

Finnish Forest Research Institute

METLA

# FOREST FINLAND

IN BRIEF

2003



## FOREST FINLAND IN BRIEF

offers a concise description of the Finnish forestry and forest industries in an international context from the viewpoint of forest statistics. For a more detailed description the reader is referred to the Finnish Statistical Yearbook of Forestry with approximately 200 tables and 60 figures in English.

Ideal growing conditions for conifers, easily workable and valuable tree species, good logging conditions and infrastructure, combined with accessibility to major European markets, have made forests a major source of well-being in Finland. Finns look upon forests not only in the material sense, but also as a valuable ecological and cultural resource.

Finland has committed itself to sustainable forestry in a broad sense, including biodiversity, social and cultural values of the forests. The reformed forest and nature-conservation legislation, as well as Finland's National Forest Programme 2010, provide a framework for achieving these ends.

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## INTERNATIONAL CONTEXT

### Major producers and traders

Finland, with its 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 their good mixture of broadleaves, enable annual fellings of over 60 million m<sup>3</sup> on a sustained basis, and this allowable cut is increasing. The infrastructure for roundwood procurement is good. Finnish forest industries are highly export-oriented. In most branches of these industries, 70% to 90% of the production goes abroad. Finland is a major exporter of sawn softwood and paper, particularly graphic papers.

### Global roundwood production in 2001

(million m<sup>3</sup> under bark):

|                   |       |              |       |
|-------------------|-------|--------------|-------|
| Industrial wood   | 1 543 | Softwood     | 1 169 |
| Fuelwood&charcoal | 1 784 | Hardwood     | 2 158 |
| <b>3 327</b>      |       | <b>3 327</b> |       |

The total value of the global export trade of forest products amounted to USD 132 billion (f.o.b) in 2001, of which Finland's share was 7.6%. In the following tables, the Russian Federation is included in Europe.

### World production of softwood, 2001

|                |              |                           |
|----------------|--------------|---------------------------|
| <b>World</b>   | <b>1 169</b> | mill. m <sup>3</sup> u.b. |
| <b>Europe</b>  | <b>385</b>   |                           |
| USA            | 284          |                           |
| Canada         | 146          |                           |
| China          | 138          |                           |
| Russia         | 108          |                           |
| Sweden         | 57           |                           |
| Brazil         | 53           |                           |
| <b>Finland</b> | <b>44</b>    |                           |

### World imports of roundwood and wood chips, 2001

|                |              |                           |
|----------------|--------------|---------------------------|
| <b>World</b>   | <b>162.2</b> | mill. m <sup>3</sup> u.b. |
| <b>Europe</b>  | <b>70.1</b>  |                           |
| Japan          | 39.6         |                           |
| China          | 20.3         |                           |
| <b>Finland</b> | <b>13.3</b>  |                           |
| Sweden         | 10.9         |                           |
| Canada         | 8.9          |                           |
| Korea Rep.     | 8.8          |                           |
| Austria        | 8.6          |                           |

### World production of sawn softwood, 2001

|                |              |                      |
|----------------|--------------|----------------------|
| <b>World</b>   | <b>271.4</b> | mill. m <sup>3</sup> |
| <b>Europe</b>  | <b>109.5</b> |                      |
| USA            | 59.4         |                      |
| Canada         | 46.7         |                      |
| Russia         | 17.5         |                      |
| Sweden         | 15.6         |                      |
| Japan          | 15.0         |                      |
| Germany        | 14.9         |                      |
| <b>Finland</b> | <b>12.7</b>  |                      |
| Austria        | 10.0         |                      |
| Brazil         | 7.8          |                      |
| China          | 4.7          |                      |

### World exports of sawn softwood, 2001

|                |             |                      |
|----------------|-------------|----------------------|
| <b>World</b>   | <b>89.9</b> | mill. m <sup>3</sup> |
| <b>Europe</b>  | <b>47.7</b> |                      |
| Canada         | 35.1        |                      |
| Sweden         | 10.8        |                      |
| <b>Finland</b> | <b>8.1</b>  |                      |
| Russia         | 7.1         |                      |
| Austria        | 6.1         |                      |
| Germany        | 3.0         |                      |
| Latvia         | 2.4         |                      |
| Czech Rep.     | 1.6         |                      |
| New Zealand    | 1.6         |                      |
| USA            | 1.5         |                      |

### World production of paper and paperboard, 2001

|                |              |                   |
|----------------|--------------|-------------------|
| <b>World</b>   | <b>320.3</b> | mill. metric tons |
| <b>Europe</b>  | <b>98.4</b>  |                   |
| USA            | 81.5         |                   |
| China          | 37.9         |                   |
| Japan          | 30.7         |                   |
| Canada         | 19.8         |                   |
| Germany        | 17.9         |                   |
| <b>Finland</b> | <b>12.5</b>  |                   |
| Sweden         | 10.5         |                   |
| France         | 9.6          |                   |
| Korea Rep.     | 9.3          |                   |
| Italy          | 8.9          |                   |

### World exports of paper and paperboard, 2001

|                |             |                   |
|----------------|-------------|-------------------|
| <b>World</b>   | <b>94.6</b> | mill. metric tons |
| <b>Europe</b>  | <b>56.7</b> |                   |
| Canada         | 14.5        |                   |
| <b>Finland</b> | <b>10.9</b> |                   |
| Germany        | 8.8         |                   |
| Sweden         | 8.7         |                   |
| USA            | 8.4         |                   |
| France         | 4.6         |                   |
| China          | 3.6         |                   |
| Austria        | 3.3         |                   |
| Netherlands    | 3.1         |                   |
| Korea Rep.     | 2.3         |                   |

Source: FAOSTAT Forestry Data 2003

## Value of global exports of forest-industries' products, 2001

|                | USD billion  | USD per capita |
|----------------|--------------|----------------|
| <b>World</b>   | <b>132.2</b> | <b>22</b>      |
| <b>Europe</b>  | <b>66.2</b>  | <b>91</b>      |
| Canada         | 24.3         | 790            |
| USA            | 14.1         | 50             |
| Germany        | 10.5         | 128            |
| <b>Finland</b> | <b>10.1</b>  | <b>1 941</b>   |
| Sweden         | 9.1          | 1 027          |
| France         | 5.4          | 92             |
| Indonesia      | 5.0          | 24             |

