erosion preventing its „drifting away“ or capturing the soil particles drifted from open areas.
Water-protection	If a forest is situated in a protection zone of water resources, spa springs or springs of mineral table waters.
Recreational	If a forest serves primarily recreation. Forest stands are maintained species rich and esthetically forceful to meet the needs and interests of visitors.
Spa-therapeutic	If a forest is used for therapeutical purposes in the surroundings of spas and medical facilities. Their management aims at the creation of hygienically favourable and esthetically forceful nature environment meeting the needs of persons under medical care or receiving spa treatment.
Nature-protection	If a forest is utilised for conservation of its natural values as regards its origin, beauty and biological diversity.
Pollution-control	If a forest buffers negative impacts of industrial pollution on humans and nature; it is applied either if the life expectancy of forest vegetation is apparently reduced due to the pollution, or for the improvement of air quality and physical environment;.
Game-management	If a forest is intended primarily for breeding and protection of game. The management objective is to provide an appropriate forest habitat for the game.
Educational-research	If a forest serves primarily to the educational, scientific and research purposes.

### 3.2.3 Original data

FRA Category / Associated functions	Area (1000 ha)			
	Main functions			
	1990	2000	2005	2010
Production	655	280	125	129,3
Protection of soil and water	245	327	344	342,3
Conservation of biodiversity	80 <sup>*)</sup>	51 <sup>*)</sup> (81 <sup>**)</sup>	57 <sup>*)</sup> (81 <sup>**)</sup>	36,2 <sup>*)</sup> (81 <sup>**)</sup>
Social services	182	265	223	236,3
Multiple purpose	760	998	1 183	1 188,8
No or unknown functions	0	0	0	0
<b>Together – Forest</b>	<b>1 922</b>	<b>1 921</b>	<b>1 932</b>	<b>1 932,9</b>

<sup>\*)</sup> Area according to the functional types, Forest Information Centre of Institute for Forest Resources and Informatics Zvolen

<sup>\*\*)</sup> Area of forests under the 4th and 5th degree of nature protection, Ministry of the Environment. This was used for further estimation.

The original data are already reclassified according to the Reclassification described in 3.3.

The area of forest stands for biodiversity conservation refers to the data of the Ministry of the Environment for forests in the 4th and 5th degree of nature protection (DNC). There was a difference in the area of this functional category between the data according to functional types and Ministry of Environment, which was subtracted from the area of “Multiple purpose forests”.

**Derivation of the area of forests for „Conservation of biodiversity“:**

**2000:** Source Ministry of the Environment of SR, Green Report 2002:

4th DNC: 6 872 (Protected Range) + 3 861 (Protection Zone of the 5th protection degree) = 10 733 x 0.65 (forest coverage) = 6 976 ha

5th DNC: 98 752 x 0.75 = 74 064

**Together (4th+5th) = 81 040 ha.**

**2005:** Status as of 31 December 2005 according to the Ministry of the Environment (Green Report 2006)

4th DNC: 17 598 x 0.65 (forest coverage of protected territories) = 11 439 ha

5th DNC: 93 067 x 0.75 (forest coverage) = 69 800 ha

**Together (4th+5th) = 81 239 ha**

**2007 = 2010:** Status as of 31 December 2007 according to the Ministry of the Environment (Green Report 2008)

4th DNC: 12 633 ha

5th DNC: 68 719 ha

**Together (4th+5th) = 81 352 ha**

**Original data for “Forest area within protected areas”**

Indicators		Large-scale protected areas (PA)		Small-scale PA	Total
		Protected landscape areas As a rule 2 <sup>nd</sup> DNC	National parks <sup>*)</sup> the 3 <sup>rd</sup> DNC PZ = 2 <sup>nd</sup> DNC	Protected range and Nature reserves <sup>*)</sup> 4 <sup>th</sup> and 5 <sup>th</sup> DNC	
1990	Area (ha)	854 090	448 877	51 128	1 354 095
	Forest coverage (%)	71	66,7	75	-
	Forest area (ha)	<b>606 403</b>	<b>299 401</b>	<b>38 346</b>	<b>944 150</b>
2000	Area (ha)	623 971	481 343	109 485	1 214 799
	Forest coverage (%)	71	66,7	74	-
	Forest area (ha)	<b>443 019</b>	<b>321 240</b>	<b>81 040</b>	<b>845 299</b>
2005	Area (ha)	522 679	588 018	110 665	1 221 362
	Forest coverage (%)	73	72,5	73	-
	Forest area (ha)	<b>381 507</b>	<b>426 562</b>	<b>81 239</b>	<b>889 308</b>

<sup>\*)</sup> Including protection zone (PZ) of the protected territories

**Original data for “Forest area within protected areas” in 2007 (= 2010)**

Protected area		Degree of nature protection (DNC) (ha)					Total
		1	2	3	4	5	
Protected Landscape Area (PLA) <sup>1</sup>		-	354 450	-	-	-	<b>354 450</b>
National Park (NP) <sup>1</sup>		-	-	225 286	-	-	<b>225 286</b>
NP protection zones (PZ)		-	117 885	-	-	-	<b>117 885</b>
PLA and NP zones, (Area in ha reduced by SSPA area)	A	-	-	-	-	1 107	<b>1 107</b>
	B	-	-	-	3 921	-	<b>3 921</b>
	C	-	-	15 826	-	-	<b>15 826</b>
	D	-	28 667	-	-	-	<b>28 667</b>
Small-scale protected areas (SSPA)	(National) Nature Reserve ((N)NR)	-	-	-	5 427	67 270	<b>72 697</b>
	(National) Nature Monument ((N)NM)	-	-	-	1 022	342	<b>1 364</b>
	Protected Landscape Element (PLE)	-	-	-	3	-	<b>3</b>
	Protected Range (PR)	-	-	62	1 232	-	<b>1 294</b>
SSPA protection zones		-	-	327	1 028	-	<b>1 355</b>
SAC – Territories of European significance – outside of national network of PA		-	67 748	-	-	-	<b>67 748</b>
SAC – Protected bird territories – outside of national network of PA		212 044	-	-	-	-	<b>212 044</b>
<b>Total</b>		<b>212 044</b>	<b>568 750</b>	<b>241 501</b>	<b>12 633</b>	<b>68 719</b>	<b>1 103 647</b>

Source: Moravčík, M. et al. 2008: Report on Forestry in the SR, Green report.

### 3.3 Analysis and processing of national data

#### 3.3.1 Calibration

Not needed.

#### 3.3.2 Estimation and forecasting

The state as of 31 December 2007 has been used as a forecast for 2010 since no significant changes are expected in both “functional typisation” and forest area within protected areas till 2010.

#### 3.3.3 Reclassification into FRA 2010 categories

Classification of forests according to their functions was done according to their primary function.

Production = Area of forest stands intended solely for the production function.

Protection of soil and water = Area of forest stands which main function is „erosion-control“, „water-management“, „avalanche-control“, „bank-protection“, „deflation-control“, „water-protection“.

Conservation of biodiversity = Area of forest stands under the most strict 4th and 5th degree of nature conservation according to the Act on nature and landscape protection.

Social services = Area of forest stands which main function is „recreational“, „spa-therapeutic“, „pollution-control“, „game-management“, „educational-research“.

Multiple purpose = Area of forest stands which main function is production but have also another associated function(s).

### 3.4 Data for Table T3

**Table 3a – Primary designated function**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	655	280	125	129
Protection of soil and water	245	327	344	342
Conservation of biodiversity	80	81	81	81
Social services	182	265	223	236
Multiple use	760	968	1 159	1 145
Other (please specify in comments below the table)	0	0	0	0
No / unknown	0	0	0	0
<b>TOTAL</b>	<b>1922</b>	<b>1921</b>	<b>1932</b>	<b>1933</b>

**Table 3b – Special designation and management categories**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	1922	1921	1932	1933
Forest area within protected areas	944	845	889	1104 <sup>1)</sup>
Forest area under sustainable forest management	1922	1921	1932	1933
Forest area with management plan	1922	1921	1932	1933

<sup>1)</sup> The increase in 2010 is caused by inclusion of the NATURA 2000 protected areas



### 3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production		
Protection of soil and water		
Conservation of biodiversity		
Social services		
Multiple use		
Other		
No / unknown designation		
Area of permanent forest estate	Exemption of forest to other land use is possible only on the basis of the decision of respective organ of state forestry administration and against payment of levy for loss of public-beneficial forest functions	
Forest area within protected areas	<p>Act on protection of nature and landscape together with Act on forests are valid for forests in protected areas. Unfortunately application of these acts leads frequently to considerable problems related to securing sustainable forest management – these acts are not harmonized in some approaches.</p> <p>The area of protected territories is too extensive including forest ecosystems whose status is not sustained without human intervention including disturbance events of a calamitous.</p> <p>Application of the Act on protection of nature and landscape hampers or obstructs implementation of measures prescribed to control insect outbreaks in protected areas. Such approach has resulted in many mountain forest reserves turning into epicentres of bark beetle outbreaks from which these spread further to adjacent forest stands.</p> <p>In MCPFE 2007 we reported only area of <b>protective forests</b> (soil, water and other ecosystem functions) 334,3 ths ha. It is the same as data in table 3a of this report. But in forest area within protected areas there are all forests included in all categories of <b>protected areas (territories)</b> listed in tables on page 16 (Original data for ...)</p>	The increase of the area of forests within protected areas in 2007 (2010) is caused by inclusion of the NATURA 2000 protected areas (SACs).
Forest area under sustainable forest management	<p>Forests managed according to valid forest management plan we consider to be forests under sustainable management.</p> <p>After expiration of validity of forest management plan all forest estates are subject of inspection carried out by state forest administration.</p>	
Forest area with management plan	Detailed 10-years forest management plans are elaborated for all forests in Slovakia	

#### Other general comments to the table

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## 4 Table T4 – Forest characteristics

### 4.1 FRA 2010 Categories and definitions

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

### 4.2 National data

#### 4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forest Information Centre Lesoprojekt Zvolen	H	Areas of forests: Primary, other naturally regenerated and planted	1990	Databases containing forest inventory data 1978-1991
Forest Information Centre Lesoprojekt Zvolen	H	Areas of forests: Primary, other naturally regenerated and planted	2000	Databases containing forest inventory data 1991-2000
Forest Information Centre Lesoprojekt Zvolen	H	Areas of forests: Primary, other naturally regenerated and planted	2005	Databases containing forest inventory data 1995-2004
KORPEE, Š.: Primeval Forests of Slovakia, Príroda, Bratislava,	H	Area of primary forests in Slovakia	1989	Results of a long term research of natural forests

## 4.2.2 Classification and definitions

National class	Definition
National classes and definitions are compliant with the FRA 2010	

## 4.2.3 Original data

Presented in the national reporting table

## 4.3 Analysis and processing of national data

### 4.3.1 Calibration

Not needed.

### 4.3.2 Estimation and forecasting

In 2010 we don't expect significant changes in reported figures for 2005, therefore we carried out expert estimation according to observed trends.

