Forest resources, Forestry and Wood management in Hungary

Published by

Ministry of Agriculture and Rural Development
Main Department of Natural Resources
Department of Forestry

Budapest, 2006.

● Forestation (regeneration and afforestation)

Achievements in the growing year 2004-2005

	State sector	Other forms of management	Total
	(ha)		
Initial stand establishment			
Natural regeneration by seed	2675	597	3272
Natural regeneration by sprouts	2636	3601	6237
Artificial regeneration	6486	3659	10145
Total regeneration	11797	7857	19654
Total afforestation	628	7029	7657
Total initial stand establishment	12425	14886	27311
Total blank filling	4275	2729	7004
Total initial s. e. and blank filling	16700	17615	34315
Established plantations			
Established regenerations	10834	9596	20430
Established afforestations	809	9874	10683
Lead time (year)			
Established regenerations	8.7	6.9	7.8
Established afforestations	5.5	4.6	4.7
Felling site not yet regenerated	1984	7898	9882
Area with delayed regeneration	795	5258	6053

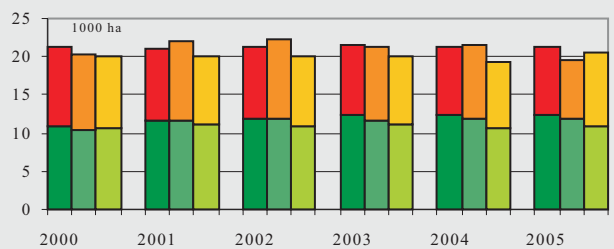
Forest regeneration includes compensatory planting.

Potential forest types in forestations (initial stand establishment)

	Regeneration	Afforestation	Total forestations
	(ha)		
Oak	4065	2307	6372
T. oak, other hard broadleaved	2431	469	2900
Beech	1072	10	1082
Black locust	6940	2894	9834
Hybid poplar and white willow	2198	1283	3481
Native poplar, other soft broadl.	1985	598	2583
Coniferous	963	96	1059
Total	19654	7657	27311

Source: State Forest Service "Report on Forestation and Fellings in 2005"

Obligations and established plantations, 2000-2005



The three columns from left to right show the obligations, initial stands and established plantations respectively. The lower part of each column represents the state sector, the upper represents other forms of management.
Source: State Forest Service "Report on Forestation and Fellings in 2005"

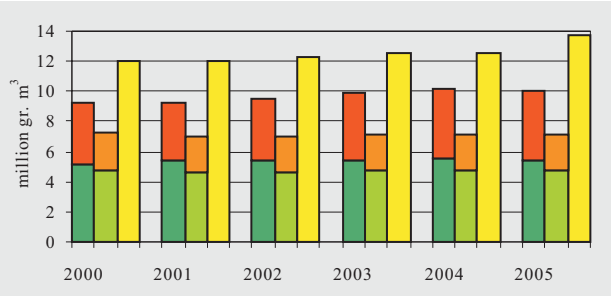
● Fellings

Gross fellings in 2005

	State sector	Other forms of management	Total
By type of felling		(1000 gr. m^3)	
Final cutting	3184	1773	4957
Increment thinning	536	127	663
Selection thinning	384	233	617
Cleaning	205	134	339
Sanitary cutting	405	125	530
Other	35	26	61
Total	4749	2418	7167
By area		(ha)	
Reduced area of final cutting	11891	8879	20770
Area of increment thinning	13817	3579	17396
Area of selection thinning	16525	8436	24961
Cleaning area	18546	9885	28431
By tree species groups		(1000 gr. m^3)	
Oak	938	250	1188
Turkey oak	787	188	975
Beech	607	97	704
Hornbeam	262	91	353
Black locust	539	862	1401
Other hard broadleaved	156	48	204
Hybid poplar	400	483	883
Native poplar	126	63	189
Other soft broadleaved	180	85	265
Coniferous	754	251	1005
Total	4749	2418	7167

Forest regeneration includes compensatory planting.

