

FOREST FINLAND

Finnish Forest Research Institute

IN BRIEF

METLA

2011

FOREST FINLAND IN BRIEF

Forest Finland in Brief is a biennial publication which provides concise information on forestry and the forest industry in Finland. It is based on statistical data and includes international comparisons. For a more detailed description, the reader is referred to the *Finnish Statistical Yearbook of Forestry*, which includes some 250 tables and 100 figures.

Ideal growing conditions for conifers, easily workable and valuable tree species, good harvesting conditions and infrastructure, and accessibility to major European markets all combine to make forests a major source of prosperity and well-being in Finland. However, the downturn in the world economics in 2009 is clearly visible in the production and export statistics.

Over 60% of Finland's commercial forests are possessed by non-industrial private forest owners. These small-scale family forest holdings number about 320 000. The annual stumpage income of about EUR 1.5 billion is therefore widely distributed, benefiting a considerable number of forest owners. This is particularly important for rural areas, where alternative sources of income are few.

Vantaa, August 2011

Martti Aarne
Head of Statistics
Forest Statistics Information Service

Compiled at
The Finnish Forest Research Institute
Forest Statistics Information Service
Jokiniemenkuja 1

FIN-01370 Vantaa, Finland
Tel. +358 10 2111

E-mail: yrjo.sevola@metla.fi
Website: www.metla.fi/hanke/3006/index-en.htm
ISBN 978-951-40-2312-5 (paperback)
ISBN 978-951-40-2311-8 (PDF)
ISSN 1455-7045

Editor:
Yrjö Sevola
Language
consultant:
Peter Ovell
Lay-out, graphs:
Maija Heino
Maps: Spatio Oy
Photos:
Erkki Oksanen

International context	4
Major producers and traders	4
Eurasian boreal forest zone.....	6
The European Union	11
Finnish forestry and forest industry	16
National economy, forestry and forest industry	16
Forest industries: production and exports	17
Wood consumption	20
Labour force	24
Roundwood markets.....	25
Silvicultural and forest improvement work	29
Forest resources.....	31
Key contacts in Finnish forest research	42
Other useful contacts.....	46

INTERNATIONAL CONTEXT

Major producers and traders

Finland, with its 23 million forest hectares, is an important supplier of forest products to global markets. Its boreal coniferous forests, which include a significant proportion of broad-leaved species, would permit annual removals of over 60 million m³ (u.b.) on a sustainable basis. Moreover, the infrastructure for roundwood procurement is good. The Finnish forest industry is also highly export-oriented, and in most sectors of the industry, 65% to 90% of production goes abroad. Finland is a major exporter of sawn softwood and paper, particularly graphic papers.

Global roundwood production in 2009

(million m³ under bark):

Industrial wood	1 424	Softwood	1 063
Fuelwood & charcoal	1 851	Hardwood	2 212
	3 275		3 275

The total value of the global export trade of forest products amounted to USD 189 billion (f.o.b) in 2009, of which Finland's share was 5.9%. In the following tables, the Russian Federation is included in Europe.

World production of softwood, 2009

World	1 063	mill. m ³ u.b
Europe	395	
USA	200	
China	137	
Russia	100	
Canada	89	
Brazil	60	
Sweden	59	
Germany	42	
Finland	32	

World imports of roundwood and wood chips, 2009

World	140.4	mill. m ³ u.b
Europe	61.3	
China	33.7	
Japan	22.6	
Austria	9.8	
Germany	8.9	
Finland	7.5	
Canada	7.0	
Sweden	6.2	
Korea Rep.	6.0	

World production of sawn softwood, 2009

World	252.5	mill. m ³
Europe	108.5	
USA	39.6	
Canada	32.0	
Germany	19.7	
Russia	17.1	
Sweden	16.1	
China	13.6	
India	9.9	
Brazil	9.5	
Japan	9.1	
Austria	8.3	
Finland	8.0	

World exports of sawn softwood, 2009

World	88.8	mill. m ³
Europe	62.3	
Canada	18.7	
Russia	15.8	
Sweden	12.3	
Germany	9.2	
Austria	5.7	
Finland	5.1	
Chile	2.2	
Czech Rep.	1.9	
New Zealand	1.9	
Romania	1.6	
USA	1.6	

World production of paper and paperboard, 2009

World	376.8	mill. tonnes
Europe	102.4	
China	90.2	
USA	72.1	
Japan	24.4	
Germany	21.1	
Canada	12.8	
Indonesia	11.5	
Sweden	11.0	
Finland	10.6	
Korea Rep.	10.5	
Brazil	9.4	

World exports of paper and paperboard, 2009

World	105.2	mill. tonnes
Europe	63.2	
Germany	12.3	
USA	11.3	
Sweden	9.9	
Finland	9.6	
Canada	9.5	
China	4.9	
France	4.0	
Austria	3.8	
Indonesia	3.6	
Italy	3.1	

Source: FAO Yearbook. Forest Products 2009

Value of global exports of forest industry products, 2009

	USD billion	USD per capita
World	188.8	28
Europe	105.4	144
USA	19.9	64
Germany	19.7	239
Canada	16.5	500
Sweden	14.1	1 533
Finland	11.1	2 094
China	7.9	6
Russia	7.8	55

Source: FAO
Yearbook. Forest
Products 2009

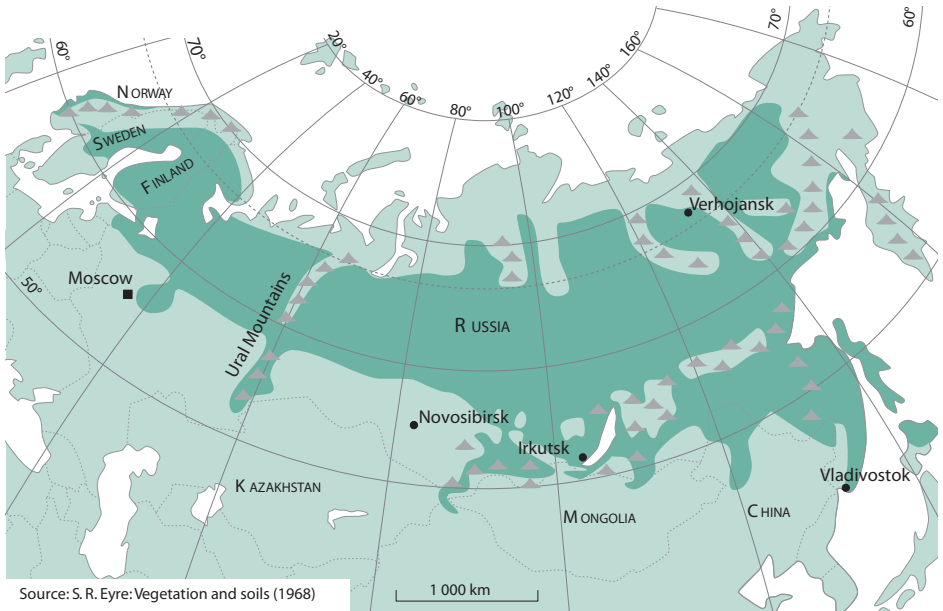
Eurasian boreal forest zone

The Eurasian boreal forest zone extends from the Atlantic coast of Norway to the Russian Pacific coast, a distance of about 9 000 km. In the Nordic countries, the width of the zone is about 1 000 km (60°–70° N); in the east it gradually extends southwards, reaching 50° N in eastern Siberia.

This huge coniferous forest zone of about 900 million hectares is one of the most important providers of roundwood in the world. Scots pine and Norway spruce dominate in the zone's European and western Siberian sections. The most important species in eastern Siberia is the Siberian larch, and in the Russian Far East the Dahurian larch. In the mountainous Far East, the forests are mostly inaccessible.

About 80% of the forests of Norway and Sweden, and almost all the forests of Finland and the Russian Federation belong to the boreal coniferous forest zone. Due to the limited availability of comparable regional forestry information solely on boreal forests, the figures in the next table are national figures.