**Primary (primeval) forests:** Their area was determined on the basis of these database indicators: long-term non-intervention status, diverse age and stand structures, and the class of naturalness as a synthetic descriptor of the compliance of current tree species composition with the model and potential natural vegetation according to the typological units (Natura 2000). Two highest classes of naturalness (1<sup>st</sup> and 2<sup>nd</sup>), i.e. natural or only slightly deviating tree species composition, were considered. Of the compartments fulfilling the aforementioned conditions, only those belonging to the category of protective and special purpose forests with the priority of nature conservation function, were accepted. The final area was compared with data published in the book "Primeval Forests of Slovakia" of KORPEL, 1989, which summarized the results of a long term research into the natural forests of Slovakia.

**Other naturally regenerated forest** we consider a former Modified natural forest (these both categories have corresponding definitions): The area includes forests originating in natural regeneration, taking into the account their management condition and applied regeneration system. This category excludes stands in the 4th (low) naturalness class, consisting predominantly of non-native tree species which presence does not match with fit the forest site type nor potential natural forest vegetation. It includes forest stands covered by the nature protection degree 3 and higher, if they meet the above mentioned criteria. These are prevailingly naturally regenerated forests, however with clearly visible indications of human activities

Into category **Planted forests** we have inserted the remaining categories of semi-natural forests and plantations.

### Introduced forest tree species

- Other naturally regenerated forests of introduced species include solely *Robinia pseudoacacia*, regenerated mostly by sprouting there.
- Planted forests of introduced species is minor, covered mostly by *Pinus nigra* (1900 ha), followed by *Quercus rubra* (1000 ha) and *Pseudotsuga menziesii* (800 ha). Other introduced species are scarce and their total areas are less than 150 ha.

### 4.3.3 Reclassification into FRA 2010 categories

Not needed

#### 4.4 Data for Table T4

**Table 4a**

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	24	24	24	24
Other naturally regenerated forest	938	939	943	950
...of which of introduced species	24.2	25.0	24.9	24.9
Planted forest	960	958	965	959
...of which of introduced species	20.4	19.4	18.5	19.0
<b>TOTAL</b>	<b>1922</b>	<b>1921</b>	<b>1932</b>	<b>1933</b>

**Table 4b**

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

#### 4.5 Comments to Table T4

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

Other general comments to the table

## 5 Table T5 – Forest establishment and reforestation

### 5.1 FRA 2010 Categories and definitions

Term	Definition
Afforestation	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not classified as forest.
Reforestation	Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.
Natural expansion of forest	Expansion of forests through natural succession on land that, until then, was under another land use (e.g. forest succession on land previously used for agriculture).

### 5.2 National data

#### 5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Moravčík, M. et al. 2007: Prognosis and Vision of development of Slovak Agriculture, Food industry, Forestry and Rural areas – part Forestry.	H	Area of reforestation	1990, 1998-2002, 2003-2007	
Remiš, J. et al. 1998: Prognosis and Concept of forestry SSR by 2010	H	Area of afforestation	1990	
Konôpka, J. et al. 1999: Analysis of development and of current status of forestry in SR (1990-1998). Lesnícke štúdie č. 55.	H		1995-1998	
Konôpka, J. et al. 2000-2002: Report on Forestry in the SR (Green Reports).	H		1999-2001	
Annual reports of Agricultural Payment Agency in 2005-2008	H		2002-2007	

#### 5.2.2 Classification and definitions

National class	Definition
National classes and definitions are compliant with the FRA 2010	

#### 5.2.3 Original data

##### Area of reforestation by planting and seeding and its share on total reforestation (the rest is secured by natural regeneration)

Years	2003	2004	2005	2006	2007	2003-2007
Ha	9 623	8 866	8 922	9 256	9 027	9 139
%	70.9	63.5	66.1	59.5	65.9	65,2
Years	1998	1999	2000	2001	2002	1998-2002
Ha	11 842	11 290	12 923	12 053	10 681	11 758
%	86.0	82.7	85.8	79.9	74.6	81,8
						1988-1992
						15 500

**Area of afforestation**

Rok (ha)								
1985	1990	1995	1996	1997	1998	1999-2003	2004-2006	2007
4450	2305 <sup>*)</sup>	234	128	118	187	0	92,1	0

<sup>\*)</sup> Prognosis by Remiš et al. (1988)

**5.3 Analysis and processing of national data****5.3.1 Calibration**

Not needed.

**5.3.2 Estimation and forecasting**

Estimation of afforestation in ha

	1990	2000	2005
<b>Afforestation</b>	Prognosis of afforestation by Remiš et al. 1988	Average of the real afforestation in 1998-2002	Average of the real afforestation in 2003-2007
	<b>2305</b>	<b>37.4</b>	<b>18.4</b>

**5.3.3 Reclassification into FRA 2010 categories**

Not needed.

**5.4 Data for Table T5**

FRA 2010 Categories	Annual forest establishment (hectares/year)			...of which of introduced species <sup>1)</sup> (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation	2305	37.4	18.4	150	10	5
Reforestation	15500	11758	9139	550	460	400
...of which on areas previously planted	n. a.	n. a.	n. a.	455	400	370
Natural expansion of forest	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.

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

Afforestation by introduced tree species is performed mostly by *Pinus nigra*.

Reforestation and reforestation on areas previously planted is mostly by Euroamerican hybrid poplars (350-400 ha) and some smaller areas reforested also by *Pinus nigra*, *Quercus rubra* and *Juglans nigra*.

**5.5 Comments to Table T5**

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation		Afforestation in Slovakia is not priority because of relatively high forest percentage. Therefore there is obvious systematical decrease of this activity. There was adopted governmental programme for afforestation in 1994 but because of lack of money it was abolished in 1999. In 2004-2006 there was performed some afforestation in the scope of Plan of rural development in Slovakia.
Reforestation		Gradual decrease the area of reforestation resides in enlargement extent of natural regeneration of forests in Slovakia (see chapter 5.2.3) mainly through the wider application of shelterwood system in forest regeneration.

Natural expansion of forest		
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<b>Other general comments to the table</b>

## 6 Table T6 – Growing stock

### 6.1 FRA 2010 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees more than X cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm.
Growing stock of commercial species	Growing stock (see def. above) of commercial species.

### 6.2 National data

#### 6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Summary Forest Management Plan 1988; Forest Information Centre of Lesoprojekt Zvolen	H	Growing stock of wood with dbh > 7 cm under bark <sup>1)</sup> , tree species, age classes, yield classes	1988	
Summary information of Forest Information Centre 2000, 2005, 2007; Lesoprojekt Zvolen	H	Growing stock of wood with dbh > 7 cm under bark <sup>1)</sup> , tree species, age classes, yield classes	2000 2005 2007	Some complementary data were obtained also from other sources of Forest Information Centre
Databases of the Forest Information Centre, Lesoprojekt Zvolen	H	Growing stock of wood with dbh > 7 cm under bark <sup>1)</sup> , tree species, age classes, yield classes	2000 2005 2007	

<sup>1)</sup> Growing stock of wood with dbh > 7 cm under bark in the Summary information of Forest Information Centre is available by age classes for 6 coniferous and 15 broadleaved tree species or species groups.

#### 6.2.2 Classification and definitions

National class	Definition
Growing stock	Volume under bark of all living trees more than 7 cm in diameter at breast height. Includes the stem from ground level up to the top diameter of 7 cm.

#### 6.2.3 Original data

FRA category	Volume (million m <sup>3</sup> )									
	Forest stands					Other wooded land				
	1988	2000	2003	2005	2007	1988	2000	2003	2004	2005
Growing stock under bark (national definition)	341.9	410.0	428.3	438.9	445.9	n. a.	n. a.	n. a.	n. a.	n. a.
Growing stock over bark	389.3	463.2	481.9	494.6	502.4	n. a.	n. a.	n. a.	n. a.	n. a.



The original data on growing stock based on national definitions, in accordance with the law, refer to the volume of wood with DBH over 7 cm under bark. They had to be converted into the volume over bark. The conversion coefficients for *Bark* were derived from the “Rastové tabuľky hlavných drevín” [Yield Tables of Main Tree Species] (HALAJ, J. – PETRÁŠ, R. 1998) and “Rastové tabuľky topoľových klonov” [Yield Tables of Poplar Clones] (MECKO, J. ET AL. 1997) for this purpose. The mean values of the Coefficients of Bark were derived for each age class according to the mean site indexes of all 21 tree species or tree species groups listed in the summaries of the national forest inventory. The mean site indexes are a little changed in the evaluated years.

FRA Categories/ Species name (Scientific and common name)	Growing Stock in Forest stands				
	(Million m <sup>3</sup> )				
	1988	2000	2003	2005	2007
<i>Picea abies</i> / Norway spruce	131.3	156.3	158.2	162.1	162.8
<i>Fagus sylvatica</i> / European beech	107.6	139.2	149.6	154.1	157.3
<i>Quercus</i> / Oak including <i>Q. petraea</i> (sessile oak), <i>Q. robur</i> (pedunculate oak) and <i>Q. cerris</i> (Turkey oak).	57.2	60.4	61.1	62.6	63.9
Genus <i>Pinus</i> / Pine including <i>P. silvestris</i> (Scots pine) and <i>P. nigra</i> (Austrian black pine)	24.6	29.4	30.6	31.3	32.0
<i>Abies alba</i> / European silver fir	34.8	27.6	26.8	26.8	27.1
<i>Carpinus betulus</i> / European hornbeam	11.4	18.2	21.2	21.7	22.1
<i>Larix decidua</i> / European larch	4.6	7.2	8.0	8.5	8.8
Genus <i>Acer</i> / maple including <i>Acer platanoides</i> (Norway maple), <i>Acer pseudoplatanus</i> (sycamore maple) and <i>Acer campestre</i> (field maple)	3.3	5.0	5.6	5.9	6.3
Genus <i>Fraxinus</i> <sup>4)</sup> including <i>Fraxinus excelsior</i> (common ash) and <i>Fraxinus angustifolia</i> (narrow-leaved ash)	2.7	5.0	5.5	5.8	6.0
<i>Robinia pseudoacacia</i> / black locust	3.9	4.8	4.6	4.7	4.6
Other tree species	7.9	10.1	10.7	11.0	11.5
<b>TOGETHER</b>	<b>389.3</b>	<b>463.2</b>	<b>481.9</b>	<b>494.6</b>	<b>502.4</b>

### 6.3 Analysis and processing of national data

#### 6.3.1 Calibration

Not needed.

#### 6.3.2 Estimation and forecasting

Data for 1990 were determined by means of linear interpolation of the data from 1988 and 2000. The forecast for 2010 is a linear extrapolation of the data from 2005 and 2007.

