Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT

COUNTRY REPORTS

CZECH REPUBLIC

FRA2010/052
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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).

The Global Forest Resources Assessment process is coordinated by the Forestry Department at FAO headquarters in Rome. The contact person for matters related to FRA 2010 is:

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

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Czech Statistical Office (www.czso.cz)	H	Total area of country, forest area	1996-2007	http://www.czso.cz/csu/2007edicniplan.nsf/t/FE003FE48E/$File/0001070203.xls
Statistical environmental yearbook of the Czech Republic, Ministry of environment	H	inland water, orchards gardens	1996-2007	http://www.cenia.cz/web/www/web-pub2.nsf/$pid/CENMSFMVTMNS/$FILE/kap_b3.pdf
Zaverecna zprava prvni etapy specialnich hospodárskych planu (Final report on special management plans. Inventory of water flows and tree groups growing outside forest), 1976, Lesprojekt Brandýs n. L.	H	other land with tree cover	1976	Tab. 1a

1.2.2 Classification and definitions

National class	Definition
Lesni půda (PUPFL) - Forest:	Land **registered in cadastre** as forest *. * That land must be in accordance with forest act reforested in 2 years after deforestation, tree density must be higher than 70 % (if less, it is obligatory to cut it down and reforest it). Size in area is not limited. **Incl. roads**, cleared tracks etc.
Vnitrozemske vodni plochy - Inland water	Major rivers, ponds, lakes and water reservoirs.
Stromy mimo les - na brezich rek, potoku a jezer, vetrolamy, male izolovane lesiky. Trees on river and lake banks, protection belts and small isolated forested lots.	Trees on river and lake banks, protection belts and small isolated forested lots. "Special management plans" for them were elaborated in the 1970´s.
Other wooded land	Not a national category. See comment below.

1.2.3 Original data

Total area of country
Czech Statistical Yearbook 2007 on Web - 7 886 666 ha,
FAOSTAT Total 7 887 thous.ha , land 7 728 thous. ha, inland water 159 thous. ha

	1990	2000	2001	2002	2003	2004	2005	2006	2007
	1000 ha								
forest	2 629	2 637	2 639	2 643	2 644	2 646	2 647	2 649	2 651
other wooded land	0	0	0	0	0	0	0	0	0
Other land	5 099	5 090	5 088	5 084	5 082	5 081	5 078	5 076	5 073
… of which orchards		49	49	48	48	47	47	47	47
inland water bodies	159	159	160	160	160	161	161	161	162
Total	7 887	7 887	7 887	7 887	7 887	7 887	7 887	7 887	7 887

Land with tree cover – trees outside forest (Source: Special management plans 1976)

	banks length		
	rivers	**ponds**	**reservoirs**
	km		
special plans	93 116.695	3 687.880	722.485

Stock assessment: 45 m3/ha

1.3 Analysis and processing of national data

1.3.1 Estimation and forecasting

Other land estimation
Total area – forest – inland water = other land.

Forecasting to 2010 – done by excel function FORECAST

	1990	2000	2001	2002	2003	2004	2005	2006	2007	2010
	1000 ha									
forest	2 629	2 637	2 639	2 643	2 644	2 646	2 647	2 649	2 651	2 657
other wooded land	0	0	0	0	0	0	0	0	0	0
Other land	5 099	5 090	5 088	5 084	5 082	5 081	5 078	5 076	5 073	5 067
… of which orchards		49	49	48	48	47	47	47	47	45
inland water bodies	159	159	160	160	160	161	161	161	162	163
Total	7 887	7 887	7 886	7 887	7 887	7 887	7 887	7 887	7 887	7 887

1.3.2 Reclassification into FRA 2010 categories

Area calculation of the other land with tree cover (Source: Special management plans 1976)

	banks length			**Stock total**	**Stock**	**Area** (total stock/average stock per ha) **2000**	**Area** (total stock/average stock per ha) **2005**	**Area** (total stock/average stock per ha) **2010**
	rivers	**ponds**	**reservoirs**					
	km			**1000 m^3**	**(m^3/km)**	**1 000 ha**	**1 000 ha**	**1 000 ha**
special plans	93 116.695	3 687.880	722.485					
total	97 527				21.5 *	46	46	46
small lots				101,157 *		2	2	2
orchards						49	47	45
total land with tree cover						**97**	**95**	**92**

* avg stock 45 m^3/ha

1.4 Data for Table T1

FRA 2010 categories	**Area (1000 hectares)**			
	1990	**2000**	**2005**	**2010**
Forest	2629	2637	2647	2657
Other wooded land	0	0	0	0
Other land	5098	5090	5079	5069
...of which with tree cover	*96*	*97*	*95*	92
Inland water bodies	160	160	161	161
TOTAL	**7887**	**7887**	**7887**	**7887**

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	The Czech and the FRA **definitions of the forest** (lesni puda, PUPFL) are very similar. Differences: - FRA size limits (0,5 ha) – in the CR, a "forest" could be smaller depending on how the individual land lot is registered in the cadaster; **no information** on this is available; total area of such isolated lots smaller than 0,5 ha could be approx. from hundreds to 2 thousands (max.) of hectares. - It is obligatory to reforest any forest stand in 2 years after felling; it is also obligatory to maintain a density of a forest stand higher than 70 %. In some cases the regeneration time could be prolonged by state forest authority. - An **unknown** part of the approx. 6 000 ha of dwarf pine is not a regular forest according to the FRA definition (it mostly does not reach a height of 5 m in situ): these dwarf pine groups ("spots"), mostly mixed with spruce, form parts – larger or smaller than 0.5 ha - of regular forest stands mainly in high mountains. Here, these (roughly 0,2 % of total forest area) are included into "forest" because they are used and protected like regular forest stands having more non-wood producing functions than a regular forest has. It is also better to keep them within "forest" than to introduce absolutely groundless subjective assessments into reporting tables. The height and area size limits are not fully useful for a forest definition in Central Europe.	**Subsidised** part of the afforestation of marginal agriculture land amounts less than 1 000 ha annually (last 3 years)
Other wooded land	- None "other wooded land" is registered in the CR. Case the agriculture land is abandoned and occupied by (forest) trees, the owner willing manage it as forest, he must change the attribute in the cadaster.	
Other land		
Other land with tree cover	- Registered orchards are included here into the land with tree cover. Parks (towns, castles, botanical gardens; approx. hundreds of hectares in total) cannot be clearly identified from the cadastre registers. A portion of registered gardens which matches the FRA land with tree cover definition is unknown. These categories probably not exceed about 1000 ha.	The area of the registered orchards is decreasing by approx. 200 ha per year

Inland water bodies	**Inland water adjusted to FAOSTAT**	

Other general comments to the table

Expected year for completion of ongoing/planned <u>national</u> forest inventory and/or RS survey / mapping	
Field inventory	First round already finished second round is planned for 2011-2014
Remote sensing survey / mapping	Ongoing process

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.
Categories related to the holder of management rights of public forest resources	
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
Annual report on the state of forests and forestry, Ministry of agriculture, Prague	H	Forest ownership (%)	Annual	

2.2.2 Classification and definitions

National class	Definition
State	Forest owned by the State (national, state and regional governments) or government-owned institutions or corporations
Municipalities	forest owned by cities, towns, municipalities, communities and villages.
Regions	Forest owned by regional government
Church	Forest owned by churches
Forest cooperatives	forest owned by individuals joined in co-operatives or similar organisations
private	Forest owned by individuals
Corporate bodies	Forest owned by corporations
JZD - agriculture cooperatives	Forest owned by former agriculture co-operatives

2.2.3 Original data

National class	1990	2000	2001	2002	2003	2004	2005	2006	2007
	%								
State	95.8	63.1	61.5	60.7	60.5	60	59.8	59.6	61.52
Municipalities	0	13.6	14.4	15	15.1	15.4	15.5	15.6	15.85
Regions			0.2	0.2	0.2	0.2	0.2	0.2	0.15
Church									0.06
Forest cooperatives	0	0.9	0.9	1	1	1	1	1	1.2
Other private	0.1	22.4	23	23.1	23.2	23.4	23.5	23.6	21.22
….of which Corporate bodies	0	0	0	0	0	0	0	0	2.27
… of which Individuals	0	0	0	0	0	0	0	0	18.95
Agriculture cooperatives	4.1	0	0	0	0	0	0	0	0

Rem.: there was a significant change in methodology of reporting starting in 2007 data. Previous dataset is not continued.

2.3 Analysis and processing of national data

2.3.1 Calibration

Not needed

2.3.2 Estimation and forecasting

Until 2007 private ownership was reported as "other private" with no distinction between individuals and corporate bodies. We used the 2007 data percentage to divide the "other private" category

	1990	2000	2005
Other private	0.1	22.4	23.5
….of which Corporate bodies	0.0	2.4	2.5
… of which Individuals	0.1	20.0	21.0

2.3.3 Reclassification into FRA 2010 categories

Owner - national	FRA	1990	2000	2005
		% of total area		
State	Public	95.8	63.1	59.8
Municipalities		0.0	13.6	15.5
Regions				0.2
Subtotal		95.8	76.7	75.5
Forest cooperatives	Private business institutions	0.0	0.9	1.0
Corporate bodies		0.0	2.4	2.5
Agriculture cooperatives		4.1	0.0	0.0
Subtotal		4.1	3.3	3.5
Individuals	individuals	0.1	20.0	21.0
Subtotal		0.1	20.0	21.0
Total		100.0	100.0	100.0

Owner - national	FRA	1990	2000	2005
		1000 ha		
State	**Public**	2518.6	1664.1	1583.2
Municipalities		0.0	358.7	410.3
Regions		0.0	0.0	5.3
Subtotal		**2518.6**	**2022.8**	**1998.8**
Forest cooperatives	**Private business institutions**	0.0	23.7	26.5
Corporate bodies		0.3	63.2	66.6
Agriculture cooperatives		107.8	0.0	0.0
Subtotal		**108.1**	**86.9**	**93.0**
Individuals	**Individuals**	2.3	527.6	555.6
Subtotal		**2.3**	**527.6**	**555.6**
Subtotal	**Private**	**110.4**	**614.5**	**648.6**
Total		2629	2637	2647

