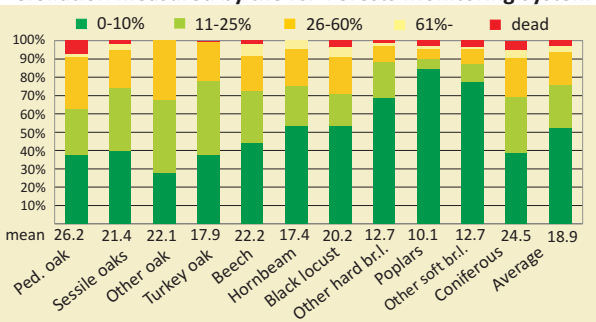
Forest health condition

Defoliation measured by the ICP Forests Monitoring System

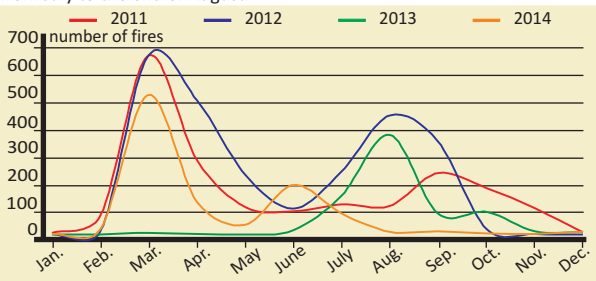


Source: NFCSO Forest Health Condition Database, data of 1st Jan. 2014

The health condition of the Hungarian forests is considered to be good although the data showed signs of slight regression in view of tree defoliation in 2014. The average defoliation was 18.9% in comparison to 17.9% from the previous year. The poplars, other hard broadleaved and other soft broadleaved showed the best status, where the average defoliation of these groups was under 13%. The oak, beech, conifers and black locust were in the worst condition based on the defoliation. The assessment is based on a sampling representative only on a Europe-wide scale.

Forest fire facts in Hungary

In our country, the two forest fire dangerous period are the spring and the summer. The spring season starts right after the snow melts and lasts till leafing. While the summer season, a warm and dry period, lasts from July to the end of August.

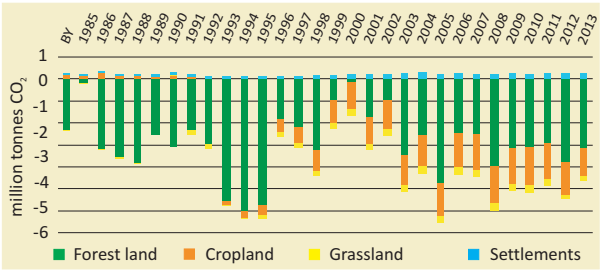


Source: NFCSO Foresty Directorate, Forest Fire Information System 2014

- Average burnt area: 2-5 ha.
- Fire size: less than 1 ha - 50-60%, between 1-10 ha - 30%.
- Average distance to residential areas is 1.5 km.
- Nearly 50% of fires occurs in the spring before the leafing.
- Fire causes are mostly carelessness, negligence and rarely arson.
- The majority of fires are related to agricultural activity.
- More than 50% of fires are generated during fire ban period.
- 40% of fires happen on weekends and public holidays.
- The spring fires rarely affect solid forest blocks, but during the summer season fires often turn into high intensity canopy fires especially in the pine forests of the Great Hungarian Plain.

The Kyoto Protocol and the forests

CO_2 emission and removals in the LULUCF sector



Source: NIR Hungary 2014, National Inventory Report for 1985-2013 Hungary, Hungarian Meteorological Service, 2014.

GHG emissions and removals in the forestry sector in 2013

Forest management activities (afforestation, regeneration and deforestation since 1990) under Article 3.3 of the KP represented a net sink of 1.2 million tonnes CO_2, while the activity under Article 3.4, i.e. forest management (FM), was also a net sink of 1.9 million tonnes CO_2. The most efficient carbon sequestration can be reached by first afforestation.