FRA Categories	Forest (volume in million m <sup>3</sup> over bark)							
	Original data				Converted for FRA			
	1988	2000	2005	2007	1990	2000	2005	2010
Growing stock	389.3	463.2	494.6	502.4	401.6	463.2	494.6	514.1

FRA Categories/ Species name (Scientific and common name)	Growing Stock in Forest stands (Million m <sup>3</sup> )		
	1988	1990 <sup>*)</sup>	2000
	<i>Picea abies</i> / Norway spruce	131.3	135.5
<i>Fagus sylvatica</i> / European beech	107.6	112.9	139.2
<i>Quercus</i> / Oak	57.2	57.7	60.4
<i>Pinus</i> / Pine	24.6	25.4	29.4
<i>Abies alba</i> / European silver fir	34.8	33.6	27.6
<i>Carpinus betulus</i> / European hornbeam	11.4	12.5	18.2
<i>Larix decidua</i> / European larch	4.6	5.0	7.2
<i>Acer</i> / Maple	3.3	3.6	5.0
<i>Fraxinus</i> / Ash	2.7	3.1	5.0
<i>Robinia pseudoacacia</i> / black locust	3.9	4.1	4.8
Other tree species	7.9	8.2	10.1
<b>TOTAL</b>	389.3	401.6	463.2

<sup>\*)</sup> Figures referring to 1990 represent a linear interpolation of the data from 1988 and 2000

## 6.4 Data for Table T6

Table 6a – Growing stock

FRA 2010 category	Volume (million cubic meters over bark)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Total growing stock	401.6	463.2	494.6	514.1	n. a.	n. a.	n. a.	n. a.
... of which coniferous	199.5	220.5	228.7	234.0	n. a.	n. a.	n. a.	n. a.
... of which broadleaved	202.1	242.7	265.9	280.1	n. a.	n. a.	n. a.	n. a.
Growing stock of commercial species	401.6	463.2	494.6	514.1	n. a.	n. a.	n. a.	n. a.

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

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)		
Rank	Scientific name	Common name	1990	2000	2005
1 <sup>st</sup>	<i>Picea abies</i>	Norway spruce	135.5	156.3	162.1
2 <sup>nd</sup>	<i>Fagus sylvatica</i>	European beech	112.9	139.2	154.1
3 <sup>rd</sup>	<i>Q. petraea</i> , <i>Q. robur</i> , <i>Q. cerris</i>	Sessile oak, pedunculate oak and Turkey oak.	57.7	60.4	62.6
4 <sup>th</sup>	<i>P. silvestris</i> <i>P. nigra</i>	Scots pine and Austrian black pine	25.4	29.4	31.3
5 <sup>th</sup>	<i>Abies alba</i>	European silver fir	33.6	27.6	26.8
6 <sup>th</sup>	<i>Carpinus betulus</i>	European hornbeam	12.5	18.2	21.7
7 <sup>th</sup>	<i>Larix decidua</i>	European larch	5.0	7.2	8.5
8 <sup>th</sup>	<i>Acer platanoides</i> , <i>Acer pseudoplatanus</i> , <i>Acer campestre</i>	Norway maple, sycamore maple and field maple	3.6	5.0	5.9
9 <sup>th</sup>	<i>Fraxinus excelsior</i> , <i>Fraxinus angustifolia</i>	Common ash and narrow-leaved ash	3.1	5.0	5.8
10 <sup>th</sup>	<i>Robinia pseudoacacia</i>	black locust	4.1	4.8	4.7
Remaining			8.2	10.1	11.0
<b>TOTAL</b>			<b>401.6</b>	<b>463.2</b>	<b>494.6</b>

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

**Table 6c – Specification of threshold values**

Item	Value	Complementary information
Minimum diameter (cm) at breast height <sup>1</sup> of trees included in growing stock (X)	7	Diameter over bark.
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	7	Diameter over bark.
Minimum diameter (cm) of branches included in growing stock (W)	7	Diameter over bark.
Volume refers to “above ground” (AG) or “above stump” (AS)	AS	

## 6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock	The presented data on growing stock show a high accuracy since they result from a regular yearly updating of the growing stock on approximately 1/10 of the forest stand area. The stand-wise forest inventory is based on the statistical survey of the growing stock in young and medium-age stands and full measurement of mature stands.	The growing stock shows a long-term increasing trend, which is associated mainly with <ul style="list-style-type: none"> <li>▪ uneven age structure and over-proportional representation of medium-age stands (50 to 90-years-old)</li> <li>▪ use of more precise domestic yield tables for the main tree species since 1993,</li> <li>▪ assumed positive effects of high nitrogen deposition originating in air pollution and of the climate change</li> </ul>
Growing stock of broadleaved / coniferous		
Growing stock of commercial species		
Growing stock composition		

### Other general comments to the table

Presented data refer to the minimum measured diameters (DBH, top end of a stem, branches) of 7 cm.

The national figures published in the UN/ECE-FAO TBFRA-2000 for the reference year 1996 (510 mill. m<sup>3</sup> o.b.) and MCPFE report 2003 (554 mill. m<sup>3</sup> o.b.) included all standing volume starting from the threshold of 0 cm, despite of the note published there that the minimum diameter was 7 cm.

Total proportion of coniferous tree species in the growing stock has been slightly but continuously decreasing from 50.2 % in 1988 to 46.4 % in 2003. *Vice versa*, the proportion of broadleaves increased from 49.8 % to 53.6 %. In spite of a general increase of the growing stock of all forests, the stock of European silver fir has decreased as a result of its complex dieback, which became widespread in the 1960's.

<sup>1</sup> Diameter at breast height (DBH) refers to diameter over bark measured at a height of 1.30 m above ground level or 30 cm above buttresses if these are higher than 1 m.

## 7 Table T7 – Biomass stock

### 7.1 FRA 2010 Categories and definitions

Category	Definition
Above-ground biomass	All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage.
Below-ground biomass	All biomass of live roots. Fine roots of less than 2mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.
Dead wood	All non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.

### 7.2 National data

#### 7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Summary Forest Management Plan 1988; Forest Information Centre of Lesoprojekt Zvolen	H	Growing stock of wood with dbh > 7 cm under bark <sup>1)</sup> , tree species, age classes, yield classes	1988	
Summary information of Forest Information Centre 2000, 2005, 2007; Lesoprojekt Zvolen	H	Growing stock of wood with dbh > 7 cm under bark <sup>1)</sup> , tree species, age classes, yield classes	2000 2005 2007	Some complementary data were obtained also from other sources of Forest Information Centre
MINDÁŠ, J. ET AL. 1997: Carbon stock and balance in the forests of Slovakia <sup>1)</sup>	M	Stock of biomass and carbon	1996	For quantification of carbon stock and its change in respective years in forest ecosystems of Slovakia.
ŠMELKO, Š. ET AL. 2008: National forest inventory and monitoring in Slovakia in 2005-2006	H	Dead wood	2005 -2006	National Forest Inventory and Monitoring (NFIM SR) For quantification of dead wood in the years 2000 and 2007 in forest land of Slovakia.

<sup>1)</sup> Used solely as a methodological reference for calculation of the biomass stock.

#### 7.2.2 Classification and definitions

National class	Definition
Above-ground biomass <sup>2)</sup>	National definition complies with the FRA 2010 definition
Below-ground biomass <sup>2)</sup>	National definition complies with the FRA 2010 definition
Dead wood biomass	Considered parameters of dead wood biomass are listed in 7.5

<sup>2)</sup> Calculation of the “above and below-ground biomass” is based on the data on growing stock listed in Table 6, according to the procedure given in section 6.2.3.

### 7.2.3 Original data

FRA 2005 Category	Biomass (million metric tonnes oven-dry weight)									
	Forest					Other wooded land				
	1988	2000	2003	2005	2007	1988	2000	2003	2004	2005
Above-ground biomass <sup>3), 4), 6)</sup>	261.4	315.3	326.6	335.9	341.8	n. a.	n. a.	n. a.	n. a.	n. a.
Below-ground biomass <sup>5)</sup>	56.1	68.1	70.8	72.9	74.3	n. a.	n. a.	n. a.	n. a.	n. a.
Dead wood biomass <sup>7)</sup>	24.5	29.4	30.7	31.0	31.0	n. a.	n. a.	n. a.	n. a.	n. a.
<b>TOTAL</b>	<b>342.0</b>	<b>412.8</b>	<b>428.1</b>	<b>439.8</b>	<b>447.1</b>	n. a.	n. a.	n. a.	n. a.	n. a.

<sup>3)</sup> Above-ground biomass was determined as a sum of tree biomass of tree species and the biomass of foliage. Original data of growing stock of wood with dbh > 7 cm under bark for Table 6 were re-calculated to trees growing stock over bark using the Coefficients of Wood with dbh > 7 cm, derived from “Rastové tabuľky hlavných drevín” [Yield Tables of Main Tree Species] (HALAJ, J. – PETRÁŠ, R. 1998) and “Rastové tabuľky topoľových klonov” [Yield Tables of Poplar Clones] (MECKO, J. ET AL. 1997). The mean values of the Coefficients of Wood with dbh > 7 were derived according to the age classes for the mean site indexes of all 21 tree species or tree species groups listed in the Summary information of Forest Information Centre. The mean site indexes are a little changed in the individual evaluated years.

<sup>4)</sup> Oven-dry weight of the biomass was a product of the growing stock of individual tree species and their wood density in an oven-dry weight. The values of wood density of the tree species were adopted from POŽGAJ, A. ET AL. 1993: Structure and properties of wood.

<sup>5)</sup> The assessment of the below-ground biomass follows the available results of scientific studies. It is an expert estimate based on the following proportions in the tree above-ground biomass over bark: coniferous tree species 20%, broadleaved tree species 25%.

<sup>6)</sup> The assessment of the biomass of foliage, thin twigs and seeds follows the available results of scientific studies. It is an expert estimate based on the domestic yield tables for coniferous and broadleaved tree species and the following proportions in the above-ground plus below-ground biomass: coniferous tree species 15%, broadleaved tree species 2%.

<sup>7)</sup> The dead wood biomass was determined by two ways:

- The first way on the basis of data from findings by Forest Information Centre of Lesoprojekt Zvolen and the available results of scientific studies as a following proportion in the growing stock: coniferous tree species 15%, broadleaved tree species 10%. By the mentioned estimate is dead wood biomass determined for the years 1988, 2000 and 2003.
- The second way for the years 2005 and 2007 on the basis of data from National forest inventory and monitoring (NFIM) in Slovakia in 2005 as of 31.12.2005 (volume dead wood biomass in m<sup>3</sup> over bark). Dead wood biomass was converted to oven-dry weight biomass by weighted arithmetical averages of wood density in an oven-dry weight of coniferous and broadleaved tree species groups. They were derived from the actual tree species composition in volume of growing stock of wood with dbh > 7 cm over bark.

## 7.3 Analysis and processing of national data

### 7.3.1 Calibration

Not needed.

### 7.3.2 Estimation and forecasting

FRA 2005 Category	Biomass (million metric tonnes oven-dry weight)							
	Original data				Re-calculated for FRA			
	1988	2000	2005	2007	1990	2000	2005	2010
Above-ground biomass	261.4	315.3	335.9	341.8	270.4	315.3	335.9	350.6
Below-ground biomass	56.1	68.1	72.9	74.3	58.1	68.1	72.9	76.4
Dead wood biomass	24.5	29.4	31.0	31.0	25.3	29.4	31.0	31.0
<b>TOTAL</b>	<b>342.0</b>	<b>412.8</b>	<b>439.8</b>	<b>447.1</b>	<b>353.8</b>	<b>412.8</b>	<b>439.8</b>	<b>458.0</b>

Data for 1990 were determined by linear interpolation of data of the years 1988 and 2000. Prospective forecasting for the year 2010 is a linear extrapolation of data for 2005 and 2007.