Source: FAO  
Yearbook. Forest  
Products 2001

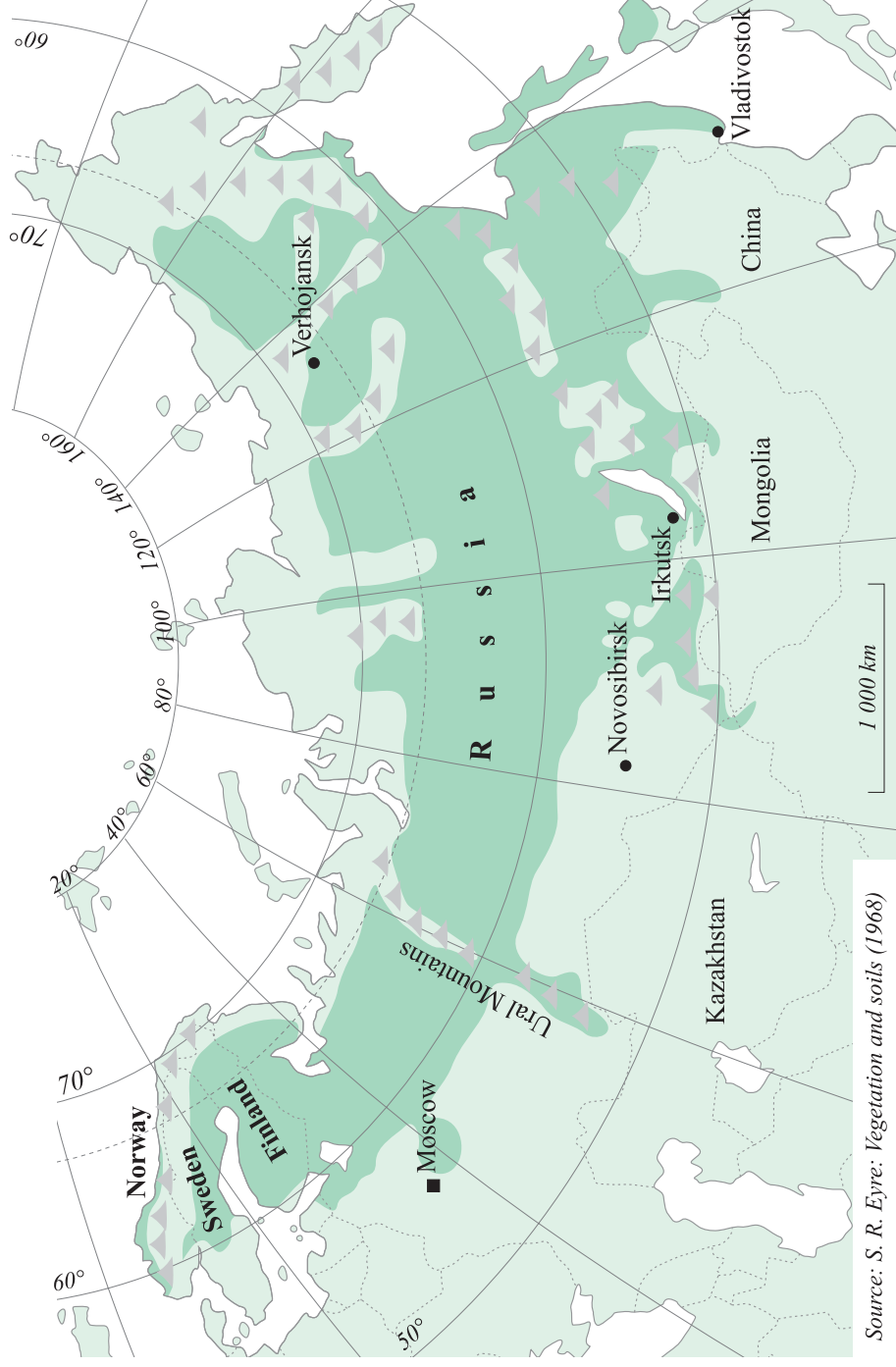
## Eurasian boreal forest zone

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 in area is one of the most important providers of roundwood in the world. In the European part and West Siberia, Scots pine and Norway spruce dominate. In East Siberia, Siberian larch, and in the Russian Far East, Dahurian larch are the most important species. In the mountainous Far East, the forests are mostly inaccessible.

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

## Eurasian boreal forest zone



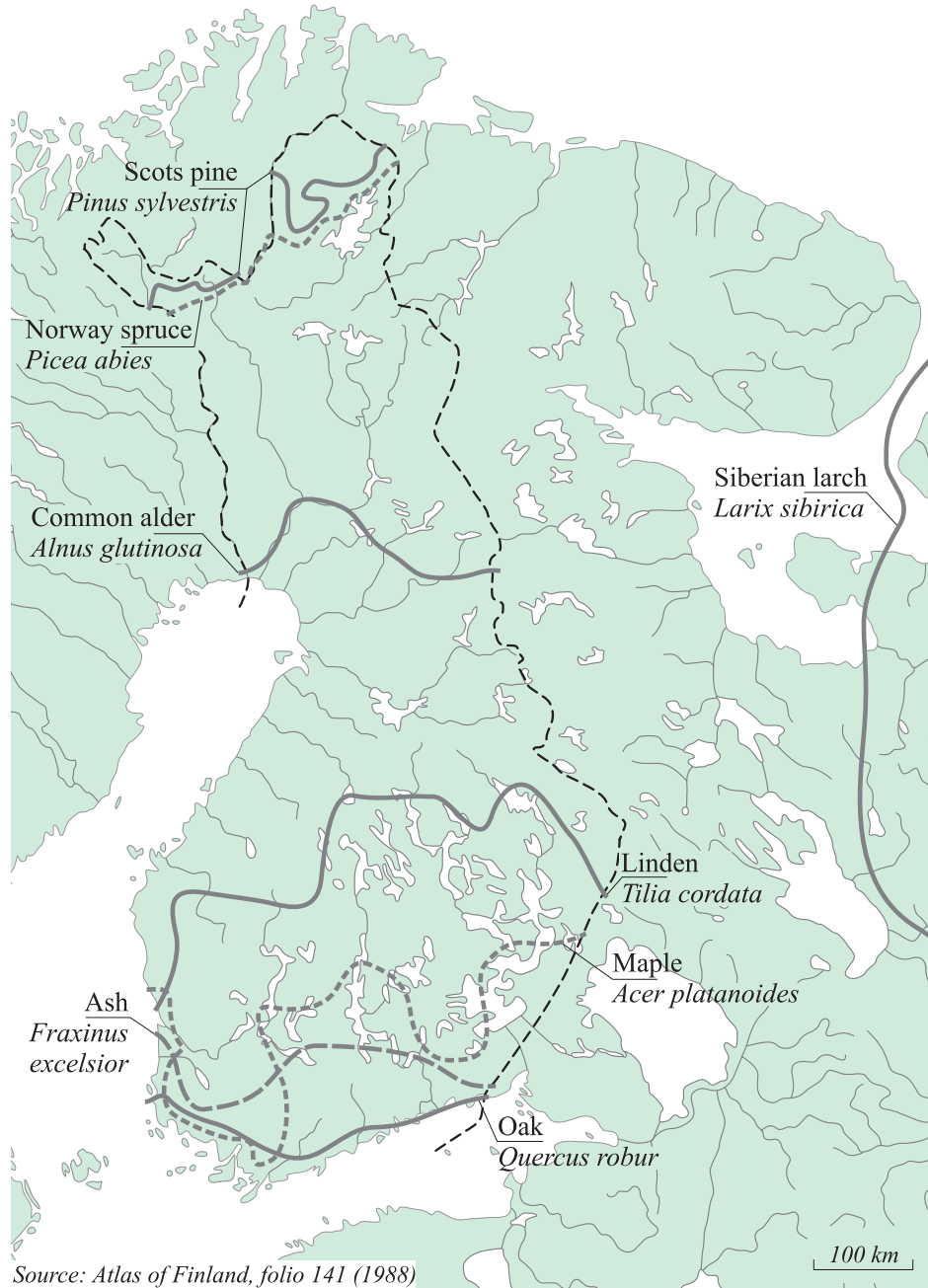
Source: S. R. Eyre: *Vegetation and soils* (1968)

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

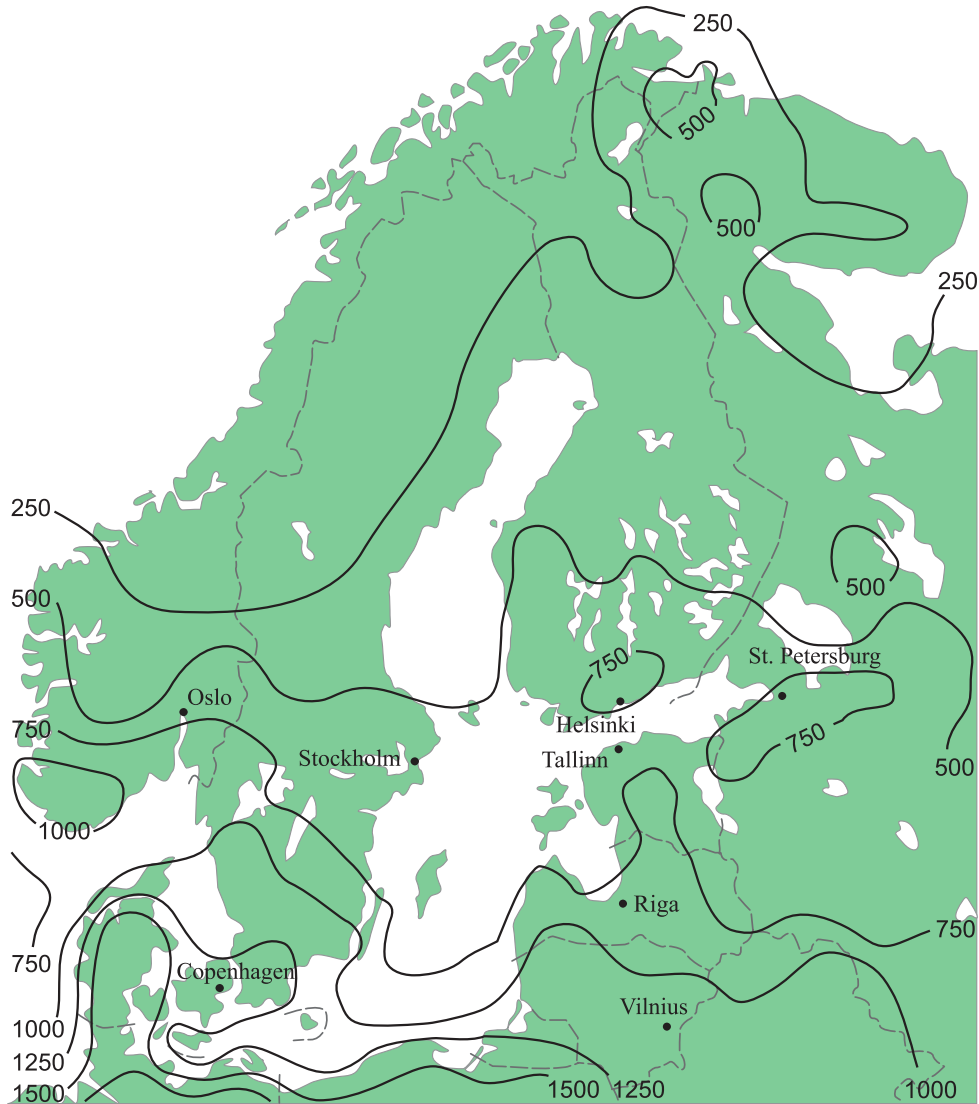
|   | Forest,<br>total | Forest available for<br>wood supply |           |
|---|------------------|-------------------------------------|-----------|
| <b>Forest land, mill. ha</b>  |                  |                                     |           |
|   |                  | % of land area                      |           |
| 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            | 49                                  | 573.7     |
| <b>Growing stock on forest land, mill. m<sup>3</sup> over bark</b>      |                  |                                     |           |
|   |                  | Conif., %                           | Conif., % |
| 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 |
| <b>Net annual increment on forest land, mill. m<sup>3</sup> o.b./yr</b> |                  |                                     |           |
|   |                  | Conif., %                           | Conif., % |
| 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  |
| <b>Removals in mid-1990s, mill. m<sup>3</sup> o.b./yr</b>               |                  |                                     |           |
|   |                  | Conif., %                           | Conif., % |
| 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  |



