

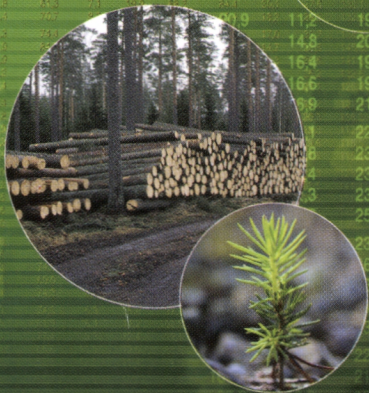
FOREST FINLAND

IN BRIEF

2007

Finnish Forest Research Institute

METLA



FOREST FINLAND IN BRIEF

Forest Finland in Brief 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 approximately 230 tables and 90 figures in English.

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. Finns look upon forests not only in the material sense, but also as a valuable ecological and cultural resource.

Almost two thirds of Finland's commercial forests are held by non-industrial private forest owners. These small-scale family forest holdings number about 300 000. 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.

Helsinki, August 2007

Martti Aarne

Head of Statistics

Forest Statistics Information Service

Compiled at

The Finnish Forest Research Institute

Forest Statistics Information Service

Unioninkatu 40 A

FIN-00170 Helsinki, Finland

Tel. +358 10 2111, fax +358 10 211 2104

E-mail: yrjo.sevola@metla.fi

Website: www.metla.fi/hanke/3006/index-en.htm

ISBN 978-951-40-2048-3

ISSN 1455-7045

Editor:

Yrjö Sevola

Language

consultant:

Peter Ovell

Lay-out, graphs:

A-K Korhonen

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

24 -08- 2007

Metsäntutkimuslaitos
Helsingin tutkimuskeskus
Kirjasto

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, permit annual fellings of over 70 million m³ on a sustainable basis, and the allowable cut is increasing. Moreover, the infrastructure for roundwood procurement is good. The Finnish forest industry is also highly export-oriented, and in most sectors of the industry, 70% to 90% of production goes abroad. Finland is a major exporter of sawn softwood and paper, particularly graphic papers.

Global roundwood production in 2005

(million m³ under bark):

Industrial wood	1 715	Softwood	1 314
Fuelwood & charcoal	1 791	Hardwood	2 192
	3 506		3 506

The total value of the global export trade of forest products amounted to USD 186 billion (f.o.b) in 2005, of which Finland's share was 6.5%. In the following tables, the Russian Federation is included in Europe.

World production of softwood, 2005

World	1 314	mill. m ³ u.b
Europe	469	
USA	313	
Canada	162	
China	138	
Russia	125	
Sweden	91	
Brazil	58	
Germany	46	
Finland	43	

World imports of roundwood and wood chips, 2005

World	176.0	mill. m ³ u.b
Europe	79.5	
China	33.7	
Japan	30.1	
Finland	18.4	
Sweden	10.9	
Austria	9.4	
Korea Rep.	7.7	
Canada	7.3	
Italy	7.0	

World production of sawn softwood, 2005

World	325.8	mill. m ³
Europe	126.4	
USA	69.2	
Canada	58.5	
Germany	21.0	
Russia	19.8	
Sweden	17.8	
Japan	12.4	
Finland	12.2	
Austria	10.9	
India	9.9	
Brazil	8.9	

World exports of sawn softwood, 2005

World	112.4	mill. m ³
Europe	63.4	
Canada	39.8	
Russia	14.6	
Sweden	11.9	
Finland	7.6	
Austria	7.1	
Germany	5.7	
Chile	2.6	
Latvia	2.5	
New Zealand	1.8	
Czech Rep.	1.7	

World production of paper and paperboard, 2005

World	354.1	mill. tonnes
Europe	110.5	
USA	81.4	
China	53.5	
Japan	29.3	
Germany	21.7	
Canada	19.7	
Finland	12.4	
Sweden	11.7	
Korea Rep.	10.5	
France	10.3	
Italy	10.0	

World exports of paper and paperboard, 2005

World	113.2	mill. tonnes
Europe	68.4	
Canada	15.7	
Germany	12.2	
Finland	11.2	
Sweden	10.6	
USA	9.6	
France	5.6	
China	4.4	
Austria	3.9	
Korea Rep.	3.2	
Netherlands	3.2	

Source: FAO Yearbook. Forest Products 2005

Value of global exports of forest-industries' products, 2005

	USD billion	USD per capita
World	185.7	29
Europe	99.1	136
Canada	29.5	932
USA	17.0	58
Germany	16.7	202
Sweden	13.2	1 467
Finland	12.1	2 327
Russia	7.6	53
France	7.3	122