### 7.3.3 Reclassification into FRA 2010 categories

Not needed.

### 7.4 Data for Table T7

FRA 2010 category	Biomass (million metric tonnes oven-dry weight)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Above-ground biomass	270.4	315.3	335.9	350.6	n. a.	n. a.	n. a.	n. a.
Below-ground biomass	58.1	68.1	72.9	76.4	n. a.	n. a.	n. a.	n. a.
Dead wood	25.3	29.4	31.0	31.0	n. a.	n. a.	n. a.	n. a.
<b>TOTAL</b>	<b>353.8</b>	<b>412.8</b>	<b>439.8</b>	<b>458.0</b>	n. a.	n. a.	n. a.	n. a.

### 7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass	Minimal average at breast height of standing living trees for determination of wood biomass is 0 cm. Minimal average of branches for biomass determination is 0 cm. Biomass comprises bark too.	The above-ground biomass shows a long-term increasing trend. Assumed reasons are the same as they are mentioned in comments on Table T6 (growing stock).
Below-ground biomass	Minimal average of roots for biomass determination is 2 mm. Stumps are included into below-ground biomass.	
Dead wood  (Years 1988-2003)	Considered minimal diameter at breast height of standing trees for determination of dead wood biomass is 10 cm. Considered minimal diameter at smaller end of tree residuals left on the ground for determination of dead wood biomass is 10 cm. Considered minimal diameter of branches for determination of dead wood biomass is 10 cm. Considered minimal diameter of roots for determination of dead wood biomass is 10 cm.	Dead wood shows increasing trend.

<p>Dead wood  (Years 2005-2007)</p>	<p>Considered minimal diameter at breast height of standing trees for determination of dead wood biomass is 7 cm.                  Considered minimal diameter at smaller end of tree residuals left on the ground for determination of dead wood biomass is 7 cm.                  Considered minimal diameter of branches for determination of dead wood biomass is 7 cm.                  Considered minimal diameter of roots for determination of dead wood biomass is 7 cm.</p>	
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**Other general comments to the table**

The thresholds of above and below-ground biomass don't change since 1988.  
 The increasing biomass stock reflects the continuous increase of the growing stock.  
 The thresholds of dead wood biomass have changed since 2005. More accurately data were obtained from NFIM in Slovakia in 2005-2006.

## 8 Table T8 – Carbon stock

### 8.1 FRA 2010 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 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	Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.
Carbon in litter	Carbon in all non-living biomass with a diameter less than the minimum diameter for dead wood (e.g. 10 cm), lying dead in various states of decomposition above the mineral or organic soil.
Soil carbon	Organic carbon in mineral and organic soils (including peat) to a specified depth chosen by the country and applied consistently through the time series.

### 8.2 National data

#### 8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Summary Forest Management Plan 1988; Forest Information Centre of Lesoprojekt Zvolen	H	Growing stock of wood with dbh > 7 cm under bark <sup>1</sup> ), tree species, age classes, yield classes	1988	
Summary information of Forest Information Centre 2000, 2005, 2007; Lesoprojekt Zvolen	H	Growing stock of wood with dbh > 7 cm under bark <sup>1</sup> ), tree species, age classes, yield classes	2000 2005 2007	Some complementary data were obtained also from other sources of Forest Information Centre
MINDÁŠ, J. ET AL. 1997: Carbon stock and balance in the forests of Slovakia <sup>1</sup> )	M	Stock of biomass and carbon	1996	For quantification of carbon stock and its change in respective years in forest ecosystems of Slovakia.
ŠMELKO, Š. ET AL. 2008: National forest inventory and monitoring in Slovakia in 2005-2006	H	Dead wood	2005 -2006	National Forest Inventory and Monitoring (NFIM SR) For quantification of dead wood in the years 2000 and 2007 in forest stands of SR.
MORAVČÍK, M. et al. 2008: Report on Forestry in the SR, Green report.	L	Litter and Soil carbon	1990 - 2007	

#### 8.2.2 Classification and definitions

National class	Definition
Definitions follow the Guidelines for Country Reporting to FRA-2010	



### 8.2.3 Original data

FRA 2005 Categories	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1988	2000	2005	2007	1988	2000	2005	2007
Carbon in above-ground biomass	129.4	156.1	166.3	169.2	n. a.	n. a.	n. a.	n. a.
Carbon in below-ground biomass	27.8	33.7	36.1	36.7	n. a.	n. a.	n. a.	n. a.
<b>Sub-total: Carbon in living biomass</b>	<b>157.2</b>	<b>189,8</b>	<b>202.4</b>	<b>205.9</b>				
Carbon in dead wood	12.1	14.5	15.3	15.3	n. a.	n. a.	n. a.	n. a.
Carbon in litter	16.2	19.5	20.4	21.2	n. a.	n. a.	n. a.	n. a.
<b>Sub-total: Carbon in dead wood and litter</b>	<b>28.3</b>	<b>33.0</b>	<b>35.7</b>	<b>36.5</b>				
Soil carbon to a depth of <u>100</u> cm	<b>270.5</b>	<b>270.5</b>	<b>270.5</b>	<b>270.5</b>	n. a.	n. a.	n. a.	n. a.
<b>TOTAL CARBON</b>								

The original data for calculation of the carbon stock are presented in Table 7. The original data for litter and soil carbon were obtained from analysis of soil and litter samples collected on ICP Forest level I monitoring plots, which are established in the network of 16 x 16 km.

For converting biomass stock (above-ground and below-ground biomass, dead wood, litter, soil) was used national carbon fraction 0.495.

## 8.3 Analysis and processing of national data

### 8.3.1 Calibration

Not needed.

### 8.3.2 Estimation and forecasting

FRA 2005 Categories	Carbon (Million metric tonnes)							
	Original date				Converted for FRA			
	1988	2000	2005	2007	1990	2000	2005	2010
Carbon in above-ground biomass	129.4	156.1	166.3	169.2	133.9	156.1	166.3	173.6
Carbon in below-ground biomass	27.8	33.7	36.1	36.7	28.8	33.7	36.1	37.6
<b>Sub-total: Carbon in living biomass</b>	<b>157,2</b>	<b>189,8</b>	<b>202.4</b>	<b>205.9</b>	<b>162.7</b>	<b>189,8</b>	<b>202.4</b>	<b>211.2</b>
Carbon in dead wood	12.1	14.5	15.3	15.3	12.5	14.5	15.3	15.3
Carbon in litter	16.2	19.5	20.4	21.2	16.7	19.5	20.4	22,4
<b>Sub-total: Carbon in dead wood and litter</b>	<b>28.3</b>	<b>33.0</b>	<b>35.7</b>	<b>36.5</b>	<b>29.2</b>	<b>34.0</b>	<b>35.7</b>	<b>37,7</b>
Soil carbon to a depth of <u>80</u> cm	270.5	270.5	270.5	<b>270.5</b>	270.5	270.5	270.5	270.5
<b>TOTAL CARBON</b>								

Data for 1990 were determined by linear interpolation of data of the years 1988 and 2000.

Prospective forecasting for the year 2010 is a linear extrapolation of data for 2005 and 2007

### 8.3.3 Reclassification into FRA 2010 categories

Not needed.

### 8.4 Data for Table T8

FRA 2010 Category	Carbon (Million metric tonnes)							
	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	133.9	156.1	166.3	173.6	n. a.	n. a.	n. a.	n. a.
Carbon in below-ground biomass	28.8	33.7	36.1	37.6	n. a.	n. a.	n. a.	n. a.
<b>Sub-total: Living biomass</b>	<b>162.7</b>	<b>189.8</b>	<b>202.4</b>	<b>211.2</b>	n. a.	n. a.	n. a.	n. a.
Carbon in dead wood	12.5	14.5	15.3	15.3	n. a.	n. a.	n. a.	n. a.
Carbon in litter	16.7	19.5	20.4	22.4	n. a.	n. a.	n. a.	n. a.
<b>Sub-total: Dead wood and litter</b>	<b>29.2</b>	<b>34.0</b>	<b>35.7</b>	<b>37.7</b>	n. a.	n. a.	n. a.	n. a.
Soil carbon	270.5	270.5	270.5	270.5	n. a.	n. a.	n. a.	n. a.
<b>TOTAL</b>	<b>462.4</b>	<b>494.3</b>	<b>508.6</b>	<b>519.4</b>	n. a.	n. a.	n. a.	n. a.

Soil depth (cm) used for soil carbon estimates	<b>80 cm</b>
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### 8.5 Comments to Table T8

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass	For converting above-ground biomass to carbon was used default global carbon fraction 0.495.	The carbon in above-ground biomass shows a long-term increasing trend. Assumed reasons are the same as they are mentioned in comments to Table T6.
Carbon in below-ground biomass	For converting below-ground biomass to carbon was used default global carbon fraction 0.495.	
Carbon in dead wood	For converting dead wood biomass to carbon was used default global carbon fraction 0.495.	
Carbon in litter		
Soil carbon		

Other general comments to the table
The trends of living biomass are strongly connected with the trends of growing and biomass stock.

## 9 Table T9 – Forest fires

### 9.1 FRA 2010 Categories and definitions

Category	Definition
Number of fires	Average number of vegetation fires per year in the country.
Area affected by fire	Average area affected by vegetation fires per year in the country.
Vegetation fire (supplementary term)	Any vegetation fire regardless of ignition source, damage or benefit.
Wildfire	Any unplanned and/or uncontrolled vegetation fire.
Planned fire	A vegetation fire regardless of ignition source that burns according to management objectives and requires limited or no suppression action.

### 9.2 National data

#### 9.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Surovec et al., 1989-93: Occurrence of injurious agents in the forests of Slovakia for the years 1990-4 and their forecasts, FRI Zvolen	H	ha, m <sup>3</sup>	1988-1994	Data on disturbance by fires
Varínský et al. 1999-2004: Occurrence of injurious agents in the forests of Slovakia for the years 1998-2003 and their forecasts, FRI Zvolen	H	ha, m <sup>3</sup>	1998-2003	Data on disturbance by fires
Kunca A. et al. 2005-8: Occurrence of injurious agents in the forests of Slovakia for the year 2004-7 and their forecasts, FRI Zvolen	H	ha, m <sup>3</sup>	2005-2008	Data on disturbance by fires
Konôpka, J. et al. 1994-2003: Report on Forestry in the Slovak Republic (Green Report).	H	ha, m <sup>3</sup>	1993-2002	Data on growing stock and disturbances by fires
Moravčík, M. et al. 2004-2008: Report on Forestry in the Slovak Republic (Green Report).	H	ha, m <sup>3</sup>	2003-2007	Data on growing stock and disturbances by fires
PTEU - Fire Expertise Institute Bratislava, database	H	ha	1998-2008	Records on fires

#### 9.2.2 Classification and definitions

National class	Definition
Number of fires	Average number of vegetation fires per year in the country.
Area affected by fire	Average area affected by vegetation fires per year in the country.
Vegetation fire (supplementary term)	Any vegetation fire regardless of ignition source, damage or benefit.
Wildfire	Any unplanned and/or uncontrolled vegetation fire.
Planned fire	A vegetation fire regardless of ignition source that burns according to management objectives and requires limited or no suppression action.