## 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 1999, in eq/ha/yr**



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, of which Finland became a member in 1995, is the most important customer region for Finnish forest-industries' products; its share is about 65% of both sawn goods and of paper and paperboard exports. Customer-orientation has also led to large Finnish investments in forest-product manufacturing in the region. The capacity of the Finnish-owned paper and paperboard industries in the EU countries other than Finland is about 12 million tonnes, not taking into account M-real's and Stora Enso's paper mills in Sweden.

## The European Union

The forest resources of the European Union roughly doubled in 1995 when forest-rich Finland, Sweden and Austria joined the EU. The EU's eastward enlargement in May, 2004, will bring additional 30 million hectares of commercial forests into the Union.

### Forests available for wood supply in the European Union

| Country        | Forest area<br>mill. ha | Growing stock<br>mill. m <sup>3</sup> | of which<br>conif., % | Increment<br>in mid-90s<br>mill. m <sup>3</sup> /yr | Removals<br>mill. m <sup>3</sup> /yr |
|----------------|-------------------------|---------------------------------------|-----------------------|---|--------------------------------------|
| Austria        | 3.4                     | 1 037                                 | 82                    | 27.3  | 16.9                                 |
| Belgium        | 0.6                     | 140                                   | 46                    | 5.1   | 4.4                                  |
| Denmark        | 0.4                     | 54                                    | 58                    | 3.2   | 2.2                                  |
| 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                                  |
| Ireland        | 0.6                     | 43                                    | 92                    | 3.5   | 2.3                                  |
| Italy          | 6.0                     | 877                                   | 33                    | 18.7  | 8.4                                  |
| Luxembourg     | 0.1                     | 20                                    | 18                    | 0.7   | 0.4                                  |
| Netherlands    | 0.3                     | 52                                    | 56                    | 2.2   | 1.2                                  |
| Portugal       | 1.9                     | 188                                   | 75                    | 12.9  | 11.0                                 |
| 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                                  |
| <b>Total</b>   | <b>95.5</b>             | <b>13 420</b>                         | <b>65</b>             | <b>459.5</b>  | <b>268.2</b>                         |

