FOREST FINLAND

IN BRIEF

The Finnish Forest Research Institute
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FOREST FINLAND IN BRIEF

offers a concise description on the Finnish forestry and forest industries in an international context from the viewpoint of forest statistics. For a more detailed description, please refer to our Yearbook of Forest Statistics.

In Finland, the rather small population inhabits a forest-rich country. Ideal growing conditions for conifers, easily workable, valuable tree species, good logging conditions and infrastructure, combined with accessibility to major European markets, have made forests our real source of welfare. And not only in material sense, for the Finns are able to enjoy the forests.

Both forestry and forest industries are facing challenges, not only because of internal development requirements and competition, but also due to often conflicting demands set by both local and international interest groups. I hope this pocket statistics offers some basic facts to deal with the challenging forestry issues.

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CONTENTS

INTERNATIONAL CONTEXT

Major producers and traders

Finland with its 5.1 million people and 23.0 million forest hectares (0.6 % of the world total) is an important supplier of forest products to global markets. Finland's boreal coniferous forests with a good mixture of broadleaves allow for annual cuttings of over 60 million m^3 on a sustained basis, and the allowable cut is increasing. The infrastructure for roundwood procurement is good. The Finnish forest industries are highly export-oriented. In many branches, 70 to 90 % of the production goes abroad. Finland is a major trader of softwood timber and paper, particularly printing and writing paper.

Global roundwood production, 1993

(million m^3 under bark):

Industrial wood	1 528	Coniferous wood	1 129
Fuelwood & charcoal	1 876	Non-coniferous wood	2 275
	3 404		3 404

Total value of the global export trade of forest products amounted to 99 618 million U.S. dollars (f.o.b) in 1993, of which the share of Finland was 7.4 %.

World production of coniferous roundwood, 1993

World	**1 129**	mill. m^3 u.b.
Europe	**207**	
USA	303	
Canada	167	
China	144	
Russia	107	
Brazil	49	
Sweden	47	
Finland	**32**	

World imports of roundwood, 1993

World	**111.4**	mill. m^3 u.b.
Europe	**36.5**	
Japan	45.5	
Korea Rep	8.7	
China	6.2	
Finland	**6.1**	
Italy	5.8	
Austria	5.6	
Canada	5.0	

World production of coniferous sawnwood, 1993

World	**307.6**	mill. m^3
Europe	**65.2**	
USA	78.4	
Canada	58.7	
Russia	32.8	
Japan	23.3	
China	15.6	
Sweden	12.5	
Germany	11.9	
Brazil	8.6	
Finland	**8.3**	

World exports of coniferous sawnwood, 1993

World	**85.3**	mill. m^3
Europe	**25.6**	
Canada	42.8	
Sweden	9.6	
USA	7.0	
Finland	**5.7**	
Russia	5.4	
Austria	4.1	
Poland	1.1	

World production of paper and paperboard, 1993

World	**253.6**	mill. metric tons
Europe	**69.9**	
USA	77.3	
Japan	27.8	
China	23.8	
Canada	17.6	
Germany	13.0	
Finland	**10.0**	
Sweden	8.8	

World exports of paper and paperboard, 1993

World	**64.5**	mill. m.t.
Europe	**35.9**	
Canada	12.9	
Finland	**8.5**	
USA	7.1	
Sweden	7.0	
Germany	4.8	
France	3.1	
Austria	2.4	

Source: FAO Yearbook of Forest Products 1993

Value of global exports of forest products, 1993

	1000 mill. USD	USD per capita
World	**99.6**	**18**
Europe	**41.4**	**83**
Canada	19.3	703
USA	13.4	53
Sweden	7.5	862
Finland	**7.4**	1 470
Germany	5.8	71
Indonesia	5.2	27
Malaysia	4.2	225

Source: FAO Yearbook of Forest Products 1993

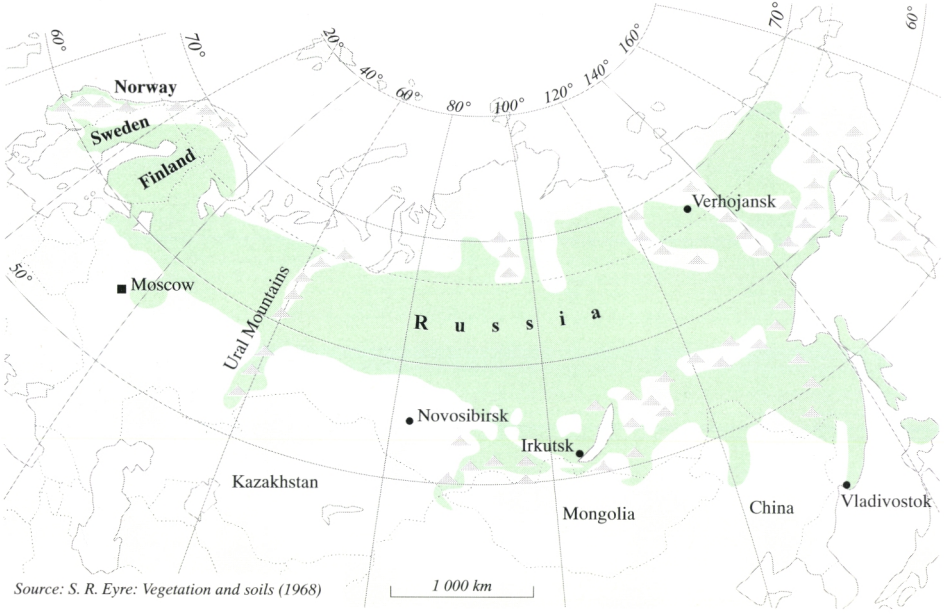
Eurasian boreal forest zone

Eurasian boreal forest zone extends from the atlantic Norway to the Russian Pacific coast, about 9 000 km. In the Nordic countries the zone width is about 1 000 km (60–70° N); eastwards it gradually spreads out more to the south reaching 50° N in the eastern Siberia and then again narrowing inbetween 60–70° N.

This huge coniferous forest zone of about 1 000 million hectares is one of the most important providers of roundwood in the world. In the European part and West Siberia, pines and spruces dominate. In East Siberia, Siberian larch, and in Russian Far East Dahurian larch are the most important species. In the mountaineous Far East, the forests are mostly inaccessible.

About 78 % of forests of Norway and Sweden, 98 % of Finland and 85 % of the former Soviet Union belong to the boreal coniferous forest zone proper. All boreal forests of the former Soviet Union are within the present Russian Federation. However, due to the restricted availability of the comparable regional forestry information, the figures in the next table are nationwide.