Organisational structure - Forest administration

- Ministry of Agriculture
  - Department of Forestry and Hunting
    - Section of State Forest Management
    - Section of Forest Administration
    - NFCSO Forestry Directorate
- Prime Minister's Office
  - County Government Offices Department of Agriculture and Forestry (10)

Other organizations concerned with forestry:

- NFCSO, Directorate of Plant Production and Horticulture Department of Forestry and Energy Reproduction materials
  - Inspectorate of propagation materials
- Ministry of Agriculture Department of National Park and Landscape Protection
  - Protection of the natural assets in forests on protected natural areas

Websites related to forestry:

Ministry of Agriculture - **www.kormany.hu/hu/foldmuvelesugyi-miniszterium**
NFCSO - Forestry Directorate - **www.nebih.gov.hu**
NARIC - Forest Research Institute (FRI) - **www.erti.hu**
University of West Hungary (UWH) - **www.nyme.hu**
Hungarian Federation of Forestry and Wood Industries - **www.fagosz.hu**
Association of Hungarian Private Forest Owners - **www.megosz.org**
National Forestry Association - **www.oee.hu**
Forestpress - **www.forestpress.hu**
FIRELIFE Project - **www. erdotuz.hu**

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Photo: Bálint Pataki; Contact: Ferenc Babinyec (BabinyecF@nebih.gov.hu)

Forest resources and forest management

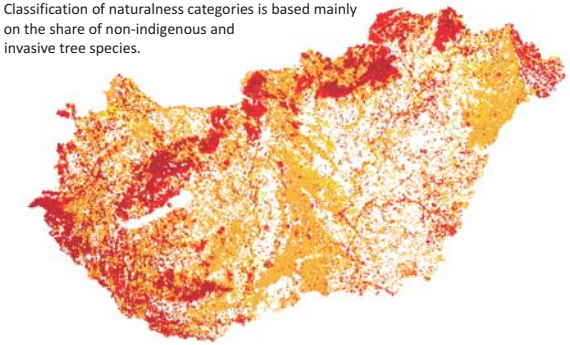
in Hungary 2014

Budapest, 2015
National Food Chain Safety Office
Forestry Directorate

Naturalness and nature conservation

Naturalness categories of forests	area (ha)
Natural and close-to-nature forests	431,882
Semi-natural forests	592,982
Transferred forests	134,750
Semi-plantations	656,607
Plantations	123,042
Total	1,939,263

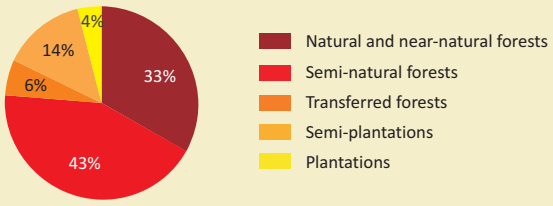
Classification of naturalness categories is based mainly on the share of non-indigenous and invasive tree species.



Protected and Natura 2000 forests area (ha)

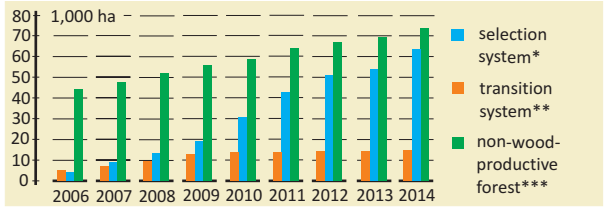
	Forest sub-compartment	Other type of subcomp.	Total
Protected area			
Strictly protected	67,109	6,125	73,234
Protected	358,876	25,552	384,428
Total	425,985	31,677	457,662
Natura 2000 sites			
Protected and strictly protected	386,667	28,768	415,435
Non-protected	385,154	33,113	418,267
Total	771,821	61,881	833,702
Birds sites and habitats sites			
Special Protection Area	467,699	31,472	499,171
Special Area of Conservation	627,881	54,734	682,615

Naturalness of the Natura 2000 forests



Source: National Forestry Database (NFD), data of 1st Jan. 2015

Close-to-nature forest management



Source: National Forestry Database, data of 1st Jan. 2015

* Individual trees or groups of trees are harvested periodically and frequently.
** The goal is to reach the selection system.
*** The aim is to let natural processes taking their course. Fellings are possible only for scientific, protection or regeneration purposes.