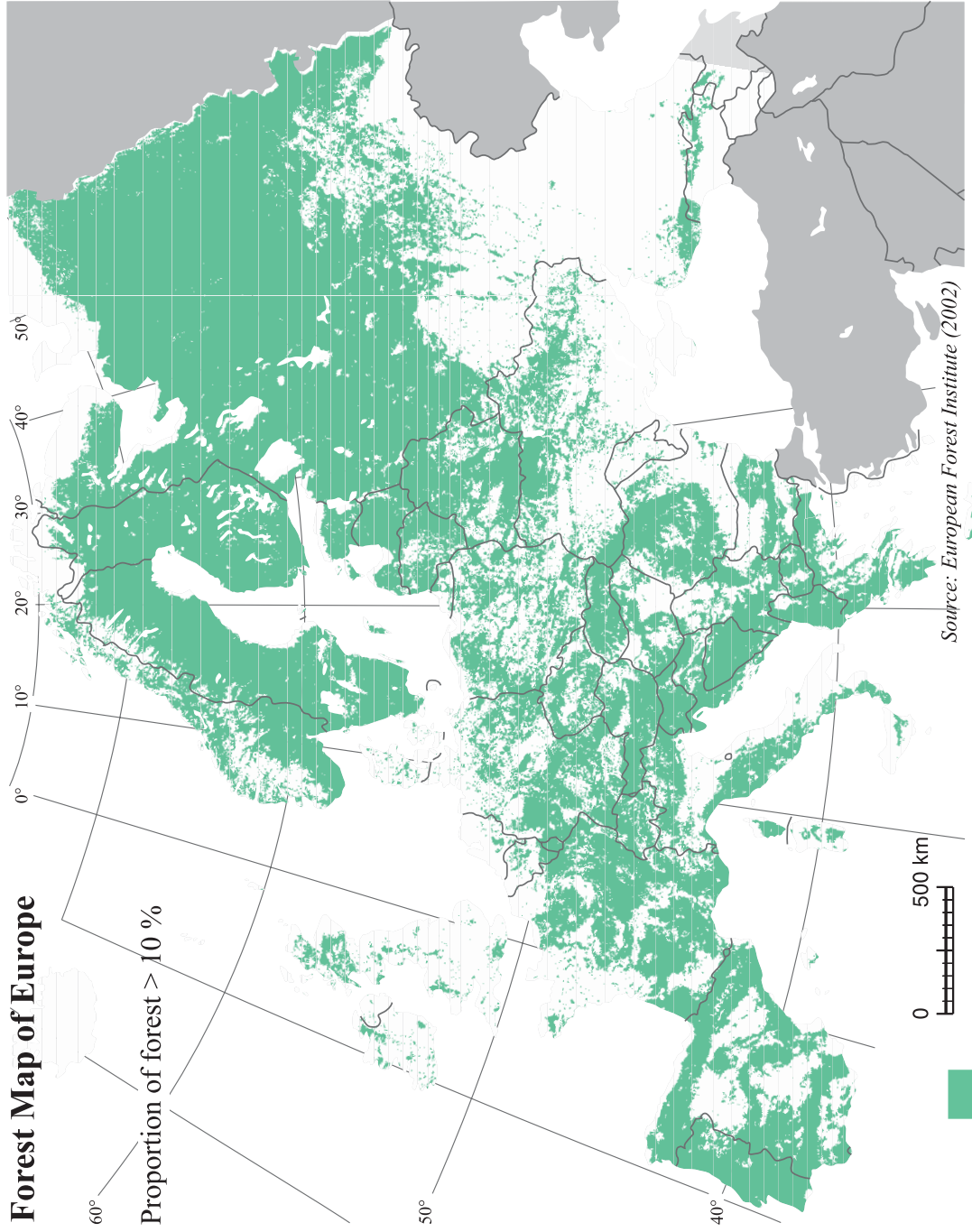


## Duration of the growing season in Europe

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



## Forest Map of Europe



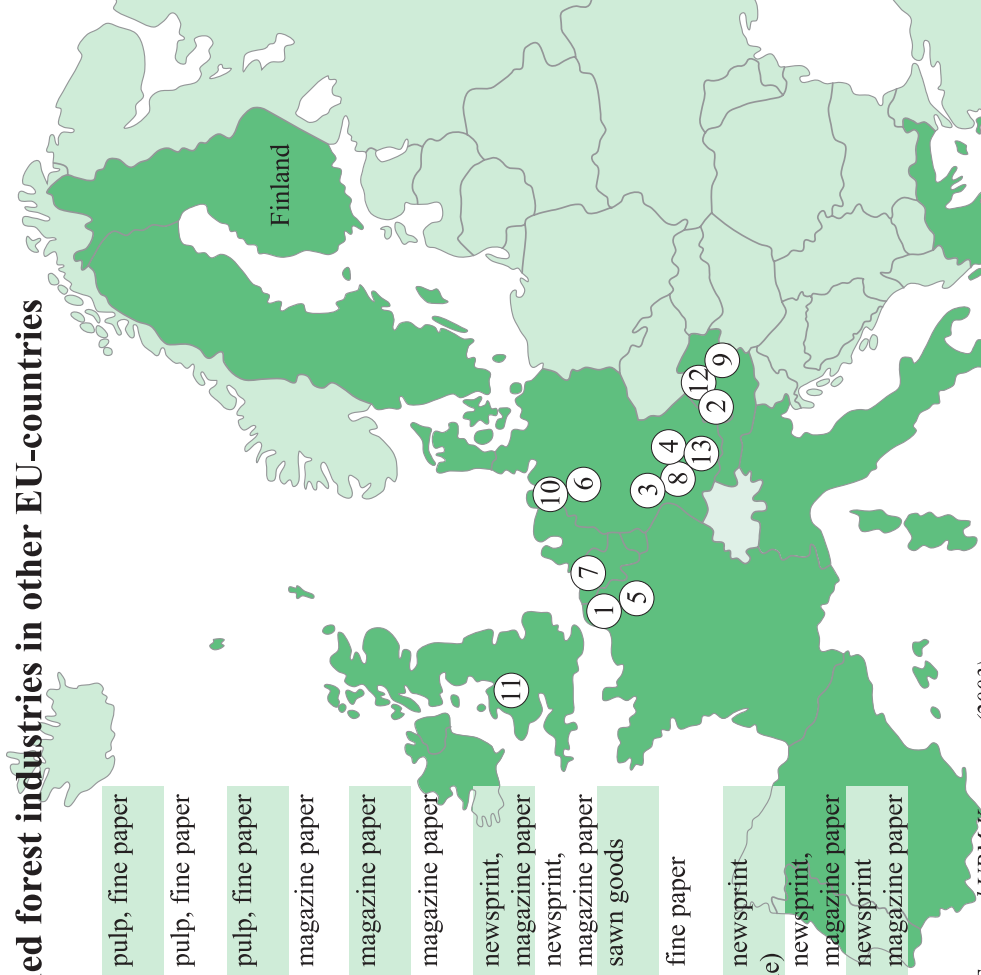
## Some major Finnish-owned forest industries in other EU-countries

(excl. Sweden)

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

Stora Enso is a Finnish-Swedish company.

Source: Annual Reports of M-real, Stora Enso and UPM-Kymmene (2003)



## Finnish exports of forest-industry products to the European Union, 2002

|                    | Sawn<br>goods<br>1 000 m <sup>3</sup> | Plywood<br>and veneer<br>board | Particle<br>board | Fibre<br>board<br>1 000 m.t. | Wood<br>Pulp | Paper and<br>paperboard |
|--------------------|---------------------------------------|--------------------------------|-------------------|------------------------------|--------------|-------------------------|
| Austria            | 68                                    | 30                             | -                 | -                            | 20           | 116                     |
| Belgium–Luxemb.    | 137                                   | 21                             | -                 | 2                            | 117          | 615                     |
| Denmark            | 458                                   | 64                             | 7                 | 5                            | 0            | 240                     |
| France             | 820                                   | 102                            | 0                 | 1                            | 151          | 684                     |
| Germany            | 745                                   | 212                            | 0                 | 9                            | 796          | 2 201                   |
| Greece             | 150                                   | 6                              | -                 | 1                            | 12           | 149                     |
| Ireland            | 148                                   | 12                             | 1                 | 2                            | 0            | 38                      |
| Italy              | 251                                   | 76                             | -                 | 1                            | 106          | 433                     |
| Netherlands        | 558                                   | 164                            | 0                 | 8                            | 73           | 483                     |
| Portugal           | 8                                     | 11                             | -                 | -                            | 42           | 80                      |
| Spain              | 285                                   | 53                             | -                 | -                            | 26           | 873                     |
| Sweden             | 42                                    | 107                            | 14                | 6                            | 208          | 289                     |
| United Kingdom     | 1 428                                 | 123                            | 152               | 30                           | 173          | 1 638                   |
| <b>EU, total</b>   | <b>5 098</b>                          | <b>982</b>                     | <b>174</b>        | <b>64</b>                    | <b>1 723</b> | <b>7 841</b>            |
| % of total exports | 62                                    | 82                             | 79                | 88                           | 77           | 66                      |

Source: National Board of Customs



## FINNISH FORESTRY AND FOREST INDUSTRIES

### National economy, forestry and the forest industries

In order to achieve economic growth in post-war Finland, investments in pulp and paper industries doubled the production between 1955 and 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 1970, roundwood and forest-industries' products represented 56% of the value of the total exports of goods; their share was 26% in 2002. The same diversification of production is, of course, to be seen in the structure of the gross domestic product. In 1970, the share of forestry of the GDP was 6.3%, and that of basic forest industries, 6.7%. The corresponding figures for the year 2002 were 2.1% and 4.8%. In employment, forestry accounted for 4.1% and forest industries for 5.2% in 1970. In 2002, the corresponding figures were 0.9% and 3.0% respectively.

Flourishing engineering and service industries have developed around 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 the manufacturing of timber harvesters, paper machines and in providing consultant services.

### Forestry and forest industries in the Finnish national economy, 2002

|                               |                   |                      |
|-------------------------------|-------------------|----------------------|
| <b>Gross domestic product</b> |                   |                      |
| at market prices              |                   | EUR 139.7 billion    |
| at basic prices               |                   | EUR 121.4 billion    |
| of which                      | forestry          | 2.1 %                |
|                               | forest industries | 4.8 %                |
| <b>Total employment</b>       |                   |                      |
|                               |                   | 2.37 million persons |
| of which                      | forestry          | 0.9 %                |
|                               | forest industries | 3.0 %                |
| <b>Total exports of goods</b> |                   |                      |
|                               |                   | EUR 47.2 billion     |
| of which                      | forestry          | 0.2 %                |
|                               | forest industries | 25.9 %               |



Finland is among the major suppliers of forest-related products to the world markets, particularly in printing and writing paper, and is one of the biggest importers of roundwood. In 2002, the total value of forest-industries' products exports amounted to EUR 12 billion. Germany and the United Kingdom are the foremost importers of Finnish forest-industries' products, together accounting for 32% of the total.

## Forest industries: production and exports

### Production of Finnish forest industries, 2000–2002

| Product              | Unit<br>1 000  | 2000   | 2001   | 2002   |
|----------------------|----------------|--------|--------|--------|
| Sawn goods           | m <sup>3</sup> | 13 400 | 12 770 | 13 380 |
| Plywood              | "              | 1 170  | 1 145  | 1 240  |
| Particle board       | "              | 462    | 430    | 410    |
| Fibreboard           | m.t.           | 100    | 109    | 101    |
| Mechanical pulp      | "              | 4 810  | 4 621  | 4 587  |
| Chemical pulp        | "              | 7 101  | 6 548  | 7 143  |
| Pulp, total          | "              | 11 910 | 11 169 | 11 730 |
| Newsprint            | "              | 1 394  | 1 296  | 1 007  |
| Magazine paper       | "              | 5 348  | 5 062  | 5 335  |
| Fine paper           | "              | 3 005  | 2 530  | 2 608  |
| Kraft paper          | "              | 528    | 494    | 543    |
| Other paper          | "              | 483    | 520    | 544    |
| Paper, total         | "              | 10 758 | 9 902  | 10 038 |
| Paperboard           | "              | 2 751  | 2 601  | 2 738  |
| Paper and paperboard | "              | 13 509 | 12 503 | 12 776 |