2.4 Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	2519	2023	1999
Private ownership	110	614	648
...of which owned by individuals	2	527	555
...of which owned by private business entities and institutions	108	87	93
...of which owned by local communities	0	0	0
...of which owned by indigenous / tribal communities	0	0	0
Other types of ownership	0	0	0
TOTAL	**2629**	**2637**	**2647**

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?	X	Yes
		No
If **No** 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	2519	2023	1999
Individuals	0	0	0
Private corporations and institutions	0	0	0
Communities	0	0	0
Other	0	0	0
TOTAL	2519	2023	1999

2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership	Forests owned by municipalities are included in public ownership	
Private ownership		The restitution process started in 1991 is almost finished. Approx. 6,5% of forest area belonged originally to churches and religious orders are still "blocked" as a property of the Czech republic. The restitution of these forests is still being discussed
Other types of ownership		
Management rights	Public forests are managed by state enterprise which we assume to be Public administration	

Other general comments to the table

3 Table T3 – Forest designation and management

3.1 FRA 2010 Categories and definitions

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

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Souhrnny lesni hospodarsky plan, SLHP (Summary of the Forest Management Plans), Forest Management Institute, Brandys n. l.,	H	primary functions	1978-2006	
Consultation, Forest and Game Management Research Institute Jiloviste-Strnady	M-L	Overlap of the production and the other functions	1990 - 2005	
Prehled subkategoii vcetne prekryvu (Summary of categories including overlaps), special survey, 1991, Forest Management Institute.	H	Multiple functions	1991	Overlaps of the other functions (excluding the production one)
Statistical environmental yearbook of the Czech Republic, Ministry of environment	H	Forests in protected areas	2004-2007	

3.2.2 Classification and definitions

Primary functions ("forest categories", declared functions)
1978-1995 (decree No. 13/1976 Coll.)

National class	Definition (declared prevailing function)
1. Les hospodarsky Production forest	Plnici produkcni funkci Production of timber and other goods
2.Ochranne lesy – Protection forest	a) na mimoradne nepriznivych stanovistich on extraordinary unfavourable sites
	b) vysokohorske pod horni hranici stromove vegetace alpine forest below tree line
	c) v pasmu kosodreviny in the zone of dwarf pine
	d) k zajisteni ochrany pudy needed for soil protection
3. Lesy zvlastniho urceni - Special purpose forest	a) ochranna pasma vodnich zdroju 1. stupne protective zones of water sources, strictly controlled
	b) ochranna pasma prirodnich lecivych zdroju a lesy lazenske protective zones of natural curative resources and forest in spas
	c) v uznanych oborach a bazantnicich game preserves and pheasantries
	d) narodni parky a CHKO national parks and protected landscape regions
	e) postihovane exhalacemi affected by air pollution
	f) urcene pro lesnicky vyzkum forestry research
	g) jiné potreby spolecnosti (vojenske, rekreacni atd.) other social demands (military, recreation, gene preserves etc.)
Porostni půda - Timberland	Forest land actually covered by trees or temporary unstocked and to be reforested in next two years. Forest roads, cleared tracks, forest enterprise facilities etc. not included. Data on forest are collected on the timberland. Area – see table 3.

1996-2008 (law No. 289/1995 Coll.)

National class	Definition
1. Les hospodarsky Production forest	11) les nezarazeny do jine kategorie Production of timber and other goods
2. Les ochranny Protection forest	21) na mimoradne nepriznivych stanovistich extremely unfavourable sites
	22) vysokohorske pod hranici stromove vegetace chranici nize polozene in high mountains below tree line, protecting forest stands down slopes
	23) v klecovem vegatcnim stupni in dwarf pine vegetation zone
3. Les zvlastniho urceni Special purpose forest	31) pasma hygienicke ochrany 1. stupne protective zones of water sources, strictly protected
	32) ochranna pasma lecivych zdroju protective zones of curative and mineral water sources
	33) narodni parky a narodni prirodni rezervace national parks and national nature reserves
	41) první zony CHKO a prirodni rezervace 1st zones of protected landscape regions and natural reserves
	42) lazenske in spas
	43) primestske a rekreacni forest in outskirts of cities and recreation forest
	44) lesnicky vyzkum a vyuka forestry research and education
	45) pudoochranne, vodoochranne a krajinotvorne soil and water protective and landscape creative
	46) zachovani biologicke ruznorodosti biodiversity protective
	47) v oborach a bazantnicich game preserves and pheasantries
	48) jiny verejny zajem other society needs (public interest)

3.2.3 Original data

1990

National class	Definition (prevailing function)	1990 ha of timberland
1.Production forest		1 507 418
2. Protection forest 63 608	a)	44 931
	b)	13 377
	c)	4 026
	d)	1 275
3. Special purpose forest 1 011 754	a)	10 640
	b)	7 595
	c)	41 321
	d)	8 046
	e)	734 094
	f)	3 449
	g)	206 610
Total timberland* (t)		2 582 780

*timberland = land covered by trees or temporary unstocked only, not including forest roads etc.

2000-2007

National class	Definition	2000	2001	2002	2003	2004	2005	2006	2007
									ha of timberland
1.Production forest	11	1 981 885	1 972 212	1 965 785	1 958 125	1 952 670	1 971 327	1 966 106	1 957 301
2. Protection forest	21	67 224	66 388	65 491	64 073	59 062	54 267	50 852	49 586
	22	17 736	17 389	21 604	21 812	16 427	16 324	16 658	16 706
	23	4 462	4 456	4 456	4 442	4 402	4 346	4 260	4 254
subtotal		89 422	88 233	91 552	90 327	79 891	74 937	71 770	70 545
3. Special purpose forest	31	12 565	12 393	12 015	11 788	11 889	11 509	11 170	10 810
	32	39 822	43 690	51 719	58 906	62 356	65 144	66 426	67 854
	33	99 118	99 408	98 681	95 504	101 265	104 305	102 145	97 491
	41	7 252	8 689	13 136	16 974	25 356	31 903	35 230	44 130
	42	207	207	207	207	207	212	212	425
	43	9 217	11 818	16 796	18 150	21 391	22 275	23 994	25 374
	44	25 212	19 282	20 207	18 402	18 269	18 227	18 208	18 203
	45	25 022	43 143	49 204	56 215	60 444	72 119	77 675	86 551
	46	38 785	42 140	48 606	56 986	65 281	78 773	85 915	89 880
	47	33 772	32 458	30 496	29 752	31 976	31 423	32 411	31 623
	48	220 557	212 316	189 457	177 827	160 057	108 751	101 694	94 996
subtotal		511 529	525 542	530 525	540 711	558 491	544 640	555 079	567 336
total timberland (t)		**2 582 836**	**2 585 987**	**2 587 861**	**2 589 162**	**2 591 052**	**2 590 903**	**2 592 955**	**2 595 182**
total forest (f)		**2 637 290**	**2 638 917**	**2 643 058**	**2 644 168**	**2 645 737**	**2 647 416**	**2 649 147**	**2 651 209**
coefficient (f/t)		**1.021083**	**1.020468**	**1.021329**	**1.021245**	**1.021105**	**1.021812**	**1.021671**	**1.021589**

3.3 Analysis and processing of national data

3.3.1 Calibration

1990

National class	Definition (prevailing function)	1990
Total timberland (t)		2 582 780
Total forest (f)		2 629 418
coefficient f/t		1.018057

		ha of forest (t * coefficient)
1.Production forest		1 534 638
2. Protection forest	a)	45 742
	b)	13 619
	c)	4 099
	d)	1 298
3. Special purpose forest	a)	10 832
	b)	7 732
	c)	42 067
	d)	8 191
	e)	747 350
	f)	3 511
	g)	210 341

2000-2007

		2000	2001	2002	2003	2004	2005	2006	2007
total timberland (t)		**2 582 836**	**2 585 987**	**2 587 861**	**2 589 162**	**2 591 052**	**2 590 903**	**2 592 955**	**2 595 182**
total forest (f)		**2 637 290**	**2 638 917**	**2 643 058**	**2 644 168**	**2 645 737**	**2 647 416**	**2 649 147**	**2 651 209**
coefficient (f/t)		**1.021083**	**1.020468**	**1.021329**	**1.021245**	**1.021105**	**1.021812**	**1.021671**	**1.021589**
National class	**Definition**	ha of forest (timberland*coefficient f/t)							
1.Production forest	11	2 023 669	2 012 580	2 007 714	1 999 724	1 993 882	2 014 325	2 008 714	1 999 557
2. Protection forest	21	68 641	67 747	66 888	65 434	60 308	55 451	51 954	50 656
	22	18 110	17 744	22 064	22 275	16 774	16 680	17 019	17 066
	23	4 556	4 548	4 551	4 536	4 495	4 440	4 352	4 346
subtotal		91 308	90 039	93 504	92 246	81 577	76 571	73 325	72 068
3. Special purpose forest	31	12 830	12 646	12 271	12 038	12 140	11 760	11 412	11 043
	32	40 661	44 584	52 822	60 157	63 672	66 565	67 865	69 318
	33	101 207	101 443	100 786	97 533	103 402	106 580	104 359	99 596
	41	7 405	8 866	13 416	17 334	25 892	32 599	35 993	45 082
	42	211	211	212	212	211	216	216	434
	43	9 411	12 059	17 155	18 536	21 842	22 760	24 514	25 922
	44	25 744	19 677	20 638	18 793	18 655	18 624	18 603	18 596
	45	25 549	44 026	50 254	57 409	61 719	73 692	79 358	88 419
	46	39 602	43 002	49 643	58 197	66 659	80 491	87 777	91 821
	47	34 484	33 122	31 147	30 384	32 651	32 109	33 113	32 306
	48	225 207	216 662	193 498	181 605	163 435	111 124	103 898	97 047
subtotal		522 313	536 298	541 840	552 198	570 279	556 520	567 109	579 584
total forest		2 637 290	2 638 917	2 643 058	2 644 168	2 645 737	2 647 416	2 649 147	2 651 209