Total fellings and current annual increment, 2000-2005



The three columns from left to right show exploitable stock as planned in management plans, actual fellings and current annual increment respectively. The lower part of each column represents the state sector, the upper represents other forms of management.
Source: State Forest Service Database and "Report on Forestation and Fellings in 2005"

*Exploitable stock is determined by **ten-year management** plans based on the requirements of sustainable forest management and prepared by the state. Fellings are authorized and executions are recorded yearly by forest authorities.*

Wood products and timber trade

Wood products output in 2005[1]

	Removals	
	total (1,000 m³)	ratio in assortment composition (%)
Logs for panel products	67541	1.1
Sawlogs	1180557	19.9
Other raw material for sawmilling	382486	6.4
Pitwood	9374	0.2
Pulpwood	452880	7.6
Bolt for panels	468839	7.9
Other industrial wood	237809	4.0
Technological chips	4140	0.1
Total industrial wood	2803626	47.2
Fuelwood	3136396	52.8
Total removals	5940022	100.0

[1] National distribution calculated on the basis of a 66 % sample. Source: State Forest Service

Output of selected products in 2005[1]

	Unit	Quantity
Coniferous sawnwood	1000 m³	81.8
Broadleaved sawnwood	"	133.4
Parquet frieze	"	36.3
Furniture strips and parts	"	4.8
Pallets	"	80.2
Wood particle board	"	564.5
Laminated particle board	"	470.5
Cement-bonded particle board	"	27.6
Fibreboard	"	49.0
Surface-treated fibreboard	"	31.9
Flat-pressed, moulded, laminated b.	"	40.2
Veneer sheets	million m²	42.9
Parquet	1000 m²	2443.6
Match	million boxes	168.0

[1] Based on data from large-scale and medium industries appointed for contributing data by the Ministry of Agriculture. Source: State Forest Service

Timber trade in 2005

	Export	Import	Balance
	(million HUF)		
Solid wood products	13269	4954	8315
Sawn wood products	16602	38280	–21678
Panel products	31180	34692	–3512
Miscellaneous wood products	44061	23654	20407
Total wood products	105111	101579	3532
Pulp and paper products	142280	239590	–97310
Total	247392	341169	–93778

Source: State Forest Service, Data as of Dec. 31, 2005.

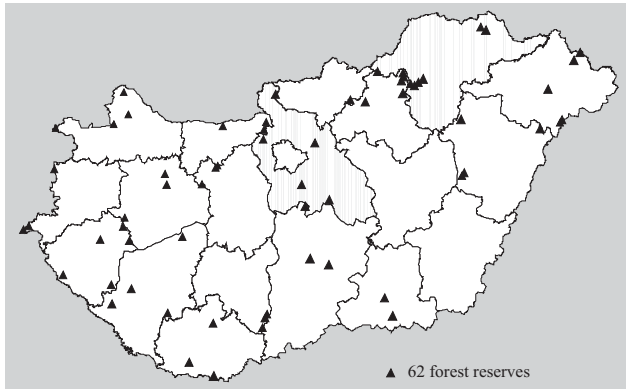
Forest protection and natural conservation

Protected forests by primary function

	Area (ha)
Forests in strictly protected natural area	61543.8
Forests in protected natural area	321228.2
Forest reserves	7565.9
Forests in historical sites	473.9
Total	390813.8

Source: State Forest Service Database, Data as of Jan. 1, 2006.

Forest reserves in Hungary



47 % of the 839019 ha of protected lands of national importance (national parks, landscape protection areas and protected natural areas) are covered by forests.

Source: State Secretariat for Nature and Environment Protection, Data as of Dec. 31, 2005.

Organisational structure

Forest administration

Ministry of Agriculture and Rural Development (FVM)
↓
FVM - Department of Natural Resources
↓
FVM Forestry Department
↓
State Forest Service (10 directorates)
↓
Forest management planning, official supervision of forest managements

Other authorities concerned with forestry:
- FVM OMMI, Forestry Department
  Inspectorate of propagation materials
- Ministry of Environmental Protection and Water Management (KvVM), State Secretariat for Nature and Environment Protection, Department of Forestry and Landscape Protection
  Official supervision of nature conservation in forests on protected natural areas.

