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Food and Agriculture Organization of the United Nations

**GLOBAL FOREST RESOURCES
ASSESSMENT**

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The Forest Resources Assessment Programme

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

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 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).

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

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1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2010 Categories and definitions

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

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
National forest fund report	H	Forest Other wooded land Other land Other land with tree cover Inland water bodies	Since 1955	The annual National Forest Fund report is an official report and database of the National Forestry Board for the forest resources in Bulgaria. It is presented in the form of database and is not exact publication.
FAOSTAT data	H	Total area Land area	1990, 2000, 2002	
“Agrostatistics – BASINK – final results for the employment and land use in Bulgaria”	H	Other wooded land ...of which with tree cover	2000 2005	Official report of Ministry of agriculture and food supply 2007 Web information http://www.mzgar.government.bg/StatPazari/Agrostatistika/agrostatistika.htm

1.2.2 Classification and definitions

National class	Definition
Forest	All the area covered with trees higher than 5m, with canopy cover of more than 10 percent and spanning more than 0.1 hectares
Other wooded land	with trees higher than 5 meters with a combined cover of shrubs, bushes and trees above 10 percent and spanning more than 0.1 hectares
Other land	All the area not covered by forest or water
Other land with tree cover	Trees able to reach a height of 5 meters at maturity and spanning more than 0.1 hectares
Inland water bodies	The area that include rivers, lakes and water reservoirs

1.2.3 Original data

FRA 2010 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	3327.027	3375.117	3651.243
Other wooded land	130.08	104.73	26.308
Other land	7605.893	7583.153	7186.449
...of which with tree cover	n.a.	98.820	71.457
Inland water bodies	36	36	236
TOTAL	11099	11099	11100

* In FRA 2005 data were derived from latest data from 31.12.2004 from National forest fund report and the latest FAOSTAT data. The data for 2005 in this report are new (for 2005 from National forest fund report, Bulgaria. Starting in 2004, data relating to “Country area”, “Land area” and “Inland water” have been revised due to different sources and definitions (differences in Inland water bodies and country area in 2005)

1.3 Analysis and processing of national data

1.3.1 Calibration

No need for calibration. The total land area of the country matches the official, reported land area according to FAOSTAT.

1.3.2 Estimation and forecasting

Forecasting for 2010 is done using the data from 2005

Original data

National class and FRA category	Area (1000 hectares)
	2005
Forest	3651
Other wooded land	26
Other land	7187
...of which with tree cover	72
Inland water bodies	236
TOTAL	11100

Forecasting using linear interpolation

Calculation of differences

Δx (2005-2000)	5
Δy_{forest} (3651-3375)	276
Δy_{owl} (26-105)	-79
Δy of which with tree cover (72-99)	-27
$\Delta y_{\text{forest}}/\Delta x$	55.2
$\Delta y_{\text{owl}}/\Delta x$	-15.8
Δy of which with tree cover / Δx	-5.4

Forecasting

$$\text{Forest 2010} = 3651 + 5 \times 55.2 = 3927$$

$$\text{OWL 2010} = 26 - 5 \times 15.8 = -53 \text{ (i.e. there will be no OWL in Bulgaria in 2010)}$$

$$\text{Other land with tree cover 2010} = 72 - 5 \times 5.4 = 45$$

1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	3327	3375	3651	3927
Other wooded land	130	105	26	0
Other land	7606	7583	7187	6937
...of which with tree cover	n.a.	99	72	45
Inland water bodies	36	36	236	236
Total for country	11099	11099	11100	11100

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest		There is a large increase in the forest area for the period 2000-2005. According to the Forest Act and the preparation of the map of the restored ownership for this period, in the Forest fund were included all excluded in the past, but not destroyed forests, all forests given up for utilization to other organizations and also all areas from agricultural fund – forested and self-forested. In this period actually the update of the Forest fund was done. Part of “Other wooded land” was also included in the Forest fund when forested. The process continues and is still not finished. The data from 2000 and 2005 are used for forecasting 2010.
Other wooded land	Pinus mugo + trees higher than 5 meters with a combined cover of shrubs and bushes	The steep decrease between 2000 and 2005 are in part due the updating of the Forest Fund, where part of the other wooded land was reclassified as forest. It may therefore not reflect the real trend for this category. See also comment on Forest.
Other land		
Other land with tree cover		Data for category “Other land of which with tree cover” include only orchards on the territory of the country. Data for 1990 are not available. Data are derived from the official report of the Ministry of agriculture and food supply (“Agrostatistics – BANSIK – final results for the employment and land use in Bulgaria”)
Inland water bodies		

Other general comments to the table

Expected year for completion of ongoing/planned national forest inventory and/or RS survey / mapping	
Field inventory	For the 2010 data = 2011
Remote sensing survey / mapping	n.a.

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
National forest fund report	H	Public ownership Private ownership ...of which owned by individuals ...of which owned by private business entities and institutions ...of which owned by local communities ...of which owned by indigenous / tribal communities Other types of ownership	Since 1955	Original data source

2.2.2 Classification and definitions

National class	Definition
State ownership	Forest owned by the State
Community ownership	Forest owned by the municipalities
Religious institution ownership	Forest area owned by the church
Private ownership	All individual, family ownership (physical and legal bodies)

2.2.3 Original data

Original data	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	3327.027	2763.847	2651.566
Community/municipality/ ownership	0	205.843	427.750
Forests belonging to Ministry of Environment and Water	0	93.447	108.206
“Agricultural” forest fund	0	14.556	52.302
Educational and experimental forests	0	14.148	10.602
Private individuals	0	264.272	374.441
Private legal entities	0	3.168	8.865
Religious institutions		15.836	17.511
TOTAL	3327	3375.117	3651.243