Source: FAO
Yearbook. Forest
Products 2005

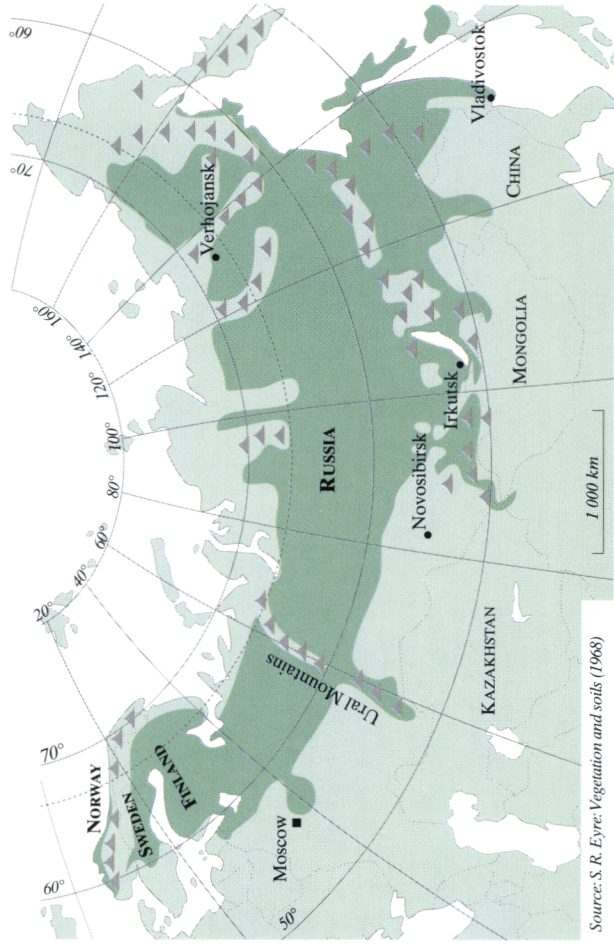
Eurasian boreal forest zone

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



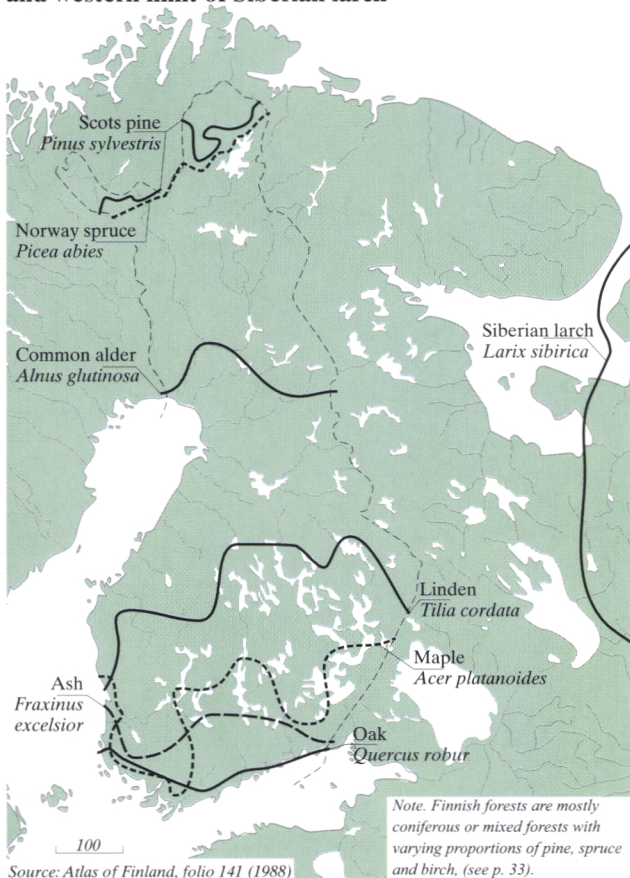
Source: S. R. Eyre: *Vegetation and soils* (1968)

Forest resources of the countries within the Eurasian boreal forest zone at the end of the 1990s

	Forests, total	Forests available for wood supply	
Forest land, mill. ha			
		% of land area	
Norway	8.7	28	6.6
Sweden	27.3	67	21.2
Finland	21.9	72	20.7
Russia	816.5	50	525.2
Total	874.4	50	573.7
Growing stock on forest land, mill. m³ over bark			
		Conifers, %	Conifers, %
Norway	771	77	671 80
Sweden	2 928	84	2 567 85
Finland	1 940	82	1 867 82
Russia	85 487	80	60 922 73
Total	91 126	80	66 027 74
Net annual increment on forest land, mill. m³ o.b.			
		Conifers, %	Conifers, %
Norway	24.4	77	22.0 80
Sweden	94.1	83	85.4 84
Finland	73.7	78	72.5 78
Russia	969.0	71	742.0 63
Total	1 161.2	73	921.9 67
Removals in mid-1990s, mill. m³ o.b./yr			
		Conifers, %	Conifers, %
Norway	10.9	89	10.9 89
Sweden	61.6	87	61.3 87
Finland	49.5	82	49.5 82
Russia	116.2	70	96.4 71
Total	238.2	78	218.1 79

Source: The
UN-ECE/FAO
Forest Resources
Assessment 2000

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

The European Union

Forests available for wood supply in the European Union

Country	Forest area mill. ha	Growing stock mill. m ³	of which conif., %	Increment	Removals
				in mid-1990s mill. m ³ /yr	mill. m ³ /yr
Austria	3.4	1 037	82	27.3	16.9
Belgium	0.6	140	46	5.1	4.4
Bulgaria	3.1	401	41	10.2	3.9
Cyprus	0.0	3	100	0.0	0.0
Czech Republic	2.6	668	84	20.4	13.0
Denmark	0.4	54	58	3.2	2.2
Estonia	1.9	307	63	7.1	4.5
Finland	20.7	1 867	82	72.5	49.5
France	14.5	2 836	36	92.3	47.6
Germany	10.1	2 820	69	89.0	38.9
Greece	3.1	140	56	3.5	2.4
Hungary	1.7	295	15	9.9	5.2
Ireland	0.6	43	92	3.5	2.3
Italy	6.0	877	33	18.7	8.4
Latvia	2.4	409	59	11.1	5.5
Lithuania	1.7	314	59	8.5	4.5
Luxembourg	0.1	20	18	0.7	0.4
Malta	0.0	0	..	0.0	0.0
Netherlands	0.3	52	56	2.2	1.2
Poland	8.3	1 771	79	39.4	25.3
Portugal	1.9	188	75	12.9	11.0
Romania	5.6	1 341	39	31.9	13.6
Slovakia	1.7	446	48	12.3	5.4
Slovenia	1.0	292	50	6.1	2.3
Spain	10.5	487	59	28.6	13.5
Sweden	21.2	2 567	85	85.4	61.3
United Kingdom	2.1	293	64	14.6	8.2
EU total	125.5	19 668	63	616.4	351.4

Source: The UN-ECE/FAO Forest Resources Assessment 2000

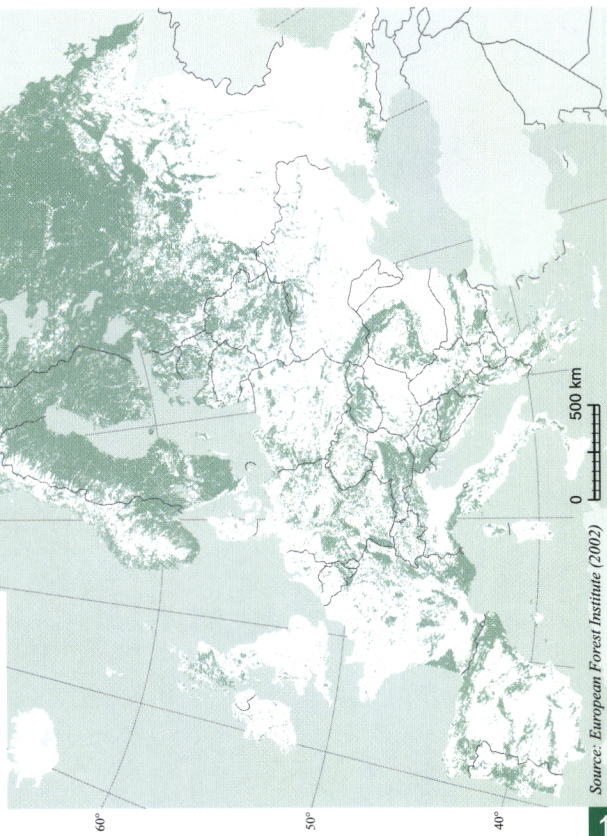
Duration of the growing season in Europe

Average periods in days (1961–90) during which daily mean temperatures are above $+5^{\circ}\text{C}$



Forest Map of Europe

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



Source: European Forest Institute (2002)

