



Forestry Department

Food and Agriculture Organization of the United Nations

**GLOBAL FOREST RESOURCES
ASSESSMENT**

COUNTRY REPORTS

CROATIA

FRA2010/049
Rome, 2010



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:

Mette Løyche Wilkie
Senior Forestry Officer
FAO Forestry Department
Viale delle Terme di Caracalla
Rome 00153, Italy

E-mail: Mette.LoycheWilkie@fao.org

Readers can also use the following e-mail address: fra@fao.org

DISCLAIMER

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

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.

Contents

INTRODUCTION	5
1 TABLE T1 – EXTENT OF FOREST AND OTHER WOODED LAND	6
2 TABLE T2 – FOREST OWNERSHIP AND MANAGEMENT RIGHTS.....	12
3 TABLE T3 – FOREST DESIGNATION AND MANAGEMENT.....	17
4 TABLE T4 – FOREST CHARACTERISTICS	27
5 TABLE T5 – FOREST ESTABLISHMENT AND REFORESTATION	32
6 TABLE T6 – GROWING STOCK.....	35
7 TABLE T7 – BIOMASS STOCK	39
8 TABLE T8 – CARBON STOCK	43
9 TABLE T9 – FOREST FIRES	46
10 TABLE T10 – OTHER DISTURBANCES AFFECTING FOREST HEALTH AND VITALITY	49
11 TABLE T11 – WOOD REMOVALS AND VALUE OF REMOVALS.....	57
12 TABLE T12 – NON-WOOD FOREST PRODUCTS REMOVALS AND VALUE OF REMOVALS	60
13 TABLE T13 – EMPLOYMENT	66
14 TABLE T14 – POLICY AND LEGAL FRAMEWORK.....	69
15 TABLE T15 – INSTITUTIONAL FRAMEWORK.....	71
16 TABLE T16 – EDUCATION AND RESEARCH.....	73
17 TABLE T17 – PUBLIC REVENUE COLLECTION AND EXPENDITURE	75

Report preparation and contact persons

The present report was prepared by the following person(s):

Name (FAMILY NAME, First name)	Institution / address	E-mail	Fax	Tables
JURIČIĆ, Srećko	Ministry of Regional Development, Forestry and Water Management Babonićeva 121 10 000 Zagreb	srecko.juricic@mrrsvg.hr	+385 1 6002 865	1-17
PEŠUT, Ivana	Ministry of Regional Development, Forestry and Water Management Babonićeva 121 10 000 Zagreb	ivana.pesut@mrrsvg.hr	+385 1 6002 865	1-17
VIDEC, Goran	Ministry of Regional Development, Forestry and Water Management Babonićeva 121 10 000 Zagreb	goran.videc@mrrsvg.hr	+385 1 6002 865	1-17
JANEŠ, Dubravko	Hrvatske šume d.o.o. Lj F. Vukotinovića 2 10 000 Zagreb	dubravko.janes@hrsume.hr	+385 1 4804 101	1-7, 10-13
KOVAČ, Goran	Hrvatske šume d.o.o. Lj F. Vukotinovića 2 10 000 Zagreb	goran.kovac@hrsume.hr	+385 1 4804 101	1-7, 11
BELČIĆ, Branko	Hrvatske šume d.o.o. Lj F. Vukotinovića 2 10 000 Zagreb	branko.belcic@hrsume.hr	+385 1 4804 101	5, 7, 10, 12, 13
MILINKOVIĆ, Antonija	Hrvatske šume d.o.o. Lj F. Vukotinovića 2 10 000 Zagreb	antonija.milinkovic@hrsume.hr	+385 1 4804 101	5, 7, 10, 12, 13
MOTIK, Darko	Faculty of Forestry Svetošimunska 25 10 000 Zagreb	motik@sumfak.hr	+385 1 2318 616	16
OJUROVIĆ, Robert	Forest Extension Service Av. V. Holjevca 20 10 000 Zagreb	r.ojurovic@suma-ss.hr	+385 1 6515 589	13, 15
GOSPOČIĆ, Stjepan	Ministry of Culture Savska cesta 41/20 10 000 Zagreb	stjepan.gospocic@min- kulture.hr	+385 1 4866 100	3, 13
GRGASOVIĆ, Višnja	Ministry of Environmental Protection, Physical Planing and Construction Rep. Austrije 14 10 000 Zagreb	visnja.grgasovic@mrrsvg.hr	+385 1 3782 157	8
VORKAPIĆ, Veljko	EKONERG Koranska 5 10 000 ZAGreb	Veljko.vorkapic@	+385 1 6171 500	8

Introduction

Republic of Croatia is proud of its long-standing tradition of sustainable forestry that dates back over 250 years. Even in 1769, the first Forest Order recognized that forest management should be based on the principles of sustainability. As a result, today Republic of Croatia has some of the most extensive, healthy and naturally self-sustaining forests in Europe. Republic of Croatia enjoys rich biodiversity concentrated on its relatively small territory. 4500 plant species and subspecies, 260 autochthonous tree species and more than 100 forest plant communities exist on approximately 2.7 millions hectares of forest and other wooded land.

In Republic of Croatia, forests cover almost half of the land territory. Their value has been recognized a long time ago. Most of this valuable resource is owned by the State, and managed in a “close to nature” practice form with the objective of natural regeneration. Forests are selectively felled, and the clear cuts are prohibited by the law, which helps to maintain the forest stands in optimal condition and provides continuous cover over large areas. Consequently, all state forests, managed by state owned enterprise, are accredited with the prestigious Forest Stewardship Council’s certificate (FSC).

Republic of Croatia has made an ambitious plan for having 100% of forests under sustainable forest management. Fulfilling of this goal will be accomplished through development of Forest Management Plans for private forests in the country.

Republic of Croatia has developed sustainable forest management financing mechanism in the form of “green tax”. It is based on the charging of Public Used Non-timber Forests Services to all economic entities in the State. Funds collected in this way are strictly designated and used only for implementation of activities supporting and executing sustainable forest management.

Forests in Republic of Croatia have not been changed substantially in the last hundred years, but this does not mean they have not been used by men. On the contrary, many areas have been and will continue to be, used sustainably for wood production or as hunting reserves, which not only bring in economic gains, but also provide jobs and additional income to thousands of people.

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
Public enterprise "Hrvatske šume": Forest Management Plan of the Republic of Croatia, Zagreb, 1993.	L ¹	Forest, and other wooded land	1986	Plans from 1986 to 1995. Data valid for 01.01.1986.
Public enterprise "Hrvatske šume": Forest Management Plan of the Republic of Croatia, Zagreb, 1996.	M ²	Forest, and other wooded land	1996	Plans from 1996 to 2005. Data valid for 01.01.1996.
Public enterprise "Hrvatske šume": Forest Management Plan of the Republic of Croatia, Zagreb, 2006.	H ³	Forest, and other wooded land	2006	Plans from 2006 to 2015. Data valid for 01.01.2006.
Public enterprise	H	Forest,	1996	

¹ Low reliability was estimated for the year 1986 due to their poorly managed forests, which resulted from the absence of forest management plans and programs for about one third of the forests in the Republic of Croatia (Dalmatia and one part of Lika). The data for this Forest Management Plan (in further text (FMP) were obtained by summing up the data of eleven forest management regions.

² Medium reliability was assessed for 1996, because at this time one part of the forests was managed, and a central forest service was established at the level of Forest Enterprise headquarters. However, within this reliability, the data on the state forests that were managed by the Forest Enterprise are the most accurate.

³ High reliability was assessed for 2006, regarding that all Croatian forests are managed and most of them are covered with satellite records and high resolution photographs, and the major part of photographs is digitalized and mapped.

"Hrvatske šume": Map of forest cover, M 1:5000, Zagreb, 2006.		and other wooded land		
WISDOM report of Republic of Croatia, 2008 (FAO TCP project: Development of sustainable charcoal industry in the Republic of Croatia (2006.-2008.))	M	Other land with tree cover	2008	

1.2.2 Classification and definitions

National class	Definition
Forest (stocked forest land)	Forest is defined as the land covered by forest trees formed as forest stand over an area larger than 10 <i>ars</i> (1 ar = 100 square meters). Separate forest tree groups over an area up to 10 <i>ars</i> , forest nurseries, wind barrier belts, tree avenues, and parks in settlements are not considered forests.
Other forest land (unstocked forest land)	Wooded land is defined as the land upon which forest is grown, or, owing to its natural characteristics and management conditions, is assigned as the most appropriate for forest cultivation. It consists of the following: a) Productive wooded land without vegetation cover, b) Non-productive wooded land without vegetation, c) Barren wooded land
a) Productive wooded land without tree cover	Clearings, stony ground, etc.
b) Non-productive wooded land without tree cover	Fire lanes, light tracts along roads wider than three meters, landings, mountain meadows, etc.
c) Barren wooded land	Forest roads wider than three meters, streams, canals, swamps, straight karst, areas under developments, gravel pits, quarries, etc.
Other land	All land which is not classified as forest or other wooded land.
Other land with tree cover	Separate forest tree groups over an area up to 10 <i>ars</i> , forest nurseries, wind barrier belts, tree avenues, and parks in settlements are not considered forests.
Inland water bodies	The water bodies including the main rivers, lakes and water reservoirs.

The sources of the data for the definitions:

1. The Republican Committee of Agriculture and forestry, 1983, Forest Law (*Narodne novine* 54/1983)
2. The Republican Committee of Agriculture and forestry, 1985 Statute on the making of forest management plans the forest units management plans, and the forest management programmes (*Narodne novine* 42/1985).
3. The Ministry of Agriculture and Forestry, 1990, Forest Law (*Narodne novine* 52/1990)
4. Ministry of Agriculture and Forestry, 1994, Statute on Forest Management (*Narodne novine* 52/1994)
5. Ministry of Agriculture and Forestry, 1997, Statute on Forest Management (*Narodne novine* 11/1997).
6. Ministry of Agriculture, Forestry and Water Management, 2005, Forest Law (*Narodne novine* 140/2005 and 81/2006).
7. Ministry of Agriculture, Forestry and Water Management, 2006, Statute on Forest Management (*Narodne novine* 111/2006 and 141/2008).

In the above-mentioned sources there were no significant changes of definitions.

1.2.3 Original data

National classes	Area (hectares)		
	1986.	1996.	2006.
FOREST (stocked forest land)	2 061 509	2 078 289	2 402 782
a) high forest, plantation and coppice	1 825 343	1 748 343	1 889 638
b) scrubland	236 166	329 946	513 144
Other forest land (unstocked forest land)	332 127	345 952	241 417
a) Productive forest land without tree cover	315 166	331 334	208 465
b) Non-productive forest land without tree cover	16 961	14 618	32 952
c) Barren wooded land	64 012	61 370	44 487
Other land	3 134 352	3 106 389	2 953 314
Other land with tree cover	n.a.	n.a.	205 065
Inland water bodies	62 000	62 000	62 000
Total for country:	5 654 000	5 654 000	5 654 000

Since the original documents report only on forests, other forest land and other land with tree cover, without including other categories, the data for the latter have been obtained by deducting the areas of forests, other forest land and other land with tree cover from the total land area (FAOSTAT).

1.3 Analysis and processing of national data

1.3.1 Calibration

Calibration is not necessary, because the original documents report on forests, other forest land and other land with tree cover, and do not encompass the category of other land, and continental water bodies. If the category other land were taken from other sources, these data would not be compatible.

1.3.2 Estimation and forecasting

National classes	Area (hectares)						
	1986	1996	2006	1990	2000	2005	2010
FOREST (stocked forest land)	2 061 509	2 078 289	2 402 782	2 078 478	2 249 115	2 334 433	2 419 751
a) high forest, plantation and coppice	1 825 343	1 748 343	1 889 638	1 801 820	1 833 967	1 850 041	1 866 115
b) scrubland	236 166	329 946	513 144	276 658	415 148	484 392	553 636
Other forest land (unstocked forest land)	332 127	345 952	241 417	333 712	288 357	265 679	243 002
a) Productive forest land without tree cover	315 166	331 334	208 465	316 999	263 648	236 973	210 298
b) Non-productive forest land without tree cover	16 961	14 618	32 952	16 713	24 709	28 706	32 704

c) Barren wooded land	64 012	61 370	44 487	62 480	52 718	47 837	42 955
Other land	3 134 352	3 106 389	2 953 314	3 117 330	3 001 811	2 944 051	2 886 292
Other land with tree cover	n.a.	n.a.	205,065	n.a.	n.a.	205 065	205 065
Inland water bodies	62 000	62 000	62 000	62 000	62 000	62 000	62 000

By using the method of linear interpolation, we obtained the assessment for the years 1990, 2000 and 2005 while the forecasting for 2010 was made by using the method of extrapolation.