Eurasian boreal forest zone



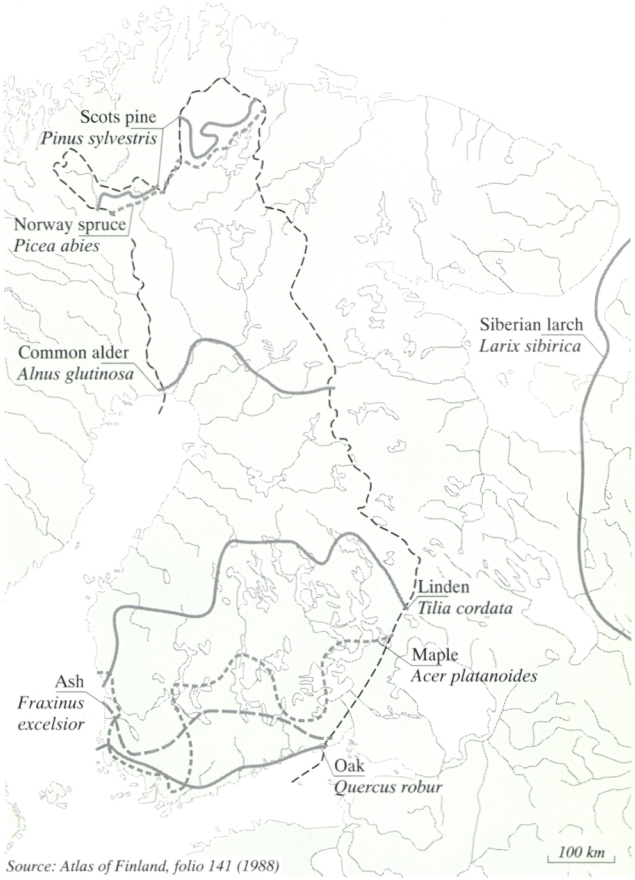
Source: S. R. Eyre: Vegetation and soils (1968)

Forest resources of the countries in the Eurasian boreal forest zone at the end of the 1980's

	Forest and other wooded land		Exploitable forest land	
Areas, mill. ha		% of land area		
Norway	9.6	31	6.6	
Sweden	28.0	69	22.0	
Finland	23.4	77	19.5	
USSR	941.5	44	414.0	
Total	1 002.5	45	462.1	
Growing stock, mill. m^3 over bark		Conifers, %		Conifers, %
Norway	621	80	571	82
Sweden	2 721	84	2 471	85
Finland	1 773	82	1 679	82
USSR	85 919	82	50 310	74
Total	91 034	82	55 031	75
Net annual increment, mill. m^3 o.b.		Conifers, %		Conifers, %
Norway	18.5	78	17.6	80
Sweden	96.7	82	91.0	83
Finland	72.5	77	69.7	77
USSR	1 017.0	63	699.9	56
Total	1 204.7	66	878.2	61
Removals in 1989, mill. m^3 o.b.		Conifers, %		Conifers, %
Norway	12.0	92	11.1	97
Sweden	56.9	83	54.5	83
Finland	52.0	80	50.7	81
USSR	516.8	65	465.2	67
Total	637.7	68	581.5	70

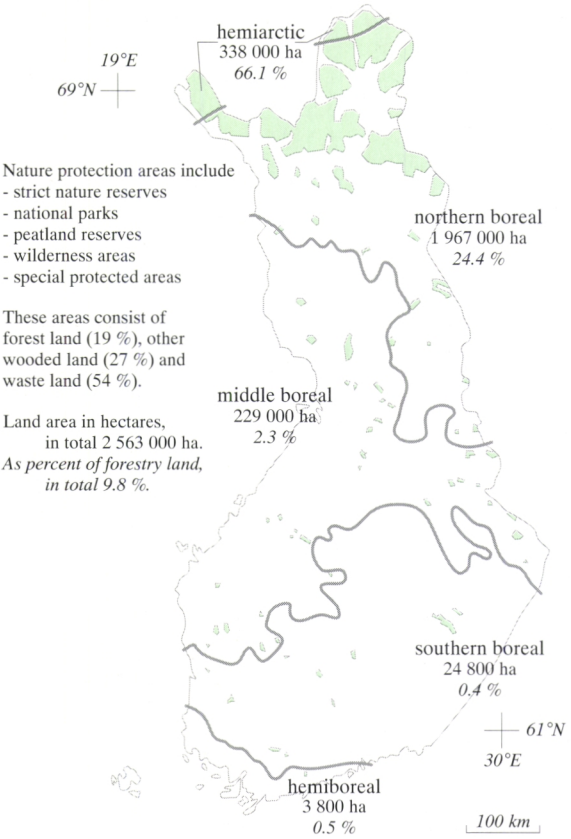
Source: The UN-ECE/ FAO 1990 Forest Resource Assessment

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



Source: Atlas of Finland, folio 141 (1988)

Nature protection areas by vegetation zones



Source: Finnish Environment Agency (1995)

The European Union

The European Union is the most important customer region for the Finnish forest products; its share is about 75 % in sawnwood and 65 % in paper and paperboard exports. The customer-orientation has also led to large Finnish investments in forest product manufacturing in those countries. The capacity of the Finnish-owned paper and paperboard industries inside the EU was about four million tons in 1994.

On January 1st, 1995 Finland together with Austria and Sweden joined the EU, with the consequent doubling of the forest resources of the European Union.

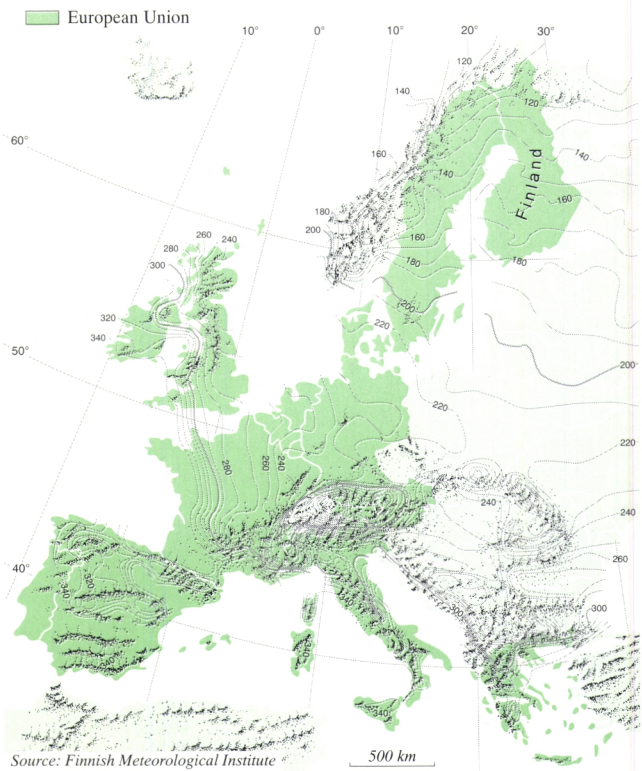
Forest resources of the European Union. Exploitable forests.