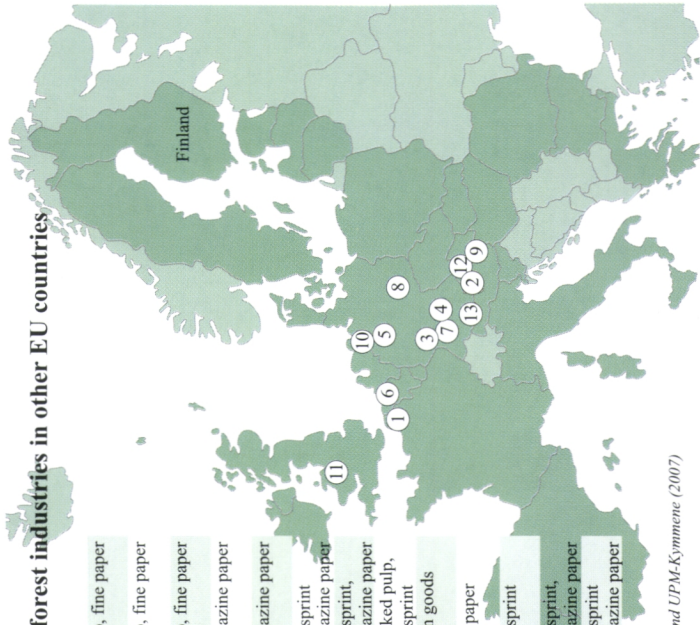
Some major Finnish-owned forest industries in other EU countries

(excl. Sweden)

- | | |
|-------------------------------------------------------------|------------------------------|
| 1. <i>M-real Alizay</i> ,
France (M-real) | pulp, fine paper |
| 2. <i>M-real Hallein</i> ,
Austria (M-real) | pulp, fine paper |
| 3. <i>M-real Stockstadt</i> ,
Germany (M-real) | pulp, fine paper |
| 4. <i>MD Papier</i> ,
Germany (Myllykoski) | magazine paper |
| 5. <i>Stora Enso Kabel</i> ,
Germany (Stora Enso) | magazine paper |
| 6. <i>Stora Enso Langerbrugge</i> ,
Belgium (Stora Enso) | newsprint
magazine paper |
| 7. <i>Stora Enso Maxau</i> ,
Germany (Stora Enso) | newsprint,
magazine paper |
| 8. <i>Stora Enso Sachsen</i> ,
Germany (Stora Enso) | deinked pulp,
newsprint |
| 9. <i>Stora Enso Timber</i> ,
Austria (Stora Enso) | sawn goods |
| 10. <i>Nordland Papier</i> ,
Germany (UPM-Kymmene) | fine paper |
| 11. <i>Shotton Paper</i> ,
United Kingdom (UPM-Kymmene) | newsprint |
| 12. <i>Steyermühl</i> ,
Austria (UPM-Kymmene) | newsprint,
magazine paper |
| 13. <i>UPM-Kymmene Papier</i> ,
Germany (UPM-Kymmene) | newsprint
magazine paper |

Stora Enso is a Finnish-Swedish company.

Source: Annual Reports of M-real, Stora Enso and UPM-Kymmene (2007)



Finnish exports of forest-industry products to the European Union, 2006

	Sawn goods	Plywood and veneer	Particle board	Fibre board	Wood pulp	Paper and paperboard
	1 000 m ³				1 000 m.t.	
Austria	83	24	–	–	64	75
Belgium	141	19	–	1	20	694
Cyprus	12	1	–	0	–	8
Czech Republic	5	7	–	–	13	45
Denmark	300	86	10	3	0	178
Estonia	43	4	15	0	2	55
France	731	83	0	0	131	573
Germany	534	234	0	1	1 134	2 421
Greece	184	3	–	0	19	181
Hungary	16	6	0	0	0	82
Ireland	165	12	0	2	0	36
Italy	265	58	–	0	122	387
Latvia	3	0	0	–	1	27
Lithuania	6	2	0	–	3	32
Luxembourg	0	0	–	0	–	7
Malta	–	–	–	0	–	1
Netherlands	389	161	–	3	150	328
Poland	17	13	0	–	74	427
Portugal	7	6	–	–	14	25
Slovakia	12	5	–	–	1	16
Slovenia	1	0	–	–	1	11
Spain	257	59	–	0	25	980
Sweden	36	105	34	8	301	316
United Kingdom	1 252	208	85	28	122	1 519
EU, total	4 459	1 094	146	47	2 196	8 424
% of total exports	58	82	65	85	74	63

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, more recently, in the high-tech electronics industry.

In 1980, roundwood and forest-industry products represented 43% of the total value of goods exported from Finland; the corresponding figure in 2006 was 21%. 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 2006 the respective figures were 1.7% and 3.7%. In employment, forestry accounted for 2.7% and the forest industry for 5.2% of the workforce in 1980. In 2006, the corresponding figures were 0.9% and 2.7%.

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, 2006

Gross domestic product

at market prices		EUR 167.9 billion
at basic prices		EUR 148.7 billion
of which	forestry	1.7 %
	forest industry	3.7 %

Total employment

of which	forestry	0.9 %
	forest industry	2.7 %

Total exports of goods

of which	forestry	0.2 %
	forest industry	20.3 %

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 2006, the total export value of Finnish forest-industry products amounted to EUR 12.5 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, 2004–2006

Product	Unit 1 000	2004	2005	2006
Sawn goods	m ³	13 544	12 269	12 225
Plywood	"	1 350	1 305	1 415
Particle board	"	448	452	440
Fibreboard	m.t.	102	101	83
Mechanical pulp	"	4 836	4 361	5 121
Chemical pulp	"	7 783	6 773	7 946
Pulp, total	"	12 619	11 134	13 067
Newsprint, magazine paper	"	6 843	6 090	6 714
Fine paper	"	3 181	2 727	3 296
Kraft and other paper	"	1 154	1 026	1 162
Paper, total	"	11 178	9 842	11 172
Paperboard	"	2 858	2 549	2 977
Paper and paper-board	"	14 036	12 391	14 149

Source: Finnish Forest Industries Federation

Finnish forest industry exports, 2004–2006

Product	Unit	2004	2005	2006
	1 000			
Sawn goods	m ³	8 226	7 663	7 728
Plywood	"	1 234	1 173	1 250
Particle board	"	242	230	224
Fibreboard	m.t.	63	67	55
Mechanical pulp	"	112	87	233
Chemical pulp	"	2 244	1 950	2 528
Newsprint	"	573	413	506
Magazine paper	"	5 803	5 201	5 862
Fine paper	"	3 093	2 680	3 258
Kraft paper	"	408	367	428
Other paper	"	341	311	346
Paper, total	"	10 218	8 971	10 401
Paperboard	"	2 461	2 163	2 552
Converted paper products	"	410	375	412
Total paper and paperboard	"	13 089	11 510	13 365