1.3.3 Reclassification into FRA 2010 categories

National classes	Percentage of a National class belonging to a FRA Class				
	Forest	Other wooded land	Other land	Other land with tree cover	TOTAL
FOREST (stocked forest land)					
a) High forest	100				100
b) Plantation	100				100
c) Coppice	100				100
d) Scrubland		100			100
Other forest land (unstocked forest land)					
a) Productive forest land without tree cover			100		100
b) Non-productive forest land without tree cover	100				100
c) Barren wooded land	50		50		100
Other land			100		
Other land with tree cover				100	

The category Productive forest land without tree cover (clearings, stony ground etc.) includes areas which are within existing forests and on the forest edges. In Croatia category Productive forest land without tree cover does not include areas in process of regeneration, and it is not expected to become forest within a short period. Regarding that those areas are not overgrown with tree species, we cannot classify them as Forest or Other wooded land (regarding to FRA classes). We have classified them as Other land, but in the future, a part of those areas will be included in afforestation.

Category Non productive forest land without tree cover refers to small and narrow open areas which are within existing forests. The forests have been on that land earlier and later trees were cut so the present condition is without trees. If we leave that land without control (to nature succession), there would be a forest as soon as possible. The questions about “Mountain meadows” are not significant for us. Croatia is unique country in south-east Europe which doesn’t have mountains higher than 2000 meters. The highest mountain in Croatia is 1848 meters. Considering the distribution of vegetation in high mountains in Croatia we assume that the meadows are irrelevant (small patches within existing forests) and they are classified as forest.

Category Barren wooded lands have to be separated into Forest and Other land. The Forest includes forest roads wider than three meters, and also some swamps, streams and canals where will be developed forest vegetation. And the quarries after closing down and recultivation with forest trees belong to the forest, too.

1.4 Data for Table T1

FRA 2010 categories	Area (1000 hectares)			
	1990	2000	2005	2010
Forest	1850	1885	1903	1920
Other wooded land	277	415	484	554
Other land	3465	3292	3205	3118
...of which with tree cover	n.a.	n.a.	205	205
Inland water bodies	62	62	62	62
TOTAL	5654	5654	5654	5654

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	This category includes high forest, plantation and coppice.	
Other wooded land	This category includes scrubland (maquia, garigue, scrubs and shrub). Forest management in these areas is composed mainly of conducting protecting measures to prevent their further degradation and stimulate their succession to forests.	Quick development of other wooded land area happened for two reasons: 1. State forests are now almost 100% managed or in some managing stage (like measuring all the trees with diameter more than 10 cm at breast height etc.). Because of that, now we have more accurate data and it shows that there are less clearings and more stocked forest land. 2. Unmanaged forest land used to be exposed to cattle and browse as the local population used it as grazing land. Now the population in the karst area is reduced, so there are fewer cattle too, and the wooded land area is expanding.
Other land	Includes all other areas that are not included in Forests or Other wooded land.	
Other land with tree cover	Includes orchards, olive orchards, green areas with tree cover, agricultural areas with important part of trees and bushes...	
Inland water bodies		

Other general comments to the table

The national forest inventory has as yet not been finished in the Republic of Croatia. The field work is done and the data processing is in progress.

The data on forests given in this document are mainly obtained from the individual forest management plans of the following validity periods: from 1986 until 1995, from 1996 until 2005 and from 2006 until 2015.

The forest management plan for an area (in further text: FMP) is made by the Forest Enterprise, and is approved by the Ministry of Regional Development, Forestry and Water Management.

To secure a unified and lasting management of forests and woodlands on the territory of the Republic of Croatia, the forest management area has been established. It covers all forest and other forest land.

Forest management plan is made for a forest management area. Accordingly, it contains the data on all the forest categories on the territory of the Republic of Croatia. A revision of the forest management plans is regularly done every ten years.

A forest management area is divided in management units (about 700 management units in both state and private forests).

A management unit is a part of a forest management area, which, as a rule, is adapted to the terrain configuration, organization requirements and roads, encompassing one or more forest areas. State forests have plans, while private forests have management programmes.

The management plan of a management unit is made for the period of ten years (half-term I); orientation plan is made for the following ten years (half-term II), as well as for the following twenty years (management period II), according to the schedule established in the forest management plan of the given area.

A forest management program is made for the period of ten years, with orientation for the following ten years.

The FMP of 1986 was made by compiling nine plans of the former forest management areas and two programs for forest karst areas. The FMP of 1996 is the result of a systematic inventory of all forests, having a higher reliability than the former one. Accordingly, the latter was obtained by using computation on the basis of the existing data, so that the growing stock is reduced to December 31 1995, because plans and management units programs have different validity periods. They contain data on forest area, ownership, forest properties, purpose, forest reserves, increments and felling volumes per tree species. Both FMPs have been obtained only by terrestrial measurements.

The FMP of 2006 was also made by using computation on the basis of the existing data, so that the growing stock is reduced to December 31 2005. Novelty in the FMP of 2006 is that private forests were measured on the basis of grid sample system (3x3 km or 2x2 km on smaller complexes), ortophoto records (1:5000) and by satellite records for the areas that were not covered with ortophoto records. 46% of private forests area was measured by ortophoto records, 39,6% by satellite records (mostly ASTER with 15 m resolution, and smaller part by LANDSAT with 30 m resolution), and 14,4% by CORINE programme (private forests in Dalmatia).

Another source of information is the records kept by the forest enterprise connected with felling, forest damage, forest fires, etc. The data of the State Institute for Statistics are used in making the tables for which there are no data in the area plans. In other words, the State Institute for Statistics collects the data from the forest enterprise and the municipalities, although there are certain deviations between the statistical data and the FMP data (definitions, classifications, and divisions – not identical with those in the Forest Law), so that the FMP data are preferred.

Expected year for completion of ongoing/planned national forest inventory and/or RS survey / mapping

Field inventory	2009
Remote sensing survey / mapping	2009

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
Public enterprise "Hrvatske šume": Forest Management Plan of the Republic of Croatia, Zagreb, 1993.	L	Area of public and private forests	1986	Plans from 1986 to 1995. Data valid for 01.01.1986.
Public enterprise "Hrvatske šume": Forest Management Plan of the Republic of Croatia, Zagreb, 1996.	M	Area of public and private forests	1996	Plans from 1996 to 2005. Data valid for 01.01.1996.
"Hrvatske šume" Ltd.: Forest Management Plan of the Republic of Croatia, Zagreb, 2006.	H	Area of public and private forests	2006	Plans from 2006 to 2015. Data valid for 01.01.2006.
"Hrvatske šume" Ltd.: Map of forest cover, M 1:5000, Zagreb, 2006.	H	Area of public and private forests	2006	

2.2.2 Classification and definitions

National class	Definition
State ownership	Corresponds to FRA definition of public ownership.
Private ownership	Same as FRA definition.

2.2.3 Original data

Forests and other forest land owned by the State:

National classes	Area (ha)		
	1986	1996	2006
Forest (stocked forest land)	1604147	1624155	1827311
a) high forest, plantation and coppice	1371341	1313897	1361421
b) scrubland	232806	310258	465890
Other forest land (unstocked forest land)	395159	400319	279605
a) Productive forest land without tree cover	314230	324359	202680
b) Non-productive forest land without tree cover	16949	14598	32502
c) Barren wooded land	63980	61362	44423

Forests and other forest land privately owned:

National classes	Area (ha)		
	1986	1996	2006
Forest (stocked forest land)	457362	454134	575471
a) high forest, plantation and coppice	454002	434446	528217
b) scrubland	3360	19688	47254
Other forest land (unstocked forest land)	980	7003	6299
a) Productive forest land without tree cover	936	6975	5785
b) Non-productive forest land without tree cover	12	20	450
c) Barren wooded land	32	8	64

Total forests and other forest land:

National classes	Area (ha)		
	1986	1996	2006
Forest (stocked forest land)	2061509	2078289	2402782
a) high forest, plantation and coppice	1825343	1748343	1889638
b) scrubland	236166	329946	513144
Other forest land (unstocked forest land)	396139	407322	285904
a) Productive forest land without tree cover	315166	331334	208465
b) Non-productive forest land without tree cover	16961	14618	32952
c) Barren wooded land	64012	61370	44487

2.3 Analysis and processing of national data**2.3.1 Calibration**

Calibration is not necessary.

2.3.2 Estimation and forecasting

Reclassification of forest areas is made as in table T1. Only the areas that correspond with FRA categories are included into national classes (according to ownership). After that, linear interpolation was made for the reference years.

National classes (forest according to FRA criteria)	Area (ha)		
	1986	1996	2006
State ownership	1420280	1359176	1416135
Private ownership	454030	434470	528699
TOTAL	1874310	1793646	1944834

National classes (forest according to FRA criteria)	Area (ha)		
	1990	2000	2005
State ownership	1399774	1397701	1396665
Private ownership	449999	487334	506000
TOTAL	1849773	1885035	1902665

2.3.3 Reclassification into FRA 2010 categories

Reclassification is not necessary regarding that FRA categories correspond to national classes.

2.4 Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	Forest area (1000 hectares)		
	1990	2000	2005
Public ownership	1400	1398	1397
Private ownership	450	487	506
...of which owned by individuals	450	487	506
...of which owned by private business entities and institutions	0	0	0
...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	1850	1885	1903

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

Does ownership of trees coincide with ownership of the land on which they are situated?	<input checked="" type="checkbox"/>	Yes
	<input type="checkbox"/>	No
If 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	1400	1398	1397
Individuals	0	0	0
Private corporations and institutions	0	0	0
Communities	0	0	0
Other	0	0	0
TOTAL	1400	1398	1397

2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Public ownership		A light decrease in public forests proportion can be noticed due to returning of a part of forests to the persons from whom it was nationalised in 1945. This trend will continue. After 2005, a part of forest areas was returned to the Church.
Private ownership		A rise in proportion of private forests can be explained by the following: <ul style="list-style-type: none"> - more forests are covered with new forest measurement for the Forest Management Plan 2006, than it was for the previous plans, - returning of nationalised forest areas to the persons and their successors.
Other types of ownership		
Management rights		

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
Public enterprise "Hrvatske šume": Forest Management Plan of the Republic of Croatia, Zagreb, 1993.	L	Production forests, protection forests, forest with special purposes	1986	Plans from 1986 to 1995. Data valid for 01.01.1986.
Public enterprise "Hrvatske šume": Forest Management Plan of Republic of the Croatia, Zagreb, 1996.	M	Production forests, protection forests, forest with special purposes	1996	Plans from 1996 to 2005. Data valid for 01.01.1996.

"Hrvatske šume" Ltd.: Forest Management Plan of the Republic of Croatia, Zagreb, 2006.	H	Production forests, protection forests, forest with special purposes	2006	Plans from 2006 to 2015. Data valid for 01.01.2006.
"Hrvatske šume" Ltd.: Map of forest cover, M 1:5000, Zagreb, 2006.	H	Production forests, protection forests, forest with special purposes	2006	

3.2.2 Classification and definitions

National class	Definition
Forest function	The definition is compatible to FRA definition "Primary designated function". According to their function, forests can be production (economic) forests, protection (protection of soil and water) forests and forest with special purposes.
Production forests	Forests primarily used for timber production and the production of other forest products accompanied by the preservation and improvement of their functions of general benefit.
Protection forests	Forests primarily used to protect soil, water, settlements, buildings and other property.
Forests with special purposes	Forests with special purposes: 1. forests and forest parts registered for the production of forest seeds, 2. forests within the protected areas or natural values protected pursuant to environmental protection regulations, 3. forests intended for the scientific research, education, defense requirements of the Republic of Croatia and other requirements prescribed by special regulations.
Protected areas	The definition is compatible to FRA definition "Protected areas". According to the Law on nature protection, protected areas make a part of altogether protected natural values and encompass following categories: strict reserve, national park, special reserve, nature park, regional park, natural monument, important landscape, forest park and monument of park architecture. In protected areas, economical activities, apropos exploitation of natural goods are not allowed, except within the area of nature park and regional park where economical activities can be performed with previously requested nature protection requirements issued by Ministry in charge of nature protection. Those requirements are built in management plan for every management unit whose forests are found within borders of those two protected areas.

Data source for definitions:

1. Ministry of Agriculture, Forestry and Water Management, 2005, Forest Law (*Narodne novine* 140/2005, 81/2006 and 129/2008);
2. Ministry of Culture, 2005, Nature Protection Act (*Narodne novine* 70/2005 and 139/2008).