### 9.2.3 Original data

Year	Number of fires	Burned area, ha
1988	350	unattended
1989	457	unattended
1990	882	unattended
1991	310	unattended
1992	401	unattended
1993	674	unattended
1994	366	unattended
1995	254	unattended
1996	662	unattended
1997	535	unattended
1998	1056	unattended
1999	426	557
2000	824	904
2001	311	305
2002	570	595
2003	852	1 567
2004	153	157
2005	287	503
2006	238	281
2007	463	680

FRA Categories	Average annual affected area (1000 ha)			
	Forest		Other wooded lands	
	1990	2000	1990	2000
Disturbance by fires	0.5	0.6	n. a.	n. a.

## 9.3 Analysis and processing of national data

### 9.3.1 Estimation and forecasting

#### Trend and perspective forecasting:

**Disturbance by fires:** the incidence of fires (not necessarily the area affected) correlates positively with drought, higher number of fires was recorded in the dry years 2000, 2002, 2003 and 2007.

## 9.4 Data for Table T9

Table 9a

FRA 2010 category	Annual average for 5-year period					
	1990		2000		2005	
	1000 hectares	number of fires	1000 hectares	number of fires	1000 hectares	number of fires
Total land area affected by fire	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
... of which on forest	0.5	480	0.6	532	0.6	432
... of which on other wooded land	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
... of which on other land	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.

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

**Table 9b**

FRA 2010 category	Proportion of forest area affected by fire (%)		
	1990	2000	2005
Wildfire	99	99	99
Planned fire	1	1	1

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

### 9.5 Comments to Table T9

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Area affected by fire	The annually burnt area varied from 157 to 1567 ha. in the last 10 years The annual area affected by forest fires represented 400–500 ha in the average. The area burnt after individual fires ranged from 0,5 to 2 ha. Bigger fires with the area over 10 ha were less frequent.	With regard to the progressing climate change, the total annual burnt area is expected to increase gradually in the future.
Number of fires	The incidence of forest fires depends on the weather of a current year, population density and also the frequency of a forest. The annual number of fires ranged from 150 to 880 over the last decade. Their causes were mostly (up to 80%) the negligence and ignoring of fire prevention. After 2004, the fire risk increased due to bigger area of forests with windthrows and died due to the bark beetles, where fellings were delayed or were not done for nature conservation reasons.	The incidence of forest fires is expected to increase gradually because of the ongoing climate change. Adequate fire preventing measures, monitoring system, technical infrastructure and skills of the firemen (including fire fighting tactics), can reduce the annual number of fires as well the area burnt and affected by forest fires.
Wildfire / planned fire	Planned fires are used in the forestry at the minimum extent. Their use is allowable during the extinguishing of bigger forest fires.	Minimum use of planned fires is expected towards the future.

#### Other general comments to the table

The basic sources of information were: the Forestry Statistical Record “L116: Report on the occurrence of injurious agents”, Database of the Lesoprojekt (Forest Inventory and Management Planning Institute) and the Fire Expertise Institute Bratislava. Regarding the disturbance by fires the forestry records “L116” were combined with data provided by the Institute for Fires and Expertise in Bratislava. In the forestry records L116, some overlaps of several factors (combined damage) may have been reported for some forest compartments

The accuracy of data on forest disturbance was high until the year 1990 when state forest enterprise managed almost 100% of forest. In 2000, pursuant to the restitution of non-state forest holdings, the forest area covered by reliable annual records represents some 85% of the forest.

## 10 Table T10 – Other disturbances affecting forest health and vitality

### 10.1 FRA 2010 Categories and definitions

Term	Definition
Disturbance	Damage caused by any factor (biotic or abiotic) that adversely affects the vigour and productivity of the forest and which is not a direct result of human activities.
Invasive species	Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.
Category	Definition
Disturbance by insects	Disturbance caused by insect pests.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as bacteria, fungi, phytoplasma or virus.
Disturbance by other biotic agents	Disturbance caused by biotic agents other than insects or diseases, such as wildlife browsing, grazing, physical damage by animals, etc.
Disturbance caused by abiotic factors	Disturbances caused by abiotic factors, such as air pollution, snow, storm, drought, etc.

### 10.2 National data

#### 10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Surovec et al., 1989-93: Occurrence of injurious agents in the forests of Slovakia for the years 1990-4 and their forecasts, FRI Zvolen	H	ha, m <sup>3</sup>	1988-1994	Data on disturbance by all kinds of harmful agents
Varínsky et al. 1999-2004: Occurrence of injurious agents in the forests of Slovakia for the years 1998-2003 and their forecasts, FRI Zvolen	H	ha, m <sup>3</sup>	1998-2003	Data on disturbance by all kinds of harmful agents
Kunca A. et al. 2005-8: Occurrence of injurious agents in the forests of Slovakia for the year 2004-7 and their forecasts, FRI Zvolen	H	ha, m <sup>3</sup>	2005-2008	Data on disturbance by all kinds of harmful agents
Konôpka, J. et al. 1994-2003: Report on Forestry in the Slovak Republic (Green Report).	H	ha, m <sup>3</sup>	1993-2002	Data on disturbance by all kinds of harmful agents
Moravčík, M. et al. 2004-2008: Report on Forestry in the Slovak Republic (Green Report).	H	ha, m <sup>3</sup>	2003-2007	Data on disturbance by all kinds of harmful agents
Kunca A., Zúbrik M. 2006: Wind damage on November 2004, FRI Zvolen	H	ha, m <sup>3</sup>	2006	Data on wind damage
Konôpka J. et al. 2008: Snow breakages in the forest of Slovakia, FRI Zvolen	H	ha, m <sup>3</sup>	2008	Data on snow damage
Konôpka J. et al. 2008: Dangerous wind directions In Slovakia, FRI Zvolen	H	ha, m <sup>3</sup>	2008	Data on wind damage

## 10.2.2 Classification and definitions

National class	Definition
Disturbance by insects	Disturbances by bark beetles of dying wood or deadwood and disturbances by leaf-eating insects in heavily defoliated forest stands in m <sup>3</sup>
Disturbance by diseases	Area of forest stands visibly damaged by fungal diseases in ha
"A" Zone for disturbance by air pollutants	Areas, where the life expectancy of forest stands has been reduced to no more than 20 years from the beginning of intensive impact of air pollution
Disturbance by wind, rime, frost, snow, drought	Wood originating from the salvage cuttings attributed to individual damaging factors in m <sup>3</sup>
Disturbance by game (browsing and peeling) and grazing	Area of young growths and forest stands damaged or destroyed

## 10.2.3 Original data

FRA-2005 Categories	Average annual affected area (1000 ha)					
	Forest			Other wooded lands		
	1990	2000	2005	1990	2000	2005
Disturbances by insects	3.7	8.0	9.7	n. a.	n. a.	n. a.
Disturbances by diseases	21.9	7.0	8.9	n. a.	n. a.	n. a.
Game and grazing	1.3	0.8	0.7	n. a.	n. a.	n. a.
Air pollutants	4.1	9.0	3.7	n. a.	n. a.	n. a.
Abiotic factors	4.8	6.0	11.5	n. a.	n. a.	n. a.
Other	1.0	1.0	1.2	n. a.	n. a.	n. a.

## 10.3 Analysis and processing of national data

### 10.3.1

As for calibration of certain kinds of disturbances, the national forestry records do not refer to the area of disturbed stands but to the volume of deadwood or losses on forest production. Thus, conversion from cubic meters to net cleared area of forest on hectare base has been done for the following kinds of disturbances: abiotic factors (windstorms, rime and drought), fungal diseases, insects (prevalingly bark beetles). As the disturbances by storms and bark beetles occur mostly in older stands, the mean standing stock of 400 m<sup>3</sup> per hectare has been used for their conversion. Disturbances by rime, fungi and drought did not appear as age-specific. The mean standing stock (wood under bark) per hectare of 181 m<sup>3</sup>, 213 m<sup>3</sup>, and 220 m<sup>3</sup> has been implemented for the years 1990, 2000, and 2005, respectively.

### 10.3.2 Estimation and forecasting

Disturbances by insects: Bark beetles: the outbreaks followed large damage caused by wind, snow as well as physiological weakening of trees by drought or fungal diseases. Important outbreaks were since 1997, but extremely critical situation occurred after a large wind calamity in Norway spruce stands on November 2004 (northern and central parts of Slovakia). Traditionally, the most important species in the Norway spruce stands is *Ips typographus*.

Leaf-eating insects: the most frequent and harmful species is gypsy moth (*Lymantria dispar*) acting in oak stands. Their gradation usually occurs once in 6-10 years. The most serious outbreak was recorded in the year of 2005. Gradation of cockchafer of *Melolontha* sp. takes

place in Slovakia each 4-5 years, the last large episode was recorded in 2003 with epicentre in south-western Slovakia.

Disturbances by diseases: they tend to be decreasing in the last decade. We mean mainly multi-casual yellowing of Norway spruce stands and forest decline due to fungal diseases of *Armillaria* sp. and *Heterobasidion* sp. The mentioned forest declines are typical for north-western regions of Slovakia (i.e. Kysuce and Orava).

Other disturbances:

*Wind storms:* large windstorms occur once in 6-8 years, but their trend is growing especially in the last decade. Large damage by wind occurred in 1996, 1999 and 2004. Especially the last one on November 2004 was extremely large, specifically 5.3 million m<sup>3</sup>, i.e. circa 30 thousand ha. As much as 2 million m<sup>3</sup> (i.e. 12 thousand ha) was damaged in the Tatra National Park. Some part of calamity wood could not be processed because of juridical rules (Nature Protection Act No. 543/2002). Consequences of calamity wood left in the Tatra National Park occurred since spring 2005 in form of heavy bark beetle outbreak, which has been continuously destroying the forests.

*Snow damage:* the largest snow calamity has been recorded in the winter 2005/2006 in the northern and central Slovakia. The volume of wood damage was nearly 460 thousand m<sup>3</sup> (its area equals circa 2.5 thousand ha).

*Rime:* very large rime calamity occurred in the central and southern Slovakia in January 2001. On the other hand, rime damage in other years of the last decade was low.

*Drought:* the worst situation in meteorological conditions was recorded in summer 2003, which was exceptionally intensive all over Europe. Consequently, forests manifested increased defoliation.

*Air pollution:* after the serious situation in the 1980s and 1990s the last decade is rather favourable. Emission of noxious matters had been cut in early 1990s, but some problems are still linked to soil acidification (residua of air pollution from the past).

*Game disturbance:* showed very high level in 1990s, recently, we recorded decreasing trend of damage.