Forest research:

Forest Research Institute (ERTI), Budapest
University of West Hungary (NyME), Sopron

Professional training:

Higher education: University of West Hungary, Sopron
Professional secondary schools: Szeged, Sopron, Mátrafüred, Barcs
Trade schools: Ásotthalom, Szőcsénypuszta, Piliscsaba, Miskolc, Somogyzsitfa

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Notable milestones in the history of modern Hungarian forestry

1791	The Parliament enacted the first feudal forest act.
1879	Enactment of the first modern civil forest act.
1920	As a result of the peace-treaty closing the First World War, Hungary lost 84 % of its forests, and forest cover decreased from 26 % to 12 %.
1935	The IV Act of 1935 was not just a forest act adjusted to the new geographical conditions of the country, but also the first Hungarian law on nature conservation to be promulgated.
1936	Hungary hosted the second World Foresty Congress and the 9th Congress of IUFRO.
1945	Private forest holdings exceeding 58 hectares were nationalized, properties of 6 to 58 hectares were taken into state management.
1959-60	Forest joint tenures were cut back, about 30 % of the forests were assigned to agricultural cooperatives.
1961	Enactment of the Act VII of 1961 on forests and wildlife management based on the socialist ownership structure.
1996	As a result of the change of system, about 40 % of forests were privatised. The legislative control for multiple-use and sustainable forestry is provided in Act LIV of 1996 on forests and protection of forests.

Main objectives of current hungarian forest policy

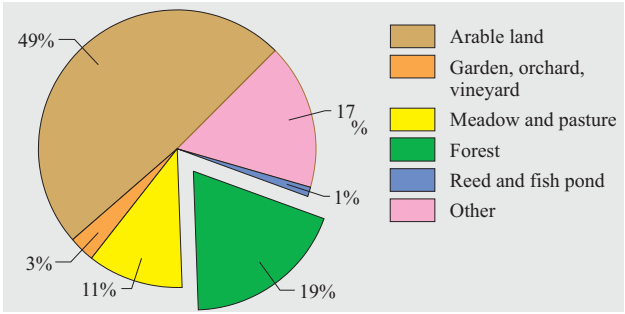
- To ensure long term environmental, economic and social services of forests with sustainable multiple-use forest management.
- To harmonize the interest of the society in sustaniable forest management with the interests of owners and managements.
- To maintain natural or close-to-natural forest stands composed by indigenous tree species and extend their area in accordance with prevailing site conditions.
- To increase the forested lands with afforestation up to the forest ratio of approximately 25-26 %.

Comprehensive facts

Total area of the country	1000 ha	9303.0
Population	millions	10.1
Forest land area	1000 ha	1853.2
Forest ratio	%	19.9
Forest area per 1,000 inhabitants	ha/1000 cap.	183.9
Area of land in forestry use	1000 ha	1983.3
Growing stock	million gr. m^3	341.4
Gross annual increment	million m^3/year	13.7
Total fellings	million gr. m^3	7.2
Final cutting	million gr. m^3	5.0
Area of final cutting	1000 ha	20.8
Regeneration (initial planting) per year	1000 ha	19.7
Afforestation (initial planting) per year	1000 ha	7.7
Ratio of forests under management plans	%	100.0

Sources: Hungarian Central Statistical Office (KSH), Data as of Jan 1., 2006
State Forest Service (ÁESZ), National Forestry Database
"Report on Forestation and Fellings in 2005"

Area by categories of land use



Source: Hungarian Central Statistical Office (KSH) Data as of May 31, 2006. The data of KSH are based on representative national sampling therefore they slightly differ from respective data of the National Forestry Database.

Forest area according to the National Forestry Database

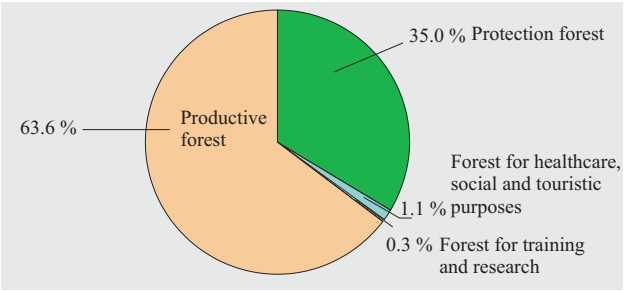
as of Jan. 1, 2006.	(1000 ha)	ratio (%)
Forest area (covered by tree stands or earmarked for plantation)	1853.2	19.9
Other wooded lands (nurseries, rides, permanent clearings)	130.1	1.4
Total area of land in forestry use	1983.3	21.3