Country	Forest area mill. ha	Growing stock mill. m^3	of which conif., %	Increment at the end of 80's mill. m^3/yr	Removals mill. m^3/yr
Belgium	0.6	90	60	4.5	3.4
Denmark	0.5	54	54	3.5	2.0
France	12.5	1742	38	65.9	48.0
Germany	9.9	2674	68	63.1	42.6
Greece	2.3	149	52	3.3	2.9
Ireland	0.4	30	87	3.5	1.6
Italy	4.4	743	36	13.6	7.6
Luxembourg	0.1	20	18	0.7	0.3
Netherlands	0.3	52	56	2.4	1.3
Portugal	2.3	167	66	11.3	10.5
Spain	6.5	450	61	27.8	14.9
United Kingdom	2.2	203	55	11.1	7.3
Total	**42.0**	**6 374**	**54**	**210.7**	**142.4**
New Member States on Jan 1, 1995					
Austria	3.3	953	83	22.0	16.5
Finland	19.5	1 679	82	69.7	50.7
Sweden	22.0	2 471	85	91.0	54.5
Total	**44.8**	**5 103**	**84**	**182.7**	**121.7**
Grand total	**86.8**	**11 477**	**67**	**393.4**	**264.1**

Source: The UN-ECE/FAO 1990 Forest Resource Assessment

Duration of the growing season in Europe

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



Source: Finnish Meteorological Institute

Finnish exports of forest industry products to the European Union, 1994

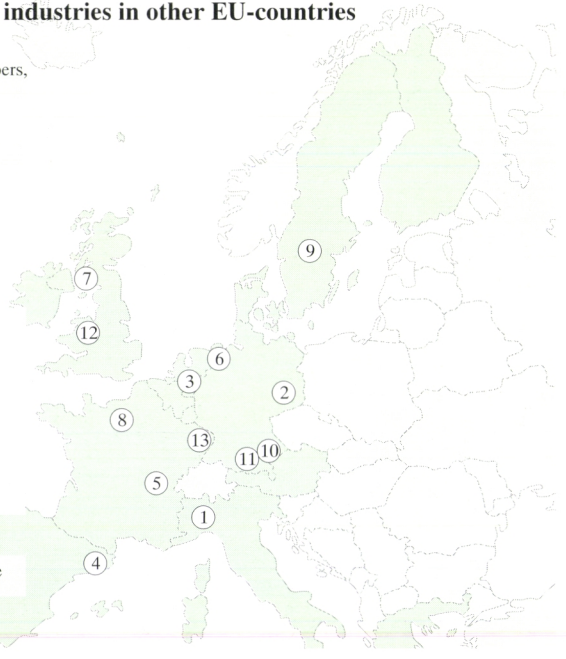
	Sawnwood	Plywood	Particle board	Fibre-board	Pulp	Paper and paperboard
	1000 m^3			1000 m.t.		
Belgium–Luxemb.	164	15	0	1	61	355
Denmark	715	32	3	3	7	292
France	690	65	0	2	165	852
Germany	1 133	185	1	3	645	1 452
Greece	108	1	-	4	8	131
Ireland	78	2	5	1	2	79
Italy	244	24	-	3	84	388
Netherlands	892	75	0	6	45	588
Portugal	3	1	-	-	29	54
Spain	106	13	-	0	12	658
United Kingdom	1 412	64	118	27	192	1 631
Total	**5 546**	**476**	**126**	**50**	**1 252**	**6 480**
% of total exports	*77*	*69*	*63*	*83*	*84*	*64*

Sources: National Board of Customs, Finnish Forest Industries Federation

Some major Finnish-owned forest industries in other EU-countries

1.	*Bosso Carte Speciali,* Italy (Ahlström)	industr. filter papers, release papers
2.	*Sachsen Papier Eilenburg,* Germany (Enso)	newsprint
3.	*Berghuizer Papierfabriek,* Netherlands (Enso)	uncoated fine paper
4.	*Enso Española,* Spain (Enso)	paperboard
5.	*Papeteries de Docelles,* France (Kymmene)	uncoated fine paper
6.	*Nordland Papier,* Germany (Kymmene)	fine paper
7.	*Caledonian Paper,* Scotland (Kymmene)	LWC paper
8.	*Chapelle Darblay,* France (Kymmene)	newsprint, LWC paper
9.	*Metsä-Serla AB,* Sweden (Metsä-Serla)	tissue paper
10.	*Gebrüder Lang,* Germany (Myllykoski)	newsprint
11.	*Papierfabrik Albbruck,* Germany (Myllykoski)	SC, LWC paper
12.	*Shotton Paper,* Wales (United Paper Mills)	newsprint
13.	*Stracel,* France (United Paper Mills)	bleached sulphite pulp, newsprint

Source: The Finnish Timber and Paper Directory 1994-95



FINNISH FORESTRY AND FOREST INDUSTRIES

National economy, forestry and the forest industries

In search of economic growth in post-war Finland, investments in pulp and paper industry doubled the production from 1955 to 1965. This trend has continued, and not only in the forest industries, but also in the metal industries and more recently, in the high-tech electronic industry.

In 1960, roundwood and forest industry products represented 75 % of the value of the total exports; their share was 35 % in 1994. The same diversification of production is, of course, to be seen in the structure of the gross domestic product. In 1960, the share of forestry on GDP was 8.7 %, and that of forest industry, 7.1 %. The corresponding figures for the year 1994 are 2.6 % and 5.7 %. In employment, forestry accounted for 6.6 % and forest industry for 5.2 % in 1960. In 1994, the corresponding figures were 1.2 and 3.7 % respectively.

It is worth noticing that flourishing engineering and service industries have developed around the Finnish forestry and forest industries. Strong mutual connections have contributed to the success of the whole. Finnish companies are in a strong position globally, e.g. in timber harvesters, paper machines and consultant services.