3.2.3 Original data

Production forests

National classes	Area of forest and other wooded land (ha)		
	1986	1996	2006
1. Production forests - total	2350467	2341483	2416109
A) Stocked forest land	1972986	1981032	2168875
a) high forest, plantation and coppice	1740502	1663938	1723042
b) scrubland	232484	317094	445833
B) Unstocked forest land	377481	360451	247234
a) productive forest land without tree cover	301855	297555	181659
b) non-productive forest land without tree cover	16357	13671	27038
c) barren wooded land	59269	49225	38537
1.1. Production forests outside protected areas		2139039	2184972
A) Stocked forest land		1816293	1976584
a) high forest, plantation and coppice		1530743	1565966
b) scrubland		285550	410618
B) Unstocked forest land		322746	208388
a) productive forest land without tree cover		265864	152374
b) non-productive forest land without tree cover		12772	22470
c) barren wooded land		44110	33544
1.2. Production forests inside protected areas		202444	231137
A) Stocked forest land		164739	192291
a) high forest, plantation and coppice		133195	157076
b) scrubland		31544	35215
B) Unstocked forest land		37705	38846
a) productive forest land without tree cover		31691	29285
b) non-productive forest land without tree cover		899	4568
c) barren wooded land		5115	4993

Production forests are divided into two categories: Production forests outside protected areas that are managed according to the Forest Management Plan approved by the Ministry in charge of forestry, and Production forests inside protected areas (in this case, the data refers only to forests within the area of nature park that are also managed according to the Forest Management Plan but with built-in nature protection requirements issued by the Ministry in charge of nature protection who also pre-approves the Forest Management Plan if they consider that prescribed actions (fellings and cultivation) will not endanger important aspects of protected area.

We consider that Production forests inside protected areas have a multiple purpose according to FRA definitions, so they are displayed separately, but because of the last changes in the Croatian Forest law, this category is displayed in group “Forests with special purposes” during each revision of the Forest Management Plan from 2006.

Nature park, according definition, is a large natural or partly cultivated area of land and/or sea distinguished by ecological features of international and national importance with marked landscape, educational, cultural-historical, tourist-recreational values.

Regional parks are a new category in protected areas group, similar to nature park, but with emphasized regional characteristics. In the future, significant increase in forest area in this category can be expected, as well as all the forests with multiple purposes. At the same time, a decrease in area of forests with primarily production purposes can be expected.

Although the original data for 1986 show only the total area of major 3 groups of functions, we easily reconstructed the proportion of production forests within nature parks, because between 1986 and 1996 not one new nature park was proclaimed, so it is the same area.

Protection forests (Protection of soil and water)

National classes	Area of forest and other wooded land (ha)		
	1986	1996	2006
2. Protection forests - total	71472	90312	154539
A) Stocked forest land	54760	47624	130630
a) high forest, plantation and coppice	52927	38677	81532
b) scrubland	1833	8947	49098
B) Unstocked forest land	16712	42688	23909
a) productive forest land without tree cover	13008	31325	18781
b) non-productive forest land without tree cover	59	603	1504
c) barren wooded land	3645	10760	3624

FRA definition for protection forests is completely compatible with national definition.

Forests with special purposes

National classes	Area of forest and other wooded land (ha)		
	1986	1996	2006
3. Forests with special purposes - total	35709	53816	118038
A) Stocked forest land	33763	49633	103277
a) high forest, plantation and coppice	31914	45728	85064
b) scrubland	1849	3905	18213
B) Unstocked forest land	1946	4183	14761
a) productive forest land without tree cover	303	2454	8025
b) non-productive forest land without tree cover	545	344	4410
c) barren wooded land	1098	1385	2326
3.1. Seed stands		4374	4604
A) Stocked forest land		4356	4603
a) high forest, plantation and coppice		4356	4603
b) scrubland			
B) Unstocked forest land		18	1
a) productive forest land without tree cover		7	
b) non-productive forest land without tree cover		3	
c) barren wooded land		8	1
3.2. National parks and strict reserves		24890	58091
A) Stocked forest land		23730	51392
a) high forest, plantation and coppice		20857	42179
b) scrubland		2873	9213
B) Unstocked forest land		1160	6699
a) productive forest land without tree cover		806	5282
b) non-productive forest land without tree cover		52	458
c) barren wooded land		302	959
3.3. Forests intended for the scientific research		4120	4622
A) Stocked forest land		4033	4428
a) high forest, plantation and coppice		4033	4340
b) scrubland			88
B) Unstocked forest land		87	194
a) productive forest land without tree cover		5	98
b) non-productive forest land without tree cover		33	56
c) barren wooded land		49	40
3.4. Forests in use of the Ministry of Defense		5837	24661
A) Stocked forest land		4757	23987
a) high forest, plantation and coppice		4735	17491
b) scrubland		22	6496
B) Unstocked forest land		1080	674
a) productive forest land without tree cover		992	619
b) non-productive forest land without tree cover		61	20
c) barren wooded land		27	35

3.5. Special reserves		5386	10925
A) Stocked forest land		3813	5052
a) high forest, plantation and coppice		3753	4787
b) scrubland		60	265
B) Unstocked forest land		1573	5873
a) productive forest land without tree cover		525	1120
b) non-productive forest land without tree cover		141	3790
c) barren wooded land		907	963
3.6. Forests for recreation and rest		6105	-
A) Stocked forest land		5935	
a) high forest, plantation and coppice		5022	
b) scrubland		913	
B) Unstocked forest land		170	
a) productive forest land without tree cover		103	
b) non-productive forest land without tree cover		36	
c) barren wooded land		31	
3.7. Forest parks		1619	3771
A) Stocked forest land		1592	3606
a) high forest, plantation and coppice		1565	3566
b) scrubland		27	40
B) Unstocked forest land		27	165
a) productive forest land without tree cover		8	99
b) non-productive forest land without tree cover		8	8
c) barren wooded land		11	58
3.8. Natural monuments		48	123
A) Stocked forest land		1	29
a) high forest, plantation and coppice		1	29
b) scrubland			
B) Unstocked forest land		47	94
a) productive forest land without tree cover			48
b) non-productive forest land without tree cover			
c) barren wooded land		47	46
3.9. Important landscapes		372	10682
A) Stocked forest land		372	9913
a) high forest, plantation and coppice		362	7802
b) scrubland		10	2111
B) Unstocked forest land		0	769
a) productive forest land without tree cover			526
b) non-productive forest land without tree cover			47
c) barren wooded land			196
3.10. Forest for other special purposes (e.g. hunting)		1065	559
A) Stocked forest land		1044	267
a) high forest, plantation and coppice		1044	267
b) scrubland			
B) Unstocked forest land		21	292
a) productive forest land without tree cover		8	233
b) non-productive forest land without tree cover			
c) barren wooded land		10	31
		3	28

Forests with special purposes consist of following subcategories:

- Seed stands – selected stands of the highest quality assigned for production of forest seeds.
- National parks and strict reserves constitute a group of the most strictly protected areas (the data are displayed together for easier reclassification of forests into FRA categories, because in some part their areas overlap). There are 2 strict reserves with total area (forest and other land) 2.395 ha and 8 national parks with area 96.135 ha. According definition, strict reserve means an area of land and/or the sea

distinguished by unaltered or slightly altered overall natural environment, earmarked exclusively for the conservation of its original natural character, scientific research which does not affect biological diversity, monitoring the state of nature, and education which does not endanger the free development of natural processes. A national park is a large, predominantly unaltered area of land and/or sea characterized by exceptional and multiple natural assets, comprising one or several preserved or predominantly unaltered ecosystems, and is primarily earmarked for conservation of original natural assets.

- Forests intended for the scientific research – forests to which this purpose is designated on the proposal of scientific institutions.
- Forests in use of the Ministry of Defense – forests for defense requirements of the Republic of Croatia (military polygons)
- Special reserves – according definition, is an area of land and/or sea of particular importance for its uniqueness, rarity or representative character, or is a habitat of endangered wild taxon, having a particular scientific significance and intended purpose.
- A forest for recreation and rest – this category is cancelled by the last legal provisions, and forests are pre-qualified into important landscapes and forest parks.
- Forest parks – natural or planted forests of major landscape value designated for relaxation and recreation.
- Natural monument – a individual unaltered segment or a group of segments of living or non-living nature distinguished by ecological, scientific, aesthetic or educational value, and can be geological, geomorphologic, hydrological, botanical, zoological etc
- Important landscapes – a natural or cultivated tracts of land distinguished by major landscape value and biological diversity or cultural-historical value, or a landscape distinguished by conserved unique features characteristic for a particular area designated for relaxation and recreation.
- Forest for other special purposes – mostly hunting. This category is not a permanent one. Hunting purpose is prescribed only in Forest Management Plan that is valid for 10 year period, and besides that, those forests do not have any other protection. They are also used for production.

The data in category Forests with special purposes are displayed all together, but we reconstructed them for some subcategories on the basis of data from 1996 and the years of proclamation of specific protected areas.

Total all purposes

National classes	Area of forest and other wooded land (ha)		
	1986	1996	2006
TOTAL forest and other wooded land	2457648	2485611	2688686
A) Stocked forest land	2061509	2078289	2402782
a) high forest, plantation and coppice	1825343	1748343	1889638
b) scrubland	236166	329946	513144
B) Unstocked forest land	396139	407322	285904
a) productive forest land without tree cover	315166	331334	208465
b) non-productive forest land without tree cover	16961	14618	32952
c) barren wooded land	64012	61370	44487

3.3 Analysis and processing of national data

3.3.1 Estimation and forecasting

National classes (Forest according to FRA categories)	Forest area (ha)		
	1986	1996	2006
1. Production forests - total	1786493	1702221	1769348
1.1. Production forests outside protected areas	1649842	1565570	1605208
1.2. Production forests inside protected areas	136651	136651	164140
2. Protection forests - total	54809	44660	84848
3. Forests with special purposes - total	33008	46765	90638
3.1. Seed stands	2829	4363	4604
3.2. National parks and strict reserves	21060	21060	43117
3.3. Forests intended for the scientific research	2256	4091	4416
3.4. Forests in use of the Ministry of Defense	0	4809	17528
3.5. Special reserves	2398	4348	9059
3.6. Forests for recreation and rest	2799	5074	0
3.7. Forest parks	870	1578	3603
3.8. Nature monument	14	25	52
3.9. Important landscapes	200	362	7947
3.10. Forests for other special purposes (e.g. hunting)	582	1055	312
TOTAL	1874310	1793646	1944834

Original reclassification was made as in Table T1, where only areas that correspond to FRA definitions were included in national classes according to purpose. After that, estimation and forecasting were made using linear interpolation for 1990, 2000 and 2005 and linear extrapolation for 2010. Following data are calculated:

National classes according to FRA categories	Forest area (ha)			
	1990	2000	2005	2010
1. Production forests - total	1757831	1749258	1744972	1740686
1.1. Production forests outside protected areas	1620264	1597946	1586788	1575630
1.2. Production forests inside protected areas	137567	151312	158184	165056
2. Protection forests - total	52427	67447	74956	82466
3. Forests with special purposes - total	39515	68330	82737	97144
3.1. Seed stands	3400	4287	4731	5174
3.2. National parks and strict reserves	21795	32824	38338	43852
3.3. Forests intended for the scientific research	2940	4020	4560	5100
3.4. Forests in use of the Ministry of Defense	2187	10951	15333	19715
3.5. Special reserves	3270	6600	8266	9931
3.6. Forests for recreation and rest	3464	2064	1365	665
3.7. Forest parks	1197	2564	3247	3930
3.8. Natural monument	19	38	47	57
3.9. Important landscapes	512	4386	6322	8259
3.10. Forests for other special purposes (e.g. hunting)	731	596	528	461
TOTAL	1849773	1885035	1902665	1920296

3.3.2 Calibration

Calibration is not necessary.

3.3.3 Reclassification into FRA 2010 categories

National classes	Percentage of a National class belonging to a FRA Class						
	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple use	Other	No / unknown
1. Production forests - total							
1.1. Production forests outside protected areas	100						
1.2. Production forests inside protected areas					100		
2. Protection forests - total		100					
3. Forests with special purposes - total							
3.1. Seed stands	100						
3.2. National parks and strict reserves			100				
3.3. Forests intended for the scientific research				100			
3.4. Forests in use of the Ministry of Defense				100			
3.5. Special reserves			100				
3.6. Forests for recreation and rest				100			
3.7. Park forests				100			
3.8. Natural monuments				100			
3.9. Important landscapes				100			
3.10. Forests for other special purposes (e.g. hunting)					100		

After reclassification into FRA 2010 categories, data are displayed for all years. Production forests outside protected areas and sees stands are classified in Production category. A light decreasing trend in their area can be noticed.