Forestations (regeneration and afforestation)

Achievements in the growing year 2013-2014 (ha)

	State forests	Non-state forests	Total
Successful initial stand establishment			
Regeneration after clear-cutting	8,430	10,187	18,617
Initial planting			
In first afforestation	201	1,086	1,287
Replacement planting			
In regeneration	3,143	983	4,126
In first afforestation	99	213	312
Completed plantings			
In regeneration, after clear-cutting	6,786	6,609	13,395
In regeneration, after shelterwood c.	1,887	226	2,113
In first afforestation	268	4,491	4,759
Terms of completion		**(year)**	
In regeneration, after clear-cutting	7.2	6.6	6.9
In regeneration, after shelterwood c.	15.6	15.9	15.7
In first afforestation	7.2	7.1	7.1

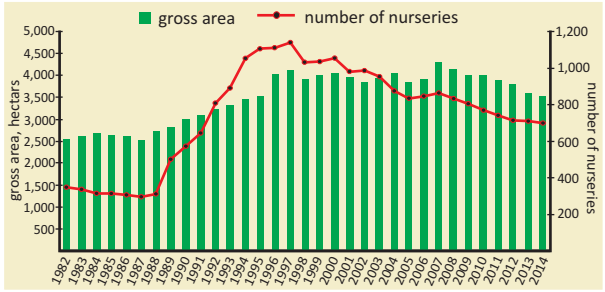
Target stand types of forestations

	Successful initial planting in regenerations (ha)	Initial planting in first afforestation (ha)
Oak	2,479	232
Turkey oak, other hard broadleaved	793	93
Beech	100	0
Black locust	8,564	465
Hybrid poplar and white willow	2,657	105
Native poplar, other soft broadleaved	3,044	375
Coniferous	980	17
Total	18,617	1,287

Source: NFCSO Forestry Directorate, 2014

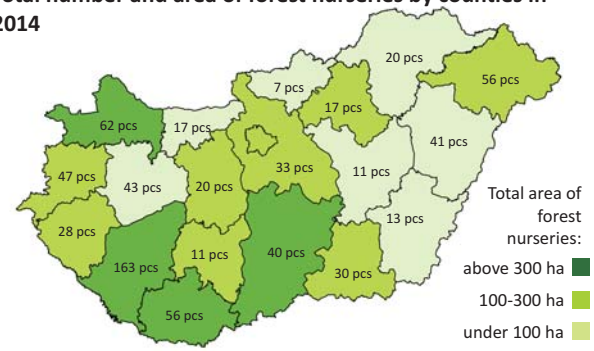
Forest reproductive material

Total number and area of forest nurseries



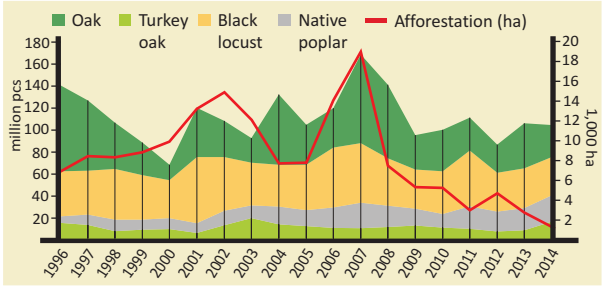
The number of forest nurseries has trippled compared to the period before the transition of the political system (1989). The peak was reached in 1997 with 1,137 licensed forest nurseries registered by the authorites. This number is started to gradually decrease, currently about 700 licensed nurseries are registered.

Total number and area of forest nurseries by counties in 2014



The variability are explained by different natural conditons and partly logistics, transportation reasons, and the differences in local silvicultural practice. South West Hungary has good climatic conditions, that is revealing in the dominance of the region. It is reflected both in the number of nurseries, and in the magnitude of production capacity.

Correlation between afforestation area and most significant forest tree species' reproductive material production



Source: NFCSO DPPH, Department of Forest and Biomass Reproductive Material - FRM data 2015

General figures on forests

Total area registered in NFD	thousand ha	2,059.7
Forest ratio	%	20.8
Growing stock	million gr. m^3	373.3
Forest area per 1,000 inhabitants	ha	196.4
Gross annual increment	million gr. m^3	13.1
Total fellings	million gr. m^3	7.5
final cutting	million gr. m^3	5.1
Afforestation (initial planting)	thousand ha	1.3
Regeneration (initial planting)	thousand ha	18.9

Source: Hungarian Central Statistical Office (HCSO) 2014; National Forestry Database (NFD), data of 1st Jan. 2015; NFCSO Forestry Directorate, 2014

The history of modern forestry in Hungary

1791 The Parliament enacted the first feudal act on forests.

1879 Enactment of the first modern forest act.

1920 After the World War I, Hungary lost 84% of its forests, and the forest cover decreased from 26% to 12%.

1935 The Act Nr. IV of 1935 on forest was according to the new conditions of the country, and also covered nature conversation.