Forestry and forest industries in Finnish national economy, 1994

Gross domestic product		**507 779 million FIM**
of which	forestry	2.6 %
	forest industries	5.7 %
Total employment		**2.02 million persons**
of which	forestry	1.2 %
	forest industries	3.7 %
Total exports		**153 873 million FIM**
of which	forestry	0.5 %
	forest industries	34.2 %

FIM = 0.19 USD

Source: Statistics Finland

Forest industry: production and exports

Finland is among the major suppliers of forest-related products to world markets, particularly in printing and writing paper, and one of the biggest importers of roundwood. In 1994, the total value of forest products exports was 53 000 million FIM (about 10 000 million USD). Germany, United Kingdom and France are the most important importers of the Finnish forest products, covering together 43 % of the total.

Production of the Finnish forest industries, 1992–94

Product	Unit 1 000	1992	1993	1994
Sawnwood	m^3	6 900	8 305	9 700
Plywood and veneer	"	462	621	700
Particle board	"	354	439	477
Fibreboard	m.t.	73	85	86
Mechanical pulp	"	3 156	3 401	3 631
Chemi-mechanical pulp	"	458	472	487
Chemical pulp	"	4 914	5 465	5 844
Pulp, total	"	8 528	9 339	9 962
Newsprint	"	1 257	1 425	1 446
Printing and writing paper	"	4 979	5 502	6 096
Kraft paper	"	407	448	504
Other paper	"	432	459	496
Paper, total	"	7 075	7 834	8 542
Paperboard	"	2 078	2 156	2 367
Paper and paperboard	"	9 153	9 990	10 909

Source: Finnish Forest Industries Federation

Finnish forest industry exports, 1992–94

Product	Unit 1 000	1992	1993	1994
Sawnwood	m^3	4 649	6 216	7 181
Plywood and veneer	"	375	582	694
Particle board	"	95	195	200
Fibreboard	m.t.	45	53	60
Mechanical pulp	"	83	83	72
Chemical pulp	"	1 206	1 372	1 420
Newsprint	"	1 146	1 250	1 252
Printing and writing paper	"	4 525	5 149	5 833
Kraft paper	"	298	329	356
Other paper	"	326	328	325
Paper, total	"	6 293	7 056	7 766
Paperboard	"	1 754	1 764	1 986
Converted paper products	"	273	308	369
Total paper and paperboard	"	8 320	9 129	10 122

Source: National Board of Customs

Value of Finnish forest industry exports, 1994

mill. FIM

Country	Sawnwood	Wood-based panels, other wood products	Pulp	Paper, paper-board, converted products	Forest exports, total
Belgium-Luxembourg	168	60	171	1 191	1 590
Denmark	789	224	21	1 020	2 053
France	742	232	415	3 223	4 612
Germany	1 402	1 491	1 601	5 145	9 653
Greece	117	16	19	407	559
Ireland	87	19	6	279	391
Italy	303	105	196	1 232	1 836
Netherlands	925	292	117	2 140	3 478
Portugal	3	6	75	174	258
Spain	109	75	27	2 082	2 293
United Kingdom	1 658	458	479	5 844	8 441
EU total	6 303	2 977	3 127	22 737	35 164
Other Europe	387	1 340	321	4 697	6 757
Europe total	**6 690**	**4 317**	**3 448**	**27 434**	**41 921**
Asia	646	256	215	3 630	4 748
Africa	647	17	12	569	1 245
North America	3	134	32	2 613	2 782
Latin America	0	1	1	931	934
Oceania	28	2	7	984	1 021
Grand total	**8 014**	**4 728**	**3 715**	**36 161**	**52 651**

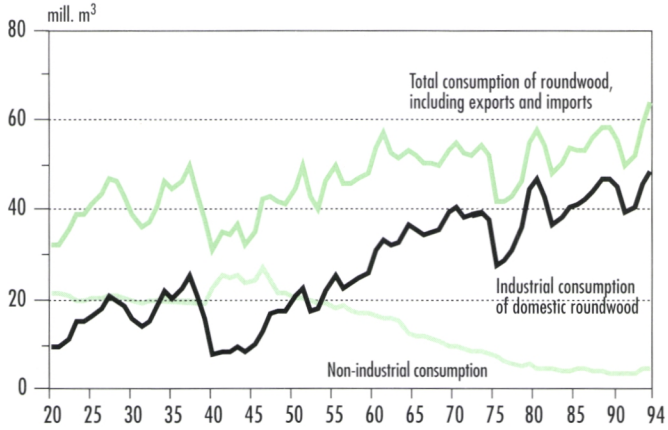
FIM = 0.19 USD
Source: National Board of Customs

Wood consumption

Total wood consumption in Finland has remained at the same level during the last 35 years, in spite of a multiple increase in wood pulp production. This is mainly due to many structural changes, such as reductions in fuelwood consumption and roundwood exports, as well as the increased use of industrial wood residues. Industrial wood consumption, nevertheless, shows a strong upwards trend.

In 1994 total roundwood consumption reached an all-time record of 65.0 million m^3, including imports and exports. Industrial wood consumption was 58.6 mill. m^3. Imported roundwood of 8.5 mill. m^3 accounted for 15 % of industrial wood consumption.

Consumption of roundwood in Finland, 1920–94



Non-industrial consumption does not include exports of roundwood

Source: The Finnish Forest Research Institute

Roundwood consumption during 5 -year periods, 1980–94

Consumption category	1980–84	1985–89	1990–94
			mill. m^3/yr
Exports	1.6	1.3	1.0
Industrial roundwood	41.2	44.4	44.4
sawmills and panel industries	21.0	20.3	20.0
pulp industries	20.2	24.1	24.4
Fuelwood and other	4.5	3.9	4.1
Domestic roundwood total	47.3	49.6	49.5
Imported wood	5.6	6.1	6.8
Total consumption	**52.9**	**55.7**	**56.3**

Source: Finnish Forest Research Institute

Roundwood consumption and roundwood exports, 1992–94

Consumption category	1992	1993	1994
			mill. m^3
Total consumption in Finland	**51.6**	**57.5**	**63.2**
Pine	19.4	21.0	22.4
Spruce	19.6	21.6	24.7
Broad-leaved	11.6	14.3	15.4
Unspecified	1.0	0.7	0.7
Domestic roundwood	44.7	50.6	54.7
Pine	17.9	19.9	20.7
Spruce	19.2	21.4	24.2
Broad-leaved	7.6	9.2	9.7
Imported wood	6.9	7.0	8.5
Pine	1.5	1.1	1.7
Spruce	0.4	0.2	0.5
Broad-leaved	4.1	5.1	5.6
Unspecified	1.0	0.7	0.7
Exports, incl. poles	**0.7**	**1.2**	**1.9**
Pine	0.5	0.8	1.0
Spruce	0.1	0.4	0.8
Broad-leaved	0.1	0.1	0.1