Unlike production, other categories have a significant rising trend.

FRA categories	Forest area (ha)						
	1986	1996	2006	1990	2000	2005	2010
Production	1652671	1569933	1609812	1623664	1602233	1591519	1580804
Protection of soil and water	54809	44660	84848	52427	67447	74956	82466
Conservation of biodiversity	23458	25408	52176	25065	39424	46604	53783
Social services	6139	15939	33546	10319	24023	30874	37726
Multiple use	137233	137706	164452	138298	151908	158712	165517
Other	0	0	0	0	0	0	0
No / unknown	0	0	0	0	0	0	0
TOTAL	1874310	1793646	1944834	1849773	1885035	1902665	1920296

3.4 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Production	1624	1602	1591	1581
Protection of soil and water	53	68	75	82
Conservation of biodiversity	25	39	47	54
Social services	10	24	31	38
Multiple use	138	152	159	165
Other (please specify in comments below the table)	0	0	0	0
No / unknown	0	0	0	0
TOTAL	1850	1885	1903	1920

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	1850	1885	1903	1920
Forest area within protected areas	25	39	47	54
Forest area under sustainable forest management	1266	1377	1433	1489
Forest area with management plan	1266	1377	1433	1489

3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production		
Protection of soil and water		
Conservation of biodiversity		
Social services		
Multiple use		
Other		
No / unknown designation		
Area of permanent forest estate	According to Forest Law, all forests are treated as permanent forest good. Considering there are some other forest areas (clearings) that are anticipating afforestation, additional increase in forest area displayed in the Table 3b can be expected.	
Forest area within protected areas	Forest area within protected areas according the IUCN Protected Area Categories I-IV consists of the following national categories: strict reserves (Ia), national parks (II), natural monuments (III) and special reserves (IV).	
Forest area under sustainable forest management	<p>Forest area under sustainable forest management corresponds with area covered with Forest Management Plan for every management unit. Forest Management Plan has a detailed plan elaborated up to the smallest spatial units: departments and divisions. A department area can be up to 60 ha. Department is divided into divisions whose area can be from 1 to 60 ha.</p> <p>Major part of private forests is not covered with Forest Management Plan, but developing of management programmes for all private forests that were not managed in the past (or were managed but the continuity in management was interrupted) is in progress. So, in this category, all the state owned forests and those private forests that are covered with Forest Management Plan are included.</p> <p>Forest Extension Service took in charge private forests after the last Forest Law was promulgated in 2005.</p> <p>State forest enterprise “Hrvatske šume” Ltd. holds the Forest Stewardship Council (FSC) certificate (issued by Woodmark Soil Association from Great Britain) since 2002 for state forests it is in charge of (69% of total forest area according to FRA definitions, or 75% including other wooded land).</p> <p>Besides that, forests and other areas within protected areas are also managed under special management plan.</p>	
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 <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 (<i>sub-category</i>)	Other naturally regenerated forest where the trees are predominantly of introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
Planted forest of introduced species (<i>sub-category</i>)	Planted forest, where the planted/seeded trees are predominantly of introduced species.
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
Public enterprise "Hrvatske šume": Forest Management Plan of the Republic of Croatia, Zagreb, 1993.	L	Cultures and plantations, Naturally regenerated forests	1986	Plans from 1986 to 1995. Data valid for 01.01.1986.
Public enterprise "Hrvatske šume": Forest Management Plan of the Republic of Croatia, Zagreb, 1996.	M	Cultures and plantations, Naturally regenerated forests	1996	Plans from 1996 to 2005. Data valid for 01.01.1996.
"Hrvatske šume" Ltd.: Forest Management Plan of the Republic of Croatia, Zagreb, 2006.	H	Cultures and plantations, Naturally regenerated forests	2006	Plans from 2006 to 2015. Data valid for 01.01.2006.

Ministry of Culture, Directorate for Nature Protection: - Register of protected natural values of Republic of Croatia - Reports from Public Institutions National Parks in Republic of Croatia	H	Primary forests types in protected areas of Republic of Croatia	2009	
---	---	---	------	--

4.2.2 Classification and definitions

National class	Definition
Naturally regenerated forest	Forests emerged by restoration after fertilizing and selection fellings. They compose of trees mostly emerged by natural restoration (from seeds or from stumps), and by their origin they can be high forest forms (from seeds) or low forest forms (coppice – stump forests).
Primary forest types	Same as FRA definition for Primary forest.
Forest cultures	Artificially raised stands without use of agrotechnical measures.
Forest plantations	Artificially raised fast growing willow and poplar stands with use of agrotechnical measures (land cultivating, e.g. hilling up, crumbling, spreading manure).

4.2.3 Original data

National classes	Forest area (ha)		
	1986	1996	2006
1. Naturally regenerated forest	1 777 915	1 777 292	1 870 378
<i>1.1. High forests</i>	1 113 234	1 259 253	1 321 094
1.1.1. Stocked forest land	1 084 343	1 227 541	1 283 561
a) primary forest	6 730	6 730	6 730
b) other naturally regenerated forest	1 077 613	1 220 811	1 276 831
1.1.2. Unstocked area that according to FRA counts into forest area	28 891	31 712	37 533
<i>1.2. Low forests (coppice)</i>	664 681	518 039	549 284
1.2.1. Stocked forest land	647 053	504 901	533 829
1.2.2. Unstocked area that according to FRA counts into forest area	17 628	13 138	15 455
2. Planted forests	96 395	16 354	74 456
<i>2.1. Cultures and plantations</i>	96 395	16 354	74 456
2.1.1. Stocked forest land	93 947	15 901	72 248
a) planted with autochthonous species	66 536	0	46 054
b) planted with introduced species	27 411	15 901	26 194
2.1.2. Unstocked area that according to FRA counts into forest area	2 448	453	2 208
TOTAL:	1 874 310	1 793 646	1 944 834

The data in the Planted forests category vary a lot for referent years. The reason for that is of administrative nature, because the definitions for some categories have been changing, as it is explained in the comments table.

4.3 Analysis and processing of national data

4.3.1 Calibration

Calibration is not necessary.

4.3.2 Estimation and forecasting

Original reclassification was made as in Table T1, where only areas that correspond to FRA definitions were included in national classes according to purpose. After that, estimation was made using linear trends in the following way: Regarding that data for planted forests in 1996 are inadequate because they do not include all categories of planted forests, interpolation was made for 1996 on the basis of the data for planted forests in 1986 and 2006. After that, interpolation was made for all categories according to national classes in the tables.

National classes	Forest area (ha)		
	1986	1996	2006
1. Naturally regenerated forest	1 777 915	1 708 221	1 870 378
a) primary forest	6 730	6 730	6 730
b) other naturally regenerated forest	1 771 185	1 701 491	1 863 648
2. Planted forests	96 395	85 425	74 456
a) planted with autochthonous species	68 288	57 875	47 461
b) planted with introduced species	28 107	27 551	26 995
TOTAL:	1 874 310	1 793 646	1 944 834

For other naturally regenerated forest with introduced species, the data from 2006 were used, and the same percent share of those forests in other naturally regenerated forest was applied for the other years.

National classes	Forest area (ha)			
	1990	2000	2005	2010
1. Naturally regenerated forest	1 757 766	1 803 997	1 827 113	1 850 229
a) primary forest	6 730	6 730	6 730	6 730
b) other naturally regenerated forest	1 751 036	1 797 267	1 820 383	1 843 499
b1)... of which of introduced species	53 608	55 024	55 731	56 439
2. Planted forests	92 007	81 038	75 552	70 067
a) planted with autochthonous species	64 122	53 709	48 502	43 295
b) planted with introduced species	27 885	27 329	27 050	26 772
TOTAL:	1 849 773	1 885 035	1 902 665	1 920 296

4.3.3 Reclassification into FRA 2010 categories

Regarding that FRA categories for forest characteristics are easily recognized from the national classes, reclassification is not necessary.

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest	7	7	7	7
Other naturally regenerated forest	1751	1797	1820	1843
...of which of introduced species	54	55	56	56
Planted forest	92	81	76	70
...of which of introduced species	28	27	27	27
TOTAL	1850	1885	1903	1920

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	They are situated in strictly protected areas: strict reserves, national parks and special reserves. Primary forest area in IUCN categories I-IV is 6 505 ha, and outside this categories, in nature park, 225 ha.	
Other naturally regenerating forest	Most of forests in this category are natural forests by origin, except black locust (<i>Robinia pseudoacacia</i> L.) forests that are included in other naturally regenerated forest with introduced species sub-category. By detailed forest measurement in 2006, for the purpose of compilation of Forest Management Plan for The Republic of Croatia, it is identified that black locust forests covers double more area than the earlier data indicated. That increase refers to private forests mostly.	Increase in this category area is partly result of more detailed measurements in 2006, while on the other hand, decrease in planted forests category has also effected it.
Planted forest	Different definitions during the time in Ordinances on Forest Management had a significant impact on data in this category. E.g. according the Ordinance from 1985, definition for cultures and plantations is “artificially raised stands with species outside their natural range”. In 1994 this definitions narrows down only to	In the last 20 years, a decrease in area of planted forests is noticed. A part of planted forests with autochthonous species, after first restoration, assigned to naturally regenerated forest. A part of areas planted with introduced species, especially plantations of euroamerican poplars, were left to natural succession, e.g. natural

	artificially raised stands with use of agrotechnical measures and with possibility of using interspaces. The newest, actual Ordinance from 2006 (with changes in 2008) includes two categories: cultures (artificially raised stands without use of agrotechnical measures) and plantations (with agrotechnical measures).	lodging of black alder (<i>Alnus glutinosa</i> (L.) Geartn.), narrow-leaved ash (<i>Fraxinus angustifolia</i> Vahl.) and other species. We assume that this trend will stop after the 2010.
Rubber plantations	Not applicable.	
Mangroves	Not applicable.	
Bamboo	Not applicable.	

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
"Hrvatske šume" Ltd. database	H	Forest management activities	1988 - 1992	Registry of performed forest management activities for the years 1988-1992.
"Hrvatske šume" Ltd. database	H	Forest management activities	1996 - 2005	Registry of performed forest management activities for the years 1996-2005.
"Hrvatske šume" Ltd. database	H	Forest management activities – biological renewal of forests	2006, 2007	Registry of performed forest management activities for the years 2006 and 2007.
"Hrvatske šume" Ltd. database	L	Area afforested or reforested with introduced species	1998 - 2007	Registry of performed afforestation and reforestation activities with seedlings of introduced species, for the years 1998-2007.

5.2.2 Classification and definitions

All national classification and definitions for forest establishment and reforestation correspond with FRA classification and definitions.

5.3 Analysis and processing of national data

5.3.1 Calibration

Calibration is not necessary.

5.3.2 Estimation and forecasting

Estimation and forecasting are not necessary.

5.3.3 Reclassification into FRA 2010 categories

Reclassification is not necessary.

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	1588.25	793.15	536.75	n.a.	12.99	18.93
Reforestation	6912.38	5306.41	4509.74	n.a.	325.06	398.54
...of which on areas previously planted	2645.17	717.26	623.89	n.a.	171.41	130.63
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	<p>The unstocked forest land and plantations of fast-growing species, afforested with forest reproductive material, are used for the annual forest establishment.</p> <p>All the areas afforested with introduced species within unstocked forest land and plantations of fast-growing species are displayed in “...of which of introduced species” sub-category.</p> <p>There are no data available for years 1988-1992.</p>	
Reforestation	<p>This category includes:</p> <ul style="list-style-type: none"> - area which were reforested by deliberate seeding and planting of forest reproductive material, - insufficiently rejuvenated areas, filled up by planting or seeding of forest reproductive material, - areas restored by seeding under the old stand (selection forests), - areas of unstocked forest land and plantations of fast-growing species afforested by seeding or planting or filling up by forest reproductive material, - areas on which resurrection of degraded stands and conversion into higher cultivation form were made by seeding and planting forest reproductive material, - areas on which reconstruction and conversion of coppices, macchia, bushes and shrubberies were made by seeding, planting or filling up by forest reproductive material, - areas that were restored and rehabilitated after fires, calamities and war actions, by seeding, planting or filling up by forest reproductive material. <p>In sub-category “...of which on areas previously planted”, areas of planted forest (mostly willow and poplar plantations) reforested by seeding and planting forest reproductive material, are displayed.</p> <p>In sub-category “...of which of introduced species”, areas reforested</p>	

	<p>by introduced species like euroamerican poplar, douglas fir, black walnut, larch etc., are displayed. There are no data available for 1990. For all years (1990, 2000 i 2005) 5-year averages are calculated.</p>	
Natural expansion of forest	Data are not 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
Public enterprise <i>Hrvatske šume</i> , Forest Management Plan of the Republic of Croatia, Zagreb, 1993.	L	Tree species in forest and their growing stock	1986	Valid from 1986 until 1995, updated to 01.01.1986.
Public enterprise <i>Hrvatske šume</i> , Forest Management Plan of the Republic of Croatia, Zagreb, 1996.	M	Tree species in forest and their growing stock	1996	Valid from 1996 until 2005, updated to 01.01.1996.
Public enterprise <i>Hrvatske šume</i> , Forest Management Plan of the Republic of Croatia, Zagreb, 2006.	H	Tree species in forest and their growing stock	2006	Valid from 2006 until 2015, updated to 01.01.2006.
Public enterprise <i>Hrvatske šume</i> , Management Plan for management unit “Kotor planina”, 2008 (used data assessment of trees in scrubland)	M	Growing stock on other wooded land	2008	

6.2.2 Classification and definitions

National class	Definition
Growing stock	Growing stock is the aboveground volume of all trees over bark more than 10 cm in diameter at breast height.