1936 Hungary hosted the 2nd World Forestry 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 Forest owner associations were cut back; about 30% of the total forests were assigned to agricultural cooperatives.

1961 Enactment of the Act Nr. VII of 1961 on forests and wildlife mangement based on socialist terms.

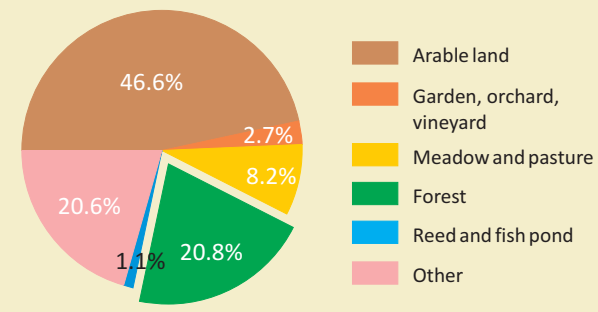
1996 As a result of the political system change in 1989, about 40% of the forests were privatised. The legislative control for multiple-use and sustainable forestry was regulated by the Act Nr. LIV of 1996 on forests and protection of forests.

2009 One main aim of the Act Nr. XXXVII of 2009 is to drive forests closer to their natural conditions. On one hand, the act defines 'quantitative naturalness' and prescribes that it may not decrease due to management activities. On the other hand, the act presrcibes the use of continuous cover forestry methods on a predetermined area of state-owned forests. Further, it enables NGOs' contribution in forest management planning.

Main objectives

- ensure long-term environmental, economic and social services of forests by sustainable multi-purpose forest management.
- harmonize the interest of the society in sustainable forest management with the interests of forest owners.
- increase the forest area by afforestation up to 26-27% of the land area.
- maintain natural or close-to-nature forest stands composed by indigenous tree species and extend their area in accordance with prevailing site conditions.

Area by land use categories



Source: Hungarian Central Statistical Office (HCSO), data of 30th September 2015

Data on forest land

	1,000 ha	share (%)
Forest land (covered by tree stands or earmarked for regeneration)	1,939.3	20.8 %
Other land in forestry use (nurseries, rides, permanent clearings, roads)	120.4	1.3 %
Total area registered in NFD	2,059.7	22.1 %

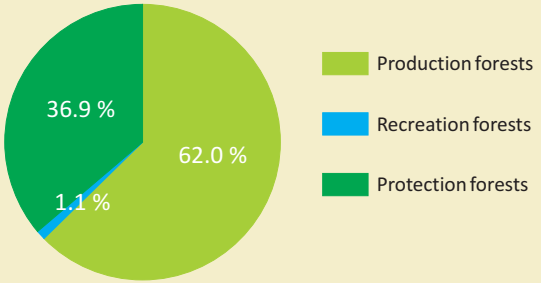
Source: National Forestry Database, data of 1st Jan. 2015

Forest land area and ownership categories

County	Area (km^2)	Forest l. area (km^2)	Forest ratio (%)	In forestry use (km^2)	State (%)	Com-munal (%)	Priva-te (%)	Mixed (%)*
Pest incl. Budapest	6,918	1,706	24.7	1,800	60.6	2.4	35.7	1.3
Fejér	4,359	542	12.4	605	75.2	2.7	21.3	0.8
Komárom-Esztergom	2,265	620	27.4	663	81.0	1.0	17.6	0.4
Veszprém	4,493	1,349	30.0	1,542	65.6	0.4	33.1	0.9
Győr-Moson-Sopron	4,208	807	19.2	889	70.9	0.6	28.4	0.1
Vas	3,336	942	28.2	987	51.4	0.4	48.1	0.1
Zala	3,784	1,198	31.7	1,262	52.7	0.6	41.0	5.7
Baranya	4,429	1,114	25.1	1,166	54.8	1.4	41.8	2.0
Somogy	6,036	1,786	29.6	1,906	56.6	0.8	41.3	1.3
Tolna	3,704	662	17.9	707	57.6	0.5	41.1	0.8
Borsod-Abaúj-Zemplén	7,250	2,099	29.0	2,179	59.9	1.3	38.0	0.8
Heves	3,637	885	24.3	915	59.7	0.3	39.6	0.4
Nógrád	2,545	996	39.1	1,031	55.3	0.2	44.2	0.3
Hajdú-Bihar	6,210	698	11.2	742	47.0	0.6	51.8	0.6
Jász-Nagykun-Szolnok	5,582	328	5.9	355	46.1	2.8	50.4	0.7
Szabolcs-Szatmár-Bereg	5,937	1,256	21.2	1,301	27.1	1.3	70.9	0.7
Bács-Kiskun	8,444	1,766	20.9	1,865	47.3	0.7	49.6	2.4
Békés	5,630	260	4.6	283	62.4	3.7	32.1	1.8
Csongrád	4,263	379	8.9	399	49.2	1.5	49.1	0.2
Total	93,030	19,393	20.8	20,597	55.7	1.2	42.0	1.1