Source: Finnish Forest Research Institute

Wood consumption in sawmilling, plywood and pulp industries, 1992–94

mill. m^3

Year	Domestic roundwood		Imported wood	Wood residues	Total
	Conif.	Broad-leaved			
		Sawmilling			
1992	15.7	0.2	0.1	-	16.0
1993	18.5	0.2	0.1	-	18.8
1994	22.2	0.2	0.3	-	22.7
		Plywood industry			
1992	0.6	0.9	0.1	-	1.6
1993	1.1	0.8	0.1	-	1.9
1994	1.1	1.0	0.1	-	2.3
		Chemical pulp industry			
1992	11.2	3.8	5.9	4.4	25.3
1993	11.8	4.6	6.2	5.1	27.7
1994	11.2	4.8	7.7	6.1	29.8
		Mechanical pulp industry			
1992	7.5	0.4	0.7	1.5	10.2
1993	8.0	0.5	0.5	1.8	10.8
1994	8.4	0.6	0.4	2.3	11.7

Source: Finnish Forest Research Institute

Labour force

Efficient multi-function timber harvesters (nowadays numbering about 1200) are increasingly used in logging operations. The mechanization of logging has led to a continuous decrease in the number of forest workers. Only about 7 000 men are working in logging proper.

Forestry employed 25 000 people in 1994, compared with 63 000 in 1980. The same trend applies to forest industries. They employed 120 000 people in 1980, but only 74 000 in 1994. However, the production has increased about 30 % during that period. Consequently, forestry and forest industries, even during a boom, do not directly contribute to solving the severe problem of unemployment in Finland (17.5 % in May 1995).

Employment in forestry and forest industries, 1992–94

1000 persons

	1992	1993	1994
Forestry	30	28	25
Forest industries	76	73	74
Forest sector, total	106	101	99
Employment, total	2 174	2 041	2 024
Unemployed, total	328	444	456
Unemployment rate, %	*13.1*	*17.9*	*18.4*

Source: Statistics Finland

Employment in forest industries, 1992–94

1000 persons

	1992	1993	1994
Sawmills	10	10	11
Plywood and veneer industry	7	7	7
Other board industry	1	1	1
Other wood products industry[1]	14	11	12
Pulp industry	20	20	19
Paper industry	19	19	18
Paperboard industry	6	6	6
Forest industries, total	**76**	**73**	**74**

[1] *Includes e.g. carpentry and manufacture of wooden houses.*

Source: Statistics Finland

Roundwood markets

The commercial removals in 1994 amounted to an all-time high, 49.2 million m^3 in total, of which an unusually high proportion (82 %) came from private non-industrial forests. The cuttings have increased rapidly following the severe recession in 1991.

Logging, even from private forests, is mainly carried out by the forest industries or by their separate wood procurement organisations. In 1994, forest owners themselves carried out or organized the logging of 11.6 million m^3, or 29 % of the commercial roundwood removed from the private forests.

Due to the recession, roundwood prices declined three years in succession, 1991–93, bottoming out in May 1993. After that the prices have again increased. Roundwood prices in Finland are agreed in regional negotiations between forest owners and forest industries.

Roundwood procurement and consumption in Finland, 1994

Sources	mill. m^3
Commercial roundwood	
from private-owned forests	40.6
from industry-owned forests	4.4
from state-owned forests	4.2
Non-commercial wood	5.8
Domestic roundwood, total	55.0
Imported wood	8.5
Roundwood procurement, total	**63.5**
Consumption	
Sawmills	22.7
Wood-based panels	2.3
Other wood products	0.5
Chemical pulp industry	23.7
Mechanical pulp industry	9.4
Industry, total	58.6
Fuelwood	4.6
Exports of roundwood	1.9
Roundwood consumption, total	**65.0**

Note 1. Imported wood is mostly birch pulpwood from Russia.
Note 2. Sawmills furnished pulp industry with 8.4 mill. m^3 of wood residues.

Source: Finnish Forest Research Institute

Roundwood removals by ownership category, 1992–94

mill. m^3

Ownership category	1992	1993	1994
Private forests[1]	34.6	36.7	46.4
commercial	29.7	31.1	40.6
non-commercial	4.9	5.6	5.8
Forests industries	5.4	6.0	4.4
Finnish Forest and Park Service [2]	5.1	5.0	4.2
Commercial, total	40.2	42.1	49.2
Grand total	**45.1**	**47.7**	**55.0**

[1] includes here communes, parishes and some other public forests.
[2] FFPS is a state-owned enterprise managing most of the state-owned forests.

Source: Finnish Forest Research Institute

Roundwood removals by assortment, 1992–94

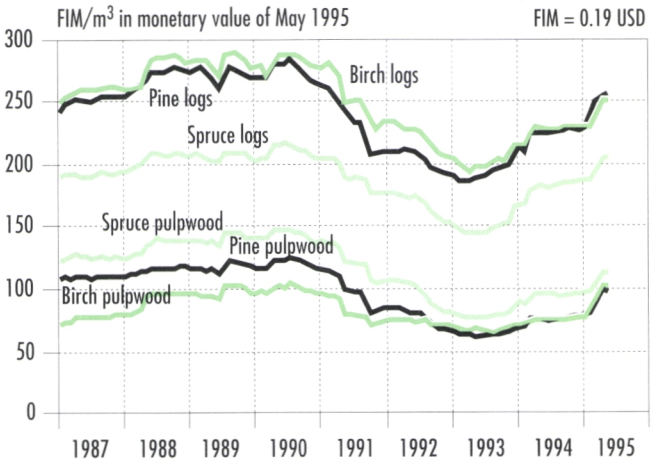
mill. m^3

Roundwood assortment	1992	1993	1994
Large-sized timber	18.0	19.8	24.9
pine sawlogs	7.6	8.2	9.6
spruce sawlogs	9.3	10.6	14.1
birch sawlogs	1.1	1.0	1.2
Pulpwood	22.2	22.1	24.2
pine pulpwood	8.7	8.7	9.7
spruce pulpwood	8.5	8.6	9.4
birch pulpwood	4.8	4.5	4.7
other industrial wood	0.2	0.2	0.4
Commercial fuelwood[1]	0.1	0.2	0.1
Commercial removals, total	40.2	42.1	49.2
Non-commercial removals	4.9	5.6	5.8
Grand total	**45.1**	**47.7**	**55.0**

[1] only that purchased by industry.