Forest land area and ownership categories in the counties

County	Area (km^2)	Forest l. area (km^2)	Forest ratio (%)	In forestry use (km^2)	State (%)	Com-munal (%)	Priva-te (%)	Un-known (%)
Pest and Budapest	6918	1653	23.9	1772	60.8	1.2	37.9	0.0
Central Hungary	6918	1653	23.9	1772	60.8	1.2	37.9	0.0
Fejér	4359	540	12.4	621	73.2	1.9	24.9	0.0
Komárom-Esztergom	2265	607	26.8	654	81.7	0.6	17.7	0.0
Veszprém	4493	1315	29.3	1519	63.5	0.4	36.0	0.2
Central Transdanubia	11117	2462	22.1	2794	70.1	0.8	29.1	0.1
Győr-Sopron-Moson	4208	811	19.3	900	69.8	0.4	29.8	0.0
Vas	3336	934	28.0	985	50.3	0.4	49.3	0.0
Zala	3784	1140	30.1	1214	54.3	0.3	44.9	0.5
Western Transdanubia	11328	2886	25.5	3099	57.3	0.4	42.1	0.2
Baranya	4430	1081	24.4	1137	54.5	1.2	44.2	0.1
Somogy	6036	1713	28.4	1831	57.0	0.7	42.3	0.1
Tolna	3703	644	17.4	690	56.4	0.4	43.2	0.0
Southern Transdanubia	14169	3438	24.3	3659	56.1	0.8	43.0	0.1
Borsod-A-Z.	7247	2001	27.6	2099	61.3	1.1	36.6	1.1
Heves	3637	852	23.4	889	61.0	0.4	38.6	0.0
Nógrád	2546	961	37.7	998	56.2	0.2	43.6	0.0
Northern Hungary	13430	3814	28.4	3986	59.9	0.7	38.8	0.6
Hajdú-Bihar	6211	651	10.5	690	46.8	1.0	52.2	0.0
Jász-Nagykun-Szolnok	5582	315	5.7	340	42.3	8.2	49.6	0.0
Szabolcs-Szatmár-B.	5936	1097	18.5	1133	29.4	1.4	69.1	0.1
Northern Great Plain	17729	2063	11.6	2163	36.9	2.3	60.8	0.1
Bács-Kiskun	8445	1634	19.3	1736	48.5	0.6	50.8	0.0
Békés	5631	246	4.4	268	61.0	3.1	35.2	0.7
Csongrád	4263	337	7.9	357	51.1	1.3	47.6	0.0
Southern Great Plain	18339	2217	12.1	2360	50.3	1.0	48.6	0.1
Total	**93030**	**18532**	**19.9**	**19833**	**56.5**	**0.9**	**42.4**	**0.2**

Source: State Forest Service Database, Data as of Jan. 1, 2006.
The category "unknown" covers areas belonging to new forest owners not yet registered as forest managers, who became owners during the system change. Before the transition the ratio of private forest was below 1 %.

Distribution of forests by primary function

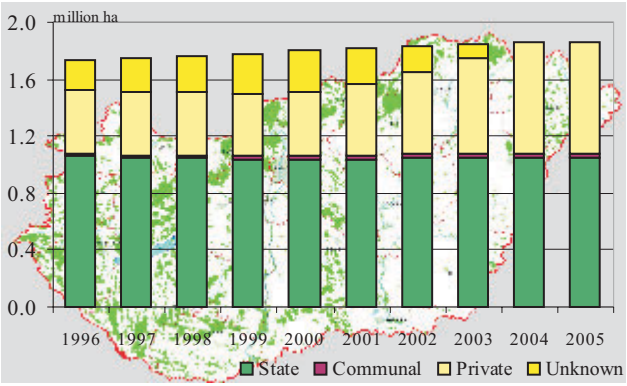


Source: State Forest Service, "Report on Forestation and Fellings in 2005"

Protection forests include protective forests (soil, wildlife, water, settlement protection, etc.) and protected forests (e.g. in protected natural areas). Their area and ratio has been increasing for decades.