2.3 Analysis and processing of national data

2.3.1 Calibration

No calibration needed

2.3.2 Estimation and forecasting

Not needed

2.3.3 Reclassification into FRA 2010 categories

FRA 2010 categories	National categories							
	Public ownership	Community/municipality/ ownership	Forests belonging to Ministry of Environment and Water	“Agricultural” forest fund	Educational and experimental forests	Private individuals	Private legal entities	Religious institutions
Public ownership	100%	100%	100%	100%	100%			
Private ownership						100%	100%	100%
...of which owned by individuals						100%		
...of which owned by private business entities and institutions							100%	100%
...of which owned by local communities								
...of which owned by indigenous / tribal communities								
Other types of ownership								

2.4 Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	3327	3092	3250
Private ownership	0	283	401
...of which owned by individuals	0	264	374
...of which owned by private business entities and institutions	0	19	27
...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	3327	3375	3651

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	3327	2886	2822
Individuals	0	0	0
Private corporations and institutions	0	0	0
Communities	0	206	428
Other	0	0	0
TOTAL	3327	3092	3250

2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership	Community forests are state ownership	
Private ownership		
Other types of ownership		
Management rights	The management rights of community forests belong to the community /this is defined by the Bulgarian Forestry Act/	

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
National forest fund report (NFB)	H	Wood production forests; Protected forests; Recreational forests; Others	Since 1955	

3.2.2 Classification and definitions

National class	Definition
Wood production forests	Forests with primary function for wood production
Protective forests	Forests with protective functions including water protecting forests; erosion preventing; irrigation (forest belts)
Protected forests	Natural reserves, national parks, protected areas, historical places, protected landscapes, natural sightseeing
Recreational forests	resort forests and areas and forest parks outside settlements (forests with social functions)
Others	All forests not included into other categories (with seed-producing plants and gardens; with forest nurseries; with geographical crops; with dendraria; forests around monuments of culture; research and experimentation forests, etc.)

3.2.3 Original data

	1990	2000	2005
	Forest (1000 ha)		
Wood production forests	2364.539	2258.312	2561.410
Protective forests	430.253	432.955	450.847
Protected forests	131.551	245.159	278.514
Recreational forests	221.615	222.757	237.620
Others	179.069	215.934	123.362
TOTAL	3327.027	3375.117	3651.753

3.3 Analysis and processing of national data

3.3.1 Calibration

No need for calibration

3.3.2 Estimation and forecasting

Data about designated function of Forest in Bulgaria are calculated in every 5 years (1990, 1995, 2000, 2005, etc.) The report about 2005 is not ready up to now. Reported values for 2005 and 2010 were calculated with the use of preliminary data for 2005.

3.3.3 Reclassification into FRA 2010 categories

FORESTS /for 1990/	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purpose	No or unknown function
Wood production forests	100%					
Protective forests		100%				
Protected forests			36%*	6.13% **	57.87%	
Recreational forests				100%		
Others					100%	

FORESTS /for 2000/	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purpose	No or unknown function
Wood production forests	100%					
Protective forests		100%				
Protected forests			19%*		81%	
Recreational forests				100%		
Others					100%	

FORESTS /for 2005/	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purpose	No or unknown function
Wood production forests	100%					
Protective forests		100%				
Protected forests			12%*		88%	
Recreational forests				100%		
Others					100%	

*Only reserves are designated for Protection of biodiversity. The other protected forests are with multiple purposes. The table concerns only forests. In the table values for 1990 were presented (47 300 ha); for other reporting years the values correspond to the area of reserves which was 46, 34 and 22 thousand hectares for 2000, 2005 and 2010 respectively.

**For 1990 the area of historical sites is 8.069 and it was included into “Social services”, for other reporting years this value is “0”

3.4 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	2365	2258	2561	2864
Protection of soil and water	430	433	451	469
Conservation of biodiversity	47	46	34	22
Social services	230	223	238	253
Multiple use	255	415	367	319
Other (please specify in comments below the table)	0	0	0	0
No / unknown	0	0	0	0
TOTAL	3327	3375	3651	3927

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	3327	3375	3651	3927
Forest area within protected areas	132	245	279	313
Forest area under sustainable forest management	3171	3156	3542	3927
Forest area with management plan	3327	3375	3651	3927

3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production		
Protection of soil and water		

Conservation of biodiversity		
Social services	For 1990 the area of historical sites is 8.069 and it was included into “Social services”.	
Multiple use		
Other		
No / unknown designation		
Area of permanent forest estate		
Forest area within protected areas		
Forest area under sustainable forest management	<p>1990 – From the total area, which is 3327 thousand ha are excluded: 1. burnt areas within the forest; only crown fires /1 thousand ha/; 2. clear cuttings /4.7 thousand ha/; 3. forest areas disturbed and treated against different abiotic or biotic factors /149 thousand ha/</p> <p>2000 - From the total area, which is 3375thousand ha are excluded: 1. burnt areas within the forest; only crown fires /15 thousand ha/ ; 2. clear cuttings /7 thousand ha/; 4. forest areas disturbed and treated against different abiotic or biotic factors /197 thousand ha/</p> <p>2005 - From the total area, which is 3651 thousand are excluded: 1. burnt areas within the forest; only crown fires /0.1 thousand ha/; 2. clear cuttings /5.5 thousand ha/; 4. forest areas disturbed and treated against different abiotic or biotic factors /103 thousand ha/</p>	
Forest area with management plan	Almost all forest within the forest fund of Bulgaria have forest management plan. Only the forest lands under 2 ha and private ownership are not obligated to have a forest management plan according to Bulgarian legislation. The Bulgarian Forestry Agency is now on the way to create an information system for all private forest owners and to collect these data in the next few months. This information will be added to the Table as soon as possible.	

Other general comments to the table

In FRA 2005 data were derived from latest data from 31.12.2004 from National forest fund report and the latest FAOSTAT data. The data for 2005 in this report are new (for 2005 from National forest fund report, Bulgaria)

In 1999 with the adoption of the Protected areas Act some ha of the category “historical sites” were reclassified into “protected sites” category and other part was eliminated.

Data about designated function of Forest in Bulgaria are calculated in every 5 years (1990, 1995, 2000, 2005, etc.).