Source: National Board of Customs

Value of Finnish forest industry exports, 2006

Country	Sawn goods	Wood-based panels, other wood products	Pulp	Paper, paper-board, converted products	EUR mill.
					Total
Austria	16	27	25	50	118
Belgium	24	16	9	398	447
Cyprus	3	1	-	5	9
Czech Republic	1	5	6	29	41
Denmark	59	74	0	132	265
Estonia	9	29	0	51	89
France	136	96	59	357	648
Germany	101	187	469	1 451	2 208
Greece	31	14	8	98	151
Hungary	3	4	0	60	67
Ireland	30	11	0	22	63
Italy	62	47	58	244	411
Latvia	1	4	0	26	31
Lithuania	2	3	1	25	31
Luxembourg	0	0	-	7	7
Malta	-	0	-	1	1
Netherlands	69	72	72	220	433
Poland	3	16	36	267	322
Portugal	1	5	7	16	29
Slovakia	3	6	0	13	22
Slovenia	0	1	0	8	9
Spain	46	55	9	533	643
Sweden	11	139	109	244	503
United Kingdom	242	167	58	944	1 411
EU total	852	979	926	5 200	7 957
Other Europe	38	205	93	947	1 283
Europe total	890	1 184	1 019	6 147	9 240
Asia	350	173	165	801	1 489
Africa	205	3	17	163	388
North America	5	53	51	808	917
Latin America	0	1	2	295	298
Oceania	4	8	-	166	178
Grand total	1 454	1 422	1 253	8 380	12 509

Source: National Board of Customs

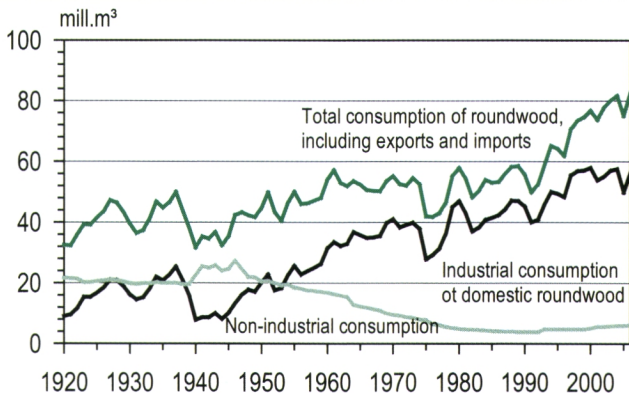
Wood consumption

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, and since 1997 this has risen to more than 70 million m³. Industrial wood consumption has shown a continuous strong upward trend.

In 2006, total roundwood consumption reached 82.6 million m³ (including imports and exports), of which industrial wood consumption accounted for 75.5 million m³. Imported roundwood (19.2 mill. m³) accounted for 25% of industrial wood consumption.

Roundwood consumption in Finland, 1920–2006



Non-industrial consumption does not include exports of roundwood
Source: Finnish Forest Research Institute

Roundwood consumption during 5 -year periods, 1995–2006

Consumption category	mill. m ³ /yr		
	1995–99	2000–04	2005–06
Exports	1.0	0.8	1.1
Industrial roundwood	53.4	56.2	53.1
sawmills and panel industr.	27.1	29.0	27.2
pulp industries	26.3	27.2	26.0
Fuelwood	4.6	5.5	6.0
Domestic roundwood total	59.0	62.5	60.2
Imported wood (industries)	9.8	15.3	18.6
Total consumption	68.8	77.8	78.8

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, 2004–2006

		mill. m ³		
Consumption category		2004	2005	2006
Total consumption in Finland		80.8	73.7	81.5
	Pine	29.5	26.0	29.3
	Spruce	30.0	28.1	29.6
	Hardwood	19.1	17.4	20.0
	Unspecified	2.2	2.2	2.5
	Domestic roundwood	63.4	55.8	62.4
<i>Pine: Pinus</i>	Pine	26.4	22.3	26.4
<i>sylvestris</i>	Spruce	26.2	23.7	25.1
<i>Spruce: Picea</i>	Hardwood	10.8	9.8	10.8
<i>abies</i>				
<i>Hardwood: mainly</i>	Imported wood	17.4	17.9	19.2
<i>Betula sp</i>	Pine	3.1	3.7	2.9
	Spruce	3.8	4.4	4.5
<i>'Unspecified' consists of imported wood chips and residues</i>	Hardwood	8.3	7.6	9.2
	Unspecified	2.2	2.2	2.5
	Exports, incl. poles	0.8	1.1	1.1
	Pine	0.6	0.9	0.9
	Spruce	0.1	0.1	0.1
	Hardwood	0.1	0.1	0.1

Source: Finnish Forest Research Institute

Wood consumption in sawmilling, plywood and pulp industries, 2004–2006

Year	Domestic roundwood		Imported wood	Sawmill chips	Total
	Conif.	Hardwood			
	mill. m ³				
	Sawmilling				
2004	25.4	0.2	3.7	–	29.2
2005	23.2	0.2	3.6	–	27.0
2006	24.4	0.2	2.8	–	27.3
	Plywood and veneer industry				
2004	1.9	1.0	0.9	–	3.8
2005	2.1	0.9	0.8	–	3.8
2006	1.9	0.9	1.3	–	4.1
	Mechanical pulp industry				
2004	8.0	0.8	1.9	2.8	13.5
2005	6.9	0.8	1.9	2.7	12.3
2006	7.4	1.3	2.4	3.1	14.2
	Chemical pulp industry				
2004	14.1	5.8	11.0	8.2	39.1
2005	10.4	5.0	11.5	7.6	34.5
2006	14.4	5.4	12.6	7.3	39.7

Source: Finnish Forest Research Institute

Labour force

During the peak season for roundwood harvesting, i.e. the winter season from October to March, about 6 000 professional forest workers are fully employed in this work. The machinery used includes about 1 800 efficient, multi-function timber harvesters and 1 900 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 23 000 people in 2006, 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 67 000 in 2006. Paper production, however, has more than doubled during the same period.

Employment in forestry and forest industry, 2004–2006

	2004	2005	2006
	1 000 persons		
Forestry	23	23	23
Forest industry	65	69	67
Forest sector, total	88	92	90
Employment, total	2 365	2 401	2 443
Unemployed, total	229	220	204
Unemployment rate, %	8.8	8.4	7.7

Source: Statistics
Finland

Employment in forest industry, 2004–2006

Branch of industry	1 000 persons		
	2004	2005	2006
Sawmilling	9	10	10
Wood-based panels	6	6	6
Other wood-products industry ¹	15	17	16
Pulp and paper industry	30	31	30
Converted paper products	5	5	4
Forest industry, total	65	69	67

¹ Including carpentry products and pre-fabricated wooden houses

Source: Statistics Finland

Commercial roundwood removals in 2006 amounted to 50.8 million m³, of which 78% came from non-industrial private forests. Removals have been at a high level since 1997, though there has been no increase in the total since 2004. Instead, the growing need for industrial wood has been met by imported roundwood.