Data source for definitions:

1. Republic Committee for Agriculture and Forestry, 1985, Statute on the making of forest management plans, the forest units management plans and programs;
2. Ministry of Agriculture and Forestry, 1994, Statute on forest management;
3. Ministry of Agriculture and Forestry, 1997, Statute on forest management.
4. Ministry of Agriculture, Forestry and Water Management, 2006, Statute on forest management

The sources listed above do not contain significant changes of definitions.

6.2.3 Original data

National classes	1986.			1996.			2006.		
	Area	Growing stock		Area	Growing stock		Area	Growing stock	
	ha	m ³	m ³ /ha	ha	m ³	m ³ /ha	ha	m ³	m ³ /ha
Forest (high forest, coppice, plantations etc.)	1 825 343	298 411 162	163	1 748 343	324 256 137	185	1 899 638	397 963 282	211
Other wooded land (maquis, garigue, shrub and scrub)	236 166	-	-	329 946	-	-	513 144	-	-
Total	2 061 509	298 411 162	145	2 078 289	324 256 137	156	2 402 782	397 963 282	166

In Republic of Croatia, growing stock for Other wooded land (scrubland) is not measured and it is not covered in the Forest Management Plan of the Republic of Croatia. For the purpose of FRA 2010, all the trees with diameter more than 10 cm at breast height on 239.34 ha in category Other wooded land were measured on grid system samples. Growing stock was calculated to be 10.28 m³/ha. Basal area is 3.12 m²/ha. Total growing stock would be significantly bigger if the trees with diameter less than 10 cm at breast height would be included too.

Species name	Growing stock (m3 o.b.)		
	1986	1996	2006
Common beech	105 297 612	118 197 958	143 344 835
Pedunculate oak	41 598 258	44 980 967	48 640 147
Sessile oak	27 971 354	32 386 239	38 409 655
Common hornbeam	23 043 099	24 892 301	36 339 991
European silver fir	34 360 233	30 475 088	31 406 078
Narrow-leafed ash	9 336 373	10 280 248	12 762 183
Spruce	4 918 592	6 525 657	8 548 834
Black locust	2 139 496	1 817 525	7 997 737
Black alder	3 328 261	3 533 065	7 826 258
Turkey oak	2 710 388	3 598 901	6 181 747
Remaining	43 707 496	47 568 188	56 505 817
Total	298 411 162	324 256 137	397 963 282

6.3 Analysis and processing of national data

6.3.1 Estimation and forecasting

Analysis and processing

	1986	1996	2006	1990	2000	2005	2010
Forest (m3 o.b.)	298 411 162	324 256 137	397 963 282	310 344 558	360 120 618	385 008 648	409 896 678
Other wooded land (m3 o.b.)	-	-	-	2 844 050	4 267 717	4 979 551	5 691 384

The 1990, 2000 and 2005 estimation was made by linear interpolation, while the forecasting for 2010 was made by linear extrapolation. For other wooded land, the area as of table T1 was multiplied by 10.28 m³/ha.

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	310.34	360.12	385.01	409.90	2.84	4.27	4.98	5.69
... of which coniferous	47.32	49.07	49.94	50.81	0	0	0	0
... of which broadleaved	263.02	311.05	335.07	359.09	2.84	4.27	4.98	5.69
Growing stock of commercial species	310.34	360.12	385.01	409.90	2.84	4.27	4.98	5.69

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> L.	Common beech	110.87	129.89	139.40
2 nd	<i>Quercus robur</i> L.	Pedunculate oak	42.96	46.48	48.24
3 rd	<i>Quercus petraea</i> (Matt.) Liebl.	Sessile oak	29.79	35.01	37.62
4 th	<i>Carpinus betulus</i> L.	Common hornbeam	24.10	30.75	34.08
5 th	<i>Abies alba</i> Mill.	European silver fir	32.97	31.49	30.75
6 th	<i>Fraxinus angustifolia</i> Vahl.	Narrow-leafed ash	9.77	11.48	12.33
7 th	<i>Picea abies</i> (L.) H.Karst.	Spruce	5.58	7.39	8.30
8 th	<i>Alnus glutinosa</i> (L.) Geartn.	Black alder	3.55	5.80	6.92
9 th	<i>Robinia pseudoacacia</i> L.	Black locust	2.23	5.16	6.62
10 th	<i>Quercus cerris</i> L.	Turkey oak	3.12	4.86	5.73
Remaining			45.40	51.81	55.02
TOTAL			310.34	360.12	385.01

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 2005 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 ⁴ of trees included in growing stock (X)	10	
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)	AG	

⁴ 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 of broadleaved / coniferous		The trend in rising growing stock in <i>Alnus glutinosa</i> (L.) Geartn, <i>Robinia pseudoacacia</i> L. and <i>Quercus cerris</i> L. does not indicate actual rising of growing stock because in the past reporting, those tree species were included in some collective categories, like other broadleaf (<i>Alnus glutinosa</i> (L.) Geartn in soft broadleaf, <i>Robinia pseudoacacia</i> L. and <i>Quercus cerris</i> L. in hard broadleaf)
Growing stock of commercial species	In Republic of Croatia all the tree species are commercial except <i>Taxus baccata</i> L. that has negligible part in growing stock.	
Growing stock composition		Recently, the trend in decline of <i>Abies alba</i> Mill. has increased, and scientific research is now in progress to find out the reasons for it (acid rains, natural succession, climate changes...). In selection forests <i>Fagus sylvatica</i> L. and <i>Abies alba</i> Mill. often grow together and the changes in composition are occurring. Ecological amplitude of <i>Abies alba</i> Mill. is smaller than the amplitude of <i>Fagus sylvatica</i> L. and it leads to survival and increase in volume of <i>Fagus sylvatica</i> L. which is vital specie and easy to rejuvenate, while the volume of <i>Abies alba</i> Mill. is decreasing.

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
Public enterprise Hrvatske šume, Forest Management Plan of the Republic of Croatia, Zagreb, 1993	L	Tree species in forest and their growing stock	1986	Plans from 1986 to 1995. Data valid for 01.01.1986.
Public enterprise Hrvatske šume, Forest Management Plan of the Republic of Croatia, Zagreb, 1996	M	Tree species in forest and their growing stock	1996	Plans from 1996 to 2005. Data valid for 01.01.1996.
Hrvatske šume ltd., Forest Management Plan of the Republic of Croatia, Zagreb, 2006	H	Tree species in forest and their growing stock	2006	Plans from 2006 to 2015. Data valid for 01.01.2006.
Hrvatske šume ltd., Management Plan for management unit "Kotor planina", 2008 (used data assessment of trees in scrubland)	M	Growing stock on other wooded land	2008	
Table T1		Forest and other wooded land		
Table T6a		Growing stock in forest and on other wooded land		
IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry, 2003		Ratio of below – ground biomass to above – ground biomass (R) – temperate domain; Default biomass conversion and expansion factors – (BCEF) – temperate and mediterranean, dry tropical, subtropical climatic zone		

7.2.2 Classification and definitions

All national classification and definitions for forest biomass stock correspond to FRA classification and definitions.

7.2.3 Original data

Data from table T6 are used and the IPCC conversion factors are applied on them.

7.3 Analysis and processing of national data

7.3.1 Calibration

Calibration is not necessary.

7.3.2 Estimation and forecasting

Estimation is made on the basis of IPCC default biomass conversion and expansion factors (BCEF), IPCC ratio of below-ground biomass to above-ground biomass (R) and the data from table T6.

Above-ground biomass

	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Growing stock - conifers (from table 6a)	47.32	49.07	49.94	50.81				
Growing stock - broadleaves (from table 6a)	263.02	311.05	335.07	359.09	2.84	4.27	4.98	5.69
BCEF for conifers	0.7	0.7	0.7	0.7				
BCEF for broadleaves	1.05	1.05	1.05	1.05	5	5	5	5
Above-ground biomass of conifers	33.12	34.35	34.96	35.57				
Above-ground biomass of broadleaves	276.17	326.60	351.82	377.04	14.20	21.35	24.90	28.45
TOTAL ABOVE-GROUND BIOMASS	309.30	360.95	386.78	412.61	14.20	21.35	24.90	28.45

Below-ground biomass

	Forest				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Broadleaved forests area (1000 ha)	203.50	207.35	209.33	211.20				
Coniferous forests area (1000 ha)	1646.50	1677.65	1693.67	1708.80	277	415	484	554
Above-ground biomass of conifers / ha	162.77	165.66	167.00	168.40				
Above-ground biomass of broadleaves / ha	167.73	194.68	207.73	220.65	51.26	51.45	51.45	51.35
R for conifers	0.305	0.305	0.305	0.305				
R for broadleaves	0.305	0.305	0.305	0.305	0.525	0.525	0.525	0.525
Below-ground biomass of conifers	10.10	10.48	10.66	10.85				
Below-ground biomass of broadleaves	84.23	99.61	107.31	115.00	7.46	11.21	13.07	14.94
TOTAL BELOW-GROUND BIOMASS	94.33	110.09	117.97	125.85	7.46	11.21	13.07	14.94

7.3.3 Reclassification into FRA 2010 categories

Reclassification is not necessary.

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	309.30	360.95	386.78	412.61	14.20	21.35	24.90	28.45
Below-ground biomass	94.33	110.09	117.97	125.85	7.46	11.21	13.07	14.94
Dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	403.63	471.04	504.75	538.46	21.66	32.56	37.97	43.39

7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass	<p>Medium values of the default biomass conversion and expansion factors (BCEF) are used because growing stock figures do not include branches and tops with diameter less than 7 cm. They also do not include growing stock of stands up to 20 years old which do not reach 10 cm in diameter. Medium values of BCEFs are used for other wooded land because the data in that category are very variable and measured on a very small sample.</p> <p>Total growing stock of forests for conifers is multiplied with factor 0,7 (climatic zone – temperate; forest type – other conifers). Total growing stock for broadleaves is multiplied with factor 1,05 (climatic zone – temperate; forest type – hardwood). Total growing stock of other wooded land for broadleaves is multiplied with factor 5 (climatic zone – Mediterranean, dry tropical, subtropical; forest type – hardwoods).</p>	
Below-ground biomass	<p>Area of broadleaved and coniferous forests is calculated in accordance to composition from extent of forest (T1) – broadleaved forests make 89% and coniferous forests make 11% of total forest area. Other wooded land is completely covered in broadleaved forests. Medium values for ratio of below-ground biomass to above-ground biomass (R) are used. Temperate climatic zone is used as a domain.</p> <p>The above-ground biomass of coniferous in forests category is above 150 t/ha, so it is multiplied with factor 0,305.</p> <p>The above-ground biomass of broadleaves in forests category is above 150 t/ha, so it is multiplied with factor 0,305.</p>	

	The above-ground biomass of broadleaves in other wooded land category is below 75 t/ha, so it is multiplied with factor 0,525.	
Dead wood	Data is not available.	

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
Public enterprise Hrvatske šume, Forest Management Plan of the Republic of Croatia, Zagreb, 1993	L	Tree species in forest and their growing stock	1986	Plans from 1986 to 1995. Data valid for 01.01.1986.
Public enterprise Hrvatske šume, Forest Management Plan of the Republic of Croatia, Zagreb, 1996	M	Tree species in forest and their growing stock	1996	Plans from 1996 to 2005. Data valid for 01.01.1996.
Hrvatske šume ltd., Forest Management Plan of the Republic of Croatia, Zagreb, 2006	H	Tree species in forest and their growing stock	2006	Plans from 2006 to 2015. Data valid for 01.01.2006.
Table T7		Biomass stock		
IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry, 2003		Carbon fraction (CF) – temperate and boreal domain		

8.2.2 Classification and definitions

All national classification and definitions for forest carbon stock correspond to FRA classification and definitions.