3.3.2 Estimation and forecasting

There are data on forest within different types of protected areas available in 2004-2007 period. Unfortunately these data do not bring the information on the overlap of particular types of protected areas. We used the GIS case study to find out the ratio between the sum of areas of particular types and the whole area of protected areas respecting the overlaps. This ratio was then used for adjustment

Forests in protected areas		2004	2005	2006	2007
		Thousands of hectars			
NP	National parks	103.5	104.0	104.0	104.0
CHKO	Protected landscape areas	561.7	588.5	586.8	586.8
NPR	National nature reserves	22.9	23.0	23.1	23.5
PR	Nature reserves	15.1	16	16.2	16.2
NPP	National natural monument	1.6	1.6	1.6	1.7
PP	Natural monument	18.9	19.0	19.1	19.2
celkem vč. Překryvů	Total including overlaps	723.6	752.1	750.8	751.4
celkem	**Total**	**713**	**741**	**739**	**740.0**

Forecasting done by Excel function FORECAST

3.3.3 Reclassification into FRA 2010 categories

Primary function
1990

FRA 2005 Categories / Designated function -	**National definition**	**National**	**FRA**
Forest		**Area (hectares)**	
Production	1. Production	1 534 638	**1 534 638**
Protection of soil and water	2 a) unfavourable sites	45 742	**65 604**
	2.d) soil protection	1 298	
	3 a) water sources	10 832	
	3 b) curative resources	7 732	
Conservation of biodiversity	2 b) alpine	13 618	**192 838**
	2 c) dwarf pine	4 098	
	3 c) game preserves	42 067	
	3 d) natl. parks, nature reserves and protected landscape	8 191	
	3 g) other (gene bases 124 864 ha)	124 864	
Social services	3 f) forestry research-	3 511	**88 988**
	3 g) other (-124 864)	85 477	
Multiple purpose	3 e) air pollution	747 350	**747 350**
No or unknown function	0	0	**0**
Total – Forest		**2 629418**	**2 629 418**

2000 - 2007

FRA categ.	**National class**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2010**
		1000 ha of forest								
Production	**Production forest**	**2 024**	**2 013**	**2 008**	**2 000**	**1 994**	**2 014**	**2 009**	**2 000**	**1 994**
Protection of soil and water	21 unfavourable sites	69	68	67	65	60	55	52	51	
	31 water sources	13	13	12	12	12	12	11	11	
	32 mineral water	41	45	53	60	64	67	68	69	
	45 soil and water protection	26	44	50	57	62	74	79	88	
Subtotal		**148**	**169**	**182**	**195**	**198**	**207**	**211**	**219**	**252**

Conservation of biodiversity	22 high mountains	18	18	22	22	17	17	17	17	
	23 dwarf pine zone	5	5	5	5	4	4	4	4	
	33 natl. parks and reserves	101	101	101	98	103	107	104	100	
	41 1st zones protected landscape regs. and reserves	7	9	13	17	26	33	36	45	
	46 biodiversity protection	40	43	50	58	67	80	88	92	
	47 game reserves	34	33	31	30	33	32	33	32	
Subtotal		**205**	**209**	**222**	**230**	**250**	**273**	**283**	**290**	**333**
Social services	42 spas	0	0	0	0	0	0	0	0	
	43 recreation	9	12	17	19	22	23	25	26	
	44 research and education	26	20	21	19	19	19	19	19	
	48 public interests	225	217	193	182	163	111	104	97	
Subtotal		**261**	**249**	**232**	**219**	**204**	**153**	**147**	**142**	**78**
Multiple purpose		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Other		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
no/unknown		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Total		**2 637**	**2 639**	**2 643**	**2 644**	**2 646**	**2 647**	**2 649**	**2 651**	**2 657**

3.4 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	1534	2024	2014	1994
Protection of soil and water	66	148	207	252
Conservation of biodiversity	193	205	273	333
Social services	89	260	153	78
Multiple use	747	0	0	0
Other (please specify in comments below the table)	0	0	0	0
No / unknown	0	0	0	0
TOTAL	**2629**	**2637**	**2647**	**2657**

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	2629	2637	2647	2657
Forest area within protected areas	n.a.	700	741	740
Forest area under sustainable forest management	2629	2637	2647	2657
Forest area with management plan	2629	2637	2647	2657

3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production	In the original data, the area, where no other potential function has been identified is considered to be the production function area. Major part of the other potential function areas is used	

	also for timber production – with a proper management the non-wood producing functions are not endangered in the majority of the cases. In fact, all the forest has some social function in a cultural landscape.	
Protection of soil and water		
Conservation of biodiversity		
Social services	.	According to our system, one parcel of forest can hold multiple categories, nevertheless one of them must be primary (there are priorities set out according to our forest act) and our reporting at the national level considers only this primary category. Social service categories usually are not the primary so it seems as the area of forests dedicated to social services is decreasing, which is not truth
Multiple use	1990 – included were forests under heavy influence of air pollution. After 1996, that category is out of use (not needed) .This category was overlapping other categories and after 1996 forests were reclassified accordingly.	
Other		
No / unknown designation		
Area of permanent forest estate		
Forest area within protected areas		
Forest area under sustainable forest management		
Forest area with management plan		

Other general comments to the table

4 Table T4 – Forest characteristics

4.1 FRA 2010 Categories and definitions

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

4.2 National data

4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Registered natural forests in Czech republic – study by VÚKOZ (www.pralesy.cz)	H	Extent of natural forests in Czech rep.	2008	Only data dated to 1.1.2008 are available – other data are estimated

4.2.2 Classification and definitions

National class	Definition
Původní les – original forest	Original forest, is considered to be the forest, where species and spatial composition corresponds to the stand conditions. No indications of human activities and the ecological processes are not significantly disturbed. **Les původní**, nebo-li **prales** – ve volnějším (a dnes častěji užívaném) pojetí člověkem víceméně neovlivněný les, kde dřevinná skladba i prostorová struktura

	odpovídají stanovištním poměrům, tzn. potenciální přirozené vegetaci. Za původní les lze označit i porosty, které byly v minulosti ovlivněny člověkem, ovšem zásah neměl vliv na vybočení z přirozené vývojové trajektorie a stopy takového zásahu již dávno nejsou patrné – např. toulavá těžba jednotlivých stromů před více než 100 lety, odvoz odumřelých stromů z okrajů porostu před více než 50 lety apod. Termín prales lze ztotožnit s označením les původní. Nutno však podotknout, že je velmi vžité užívání termínu prales v souvislosti s označováním některých porostů, které ve skutečnosti jsou lesem přírodním či přírodě blízkým – např. „prales Mionší“, „Rýchorský prales“ atd. Toto tradiční a populární označení nelze u laické veřejnosti v krátké době odbourat, proto je třeba užívat termín prales opravdu uvážlivě. Ekvivalenty v cizích jazycích – anglicky original forest, resp. virgin forest nebo primary forest; německy der Urwald.
Přírodní les – natural forest	**Forest established by natural processes but in past influenced by human activities (mostly by harvesting and pasture – not seeding and planting)** **Les přírodní** – les vzniklý přírodními procesy, avšak člověkem v minulosti ovlivňovaný (zejména toulavou těžbou a pastvou, nikoliv sadbou nebo síjí). Jeho dřevinná skladba i prostorová a věková struktura převážně odpovídají stanovištním poměrům, pomístně se mohou odchylovat, např. vlivem samovolného vývoje, který proběhl v pozměněných podmínkách (např. po vyklučení části lesů ve středověku a jejich dlouhodobém ponechání samovolnému vývoji, dlouhodobým vlivem vyšších stavů zvěře apod.). Ekvivalenty v cizích jazycích – anglicky natural forest; německy der Naturwald.
Les přírodě blízký - near-natural forest	**Forest with species composition predominantly corresponding to stand conditions, but with simpler spatial composition** **Les přírodě blízký** – les, jehož dřevinná skladba odpovídá převážně poměrům stanovištním, avšak prostorová struktura je jednodušší než v původním lese. Tyto porosty vznikaly pod vlivem člověka a jejich stav mohl být docílen i vědomě člověkem. Dlouhodobě docházelo k usměrňování jejich vývoje a stopy tohoto usměrňování jsou dosud patrné (odvoz odumřelého dříví, těžba dříví, výchovné zásahy apod.). Ekvivalenty v cizích jazycích – anglicky near-natural forest; německy der naturnahe Wald.
Kulturni les - planted forest	Managed forest composed of domestic species, regenerated artificially or naturally.
Plantaz -plantation	Intensive managed forest stand composed of introduced species, short rotation.

4.2.3 Original data

No plantations are recorded – none clear ligniculture exists in the CR, x-mas tree plantations size varies localities (mostly on agriculture land) moving in response to the market and these cover less than approx. 500 ha in maximum.

Artificial regeneration is prevailing but use of domestic and the site proper species is requested. The management aims are all the forest functions, not only the production one. Use of introduced species is strongly limited and must be approved by regional bodies of the ministry of environment and of the agriculture.