Changes in forest area and afforestations

Changes in forest area, 1997-2005[1]



The forest ratio increased from 11.9 % to 19.9 % between 1938 and 2005.

Afforestations in the past decade (initial plantings)

Growing year	State sector	Other forms of management (ha)	Total
1996-1997	401	7918	8319
1997-1998	392	7812	8204
1998-1999	446	8262	8708
1999-2000	372	9418	9790
2000-2001	665	12472	13137
2001-2002	755	14075	14830
2002-2003	899	11116	12015
2003-2004	437	7137	7574
2004-2005	628	7029	7657

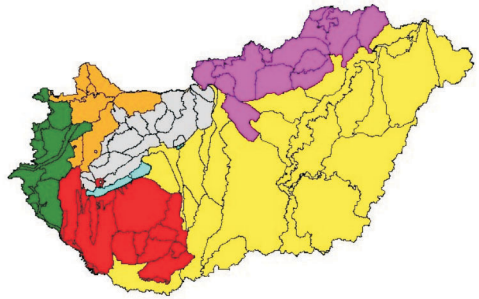
Source: State Forest Service "Report on Forestation and Fellings in 2005"

Site conditions

Distribution by height above sea-level (%)		Distribution by climates (%)	
- 150m	4.4	Beech forest climate	8.7
151 - 350m	45.8	Hornbeam-oak forest climate	38.5
351 - 750m	12.4	Sessile oak - Turkey oak f. climate	27.7
751 - 1015m	0.4	Forest-steppe climate	25.1

Source: State Forest Service Database, Data as of Jan. 1, 2006.

Forest regions in Hungary

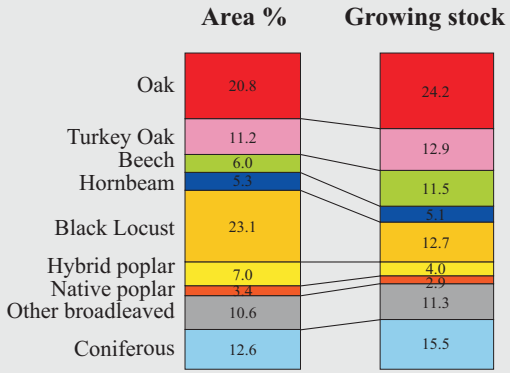


57 forest regions and 6 main regions according to the revision of February, 2004.

	Ratio of total forest area falling into the region (%)	Forest ratio in the region (%)
Western Transdanubia	9.7	34.2
Southern Transdanubia	17.6	28.2
Small Plain	4.0	14.7
Transdanubian Mountain Range	14.6	39.1
Northern Mountain Range	22.1	37.5
Great Plain	32.0	12.6

Source: State Forest Service Database, Data as of Jan. 1, 2006.

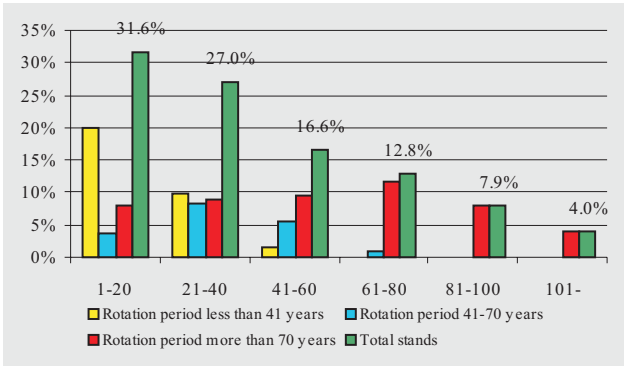
Tree species distribution



Source: State Forest Service Database, Data as of Jan. 1, 2005.

57 % of the forest area is covered by indigenous species, and 43 % by either introduced (black poplar, red oak, coniferous) or cloned (hybrid poplar) tree species.

Age class distribution by area

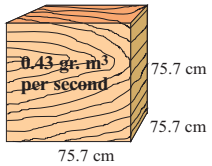


Source: State Forest Service Database, Data as of Jan. 1, 2006.