Source: National Forestry Database (NFD), data of 1st Jan. 2015
*Areas having state, private and community property plots.

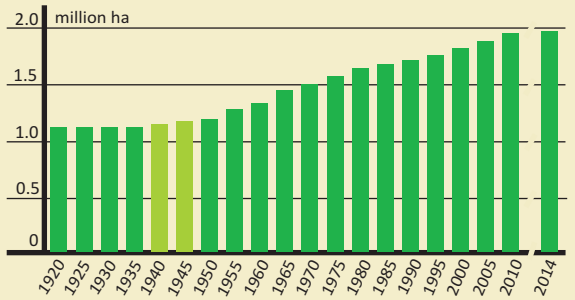
Distribution of forests by primary function



Source: National Forestry Database (NFD), date of 1st Jan. 2015

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

Changes of the forest area (1920-2014)



Source: National Forestry Database (NFD), 2014.
Data of 1940 and 1945 are missing. The light green clounms show estimated data.

The share of the forest area between 1920 and 2014 increased from 11.8% to 20.8%, due to the afforestation programs subsidized by the state. After the transition of the political system in 1989 mainly private forest owners made first afforestations.

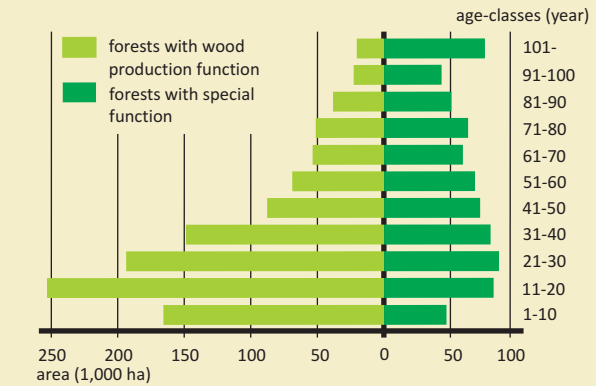
First afforestation - initial plantings (ha)

Growing year	State forests	Non-state forests	Total
2006-2007	512	18,436	18,948
2007-2008	391	6,941	7,332
2008-2009	791	4,377	5,168
2009-2010	1,084	4,012	5,096
2010-2011	143	2,660	2,803
2011-2012	516	4,021	4,537
2012-2013	136	2,394	2,530
2013-2014	201	1,086	1,287

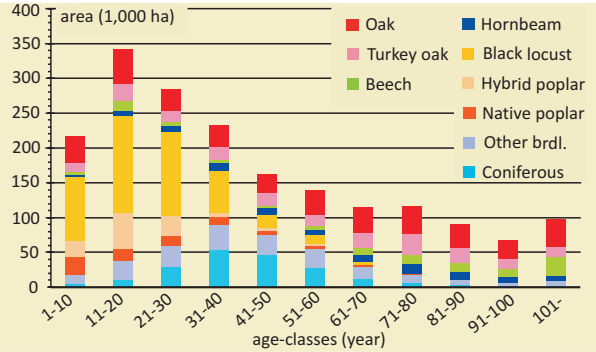
Source: NFCSO Forestry Directorate, 2014

Tree species and age-class distribution

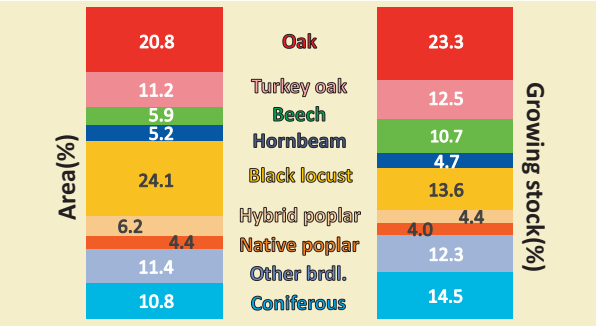
Age-class distribution of the forest area by function