### 10.3.3 Reclassification into FRA 2010 categories

Some categories (groups of harmful agents) are slightly different between the Slovak national inventory and the FRA 2010. Thus, data on disturbances in the Slovak forests were regrouped and fitted to the FRA 2010.

## 10.4 Data for Table T10

**Table 10a – Disturbances**

FRA-2010 Categories	Affected forest (1000 ha)		
	1990	2000	2005
Disturbances by insects	3.7	8.2	9.7
Disturbances by diseases	21.9	7.0	8.9
Disturbances by other biotic agents	1.3	0.8	0.7
Disturbances by other abiotic agents	9.9	16.0	16.4
<b>Total area affected by disturbances</b>	<b>32.8</b>	<b>30.1</b>	<b>34.3</b>

Note:

The numbers for the reporting years refer to the averages of annually affected areas for the 5-year periods (1990: 1988-1992, 2000: 1998-2002, 2005: 2003-2007).

The total area affected by disturbances is not necessary the sum of the individual disturbances as these may be overlapping.



**Table 10b – Major outbreaks of insects and diseases affecting forest health and vitality**

Description / name	Tree species or genera affected (scientific name)	Year(s) of latest outbreak	Area affected (1000 hectares)	If cyclic, approx. cycle (years)
<i>Ips typographus</i>	<i>Picea abies</i>	2003-2007	24,7	
<i>Pityogenes chalcographus</i>	<i>Picea abies</i>	2007	0,8	
<i>Lymantria dispar</i>	<i>Quercus spp.</i>	2002-2006	50,7	10
<i>Tortricidae</i>	<i>Quercus spp.</i>	1995-1999	22,0	11
<i>Geometridae</i>	<i>Quercus spp.</i>	2004-2006	10,5	8
<i>Armillaria spp.</i>	<i>Picea abies</i>	2003-2007	6,4	

Note: Area affected refers to the total area affected during the outbreak.

**Table 10c – Area of forest affected by woody invasive species**

Scientific name of woody invasive species	Forest area affected 2005 (1000 hectares)
<b>Total forest area affected by woody invasive species</b>	

Note: The total forest area affected by woody invasive species is not necessary the sum of the values above, as these may be overlapping.

### 10.5 Comments to Table T10

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Disturbance by insects		
Disturbance by diseases		
Disturbance by other biotic agents		
Disturbance caused by abiotic factors		

Major outbreaks	Biotic outbreaks followed large damage caused by wind, snow as well as physiological weakening of trees by drought or fungal diseases	
Invasive species	The table 10c includes data from pheromone trap monitoring <i>Ips duplicatus</i> from north part of Slovakia (occupied area).	

**Other general comments to the table**

Serious events of the last years with a significant impact on the health of forest stands:

- Large-scale windstorm disturbances in 1996 and 2004,
- Country-wide gradation of *Lymantria dispar* in oak stands in 2003-2004,
- Extreme droughts on the whole territory in 2000 and 2003.

## 11 Table T11 – Wood removals and value of removals

### 11.1 FRA 2010 Categories and definitions

Category	Definition
Industrial roundwood removals	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removals	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

### 11.2 National data

#### 11.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Konôpka, J. et al. 1999-2003: Report on Forestry in the Slovak Republic.	H	Wood prices and wood removals	1998-2007	For reporting years 2000 and 2005
Moravčík, M. et al. 2004-2008: Report on Forestry in the SR.				
Green reports 1995-1998 and forestry statistics	H	Wood prices and wood removals	1988-1993	For reporting year 1990

#### 11.2.2 Classification and definitions

National class	Definition
Industrial roundwood	Definition according to EUROSTAT, UNECE, FRA 2010
Woodfuel	Definition according to EUROSTAT, UNECE, FRA 2010

#### 11.2.3 Original data

Original data corresponds to FRA 2010 definitions.

Year	1988	1989	1990	1991	1992	Average 1990	Average 1990
	m <sup>3</sup> under bark						m <sup>3</sup> over bark
Fuel wood	517 358	369 811	393 131	425 384	407 929	422 723	472 135
Industrial roundwood	5 510 422	5 003 510	4 770 289	3 694 160	3 771 612	4 549 999	5 073 365
Year	1 998	1999	2 000	2 001	2 002	Average 2000	Average 2000
	m <sup>3</sup> under bark						m <sup>3</sup> over bark
Fuel wood	347 313	362 254	249 409	268 354	258 837	297 233	331 476
Industrial roundwood	4 648 921	4 848 909	5 541 045	5 535 947	5 522 364	5 219 437	5 818 799
Year	2003	2004	2005	2006	2007	Average 2005	Average 2005
	m <sup>3</sup> under bark						m <sup>3</sup> over bark
Fuel wood	327 462	327 887	315 752	460 213	389 634	364 190	406 123
Industrial round wood	6 027 857	6 912 415	8 986 377	7 408 296	7 741 853	7 415 360	8 260 267

### 11.3 Analysis and processing of national data

#### 11.3.1 Calibration

Not needed

#### 11.3.2 Estimation and forecasting

Not needed

#### 11.3.3 Reclassification into FRA 2010 categories

Not needed

### 11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m <sup>3</sup> o.b.)	5 073	5 819	8 260	472	331	406
... of which from forest	5 073	5 819	8 260	472	331	406
Unit value (local currency / m <sup>3</sup> o.b.)	654	1 238	1 451	196	316	521
Total value (1000 local currency)	3 311 916	7 205 686	11 983 357	93 311	105 031	211 414

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

	1990	2000	2005
Name of local currency	CSK	SKK	SKK

### 11.5 Comments to Table T11

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total volume of industrial roundwood removals	Slovakia uses home wood volume tables for each tree species. Roundwood is measured over bark, but volume in tables is given under bark. Average conversion factors are: for coniferous 1.10975, for non-coniferous 1.12044	
Total volume of woodfuel removals	Wood fuel is measured over bark, but volume is given under bark. Average conversion factors are: for coniferous 1.10975, for non-coniferous 1.12044	
Unit value	Value corresponds with reporting notes, it means wood value at roadside	
Total value	Wood really sold on the market	

Other general comments to the table

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

### 12.1 FRA 2010 Categories and definitions

Term	Definition
Non-wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Value of NWFP removals	For the purpose of this table, value is defined as the market value at the site of collection or forest border.

### NWFP categories

Category
<p><b><u>Plant products / raw material</u></b></p> <ol style="list-style-type: none"> <li>1. Food</li> <li>2. Fodder</li> <li>3. Raw material for medicine and aromatic products</li> <li>4. Raw material for colorants and dyes</li> <li>5. Raw material for utensils, handicrafts &amp; construction</li> <li>6. Ornamental plants</li> <li>7. Exudates</li> <li>8. Other plant products</li> </ol> <p><b><u>Animal products / raw material</u></b></p> <ol style="list-style-type: none"> <li>9. Living animals</li> <li>10. Hides, skins and trophies</li> <li>11. Wild honey and bee-wax</li> <li>12. Wild meat</li> <li>13. Raw material for medicine</li> <li>14. Raw material for colorants</li> <li>15. Other edible animal products</li> <li>16. Other non-edible animal products</li> </ol>

### 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 on Hunting	H to M, summary data	Bush meat, trophies, hides, skins, living animals	1995-2007	Worked out every year on the basis of annual reports of hunting association, subjects of overhead and private hunting grounds
Konôpka, J. et al. 1994-03: Report on Forestry in the SR. Moravčík, M. et al. 2004-08: Report on Forestry in the SR. (Green reports).	H to M	Bush meat, living animals, trophies	1993-2007	Worked out since 1993 every year from official state and sector reports, accounting reports, annual reports on management and special questionnaires from reporting units of information network
Tutka, J.: Data and information for the national account	H to M, summary data	Potential, effective and actual production of forest fruits	2000-2007	Source of information are the results of research (domestic and foreign), Customs Statistics, Green Report, etc.

Tutka, J. et al.: Potential and actual value of non-wood production function of forest. RR, Zvolen 2002, 34 p.	H to M, summary data	Potential and actual production of forest fruits, etc.	2002	National Forest Centre – Forest Research Institute, Results of field examinations on the territory of Slovakia
Tutka J., Kovalčík M.: Forest production other than wood products in the Slovak Republic. RR 2006, 2007	H to M, summary data	Actual production of forest fruits and mushrooms obtained in the surveys of agencies and FRI-NFC Zvolen	2006-2007	Results of 2 years lasting examination of survey agencies and National Forest Centre – Forest Research Institute

### 12.2.2 Classification and definitions

National class	Definition
Compliant with FRA 2010, see 12.2.3 Original data	

### 12.2.3 Original data

FRA 2010 Category	Amount obtained by picking*/Removal	Altogether		
		1990	2000	2005**
<b>Plant products/raw material</b>	<b>Measuring unit</b>			
<b>1. Food</b>				
Bilberry	1000 kg	180	130	180
Cranberry	1000 kg	7	5	65
Raspberry	1000 kg	140	125	140
Blackberry	1000 kg	30	25	28
Rose hips	1000 kg	50	45	65
Hazelnuts	1000 kg	15	12	30
Other forest fruits	1000 kg	45	40	72
<b>Together</b>	<b>1000 kg</b>	<b>467</b>	<b>382</b>	<b>580</b>
<b>Fresh mushrooms (edible mushrooms, all species)</b>	1000 kg	400	390	685

FRA 2010 Category	Amount obtained By picking/Removal	Altogether		
		1990	2000	2005**
<b>2. Fodder</b>				
Hay for animals and horses	1000 kg	120	130	140
<b>3.Raw material for medicine and aromatic products</b>				
medicinal plants	1000 kg	180	150	160
<b>4. Raw materials for colorants and dyes</b>				
<b>5. Raw materil for utensils, handicraft &amp; construction</b>				
Birch and other wicker	10 <sup>3</sup> pcs	15	10	10
Hazelnut poles for crops	100 kg	600	500	400
Small-dimension elder (Sambucus) stems for musical instruments	100 kg	10	13	12
Together	10 <sup>3</sup> pcs 100 kg	15 610	10 513	10 412

<b>6. Ornamental plants</b>				
Christmas trees	10 <sup>3</sup> pcs	450	390	370
Branches, twigs and cones, evergreens	100 kg	270	250	250

<sup>1</sup> Estimation on the basis of census numbers of forest game and stock of horses used for timber skidding.

<sup>2</sup> Estimation on the basis of annual offer of brooms at selected market places.

<sup>3</sup> Estimation was done on the basis of actual number of hobby-gardeners in Slovakia. It is supposed that 1/3 of the number of gardeners harvest 10 new hazelnut poles per year as supports for the bean and pea crops.

<sup>4</sup> Estimation on the basis of the offer of Slovak folk instruments (shepherds' long pipes and pipes sold at open markets, souvenir shops and folk festivals.

\* Domestic buy out + export + own consumption.

\*\* A drop due to cultivation in plantations located mostly on farmlands.