Harvesting in non-industrial private forests is mainly carried out by the forest industry or by its wood-procurement organisations. In 2006, the amount of harvesting carried out or organised by the forest owners themselves totalled 6.9 million m³, or 17% of the commercial roundwood removed from their forests.

Roundwood prices (excl. spruce logs) were falling in real terms between 1999 and June 2006, after which they began to rise again. A year later the prices for coniferous logs were at their highest for 30 years. For other types of roundwood the increase in prices was less marked.

Roundwood markets

Roundwood procurement and consumption in Finland, 2006

Sources	mill. m ³
Commercial roundwood	
from private-owned forests	39.4
from industry-owned forests	6.4
from state-owned forests	5.0
Other wood (mostly priv. for.)	7.0
Domestic roundwood, total	57.8
Imported wood	20.0
Roundwood procurement, total	77.8
Consumption	
Sawmilling	27.3
Wood-based panels	4.2
Other wood-based products	0.4
Mechanical pulp industry	11.1
Chemical pulp industry	32.4
Industry, total	75.5
Household and other fuelwood	6.0
Exports of roundwood	1.1
Roundwood consumption, total	82.6

About 80% of imported wood comes from Russia. In addition, sawmills furnished pulp industry with 11.4 mill. m³ of wood chips and other residues.

Source: Finnish Forest Research Institute

Roundwood removals by ownership category, 2004–2006

Ownership category	2004	2005	mill. m ³
			2006
Private forests ¹	46.6	44.2	39.4
Forests industries	3.8	3.8	6.4
State forests	4.7	4.6	5.0
Commercial removals, total	55.1	52.6	50.8
Other removals (mostly priv.)	6.8	6.8	7.0
Grand total	61.9	59.4	57.8

¹ including municipalities, parishes and some other public owners.

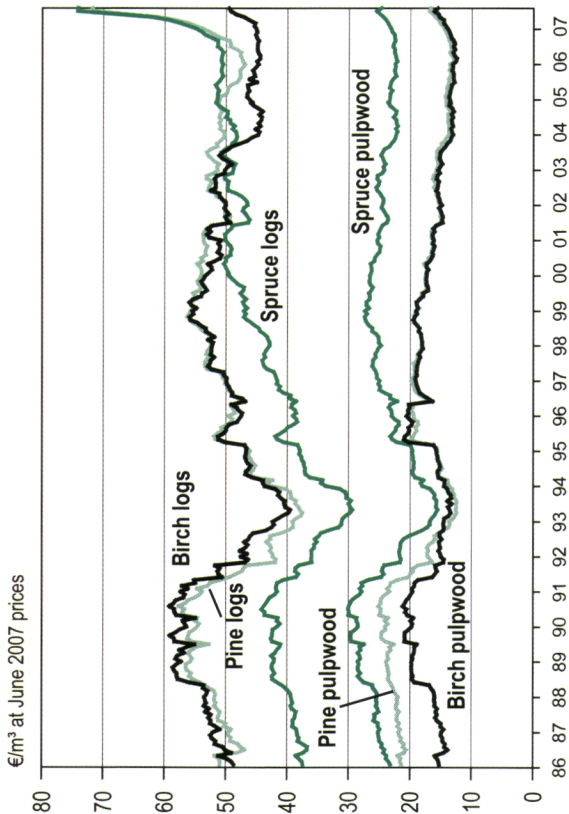
Source: Finnish Forest Research Institute

Removals by roundwood type, 2004–2006

Roundwood type	2004	2005	mill. m ³
			2006
Sawlogs	26.4	24.4	23.7
pine logs	10.8	9.8	10.2
spruce logs	14.6	13.5	12.6
hardwood logs	1.0	1.1	1.0
Pulpwood	28.6	28.2	27.0
pine pulpwood	12.7	12.5	12.2
spruce pulpwood	9.9	9.6	8.9
hardwood pulpwood	6.0	6.1	5.9
Commercial removals, total	55.1	52.6	50.8
Other removals	6.8	6.8	7.0
Grand total	61.9	59.4	57.8

Source: Finnish Forest Research Institute

Stumpage prices in non-industrial private forestry 1986–2007



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 30 000 hectares annually.

Silvicultural measures are applied to about 220 000 hectares of seedling stands annually. About half of Finland's mires (wetlands) have been drained for forestry, but nowadays forest ditching has ceased and efforts are concentrated instead on cleaning existing ditches. Forest fertilizers are applied to a minor extent.

The total cost of silvicultural and forest improvement work was EUR 235 million in 2006. Some 70% of the EUR 179 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 grants. In addition, state subsidies were given for controlling root-rot disease and harvesting small-sized trees for energy purposes (EUR 9 mill.).

Felling activities, 2004–2006

Type of felling	1 000 ha		
	2004	2005	2006
Thinnings	335	311	384
Clear fellings	153	122	145
Seed tree and shelterwood fellings	33	26	27
Removal of seed trees and shelterwood	52	43	53
Other fellings	15	9	10
Total	588	511	619
% of forest area	2.6	2.2	2.7

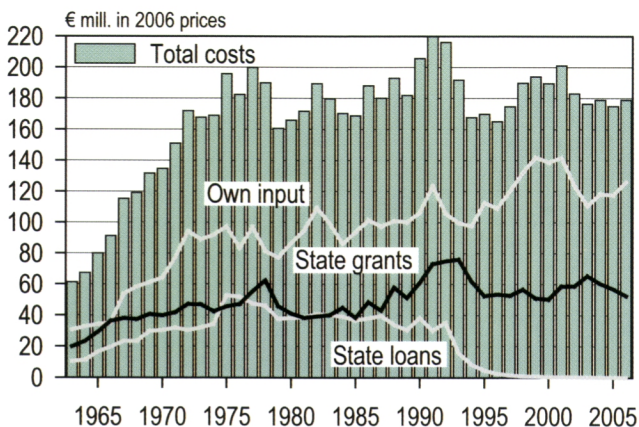
Source: Finnish Forest Research Institute

Silvicultural and forest improvement work, 2004–2006

Type of work		2004	2005	2006
Clearing of regeneration areas	1 000 ha	66	63	63
Soil preparation	"	123	123	122
Artificial regeneration	"	123	119	119
Seedling stand improvement	"	236	219	218
Forest fertilization	"	22	20	26
Maintenance of drainage	"	78	69	72
Construction of forest roads	km	831	790	793
Improvement of forest roads	"	2 046	2 155	2467
Total costs	EUR mill.	218	222	235

Source: Finnish Forest Research Institute

Financing of silvicultural and forest-improvement works in non-industrial private forests 1963–2006



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	2004–2006
III	1951–53	VII	1977–84		
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. The latest estimate is 2 189 million m³. In recent years, the annual volume increment has exceeded the drain by about 30 million m³.