Eurasian boreal forest zone



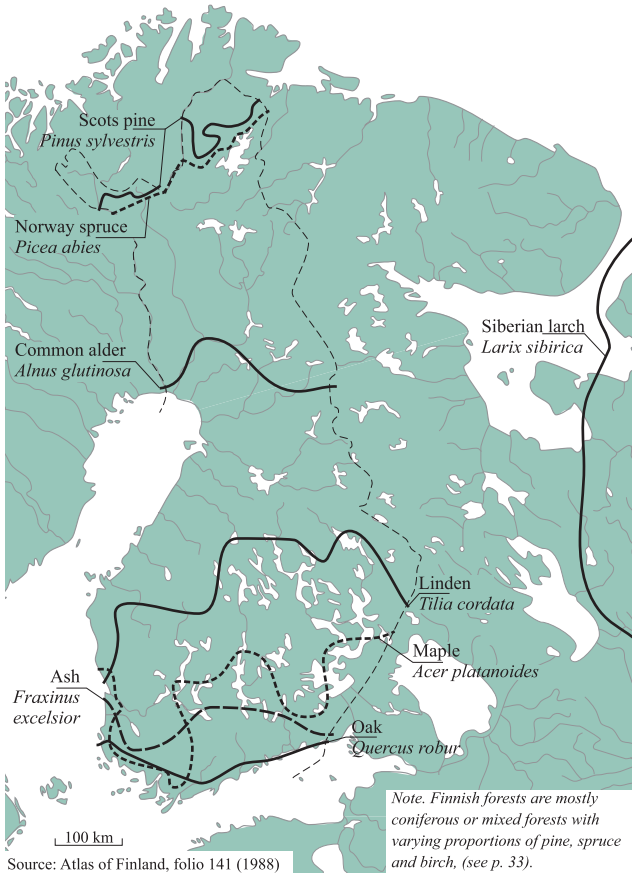
Forest resources of the countries within the Eurasian boreal forest zone, 2010

	Forests, total	Forests available for wood supply	
Forest land , mill. ha			
		% of land area	
Norway	10.1	34	6.4
Sweden	28.6	70	20.6
Finland	22.1	73	19.9
Russia	809.1	49	677.2
Total	870.1	50	724.1
Growing stock on forest land, mill. m ³ over bark			
Norway	997		797
Sweden	3 243		2 651
Finland	2 207		2 024
Russia	81 523		68 234
Total	87 970		73 706
Net annual increment on forest land, mill. m ³ o.b.			
Norway			21.9
Sweden			96.5
Finland			91.0
Russia			852.9
Total			1062.3
Fellings ¹ , mill. m ³ o.b./yr			
Norway			11.0
Sweden			80.9
Finland			59.4
Russia			170.0
Total			321.3

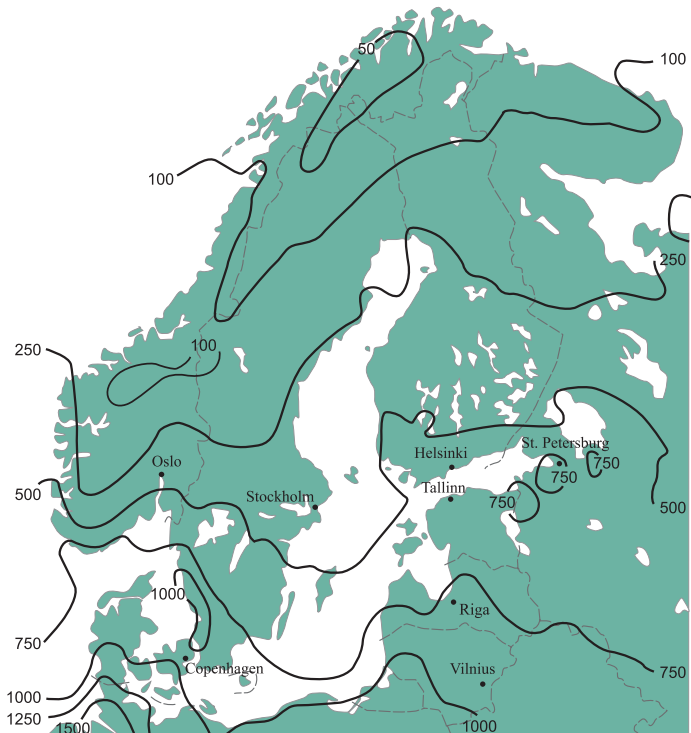
Source: State of Europe's Forests 2011 (UNECE/FAO)

¹ total of stemwood cut, incl. pre-commercial thinnings

Northern limits of selected tree species in Finland and western limit of Siberian larch



Combined deposition of sulphur and nitrogen in the Nordic and the Baltic countries in 2008, in eq/ha/yr



Sources: Finnish Meteorological Institute,
EMEP / MSC-West

The depositions are combined as equivalent in relation to their potentially acidifying effect. For example, 500 eq/ha/yr is equivalent to 8 kg (S)/ha/yr.

The European Union

The European Union, which Finland joined in 1995, is the most important customer region for Finnish forest-industry products, accounting for about 50% of Finland's sawnwood exports and over 60% of paper and paperboard exports. A strong focus on customers and markets has also led to considerable Finnish investments in forest-product manufacturing in Europe (see p. 14). The EU's eastward enlargements in 2004 and 2007 brought an additional 30 million hectares of commercial forests into the Union.

Forests available for wood supply in the European Union, 2010

Country	Forest area mill. ha	Growing stock mill. m ³ o.b.	Net increment mill. m ³ o.b.	Fellings ¹ mill. m ³ o.b.
Austria	3.3	1 107	25.1	23.5
Belgium	0.7	164	5.3	3.9
Bulgaria	2.9	435	14.7	7.8
Cyprus	0.0	3	0.0	0.0
Czech Republic	2.3	738	23.1	17.9
Denmark	0.6	112	5.8	2.4
Estonia	2.0	398	11.2	5.7
Finland	19.9	2 024	91.0	59.4
France	15.1	2 453	94.4	64.3
Germany	10.6	3 466	107.0	59.6
Greece	3.6	170	3.8	1.8
Hungary	1.7	259	11.1	6.9
Ireland	0.7	74	5.2	2.8
Italy	8.1	1 285	32.5	12.8
Latvia	3.1	584	16.5	12.4
Lithuania	1.9	408	10.8	8.6
Luxembourg	0.1	15	0.7	0.2
Malta	0.0	0	0.0	0.0
Netherlands	0.3	56	2.3	1.6
Poland	8.5	2 092	67.6	40.7
Portugal	1.8	154	18.9	14.2
Romania	5.2	1 100	34.6	17.2
Slovakia	1.8	478	13.2	10.4
Slovenia	1.2	390	9.2	3.4
Spain	14.9	784	45.8	16.6
Sweden	20.6	2 651	96.5	80.9
United Kingdom	2.4	340	20.7	10.5
EU total	133.3	21 740	767.0	485.5

¹ total of stemwood cut, incl. pre-commercial thinnings

Source: State of Europe's Forests 2011 (UNECE, FAO)

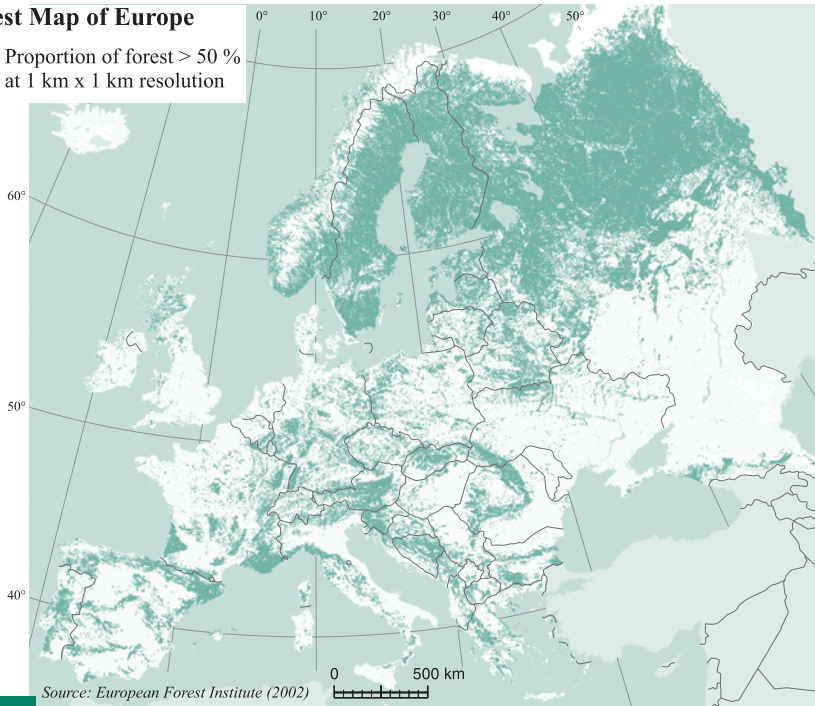
Duration of the growing season in Europe