Source: Finnish Forest Industries Federation

## Finnish forest industry exports, 2000–2002

| Product                    | Unit<br>1 000  | 2000   | 2001   | 2002   |
|----------------------------|----------------|--------|--------|--------|
| Sawn goods                 | m <sup>3</sup> | 8 431  | 8 135  | 8 187  |
| Plywood                    | "              | 1 006  | 1 009  | 1 117  |
| Particleboard              | "              | 204    | 218    | 219    |
| Fibreboard                 | m.t.           | 69     | 72     | 72     |
| Mechanical pulp            | "              | 96     | 92     | 156    |
| Chemical pulp              | "              | 1 583  | 1 606  | 1 959  |
| Newsprint                  | "              | 1 144  | 1 041  | 749    |
| Magazine paper             | "              | 5 095  | 4 711  | 5 070  |
| Fine paper                 | "              | 2 805  | 2 316  | 2 571  |
| Kraft paper                | "              | 376    | 460    | 402    |
| Other paper                | "              | 287    | 366    | 324    |
| Paper, total               | "              | 9 709  | 8 894  | 9 116  |
| Paperboard                 | "              | 2 324  | 2 209  | 2 310  |
| Converted paper products   | "              | 394    | 417    | 420    |
| Total paper and paperboard | "              | 12 427 | 11 520 | 11 846 |

Source: National  
Board of Customs

## Value of Finnish forest industry exports, 2002

| Country             |              |  |            |  | EUR mill.     |
|---------------------|--------------|--|------------|--|---------------|
|                     | Sawn goods   | Wood-based panels, other wood products | Pulp       | Paper, paper-board, converted products | Total         |
| Austria             | 13           | 32                                     | 9          | 82                                     | 136           |
| Belgium-Luxemb.     | 19           | 16                                     | 53         | 416                                    | 504           |
| Denmark             | 76           | 63                                     | 0          | 183                                    | 322           |
| France              | 141          | 73                                     | 65         | 511                                    | 790           |
| Germany             | 129          | 193                                    | 331        | 1 561                                  | 2 214         |
| Greece              | 23           | 10                                     | 5          | 85                                     | 123           |
| Ireland             | 27           | 13                                     | 0          | 29                                     | 69            |
| Italy               | 53           | 45                                     | 44         | 297                                    | 439           |
| Netherlands         | 91           | 76                                     | 30         | 343                                    | 540           |
| Portugal            | 2            | 6                                      | 17         | 53                                     | 78            |
| Spain               | 45           | 44                                     | 10         | 552                                    | 651           |
| Sweden              | 10           | 118                                    | 79         | 236                                    | 443           |
| United Kingdom      | 273          | 166                                    | 80         | 1 203                                  | 1 722         |
| EU total            | 901          | 855                                    | 721        | 5 552                                  | 8 029         |
| Other Europe        | 51           | 236                                    | 82         | 1 046                                  | 1 415         |
| <b>Europe total</b> | <b>953</b>   | <b>1 091</b>                           | <b>802</b> | <b>6 599</b>                           | <b>9 445</b>  |
| Asia                | 304          | 143                                    | 68         | 710                                    | 1 225         |
| Africa              | 163          | 1                                      | 8          | 101                                    | 273           |
| North America       | 20           | 57                                     | 48         | 763                                    | 888           |
| Latin America       | 0            | 0                                      | 1          | 180                                    | 181           |
| Oceania             | 2            | 6                                      | 0          | 147                                    | 155           |
| Unspecified         | -            | -                                      | -          | 82                                     | 82            |
| <b>Grand total</b>  | <b>1 441</b> | <b>1 299</b>                           | <b>927</b> | <b>8 581</b>                           | <b>12 248</b> |

Source: National Board of Customs

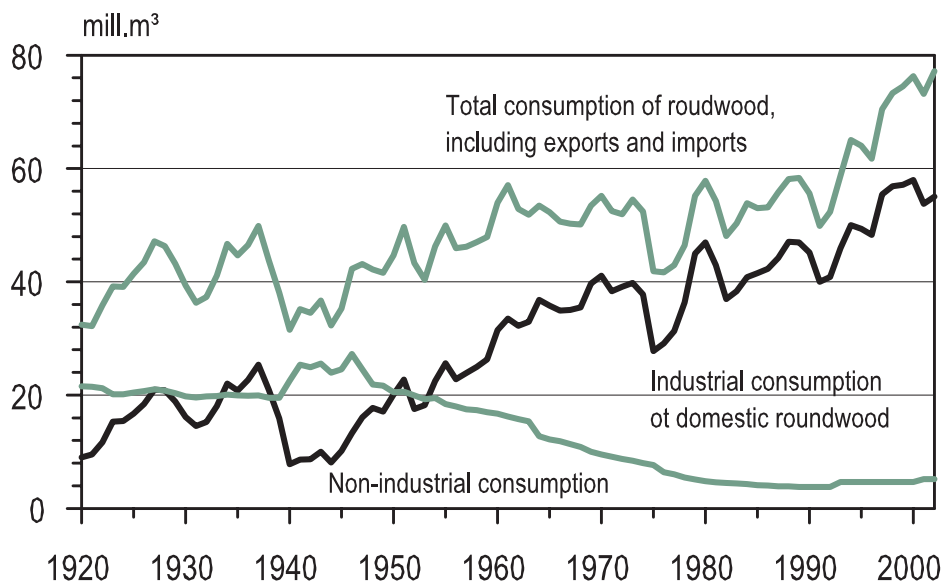
## Wood consumption

Despite a multiple increase in wood pulp production, total wood consumption in Finland remained at approximately the same level during the 30-year period from 1960. The years 1994 to 1996 were the first ones in which annual wood consumption exceeded 60 million m<sup>3</sup>, and since 1997 the consumption has exceeded 70 million m<sup>3</sup>.

Many structural changes, such as reductions in fuelwood consumption and roundwood exports, as well as the increased use of industrial wood residues, contributed to rather modest increases in total wood consumption until the year 1993. Industrial wood consumption has shown a continuous strong upward trend.

In 2002, total roundwood consumption reached 77.2 million m<sup>3</sup>, including imports and exports. Industrial wood consumption was 71.3 mill. m<sup>3</sup>. Imported roundwood (16.3 mill. m<sup>3</sup>) accounted for 23% of industrial wood consumption.

### Roundwood consumption in Finland, 1920–2002



20

*Non-industrial consumption does not include exports of roundwood.*

*Source: Finnish Forest Research Institute*

## Roundwood consumption during 5-year periods, 1990–2002

| Consumption category        | 1990–94     | 1995–99     | 2000–02     |
|-----------------------------|-------------|-------------|-------------|
| Exports                     | 1.0         | 1.0         | 0.8         |
| Industrial roundwood        | 44.4        | 53.4        | 55.6        |
| sawmills and panel industr. | 20.0        | 27.1        | 28.9        |
| pulp industries             | 24.4        | 26.3        | 26.7        |
| Fuelwood and other          | 4.1         | 4.6         | 5.0         |
| Domestic roundwood, total   | 49.5        | 59.0        | 61.4        |
| Imported wood (industries)  | 6.8         | 9.8         | 14.2        |
| <b>Total consumption</b>    | <b>56.3</b> | <b>68.8</b> | <b>75.6</b> |

mill. m<sup>3</sup>/yr

*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, 2000–2002

| Consumption category                | 2000        | 2001        | 2002                 |
|-------------------------------------|-------------|-------------|----------------------|
|                                     |             |             | mill. m <sup>3</sup> |
| <b>Total consumption in Finland</b> | <b>75.4</b> | <b>72.5</b> | <b>76.5</b>          |
| Pine                                | 25.9        | 25.4        | 27.5                 |
| Spruce                              | 30.7        | 29.3        | 29.2                 |
| Hardwood                            | 17.8        | 16.4        | 18.3                 |
| Unspecified                         | 1.0         | 1.3         | 1.5                  |
| Domestic roundwood                  | 62.6        | 58.9        | 60.2                 |
| Pine                                | 23.9        | 23.0        | 24.7                 |
| Spruce                              | 28.5        | 26.4        | 25.5                 |
| Hardwood                            | 10.2        | 9.6         | 10.0                 |
| Imported wood                       | 12.8        | 13.5        | 16.3                 |
| Pine                                | 2.1         | 2.4         | 2.8                  |
| Spruce                              | 2.2         | 2.9         | 3.7                  |
| Hardwood                            | 7.6         | 6.9         | 8.3                  |
| Unspecified                         | 1.0         | 1.3         | 1.5                  |
| <b>Exports, incl. poles</b>         | <b>0.9</b>  | <b>0.7</b>  | <b>0.7</b>           |
| Pine                                | 0.7         | 0.5         | 0.6                  |
| Spruce                              | 0.1         | 0.1         | 0.1                  |
| Hardwood                            | 0.1         | 0.1         | 0.1                  |

*Pine: Pinus  
sylvestris  
Spruce: Picea abies  
Hardwood: mainly  
Betula sp.  
'Unspecified'  
consists of imported  
wood chips and  
residues.*