	2007
	hectars
Original forest	921
Natural forest	8421
Near natural forest left to spontaneous development	12724
Planted forest	2 629 142
Total	2 651 209

4.3 Analysis and processing of national data

4.3.1 Estimation and forecasting

	1990	2000	2005	2007	2010
	1000 hectars				
Original forest	0.92	0.92	0.92	0.92	0.92
Natural forest	8.42	8.42	8.42	8.42	8.42
Near natural forest left to spontaneous development	10.00	11.50	12.40	12.72	13.18
Planted forest	2609.66	2616.45	2625.67	2629.14	2634.73
Total	2629.00	2637.29	2647.42	2651.21	2657.25

4.3.2 Reclassification into FRA 2010 categories

National category	FRA 2010 category
Original forest	Primary forest
Natural forest	
Near natural forest left to spontaneous development	Other naturally regenerated forest
Planted forest	Planted forest

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	9	9	9	9
Other naturally regenerated forest	10	12	12	13
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
Planted forest	2610	2616	2626	2635
...of which of introduced species	n.a.	n.a.	n.a.	n.a.
TOTAL	2629	2637	2647	2657

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	Only data dated to 1.1.2008 are available – other data are estimated – primary forests are considered to remain in same extent during period 1990-2010	
Other naturally regenerating forest	Only data dated to 1.1.2008 are available – other data are estimated – there is a growing trend estimated in the table based on consultation with experts	
Planted forest	This category is calculated as a remaining part of overall forests. This area includes some part which origins in natural regeneration, but this part is not known. Prevailing regeneration during last period (especially during second half of 20th century) was artificial. That proportion has been changed in the recent years; the percentage of natural regeneration is increasing and currently exceeds 20%.	
Rubber plantations	No such plantations in Czech republic	
Mangroves	No such plantations in Czech republic	
Bamboo	No such plantations in Czech republic	

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
Annual report on the state of forests and forestry, Ministry of agriculture, Prague	H	Reforestation, afforestation		Issued annually
Annual implementation report on the Horizontal rural development plan	H	Afforestation	2004-2006	Subsidised afforestation on the agricultural land
Annual implementation report on the Operational program Rural development plan and multifunctional agriculture	H	Afforestation	2004-2006	Subsidized afforestation on the agricultural land

5.2.2 Original data

hectares	1985	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Afforestation											433
Reforestation	34 149		35 016	34 523	32 073	30 175	28 395	27 715	31 291	30 324	26 576
Refor. Introd.sp.	na		na	na	na	na	na	na	na	na	na

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Afforestation	403	493	908	1 091	1 203	940	570	746	985	
Reforestation	26 890	25 770	25 776	22 421	20 527	19 538	22 234	21 629	21 630	21 325
Refor. Introd.sp.	na	na	na	850	685	554	543	476	412	462

5.3 Analysis and processing of national data

5.3.1 Calibration

Not needed

5.3.2 Reclassification into FRA 2010 categories

We consider following species to be "introduced" in Czech republic according to Environment act 114/1992: Picea pungens and other not natives Picea, Abies grandis and other not natives Abies, Douglas fir, Weymouth pine, Larch

5.4 Data for Table T5

FRA 2010 Categories	Annual forest establishment (hectares/year)			...of which of introduced species [1] (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation	n.a.	820	810	n.a.	n.a.	n.a.
Reforestation	32947	24277	21271	n.a.	768	489
...of which on areas previously planted	32947	24277	21271	n.a.	768	489
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.

5.5 Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation	All the available data concerns subsidised afforestation – three main sources were included – Afforestation subsidised: 1. according to 505/2000 regulation (until 2003) 2. Horizontal rural development plan (2004-2006) 3. Operational program Multifunct. agriculture...(2004-2006) No report of unsubsidised Afforestation is available No report on Afforestation prior to 1997	
Reforestation	Detailed data on the particular species are only available since 2001	
Natural expansion of forest	No report on these data is available.	

Other general comments to the table

6 Table T6 – Growing stock

6.1 FRA 2010 Categories and definitions

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

6.2 National data

6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Souhrnny lesni hospodarsky plan, SLHP (Summary of the Forest Management Plans), Forest Management Institute, Brandys n. l.,	H	Growing stock	1990, 2000,2005,2007	
Annual report on the state of forests and forestry, Ministry of agriculture, Prague	H	Growing stock	1990, 2000,2005,2007	published annually
Zjistovani biomasy v lesnich ekosystemech (Biomass volume assessment in the forest ecosystems), VULHM Opocno, 2003	H	under to overbark coefficient	2003	special study

6.2.2 Classification and definitions

National class	Definition
Porostni zasoba - Growing stock of all forests	Volume of living trees with the minimum DBH of 7 cm. in m^3 under bark
Koeficient hroubi s kurou -under bark to over bark coefficient	1.1082967

6.2.3 Original data

Growing stock of all the forests (mill. m^3 u.b.)

Stock volume (under bark) milion m^3	**1990**	**2000**	**2005**	**2007**
Norway Spruce [Picea Abies]	366.604	399.452	414.865	419.669
Scots pine [Pinus sylvestris]	91.957	96.346	100.341	101.259
Beech [Fagus silvatica]	29.861	37.340	40.776	41.755
Oak [Quercus sp.]	24.295	29.235	31.278	32.222
Larch [Larix decidua]	17.038	22.952	26.820	27.679
Birch [Betula pendula]	5.139	8.278	8.440	8.468
Silver fir [Abies alba]	9.765	7.712	7.869	7.923
Ash [Fraxinus Excelsior]	3.959	5.365	5.982	6.258
Linden [Tilia sp.]	2.950	4.780	5.330	5.549
Alder [Alnus sp.]	3.010	4.529	4.985	5.102
Remaining	9.532	14.511	16.514	17.016
Conniferous	485.938	527.500	551.500	558.100
Broadleaved	78.171	103.000	111.700	114.800
Dwarf pine [Pinus Mugo] – the only non-commercial species	0.066	0.071	0.073	0.073
Commercial species	564.044	630.429	663.127	672.827
Total	**564.110**	**630.500**	**663.200**	**672.900**

6.3 Analysis and processing of national data

6.3.1 Calibration

Not needed

6.3.2 Estimation and forecasting

Forecasting done by excel function “Forecast” using the data set 1990,2000,2005,2007

Reclassification into FRA 2010 categories just adjusted to over bark volume by coefficient **1,1082967**

Stock volume (over bark) milion m^3	**1990**	**2000**	**2005**	**2007**	**2010**
Norway Spruce [Picea Abies]	406.305	442.712	459.793	465.118	476.692
Scots pine [Pinus sylvestris]	101.916	106.780	111.207	112.225	113.874
Beech [Fagus silvatica]	33.094	41.383	45.192	46.277	48.954
Oak [Quercus sp.]	26.926	32.401	34.665	35.711	37.324
Larch [Larix decidua]	18.883	25.438	29.725	30.677	32.889
Birch [Betula pendula]	5.696	9.174	9.354	9.385	10.528
Silver fir [Abies alba]	10.823	8.547	8.721	8.781	8.032
Ash [Fraxinus Excelsior]	4.387	5.946	6.630	6.935	7.396
Linden [Tilia sp.]	3.270	5.298	5.908	6.150	6.781
Alder [Alnus sp.]	3.336	5.019	5.525	5.654	6.206
Remaining	10.564	16.082	18.303	18.859	20.674
Conniferous	538.563	584.627	611.226	618.540	633.476
Broadleaved	86.637	114.155	123.797	127.232	135.872
Dwarf pine [Pinus Mugo]	0.073	0.079	0.081	0.081	0.083
Commercial species	625.128	698.702	734.941	745.692	769.265
Total	**625.201**	**698.781**	**735.022**	**745.773**	**769.348**

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	625.2	698.8	735.0	769.3	0	0	0	0
... of which coniferous	538.6	584.6	611.2	633.5	0	0	0	0
... of which broadleaved	86.6	114.2	123.8	135.9	0	0	0	0
Growing stock of commercial species	625.1	698.7	734.9	769.3	0	0	0	0

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

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)		
Rank	Scientific name	Common name	1990	2000	2005
1st	*Picea abies*	Norway Spruce	406.3	442.7	459.8
2nd	*Pinus sylvestris*	Scots pine	101.9	106.8	111.2
3rd	*Fagus silvatica*	Beech	33.1	41.4	45.2
4th	*Quercus sp.*	Oak	26.9	32.4	34.7
5th	*Larix decidua*	Larch	18.9	25.4	29.7
6th	*Betula pendula*	Birch	5.7	9.1	9.4
7th	*Abies alba*	Silver fir	10.8	8.6	8.7
8th	*Fraxinus Excelsior*	Ash	4.4	6.0	6.6
9th	*Tilia sp.*	Linden	3.3	5.3	5.9
10th	*Alnus sp.*	Alder	3.3	5.0	5.5
Remaining			10.6	16.1	18.3
TOTAL			625.2	698.8	735.0

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

Table 6c – Specification of threshold values

Item	Value	Complementary information
Minimum diameter (cm) at breast height[1] of trees included in growing stock (X)	7	
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	7	
Minimum diameter (cm) of branches included in growing stock (W)	7	
Volume refers to "above ground" (AG) or "above stump" (AS)	AS	

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

6.5 Comments to Table T6

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total growing stock		Growing stock is increasing because: the measurement methods and tools are improving reaching more accuracy, current increment is going up in Europe, rotation period length is increasing in the CR, thinning is insufficient here, average age is increasing, etc.
Growing stock of broadleaved / coniferous		
Growing stock of commercial species		The only species identified as non-commercial within the summary of forest management plans was the Dwarf pine
Growing stock composition		As for FRA 2005 we used area for identifying the 10 most common species and for FRA 2010 we used stock volume, according to guidelines, there has been a change in these 10 most common species

Other general comments to the table

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
Souhrnny lesni hospodarsky plan, SLHP (Summary of the Forest Management Plans), Forest Management Institute, Brandys n. l.,	H	Land use, forest cover, growing stock	1990-2006	Compilation of forest management plans and guidelines
Expert activity in founding and evaluating of biomass accumulation in forest ecosystems, Forestry and Game Management Institute(VULHM), Opocno,	H	BCEF for AG and BG biomass	2005,2006, 2007,2008	Project of the Ministry of Agriculture CR
Dead wood- Forest Management Institute research	H	Dead wood	1991	Field research
Project: Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process, Forest Management Institute (ÚHÚL) 2008	H	Above ground biomass, below ground biomass, volume to weight coefficient	2008	Project of the Ministry of Environment CR
Tables: Pařez, Žlábek, Kopřiva, ÚHÚL	H	Stem to above ground woody biomass	1990	

7.2.2 Classification and definitions

National class	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.
Dead wood	Dead wood includes wood lying on the surface.