8.2.3 Original data

Data from table T7 and Carbon fraction (CF) from IPCC *Good Practice Guidance for Land Use, Land Use Change and Forestry, 2003* are used.

8.3 Analysis and processing of national data

8.3.1 Calibration

Calibration is not necessary.

8.3.2 Estimation and forecasting

Estimation is made using IPCC carbon fraction (CF) of 0,47.

8.3.3 Reclassification into FRA 2010 categories

Reclassification is not necessary.

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	145.37	169.65	181.79	193.93	6.67	10.03	11.70	13.37
Carbon in below-ground biomass	44.34	51.74	55.45	59.15	3.51	5.27	6.14	7.02
Sub-total: Living biomass	189.71	221.39	237.24	253.08	10.18	15.30	17.84	20.39
Carbon in dead wood	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in litter	n.a.	n.a.	n.a.	n.a.	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	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	189.71	221.39	237.24	253.08	10.18	15.30	17.84	20.39

Soil depth (cm) used for soil carbon estimates	n.a.
--	------

8.5 Comments to Table T8

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass	Total above-ground biomass stock is multiplied with IPCC carbon fraction (CF) 0,47	
Carbon in below-ground biomass	Total below-ground biomass stock is multiplied with IPCC carbon fraction (CF) 0,47	
Carbon in dead wood	Data is not available.	
Carbon in litter	Data is not available.	
Soil carbon	Data is not available.	

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
Ministry of Agriculture, Forestry and Water management; Forest Fire Statistics with FAO, Zagreb, 2002.	High	Fire disturbance	1991-2002	
Ministry of Regional Development, Forestry and Water Management UNECE Forest Fire statistics	Medium	Fire disturbance	2003-2007	

9.2.2 Classification and definitions

National class	Definition
Forest fire	fire which breaks out and spreads on the forest and forest land or which breaks out on other land and spreads to the forest and forest land

The source of the data for the definition:

1. Ministry of Agriculture, Forestry and Water Management, 2005, Forest Law (Official Gazette 140/05, 82/06 & 129/08)

9.2.3 Original data

Forest fires

Year	Total number of forest fires	Total burnt area (ha)	Burnt forest area (ha)	Burnt area of other wooded land (ha)
1990	271	7,833	1,256	2,052
2000	369	25,459	5,777	11,172
2005	279	11,677	6,551	3,396

Since there are no data for 1988, 1989 and 1990, the average value of the period between 1991 and 1992 has been taken for the year 1990. The average value of 1998 – 2002 has been taken for the year 2000. The average value of 2003 – 2007 has been taken for the year 2005.

9.3 Analysis and processing of national data

9.3.1 Calibration

Calibration is not necessary.

9.3.2 Estimation and forecasting

Estimation and forecasting wasn't used.

9.3.3 Reclassification into FRA 2010 categories

Reclassification is not necessary.

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	7.833	n.a.	25.459	n.a.	11.677	279
... of which on forest	1.25	271	5.77	369	6.551	n.a.
... of which on other wooded land	2.052	n.a.	11.172	n.a.	3.396	n.a.
... of which on other land	n.a.	n.a.	n.a.	n.a.	1.73	n.a.

Table 9b

FRA 2010 category	Proportion of forest area affected by fire (%)		
	1990	2000	2005
Wildfire	n.a.	n.a.	100
Planned fire	n.a.	n.a.	0

Note: The figures for the reporting years refer to the averages of annually affected areas for the periods 1991-1992, 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	Data on other lands (agriculture land, pasture land etc.) affected by fire are <u>estimated</u> in the field after the fire. This data include only other lands that are affected by fire at the same time like forests or other wooded land too. Data on other lands when fire start and affects only other land is not included in this data.	
Number of fires	Number of fires is not including fires that are affecting only other lands.	
Wildfire / planned fire	All forest fires in Croatia are categorized as wildfires because we don't use fire as a forest management tool.	

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
Forest research institute Jastrebarsko, Centre for diagnosing and forecasting in forestry of Republic of Croatia, "Plant protection service report for 1998"	H	Affected area, control measures (pesticide name, type and dose, number of treatments, number of destroyed plants)	1998	
Forest research institute Jastrebarsko, Centre for diagnosis and forecasting in forestry of Republic of Croatia, "Diagnosing-forecasting forestry plant protection service report for 1999"	H	Affected area, control measures (pesticide name, type and concentration, number of treatments)	1999	
Forest research institute Jastrebarsko, Centre for diagnosing and forecasting in forestry of Republic of Croatia, "Diagnosing-forecasting and reporting service for plant protection in forestry of Republic of Croatia – 2000 annual report", Jastrebarsko 2000	H	Affected area, treated area, control measures (pesticide name, type and concentration, number of treatments))	2000	
Forest research institute Jastrebarsko, Centre for diagnosis and forecasting in forestry of Republic of Croatia, "Diagnosing-forecasting and reporting	H	Affected area, treated area, control measures	2001	

service for plant protection in forestry of Republic of Croatia – 2001 annual report”, Jastrebarsko 2001				
Forest research institute Jatrebarsko, “Annual report of Diagnosing-forecasting and reporting service for plant protection in Republic of Croatia for 2002”, Jastrebarsko 2002	H	Affected area, treated area, control measures	2002	
Forest research institute Jatrebarsko, “Annual report of Diagnosing-forecasting and reporting service for plant protection in Republic of Croatia for 2003”, Jastrebarsko 2003	H	Affected area, treated area, control measures	2003	
Forest research institute Jatrebarsko, “Report of Diagnosing-forecasting service in forestry for 2004”, , Jastrebarsko, 2005	H	Affected area, treated area, control measures	2004	
"Hrvatske šume" Ltd.: “Report of Diagnosing-forecasting service in forestry for 2005”,, Forest research institute Jatrebarsko, Jastrebarsko, 2006	H	Affected area, treated area, control measures	2005	
Forest research institute Jatrebarsko, „Diagnosing-forecasting work in forestry for 2006/2007”, Jastrebarsko, 2007	H	Affected area, treated area, control measures	2006	
Forest research institute Jatrebarsko, „Diagnosing-forecasting work in forestry for 2007/2007”, Jastrebarsko, 2008	H	Affected area, treated area, control measures	2007	
Public enterprise "Hrvatske šume": Forest Management Plan of the Republic of Croatia, Zagreb, 1996.	M	Area of 1 st age class of common oak forests and narrow-leaved ash forests, area of state owned locust forests	1996	Plans from 2006 to 2015. Data valid for 01.01.2006.
"Hrvatske šume" Ltd.: Forest Management Plan of the Republic of Croatia, Zagreb, 2006.	H	Area of state owned locust forests	2006	Plans from 2006 to 2015. Data valid for 01.01.2006.

10.2.2 Classification and definitions

All national classification and definitions correspond to FRA classification and definitions.

10.2.3 Original data

DISTURBANCES BY INSECTS												
Year	1998	1999	2000	2001	2002	Total	2003	2004	2005	2006	2007	Total
Unit	ha											
<i>Agelastica alni</i>		36,30										
<i>Apethymus abdominalis</i>	152,61	300,05	11,30					20,36				411,00
<i>Argyresthia fundella</i>	15,00						3,00		7,00	5,00		4,00
<i>Caliroa annulipes</i>				1,00								
<i>Chermes viridis</i>				35,50								
<i>Coleophora laricela</i>				3,00								
<i>Euproctys chrissorhoea</i>	7262,26						727,00					
<i>Evetria buoliana</i>				11,00								
<i>Geometridae sp.</i>		482,43	3784,65	2748,52	2029,31		231,18	117,18	7513,03	40,26		2898,66
<i>Hylophila prasinana</i>					18,50							
<i>Lymantria dispar</i>							50,00	1479,13	30992,00	19882,61		6796,00
<i>Malacosoma neustria</i>	8022,87	11123,00	3974,00	1636,64								
<i>Melasoma populi</i>	4,40											
Pine bark beetles								152,16	275,48			301,00
<i>Pityokteines spinidens</i>								13577,56	15934,47	708,17		8395,06
<i>Ips curvidens</i>		2,35	2,00									
<i>Ips typographus</i>	29,14	423,99	821,85	1041,67	1066,29		1394,90	9160,71	3772,97	1331,92		5125,93
<i>Pytiogenes chalcographus</i>												
<i>Stereonychus fraxini</i>	9376,28		41,00					14,57	9,96	3,81		
<i>Porthesia similis</i>			14,95									
<i>Thaumetopoea ptyocampa</i>	1252,20	1628,48	1000,10	841,33	1133,08		636,44	813,70	704,96	723,07		815,24
<i>Thaumetopoea processionea</i>		105,98	90,00									
<i>Tortrix viridana</i>	1534,49	1497,66		89,83	300,00		540,84			1,00		83,50
<i>Phyllaphis fagi</i>								260,5				
<i>Attelabus nitens</i>								22,99				
<i>Platypus cylindrus</i>										9,00		2,80
Aphis												16,01
<i>Melolontha melolontha</i>												1,34
Total	27649,25	15600,24	9739,85	6408,49	4547,18	63945,01	3583,36	25618,86	59209,87	22704,84	24850,54	135967,47
5-years average						12789,00						27193,49

DISTURBANCES BY DISEASES												
Year	1998	1999	2000	2001	2002	Ukupno	2003	2004	2005	2006	2007	Ukupno
Unit	ha											
<i>Armillaria mellea</i>	1,30	106,98	251,79	549,39	452,89		69,32		0,80	69,48		
<i>Botrytis cinerea</i>			5,20									
<i>Cronatrium ribicola</i>		56,21	129,40	24,63	332,89		56,25	108,27	68,38	121,15	46,50	
<i>Cryphonectria parasitica</i>	307,80	710,08	897,47	1257,82	607,22		1124,06	1480,68	1395,97	842,01	2506,06	
<i>Mycosphaerella pini</i>		2,00	75,89	16,93	9,93				4,00			
<i>Melampsorella caryophyllacearum</i>							5,00	9,50				
<i>Microsphaera aliphitoides</i>	7882,90	7541,95	6062,25	10086,94	10852,95		7203,79	9578,54	8647,99	7080,00	11574,86	
<i>Phaeocryptopus gaeumannii</i>		2,00										
<i>Phomopsis conorum</i>			3,62									
<i>Verticicladiella procer)</i>				0,70								
<i>Lophodermium piceae</i>									10,00			
<i>Fomes fomentarius</i>	3,00	1,00								0,70		
<i>Sphaeropsis sapinea</i>					20,00							
<i>Ophiostroma ulmi</i>							0,50					
Acorn fungi										33,00		
<i>Scirrhia pini</i>	21,35											
<i>Fomes annosu</i>		2,00										
Total	8216,35	8422,22	7425,62	11936,41	12275,88	48276,48	8458,92	11176,99	10127,14	8146,34	14127,42	52036,81
5-years average						9655,30						10407,36
DISTURBANCES BY OTHER BIOTIC AGENTS												
Year	1998	1999	2000	2001	2002	Total	2003	2004	2005	2006	2007	Total
Unit	ha											
Game	25,82	48,02	310,73	291,44	170,97		106,63	356,66	236,66	29,96	166,00	
Rodents (mice, dormice, voles)	2822,50	1690,73	4147,79	4742,06	4594,30		4694,03	3393,36	2390,28	4039,04	4018,69	
Horses, cows, pigs				565,76	516,45		452,00					
Weeds (herbaceous weeds and undesirable tree species)	278,60	483,93	72752,14	770,32	1571,59		3207,05	1999,26	1575,48	2859,20	2408,65	
<i>Loranthus europaeus</i>	43,00	9,00	35,50				2,00			18,27		
<i>Viscum album</i>	26,00	530,50	686,00	910,00	950,00		3775,00		5450,00			
Total	3195,92	2762,18	77932,16	7279,58	7803,31	98973,15	12236,71	5749,28	9652,42	6946,47	6593,34	41178,22
5-years average						19794,63						8235,64

DISTURBANCES BY ABIOTIC FACTORS												
Year	1998	1999	2000	2001	2002	Total	2003	2004	2005	2006	2007	Total
Unit	ha											
Ice- and snow-breaks	1396,45	1279,54	2756,09	1682,74	156,70		340,27	695,62	36,73	116,22	154,03	
Frost		1,00		35001,60	21748,69		13180,37	207,46	3955,18	200,00	191,73	
Drought			34090,91								60,00	
Wind	904,57	5204,99	6734,36	6578,89	9334,46		8634,13	12277,97	18117,61	11664,72	25467,23	
Land-slide sites									4,40	4,44	7,44	
Flood		4,00										
Total	2301,02	6489,53	43581,36	43263,23	31239,85	126874,99	22154,77	13181,05	22113,92	11985,38	25880,43	95315,55
5-years average						25375,00						19063,11

10.3 Analysis and processing of national data

10.3.1 Calibration

Calibration is not necessary.