Average periods in days (1961–90) during which daily mean temperatures are above +5 °C



Forest Map of Europe

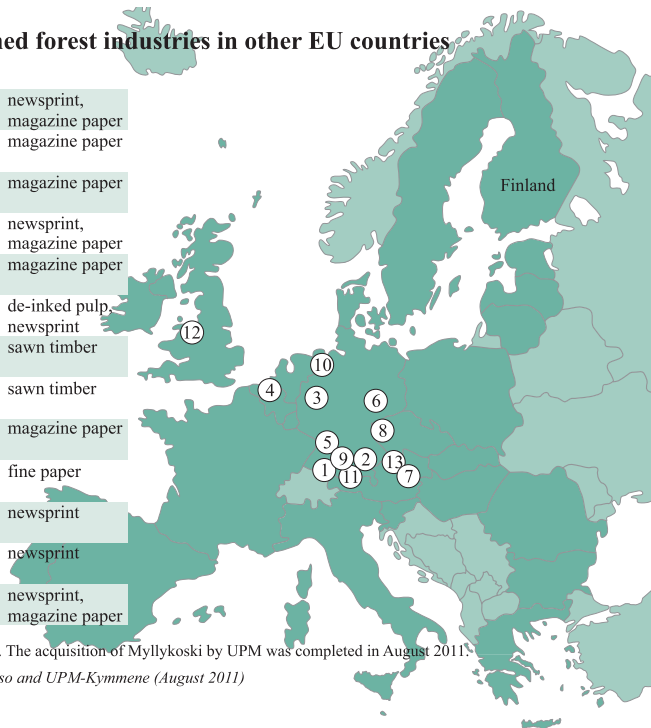
■ Proportion of forest > 50 %
at 1 km x 1 km resolution



Some major Finnish-owned forest industries in other EU countries

(excl. Sweden)

1. <i>Lang Papier</i> , Germany (Myllykoski)	newsprint, magazine paper
2. <i>MD Plattling</i> , Germany (Myllykoski)	magazine paper
3. <i>Stora Enso Kabel</i> , Germany (Stora Enso)	magazine paper
4. <i>Stora Enso Langerbrugge</i> , Belgium (Stora Enso)	newsprint, magazine paper
5. <i>Stora Enso Maxau</i> , Germany (Stora Enso)	magazine paper
6. <i>Stora Enso Sachsen</i> , Germany (Stora Enso)	de-inked pulp, newsprint
7. <i>Stora Enso Wood Products</i> , Austria (Stora Enso)	sawn timber
8. <i>Stora Enso Wood Products</i> , Czech Republic (Stora Enso)	sawn timber
9. <i>UPM Augsburg</i> , Germany (UPM-Kymmene)	magazine paper
10. <i>UPM Nordland Papier</i> , Germany (UPM-Kymmene)	fine paper
11. <i>UPM Schongau</i> , Germany (UPM-Kymmene)	newsprint
12. <i>UPM Shotton Paper</i> , Great Britain (UPM-Kymmene)	newsprint
13. <i>UPM Steyrermühl</i> , Austria (UPM-Kymmene)	newsprint, magazine paper



Stora Enso is a Finnish-Swedish company. The acquisition of Myllykoski by UPM was completed in August 2011.

Sources: Websites of Myllykoski, Stora Enso and UPM-Kymmene (August 2011)

Finnish exports of forest-industry products to the European Union, 2010

	Sawn goods	Plywood and veneer	Particle board	Fibre board	Wood pulp	Paper and paperboard
	1 000 m ³				1 000 m.t.	
Austria	87	16	-	-	6	56
Belgium	105	15	-	0	120	594
Bulgaria	0	0	0	-	0	10
Cyprus	15	0	-	0	-	6
Czech Republic	6	4	-	-	1	22
Denmark	116	37	3	2	0	103
Estonia	59	1	7	1	4	68
France	606	64	0	0	115	360
Germany	381	159	-	0	555	2 430
Greece	54	0	-	-	20	111
Hungary	18	7	0	-	0	95
Ireland	34	1	-	0	0	13
Italy	134	27	-	0	191	233
Latvia	3	0	0	-	0	25
Lithuania	4	7	0	-	11	32
Luxembourg	0	0	-	-	-	5
Malta	-	-	-	0	-	0
Netherlands	222	114	-	1	72	218
Poland	41	22	0	-	36	458
Portugal	10	3	-	0	53	12
Romania	1	0	-	-	3	12
Slovakia	4	2	-	-	9	19
Slovenia	0	0	-	-	0	3
Spain	113	24	-	0	93	656
Sweden	20	77	57	8	186	402
United Kingdom	701	176	3	20	119	1 295
EU, total	2 731	760	70	31	1 593	7 244
% of total exports	47	86	76	89	69	65

Source: National Board of Customs

FINNISH FORESTRY AND FOREST INDUSTRY

National economy, forestry and the forest industry

In order to achieve economic growth in post-war Finland, major investment was made in the pulp and paper industry, leading to a doubling of production between 1955 and 1965. While growth has continued in the forest industry, there has also been substantial growth in the metal and engineering industries and, later, in the high-tech electronics industry. The impact of the downturn in the world economy in 2009 is still to be seen particularly in wood-products industry.

In 1980, roundwood and forest-industry products represented 43% of the total value of goods exported from Finland; the corresponding figure in 2010 was 20%. The same diversification of production is also seen in the structure of the gross domestic product: in 1980, forestry accounted for 4.6% of GDP and primary forest-industry production for 6.7%, while in 2010 the respective figures were 1.9% and 2.8%. In employment, forestry accounted for 2.7% and the forest industry for 5.2% of the workforce in 1980. In 2010, the corresponding figures were 0.9% and 1.9%.

Flourishing engineering and service industries have also developed around forestry and the forest industry. Strong mutual connections have contributed to the success of the sector. Finnish engineering and service industry companies are in a strong position globally, e.g. in the manufacture of timber harvesters and paper machines and in providing consultancy services.

Forestry and the forest industry in the Finnish national economy, 2010

Gross domestic product

at market prices		EUR 180.3 billion
at basic prices		EUR 157.5 billion
of which	forestry	1.9 %
	forest industry	2.8 %

Total employment

		2.45 million persons
of which	forestry	0.9 %
	forest industry	1.9 %

Total exports of goods

		EUR 52.4 billion
of which	forestry	0.2 %
	forest industry	20.2 %

Source: Statistics
Finland

Finland is among the major suppliers of forest-related products to the world market, particularly printing and writing papers, and one of the biggest importers of roundwood. In 2010, the total export value of Finnish forest-industry products amounted to EUR 10.8 billion. Germany and the United Kingdom are the foremost importers of Finnish forest-industry products, together accounting for 29% of the total.