4 Table T4 – Forest characteristics

4.1 FRA 2010 Categories and definitions

Term / category	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Introduced species	A species, subspecies or lower taxon, occurring <u>outside</u> its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans).
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
National forest fund report (NFB)	H	Protected native forests; Virgin forests; Native forest with production designation; Introduced species; Recreational forest (introduced and native species mixed)	Since 1955	
Virgin forests in Bulgaria	H	Virgin forests	2005	PINMATRA Project Royal dutch society for nature protection; Ministry of environment and water /Bulgaria/

4.2.2 Classification and definitions

National class	Definition
Protected native forests	Forest of native species, where the ecological processes are not significantly disturbed
Virgin forests	Forest ecosystem, product of natural evolution, as well as those with partial exogenic influences of anthropogenic character, with preserved structure and relationship between biocenosis and environment
Planted forest	Forest composed of trees established through planting and/or deliberate seeding.
Primary forest	The same as FRA definition
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities.

4.2.3 Original data

National class	1990	2000	2005
	Forests (1000ha)		
Protected native forests	131.551	245.159	278.514
Virgin forests outside protected areas *	25.037*	25.037*	25.037*
Other naturally regenerated forests	2138	2172.224	2473.034
...of which of introduced species	96.204	110.809	33.309
Planted forests	1032	933.034	873.858
...of which of introduced species	37.173	28.226	139.855

* see explanation in comments

4.3 Analysis and processing of national data

4.3.1 Estimation and forecasting

Forecasting using linear interpolation

Calculation of differences

Δx (2005-2000)	5
Δy Primary forest (304-270)	34
Δy Other naturally regenerated forest (2473-2172)	301
Δy .. of which of introduced species (140-111)	29
Δy Planted forest	-59
Δy of which of introduced species	5
Δy Primary forest / Δx	6.8
Δy Other naturally regenerated forest / Δx	60.2
Δy of which of introduced species / Δx	5.8
Δy Planted forest / Δx	-11.8
Δy of which of introduced species / Δx	1

Forecasting

Primary forest 2010 = 304+5x(6.8) = 338

Other naturally regenerated forest 2010 = 2473+5x60.2 = 2774

....etc.

4.3.2 Reclassification into FRA 2010 categories

Data about characteristics of Forests in Bulgaria are calculated in every 5 years (1990, 1995, 2000, 2005).

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	157	270	304	338
Other naturally regenerated forest	2138	2172	2473	2774
...of which of introduced species	96	111	140	169
Planted forest	1032	933	874	815
...of which of introduced species	37	28	33	38
TOTAL	3327	3375	3651	3927

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	Sum of Protected areas and Virgin forests. The data for virgin forests for 1990 and 2000 are interpreted using National Forest Fund report and are not very reliable and precise. Till 2002 no exact investigations on Virgin forests in Bulgaria were carried out. During the period 2002 and 2005 the project “PINMATRA –Virgin forests in Bulgaria” was launched. For 2005 were used the data according to this report, which are very reliable and new.	According to the results of the project PINMATRA – Virgin forests in Bulgaria”, the total area of Virgin forests in Bulgaria is 103 356.1 ha, of which 78 318.7 ha are included in the category “Protected areas” according to Bulgarian legislation /category “Protected native forests” – National class /see table 4.2.3.above/. Because the 2005 was found as reliable, contrary to the old ones, the 2005 data on the area of virgin forests outside the protected areas (25 037 ha) were used for all reference periods.
Other naturally regenerating forest		
Planted forest		
Rubber plantations		
Mangroves		
Bamboo		

Other general comments to the table

Other naturally regenerated forest of introduced species – Acacia sp.
Planted forest of introduced species - Poplar ; Douglas fir ; larch

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
National forest fund report (NFB)	M	Afforestation, reforestation and natural expansion of forests	from 1951	
Inventory of forest plantations	H	Afforestation	from 1995	

5.2.2 Classification and definitions

National class	Definition
Afforestation	The same as FRA category
Reforestation	The same as FRA category
Natural expansion of forest	Natural succession of forest in agricultural fund on the territory of the country (includes also abandoned agricultural area)

5.2.3 Original data

FRA 2010 Categories	Annual forest establishment (hectares/year)			...of which of introduced species ¹⁾ (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation	5798	2681	5953		409	327
Reforestation	20259	4065	2799		1056	733
...of which on areas previously planted	2243	907	811			
Natural expansion of forest		12 102	37 267			

5.3 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	5798	2681	5953	n.a	409	327
Reforestation	20259	4065	2799	n.a	1056	733
...of which on areas previously planted	2243	907	811	n.a	n.a	n.a
Natural expansion of forest	n.a.	12 102	37 267	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.

5.4 Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation	The average data for 1990 for introduced species can not be reported because during these years the forest inventory was not full and these species were not investigated and reported	
Reforestation	'...of which on areas previously planted' – data available only for Poplar	
Natural expansion of forest	n.a. – such information for the forest fund in Bulgaria is not available	

Other general comments to the table

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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
National forest fund report	H	Growing stock	Since 1955	

6.2.2 Classification and definitions

National class	Definition
Growing stock	Volume over bark of all living trees higher than 3m with branches

6.2.3 Original data

FRA Categories	Volume (1000 cubic meters over bark)		
	Forest		
	1990	2000	2005
Growing stock	404 872	526 063	591 162
Growing stock of commercial species	259 175	321 058	378 143

6.3 Analysis and processing of national data

6.3.1 Estimation and forecasting

As original data are available for three reporting years, there is need only for forecasting 2010.

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	405	526	591	656	n.a.	n.a.	n.a.	n.a.
... of which coniferous	158	231	259	287	n.a.	n.a.	n.a.	n.a.
... of which broadleaved	247	295	332	369	n.a.	n.a.	n.a.	n.a.
Growing stock of commercial species*	405	526	591	656	n.a.	n.a.	n.a.	n.a.