Current annual increment and growing stock

Current increment by species (%)	
Oak	20.5
Turkey oak	8.7
Beech	7.4
Black locust	22.4
Other hard broadleaved	9.4
Poplar	12.1
Other soft broadleaved	6.1
Coniferous	13.5

Gross annual increment in Hungarian forests: 13.7 million m^3 / year

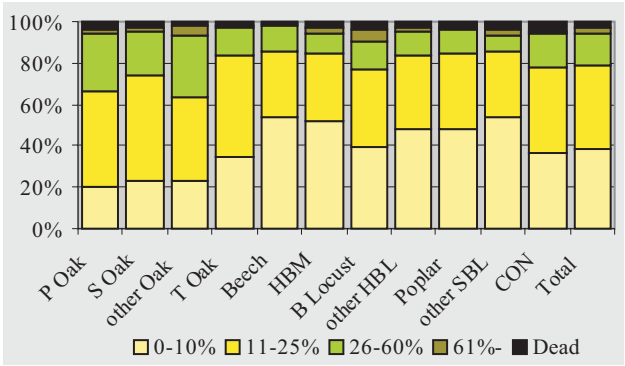


Source: State Forest Service Database

Development of growing stock (million m^3)			
Jan. 1, 2001	326.4	Jan. 1, 2004	334.3
Jan. 1, 2002	328.8	Jan. 1, 2005	337.0
Jan. 1, 2003	330.9	Jan. 1, 2006	341.4

Health conditions in 2005

Defoliation measured by the ICP Forests Monitoring System

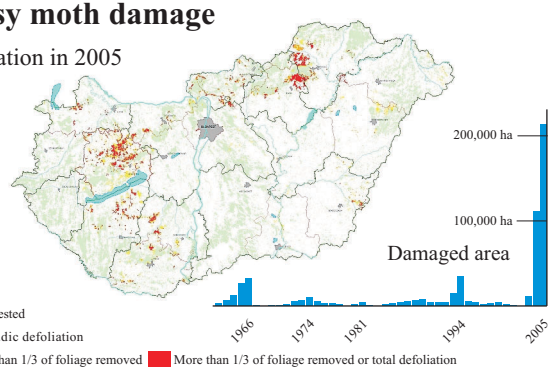


Source: State Forest Service Health Conditions Database, 2005.

Health conditions didn't characteristically changed. The number of not and severely damaged sample trees has slightly decreased while the number of slightly damaged sample trees has increased.

Gypsy moth damage

Defoliation in 2005



Source: State Forest Service and Forest Research Institute (ERTI)

Almost 100 millions HUF from the national budget were spent in 2006 on reducing gypsy moth damage. According to experts' forecast the collapse of outbreak can be expected this year.

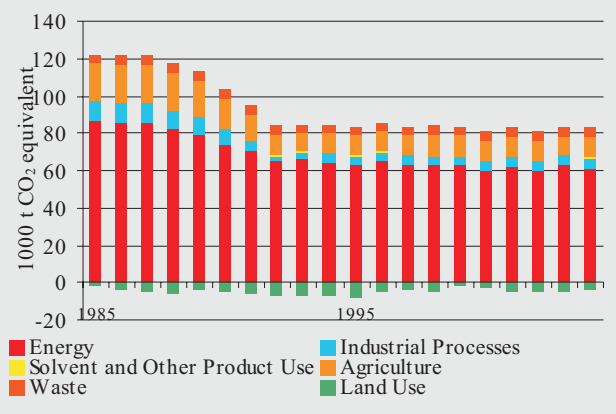
Damages in forestations caused by game

Growing year	Quantitative damage (ha)	Qualitative damage (ha)
1998-1999	226	4987
1999-2000	313	4807
2000-2001	715	5219
2001-2002	475	5944
2002-2003	427	6470
2003-2004	610	5565
2004-2005	282	5871

Source: State Forest Service, technical acceptance protocols of forestations

Greenhouse gases

Emissions and removals by sectors



Souce: KvVM, National Inventory Report (NIR 2006)

Land Use sector includes forestry, cropland and grazing land management and reforestations.
The Kyoto Protocol keeps count of five carbon pools in forests: above- and below-ground biomass, dead wood, litter and soil.