Forest industry: production and exports

Production of Finnish forest industry, 2008–2010

Product	Unit 1 000	2008	2009	2010
Sawn goods	m ³	9 881	8 072	9 473
Plywood	"	1 265	800	980
Particle board	"	270	170	220
Fibreboard	m.t.	66	46	57
Mechanical pulp	"	4 465	3 297	3 775
Chemical pulp	"	7 159	5 518	6 733
Pulp, total	"	11 624	8 815	10 508
Newsprint, magazine paper	"	5 894	4 235	4 685
Fine paper	"	2 940	2 621	2 781
Kraft and other paper	"	1 394	1 240	1 462
Paper, total	"	10 229	8 096	8 929
Paperboard	"	2 897	2 506	2 830
Paper and paperboard	"	13 126	10 602	11 759

Source: Finnish Forest Industries Federation

Finnish forest industry exports, 2008–2010

Product	Unit	2008	2009	2010
	1 000			
Sawn goods	m ³	5 992	5 109	5 838
Plywood	"	1 083	683	834
Particle board	"	88	49	92
Fibreboard	m.t.	41	34	35
Mechanical pulp	"	135	88	165
Chemical pulp	"	2 090	1 370	1 994
Newsprint	"	303	79	180
Magazine paper	"	5 286	4 046	4 358
Fine paper	"	3 048	2 749	3 013
Kraft paper	"	369	287	377
Other paper	"	291	273	330
Paper, total	"	9 297	7 434	8 259
Paperboard	"	2 599	2 253	2 545
Converted paper products	"	409	321	349
Total paper and paperboard	"	12 305	10 008	11 153

Source: National Board of Customs

Value of Finnish forest industry exports, 2010

Country	EUR mill.				
	Sawn goods	Wood-based panels, other wood products	Pulp	Paper, paper-board, converted products	Total
Austria	18	13	3	41	75
Belgium	21	9	58	352	440
Bulgaria	0	0	0	7	7
Cyprus	3	1	-	5	9
Czech Republic	1	5	0	18	24
Denmark	30	29	0	89	148
Estonia	12	12	1	59	84
France	122	74	69	236	501
Germany	80	130	296	1 514	2 020
Greece	11	8	12	65	96
Hungary	4	3	0	68	75
Ireland	7	2	0	9	18
Italy	32	20	115	158	325
Latvia	1	1	0	23	25
Lithuania	1	5	7	22	35
Luxembourg	0	0	-	5	5
Malta	-	0	-	0	0
Netherlands	42	50	44	171	307
Poland	8	14	22	321	365
Portugal	2	3	28	8	41
Romania	0	1	2	10	13
Slovakia	1	4	5	14	24
Slovenia	0	1	0	3	4
Spain	23	19	55	368	465
Sweden	6	105	54	307	472
United Kingdom	151	92	71	798	1 112
EU total	577	601	843	4 667	6 688
Other Europe	31	138	82	877	1 128
Europe total	608	740	925	5 544	7 817
Asia	277	137	271	733	1 418
Africa	286	2	39	142	469
North America	1	21	3	557	582
Latin America	0	2	7	306	315
Oceania	3	4	0	144	151
Grand total	1 175	905	1 245	7 425	10 750

Source: National Board of Customs

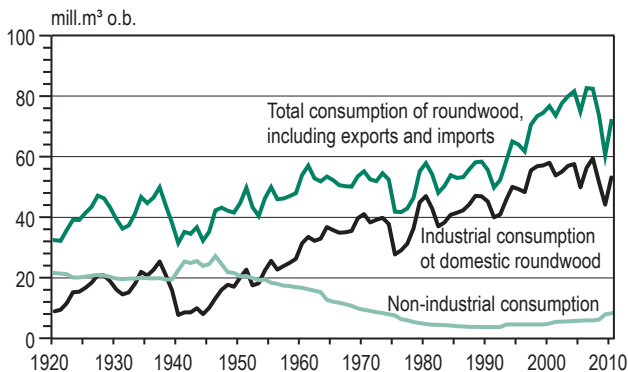
Wood consumption

Despite a multiple increase in wood pulp production, total roundwood consumption in Finland remained at approximately the same level throughout the 30-year period from 1960. Many structural changes, such as reductions in fuelwood consumption and in roundwood exports, together with an increase in the use of industrial wood residues, contributed to rather modest increases in total wood consumption until the year 1993.

The years 1994 to 1996 were the first in which annual wood consumption exceeded 60 million m³ o.b., and since 1997 this has risen to more than 70 million m³ (except in 2009). Industrial wood consumption has shown a continuous strong upward trend but it is now levelling off due to capacity cuts particularly in paper industries.

In 2010, total roundwood consumption reached 71.7 million m³ (including imports and exports), of which industrial wood consumption accounted for 62.5 million m³. Imported roundwood (9.3 mill. m³) accounted for 15% of industrial wood consumption.

Roundwood consumption in Finland, 1920–2010



Non-industrial consumption does not include exports of roundwood.

Source: Finnish Forest Research Institute

Roundwood consumption during 5-year periods, 1995–2009

Consumption category	mill. m ³ o.b./yr		
	1995–99	2000–04	2005–09
Exports	1.0	0.8	1.1
Industrial roundwood	53.4	56.2	52.3
sawmills and wood-based panels	27.1	29.0	25.7
pulp industries	26.3	27.2	26.6
Fuelwood	4.6	5.5	6.5
Domestic roundwood total	59.0	62.5	59.9
Imported wood (industries)	9.8	15.3	15.0
Total consumption	68.8	77.8	74.9

Note. In addition, pulp industries use wood residues which originate mainly from the sawmilling industry. See p. 23

Source: Finnish Forest Research Institute

Roundwood consumption and roundwood exports, 2008–2010

		mill. m ³ o.b.		
Consumption category		2008	2009	2010
Total consumption in Finland		72.8	59.5	70.8
	Pine	27.5	22.2	27.8
	Spruce	23.8	17.9	22.0
	Hardwood	17.7	14.6	15.1
	Unspecified	3.7	4.7	5.9
Domestic roundwood		58.0	52.1	61.5
	Pine	25.1	20.8	26.6
	Spruce	21.2	16.9	20.8
	Hardwood	10.6	11.8	11.1
	Unspecified (energy wood) ¹	1.1	2.6	3.0
	Imported wood	14.7	7.3	9.3
	Pine	2.4	1.4	1.2
	Spruce	2.6	1.0	1.2
	Hardwood	7.1	2.8	4.0
	Unspecified (wood chips)	2.6	2.1	2.9
Exports, incl. poles		1.1	1.0	0.9
	Pine	0.9	0.8	0.8
	Spruce	0.1	0.1	0.1
	Hardwood	0.1	0.1	0.0

Source: Finnish
Forest Research
Institute

¹ stemwood used in heating and power plants

Wood consumption in sawmilling, plywood and pulp industries, 2008–2010

mill. m³ o.b.

Year	Domestic roundwood Conif. Hardwood	Imported wood	Sawmill chips	Total	
Sawmilling					
2008	21.0	0.2	0.9	–	22.1
2009	17.3	0.2	0.9	–	18.4
2010	21.2	0.2	0.5	–	21.9
Plywood and veneer industry					
2008	1.9	0.8	0.8	–	3.5
2009	1.3	0.6	0.1	–	2.0
2010	1.5	0.8	0.1	–	2.3
Mechanical pulp industry					
2008	7.3	1.2	1.5	2.6	12.6
2009	5.5	1.3	0.7	1.6	9.1
2010	6.4	1.4	0.8	1.6	10.2
Chemical pulp industry					
2008	13.7	5.1	11.5	6.4	36.7
2009	11.2	6.4	5.5	4.5	27.6
2010	16.0	5.4	7.9	4.8	34.2

Source: Finnish
Forest Research
Institute

Labour force

During the peak season for roundwood harvesting, i.e. the winter season from October to March, over 6 000 professional forest workers are fully employed in this work. The machinery used includes about 2 000 efficient, multi-function timber harvesters and 2 100 forwarders. During the other half of the year the labour and machinery inputs are about two thirds of those of the peak season. This seasonal variation in the demand for labour in forestry work is to an extent counterbalanced by the silvicultural work undertaken from May to September in particular. The annual labour input of non-industrial private forest owners is equivalent to over 4 000 man-years, of which about half relates to roundwood harvesting and half to silvicultural work.

In total, forestry employed 22 000 people in 2010, compared with 63 000 in 1980. This sharp contraction in employment occurred in the period up to 1996, after which employment in forestry has remained at about the same level. While mechanisation in roundwood harvesting has decreased the demand of labour, new areas of work have also emerged, for instance the harvesting and chipping of felling residues and small-sized trees for energy purposes. A similar downward trend in employment has also occurred in primary forest-industry production, which employed 120 000 people in 1980, but only 46 000 in 2010. Paper production which has to some extent decreased in recent years is, however, twice as much as in 1980.