10.3.2 Estimation and forecasting

Estimation and forecasting are not necessary.

10.3.3 Reclassification into FRA 2010 categories

Reclassification is not necessary.

10.4 Data for Table T10

Table 10a – Disturbances

FRA 2010 category	Affected forest area (1000 hectares)		
	1990	2000	2005
Disturbance by insects	n.a.	12.79	27.19
Disturbance by diseases	n.a.	9.66	10.41
Disturbance by other biotic agents	n.a.	19.79	8.24
Disturbance caused by abiotic factors	n.a.	25.38	19.06
Total area affected by disturbances	n.a.	67.62	64.90

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)
n.a.	n.a.	n.a.	n.a.	n.a.

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>Amorfa fruticosa</i>	20.15
<i>Robinia pseudoacacia</i>	11.57
Total forest area affected by woody invasive species	31.72

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	Data are displayed for state owned forests only. There are no data available for privately owned forests. Monitoring of disturbances in private forests is in initial faze and the data will be available in the forthcoming years. Areas where the insects were treated are used for the data, because the intensity of disturbances is lower on the other areas and it doesn't have a significant influence on forest health and vitality. For the period 1988-1992, there is no data available for state owned forests too. For 2000 and 2005, 5-years averages were calculated.	
Disturbance by diseases	Data are displayed for state owned forests only. There are no data available for privately owned forests. Monitoring of disturbances in private forests is in initial faze and the data will be available in the forthcoming years. Areas where the diseases were treated are used for the data, because the intensity of disturbances is lower on the other areas and it doesn't have a significant influence on forest health and vitality. For the period 1988-1992, there is no data available for state owned forests too. For 2000 and 2005, 5-years averages were calculated.	
Disturbance by other biotic agents	Data are displayed for state owned forests only. There are no data available for privately owned forests. Monitoring of disturbances in private forests is in initial faze and the data will be available in the forthcoming years. Areas where other biotic agents were treated are used for the data, because the intensity of disturbances is lower on the other areas and it doesn't have a significant influence on forest health and vitality. For the period 1988-1992, there is no data available for state owned forests too. For 2000 and 2005, 5-years averages were calculated.	
Disturbance caused by abiotic factors	Data are displayed for state owned forests only. There are no data available for privately owned forests. Monitoring of disturbances in private forests is in initial faze and the data will be available in the forthcoming years. Total areas of sections, in which the disturbances caused by abiotic factors are registered, are used for the data, because results of such	

	<p>disturbances (wind, ice and snow-breaks) are often displayed in m³ and not by the area where they occurred.</p> <p>For the period 1988-1992, there is no data available for state owned forests too.</p> <p>For 2000 and 2005, 5-years averages were calculated.</p>	
Major outbreaks	Major outbreaks of insects and diseases affecting forest health and vitality were not registered.	
Invasive species	<p>Area of <i>Amorfa fruticosa</i> is estimated on the basis of 1st age class of state owned common oak (<i>Quercus robur</i>) and narrow-leaved ash (<i>Fraxinus angustifolia</i>) forests which are potentially threatened by <i>Amorfa fruticosa</i>. Area of <i>Amorfa fruticosa</i> is not constant, because <i>Amorpha fruticosa</i> is constant.</p> <p>We used black locust area inside natural forests with a tendency to expand and suppress natural forests as area affected by black locust (<i>Robinia pseudoacacia</i>).</p>	

Other general comments to the table

Total area affected by disturbances (Table 10a) is the sum of individual areas, because we do not have the data on which of the affected areas are overlapping.

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
“Hrvatske šume” database on wood removals and sales.	H	Volume of sold roundwood, fuelwood and pulpwood.	1998-2002, 2003-2007	

11.2.2 Classification and definitions

National class	Definition
Roundwood (sold and removed)	Logs and thin roundwood (volume under bark).
Pulpwood and fuelwood (sold and removed)	Wood for processing (cellulose) and fuel (volume over bark).

Original data

National classes	Average annual selling and removal of wood			
	2000 (1998 -2002)		2005 (2003-2007)	
	m3/year	HRK/m3	m3/year	HRK/m3
Roundwood (under bark)	1743223	496.92	1991222	499.92
Pulpwood and fuelwood (over bark)	1602106	109.36	1968981	141.10
Total	3345329	311.31	3960203	321.52

Data are available for state-owned forests only and for stated periods.

11.3 Analysis and processing of national data

11.3.1 Calibration

Calibration is not necessary.

11.3.2 Estimation and forecasting

Regarding that roundwood volume in original data is stated under bark, global default conversion factor 1.15 was used for converting volume under bark to volume over bark. The following data were obtained:

National classes	Average annual selling and removal of wood			
	2000 (1998 -2002)		2000 (1998 -2002)	
	m3/year	HRK/m3	m3/year	HRK/m3
Roundwood (over bark)	2 004 706	432.11	2 289 905	434.72
Pulpwood and fuelwood (over bark)	1 602 106	109.36	1 968 981	141.10
Total	3 606 812	288.74	4 258 886	298.97

11.3.3 Reclassification into FRA 2010 categories

National classes	Percentage of a National class belonging to a FRA Class	
	Industrial roundwood	Woodfuel
Roundwood over bark	100	-
Pulpwood and fuelwood	40	60

We estimate that pulpwood amounts around 40 % total pulpwood and fuelwood. Pulpwood is not used for energy consumption, but for cellulose and other products. After reclassification, following data were obtained:

National classes	Average annual selling and removal of wood			
	2000 (1998 -2002)		2000 (1998 -2002)	
	m3/year	HRK/m3	m3/year	HRK/m3
Industrial wood	2 645 548	353.93	3 077 497	359.58
Fuelwood	961 264	109.36	1 181 389	141.10
Total	3 606 812	288.74	4 258 886	298.97

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.)	n.a.	2 646	3 077	n.a.	961	1 181
... of which from forest	n.a.	2 646	3 077	n.a.	961	1 181
Unit value (local currency / m ³ o.b.)	n.a.	353.93	359.58	n.a.	109.36	141.10
Total value (1000 local currency)	n.a.	936499	1106428	n.a.	105095	166639

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	Dinar (DIN, YUD)	Croatian kuna (HRK)	Croatian kuna (HRK)

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	Data are displayed for state-owned forests only. The data from privately-owned forests are missing, but we estimate that their share in this category is irrelevant.	Rising trend in wood selling in this category is evident.
Total volume of woodfuel removals	Data are also displayed for state-owned forests only. The data from privately-owned forests are missing. We assume that most of the wood is removed for owner's personal consumption, regarding that average private forests properties are small. By founding of Forest Extension Service, since 2006, we will be able to collect the data on felling and removals in private forests.	Rising trend exists in this category also, because of growing interest for renewable sources energy production.
Unit value		
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
<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
"Hrvatske šume" Ltd. Database, 2000-2008	H	Number of trophies paid in full and their total value; number of realised game and total value paid in full; value of service (for wild boars collective hunting); number and value of Christmas' trees; species, quantity and value of forest seeds	2005	
Expert assessment by National Correspondent	L	Honey, mushrooms, fodder and ornamental plants	2009	

12.2.2 Classification and definitions

All national classification and definitions for non-wood forest products removals and value of removals correspond to FRA classification and definitions.

12.2.3 Original data

Plant products / raw material					
NWFP categories		Species	Unit	Quantity	Value (1000 local currency)
Food	Honey		kg	720	10.80
	Mushrooms	<i>Boletus sp.</i>	kg	5 000	200.00
Fodder	Hay		kg	5 000 000	3750.00
Raw material for medicine and aromatic products		<i>Allium ursinum</i>	kg	10 000	10.00
		<i>Betula pendula</i>			
		<i>Castanea sativa</i>			
		<i>Crataegus monogyna</i>			
		<i>Galium verum</i>			
		<i>Fragaria vesca</i>			
		<i>Genista tinctoria</i>			
		<i>Geranium robertianum</i>			
		<i>Glechoma hederacea</i>			
		<i>Humulus lupulus</i>			
		<i>Hypericum perforatum</i>			
		<i>Laurus nobilis</i>			
		<i>Phyllitis scolopedrium</i>			
		<i>Polygonum aviculare</i>			
		<i>Prunus spinosa</i>			
		<i>Pulmonaria officinalis</i>			
		<i>Rhamnus frangula</i>			
		<i>Rosa canina</i>			
		<i>Rubus fruticosus</i>			
		<i>Rubus idaeus</i>			
		<i>Salix alba</i>			
	<i>Sambucus nigra</i>				
	<i>Symphytium officinale</i>				
	<i>Tilia cordata</i>				
	<i>Tilia platyphyllos</i>				
	<i>Urtica dioica</i>				
	<i>Vaccinium myrtillus</i>				
	<i>Vinca minor</i>				
	<i>Viola odorata</i>				
	<i>Viscum album</i>				
Ornamental plants	Christmas trees		pieces	28 688	932.,36
Other plant products	Forest seeds	<i>Quercus robur</i> <i>Quercus petraea</i> <i>Fraxinus angustifolia</i>	kg	428 626	2995.78

		<i>Alnus glutinosa</i> <i>Juglans nigra</i> <i>Acer</i> <i>pseudoplatanus</i> Wild fruits <i>Pinus nigra</i> <i>Pinus sylvestris</i> <i>Pinus halepensis</i> <i>Pinus pinaster</i> <i>Quercus ilex</i> <i>Quercus pubescens</i>			
--	--	---	--	--	--

Animal products / raw material									
NWFP categories		Species	Number of trophies paid in full	Trophies value (HRK)	Total wild meat (kg)	Wild meat value (HRK)	Unit	Quantity	Value (1000 HRK)
Hides, skins and trophies	Trophies	<i>Cervus elaphus</i>	116	1385122.00			kom		2776.19
		<i>Dama dama</i>	13	59961.50					
		<i>Capreolus capreolus</i>	144	317985.00					
		<i>Rupicapra rupicapra</i>	7	47226.50					
		<i>Ovis musimon</i>	18	248133.00					
		<i>Sus scrofa</i>	2188	361928.50					
		<i>Ursus arctos</i>	9	355833.00					
Wild meat		<i>Cervus elaphus</i>			32704.50	735847.50	kg		2667.95
		<i>Dama dama</i>			1455.50	50362.50			
		<i>Capreolus capreolus</i>			4999.00	178789.00			
		<i>Rupicapra rupicapra</i>			116.00	1554.00			
		<i>Ovis musimon</i>			329.00	5129.50			
		<i>Sus scrofa</i>			104543.50	959072.50			
		<i>Ursus arctos</i>			580.00	18250.00			
		<i>Lepus europaeus</i>			201.00	41206.00			
		<i>Phasianus colchicus</i>			3449.00	299983.00			
		<i>Perdix perdix</i>			19.00	4940.00			
		<i>Coturnix coturnix</i>			85.60	57274.00			
		<i>Scolopax rusticola</i>			203.75	211304.00			
		<i>Anas platyrhynchos</i>			1028.25	76776.00			
<i>Fulica atra</i>			597.00	27462.00					
Other edible animal products	Meat products						kg	300	15.00

12.3 Analysis and processing of national data

12.3.1 Calibration

Calibration is not necessary.

12.3.2 Estimation and forecasting

Estimation and forecasting are not necessary.

12.3.3 Reclassification into FRA 2010 categories

Reclassification is not necessary.