7.2.3 Original data

1.Aboveground dendromass: growing stock T6*1,225*0,64 (Stem to above ground woody biomass including stumps without foliage volume- project "Expert activity in founding and evaluating of biomass accumulation in forest ecosystems", Forestry and Game Management Institute VULHM: *1,225*; volume to weight coefficient - project "Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process", Forest Management Institute UHUL 2008: *0,64*)

2.Foliage: growing stockT6*1,204*0,06*0,64 (tree stock coefficient – project "Expert activity in founding and evaluating of biomass accumulation in forest ecosystems", Forestry and Game Management Institute VULHM: *1,204*; foliage volume - tables Pařez, Žlábek, Kopřiva(Lesnictví 1990): *0,06*; volume to weight coefficient – project "Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process", Forest Management Institute UHUL 2008: *0,64*)
above ground biomass = 1+2

3.Belowground biomass coniferous: growing stock coniferous*0,2*0,64(coniferous roots volume - project "Expert activity in founding and evaluating of biomass accumulation in forest ecosystems", Forestry and Game Management Institute VULHM: *0,2*; volume to weight coefficient – project "Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process", Forest Management Institute UHUL 2008: *0,64*)

4.Below ground biomass broadleaved: growing stock broadleaved*0,42*0,64(broadleaved roots volume- project "Expert activity in founding and evaluating of biomass accumulation in forest ecosystems", Forestry and Game Management Institute VULHM : *0,42*; volume to weight coefficient – project "Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process", Forest Management Institute UHUL 2008: *0,64*)
below ground biomass = 3+4

5. Dead wood = forest area*21*0,64 (deadwood volume per ha - project UHUL: *21*; volume to weight coefficient "Analysis of the forest harvesting energetic residues availability in connection with natural conditions, forest management and economic of the whole process", Forest Management Institute UHUL *0,64*)

	1990	2000	2005	2010
Growing stock (million cubic meters)	625.201	698.781	735.022	769.348
above ground woody biomass including stumps without foliage volume (million cubic meters)	765.872	856.007	900.402	942.452
above ground woody biomass including stumps without foliage weight (million metric tonnes)	490.158	547.844	576.258	603.169
foliage volume (million cubic meters)	45.165	50.480	53.098	55.578
foliage weight - volume to weight coefficient (million metric tonnes)	28.905	32.307	33.983	35.570
above-ground biomass (million metric tonnes)	**519.063**	**580.152**	**610.240**	**638.739**
Coniferous (million cubic meters)	538.563	584.627	611.226	633.476
Broadleaved (million cubic meters)	86.637	114.155	123.797	135.872
below-ground biomass coniferous volume (million cubic meters)	107.713	116.925	122.245	126.695
below-ground biomass coniferous weight (million metric tonnes)	68.936	74.832	78.237	81.085
below-ground biomass broadleaved volume (million cubic meters)	36.387	47.945	51.995	57.066
below-ground biomass broadleaved weight (million metric tonnes)	23.288	30.685	33.277	36.522
below-ground biomass (million metric tonnes)	**92.224**	**105.517**	**111.513**	**117.607**

forest area (ha)	2 629 418	2 637 290	2 647 416	2 657 248
deadwood volume (million cubic meters)	55.218	55.383	55.596	55.802
deadwood weight (million metric tonnes)	**35.339**	**35.445**	**35.581**	**35.713**

7.3 Analysis and processing of national data

7.3.1 Calibration

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	519.1	580.2	610.2	638.7	0	0	0	0
Below-ground biomass	92.2	105.5	111.5	117.6	0	0	0	0
Dead wood	35.3	35.4	35.6	35.7	0	0	0	0
TOTAL	**646.6**	**721.1**	**757.3**	**792.0**	**0**	**0**	**0**	**0**

7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass	The above-ground biomass is derived from total growing stock in table T6	Above-ground is increasing because: the measurement methods and tools are improving reaching more accuracy, current increment is going up in Europe, rotation period length is increasing in the CR, average age is increasing, etc.
Below-ground biomass	The below-ground biomass is derived from above-ground biomass	
Dead wood		

Other general comments to the table

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
Souhrnny lesni hospodarsky plan, SLHP (Summary of the Forest Management Plans), Forest Management Institute, Brandys n. l.,	H	Land use, forest cover, growing stock	1990-2006	Compilation of forest management plans and guidelines
National forest inventory- FMI report	H	deadwood	2001-2004	The first Czech national forest inventory output
Expert activity in founding and evaluating of biomass accumulation in forest ecosystems, Forestry and Game Management Institute(VULHM), Opocno,	H	Soil carbon, carbon in litter	2005,2006,2007,2008	Project of the Ministry of Agriculture CR
FRA Guidelines 2010	H	Biomass to carbon stock coefficient	2008	
Project: Czech Carbo – investigation of carbon cycle in terrestrial ecosystems of the Czech Republic, Institute of Forest Ecosystem Research (IFER)	H	Soil carbon, carbon in litter	2007	Project of the Ministry of Environment CR

8.2.2 Classification and definitions

National class	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.
Carbon in dead wood	Dead wood includes only wood lying on the surface.
Carbon in litter	Carbon in litter layer without any humification.
Soil carbon	Carbon in mineral and organic soil to a 30 cm depth

8.2.3 Original data

Carbon in AG, BG biomass and dead wood using table T7*0,47 biomass stock to carbon stock coefficient FRA 2010

Carbon in litter = foliage biomass *0,47 coefficient FRA 2010 (assuming that previous years foliage is present as litter)

Carbon in soil = forest area *64t Project "Expert activity in founding and evaluating of biomass accumulation in forest ecosystems" VÚLHM coefficient for carbon stock in soil

above-ground biomass (million metric tonnes)	519.063	580.152	610.240	638.739
above-ground carbon (million metric tonnes)	243.960	272.671	286.813	300.207
below-ground biomass (million metric tonnes)	92.224	105.517	111.513	117.607
below-ground carbon (million metric tonnes)	43.345	49.593	52.411	55.276
deadwood weight (million metric tonnes)	35.339	35.445	35.581	35.713
deadwood carbon (million metric tonnes)	16.610	16.659	16.723	16.785
foliage weight (million metric tonnes)	28.905	32.307	33.983	35.570
carbon in litter (million metric tonnes)	13.585	15.184	15.972	16.718
forest area (ha)	2 629 418	2 637 290	2 647 416	2 657 248
carbon in soil (million metric tonnes)	168.283	168.787	169.435	170.064

8.3 Analysis and processing of national data

8.3.1 Calibration

Not needed

8.3.2 Estimation and forecasting

Carbon in AG, BG biomass and dead wood according to biomass stock volume in data set 1990, 2000, 2005, 2010 FRA2010.

Carbon in litter and soil carbon according to forest area volume in data set 1990, 2000, 2005, 2010 FRA2010.

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	244.0	272.7	286.8	300.2	0	0	0	0
Carbon in below-ground biomass	43.3	49.6	52.4	55.3	0	0	0	0
Sub-total: Living biomass	***287.3***	***322.3***	***339.2***	***355.5***	***0***	***0***	***0***	***0***
Carbon in dead wood	16.6	16.6	16.7	16.8	0	0	0	0
Carbon in litter	13.6	15.2	16.0	16.7	0	0	0	0
Sub-total: Dead wood and litter	***30.2***	***31.8***	***32.7***	***33.5***	***0***	***0***	***0***	***0***
Soil carbon	168.3	168.8	169.4	170.1	0	0	0	0
TOTAL	**485.8**	**522.9**	**541.3**	**559.1**	**0**	**0**	**0**	**0**

Soil depth (cm) used for soil carbon estimates	30

8.5 Comments to Table T8

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass	Carbon in AG biomass amount is derived from AG biomass stock using coefficient 0,47.	
Carbon in below-ground biomass	Carbon in BG biomass amount is derived from BG biomass stock using coefficient 0,47.	
Carbon in dead wood	Carbon in dead wood amount is derived from dead wood using coefficient 0,47.	
Carbon in litter	Carbon in litter is defined in Czech projects as a carbon in litter layer	
Soil carbon	Soil carbon is defined in Czech projects as a carbon in mineral and organic soils	

Other general comments to the table

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
Annual report on the state of forests and forestry, Ministry of agriculture, Prague	H	fires		Issued annually
Statistická ročenka požární ochrany (Statistical yearbook of the fire protection)	H	fires	2007	Number of fires in 1991-1995

9.2.2 Classification and definitions

National class	Definition
Disturbance by fire	Reported disturbance caused by wildfire, independently whether it broke out inside or outside the forest in ha.

9.2.3 Original data

Forest fires		avge		avge
	ha		number	
1991*	76	677	1019	1556
1992	1278		2092	
1998	1132	422	2 563	1 310
1999	336		1 403	
2000	375		1 499	
2001	87		483	
2002	179		604	
2003	1236	503	1 754	949
2004	335		873	
2005	226		619	
2006	405		693	
2007	315		805	

* No information before 1991

9.3 Analysis and processing of national data

9.3.1 Calibration

Not needed

9.3.2 Estimation and forecasting

As data prior to 1991 are not available, the 1990 value is average of 1991 and 1992 values

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	0.7	1556	0.4	1310	0.5	949
... of which on other wooded land	0	0	0	0	0	0
... of which on other land	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table 9b

FRA 2010 category	Proportion of forest area affected by fire (%)		
	1990	2000	2005
Wildfire	100%	100%	100%
Planned fire			

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	No data on the area of forest fire prior to 1991 – therefore the average of the period 1991-1992 was used for 1990 area of fires	
Number of fires	No data on the number of forest fire prior to 1991 – therefore the average of the period 1991-1992 was used for 1990 number of fires	
Wildfire / planned fire		

Other general comments to the table

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
Occurrence of forest damaging agents – Forest protection newsletter The Forestry and Game Management Research Institute	H	all agents	1996-2007	Annually – **covers approx. 75% of forest area – only data in 10a were estimated to whole forest area. Disturbances are reported as affected area or through salvage fellings**
Lesni hospodarska evidence (Summary of forestry records), Forest Management Institute, UHUL, Brandys n. L:	H	Salvage felling	before 1994	Annually – disturbances were reported through amount of salvage fellings

10.2.2 Classification and definitions

National class	Definition
Criteria	Disturbed is the area: (i) where the damage could be faced by the regeneration (salvage) felling only; (ii) in the case of the leaf-eating insects, the disturbed area means stands defoliated by more than 70 % (not depending on regeneration possibility).
Salvage felling caused by insects	Reported salvage felling caused by insects.
Disturbance caused by diseases	Reported disturbance caused by diseases attributable to pathogens, such as a bacteria, fungi, phytoplasma or virus. Usually such a disturbance causes increased salvage felling.
Other salvage felling	Reported salvage felling caused by air pollution, draught, wind and snow.