FRA 2010 Category	Amount obtained in picking/hunt	Altogether		
		1990	2000	2005
Animal products/raw material	Measuring unit			
<b>9. Living animals*</b>				
Red deer	Individuals	30	35	48
Fallow deer	Individuals	60	73	68
Roe deer	individuals	5	5	4
Mouflon	individuals	100	67	152
Wild boar	individuals	50	5	135
Hare	individuals	10 000	9 735	10 496
Together	individuals	10 245	9 920	10 903
<b>10. Hides, skins and trophies</b>				
Antlers– red deer	10 <sup>3</sup> pcs	4	3,5	3
Antlers – roe deer	10 <sup>3</sup> pcs	7,5	7	7
Fox– pelts from whole body	10 <sup>3</sup> pcs	10	10	11
Bear – pelts with skull	pcs	40	30	50
Wolf – pelts with skull	pcs	100	90	100
Lynx – pelts with skull	pcs	80	-	-
Marten – pelts from whole body	pcs	1 500	1 400	1 400
Together	pcs	23 220	22 020	22 550
<b>12. Bush meat</b>				
Red deer		6.3/441	9.6/672	12.7/1008.1
Fallow deer		0.9/31.5	1.3/45.5	2.3/80.5
Roe deer		11.9/154.7	15.5/201.5	17.2/223.6
Mouflon	10 <sup>3</sup> individuals	0.8/14.4	1.7/30.6	2.5/45.0
Wild boar	/1000 kg)	14.4/576	16.4/65.6	21.8/872
Hares		8.9/35.6	22.3/89.2	21.8/87.2
Pheasants		24.7/37.0	90.3/135.5	127.9/191.9
Rare game		0.2/16.0	0.07/5.6	0.1/8.0
Other game		15/7.5	18.8/9.4	120.7/60.4
Together		83.1/1313.7	175.97/1845.3	327.0/2576.7

\* Living animals caught and redistributed for the purpose of re-population or hunting to another hunting grounds.

### 12.3 Analysis and processing of national data

#### 12.3.1 Calibration

Not needed

#### 12.3.2 Estimation and forecasting

Estimates concerning the reference periods 2000 and 2007 are described in the notes to the

tables in subsection 12.2.2. They were used when representative data were not available or they were fragmentary. Extrapolations were applied where information was available for other than the reference periods.

### 12.3.3 Reclassification into FRA 2010 categories

Not needed

## 12.4 Data for Table T12

Rank	Name of product	Key species	Unit	NWFP removals 2005		NWFP category
				Quantity	Value (1000 local currency)	
1 <sup>st</sup>	Wild boar		Individuals, (pcs)	21 804	48 142	12
2 <sup>nd</sup>	Red deer		pcs	12 723	47 042	12
3 <sup>rd</sup>	Fresh mushrooms		1000 kg	685	33 450	1
4 <sup>th</sup>	Pheasants		pcs	127 943	22 390	12
5 <sup>th</sup>	Roe deer		pcs	17 170	20 260	12
6 <sup>th</sup>	Bilberry		1000 kg	180	11 500	1
7 <sup>th</sup>	Hare		pcs	21 818	8 073	12
8 <sup>th</sup>	Cranberry		1000 kg	65	4 875	1
9 <sup>th</sup>	Fallow deer		pcs	2 257	4 288	12
10 <sup>th</sup>	Raspberry		1000 kg	140	3 425	1
<b>Together</b>		-	-	-	203 445	
All other plant products					117 355	
All other animal products					127 894	
<b>TOTAL</b>					<b>448 694</b>	
			<b>2005</b>			
Name of local currency			Slovak crown (SKK)			

## 12.5 Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	Most important products are by name in the table 12.4
Other plant products	Other plant products included other forest fruits , fodder, raw materials for medicine and aromatic products, raw material for utensils, handicraft & construction and ornamental plants.
Other animal products	Up to other animal products are include those kind of products: mouflon, rare game, other game and hides, skins and trophies
Value by product	Value by products is prevailingly market value timely year regardless of the are for subsistence and commercial use
Total value	

### Other general comments to the table

In future also the relevant value of the benefits of public beneficial functions of forest ecosystems and forestry as well should be incorporated into the value of non-wood forest products.



## 13 Table T 13 – Employment

### 13.1 FRA 2010 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment	Includes all persons in paid employment or self-employment.
Paid employment	Persons who during a specified reference period performed some work for <u>wage or salary</u> in cash or in kind.
Self-employment	Persons who during a specified reference period performed some work for <u>profit or family gain</u> in cash or in kind (e.g. employers, own-account workers, members of producers' cooperatives, contributing family workers).

### 13.2 National data

#### 13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Lacko, M. et al., 1992: Prognoses and documents on the care of workers in the forest sector, FRI Zvolen	H	Number of employees in forest sector	1992	Data series 1988-1992
Konôpka, J. et al. 2003: Report on Forestry in the SR, Green Report.	H	Number of employees in forestry	2000	Data series 1998-2002
Moravčík, M. et al. 2004-08: Report on Forestry in the SR. (Green reports).	H	Number of employees in forestry	2003-2007	Data series 2003-2007
Statistical Office of SR: National statistics on employment <a href="http://www.statistics.sk">www.statistics.sk</a>	H	Total number of employees in forestry and related services according to ISIC/NACE 02.0 (Forestry, logging and related services)		2000-2007

#### 13.2.2 Classification and definitions

National class	Definition
	Compliant with FRA 2010 definition

#### 13.2.3 Original data

Employment in Slovakia is monitored in accordance with the provisions of EU regulations (Council Regulation (EC) No 577/98 on the organization of a labour force sample survey in the Community). The methodology fully corresponds with the recommendations of the International Labour Organization (ILO) and allows for classification according to the Sectoral Classification of Economic Activities (SCEA).

Summarized data originating in the above mentioned sources of information are present in the national reporting table.

year	number of rangers	number of forestry specialists
2000	25	21
2005	107	33
2008	86	35

### 13.3 Analysis and processing of national data

#### 13.3.1 Reclassification into FRA 2010 categories

An absolute number of full-time employees in the state sector organizations are calculated from the data provided by a special survey questionnaire issued by Ministry of Agriculture of the SR.

Data concerning self-employed workers for the years 2000 and 2005 come from the National statistics on employment carried out by Statistical Office.

#### 13.4 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	36.3	24.8	23.6
...of which paid employment	36.3	20.4	15.8
...of which self-employment	0	4.4	7.8
Employment in management of protected areas	n. a.	0,05	0,14

#### 13.5 Comments to Table T13

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Employment in primary production of goods	The number of workforce employed in the industry of forestry, timber felling and associated services (SCEA 02).	
Paid employment / self-employment	“Paid employment” category includes employees of state and non-state forestry subjects and supplier companies “self-employment” category includes entrepreneurs in ISIC/NACE 02.0.	
Employment in management of protected areas	This category includes 2 kinds of employees of State Nature Conservancy – “forestry specialists” and “rangers”	The increase in 2005 as compared to 2000 was due to by extensive application of Natura 2000.

#### Other general comments to the table

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## 14 Table T14 – Policy and legal framework

### 14.1 FRA 2010 Categories and definitions

Term	Definition
Forest policy	A set of orientations and principles of actions adopted by public authorities in harmony with national socio-economic and environmental policies in a given country to guide future decisions in relation to the management, use and conservation of forest and tree resources for the benefit of society.
Forest policy statement	A document that describes the objectives, priorities and means for implementation of the forest policy.
National forest programme (nfp)	A generic expression that refers to a wide range of approaches towards forest policy formulation, planning and implementation at national and sub-national levels. The national forest programme provides a framework and guidance for country-driven forest sector development with participation of all stakeholders and in consistence with policies of other sectors and international policies.
Law (Act or Code) on forest	A set of rules enacted by the legislative authority of a country regulating the access, management, conservation and use of forest resources.

### 14.2 Data for Table T14

Indicate the existence of the following (2008)			
<b>Forest policy statement with national scope</b>		√ Yes	
		No	
If Yes above, provide:	Year of endorsement	2006	
	Reference to document	Concept of Agrarian Development for the years 2007-2013 – part Forestry	
	Year of endorsement	2008	
	Reference to document	Strategy of Forestry Development	
<b>National forest programme (nfp)</b>		√ Yes	
		No	
If Yes above, provide:	Name of nfp in country	National Forest Programme of the Slovak Republic	
	Starting year	2007	
	Current status		In formulation
		√	<u>In implementation</u>
			Under revision
			Process temporarily suspended
Reference to document or web site	<a href="http://www.land.gov.sk/sk/?navID=1&amp;id=481">http://www.land.gov.sk/sk/?navID=1&amp;id=481</a>		
<b>Law (Act or Code) on forest with national scope</b>		√ Yes, specific forest law exists	
		Yes, but rules on forests are incorporated in other (broader) legislation	
		No, forest issues are not regulated by national legislation	
If Yes above, provide:	Year of enactment	2005 (Act on Forests No. 326/2005)	
	Year of latest amendment	2007 (No. 360/2007)	
	Reference to document		
<a href="http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=18775&amp;FileName=05-z326&amp;Rocnik=2005">http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=18775&amp;FileName=05-z326&amp;Rocnik=2005</a>			
<a href="http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=207612&amp;FileName=zz07-00360-0207612&amp;Rocnik=2007">http://www.zbierka.sk/zz/predpisy/default.aspx?PredpisID=207612&amp;FileName=zz07-00360-0207612&amp;Rocnik=2007</a>			

In case the responsibility for forest policy- and/or forest law-making is decentralized, please indicate the existence of the following and explain in the comments below the table how the responsibility for forest policy- and law-making is organized in your country.	
Sub-national forest policy statements	Yes
	<input checked="" type="checkbox"/> No
If Yes above, indicate the number of regions/states/provinces with forest policy statements	
Sub-national Laws (Acts or Codes) on forest	Yes
	<input checked="" type="checkbox"/> No
If Yes above, indicate the number of regions/states/provinces with Laws on forests	

### 14.3 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	<p><b>Concept of Agrarian Development (CAD) for the years 2007-2013 – part Forestry.</b> It appoints the strategic objective, development priorities and framework goals aimed at achievement of given priorities for forestry in Slovakia</p> <p><b>Strategy of Forestry Development.</b> Validity of the strategy by 2020-2025. It elaborates priorities of both the CAD and the NFP SR. It gives reasons for suggested objectives, goals and priorities and identifies existing constraints, strong and weak aspects and risks at their achievement. It indicates possible tools, means and procedures on implementation of proposed objectives, goals and priorities.</p>
National forest programme (nfp)	In elaboration of the <b>NFP SR</b> there were considered principles following from the Annex to Vienna Resolution 1: MCPFE Approach to National Forest Programmes in Europe. Great emphasis was put mainly on securing the participation of the representatives of all interested groups in formulating NFP (their involvement into working groups), inter-sectoral approach (considering interrelations of forestry and related sectors), harmonization with national legislation and policies, national strategies of sustainable development, international commitments and ecosystem approach. It is the basic document for securing sustainable forest management. It was approved by the Government of SR (May 2007) and the National Council of SR took note of the NFP SR in September 2007. In 2008 it was in-processed into more details through measures formulated in the Action Plan of the NFP SR.
Law (Act or Code) on forest with national scope	
Sub-national forest policy statements	
Sub-national Laws (Acts or Codes) on forest	

Other general comments to the table

## 15 Table T15 – Institutional framework

### 15.1 FRA 2010 Categories and definitions

Term	Definition
Minister responsible for forest policy-making	Minister holding the main responsibility for forest issues and the formulation of the forest policy.
Head of Forestry	The Head of Forestry is the Government Officer responsible for implementing the mandate of the public administration related to forests.
Level of subordination	Number of administrative levels between the Head of Forestry and the Minister.
University degree	Qualification provided by University after a minimum of 3 years of post secondary education.