*Source: Finnish  
Forest Research  
Institute*

## Wood consumption in sawmilling, plywood and pulp industries, 2000–2002

| Year                        | Domestic roundwood |          | Imported wood | Sawmill chips | Total |
|-----------------------------|--------------------|----------|---------------|---------------|-------|
|                             | Conif.             | Hardwood |               |               |       |
| mill. m <sup>3</sup>        |                    |          |               |               |       |
| Sawmilling                  |                    |          |               |               |       |
| 2000                        | 27.1               | 0.2      | 2.1           | -             | 29.4  |
| 2001                        | 24.8               | 0.2      | 2.9           | -             | 27.9  |
| 2002                        | 25.1               | 0.2      | 3.5           | -             | 28.8  |
| Plywood and veneer industry |                    |          |               |               |       |
| 2000                        | 1.7                | 1.1      | 0.6           | -             | 3.4   |
| 2001                        | 1.6                | 1.0      | 0.8           | -             | 3.4   |
| 2002                        | 1.8                | 0.9      | 0.9           | -             | 3.6   |
| Mechanical pulp industry    |                    |          |               |               |       |
| 2000                        | 8.9                | 0.7      | 0.9           | 2.8           | 13.3  |
| 2001                        | 8.4                | 0.9      | 1.1           | 2.6           | 13.0  |
| 2002                        | 8.3                | 0.8      | 1.5           | 2.6           | 13.2  |
| Chemical pulp industry      |                    |          |               |               |       |
| 2000                        | 12.8               | 5.1      | 9.2           | 9.1           | 36.2  |
| 2001                        | 12.0               | 4.6      | 8.7           | 7.9           | 33.2  |
| 2002                        | 12.5               | 5.2      | 10.3          | 8.3           | 36.3  |

Source: Finnish Forest Research Institute

## Labour force

Efficient multi-function timber harvesters (nowadays numbering about 1500) prevail in logging operations. Mechanization in logging has led to a continuous fall in the number of forest workers. Today, a professional workforce of only about 6 000 men are employed in logging proper. In addition, the labour input of mainly forest owners is equivalent to approximately 3 000 man-years.

Forestry employed 21 000 people in 2002, compared with 63 000 in 1980. The same trend applies to the basic forest industries. They employed 120 000 people in 1980, but only 71 000 in 2002. However, the paper production has more than doubled during the same period. Consequently, forestry and forest industries, even during a boom, have no direct ameliorating effect on Finland's chronic unemployment problem (9.6 % in June 2003).

### Employment in forestry and forest industries, 2000–2002

|                      | 2000          | 2001  | 2002  |
|----------------------|---------------|-------|-------|
|                      | 1 000 persons |       |       |
| Forestry             | 24            | 23    | 21    |
| Forest industries    | 72            | 71    | 71    |
| Forest sector, total | 96            | 94    | 92    |
| Employment, total    | 2 335         | 2 367 | 2 372 |
| Unemployed, total    | 253           | 238   | 237   |
| Unemployment rate, % | 9.8           | 9.1   | 9.1   |

Source: Statistics Finland



## Employment in forest industries, 2000–2002

| Branch of industry                        | 2000      | 1 000 persons |           |
|---|-----------|---------------|-----------|
|   |           | 2001          | 2002      |
| Sawmilling                                | 12        | 12            | 11        |
| Plywood and veneer industry               | 6         | 6             | 6         |
| Other board industries                    | 1         | 1             | 1         |
| Other wood-products industry <sup>1</sup> | 15        | 15            | 14        |
| Pulp industry                             | 14        | 14            | 15        |
| Paper industry                            | 14        | 14            | 15        |
| Paperboard industry                       | 4         | 4             | 4         |
| Paper products industry                   | 6         | 5             | 5         |
| <b>Forest industries, total</b>           | <b>72</b> | <b>71</b>     | <b>71</b> |

<sup>1</sup> Including carpentry products and pre-fabricated wooden houses.

Sources: Statistics Finland, Finnish Forest Research Institute

Commercial roundwood removals in 2002 amounted to 54.2 million m<sup>3</sup>, of which 85% came from non-industrial, private forests. Fellings have been at a very high level since 1997.

Logging in non-industrial, private forests is mainly carried out by the forest industries or by their wood-procurement organisations. In 2002, forest owners themselves carried out or organized the logging of 10.3 million m<sup>3</sup>, or 22% of the commercial roundwood removed from their forests.

In real terms, roundwood prices have been slightly decreasing in recent years.

## Roundwood markets

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## Roundwood procurement and consumption in Finland, 2002

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| Sources                             | mill. m <sup>3</sup> |
|-------------------------------------|----------------------|
| Commercial roundwood                |                      |
| from private-owned forests          | 46.3                 |
| from industry-owned forests         | 3.1                  |
| from state-owned forests            | 4.8                  |
| Non-commercial wood (priv. for.)    | 6.1                  |
| Domestic roundwood, total           | 60.3                 |
| Imported wood                       | 16.2                 |
| <b>Roundwood procurement, total</b> | <b>76.5</b>          |
| <b>Consumption</b>                  |                      |
| Sawmilling                          | 28.8                 |
| Wood-based panels                   | 3.7                  |
| Other wood-based products           | 0.3                  |
| Mechanical pulp industry            | 10.5                 |
| Chemical pulp industry              | 28.0                 |
| Industry, total                     | 71.3                 |
| Fuelwood in dwellings               | 5.2                  |
| Exports of roundwood                | 0.7                  |
| <b>Roundwood consumption, total</b> | <b>77.2</b>          |

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*Imported wood is mostly birch pulpwood from Russia. In addition, sawmills furnished pulp industry with 10.9 mill. m<sup>3</sup> of wood chips and residues.*

*Source: Finnish Forest Research Institute*

## Roundwood removals by ownership category, 2000–2002

| Ownership category                   | 2000        | 2001        | mill. m <sup>3</sup><br>2002 |
|--------------------------------------|-------------|-------------|------------------------------|
| Private forests <sup>1</sup>         | 53.6        | 51.2        | 52.4                         |
| commercial                           | 48.0        | 45.1        | 46.3                         |
| non-commercial                       | 5.6         | 6.1         | 6.1                          |
| Forests industries                   | 3.3         | 3.5         | 3.1                          |
| Forest and Park Service <sup>2</sup> | 4.6         | 4.6         | 4.8                          |
| Commercial, total                    | 55.9        | 53.2        | 54.2                         |
| <b>Grand total</b>                   | <b>61.5</b> | <b>59.4</b> | <b>60.3</b>                  |

<sup>1</sup> including communes, parishes and some other public owners.

<sup>2</sup> a state-owned enterprise managing most of the state-owned forests.

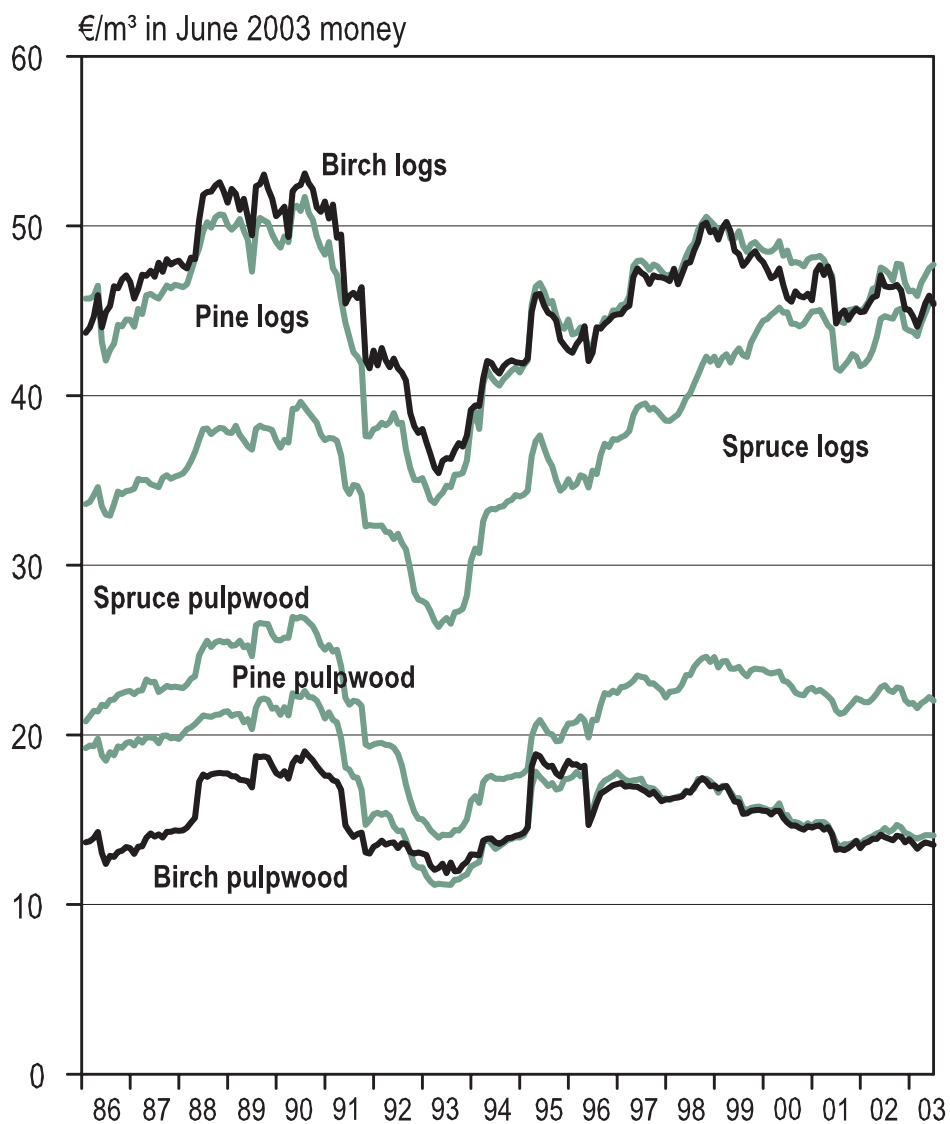
Source: Finnish Forest Research Institute