Source: Finnish Forest Research Institute

Stumpage prices in non-industrial private forestry, 1987–95



Source: Finnish Forest Research Institute

Silvicultural and forest improvement work

About 110–120 thousand hectares are currently planted or seeded annually for forestry, almost exclusively with native tree species. Seed tree or shelterwood cuttings have been applied to 40 to 50 thousand hectares yearly.

About 230 000 hectares of seedling stands are treated annually with silvicultural measures. About half of the Finnish mires have been drained for forestry, but nowadays this work is quantitatively declining. The same applies to forest fertilization.

The total costs of silvicultural and forest improvement work amounted to FIM 1143 million (about 200 million USD) in 1993. Out of the 958 million FIM corresponding non-industrial private forestry, 52 % are accounted for by forest owners' own financing or work, and the rest are financed by state grants (40 %) or loans (8 %).

Annual cutting areas, 1992–93

Type of cutting	1992	1 000 ha 1993
Thinnings	138	141
Clearcuttings	127	106
Seed tree and shelterwood cuttings	43	46
Removals of seed tree and shelterwood	36	38
Other cuttings	7	9
Total	**351**	**340**
% of forest area	1.5	1.5

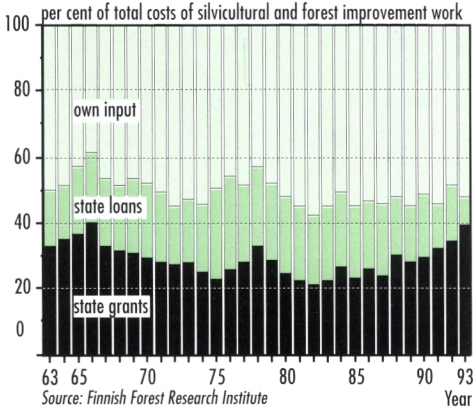
Source: Finnish Forest Research Institute

Silvicultural and forest improvement work, 1992–93

		1992	1993
Clearing of regeneration areas	1000 ha	106	93
Scarification	"	119	121
Artificial regeneration	"	123	111
Seedling stand improvement	"	242	232
Forest fertilization	"	5	4
Drainage of mires	"	35	26
Maintenance of drainage	"	74	80
Construction of forest roads	km	3 856	4 196
Total costs	**mill. FIM**	**1 262**	**1 143**

Source: Finnish Forest Research Institute

Financing of silviculture and forest improvement work in non-industrial private forestry, 1963–93



Source: Finnish Forest Research Institute

Forest resources

The nationwide information on forest resources is based on surveys carried out by the Finnish Forest Research Institute. Systematic ground sampling has been applied. The inventory years are as follows:

I	1921–24	V	1964–70
II	1936–38	VI	1971–76
III	1951–53	VII	1977–84
IV	1960–63	VIII	1986–94

In spite of the 12 % reduction in forest area in 1944 due to the war, wood resources are currently more plentiful than in pre-war Finland. According to the 1st Inventory the total growing stock volume was 1 588 million m^3. The 7th Inventory gave a result of 1 660 million m^3 and the 8th 1 887 million m^3. In recent years annual volume increment has exceeded drain by some 30 million m^3.

During the past 70 years the structure of the forests has changed significantly. The forests now have a more even age structure. Of the growing stock, Scots pine's share is 45 % and Norway spruce's 37 %, leaving 18 % for the broad-leaved species, mostly birch. This distribution has been stable. However, Scots pine is the dominant species on 63 % of forest land area, which means that there is a large area of young pine stands.

The area of productive forest land (criterion: capability to yield at least 1 m^3/ha/yr) is 20.0 million hectares and that of other wooded land 3.0 million hectares. Thus, the total wood-growing area is 23.0 million hectares. Of this, 1.17 million hectares (5.1 %) has been proctected. These areas, in which all forestry activities are prohibited, are almost entirely situated in the northern part of the country.

Principal land use categories in Finland, 1986–94

	mill. ha
Total area	**33.8**
Inland watercourses	3.3
Land area	30.5
Forest land	20.0
Other wooded land	3.0
Waste land	3.1
Roads, depots	0.2
Forestry land, total	**26.3**
Agricultural land	3.0
Built-up areas	0.8
Transport routes	0.4

Source: Finnish Forest Research Institute

Mineral soils and mires and their drainage, 1986–94

	mill. ha
Mineral soils	17.2
Mires	8.9
Roads, depots	0.2
Forestry land, total	**26.3**
Spruce mires	2.3
Pine mires	4.9
Open mires	1.7
Total	**8.9**
Undrained mires	4.3
Recently drained mires	1.1
Transforming mires	2.7
Transformed mires	0.9
Total	**8.9**

Soil is recorded as mire if it is peat-covered or mire plants account for more than three quarters of the ground flora. In transforming mires the effect of drainage is perceptible in the growing stock. Transformed mires have reached full productivity after drainage.

Source: Finnish Forest Research Institute

Dominant tree species of forest stands, 1986–94

		%[1]
Temporarily non-stocked		1.5
Scots pine	*Pinus sylvestris*	64.5
Norway spruce	*Picea abies*	25.7
Other coniferous		0.1
White birch	*Betula pendula*	1.3
Downy birch	*Betula pubescens*	6.2
Aspen	*Populus tremula*	0.3
Alder	*Alnus sp.*	0.4
Other broad-leaved		0.1
Total		100.0
Forest land area	(mill. ha)	20.0

[1] *on forest land area.*

Note that of volume the broad-leaved species share much more.