*see comments

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

FRA 2010 category / Species name			Growing stock in forest (million cubic meters)		
Rank	Scientific name	Common name	1990	2000	2005
1 st	<i>Fagus sylvatica</i>	Beech	107.3	130.1	142.6
2 nd	<i>Pinus sylvestris</i>	Scots pine	85.2	114.4	125.2
3 rd	<i>Quercus sp.</i>	Oak	63.9	76.9	87.0
4 th	<i>Pinus nigra</i>	Black pine	22.0	53.6	62.6
5 th	<i>Picea abies</i>	Norway spruce	35.1	42.6	48.5
6 th	<i>Quercus cerris</i>	Bitter oak	25.8	32.5	42.3
7 th	<i>Carpinus betulus</i>	Hornbeam	23.9	20.5	23.0
8 th	<i>Abies alba</i>	Silver fir	10.4	10.8	11.8
9 th	<i>Tilia sp.</i>	Lime	6.3	8.2	11.1
10 th	<i>Populus sp.</i>	Poplar	2.0	1.8	2.5
Remaining			23.1	34.6	34.4
TOTAL			405	526	591

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)	Not applicable	Trees above 3 meters
Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y)	0	
Minimum diameter (cm) of branches included in growing stock (W)	0	
Volume refers to “above ground” (AG) or “above stump” (AS)	AG	

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	There are new data available for 2005 from National forest fund report	
Growing stock of broadleaved / coniferous		
Growing stock of commercial species	* Information on “growing stock on commercial species“ is reported according to the FAO definition, where total volume of species that are considered as commercial is reported. According to national definition, the volume of commercial species in Bulgaria is categorized according their function – if they are designated for wood production. The volume of all species under categories as follow: “Protected forests”, “Protective forests”, “Recreational forests” are not designated for wood production, resp. they are not considered as commercial in their own territory.	
Growing stock composition		

Other general comments to the table
<p>List of non-commercial species</p> <ol style="list-style-type: none"> 1. Ulmus sp. 2. Carpinus orientalis 3. Fraxinus ornus 4. Alnus glutinosa 5. Pinus heldreichii 6. Pinus mugo 7. Fruit trees except wild cherry-tree

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
IPCC Guidelines for National Greenhouse Gas Inventories		Biomass factors	2006	
National forest fund report	H	Growing stock	Since 1955	

7.2.2 Classification and definitions

National class	Definition
Above-ground biomass	The same as FRA category
Below-ground biomass	The same as FRA category
Dead wood	The same as FRA category

7.2.3 Original data

Calculations – year 1990

Forest type	Growing stock	Area /ha/	Growing stock/ha	BCEF*
Hardwood	246 510 254	2 220 090	111.04	0.6
Pines	111 412 294	897 557	124.13	0.4
Other conifers	46 949 452	209 380	224.23	0.4

Calculations – year 2000

Forest type	Growing stock	Area /ha/	Growing stock/ha	BCEF*
Hardwood	293 935 467	2 336 641	125.8	0.6
Pines	172 669 779	691 054	249.8	0.4
Other conifers	58 591 514	347 422	168.6	0.4

Calculations – year 2005

Forest type	Growing stock	Area /ha/	Growing stock/ha	BCEF*
Hardwood	332 467 909	2 572 260	129.3	0.6
Pines	192 580 943	851 123	226.3	0.4
Other conifers	66 113 110	227 860	290.1	0.4

*The Growing stock includes branches and stem tops – lower values are used

7.3 Analysis and processing of national data

7.3.1 Estimation and forecasting

Calculation of AGB

1990

$$\text{AGB}_{\text{hardwood}} = \text{GS} \times \text{BCEF} = 246\,510\,254 \times 0.6 = 147\,906\,152.4$$

$$\text{AGB}_{\text{pines}} = \text{GS} \times \text{BCEF} = 111\,412\,294 \times 0.4 = 44\,564\,917.6$$

$$\text{AGB}_{\text{other conifers}} = \text{GS} \times \text{BCEF} = 46\,949\,452 \times 0.4 = 18\,779\,780.8$$

$$\text{AGB}_{\text{total}} = 211\,250\,850.8$$

2000

$$\text{AGB}_{\text{hardwood}} = \text{GS} \times \text{BCEF} = 293\,935\,467 \times 0.6 = 176\,361\,280$$

$$\text{AGB}_{\text{pines}} = \text{GS} \times \text{BCEF} = 172\,669\,779 \times 0.4 = 69\,067\,911$$

$$\text{AGB}_{\text{other conifers}} = \text{GS} \times \text{BCEF} = 58\,591\,514 \times 0.4 = 23\,436\,605.6$$

$$\text{AGB}_{\text{total}} = 268\,865\,796.6$$

2005

$$\text{AGB}_{\text{hardwood}} = \text{GS} \times \text{BCEF} = 332\,467\,909 \times 0.6 = 199\,480\,745.4$$

$$\text{AGB}_{\text{pines}} = \text{GS} \times \text{BCEF} = 192\,580\,943 \times 0.4 = 77\,032\,377.2$$

$$\text{AGB}_{\text{other conifers}} = \text{GS} \times \text{BCEF} = 66\,113\,110 \times 0.4 = 26\,445\,244$$

$$\text{AGB}_{\text{total}} = 302\,958\,366.6$$

Calculation of BGB = AGB x R

1990

$$\text{BGB}_{\text{hardwood}} = 147\,906\,152.4 \times 0.27 = 39\,934\,661$$

*0.265 is an average sum according to table 5.3 for temperate forests

$$\text{BGB}_{\text{pines}} = 44\,564\,917.6 \times 0.29 = 12\,923\,826.1$$

$$\text{BGB}_{\text{other conifers}} = 18\,779\,780.8 \times 0.29 = 5\,446\,136.432$$

$$\text{BGB}_{\text{total}} = 58\,304\,624$$

2000

$$\text{BGB}_{\text{hardwood}} = 176\,361\,280 \times 0.27 = 47\,617\,545.6$$

*0.27 is an average sum according to table 5.3 for temperate forests

$$\text{BGB}_{\text{pines}} = 69\,067\,911 \times 0.29 = 20\,029\,694.2$$

$$\text{BGB}_{\text{other conifers}} = 23\,436\,605.6 \times 0.29 = 6\,796\,615.6$$