## Roundwood removals by assortment, 2000–2002

| Roundwood assortment       | 2000        | 2001        | mill. m <sup>3</sup><br>2002 |
|----------------------------|-------------|-------------|------------------------------|
| Logs                       | 28.3        | 25.4        | 25.9                         |
| pine logs                  | 10.9        | 10.1        | 10.4                         |
| spruce logs                | 16.0        | 14.0        | 14.3                         |
| hardwood logs              | 1.3         | 1.3         | 1.2                          |
| Pulpwood                   | 27.6        | 27.8        | 28.2                         |
| pine pulpwood              | 12.4        | 12.3        | 12.5                         |
| spruce pulpwood            | 9.9         | 9.9         | 9.9                          |
| hardwood pulpwood          | 5.3         | 5.6         | 5.8                          |
| Commercial removals, total | 55.9        | 53.2        | 54.2                         |
| Non-commercial removals    | 5.6         | 6.1         | 6.1                          |
| <b>Grand total</b>         | <b>61.5</b> | <b>59.4</b> | <b>60.3</b>                  |

Source: Finnish Forest Research Institute

## Stumpage prices in non-industrial, private forestry, 1986–2003



28

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

Source: Finnish Forest Research Institute



Currently, about 110–130 000 hectares of forest land are planted or seeded annually for forestry after clear fellings, and favouring almost exclusively native tree species. Seed-tree or shelterwood fellings aimed for natural regeneration account for 40–50 000 hectares annually.

About 220 000 hectares of seedling stands are treated annually with silvicultural measures. About half of Finland's mires (wetlands) have been drained for forestry, but nowadays this draining activity has ceased, and ditch cleaning has taken the place of it. Forest fertilization is applied to a minor extent.

The total costs of silvicultural and forest improvement work were EUR 237 million in 2001. Of the EUR 188 million spent in non-industrial, private forestry, forest owners' own financing or work accounted for 69 %, and the rest was financed through state grants.

## Silvicultural and forest improvement work

### Felling activities, 2000–2001

| Type of felling                      | 1 000 ha   |            |
|--------------------------------------|------------|------------|
|                                      | 2000       | 2001       |
| Thinnings                            | 328        | 309        |
| Clearfellings                        | 156        | 118        |
| Seed-tree and shelterwood fellings   | 51         | 35         |
| Removal of seed-tree and shelterwood | 68         | 51         |
| Other fellings                       | 8          | 11         |
| <b>Total</b>                         | <b>610</b> | <b>524</b> |
| % of forest area                     | 2.7        | 2.3        |

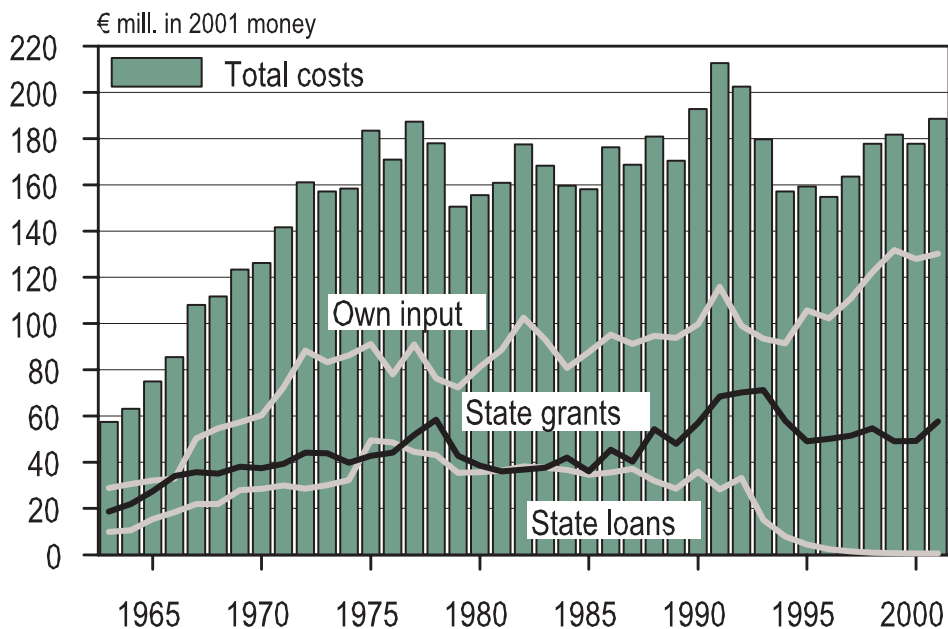
Source: Finnish Forest Research Institute

## Silvicultural and forest improvement work, 2000–2001

| Type of work                  |                  | 2000       | 2001       |
|-------------------------------|------------------|------------|------------|
| Clearing of regeneration area | 1000 ha          | 70         | 67         |
| Soil preparation              | "                | 120        | 132        |
| Artificial regeneration       | "                | 117        | 126        |
| Seedling stand improvement    | "                | 223        | 239        |
| Forest fertilization          | "                | 21         | 19         |
| Drainage of mires             | "                | 1          | -          |
| Maintenance of drainage       | "                | 74         | 83         |
| Construction of forest roads  | km               | 1 385      | 1 604      |
| Improvement of forest roads   | "                | 1 410      | 1 341      |
| <b>Total costs</b>            | <b>EUR mill.</b> | <b>217</b> | <b>237</b> |

Source: Finnish Forest Research Institute

## Financing of silvicultural and forest-improvement works in non-industrial, private forests 1963–2001



Source: Finnish Forest Research Institute



## Forest resources

Information on Finland's forest resources is based on surveys carried out by the Finnish Forest Research Institute. Systematic ground sampling has been used. Satellite imagery and digital map data are employed when results are needed for small areas. The inventory years to date have been as follows:

|     |         |    |         |      |         |
|-----|---------|----|---------|------|---------|
| I   | 1921–24 | IV | 1960–63 | VII  | 1977–84 |
| II  | 1936–38 | V  | 1964–70 | VIII | 1986–94 |
| III | 1951–53 | VI | 1971–76 | IX   | 1996–   |

Despite the 13% reduction in forest area in 1944 due to the losses of land in the war, Finland's wood resources are currently more plentiful than in the pre-war years.

According to the 1st national forest inventory, the total growing stock volume was 1 588 million m<sup>3</sup>. The newest estimate, based mostly on the 9<sup>th</sup> inventory, is 2 024 million m<sup>3</sup>. In recent years, the annual volume increment has exceeded the drain by about 10 million m<sup>3</sup>.

During the past 70 years, the structure of Finnish forests has changed significantly. They now have a more even age structure. Scots pine's share of the growing stock is 47% and that of Norway spruce 34%, leaving 19% for the broadleaved species, mostly birch. This distribution has been a stable one. However, Scots pine is the dominant species on 65% of the forest land area.