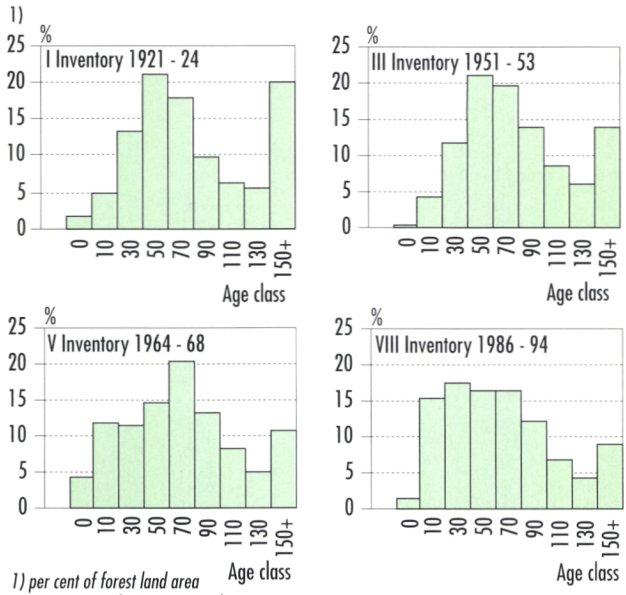
Source: Finnish Forest Research Institute

Wood resources in Finland, 1986–94

Forest and other wooded land	mill. ha	23.0
Growing stock volume	mill. m^3	1 887
Scots pine	"	863
Norway spruce	"	690
Broad-leaved	"	334
Volume increment	mill.m^3/yr	77.1
Scots pine	"	33.1
Norway spruce	"	27.4
Broad-leaved	"	16.6

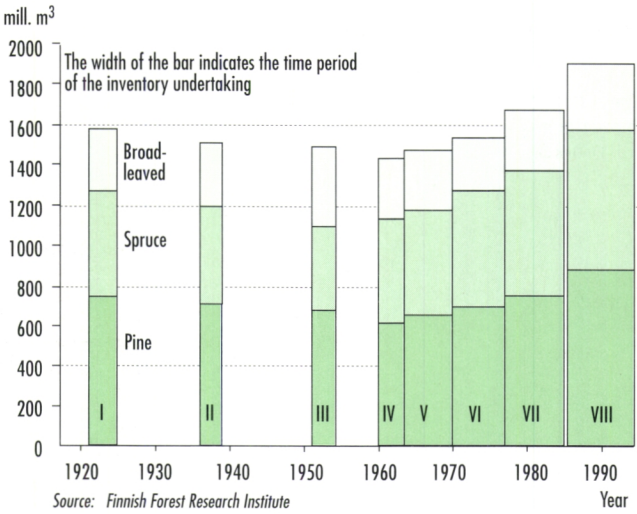
Source: Finnish Forest Research Institute

Age structure development of the Finnish forests



1) per cent of forest land area
Source: Finnish Forest Research Insitute

Growing stock volumes according to eight national forest inventories



Source: Finnish Forest Research Institute

Forest ownership in Finland, 1986–94

Ownership category	Forest land mill. ha	Forestry land mill. ha	%
Private	12.4	14.2	*54.2*
Companies	1.7	2.0	*7.7*
State	5.0	8.8	*33.4*
Others	1.0	1.2	*4.7*
Total	**20.0**	**26.3**	*100.0*

Source: Finnish Forest Research Institute

Non-industrial private ownership of forests, 1990

Ownership group	% On holdings/ owners	% On forest land area
Family ownership	76	76
Group ownership	6	7
Heirs ownership	18	17
Farmers	32	42
Wage earners	27	24
Entrepreneurs	5	5
Pensioners	36	29
Less than 40 years old	14	16
40 to 59 years old	44	45
Over 60 years old	42	39
Reside on the holding regularly	59	66
Reside on the holding part-time	9	9
Reside somewhere else	32	25

The figures concern forest holdings of over five hectares of forest land, the number of which is about 280 000 and the corresponding forest land area is 12.4 million hectares.

Source: Finnish Forest Research Institute

Growing stock volume within ownership categories, 1986–94

Ownership category	Scots pine	Norway spruce	Broad-leaved	Total (mill. m^3)	%
Private	533	526	243	1 302	*69.0*
Companies	77	51	22	150	*7.9*
State	211	80	53	344	*18.2*
Others	43	33	16	92	*4.9*
Total	**863**	**690**	**334**	**1 887**	*100.0*

Source: Finnish Forest Research Institute

Annual volume increment within ownership categories, 1986–94

Ownership category	Scots pine	Norway spruce	Broad-leaved	Total	
		mill. m^3/yr			%
Private	20.8	21.8	12.7	55.3	*71.7*
Companies	3.9	2.3	1.2	7.4	*9.6*
State	6.7	2.1	1.9	10.7	*13.9*
Others	1.7	1.2	0.8	3.7	*4.8*
Total	**33.1**	**27.4**	**16.6**	**77.1**	*100.0*

Source: Finnish Forest Research Institute

Mean growing stock volume and annual increment within ownership categories, 1986–94

Ownership category	Mean volume m^3/ha	Increment m^3/ha/yr	Increment percentage
Private	104	4.4	4.2
Companies	85	4.2	4.9
State	64	2.0	3.1
Others	92	3.8	4.1
Total	**92**	**3.8**	**4.1**

The data refer to stands on forest land.
State forests are located mainly in North Finland where the climate is less favourable.

Source: Finnish Forest Research Institute

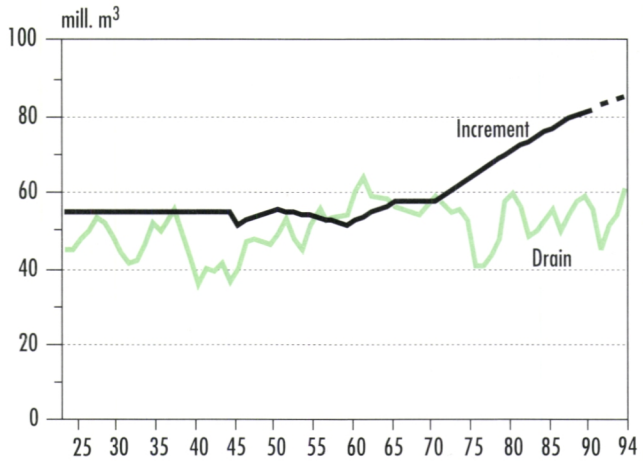
Increment (I) and drain (D) in 5 -year periods, 1980–94

		1980–84	1985–89	mill. m^3/yr 1990–94
Scots pine	I	29.6	33.9	35.8
	D	21.8	20.9	20.0
Norway spruce	I	26.2	27.9	28.8
	D	20.2	21.9	22.3
Broad-leaved	I	16.2	16.8	16.8
	D	11.1	12.1	11.0
Total	I	**72.0**	**78.6**	**81.4**
	D	**53.2**	**54.9**	**53.3**

Note. Increments for 1990–94 are rough forecasts.