$$\text{BGB}_{\text{total}} = 74\,443\,855$$

2005

$$\text{BGB}_{\text{hardwood}} = 199\,480\,745.4 \times 0.27 = 53\,859\,801.3$$

*0.27 is an average sum according to table 5.3 for temperate forests

$$\text{BGB}_{\text{pines}} = 77\,032\,377.2 \times 0.29 = 22\,339\,389.4$$

$$\text{BGB}_{\text{other conifers}} = 26\,445\,244 \times 0.29 = 7\,669\,120.8$$

$$\text{BGB}_{\text{total}} = 83\,868\,312$$

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	211	269	303	337	n.a.	n.a.	n.a.	n.a.
Below-ground biomass	58	74	84	93	n.a.	n.a.	n.a.	n.a.
Dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass		
Below-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
IPCC Guidelines for National Greenhouse Gas Inventories		Biomass factors	2006	
IPCC Guidelines for National Greenhouse Gas Inventories		Litter and dead wood carbon stocks	2006	
IPCC Guidelines for National Greenhouse Gas Inventories		Soil organic C stocks	2006	
National forest fund report	H	Growing stock	Since 1955	

8.2.2 Original data

Original data for broadleaf and needle-leaf forests needed for calculations

Forest area /1000 ha/	1990	2000	2005
Broadleaf deciduous	2135	2337	2572
Needleleaf evergreen	1192	1038	1079
Total	3327	3375	3651

Carbon in litter	1990	2000	2005
Broadleaf deciduous	34 160	37 392	41 152
Needleleaf evergreen	30 992	26 988	28 054
Total	65 152	64 380	69 206

Forest	1990	2000	2005
Soil carbon factor	95	95	95
Forest area	3327	3375	3651
Soil carbon	316 065	320 625	346 845

OWL	1990	2000	2005
Soil carbon factor	95	95	95
OWL area	130	105	26
Soil carbon	12 350	9975	2470

8.3 Analysis and processing of national data

8.3.1 Estimation and forecasting

The applied factor is the default global carbon fraction recommended by IPCC – 0.47

Default values for litter and wood carbon stocks

Litter:

- for Broadleaf deciduous /cold temperate, moist/ - 16 tonnes C ha⁻¹
- for needleleaf evergreen/cold temperate, moist/ - 26 tonnes C ha⁻¹

Soil organic C stocks

- HAC soils /cold temperate, moist/ - 95 tonnes C ha⁻¹

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	99.3	126.4	142.4	158.4	n.a.	n.a.	n.a.	n.a.
Carbon in below-ground biomass	27.3	34.8	39.5	43.7	n.a.	n.a.	n.a.	n.a.
Sub-total: Living biomass	126.6	161.2	181.9	202.1	n.a.	n.a.	n.a.	n.a.
Carbon in dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in litter	6.5	6.4	6.9	7.3	n.a.	n.a.	n.a.	n.a.
Sub-total: Dead wood and litter	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Soil carbon	316	321	347	373	12	10	2.5	0
TOTAL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Soil depth (cm) used for soil carbon estimates	30
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8.5 Comments to Table T8

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass		
Carbon in below-ground biomass		
Carbon in dead wood		
Carbon in litter		
Soil carbon		

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
Official fire statistics of State Forestry Agency	H	Disturbance by fires	annual	
Forest fires in Europe, EC – JRC, Ispra	H	Disturbance by fires	annual	

9.2.2 Classification and definitions

National class	Definition
Disturbance by fire	Disturbance by fire caused human or natural activities.
Number of fires	Number of vegetation fires per year in the country.
Planned fire	According to Forestry Act in Bulgaria planned fires are forbidden

9.2.3 Original data

FORESTS	1988 (000 ha)	1989 (000 ha)	1990 (000 ha)	1991 (000 ha)	1992 (000 ha)	5-year average (000 ha)
Disturbance by fire	0.462	0.223	1.012	0.471	4.154	1.2644
Number of fires	104	63	208	73	602	210

OTHER WOODED LAND	1988 (000 ha)	1989 (000 ha)	1990 (000 ha)	1991 (000 ha)	1992 (000 ha)	5-year average (000 ha)
Disturbance by fire	NDA	NDA	0.029	0.040	1.089	0.386

FORESTS	1998 (000 ha)	1999 (000 ha)	2000 (000 ha)	2001 (000 ha)	2002 (000 ha)	5-year average (000 ha)
Disturbance by fire	6.060	4.198	37.431	18.463	5.910	14.4124
Number of fires	584	320	1710	825	402	768

OTHER WOODED LAND	1998 (000 ha)	1999 (000 ha)	2000 (000 ha)	2001 (000 ha)	2002 (000 ha)	5-year average (000 ha)
Disturbance by fire	0.907	4.093	19.975	1.689	0.603	5.4534

FORESTS	2003	2004	2005	2006	2007	5-year
Disturbance by fire	5.000	1.137	1.456	3.540	42.999	10.83
Number of fires	452	294	241	393	1479	572

9.2.4 Estimation and forecasting

	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990 (5-year average 1988 -1992)	2000 (5-year average 1998-2002)	1990 (5-year average 1988 -1992)	2000 (5-year average 1998 -2002)
Disturbance by fire	1.2644	14.4124	0.386	5.4534

9.3 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	1.26	210	14.4	768	10.83	572
... of which on other wooded land	0.386	n.a.	5.45	n.a.	n.a.	n.a.
... 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	0	0	0

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

9.4 Comments to Table T9

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Area affected by fire		
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
National forest fund report	H		Since 1955	
Forest protection stations – official statistics (Branches of NFB)	M	Disturbance by insects, disturbance by insects, other	annual	

10.2.2 Classification and definitions

National class	Definition
Disturbance by insects	Disturbance caused by insect pests
Disturbance by diseases	Disturbance caused by fungi, bacteria, etc.
Other disturbance	Disturbance caused by other factors than fire, insects or diseases

10.2.3 Original data

FORESTS	1988	1989	1990	1991	1992	5-year average
	(1000 ha)					
Disturbance by insects	89.657	99.117	112.424	97.846	118.660	103.54
Disturbance by diseases	43.128	55.512	51.131	51.752	59.099	52.1
Other disturbance	9.28	8.428	8.645	5.342	13.501	9.04

FORESTS	1998	1999	2000	2001	2002	5-year average
	(000 ha)					
Disturbance by insects	311.254	235.079	152.045	150.717	82.431	186.31
Disturbance by diseases	26.128	26.085	29.248	39.306	60.696	36.29
Other disturbance	22.852	26.934	33.832	18.777	11.063	22.6916

Forests	2003	2004	2005	2006	2007	5-year average
	(1000ha)					
Disturbance by insects	83,7	92,5	102,5	70,4	61,5	82
Disturbance by diseases	55,9	40,6	28,9	19,7	16,6	32
Other disturbance	6,3	3	10,7	10,6	8,1	7,7

“Other disturbances” are abiotic (wind throw, snow throw, etc.).