10.2.3 Original data

Data from 1988-1992 Summary of the forest records - salvage felling mill. m^3

year	abiotic		air pollution		other		insects	
	mill. m^3	avge	mill. m^3	avge	mill. m^3	avge	mill. m^3	avge
1988	3,41		0,64		0,43		0,85	
1989	3,20		0,50		0,33		0,33	
1990	8,57	4.312	0,36	0.416	0,29	0.404	0,40	0.508
1991	4,07		0,34		0,45		0,22	
1992	2,31		0,24		0,52		0,74	

Occurrence of disturbances 1996-2007 – Forest protection newsletter

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
	cubic meters											
wind+snow+icing	3317838	2544590	1835326	2006940	1660871	1039449	2594777	4071472	1792702	1530198	4191067	9042776
drought	595635	194192	207667	188363	196298	157349	113282	292458	457380	378044	294564	243415
emissions	277825	192091	191441	72576	56166	33095	24004	27850	27185	17465	14320	27358
others	134422	190895	109893	86717	73341	42281	22703	79493	75603	33550	43570	29991
	hectars											
Cephalcia spp. On spruce	452	4799	689	923	708	424	1172	1214	415	421	1747	112
Tenthredinidae on spruce	2294	4236	4434	4595	3387	3240	2611	1355	942	1090	482	133
Tortricidae and Geometridae on oaks	19318	21229	4802	4658	1462	1280	1125	974	3733	2743	1125	356
Hylobius abietis	1788	2613	2323	2234	2149	1901	2028	2064	1470	1981	1785	1472
Lymantria monacha	1295	2254	0	0	210	222	5991	901	946	1025	952	500
	cubic meters											
Ips Typographus, Ips Imatinus, Pityogenes Chalcographus	947764	368555	320315	248969	285262	165468	169651	856828	836094	587764	607225	1085160
Ips Duplicatus	16100	4594	7432	2429	7167	5448	8919	132554	83547	38051	93014	199921
Polygraphus Poligraphus	3042	308	2776	11979	3738	7676	12988	12331	14386	9049	8000	6857
Pityophtorus Pityographus										7	10	
Ips Acuminatus	10410	1353	655	1856	712	719	1224	4630	5212	5732	2962	1878
Tomicus Piniperda, T. Minor	4785	1093	1462	1979	1490	1060	1586	2463	651	5301	4735	2073
Ips Sexdentatus	697	379	145	100	191	156	153	407	4629	711	903	703
Phaenops Cyanea	2574	1917	327	657	522	416	535	922	7263	10305	1231	703

Pityokteines spp.	608	64	37	191	86	84	38	138	233	304	63	294
Ips Cembrae	259	2755	237	237	195	290	191	600	549	424	1415	1149
Scolytus Intricatus		70	136	304	274	131		41	48	18	8	133
Scolytus Ratzeburgii	284	503	167	41	20	18		16	15	56	23	44
Hylesinus spp.			30	0	3405	6		5	50	43	47	34
	hectars											
spruce chlorosis	6151	3714	3259	9732	15071	18484	20305	24364	27236	28857	35775	35790
Microsphaera alphitoides and others				16		258	250		95	154	140	143
Lophodermium spp.	508	840		377	325	1481	1505	1808	1688	1826	2420	1086
Armillaria spp.	656	300		210	86	1060	1671	4082	2421	2258	3207	4085
	hectars											
rodents in forest plantations	1888	2271	6223	2057	1299	1148	837	843	649	1222	959	790

10.3 Analysis and processing of national data

10.3.1 Estimation and forecasting

Data for 1990 were taken from FRA 2005 without changes, as no new original data are available

Data for 2000 and 2005 - salvage felling area estimation (is done through average stock volume)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
insects salvage fellings (m3)	333719	268742	303061	181471	195285	1010935	952677	657765	719636	1298949
Abiotic salvage fellings (m3)	2344327	2354596	1986676	1272174	2754766	4471273	2352870	1959257	4543521	9343540
average stock volume (cubic meters per hectar)	237	242	244	247	249	251	254	256	258	259
insects salvage fellings (ha)	1406	1111	1241	735	783	4027	3754	2570	2794	5009
Abiotic salvage fellings (ha)	9878	9733	8138	5154	11051	17812	9271	7655	17641	36034

Whole area estimation (data comes from only a part of Czech republic, therefore estimation of whole area disturbances is necessary)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Disturbance by insects	13 654	13 521	9 144	7 802	13 711	10 536	11 260	9 830	8 885	7 583
Disturbance by diseases	3 259	10 335	15 482	21 284	23 730	30 254	31 440	33 096	41 541	41 104
Disturbance by other biotic agents	6 223	2 057	1 299	1 148	837	843	649	1 222	959	790
Disturbance caused by abiotic factors	9 878	9 733	8 138	5 154	11 051	17 812	9 271	7 655	17 641	36 034
percentage of data sources	0,75	0,74	0,75	0,71	0,75	0,75	0,75	0,75	0,75	0,70
Disturbance by insects whole republic estimation	18 205	18 272	12 192	10 988	18 282	14 048	15 013	13 106	11 846	10 832
Disturbance by diseases whole republic estimation	4 345	13 966	20 642	29 978	31 641	40 338	41 920	44 128	55 388	58 720
Disturbance by other biotic agents whole republic estimation	8 297	2 780	1 732	1 617	1 116	1 124	865	1 629	1 279	1 129
Disturbance caused by abiotic factors whole republic estimation	13 170	13 153	10 851	7 260	14 735	23 749	12 362	10 206	23 521	51 477

10.4 Data for Table T10

Table 10a – Disturbances

FRA 2010 category	Affected forest area (1000 hectares)		
	1990	2000	2005
Disturbance by insects	2.3	15.59	12.97
Disturbance by diseases	24.7	20.11	48.10
Disturbance by other biotic agents	n.a.	3.11	1.21
Disturbance caused by abiotic factors	23.1	11.83	24.26
Total area affected by disturbances	**50.1**	**50.64**	**86.54**

Notes: 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.

The total area affected by disturbances is not necessarily 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)
Tortricidae and Geometridae on oaks (Tortrix viridana, Operophtera brumata, Archips crataeganus)	*Quercus sp.*	1997	21.2	
Lymantria monacha	*Picea abies*	1993-1996	30	
Lymantria dispar	*Quercus sp.*	1992-1994	12	
Ips Typographus, Ips amitinus, Pityogenes chalcographus	*Picea abies*	2003-2007	15.5	
spruce chlorosis	*Picea abies*	2007	35.7	

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)
n.a.	n.a.
Total forest area affected by woody invasive species	n.a.

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	The major included disturbance is spruce chlorosis which is considered to be the result of different causes	
Disturbance by other biotic agents		
Disturbance caused by abiotic factors	The main damaging agent included in the "abiotic factors" are: wind and snow damage registered by the means of the salvage felling reports.	
Major outbreaks	Population density of bark boring insects has in 2007 increased in spruce stands enormously in consequences with windbreaks (Kyrill 2007, Emma 2008) and spruce wood infested by bark beetles. Most of the infestation belonged to Ips typographus. In most of the Czech republic higher population densities or even epidemic state have still continued. The average volume of bark beetle infested wood was 1,33 m3/ha (the level of endemic state is 0,2 m3/ha)	
Invasive species	Woody species, which can act as invasive species might be following: Robinia pseudoacacia, Ailanthus altissima, Pinus strobus, Acer negundo, Padus serotina, Lycium barbarum. Of these only Robinia pseudoacacia is of considerable extent (0.55% of forest area in 2007) but on most stands it does not act as an invasive species. According to our legislation, these species are not considered as an invasive species to be controlled and monitored – therefore data are not available.	

Other general comments to the table
In the majority of cases, disturbance by diseases is not followed immediately by salvage felling. The area is a result of field surveys. Slight damage by leaf-eating insects could be neglected, not the damage by bark beetle (for forest owner, it is obligatory to cut the invaded trees immediately and take measures for killing the insect; they report the area actually reforested). Area of snow and wind damage is also mapped in the field. Sparse windbreaks (or insect affected trees) area is counted using average volume per hectare. Damage by fungi could be underestimated because it is hard to asses it in standing trees.

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
Annual report on the state of forests and forestry, Ministry of agriculture, Prague	H	removals: industrial roundwood and fuelwood		Issued annually
Czech statistical office www.czso.cz	H	Price	1993,2000,2005	

11.2.2 Original data

	Total volume		Industrial roundwood removals		Woodfuel removals	
Year	1000 m3 u.b.	Avg	1000 m3 u.b.	avg	1000 m3 u.b.	avg
1988	12 657		11 554		1 103	
1989	12 451		11 487		964	
1990	12 828	11 737	11 627	10 714	1 301	1 043
1991	10 878		9 864		1 014	
1992	9 870		9 037		833	
1995	12 640		11 991		649	
1998	13 991		13 171		820	
1999	14 203		13 363		840	
2000	14 441	14 310	13 501	13 387	940	923
2001	14 374		13 364		1 010	
2002	14 541		13 534		1 007	
2003	15 140		13 960		1 180	
2004	15 601		14 411		1 190	
2005	15 510	16 487	14 285	15 145	1 225	1 342
2006	17 678		16 333		1 345	
2007	18 508		16 738		1 770	