Employment in forestry and forest industry, 2008–2010

	1 000 persons		
	2008	2009	2010
Forestry	25	23	22
Forest industries	59	47	46
Forest sector, total	83	70	69
Employment, total	2 531	2 457	2 447
Unemployed, total	172	221	224
Unemployment rate, %	6.4	8.2	8.4

Source: Statistics Finland

Employment in forest industry, 2008–2010

Branch of industry	1 000 persons		
	2008	2009	2010
Sawmilling	10	8	9
Wood-based panels	7	5	4
Other wood-products industry ¹	15	13	14
Pulp and paper industry	23	18	17
Converted paper products	4	3	3
Forest industry, total	59	47	46

¹ including
carpentry products
and pre-fabricated
wooden houses

Source: Statistics
Finland

Commercial roundwood removals in 2010 amounted to 52.0 million m³ o.b., of which 78% came from non-industrial private forests. Removals have been at a high level since 1997 (except in 2009) but there has not been much increase since then. Instead, the growing need for industrial wood has been met by imported roundwood. However, recently the situation has changed as forest industries cut their production capacities in 2008 and 2009. Domestic roundwood procurement, however, was not so much affected as roundwood imports dropped.

Harvesting in non-industrial private forests is mainly carried out by the forest industry or by its wood-procurement organisations. In 2010, the amount of harvesting carried out or organised by the forest owners themselves totalled 6.2 million m³, or 15% of the commercial roundwood removed from their forests.

Roundwood prices (excl. spruce logs) were falling in real terms between 1999 and spring 2006, after which they began to rise quickly. In summer 2007 the prices for coniferous logs were at their highest for 30 years. But the prices also came down quickly. For other types of roundwood the variation in prices was less marked. During the years the position of spruce logs has strengthened and that of birch logs weakened. The latter applies also to spruce pulpwood (see p. 28).

Roundwood markets

Roundwood procurement and consumption in Finland, 2010

	mill. m ³ o.b.
Sources	
Commercial roundwood	
from private-owned forests	40.7
from industry-owned forests	5.2
from state-owned forests	6.1
Other wood (mostly priv. for.) ¹	9.3
Domestic roundwood, total	61.3
Imported wood	12.2
Roundwood procurement, total	73.5
Consumption	
Sawmilling	21.9
Wood-based panels	2.4
Other wood-based products	0.3
Mechanical pulp industry	8.5
Chemical pulp industry	29.4
Industry, total	62.5
Household and other fuelwood ¹	8.4
Exports of roundwood	0.9
Roundwood consumption, total	71.8

¹ including stemwood used in heating and power plants

About 60% of imported wood comes from Russia. In addition, sawmills furnished the pulp industry with 6.4 mill. m³ of wood chips and other residues.

Source: Finnish Forest Research Institute

Roundwood removals by ownership category, 2008–2010

Ownership category	mill. m ³		
	2008	2009	2010
Private forests ¹	41.1	32.1	40.7
Forest industries	5.3	4.3	5.2
State forests	5.3	5.0	6.1
Commercial removals, total	51.7	41.4	52.0
Other removals (mostly priv.) ²	7.5	9.0	9.3
Grand total	59.1	50.4	61.3

¹ including municipalities and parishes

² mostly for energy use

Source: Finnish Forest Research Institute

Removals by roundwood type, 2008–2010

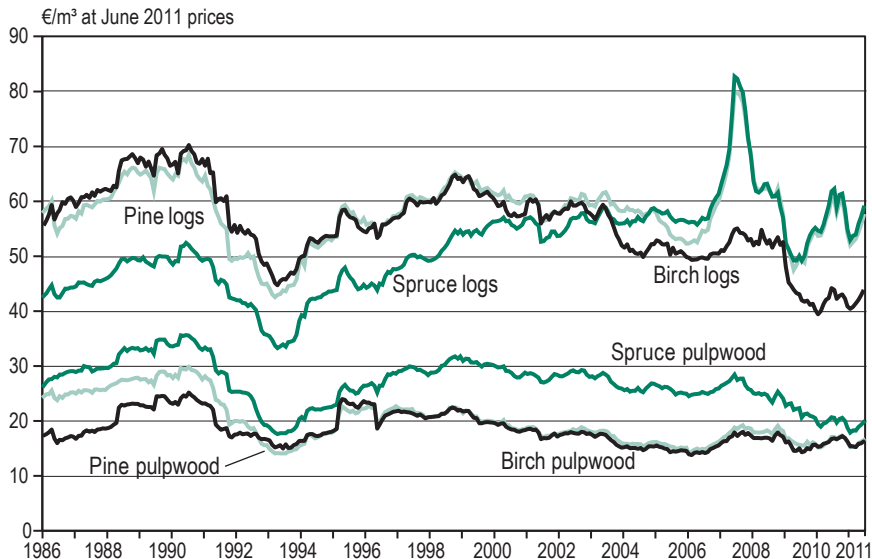
Roundwood type	mill. m ³		
	2008	2009	2010
Sawlogs	21.5	16.8	21.6
pine logs	9.8	7.6	9.5
spruce logs	10.5	8.5	11.2
hardwood logs	1.1	0.8	0.9
Pulpwood	30.2	24.6	30.4
pine pulpwood	14.6	11.0	14.2
spruce pulpwood	8.2	6.9	8.4
hardwood pulpwood	7.4	6.7	7.8
Commercial removals, total	51.7	41.4	52.0
Other removals	7.5	9.0	9.3
Grand total	59.1	50.4	61.3

Source: Finnish Forest Research Institute

Real stumpage prices in non-industrial private forestry, 1986–2011

Stumpage prices are unit prices paid for different kinds of standing (uncut) timber.

Source: Finnish Forest Research Institute



Silvicultural and forest improvement work

Currently, about 120 000 hectares of Finnish forest land are planted or seeded annually for forestry after clear felling. The species chosen are almost exclusively native tree species. Seed-tree or shelterwood fellings conducted to encourage natural regeneration account for about 20 000 hectares annually.

Silvicultural measures are applied to about 250 000 hectares of seedling stands annually. About half of Finland's mires (wetlands) have been drained for forestry, but forest ditching has ceased and efforts are concentrated instead on cleaning existing ditches. Forest fertilizers are applied to some 50 000 hectares annually.

The total cost of silvicultural and forest improvement work was EUR 289 million in 2010. Some 70% of the EUR 206 million spent in non-industrial private forestry was accounted for by self-financing or own work input of the forest owners themselves, and the rest was financed through state subsidies. In addition, state subsidies were given for harvesting small-sized trees for energy purposes (EUR 18 mill.).

Felling activities, 2008–2010

Type of felling	1 000 ha		
	2008	2009	2010
Thinnings	487	303	480
Clear fellings	108	93	145
Seed tree and shelterwood fellings	21	18	24
Removal of seed trees and shelterwood	46	44	53
Other fellings	11	13	27
Total	673	470	729
% of forest area	2.9	2.1	3.2

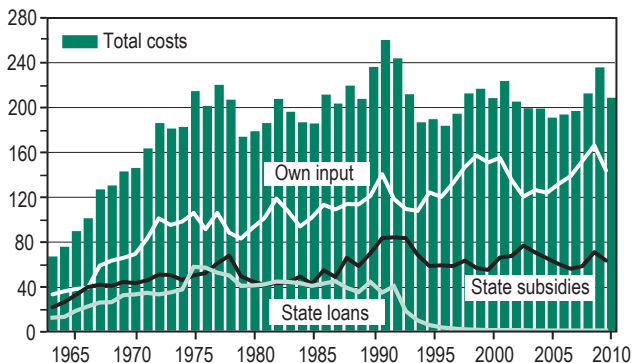
Source: Finnish Forest Research Institute

Silvicultural and forest improvement work, 2008–2010

Type of work		2008	2009	2010
Clearing of regeneration areas	1 000 ha	63	53	49
Soil preparation	"	136	110	98
Artificial regeneration	"	128	123	109
Seedling stand improvement	"	256	257	230
Forest fertilization	"	51	46	45
Maintenance of drainage	"	61	69	59
Construction of forest roads	km	826	857	740
Improvement of forest roads	"	3 573	3 273	3 324
Total costs	EUR mill.	304	305	289

Source: Finnish Forest Research Institute

Financing of silvicultural and forest improvement work in non-industrial, private forests, 1963–2010



Source: Finnish Forest Research Institute

Information on Finland's forest resources is collected through surveys carried out by the Finnish Forest Research Institute. Systematic ground sampling has been used. The periods during which the national forest inventory has been undertaken are as follows:

I	1921–24	V	1964–70	IX	1996–2003
II	1936–38	VI	1971–76	X	2004–2008
III	1951–53	VII	1977–84	XI	2009–
IV	1960–63	VIII	1986–94		

Despite the 13% reduction in Finland's forest area in the 1940s due to the territory lost in the Second World War, Finland's wood resources are currently more plentiful than in the pre-war years. According to the first national forest inventory, the total growing stock volume was 1 588 million m³ over bark. The latest estimate is 2 206 million m³ o.b. In recent years, the annual volume increment has exceeded the drain by about 30 million m³ (see p. 39).