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 a stable one but during the last 10 years the share of Norway spruce has been getting smaller. Scots pine is the dominant species on 66% of Finland's forested 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 other wooded land 2.8 million hectares. Thus, the total wood-growing area is 22.9 million hectares. The amount of this set aside for conservation purposes is 1.53 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 22.5 million hectares.

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

Principal land use categories in Finland, 2004–2006

	mill. ha
Total area	33.8
Inland watercourses	3.4
Land area	30.4
Agricultural land	2.7
Built-up areas	1.0
Transport routes	0.4
¹ Treeless hills and mires	
Forest land	20.1
Other wooded land	2.8
Unproductive land ¹	3.2
Roads, depots	0.2
Forestry land, total	26.3
(of which nature conservation areas)	2.8)

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, 2004–2006

	mill. ha
Mineral soils	17.1
Mires	9.0
Roads, depots	0.2
Forestry land, total	26.3
Spruce mires	2.1
Pine mires	5.2
Treeless mires	1.6
Total	9.0
Undrained mires	4.1
Recently drained mires	0.2
Transforming mires	2.5
Transformed mires	2.2
Total	9.0

Dominant tree species of forest stands, 2004–2006

		% ¹
Temporarily non-stocked		1.3
Scots pine	<i>Pinus sylvestris</i>	65.5
Norway spruce	<i>Picea abies</i>	23.7
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

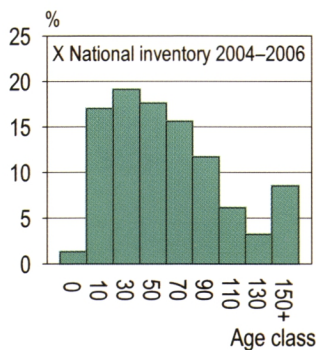
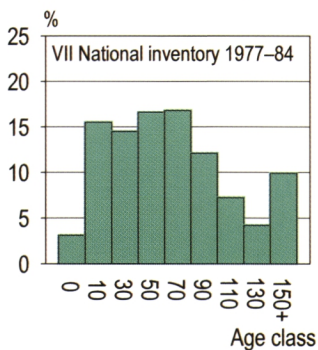
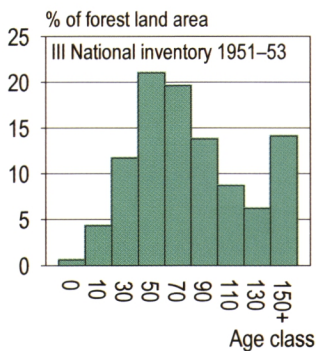
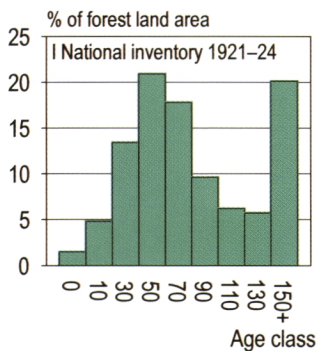
¹ on forest land area
Note that of the broad-leaved species is much greater.
Source: Finnish Forest Research Institute

Timber resources in Finland, 2004–2006

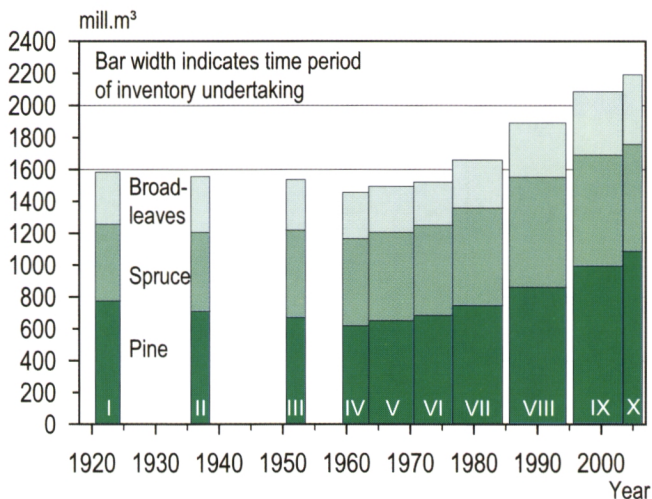
Forest and other wooded land	mill. ha	22.9
Growing stock volume	mill. m ³	2 189
Scots pine	"	1 093
Norway spruce	"	667
Birch	"	357
Other broadleaves	"	73
Volume increment	mill.m ³ /year	98.5
Scots pine	"	47.1
Norway spruce	"	29.0
Birch	"	18.2
Other broadleaves	"	4.2

Source: Finnish Forest Research Institute

Age structure development of the Finnish forests



Growing stock volumes according to ten national forest inventories



Source: Finnish Forest Research Institute

Forest ownership in Finland, 2004–2006

Ownership category	Forest land	Forestry land	%
	mill. ha	mill. ha	
Non-industrial private	12.0	13.6	51.8
Industrial private	1.8	2.0	7.7
State	5.2	9.3	35.2
Other public	1.1	1.4	5.3
Total	20.1	26.3	100.0

Source: Finnish Forest Research Institute

Non-industrial, private ownership of forests, 1999

Ownership group	%	
	Of holdings/ owners	Of forest land area
Family ownership	75	76
Group ownership	11	12
Heirs ownership	14	12
Farmers	22	33
Other entrepreneurs	6	6
Wage earners	30	25
Pensioners	37	32
Others	5	4
Age < 40 years	11	13
Age 40–59 years	45	47
Age 60+ years	44	40
Reside on holding	50	60
Reside in the same municipality	17	15
Reside elsewhere	33	25

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, 2004–2006

Ownership category	Scots pine	Norway spruce	Broad-leaves	mill. m ³	
				Total	%
Non-indust. private	628	480	295	1 403	64.1
Industrial private	114	53	36	204	9.3
State	285	97	72	453	20.7
Other public	66	37	26	129	5.9
Total	1 093	667	429	2 189	100.0

Source: Finnish Forest Research Institute

Annual volume increment by ownership category, 2004–2006

Ownership category	Scots pine	Norway spruce	Broad-leaves	mill. m ³ /yr	
				Total	%
Non-indust. private	27.7	21.8	16.4	65.8	66.8
Industrial private	5.9	2.6	2.0	10.6	10.7
State	10.7	3.0	2.8	16.6	16.8
Other public	2.8	1.5	1.4	5.6	5.7
Total	47.1	29.0	22.5	98.5	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, 2004–2006