10.3 Analysis and processing of national data

10.3.1 Estimation and forecasting

	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990 (5-year average 1988 -1992)	2000 (5-year average 1998-2002)	1990 (5-year average 1988 -1992)	2000 (5-year average 1998 -2002)
Disturbance by insects	104	186	NDA	NDA
Disturbance by diseases	52	36	NDA	NDA
Other disturbance	9	23	NDA	NDA

10.4 Data for Table T10

Table 10a – Disturbances

FRA 2010 category	Affected forest area (1000 hectares)		
	1990	2000	2005
Disturbance by insects	104	186	82
Disturbance by diseases	52	36	32
Disturbance by other biotic agents	0.4	0.3	1
Disturbance caused by abiotic factors	9	23	6.7
Total area affected by disturbances	165	245	122

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)
Lymantria dispar	<i>Quercus sp.</i> , <i>Carpinus sp.</i> , <i>Populus sp.</i>	2005	40	8-9 years
Geometridae, Tortricidae	<i>Quercus sp.</i> , <i>Carpinus sp.</i>	2008	25.5	-
Euproctis chrysorrhoea	<i>Quercus sp.</i>	2000	55.7	-
Traumatocampa pityocampa	<i>Pinus nigra</i> , <i>Pinus sylvestris</i>	2008	18.5	-
Neodiprion pini	<i>Pinus nigra</i> , <i>Pinus sylvestris</i>	2008	9.7	-
Pine drying	<i>Pinus nigra</i> , <i>Pinus sylvestris</i>	2007	1.5	-
Oak drying	<i>Quercus sp.</i>	2007	5	-
* <i>Quercus cerris</i> drying (Hypoxylon mediterraneum)	<i>Quercus cerris</i>	2007	1.2	-

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)
<i>Amorpha fruticosa</i>	n.a.
<i>Fraxinus americana</i>	n.a.
<i>Ailantus altissima</i>	n.a.
Total forest area affected by woody invasive species	n.a.

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

10.5 Comments to Table T10

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Disturbance by insects		
Disturbance by diseases		
Disturbance by other biotic agents	Complex reasons for this disturbances	
Disturbance caused by abiotic factors		
Major outbreaks	* <i>Quercus cerris</i> drying (Hypoxylon mediterraneum) – the reason for drying is more complex than activeness of Hypoxylon mediterraneum	
Invasive species	There is no methodology for systematic monitoring of invasive species; there are only a few scientific investigations in the area	

Other general comments to the table

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
National forest fund report	H	Industrial roundwood; woodfuel removals	Since 1955	

11.2.2 Classification and definitions

National class	Definition
Industrial roundwood removals	The same as FRA category
Woodfuel removals	The same as FRA category

11.2.3 Original data

	1990	1998	1999	2000	2001	2002	2000 average
Industrial roundwood removals	2 457	3444	3168	2745	2117	2522	2799
Woodfuel removals	943	1051	1090	984	809	961	979
Total	3 400	4 495	4 258	3 729	2926	3483	3778

	2003	2004	2005	2006	2007	2005 average
Industrial roundwood removals	3440	3813	3864	3931	3813	3772
Woodfuel removals	1903	2032	1870	2023	1862	1938
Total	5343	5845	5734	5 954	5 675	5 710

11.3 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.)	2457	2799	3772	943	979	1938
... of which from forest	2457	2799	3772	943	979	1938
Unit value (local currency / m ³ o.b.)	19	27.43	55.00	2	4.88	35.00
Total value (1000 local currency)	46683	76777	207460	1886	4777	67830

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	USD*	Lev	Lev

*for the reasons explained below, USD are applied for reporting for 1990 while the local currency was Lev.

11.4 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 of woodfuel removals		
Unit value	*1990 It is very difficult to calculate the data in local currency during this reporting period because of the extreme /every day sometimes/ changes of the proportion between lev and US dollar. That's way is better to use US dollar for 1990 to report	
Total value		

Other general comments to the table

In FRA 2005 the data for industrial wood and woodfuel were estimated as the planned removals at the beginning of the 2005. Now the actual data for both categories were used.

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
<u>Plant products / raw material</u>
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
<u>Animal products / raw material</u>
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
Official report of National Forestry Board/2006	H	Non-wood forest products	2005	
Statistics of National Forestry Board	H	Non-wood forest products	2005	

12.2.2 Original data

Rank	Name of product	Key species	Unit	NWFP removals 2005	
				Quantity	Value lev
1 st	Mushrooms	Boletus edulis; Cantharellus cibarius; Marasmius oreades; Lactarius deliciosus, etc.	kg	7 937 062	1 553 023
2 nd	Christmas tree	Pinus nigra, Abies alba, Picea abies	number	42 992	100 123
3 rd	Game meat	-	t	1 208 000	2 426 000
4 th	Pelts, hides, skins and trophies	-	t	25 00	1 252 000
5 th	Walnuts	walnut	t	20 011	18 726
6 th	Forest fruits	Raspberry, blackberry, blueberry, etc.	kg	1 849 075	75 612
7 th	Forest seeds	Needle, broadleaf	kg	40 172	3263
8 th	Herbs	-	kg	5 295 329	127 964
9 th	Bark	Needle, broadleaf	kg	27 944	1597
10 th	Decorative wildlings	Needle, broadleaf	number	37 264	67 013
Other		Services, taxes (ski resorts renting and permissions; renting of pasture land; rent of land for camping sites, etc.)			1 179 401
	All other plant products	Wildlings, plant-growing ; other wood materials; fodder; Hay			91 757
	All other animal products	Stock-breeding;		0	66 502
TOTAL					