Distribution of the forest area by tree species and age



Tree species distribution of the forest area and the growing stock

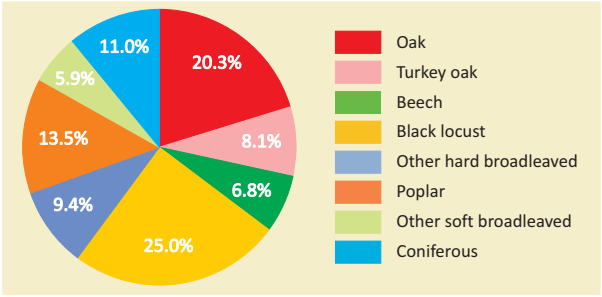


Source: National Forestry Database (NFD), data of 1st Jan. 2015

63% of the forest area is covered by indigenous species and 37% by alien ones (Black locust, Red oak, coniferous), or improved species (Hybrid poplar).

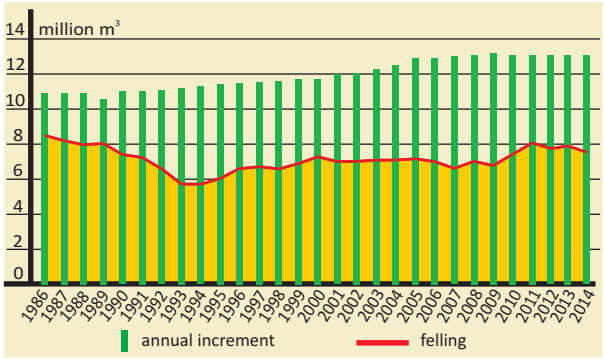
Annual increment, fellings and growing stock

Current increment by species

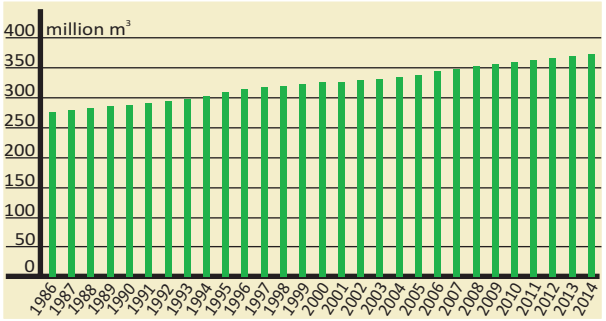


The gross annual increment is **13.1 million gross m³/year**.
It is **0.414 gross m³** per sec, equal to the volume of a cube of 74.5 cm ledge.

Felling and annual increment



Growing stock



Source: NFCSO Forestry Directorate, 2014;
National Forestry Database (NFD), data of 1st Jan. 2015

The growing stock has been steadily increasing since the annual increment has been in each year higher than the volume of felling and mortality.

Gross felling volume

	State forests	Non-state forests	Total
By felling types	1,000 gross m³		
Cleaning	154	146	300
Pre-commercial thinning	411	338	749
Commercial thinning	586	142	728
Final cutting	2,956	2,174	5,130
Selection cutting	37	3	40
Stock maintenance	0	11	11
Sanitary cutting	394	88	482
Other fellings	56	21	77
Total	4,594	2,923	7,517

By tree species groups	1,000 gross m³		
Oak	750	192	942
Turkey oak	704	139	843
Beech	572	86	658
Hornbeam	193	63	256
Black locust	551	989	1,540
Other hard broadleaved	202	62	264
Hybrid poplar	380	720	1,100
Native poplar	139	112	251
Other soft broadleaved	180	128	308
Coniferous	923	432	1,355
Total	4,594	2,923	7,517

Source: NFCSO Forestry Directorate, 2014

Timber products

	Total (1,000 net m³)	Share in assortment composition (%)*
Logs for panel products	123	1.9
Sawlogs	982	15.2
Other raw material for sawmilling	460	7.2
Pitwood	2	0.1
Pulpwood	579	9.1
Bolt for panels	527	8.2
Other industrial wood	409	6.4
Technological chips	37	0.6
Total industrial wood	3,119	48.7
Fuelwood	3,285	51.3
Total removals	6,404	100.0

Source: NFCSO Forestry Directorate, 2014
*Calculated on the basis of statistical sampling.

National Food Chain Safety Office
Forestry Directorate