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

Average price 1993

Sortimenty	Assortments	1993							
		price CZK/m^3	1000 m^3					price * volume	average CZK/m^3
industrial wood			round wood	pulpwood	forest chips	fuel wood	industrial wood		
Jehličnaté	Conifers		100 4485	100 3686	100 13		100 8843		
Výřezy I. třídy	Logs, 1st class	3535	10 448.5					1585447	
Výřezy II. třídy	Logs, 2nd class	2751	20 897.0					2467647	
Výřezy III. A třídy	Logs, 3rd A class	1385	30 1345.5					1860827	
Výřezy III. B třídy	Logs, 3rd B class	1127	40 1794.0					2021828	
Výřezy IV. třídy dulni	Logs, 4th class	1081					100 8843	9559283	
Výřezy V. třídy vlakninove	Logs, 5th class	698		100 3686	100 13			2581902	
Listnaté	Broadleaves		100 260	100 340	100 0		100 604		
Výřezy I. třídy	Logs, 1st class	9900	10 26.0					257400	
Výřezy II. třídy	Logs, 2nd class	3534	20 52.0					183768	
Výřezy III. A třídy	Logs, 3rd A class	1550	30 78.0					120900	
Výřezy III. B třídy	Logs, 3rd B class	1333	40 104.0				20 120.8	298592	
Drivi IV. tridy dulni		995					60 362.4	360190	
Dříví V. třídy	Logs, 5th class	725					20 120.8	87000	
Celkem	Total		18231					21384794	**1173**
fuelwood									
conif.						100 558			
Dříví VI. třídy jehlic	Logs, 6th class	160				100 558		89280	
brdlvs.						100 136			
Dříví VI. třídy palivo list.	Logs, 6th class brdlvs.	209				100 136		28424	
Celkem	Total		694					117704	**170**

Price 1990 assessment
1990 = 98 %; 1993 = 198 %; coef. 1990/1993 = 0.4949

	Price 1993	Price 1990
Industrial roundwood	1173	580.6
fuelwood	170	84.1

Average price 2000

Sortimenty	Assortments	2000							
		price CZK/m^3	% 1000 m3 (weight)					price * volume	average CZK/m^3
industrial wood			round wood	pulpwood	forest chips	fuel wood	industrial wood		
Jehličnaté	Conifers		100 7370	100 4787	100 34		100 660		
Výřezy I. třídy	Logs, 1st class	3635	10 737.0					2678995	
Výřezy II. třídy	Logs, 2nd class	2950	20 1474.0					4348300	
Výřezy III. A třídy	Logs, 3rd A class	1887	30 2211.0					4172157	
Výřezy III. B třídy	Logs, 3rd B class	1538	40 2948.0					4534024	
Výřezy IV. třídy dulni	Logs, 4th class	1234					100 660.0	814440	
Výřezy V. třídy vlakninove	Logs, 5th class	907		100 4787.0	100 34.0			4372647	
Listnaté	Broadleaves		100 650	100 660	100 0		100 280		
Výřezy I. třídy	Logs, 1st class	6101	10 65.0					396565	
Výřezy II. třídy	Logs, 2nd class	3579	20 130.0					465270	
Výřezy III. A třídy	Logs, 3rd A class	1746	30 195.0					340470	
Výřezy III. B třídy	Logs, 3rd B class	1379	40 260.0				70 196.0	628824	
Dříví V. třídy	Logs, 5th class	592					30 84.0	49728	
Celkem	Total		14441					22801420	**1579**

fuelwood									
conif.						100 660			
Dříví VI. třídy jehlic	Logs, 6th class	264				100 660.0		174240	
brdlvs.						100 280			
Dříví VI. třídy palivo list.	Logs, 6th class brdlvs.	385				100 280.0		107800	
Celkem	Total		940					282040	**300**

2005							
Sortimenty	Assortments	price	**roundwood**	**pulpwood**	**forest chips**	**fuel wood**	**total**
industrial wood		CZK	**1000 m3**				
Jehličnaté	Conifers		8 263	5 973	49	1 225	
Výřezy I. třídy	Logs, 1st class	3777	661				2 496 748
Výřezy II. třídy	Logs, 2nd class	2890	1653				4 776 014
Výřezy III. A třídy	Logs, 3rd A class	1796	2479				4 452 104
Výřezy III. B třídy	Logs, 3rd B class	1483	3305				4 901 612

Výřezy IV. třídy dulni	Logs, 4th class	898	165				148 403
Výřezy V. třídy vlakninove	Logs, 5th class	651		5973	49		3 920 322
Listnaté	Broadleaves		665	645		280	
Výřezy I. třídy	Logs, 1st class	8371	67				556 672
Výřezy II. třídy	Logs, 2nd class	3516	133				467 628
Výřezy III. A třídy	Logs, 3rd A class	2281	200				455 060
Výřezy III. B třídy	Logs, 3rd B class	1663	266				442 358
Dříví V. třídy	Logs, 5th class	585		645	0		377 325
Total average CZK/m3							**1 345**
fuelwood							
Dříví VI. třídy jehlic	Logs, 6th class conif.	347				1225	425 075
Dříví VI. třídy palivo list.	Logs, 6th class broadl.	503				280	140 840
Total average CZK/m3							**376**

11.3.2 Reclassification into FRA 2010 categories

	Industrial roundwood			Fuel wood		
	1 990	2 000	2 005	1 990	2 000	2 005
volume under bark (1000 m3)	10 714	13 387	15 145	1 043	923	1 342
volume over bark (1000 m3)	11 874	14 836	16 786	1 156	1 023	1 487
of which form forests (1000 m3)	11 874	14 836	16 786	1 156	1 023	1 487
price/m3 u.b	581	1 579	1 345	84	300	376
price/m3 o.b	524	1 425	1 214	76	271	339
Total value 1000 CZK	6 224 834	21 137 441	20 370 563	87 612	277 020	504 592
under/over bark coeficient	**1,1082967**					

11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990	2000	2005	1990	2000	2005
Total volume (1000 m^3 o.b.)	11874	14836	16786	1156	1023	1487
... of which from forest	11874	14836	16786	1156	1023	1487
Unit value (local currency / m^3 o.b.)	524	1 425	1 214	76	271	339
Total value (1000 local currency)	6224834	21137441	20370563	87612	277020	504592

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	CZK – Czech Crown	CZK – Czech Crown	CZK – Czech Crown

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		Total volume is increasing continuously
Total volume of woodfuel removals		Total volume is increasing continuously
Unit value		Average unit price of roundwood is decreasing since 2000. Wood fuel price has increased due to higher demand
Total value		

Other general comments to the table

12 Table T12 – 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
Plant products / raw material
1. Food
2. Fodder – Píce
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates – vyloučená látka
8. Other plant products
Animal products / raw material
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Wild meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Annual report on the state of forests and forestry, Ministry of agriculture, Prague	H	Forest fruits collection	2005	Issued annually
Czech Statistical Office (www.czso.cz)	H	Game stock and hunting	2005	
Internet - Expert assessment	M	venison price	2008	No significant changes in prices during last three years, so 2005 prices are considered to be the same as 2008

12.2.2 Classification and definitions

National class	Definition
Forest fruits and mushrooms	Includes main berries and mushrooms collected in the forests
Game	Includes main game species

12.2.3 Original data

Collected fruits and mushrooms in forests		
	mil kg	mil CZK
Mushrooms	19.5	2048
Blueberries	7.6	670
Raspberries	2.6	246
Blackberries	1.3	125
Cranberries	0.8	85
Elderberries	1.3	101
total	33.1	3275

Hunting of main game species		
	pieces	tons
red deer	20668	1547.9
fallow deer	10308	301.5
mouflon	7241	171.7
roe deer	124287	1864.3
wild boar	100608	5027.9
duck	347596	275.8
pheasant	588513	-
hare	93377	576.6

Venison price		
Druh zvěře:	Game	CZK /1kg – whole body
Jelen lesní	red deer	70
Daněk evropský	fallow deer	70
Prase divoké	wild boar	50
Muflon	mouflon	40
Srnec obecný	roe deer	125
		CZK/piece
Zajíc polní	hare	300
Bažant	pheasant	40
Kachna divoká	duck	30

12.3 Data for Table T12

Rank	Name of product	Key species	Unit	NWFP removals 2005		NWFP category
				Quantity	Value (1000 local currency)	
1st	Mushrooms	Mushrooms	tons	19500	2048000	1
2nd	Blueberries	Blueberries	tons	7600	670000	1
3rd	wild boar	wild boar	tons	5028	251395	12
4th	Raspberries	Raspberries	tons	2600	246000	1
5th	roe deer	roe deer	tons	1864	233038	12
6th	Blackberries	Blackberries	tons	1300	125000	1
7th	red deer	red deer	tons	1548	108353	12
8th	Elderberries	Elderberries	tons	1300	101000	1
9th	Cranberries	Cranberries	tons	800	85000	1
10th	hare	hare	pieces	93377	28013	12
All other plant products					0	
All other animal products					61941	
TOTAL					**3957740**	

	2005
Name of local currency	CZK – Czech Crown

12.4 Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	
Other plant products	No comprehensive info on the amount of plants collected for medicine purposes
Other animal products	
Value by product	
Total value	

Other general comments to the table
All prices are reported as a going price on the market, no estimation of "raw material at the site of collection" price was done

13 Table T13 – 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 wage or salary in cash or in kind.
Self-employment	Persons who during a specified reference period performed some work for profit or family gain 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
Annual report on the state of forests and forestry, Ministry of agriculture, Prague	H	Employment		Issued annually
Expert assessment	L	person in primary production		

13.2.2 Classification and definitions

National class	Definition
Employment in forestry sector	Persons in primary production and services.
Persons in services	Managers of all levels, forestry service institutions, forest management planning

13.2.3 Original data

Number of employees in forestry sector

Rok Year	1988	1989	1990	1991	1992	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Lesní hospodářství celkem - Total forestry	57 700	50 400	57 700	50 400	46 500	33 985	33 314	32 264	29 804	25 702	24 893	23 996	21 835	20 342	19 398

13.3 Analysis and processing of national data

Averages

Year	1988	1989	1990	1991	1992	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total forestry	57 700	50 400	57 700	50 400	46 500	33 985	33 314	32 264	29 804	25 702	24 893	23 996	21 835	20 342	19 398
average	**52 540**					**31 014**					**22 093**				

13.4 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	52.5	31.0	22.1
...of which paid employment	52.5	31.0	22.1
...of which self-employment	n.a.	n.a.	n.a.
Employment in management of protected areas	n.a.	n.a.	n.a.