12.3 Data for Table T12

Rank	Name of product	Key species	Unit	NWFP removals 2005		NWFP category
				Quantity	Value (1000 local currency)	
1 st	Game meat	-	t	1208	2426	12
2 nd	Mushrooms	Boletus edulis; Cantharellus cibarius; Marasmius oreades; Lactarius deliciosus, etc.	kg	7937	1553	1
3 rd	Pelts, hides, skins and trophies	-	t	2.5	1252	10
4 th	Herbs	-	kg	5295	128	3
5 th	Christmas tree	Pinus nigra, Abies alba, Picea abies	number	43	100	6
6 th	Forest fruits	Raspberry, blackberry, blueberry, etc.	kg	1849	76	1
7 th	Decorative wildlings	Needle, broadleaf	number	37	67	6
8 th	Walnuts	walnut	t	20	19	1
9 th	Forest seeds	Needle, broadleaf	kg	40	3	8
10 th	Bark	Needle, broadleaf	kg	28	2	8
	All other plant products				92	
	All other animal products				0	
TOTAL						5718

	2005
Name of local currency	Lev

12.4 Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	
Other plant products	
Other animal products	
Value by product	
Total value	

Other general comments to the table
Services are not included in the reporting.

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 <u>wage or salary</u> in cash or in kind.
Self-employment	Persons who during a specified reference period performed some work for <u>profit or family gain</u> in cash or in kind (e.g. employers, own-account workers, members of producers' cooperatives, contributing family workers).

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Labour Force Survey	L	Self-employment	2000, 2005	
R&D survey	H	R&D personnel by qualification	2000, 2005	The data for reference year 2008 will be available at the end of 2009.

13.2.2 Original data

	1990	2000	2005
Employment in forestry, logging and related service activities *	n.a.	26.3	20.5
...of which paid employment *	n.a.	23.0	18.9
...of which self-employment *	n.a.	3.3	1.6

*Data are reported in number of employed persons

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

The unit "Full-time equivalents (FTE) corresponds to one person working full time. 1000 years FTE corresponds to 1000 persons working full-time during one year, or 2000 persons working half time during one year.

13.4 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	n.a.	26	21
...of which paid employment	n.a.	23	19
...of which self-employment	n.a.	3	2
Employment in management of protected areas	n.a.	84	98

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	Reporting excludes administrative staff, which is engaged in management of both, protected and non-protected areas. Total number of administrative staff engaged with the management in both primary production of goods and management of protected areas is reported under category “Employment in management of protected areas”.	
Paid employment / self-employment		
Employment in management of protected areas	*Only administrative staff is engaged with the management of protected areas – these data are included into T15b	

Other general comments to the table

Data are reported in number of employed persons (data are not converted into full-time equivalents).

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	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Year of endorsement	2006	
	Reference to document	“National Strategy for sustainable development of the forest sector 2006-2015” “Strategic Plan for development of the forest sector 2007-2011”.	
National forest programme (nfp)	<input checked="" type="checkbox"/>	Yes	
	<input type="checkbox"/>	No	
If Yes above, provide:	Name of nfp in country	“National Strategy for sustainable development of the forest sector 2006-2015”	
	Starting year	2003	
	Current status	<input type="checkbox"/>	In formulation
		<input checked="" type="checkbox"/>	In implementation
		<input type="checkbox"/>	Under revision
Reference to document or web site	“National Strategy for sustainable development of the forest sector 2006-2015” “Strategic Plan for development of the forest sector 2007-2011” http://nug.bg/cgi-bin/index.cgi?Unit=Docs&lng=bg		
Law (Act or Code) on forest with national scope	<input checked="" type="checkbox"/>	Yes, specific forest law exists	
	<input type="checkbox"/>	Yes, but rules on forests are incorpo-rated in other (broader) legislation	
	<input type="checkbox"/>	No, forest issues are not regulated by national legislation	

If Yes above, provide:	Year of enactment	1. In 1958 is the year of enactment of the current Forest Act 2. 1997
	Year of latest amendment	1. 28 April 2009 (SG 32) 2. Jan 2009 (SG 6/23)
	Reference to document	1. Forest Act * 2. Law for restoration of ownership of forests and forest land entirety 1. http://lex.bg/laws/ldoc/2134178816 2. http://lex.bg/laws/ldoc/2134171136

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	<input type="checkbox"/>	Yes
	<input checked="" type="checkbox"/>	No
If Yes above, indicate the number of regions/states/provinces with forest policy statements		
Sub-national Laws (Acts or Codes) on forest	<input type="checkbox"/>	Yes
	<input checked="" type="checkbox"/>	No
If Yes above, indicate the number of regions/states/provinces with Laws on forests		

14.3 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	
National forest programme (nfp)	The Strategic Plan specifies how to implement the National Strategy with specific targets and points.
Law (Act or Code) on forest with national scope	* Forest Act Art. 1. (1) This law settles the relations in connection with the ownership and tenure - management, reproduction, use and protection of the forests in the Republic of Bulgaria. (2) The purpose of the law is the preservation of the Bulgarian forests as national wealth - main environment forming factor through the reproduction and their steady development and multi-purpose use to the interest of the owners and the society.
Sub-national forest policy statements	
Sub-national Laws (Acts or Codes) on forest	

Other general comments to the table

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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	State Forestry Agency – Chairman	
Level of subordination of Head of Forestry within the Ministry	X	1 st level subordination to Minister
		2 nd level subordination to Minister
		3 rd level subordination to Minister
		4 th or lower level subordination to Minister
Other public forest agencies at national level		
Institution(s) responsible for forest law enforcement	State Forestry Agency and its regional structures	