12.4 Data for Table T12

Rank	Name of product	Key species	Unit	NWFP removals 2005		NWFP category
				Quantity	Value (1000 local currency)	
1 st	Hay	Wild plants	kg	5000000	3750.00	2
2 nd	Forest seeds	<i>Quercus robur</i> , <i>Quercus petraea</i> , <i>Fraxinus angustifolia</i> , <i>Alnus glutinosa</i> , <i>Juglans nigra</i> , <i>Acer pseudoplatanus</i> , Wild fruits: <i>Pinus nigra</i> , <i>Pinus sylvestris</i> , <i>Pinus halepensis</i> , <i>Pinus pinaster</i> , <i>Quercus ilex</i> , <i>Quercus pubescens</i>	kg	428626	2995.78	8
3 rd	Trophies	<i>Cervus elaphus</i> , <i>Dama dama</i> , <i>Capreolus capreolus</i> , <i>Rupicapra rupicapra</i> , <i>Ovis musimon</i> , <i>Sus scrofa</i> , <i>Ursus arctos</i>	pieces	2495	2776.19	10
4 th	Wild meat	<i>Cervus elaphus</i> , <i>Dama dama</i> , <i>Capreolus capreolus</i> , <i>Rupicapra rupicapra</i> , <i>Ovis musimon</i> , <i>Sus scrofa</i> , <i>Ursus arctos</i> , <i>Lepus europaeus</i> , <i>Phasianus colchicus</i> , <i>Perdix perdix</i> , <i>Coturnix coturnix</i> , <i>Scolopax rusticola</i> , <i>Anas platyrhynchos</i> , <i>Fulica atra</i>	kg	150311.1	2667.95	12
5 th	Christmas trees		pieces	28688	932.36	6
6 th	Mushrooms	<i>Boletus sp.</i>	kg	5000	200.00	1

7 th	Meat products		kg	300	15.00	15
8 th	Honey		kg	720	10.80	1
9 th	Raw material for medicine and aromatic products	<i>Allium ursinum, Betula pendula, Castanea sativa, Crataegus monogyna, Galium verum, Fragaria vesca, Genista tinctoria, Geranium robertianum, Glechoma hederacea, Humulus lupulus, Hypericum perforatum, Laurus nobilis, Phyllitis scolopedrium, Polygonum aviculare, Prunus spinosa, Pulmonaria officinalis, Rhamnus frangula, Rosa canina, Rubus fruticosus, Rubus idaeus, Salix alba, Sambucus nigra, Symphytum officinale, Tilia cordata, Tilia platyphyllos, Urtica dioica, Vaccinium myrtillus, Vinca minor, Viola odorata, Viscum album</i>	tones	10	10.00	3
10 th	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
All other plant products					n.a.	
All other animal products					n.a.	
TOTAL					13358.08	

	2005
Name of local currency	Croatian kuna (HRK)

12.5 Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	<p>Data for NWFP category “fodder” are estimated because there is no reliable data on quantity and value of removals. In this category, we included grass and wild herbs that grow on the small forest clearings. They are mown, collected and then used for game feeding.</p> <p>Data for NWFP categories “food” (mushrooms, honey) and “raw material for medicine and aromatic products” are also estimated because there is no reliable data on quantity and value of removals.</p> <p>Data for NWFP categories “wild meat” and “hides, skins and trophies” relates to area of forest and OWL, because it was not possible to estimate the number of game killed in the forests only.</p> <p>“Other edible animal products” category relates to wild meat products. They are also estimated because there is no reliable data on exact quantity and value.</p>
Other plant products	No data available.
Other animal products	No data available.
Value by product	<p>Estimated values are the medium market values: honey 15 HRK/kg, mushrooms 40 HRK/kg, hay 0,75 HRK/kg, raw material for medicine and aromatic products 1 HRK/kg, other edible animal products 50 HRK/kg.</p> <p>Values for Christmas trees, forest seeds, trophies and wild meat are calculated on the basis of actual market values.</p>
Total value	Total value represents the sum of estimated and actual values.

Other general comments to the table

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
Public enterprise for the management of forests and forestlands in the Republic of Croatia: <i>Hrvatske šume</i> . Business report of <i>Hrvatske šume</i> for the year 1996, Zagreb, 1997.	H	Employment in the enterprise <i>Hrvatske šume</i>	1990	
Public enterprise <i>Hrvatske šume</i> : 2000 Annual report, Zagreb,	H	Personnel costs	2000	
<i>Hrvatske šume</i> Ltd.: 2005 Annual report, Zagreb	H	Human potentials	2005	

13.2.2 Classification and definitions

All national classifications and definitions for employment correspond with FRA classifications and definitions.

13.2.3 Original data

Categorie	1990	2000	2005
Production workers	n.a.	5050	4308
Unskilled attendants	n.a.	299	273
A) First-hand workers		5349	4581
Expert personnel	n.a.	3195	3215
Unskilled attendants	n.a.	1364	1297

B) Overhead workers		4459	4512
A + B	n.a.	9908	9093
Forest inventory	0	0	2
TOTAL	14296	9908	9095

13.3 Analysis and processing of national data

13.3.1 Calibration

Calibration is not necessary.

13.3.2 Estimation and forecasting

Estimation and forecasting are not necessary.

13.3.3 Reclassification into FRA 2010 categories

Reclassification is not necessary.

13.4 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	14.296	9.908	9.095
...of which paid employment	14.296	9.908	9.095
...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	<p>The data for 1990 are repeated from FRA 2005.</p> <p>The 2000 and data refers to all „Hrvatske šume” employees that participate in primary production of goods. Those are employees in production of industrial roundwood fuelwood and non-wood forest products; silvicultural activities, Christmas trees production, forest inventory, forest management consulting services, timber value assessments, forest fire fighting and protection, forest pest control, harvesting and transport of logs within the forest and administrative staff.</p> <p>There are no data for other forest owners. All employees, except employees on Forest Inventory, are counted as full-time equivalents (FTE) because there are no reliable data on the number of half-time employees.</p>	

Paid employment / self-employment	All „Hrvatske šume” employees are in paid employment category. There are no available data on self-employment.	
Employment in management of protected areas	There are no available data on employment in management of protected areas for the referent years. Data are available for 2008, and there were 104 employees in management of protected areas and it is planned to employ 50 persons more.	

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		Yes	
	X	No	
If Yes above, provide:	Year of endorsement		
	Reference to document		
National forest programme (nfp)	X	Yes	
		No	
If Yes above, provide:	Name of nfp in country	National Forest Policy and Strategy	
	Starting year	2003	
	Current status		In formulation
			In implementation
		X	Under revision
			Process temporarily suspended
Reference to document or web site	National Forest Policy and Strategy (Narodne novine 120/2003) http://narodne-novine.nn.hr/clanci/sluzbeni/2003_07_120_1663.html		
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	2005	
	Year of latest amendment	2008	
	Reference to document	Forest law (<i>Narodne novine</i> 140/2005, 82/2006 and 129/2008)	

		http://narodne-novine.nn.hr/clanci/sluzbeni/2005_11_140_2642.html http://narodne-novine.nn.hr/clanci/sluzbeni/2006_07_82_1964.html , http://narodne-novine.nn.hr/clanci/sluzbeni/2008_11_129_3681.html
--	--	---

<p>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.</p>		
<p>Sub-national forest policy statements</p>		Yes
	X	No
<p>If Yes above, indicate the number of regions/states/provinces with forest policy statements</p>		
<p>Sub-national Laws (Acts or Codes) on forest</p>		Yes
	X	No
<p>If Yes above, indicate the number of regions/states/provinces with Laws on forests</p>		

14.3 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	
National forest programme (nfp)	
Law (Act or Code) on forest with national scope	
Sub-national forest policy statements	
Sub-national Laws (Acts or Codes) on forest	

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

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 Regional Development, Forestry and Water Management	
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	- Forest Extension Service - “Hrvatske šume” Ltd	
Institution(s) responsible for forest law enforcement	Ministry of Regional Development, Forestry and Water Management	

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	22	36.4	43	30.2	169	32.5
...of which with university degree or equivalent	21	33.3	41	26.8	138	28.3

Notes:

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

15.3 Comments to Table T15

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Minister responsible for forest policy formulation		
Level of subordination of Head of Forestry within the Ministry		
Other public forest agencies at national level	<p>- Forest Extension Service is a specialized public institution for conducting matters in part of public authorities, improving management of forests and woodlands in private forests. It was founded on 2 June 2006 by regulation of the Government of the Republic of Croatia. It started work at the beginning of 2007.</p> <p>- "HRVATSKE ŠUME" Ltd. is a national establishment for management of state-owned forest.</p>	
Institution(s) responsible for forest law enforcement		
Human resources within public forest institutions		<p>The rising trend in the human resources data for 2008 happened because the employees of Forest Extension Service, founded in 2006, are included, besides the employees of the Ministry.</p>

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
University of Zagreb, Faculty of Forestry	H	Graduation of students in forest-related education	2000, 2005, 2008	
Forest Research Institute Jastrebarsko	H	Professionals working in publicly funded forest research centres	2000, 2005, 2008	

16.2.2 Original data

Original data correspond to FRA categories.

16.3 Analysis and processing of national data

16.3.1 Estimation and forecasting

Estimation and forecasting are not necessary.

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	3	0	5	0	2	50
Bachelor's degree (BSc) or equivalent	70	19	97	29	75	16
Forest technician certificate / diploma	0	0	0	0	0	0
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)	10	20	9	33	15	33
Master's degree (MSc) or equivalent	9	33	13	30	10	30
Bachelor's degree (BSc) or equivalent	14	28	9	33	16	50

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	<p>All the persons who have finished university education with a total duration of four years and after that have finished postgraduate study are counted in Master's degree (MSc) or equivalent category.</p> <p>There are two departments on Faculty of Forestry: Forestry and Wood Technology, and in the Table 1.4. only the data for Forestry Department are given. Number of Bachelor's degrees or equivalents in Wood Technology Department figures: 29 (28% female) in 2000, 25 (20% female) in 2005 and 42 (17% female) in 2008.</p> <p>First generation of bachelors enrolled Faculty of Forestry in 2005, and the first generation graduated in 2008.</p> <p>For year 2008, students who graduated from the former programme, as well as the students who graduated from the new three-years programme (bachelors) are counted in.</p>	
Professionals working in public forest research centres	<p>All the persons who have finished university education with a total duration of four years and after that have finished postgraduate study are counted in Master's degree (MSc) or equivalent category.</p> <p>Until the last year, Croatia had a university education with a total duration of four years, and the persons who finished that study are counted in the Bachelor's degree (BSc) or equivalent category.</p>	

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
Ministry of Finance, Department for Budget Execution, 2008	H	Forest revenue	2000, 2005	
Croatian Parliament: Annual State Budget Expense Report, 2006	M	Public expenditure	2005	

17.2.2 Classification and definitions

All national classification and definitions correspond to FRA classification and definitions.

17.2.3 Original data

2005	
Public expenditure	Amount (HRK)
Hunting and forestry development	2 628 857,75
Wood industry development	2 080 000,00
Total:	4 708 857,75

17.3 Analysis and processing of national data

17.3.1 Calibration

Calibration is not necessary.

17.3.2 Estimation and forecasting

Estimation and forecasting are not necessary.

17.3.3 Reclassification into FRA 2010 categories

Reclassification is not necessary.

17.4 Data for Table T17

Table 17a - Forest revenues

FRA 2010 Categories	Revenues (1000 local currency)	
	2000	2005
Forest revenue	3 750	0

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.	4 709	n.a.	0	n.a.	4 709
Transfer payments	n.a.	0	n.a.	0	n.a.	0
Total public expenditure	n.a.	4 709	n.a.	0	n.a.	4 709
If transfer payments are made for forest management and conservation, indicate for what specific objective(s) - Please tick all that apply.	<input type="checkbox"/>	Reforestation				
	<input type="checkbox"/>	Afforestation				
	<input type="checkbox"/>	Forest inventory and/or planning				
	<input type="checkbox"/>	Conservation of forest biodiversity				
	<input type="checkbox"/>	Protection of soil and water				
	<input type="checkbox"/>	Forest stand improvement				
	<input type="checkbox"/>	Establishment or maintenance of protected areas				
	<input type="checkbox"/>	Other, specify below				

17.5 Comments to Table T17

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest revenue		
Operational expenditure	Data on personnel, materials, operating costs and capital investments are not included because they were not available.	
Transfer payments		

Other general comments to the table

Legal and physical persons who conduct economic activity in the Republic of Croatia pay a fee for utilization of forest functions of general benefit ("green tax") in the amount of 0,07% of the total income. The funds are placed directly into a special "Hrvatske šume" Ltd. account for the purposes of biological renewal of forests, forest protection, management of karst forests, recovery and rehabilitation of stands endangered by desiccation and other hazards, construction of forest roads, demining of forest surfaces and other activities necessary for the preservation and improvement of forest functions of general benefit; activities of the seed growing and nursery gardening functions in forestry, the genofond preservation and the rising of the clone seed plantations, scientific research in the area of forestry; costs of production, renewal and revision of the management programmes for private forests. A part of the funds is allocated to Forest Extension Service in proportion to the surface share of private forests and forest land in accordance with the Forest Management Plans and Programmes in the area of forestry.