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		
Paid employment / self-employment		
Employment in management of protected areas		

Other general comments to the table

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)			
Forest policy statement with national scope		x	Yes
			No
If Yes above, provide:	Year of endorsement	1994,2000	
	Reference to document	Principles of State Forestry Policy (1994) Concept of departmental Policy of the Ministry of Agriculture for the period before the entry into EU (2000)	
National forest programme (nfp)		x	Yes
			No
If Yes above, provide:	Name of nfp in country	Národní lesnický program pro období do roku 2013 (NLP II)	
	Starting year	2008 (NLP I – 2003)	
	Current status		In formulation
		x	In implementation
			Under revision
			Process temporarily suspended
	Reference to document or web site	http://www.uhul.cz/forum/download/file.php?id=9	
Law (Act or Code) on forest with national scope		x	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	1995
	Year of latest amendment	2008
	Reference to document	http://www.uhul.cz/legislativa/289.php

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
	x	No
If Yes above, indicate the number of regions/states/provinces with forest policy statements		
Sub-national Laws (Acts or Codes) on forest		Yes
	x	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	In 1994 the" Principles of State Forestry Policy" were endorsed by Government (Resolution of the Government of the Czech Republic No. 249 of 11 May 1994) In 2000 the "The Ministry of Agriculture's agrarian policy conception for the period before the Czech Republic accession to the EU" which includes forest policy was endorsed by government (Resolution of the Government of the Czech Republic No. 49 of 12 January 2000)
National forest programme (nfp)	National Forestry Program I (NFP I) (Resolution of the Government of the Czech Republic No. 53 of 13 November 2003) National forest program II for the period until 2013 (Resolution of the Government of the Czech Republic No. 1221 of 1 October 2008)
Law (Act or Code) on forest with national scope	There is a specific forest law, but forests are incorporated to the Environmental act as well
Sub-national forest policy statements	There is ongoing process on establishing the Regional forest management development programs on the NUTS3 level (14 regions)
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	Minister of agriculture	
Level of subordination of Head of Forestry within the Ministry	x	1st level subordination to Minister
		2nd level subordination to Minister
		3rd level subordination to Minister
		4th or lower level subordination to Minister
Other public forest agencies at national level	Forest management institute, The Forestry and Game Management Research Institute Forests of the Czech Republic, State Enterprise Military forests and estates, State Enterprise Management of National Parks (contributory organizations established for each of 4 National parks - Krkonoše, Šumava, Podyjí, Česko-Saské Švýcarsko) Agency for Nature Conservation and Landscape Protection of the Czech Republic	
Institution(s) responsible for forest law enforcement	Ministry of agriculture Ministry of environment Czech Environmental Inspectorate Ministry of defence	

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						

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	Ministry of Agriculture is responsible for setting-up the forest policy in the country in collaboration with Ministry of Environment. Forests and forest management is also embodied in programme of Nature and Landscape Conservation and from the previous period also in the Concept of Industrial Policy. Ministry of Environment is responsible for forests in the territory of national parks. Ministry of defence is responsible for forests within its scope	
Level of subordination of Head of Forestry within the Ministry		
Other public forest agencies at national level	Forests of the Czech Republic, State Enterprise (S. E.) was established to manage forests in property of the Czech republic within the scope of the Ministry of Agriculture Military forests and estates, State Enterprise – manages forests within the scope of the Ministry of Defense Management of National Parks(contributory organizations established for each of 4 National parks - Krkonoše, Šumava, Podyjí, Česko-Saské Švýcarsko) manages forests in national parks Agency for Nature Conservation and Landscape Protection of the Czech Republic (governmental body) is responsible for management of forests within protected areas Contributory organization is a type of organization, which is partially financed from state budget	
Institution(s) responsible for forest law enforcement	Forest administration on lower level is carried out by state administration, which organizationally belongs under Ministry of interior, but Ministry of Agriculture provides guidance to them	
Human resources within public forest institutions	Such data are not available on whole scale	

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
Questioning on following schools and universities: • Czech agricultural university Prague • Mendel university of Agriculture and forestry in Brno • Czech Forestry academy Trutnov • Bedřich Schwarzenberg's Forestry College (Higher Forestry School) and Secondary Forestry School, Písek,	H	Number of graduating	2000 2005 2008	
Questioning on The Forestry and Game Management Research Institute	H	Number of professionals working in publicly funded forest research centres	2000 2005 2008	

16.2.2 Original data

Number of graduating

			Czech Forestry academy Trutnov	Bedřich Schwarzenberg's Forestry College	Czech agricultural university Prague	Mendel university of Agriculture and forestry in Brno
2000	DiS	total	9	23		
		women	0	4		
	Bc	total			19	
		women			9	
	Mg	total			95	
		women			29	

2005	DiS	total	18	32		
		women	2	7		
	Bc	total			60	
		women			20	
	Mg	total			112	
		women			46	
2008	DiS	total	10	39		
		women	2	12		
	Bc	total			132	219
		women			32	47
	Mg	total			79	157
		women			24	39

Number of professionals working in Forestry and Game Management Research Institute

		2000	2005	2008
DiS.	men	0	0	0
	women	0	1	2
Bc.	men	0	1	0
	women	0	0	2
Mgr.	men	0	1	1
	women	5	3	4
Ing.	men	25	26	22
	women	19	20	16
MSc.	men	1	0	0
	women	0	0	0
RNDr.	men	1	1	1
	women	1	1	1
Ph.D.	men	0	7	7
	women	0	1	6
CSc.	men	20	15	11
	women	4	4	4
DrSc.	men	1	1	1
	women	0	0	0
Doc.	men	1	5	6
	women	0	0	0
Prof.	men	0	2	0
	women	0	0	0
Total	men	49	59	49
	women	29	30	35

16.3 Analysis and processing of national data

16.3.1 Estimation and forecasting

Only data from 2008 are available at Mendel University, but according to responsible persons statement numbers are not changing significantly – therefore we used data from 2008 also for 2000 and 2005

			Czech Forestry academy Trutnov	Bedřich Schwarzenberg's Forestry College	Czech agricultural university Prague	Mendel university of Agriculture and forestry in Brno	total
2000	DiS	total	9	23			32
		women	0	4			4
	Bc	total			19	219	238
		women			9	47	56
	Mg	total			95	157	252
		women			29	39	68
2005	DiS	total	18	32			50
		women	2	7			9
	Bc	total			60	219	279
		women			20	47	67
	Mg	total			112	157	269
		women			46	39	85
2008	DiS	total	10	39			49
		women	2	12			14
	Bc	total			132	219	351
		women			32	47	79
	Mg	total			79	157	236
		women			24	39	63

16.3.2 Reclassification into FRA 2010 categories

DiS.	Forest technician certificate / diploma
Bc.	Bachelor's degree (BSc) or equivalent
Mgr.	Master's degree (MSc) or equivalent
Ing.	
MSc.	
RNDr.	
Ph.D.	Doctor's degree (PhD)
CSc.	
DrSc.	
Doc.	
Prof.	

16.4 Data for Table T16

FRA 2010 Category	Graduation [1] of students in forest-related education					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Master's degree (MSc) or equivalent	252	26.98%	269	31.60%	236	26.69%
Bachelor's degree (BSc) or equivalent	238	23.53%	279	24.01%	351	22.51%
Forest technician certificate / diploma	32	12.50%	50	18.00%	49	28.57%
FRA 2010 Category	**Professionals working in publicly funded forest research centres [2]**					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Doctor's degree (PhD)	26	15.38%	35	14.29%	35	28.57%
Master's degree (MSc) or equivalent	52	48.08%	52	46.15%	29	72.41%
Bachelor's degree (BSc) or equivalent	0	0.00%	1	0.00%	2	100.00%

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	Only data from 2008 are available at Mendel University, numbers have not changed significantly since 2000 – therefore we used data from 2008 also for 2000 and 2005	
Professionals working in public forest research centres	We include higher degrees (DoC. and Prof. which are the research-teaching degrees) to Doctor's degree	

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
Annual report on the state of forests and forestry, Ministry of agriculture, Prague	H	Transfer payments	2000,2005	Issued annually
Annual report on Operational program Rural development and multifunctional agriculture 2005	H	Transfer payments	2005	EU funding
Annual report on Horizontal rural development plan 2005	H	Transfer payments	2005	EU funding
Ministry of environment – email questioning	H	Transfer payments	2000,2005	National budget sources – Care of landscape programme, Programme of stabilization of the forests in Jizerské hory (Jizera mountains)

17.2.2 Original data

transfer payments	million CZK	2000	2005
domestic funding	State commitments under the forest act	245.743	186.7
	Subsidies for forest owners	567.0	354.1
	Services for forest owners	119.0	59.0
	Care of landscape programm	0.240	0.368
	Programe of stabilization of the forests in Jizerské Hory - Jizera mountains)	6.240	6.365
	other sources *	210.0	98.0
external funding	Operational program Agriculture	0	82
	Horizontal rural development plan	0	55

*) Other sources within domestic funding includes aids for afforestation of agricultural lands, aids covering interests of credits in forestry, aids from the State environmental funds.

17.3 Data for Table T17

Table 17a - Forest revenues

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	2005
Forest revenue	n.a.	n.a.

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	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Transfer payments	1 148 223	704 773	n.a.	136 959	1 148 223	841 692
Total public expenditure	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	x	Reforestation
	x	Afforestation
	x	Forest inventory and/or planning
	x	Conservation of forest biodiversity
	x	Protection of soil and water
	x	Forest stand improvement
	x	Establishment or maintenance of protected areas
		Other, specify below

17.4 Comments to Table T17

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue	Data not available	
Operational expenditure	Data not available	
Transfer payments	Only the main sources of subsidies are stated. There are other sources, for example funding of establishment or maintenance of protected areas but this data is not available separately for forests parts although there are specific measures.	Trend between 2000 and 2005 was decreasing as a result of decrease of funds allocated for forestry within state budget – after 2007 it has increased again almost to 2000 level also thanks to EU funds

Other general comments to the table