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	9 239	35%	7734	35%	1329	30%
...of which with university degree or equivalent	4139	40%	3134	35%	667	30%

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	<p>State Forestry Agency is with the status of “Ministry” and is under the direct authority of the Council of Ministers.</p> <p>National Forestry Board was the old structure inside the Ministry of agriculture and forests till 2007. With a decree of the Council of Ministers, National Forestry Board was transformed into State Forestry Agency and separated from the Ministry of agriculture and forests. The Ministry of agriculture and forests was transformed into Ministry of agriculture and food.</p>	
Level of subordination of Head of Forestry within the Ministry	<p>No subordination as the Head of Forestry has the status of Minister.</p> <p>Within the State Forestry Agency:</p> <ul style="list-style-type: none"> Chairman 3 Vice-Chairmens 1 General Secretary 9 Directorates, etc. 	
Other public forest agencies at national level		
Institution(s) responsible for forest law enforcement	<p>State Forestry Agency and its structures</p> <ul style="list-style-type: none"> - Regional Forest Directorates (16) - State forest enterprises – (141) - State hunting enterprises – (37) - Nature Parks Directorates (11) - Seed Control Stations (2) - Forest Protection Stations (3) - Experimental Stations (3) - Poplar Station 	
Human resources within public forest institutions	<p>From 01.07.2008 new reform started in forestry sector in Bulgaria – all State Forestry and Hunting Units become State Forest and Hunting Enterprises and are not anymore part of State forest administration</p> <p>Till 01.07.2008 the total staff within public forest institutions was 7538 of which with university degree 3134.</p>	

Other general comments to the table

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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
R&D survey	H	R&D personnel by qualification	2000, 2005	The data for reference year 2008 will be available at the end of 2009.
Annual statistical surveys (Census) - National statistical institute	H	Graduation of students in forest-related education	2000, 2005, 2007	The data refers to the school (academic) years

16.3 Data for Table T16

FRA 2010 Category	Graduation ¹⁾ of students in forest-related education					
	2000		2005		2008 ³⁾	
	Number	%Female	Number	%Female	Number	%Female
Master's degree (MSc) or equivalent ⁴⁾	111	36.04	24	20.83	22	9.09
Bachelor's degree (BSc) or equivalent ⁴⁾	n.a.	n.a.	64	37.5	57	29.82
Forest technician certificate / diploma ⁴⁾	35	2.86	426 ⁵⁾	7.51	357 ⁵⁾	11.48
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)	127	35.4	153	36.6	n.a.	n.a.
Master's degree (MSc) or equivalent					n.a.	n.a.
Bachelor's degree (BSc) or equivalent	77	57.1	48	70.8	n.a.	n.a.

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.

16.4 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Graduation of students in forest-related education	<p>³⁾ The latest data available for <i>Graduation of students in forest-related education</i> are about year 2007. All the data filled in column 2008 are about graduates students in year 2007.</p> <p>⁴⁾ The data about graduates are collected according to International Standard Classification – revision 1997 (ISCED '97). According to ISCED '97: <i>Master's degree (MSc) or equivalent</i> corresponds to ISCED 5A (cumulative duration 5 years) <i>Bachelor's degree (BSc) or equivalent</i> corresponds to ISCED 5A (4 years duration)</p> <p>⁵⁾ The data about <i>Forest technician certificate / diploma</i> for years 2005 and 2007 includes graduates ISCED 4 (Post secondary education) and moreover students who acquired vocational qualification in programmes against payment in Vocational Training Centres, vocational gymnasiums and vocational colleges, which programmes starts in year 2004</p>	<p>Forest technician certificate: in 2004 Vocational Training Centers by the National agency for professional education and training were created. Previously there were not such Centers and no possibility to receive such a certificate/diploma. That's why the number of the technicians is so high in 2005. See point 5) in “Comments related to data”</p> <p>Decrease of master's degree: in 2000, the higher education system of Bulgaria was changed. Till 2000, master's degree was obtained after 5 years education in the University. After 2000, Bachelor's degree was introduced (4 years education). Only the best students with best results have the possibility to continue with a Master's degree.</p>
Professionals working in public forest research centers	<ul style="list-style-type: none"> - The data on Professionals working in publicly funded forest research centres are in Head count. - The data on Master's degree (MSc) and Bachelor's degree (BSc) are not separately available. - The used definitions in Bulgarian R&D survey are fully compliant with definitions recommended and adopted by Eurostat methodological manual for R&D surveys - 'Frascati Manual' (Proposed Standard Practice for Surveys of Research and Experimental Development, OECD). 	

Other general comments to the table

All the data for this table are provided by National statistics institute, Bulgaria

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
Official State Forestry Agency budget report	H	Revenues, Expenditures /operational, transfer/	2000, 2005	

17.2.2 Classification and definitions

National class	Definition
Forest revenues	The same as FRA
Public expenditure	The same as FRA
Operational	

17.2.3 Original data

Category	2000	2005
Forest revenue	75 480 037	72 390 128

17.3 Data for Table T17

Table 17a - Forest revenues

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	2005
Forest revenue	75 480	72 390

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	53 789	66 678	0	0	53 789	66 678
Transfer payments	30 497	23 351	0	1 048	30 497	24 399
Total public expenditure	84 286	90 029	0	1 048	84 286	91 077
If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	<input checked="" type="checkbox"/>	Reforestation				
	<input checked="" type="checkbox"/>	Afforestation				
	<input checked="" type="checkbox"/>	Forest inventory and/or planning				
	<input checked="" type="checkbox"/>	Conservation of forest biodiversity				
	<input checked="" type="checkbox"/>	Protection of soil and water				
	<input checked="" type="checkbox"/>	Forest stand improvement				
	<input checked="" type="checkbox"/>	Establishment or maintenance of protected areas				
	<input checked="" type="checkbox"/>	Other, specify below				
Hunting & Fishery Management Forest guarding						

17.4 Comments to Table T17

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue		
Operational expenditure	Due to a very big international project (Forest sector development project sponsored by World Bank), Bulgaria received the amount of 1048\$ from the World bank.	
Transfer payments		

Other general comments to the table