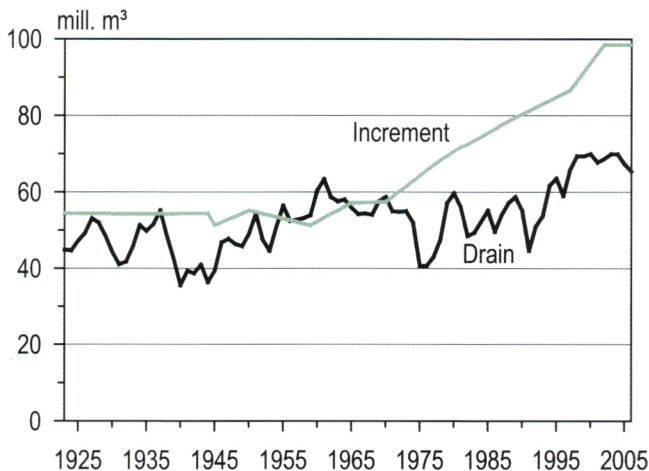
Ownership category	Mean volume m ³ /ha	Increment m ³ /ha/yr	Increment %
Non-industrial private	115	5.4	4.7
Industrial private	112	5.8	5.2
State	80	3.0	3.8
Other public	111	4.9	4.4
Total	105	4.8	4.6

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

		mill. m ³ /yr		
		1995–99	2000–04	2005–06
Scots pine	I	40.0	46.2	47.1
	D	25.1	27.8	27.1
Norway spruce	I	27.5	28.7	29.0
	D	27.8	28.5	26.3
Broadleaves	I	20.0	22.2	22.5
	D	12.5	13.4	13.6
Total	I	87.6	97.1	98.5
	D	65.4	69.7	67.0

Increments for 2005–06 are forecasts
Drain refers to losses in growing stock due to fellings, silvicultural measures and natural mortality.
Source: Finnish Forest Research Institute

Increment and drain of the growing stock, 1923–2006



Multiple production of forests, 2004–2006

Product		2004	2005	2006	
Commercial roundwood	mill. m ³ o.b.	55	53	51	¹ for energy production
Other roundwood	mill. m ³ o.b.	7	7	7	
Harvested logging residues ¹	mill. m ³ o.b.	2	2	2	
Commercial forest berries	t ²	3 123	12 027	6 065	² Quantities offered for sale, in tonnes.
Commercial forest mushrooms	t ²	356	426	447	
Lichen picked for exporting	t	287	217	222	Sources: Finnish Forest Research Institute, Finnish Game and Fisheries Research Institute
Deer venison	t	10 086	10 784	11 104	
Hare venison	t	512	516	525	
Forest game birds	t	210	246	308	
Fur-bearing animals	1000 indiv.	266	263	290	
Reindeer meat production	t	2 500	2 900	2 800	

Forest condition in Finland, 2004–2006

Forest land area, total 20.1 mill. ha

Extent of damage affecting stand quality	% forest land
Totally damaged	0.2
Severely damaged	4.1
Moderately damaged	22.9
Total	27.3

Damage agents

Natural competition	0.7
Abiotic factors	7.5
Human interference	1.0
Moose	3.3
Insects	0.3
Fungi	5.2
Unidentified	9.3
Total	27.3

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

Source: Finnish Forest Research Institute

Nature protection areas by vegetation zone

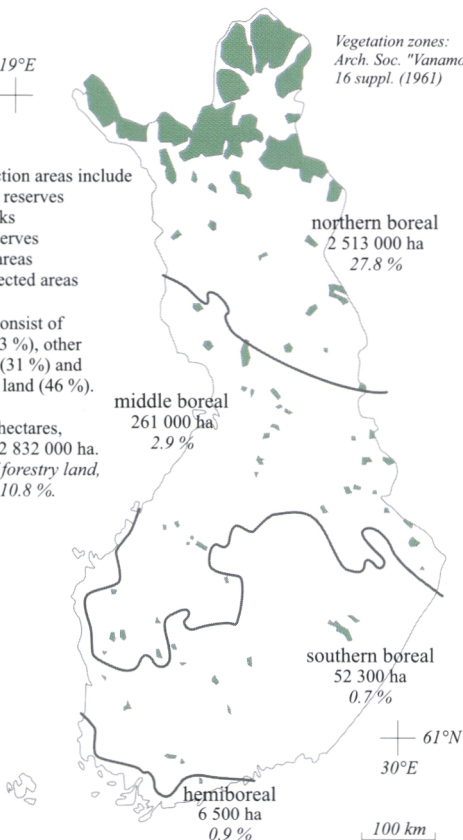
Vegetation zones:
Arch. Soc. "Vanamo"
16 suppl. (1961)

Nature protection areas include

- strict nature reserves
- national parks
- peatland reserves
- wilderness areas
- special protected areas

These areas consist of
forest land (23 %), other
wooded land (31 %) and
unproductive land (46 %).

Land area in hectares,
in total 2 832 000 ha.
As percent of forestry land,
in total 10.8 %.



Source: Finnish Environment Institute (2007)

KEY CONTACTS IN FINNISH FOREST RESEARCH

FINNISH FOREST RESEARCH INSTITUTE

(Metsäntutkimuslaitos, Metla)

Vantaa Research Unit, Helsinki Unit

Unioninkatu 40 A, FIN-00170 Helsinki

Tel. +358 10 2111, fax +358 10 211 2101

Website: www.metla.fi

(Forest Resources and Economics, Administration)

Vantaa Research Unit, Vantaa Unit

Jokiniemenkuja 1, FIN-01300 Vantaa

Tel. +358 10 2111, fax +358 10 211 2202

Website: www.metla.fi/va

(Forest Ecology and Production)

Joensuu Research Unit

Yliopistokatu 6, FIN-80100 Joensuu

Tel. +358 10 2111, fax +358 10 211 3113

Website: www.metla.fi/jo

(Silviculture and Forest Management, Wood Products)

Kannus Research Unit

Silmäjärventie 2, FIN-69100 Kannus

Tel. +358 10 2111, fax +358 10 211 3401

Website: www.metla.fi/ka

(Peatland Forestry, Bioenergy)

Kolari Research Unit

Muoniontie 21 A, FI-95900 Kolari

Tel. +358 10 2111, fax +358 10 211 3501

Website: www.metla.fi/ko

(Timberline research)

Muhos Research Unit

Kirkkosaarentie 7, FIN-91500 Muhos

Tel. +358 10 2111, fax +358 10 211 3701

Website: www.metla.fi/mu

(Forest condition, Forest regeneration)

Parkano Research Unit

Kaironiementie 54, FIN-39700 Parkano
Tel. +358 10 2111, fax +358 10 211 4001
Website: www.metla.fi/pa
(Peatland Forestry, Forest Regeneration)