### 15.2 Data for Table T15

Table 15a – Institutions

FRA 2010 Category	2008	
Minister responsible for forest policy formulation : please provide full title	Ministry of Agriculture of the Slovak Republic	
Level of subordination of Head of Forestry within the Ministry	√	1 <sup>st</sup> level subordination to Minister
		2 <sup>nd</sup> level subordination to Minister
		3 <sup>rd</sup> level subordination to Minister
		4 <sup>th</sup> or lower level subordination to Minister
Other public forest agencies at national level	<ul style="list-style-type: none"> <li>▪ National Forest Centre (NFC) includes: <ul style="list-style-type: none"> <li>○ Forest Research institute</li> <li>○ Institute of Forest Consulting and Education</li> <li>○ Institute of Forest Resources and Informatics</li> <li>○ Institute of Forest Management Planning (Lesoprojekt)</li> </ul> </li> <li>▪ Forests of the Slovak Republic, state enterprise, Banská Bystrica</li> <li>▪ Military Forests and Estates of the Slovak Republic, state enterprise, Pliešovce</li> </ul>	
Institution(s) responsible for forest law enforcement	<ul style="list-style-type: none"> <li>▪ Forestry section of the Ministry of Agriculture of SR</li> <li>▪ County Forest Offices (8)</li> <li>▪ District Forest Offices (40)</li> </ul>	

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.
...of which with university degree or equivalent	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.

Notes:

1. Includes human resources within public forest institutions at sub-national level
2. Excludes people employed in State-owned enterprises, education and research, as well as temporary / seasonal workers.

**15.3 Comments to Table T15**

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Minister responsible for forest policy formulation		
Level of subordination of Head of Forestry within the Ministry	Head of Forestry is the head of Forestry Section which is directly subordinated to the Minister of Agriculture	
Other public forest agencies at national level	Among other public forest agencies at national level we included public (state) forestry institutions acting at national level	
Institution(s) responsible for forest law enforcement	Forest law enforcement in Slovakia is secured by the Forestry section of the Ministry of Agriculture as the central body of state administration; by the District Forest Offices on the 1 <sup>st</sup> level and by the County Forest Offices on the 2 <sup>nd</sup> level. No other agencies have these responsibilities.	
Human resources within public forest institutions		

Other general comments to the table

## 16 Table T16 – Education and research

### 16.1 FRA 2010 Categories and definitions

Term	Definition
Forest-related education	Post-secondary education programme with focus on forests and related subjects.
Doctor's degree (PhD)	University (or equivalent) education with a total duration of about 8 years.
Master's degree (MSc) or equivalent	University (or equivalent) education with a total duration of about five years.
Bachelor's degree (BSc) or equivalent	University (or equivalent) education with a duration of about three years.
Technician certificate or diploma	Qualification issued from a technical education institution consisting of 1 to 3 years post secondary education.
Publicly funded forest research centers	Research centers primarily implementing research programmes on forest matters. Funding is mainly public or channelled through public institutions.

### 16.2 National data

#### 16.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Original statistics of Forestry colleges, Forestry apprentice schools, and Faculty of Forestry	H	Number of persons	2000 2005 and Jun 2008	

#### 16.2.2 Original data

Graduate and undergraduate courses and programmes in forestry subjects are offered at the Faculty of Forestry of Technical University Zvolen. In addition, there are three specialised forestry colleges in Banská Štiavnica, Liptovský Hrádok, Prešov which are offering high school equivalent education, and five forestry apprentice schools (Banská Štiavnica, Bijacovce, Modra Harmónia, Sigord and Tvrdošín).

Original data comes from the evidence of number of students that have successfully completed studies on particular school and year.

### 16.3 Analysis and processing of national data

#### 16.3.1 Estimation and forecasting

Not needed.

## 16.4 Data for Table T16

FRA 2010 Category	Graduation <sup>1)</sup> of students in forest-related education					
	2000		2005		2008	
	Number	% Female	Number	% Female	Number	% Female
Master's degree (MSc) or equivalent	132	16	116	21	63	25
Bachelor's degree (BSc) or equivalent	-	-	-	-	93	18
Forest technician certificate / diploma	283 (148)	1(0)	307(160)	3(3)	223(120)	7(2)
FRA 2010 Category	Professionals working in publicly funded forest research centres <sup>2)</sup>					
	2000		2005		2008	
	Number	% Female	Number	% Female	Number	% Female
Doctor's degree (PhD)	155	14	146	18	150	23
Master's degree (MSc) or equivalent	101	32	74	43	59	34
Bachelor's degree (BSc) or equivalent	-	-	-	-	1	0

Notes:

1. Graduation refers to the number of students that have successfully completed a Bachelor's or higher degree or achieved a certificate or diploma as forest technician.
2. Covers degrees in all sciences, not only forestry.

## 16.5 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Graduation of students in forest-related education	The Bachelor curriculum was started at Faculty of Forestry in 2005. Number in bracket means other forestry related education with duration 3-4 years without higher certification.	
Professionals working in public forest research centres		

Other general comments to the table



## 17 Table T17 – Public revenue collection and expenditure

### 17.1 FRA 2010 Categories and definitions

Category	Definition
Forest revenue	All government revenue collected from the domestic production and trade of forest products and services. For this purpose, forest products include: roundwood; sawnwood; wood-based panels; pulp and paper; and non-wood forest products. As far as possible, this should include revenue collected by all levels of government (i.e. central, regional/provincial and municipal level), but it should exclude the income of publicly owned business entities.
Public expenditure	All government expenditure on forest related activities (further defined below).
Operational expenditure (sub-category to Public expenditure)	All government expenditure on public institutions solely engaged in the forest sector. Where the forest administration is part of a larger public agency (e.g. department or ministry), this should only include the forest sector component of the agency's total expenditure. As far as possible, this should also include other institutions (e.g. in research, training and marketing) solely engaged in the forest sector, but it should exclude the expenditure of publicly owned business entities.
Transfer payments (sub-category to Public expenditure)	All government expenditure on direct financial incentives paid to non-government and private-sector institutions, enterprises communities or individuals operating in the forest sector to implement forest related activities.
Domestic funding	Public expenditure funded from domestic public financial resources, including: retained forest revenue; forest-related funds; and allocations from the national budget (i.e. from non-forest sector public revenue sources).
External funding	Public expenditure funded from grants and loans from donors, non-governmental organisations, international lending agencies and international organisations, where such funds are channelled through national public institutions.

### 17.2 National data

#### 17.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Konôpka, J. et al. 2001: Report on Forestry in the SR, Green Report.	H	revenue, public expenditures	2000	
Moravčík, M. et al. 2006: Report on Forestry in the SR, Green report.	H	revenue, public expenditures	2005	
Moravčík, M. et al. 2008: Report on Forestry in the SR, Green report.	H	sanctions	2007	
Slovak hunting association <a href="http://www.polovnictvo.sk/">http://www.polovnictvo.sk/</a>	M	Licence fees for hunting	2000-2007	

### 17.3 Analysis and processing of national data

#### 17.3.1 Calibration

**Year: 2000**

Expenditures from State Fund for Forest Improvement

Item	Share
Expenditure on research	1%
Expenditure on forest management plans	5%
Expenditure on forestry activities	94%
<b>Total</b>	<b>100%</b>

Source: Green Report 2001

Calibrated national data (State Fund for Forest Improvement)

Item	mil. SKK
Expenditure on research	4,446
Expenditure on forest management plans	22,230
Expenditure on other forestry activities	417,924
<b>Total</b>	<b>444,600</b>

Calibrated national data (Total Forestry Support)

Item	mil. SKK
<b>Transfer payments</b>	<b>434,624</b>
Expenditure on forestry activities	417,924
Transfer payments from other sources	16,700
<b>Operational expenditure</b>	<b>137,376</b>
Expenditure on research	4,446
Expenditure on forest management plans	22,230
Other operational expenditures	110,700
<b>Total forestry support</b>	<b>572,000</b>

Data from 2005 we did not need to calibrate, because we had it in required structure

#### 17.3.2 Estimation and forecasting

Original data

National class	2007	2005
Penalties and sanctions (SKK)	750 000	622 000

Source: Green Report 2008 and Green Report 2006

Calculation of differences

$\Delta x$ (2007-2005)	2
$\Delta$ penalties and sanctions	128 000 SKK
$\Delta$ penalties and sanctions / $\Delta x$	64

Estimation

National class	2005	2000
Penalties and sanctions (SKK)	622 000	302 000

**Estimation of licence fees for hunting**

Licence fee for hunting	300 SKK/5 years
No. of hunters	55 000
<b>Licence fee for hunting per year</b>	<b>3 300 000 SKK</b>

**17.4 Data for Table T17****Table 17a - Forest revenues**

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	2005
Forest revenue	58 602	58 922

**Table 17b - Public expenditure in forest sector by funding source**

FRA 2010 Categories	Domestic funding (1000 local currency)		External funding (1000 local currency)		Total (1000 local currency)	
	2000	2005	2000	2005	2000	2005
Operational expenditure	137 000	243 300	0	0	137 000	243 300
Transfer payments	435 000	196 888	0	80 612	435 000	277 500
<b>Total public expenditure</b>	<b>572 000</b>	<b>440 188</b>	<b>0</b>	<b>80 612</b>	<b>572 000</b>	<b>520 800</b>
If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	<input type="checkbox"/>	Reforestation				
	<input type="checkbox"/>	Afforestation				
	<input checked="" type="checkbox"/>	Forest inventory and/or planning				
	<input checked="" type="checkbox"/>	Conservation of forest biodiversity				
	<input checked="" type="checkbox"/>	Protection of soil and water				
	<input checked="" type="checkbox"/>	Forest stand improvement				
	<input type="checkbox"/>	Establishment or maintenance of protected areas				
	<input type="checkbox"/>	Other, specify below				

**17.5 Comments to Table T17**

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue	It includes: <ul style="list-style-type: none"> <li>▪ Payments for forest land exemption (an estimation in the amount of 55 mil. SKK per year)</li> <li>▪ Penalties and sanctions for the violation of enforced regulations</li> <li>▪ Licence fee for hunting (an estimation in the amount of 3.3 mil. SKK)</li> </ul>	
Operational expenditure	It includes: expenditure on regional forest offices and state forestry administration, research and training (since 2006 National Forest Centre) and on other public agencies (Svätý Anton Museum and Forestry and Wood-processing Industry Museum)	
Transfer payments	It includes: all expenditures on forest management to state and non-state forest enterprises.	The reported trend is decreasing until 2005. Since 2006 the operational expenditure has increased due to support from EU Funds.

**Other general comments to the table**

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