The structure of Finnish forests has changed significantly over the past 80 years. The forests now have a more even age structure. Scots pine accounts for 50% of the growing stock, Norway spruce for 30% and broad-leaved species (mostly birch) for 20%. This distribution has been rather stable but during the last 20 years the share of Norway spruce has been diminishing. Scots pine is the dominant species on 65% of Finland's forest land area.

The area of productive forest land (i.e. land capable of yielding at least 1 m³/ha/yr) is 20.1 million hectares, and that of low productive forest land 2.7 million hectares. Thus, the total wood-growing area is 22.8 million hectares. The amount of this set aside for conservation purposes is 1.52 million hectares (6.7%). This land, on which all forestry activities are prohibited, lies almost entirely in the northern part of the country. According to the internationally defined concept of forest land, which sets a canopy cover of 10% as the threshold between forest land and other land, the forested land area is 22.2 million hectares.

The following tables are based on the 10th national forest inventory. Nature conservation areas are included.

Principal land use categories in Finland, 2004–2008

	mill. ha
Total area	33.8
Inland watercourses	3.4
Land area	30.4
Arable land	2.7
Built-up areas	1.0
Transport routes	0.4
Forest land	20.1
Low productive forest land	2.7
Unproductive land ¹	3.3
Roads, depots	0.2
Forestry land, total	26.3
(of which nature conservation areas)	(2.8)

¹ treeless hills and mires

Source: Finnish Forest Research Institute

A site is recorded as mire if it is peat-covered or mire plants account for more than three quarters of the field layer flora.

In transforming mires the effect of drainage is perceptible in the growing stock. Transformed mires have reached full post-drainage productivity.

Source: Finnish Forest Research Institute

Mineral soils and mires and their drainage, 2004–2008

	mill. ha
Mineral soils	17.2
Mires	8.9
Roads, depots	0.2
Forestry land, total	26.3
Spruce mires	2.2
Pine mires	5.1
Treeless mires	1.6
Total	8.9
Undrained mires	4.1
Recently drained mires	0.2
Transforming mires	2.4
Transformed mires	2.2
Total	8.9

Dominant tree species of forest stands, 2004–2008

		% ¹
Temporarily non-stocked		1.4
Scots pine	<i>Pinus sylvestris</i>	65.0
Norway spruce	<i>Picea abies</i>	23.9
Other conifers		0.1
Silver birch	<i>Betula pendula</i>	2.7
Downy birch	<i>Betula pubescens</i>	6.1
Aspen	<i>Populus tremula</i>	0.3
Alder	<i>Alnus sp.</i>	0.3
Other broadleaves		0.1
Total		100.0
Forest land area	(mill. ha)	20.1

¹ on forest land area

Note that of volume, share of the broad-leaved species is much greater.

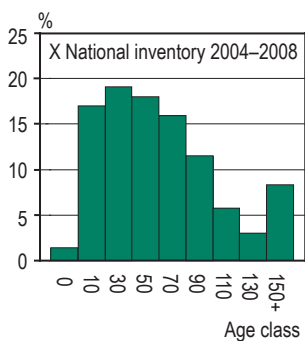
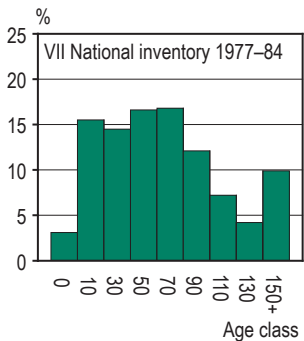
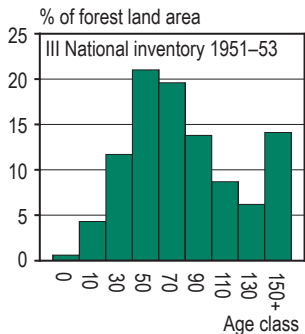
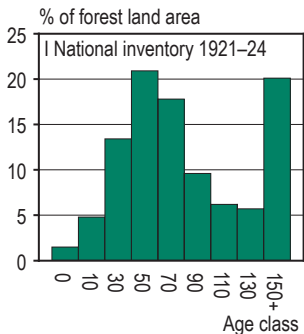
Source: Finnish Forest Research Institute

Forest resources in Finland, 2004–2008

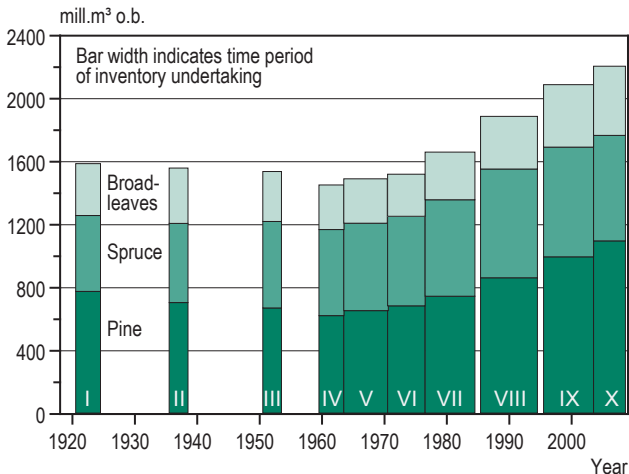
Forest and low prod. for. land	mill. ha	22.8
Growing stock volume	mill. m ³	2 206
Scots pine	"	1 098
Norway spruce	"	669
Birch	"	365
Other broadleaves	"	73
Volume increment	mill.m ³ /year	99.5
Scots pine	"	47.4
Norway spruce	"	29.8
Birch	"	18.3
Other broadleaves	"	4.1

Source: Finnish Forest Research Institute

Age structure development of the Finnish forests



Growing stock volumes according to ten national forest inventories



Note. Finland lost 13% of its forested area in 1944 due to the war.

Source: Finnish Forest Research Institute

Forest ownership in Finland, 2004–2008

Ownership category	Forest land	Forestry land	%
	mill. ha	mill. ha	
Non-industrial private	12.1	13.7	52.1
Industrial private	1.8	2.0	7.7
State	5.1	9.2	35.1
Other public	1.1	1.3	5.0
Total	20.1	26.3	100.0

Source: Finnish Forest Research Institute

Non-industrial, private ownership of forests, 2009

		%
	Ownership group	Of holdings/ owners Of forest land area
	Family ownership	76 75
	Group ownership	12 14
	Heirs ownership	11 11
	Wage earners	30 26
	Farmers	16 26
	Other entrepreneurs	7 8
	Pensioners	45 39
	Others	2 2
	Age < 40 years	6 8
	Age 40–59 years	37 40
	Age 60+ years	56 53
	Reside on holding	42 52
	Reside in the same municipality	22 19
	Reside elsewhere	36 29
	Rural place of residence	56 64
	Semi-urban place of residence	19 15
	Urban place of residence	25 20

The figures apply to forest holdings with 5+ ha of forest land, of which there are about 320 000, and their corresponding forest land area is 12.0 million ha.