Punkaharju Research Unit

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

Rovaniemi Research Unit

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

Suonenjoki Research Unit

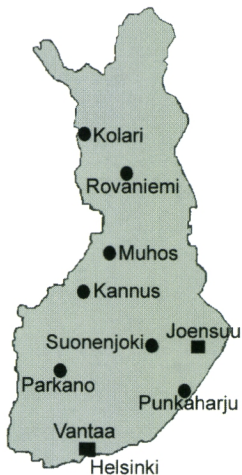
Juntintie 154, FIN-77600 Suonenjoki
Tel. +358 10 2111, fax +358 10 211 4801
Website: www.metla.fi/su
(Ecophysiology, Regeneration Research)

European Forest Institute

(Euroopan Metsäinstituutti)
Torikatu 34, FIN-80100 Joensuu
Tel. +358 13 252 020 , fax +358 13 124 393
Website: www.efi.int
(Independent, Non-governmental Research Unit)

Finnish Game and Fisheries Research Institute

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



Finnish Society of Forest Science

(Suomen Metsätieteellinen Seura)
Unioninkatu 40 A, FIN-00170 Helsinki
Tel. +358 10 211 2144, fax +358 10 211 2102
Website: www.metla.fi/org/sms

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. The journal carries original research articles, review articles, research notes, discussion papers, book reviews, and information on forthcoming events.

Editorial office:

METLA/ Editorial Office
Unioninkatu 40 A
FIN- 00170 Helsinki
Tel. +358 10 2111, fax +358 10 211 2101
Website: www.metla.fi/silvafennica

KCL

(Keskuslaboratorio)
Tekniikantie 2, FIN-02150 Espoo
Tel. +358 20 7477 100, fax +358 9 464 305
Website: www.kcl.fi
(Pulp and paper research)

Metsäteho

Snellmaninkatu 13, FIN-00130 Helsinki
Tel. +358 20 765 8800
Website: www.metsateho.fi
(R&D Unit for Timber Procurement and Production, mainly owned by Forest Industries)

Pellervo Economic Research Institute PTT

(Pellervon taloudellinen tutkimuslaitos PTT)
Eerikinkatu 28 A, FIN-00180 Helsinki
Tel. +358 9 348 8844, fax +358 9 3488 8500
Website: www.ptt.fi
(Related to the Finnish cooperative movement)

TTS Institute

(Työteho-seura)

Kiljavantie 6, FIN-05200 Rajamäki

Tel. +358 9 2904 1200, fax +358 9 2904 1285

Website: www.tts.fi

(Small-scale forestry, Forest work)

University of Helsinki

(Helsingin yliopisto)

Faculty of Agriculture and Forestry

Forestry Departments

Latokartanonkaari 7, FIN-00710 Helsinki

Tel. +358 9 1915 8247, fax +358 9 1915 8575

Website: www.mm.helsinki.fi

Viikki Science Library of Helsinki University

(Applied biosciences)

Viikinkaari 11 A, FIN-00710 Helsinki

Tel. +358 9 1915 8040, fax +358 9 1915 8011

Website: www.tiedekirjasto.helsinki.fi

University of Joensuu

(Joensuun yliopisto)

Faculty of Forestry

Yliopistokatu 7, FIN-80100 Joensuu

Tel. +358 13 251 4450

Website: gis.joensuu.fi

Other useful contacts

Ministry of Agriculture and Forestry

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

Ministry of the Environment

(Ympäristöministeriö)
Kasarmikatu 25, FIN-00130 Helsinki
Tel. +358 20 490100, fax +358 9 1603 9320
Website: www.ymparisto.fi

Finnish Environment Institute

(Suomen ympäristökeskus)
Mechelininkatu 34 a, FIN-00260 Helsinki
Tel. +358 20 490123, fax +358 20 490 2190
Website: www.ymparisto.fi
(Governmental expert management of environment)

Finnish Forest Association

(Suomen Metsäyhdistys)
Salomonkatu 17 A. FIN-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, FIN-00170 Helsinki
Tel. +358 9 13 261, fax +358 9 132 4445
Website: www.forestindustries.fi

Finnish Meteorological Institute

(Ilmatieteen laitos)
Erik Palmenin aukio 1, FIN-00560 Helsinki
Tel. +358 9 19291, fax +358 9 179581
Website: www.ilmatieteenlaitos.fi

Forestry Development Centre Tapio

(Metsätalouden kehittämiskeskus Tapio)

Soidinkuja 4, FIN-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, FIN-01300 Vantaa

Tel. +358 20 564100

Website: www.metsa.fi

(State-owned enterprise managing state forests)

MTK Forestry Group

(MTK, Metsäryhmä)

Simonkatu 6, FIN-00100 Helsinki

Tel. +358 20 4131, fax +358 20 413 2409

Website: www.mtk.fi

(MTK is the Finnish Federation of Agricultural and Forestry Producers)

Statistics Finland

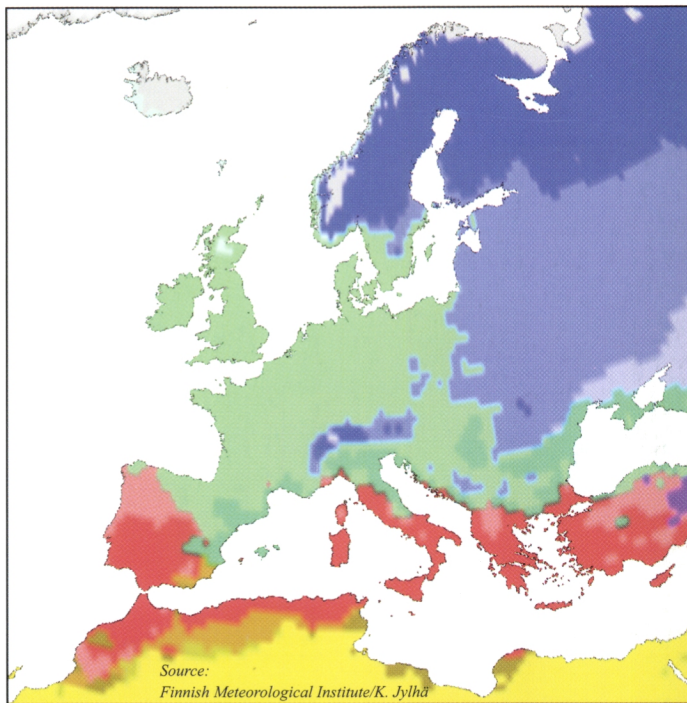
Työpajakatu 13, FIN-00580 Helsinki

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

Website: www.stat.fi

Source: *Finnish Forest Association*

Köppen climatic zones 1961–90



Dry climates

- Steppe
- Desert

Mild winters

- Dry summers
- Wet all seasons

Cold winters

- Dry summers
- Wet all seasons

Polar climates

- Tundra
- Ice cap