Source: Finnish Forest Research Institute

Annual increment and drain of the growing stock, 1923–94



Multiple production of forests, 1992–94

		1992	1993	1994
Commercial roundwood	mill. m³ o.b.	40	42	49
Non-commercial roundwood	mill. m³ o.b.	5	6	6
Commercial forest berries	m.t. [1]	7 504	1 774	10 339
Commercial forest mushrooms	m.t. [1]	672	379	462
Lichen picking for export	m.t.	466	459	401
Moose catches	m.t.	6 656	6 495	..
Hare catches	m.t.	670	721	..
Catches of callinaceous birds	m.t.	211	256	..
Catches of fur animals	1000 ind.	297	294	..
Reindeer meat production	m.t.	4 150	3 000	3 200

[1] *Quantities offered for sale.*

Sources: Finnish Forest Research Institute, Finnish Game and Fisheries Research Institute

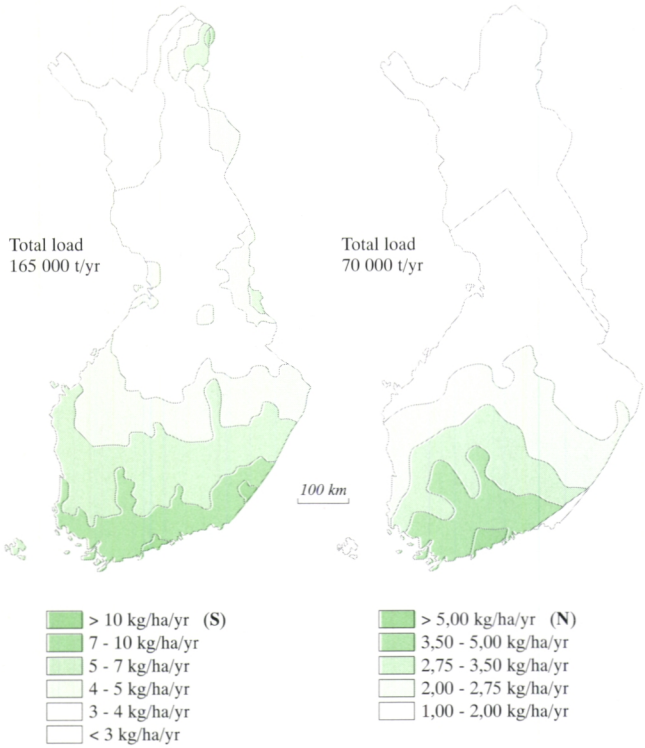
Forest condition in Finland, 1986–94

Forest land area, total 20.0 mill. ha

Extension of damages affecting stand quality	% on forest land
Totally damaged	0.4
Severely damaged	4.2
Moderately damaged	17.0
Total	**21.6**
Damaging agents	
Natural competition	1.4
Climatic factors	5.2
Harvesting damages	0.6
Moose	1.2
Moles	0.1
Insects	0.3
Fungi	7.0
Multiple symptoms	1.5
Unknown	4.3
Total	**21.6**

Source: Finnish Forest Research Institute

Pollution-induced load to forests



Source: Finnish Meteorological Institute (1992)

Note. On October 12, 1996, the regional telephone codes will be changed. The new codes are mentioned in brackets after the current ones.

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Finnish Pulp and Paper Research Institute (KCL)
(Keskuslaboratorio)
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(owned by the paper industry)

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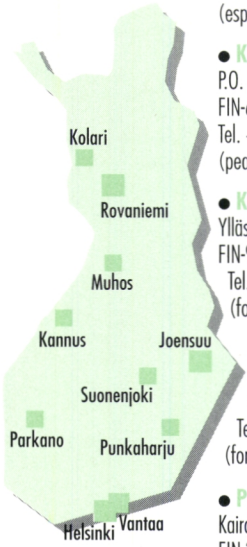

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The Finnish Society of Forest Science and the Finnish Forest Research Institute jointly publish the scientific journals Acta Forestalia Fennica and Silva Fennica.

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Sources: Finnish Forestry Association

The Yearbook of Forest Statistics

Dear Colleague,

Now, after having examined "Forest Finland in brief", you certainly have the basic facts on the Finnish forest sector. But is this enough for you? – There are other options for those interested in obtaining a more in-depth and detailed statistical view of forestry and the forest industries in Finland.

The Finnish **Yearbook of Forest Statistics**, comprising approx. 200 tables and 70 figures, covers the Finnish forest sector in full detail, ranging from forest resources to foreign trade in forest-related products. Recent international statistics of major importance are also presented. Special emphasis is placed on extended time series, many of which date back to the 1950's. The yearbook is presented in two languages, Finnish and English.

Finally, I would like to remind you that the METLA also monitors the development of the Finnish roundwood markets and foreign trade on a monthly basis. At request, this information can also be distributed abroad.

For further information, feel free to contact me:

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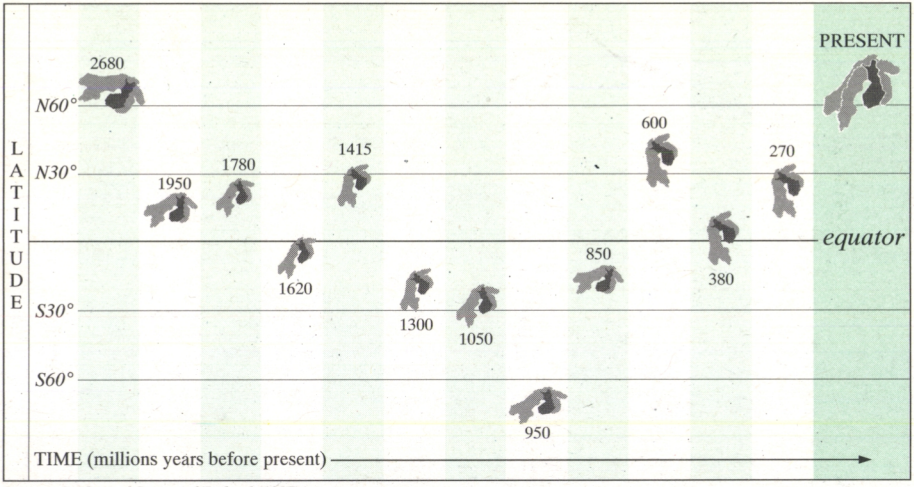
Yours sincerely,

Martti Aarne
Research Forester
The Finnish Forest Research Institute (METLA)
Forest Statistics Information Service

The changing world: the latitude-related drift history of Fennoscandia



Source: Geological Survey of Finland (1987)