Source: Finnish Forest Research Institute

Growing stock volume by ownership category, 2004–2008

Ownership category	Scots pine	Norway spruce	Broad-leaves	mill. m ³ o.b.	
				Total	%
Non-industrial private	632	484	305	1 421	64.4
Industrial private	119	52	35	206	9.3
State	284	97	73	454	20.6
Other public	63	36	26	125	5.7
Total	1 098	669	439	2 206	100.0

Source: Finnish Forest Research Institute

Annual volume increment by ownership category, 2004–2008

Ownership category	Scots pine	Norway spruce	Broad-leaves	mill. m ³ o.b./yr	
				Total	%
Non-industrial private	28.0	22.5	16.4	66.9	67.2
Industrial private	5.9	2.7	1.8	10.3	10.4
State	10.8	3.1	2.9	16.7	16.8
Other public	2.7	1.5	1.3	5.5	5.6
Total	47.4	29.8	22.4	99.5	100.0

Source: Finnish Forest Research Institute

The data refer to stands on forest land.

State forests are located mainly in northern Finland where the climate is less favourable.

Source: Finnish Forest Research Institute

Mean growing stock volume and annual increment by ownership category, 2004–2008

Ownership category	Mean volume m ³ /ha	Increment m ³ /ha/yr	Increment %
Non-industrial private	116	5.5	4.7
Industrial private	113	5.7	5.0
State	81	3.1	3.8
Other public	114	5.1	4.5
Total	107	4.9	4.6

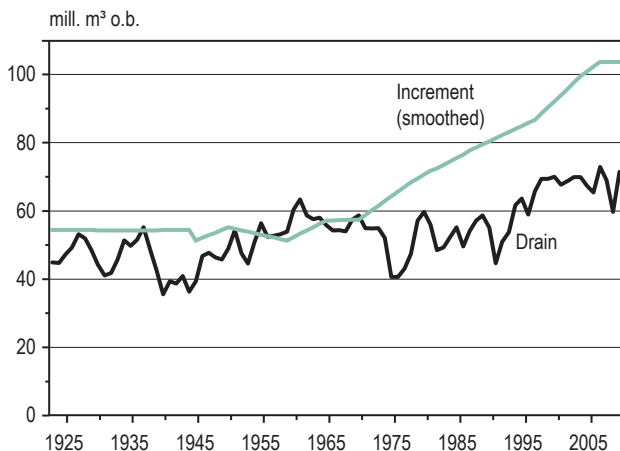
Increment (I) and drain (D) in 5-year periods

Increments for 2005–09 are forecasts. Drain refers to losses in growing stock due to fellings, silvicultural measures and natural mortality.

Source: Finnish Forest Research Institute

		mill. m ³ o.b./yr		
		1995–99	2000–04	2005–09
Scots pine	I	39.8	46.1	47.6
	D	25.1	27.8	27.3
Norway spruce	I	27.5	28.6	31.7
	D	27.8	28.5	24.4
Broadleaves	I	20.1	21.7	23.6
	D	12.5	13.4	15.2
Total	I	87.4	96.4	102.9
	D	65.4	69.7	66.8

Increment and drain of the growing stock, 1923–2010



Source: Finnish Forest Research Institute

Multiple production of forests, 2008–2010

Product		2008	2009	2010	
Commercial roundwood (ind.)	mill. m ³ o.b.	52	41	52	¹ for energy production
Other roundwood (energy)	mill. m ³ o.b.	7	9	9	
Harvested logging residues ¹	mill. m ³ o.b.	3	3	3	
Commercial forest berries	t ²	5 986	6 820	9 097	² quantities offered for sale, in tonnes
Commercial forest mushrooms	t ²	492	590	855	
Lichen picked for exporting	t	197	180	194	
Deer venison	t	8 825	9 488	10 351	Sources: Finnish Forest Research Institute, Finnish Game and Fisheries Research Institute
Hare venison	t	556	575	501	
Forest game birds	t	148	123	204	
Fur-bearing animals	1000 indiv.	319	347	331	
Reindeer meat production	t	2 400	2 300	2 400	

Forest condition in Finland, 2004–2008

Forest land area, total 20.1 mill. ha

Extent of damage affecting stand quality	% forest land
Totally damaged	0.2
Severely damaged	4.2
Moderately damaged	23.9
Total	28.3

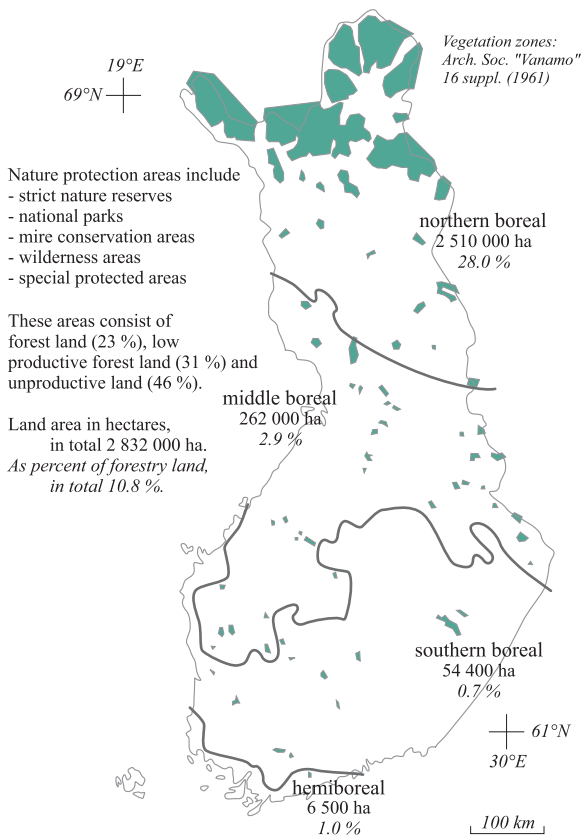
Damage agents

In two-storeyed stands only damage affecting the dominant storey is taken into account.

Natural competition	0.7
Abiotic factors	8.4
Human interference	1.1
Moose	3.2
Insects	0.4
Fungi	5.3
Unidentified	9.3
Total	28.3

Source: Finnish Forest Research Institute

Nature protection areas by vegetation zone



Source: Finnish Environment Institute (2011)

KEY CONTACTS IN FINNISH FOREST RESEARCH

Finnish Forest Research Institute

(Metsäntutkimuslaitos, Metla)

Headquarters

Jokiniemenkuja 1, FI-01370 Vantaa
Tel. +358 10 2111, fax +358 10 211 2103
Website: www.metla.fi
(Management, Administration)

Vantaa Unit

Jokiniemenkuja 1, FI-01370 Vantaa
Tel. +358 10 2111, fax +358 10 211 2202
Website: www.metla.fi/va/
(Forest Resources and Economics, Forest Ecology and Production)

Joensuu Unit

Yliopistokatu 6, FI-80100 Joensuu
Tel. +358 10 2111, fax +358 10 211 3113
Website: www.metla.fi/jo/
(Silviculture and Forest Management, Wood Products)

Kannus Unit

Silmäjärventie 2, FI-69100 Kannus
Tel. +358 10 2111, fax +358 10 211 3401
Website: www.metla.fi/ka/
(Peatland Forestry, Bioenergy)

Kolari Unit

Muoniontie 21 A, FI-95900 Kolari
Tel. +358 10 2111, fax +358 10 211 3501
Website: www.metla.fi/ko/
(Timberline forest research)

Muhos/Oulu Unit

Kirkkosaarentie 7, FI-91500 Muhos
Tel. +358 10 2111, fax +358 10 211 3701
Website: www.metla.fi/mu/
(Forest condition, Forest regeneration)
In January 2012 Muhos Unit will move to Oulu,
Rakentajantie 3, FI-90570 Oulu

Parkano Unit

Kaironiementie 15, FI-39700 Parkano
Tel. +358 10 2111, fax +358 10 211 4001
Website: www.metla.fi/pa/
(Peatland Forestry, Forest Regeneration)

Punkaharju Unit

Finlandiantie 18, FI-58450 Punkaharju
Tel. +358 10 2111, fax +358 10 211 4201
Website: www.metla.fi/pu/
(Forest Genetics)

Rovaniemi Unit

Eteläranta 55, FI-96300 Rovaniemi
Tel. +358 10 2111, fax +358 10 211 4401
Website: www.metla.fi/ro/
(Silviculture in northern Finland)

Suonenjoki Unit

Juntintie 154, FI-77600 Suonenjoki
Tel. +358 10 2111, fax +358 10 211 4801
Website: www.metla.fi/su/
(Ecophysiology, Regeneration Research)



European Forest Institute

(Euroopan Metsäinstituutti)
Torikatu 34, FI-80100 Joensuu
Tel. +358 10 773 4300 , fax +358 10 773 4377
Website: www.efi.int
(Independent, Non-governmental Research Institute)

Finnish Game and Fisheries Research Institute

(Riista- ja kalatalouden tutkimuslaitos)
Viikinkaari 4, FI-00790 Helsinki
Tel. +358 205 7511, fax +358 205 751 201
Website: www.rktl.fi

Finnish Society of Forest Science

(Suomen Metsätieteellinen Seura)
Jokiniemenkuja 1, FI-01370 Vantaa
Tel. +358 40 801 5596, fax +358 10 211 2103
Website: www.metsatieteellinenseura.fi

The Finnish Society of Forest Science and the Finnish Forest Research Institute jointly publish *Silva Fennica*. **Silva Fennica** is a peer-reviewed international journal of forest science. It covers all aspects of forest research. In addition to original research articles, the journal publishes review articles, research notes, discussion papers, book reviews, and information on forthcoming events.

Editorial office:

Metla/Editorial Office
Jokiniemenkuja 1, FI-01370 Vantaa
Tel. +358 10 2111, fax +358 10 211 2103
Website: www.metla.fi/silvafennica

KCL

(Keskuslaboratorio)
Tekniikantie 2, FI-02150 Espoo
Tel. +358 20 7477 100, fax +358 9 464 305
Website: www.kcl.fi
(R&D, pilot services for pulp and paper making)

Metsäteho

Snellmaninkatu 13, FI-00170 Helsinki
Tel. +358 20 765 8800
Website: www.metsateho.fi
(R&D Unit for Wood Procurement and Production, mainly owned by Forest Industries)

Pellervo Economic Research PTT

(Pellervon taloustutkimus PTT)
Eerikinkatu 28 A, FI-00180 Helsinki
Tel. +358 9 348 8844, fax +358 9 3488 8500
Website: www.ptt.fi
(Agricultural and forestry economics; PTT is backed by the Finnish cooperative movement)

TTS Institute

(Työtehoseura)

Kiljavantie 6, FI-05200 Rajamäki

Tel. +358 9 2904 1200, fax +358 9 5129 0720

Website: www.tts.fi

(Small-scale forestry, Forest work)

University of Helsinki

(Helsingin yliopisto)

Faculty of Agriculture and Forestry

Department of Forest Sciences

Latokartanonkaari 7, FI-00710 Helsinki

Tel. +358 9 1911, fax +358 9 1915 8100

Website: www.helsinki.fi/forestsciences/

Viikki Campus Library of Helsinki University

(Viikin kampuskirjasto)

Viikinkaari 11 A, FI-00710 Helsinki

Tel. +358 9 1915 8040

Website: www.helsinki.fi/library/viikki/

University of Eastern Finland

(Itä-Suomen yliopisto)

School of Forest Sciences

Yliopistokatu 7, FI-80100 Joensuu

Tel. +358 13 251 111, fax +358 13 2513 634

Website: www.uef.fi/metsa

VTT Technical Research Centre of Finland

Vuorimiehentie 5, FI-02150 Espoo

Tel. +358 20 722 111, fax +358 20 722 7001

Website: www.vtt.fi

(Forest industry, VTT operates as a R&D partner)

Other useful contacts

Ministry of Agriculture and Forestry

(Maa- ja metsätalousministeriö)
Hallituskatu 3 A, FI-00170 Helsinki
Tel. +358 9 16001, fax +358 9 16054 202
Website: www.mmm.fi

Ministry of Employment and the Economy

(Työ- ja elinkeinoministeriö)
Aleksanterinkatu 4, FI-00170 Helsinki
Tel. +358 10 606 000, fax +358 9 1606 2166
Website: www.tem.fi

Ministry of the Environment

(Ympäristöministeriö)
Kasarmikatu 25, FI-00130 Helsinki
Tel. +358 20 610100, fax +358 9 1603 9320
Website: www.environment.fi

Finnish Environment Institute

(Suomen ympäristökeskus, SYKE)
Mechelininkatu 34a, FI-00260 Helsinki
Tel. +358 20 610123, fax +358 9 5490 2190
Website: www.environment.fi
(Governmental expert management of environment)

Finnish Forest Association

(Suomen Metsäyhdistys)
Salomonkatu 17 A, FI-00100 Helsinki
Tel. +358 9 685 0880, fax +358 9 6850 8820
Website: www.smy.fi
(Joint association for those related to forestry and forest industries)

Finnish Forest Industries Federation

(Metsäteollisuus ry)
Snellmaninkatu 13, FI-00170 Helsinki
Tel. +358 9 13 261, fax +358 9 132 4445
Website: www.forestindustries.fi

Finnish Meteorological Institute

(Ilmatieteen laitos)

Erik Palmenin aukio, FI-00560 Helsinki

Tel. +358 9 19291, fax +358 9 179 581

Website: www.fmi.fi

Forestry Development Centre Tapio

(Metsätalouden kehittämiskeskus Tapio)

Soidinkuja 4, FI-00700 Helsinki

Tel. +358 20 772 9000, fax +358 20 772 9008

Website: www.tapio.fi

(Provides expertise particularly for private forestry)

Metsähallitus

Vernissakatu 4, FI-01300 Vantaa

Tel. +358 20 564100

Website: www.metsa.fi

(State-owned enterprise managing state forests)

MTK Forestry Group

(MTK, Metsäryhmä)

Simonkatu 6, FI-00100 Helsinki

Tel. +358 20 4131, fax +358 20 413 2403

Website: www.mtk.fi

(MTK is the Central Union of Agricultural Producers and Forest Owners)

Statistics Finland

(Tilastokeskus)

Työpajankatu 13, FI-00580 Helsinki

Tel. +358 9 17 341, fax +358 9 1734 2474

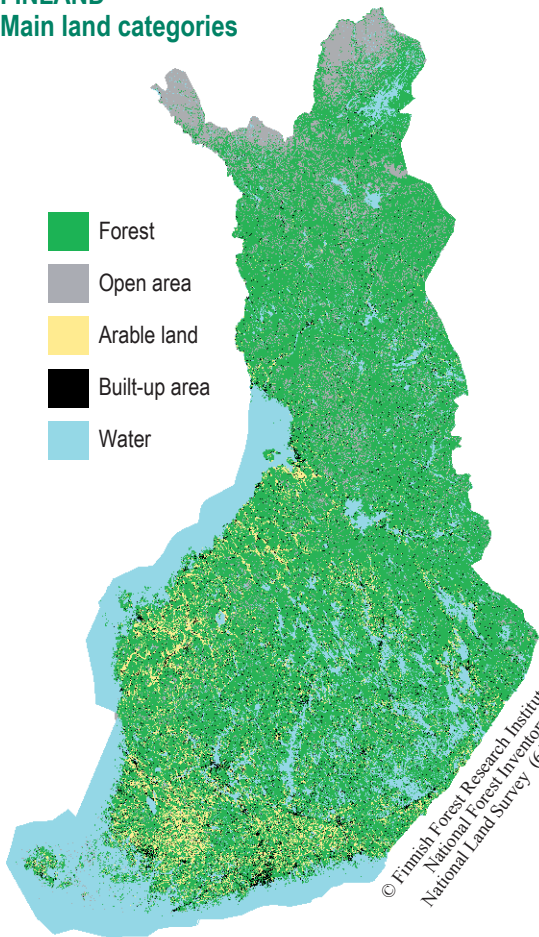
Website: www.stat.fi

Source: *Finnish Forest Association*

FINLAND

Main land categories

-  Forest
-  Open area
-  Arable land
-  Built-up area
-  Water



© Finnish Forest Research Institute,
National Forest Inventory
National Land Survey (6/MYY/11)