The area of productive forest land (i.e. land capability to yield at least 1 m<sup>3</sup>/ha/yr) is 20.2 million hectares and that of other wooded land 2.8 million hectares. Thus, the total wood-growing area is 23.0 million hectares. Of this, 1.46 million hectares (6.3%) have been set aside for conservation purposes. These areas, in which all forestry activities are prohibited, lie almost entirely in the northern part of the country. According to the internationally defined forest-land concept, which sets a canopy cover of 10% as the threshold between forest lands and other lands, the forest land area is 21.9 million ha.

The following tables are based on the combined 8<sup>th</sup> and 9<sup>th</sup> national forest inventories in such a way that always the most recent regional data have been used. Nature conservation areas are always included.

## Principal land use categories in Finland, 1992–2001

|                                     | mill. ha    |
|-------------------------------------|-------------|
| <b>Total area</b>                   | <b>33.8</b> |
| Inland watercourses                 | 3.3         |
| Land area                           | 30.5        |
| Forest land                         | 20.2        |
| Other wooded land                   | 2.8         |
| Waste land <sup>1</sup>             | 3.1         |
| Roads, depots                       | 0.2         |
| <b>Forestry land, total</b>         | <b>26.3</b> |
| (of which nature conservation areas | 2.8)        |
| Agricultural land                   | 2.8         |
| Built-up areas                      | 1.0         |
| Transport routes                    | 0.4         |

<sup>1</sup> Treeless mountains and mires

Source: Finnish Forest Research Institute

## Mineral soils and mires and their drainage, 1992–2001

|                             | mill. ha    |
|-----------------------------|-------------|
| Mineral soils               | 17.2        |
| Mires                       | 8.9         |
| Roads, depots               | 0.2         |
| <b>Forestry land, total</b> | <b>26.3</b> |
| Spruce mires                | 2.3         |
| Pine mires                  | 4.9         |
| Treeless mires              | 1.7         |
| <b>Total</b>                | <b>8.9</b>  |
| Undrained mires             | 4.1         |
| Recently drained mires      | 0.5         |
| Transforming mires          | 2.9         |
| Transformed mires           | 1.4         |
| <b>Total</b>                | <b>8.9</b>  |

A site is recorded as a 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



## Dominant tree species of forest stands, 1992–2001

|                         |                         | % <sup>1</sup> |
|-------------------------|-------------------------|----------------|
| Temporarily non-stocked |                         | 1.4            |
| Scots pine              | <i>Pinus sylvestris</i> | 64.9           |
| Norway spruce           | <i>Picea abies</i>      | 23.9           |
| Other coniferous        |                         | 0.1            |
| Silver birch            | <i>Betula pendula</i>   | 2.5            |
| Downy birch             | <i>Betula pubescens</i> | 6.5            |
| Aspen                   | <i>Populus tremula</i>  | 0.3            |
| Alder                   | <i>Alnus sp.</i>        | 0.3            |
| Other broadleaves       |                         | 0.0            |
| Total                   |                         | 100.0          |
| Forest land area        | (mill. ha)              | 20.2           |

<sup>1</sup> of forest land area.  
Note that of volume, share of the broadleaved species is much greater.

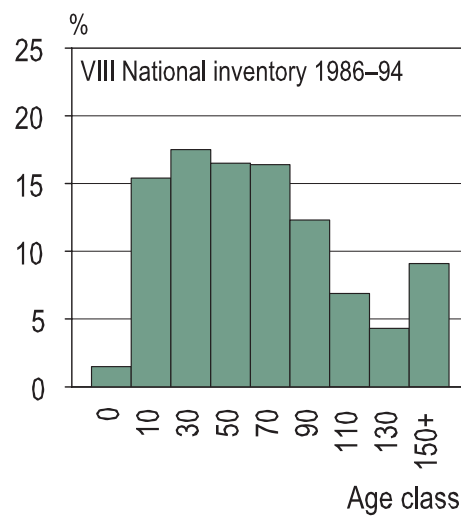
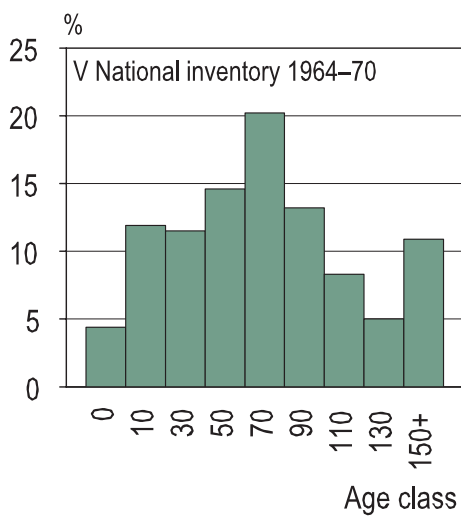
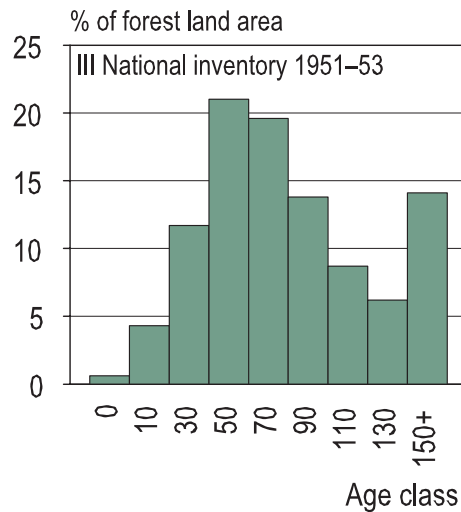
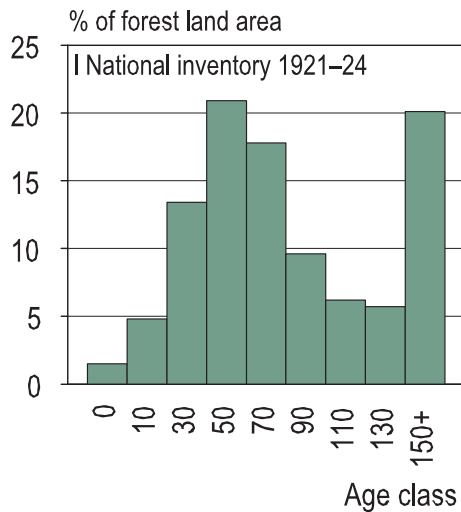
Source: Finnish Forest Research Institute

## Timber resources in Finland, 1992–2001

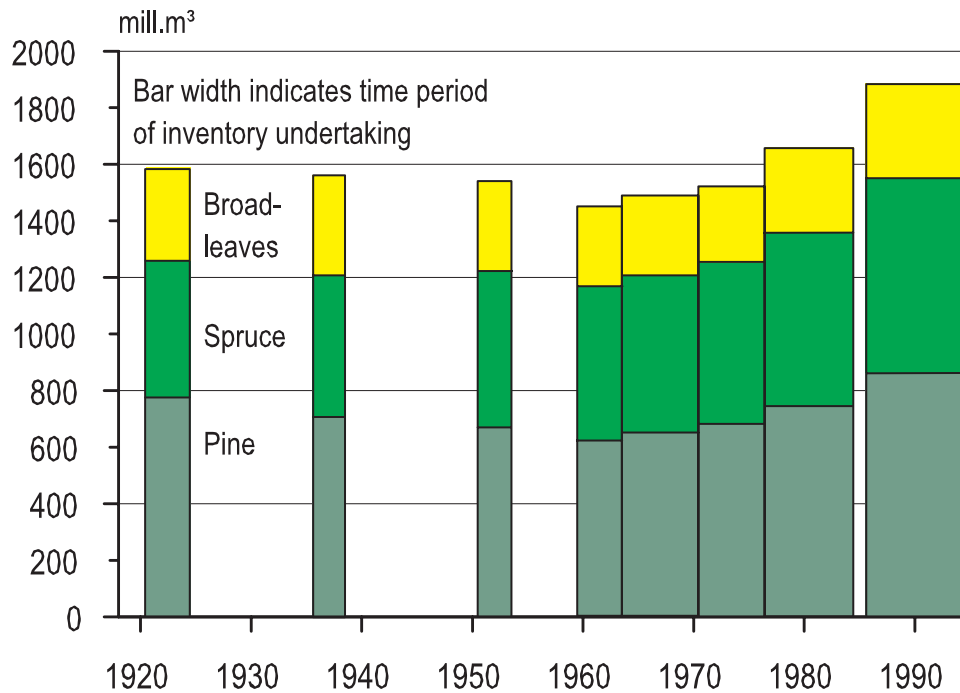
|                              |                         |       |
|------------------------------|-------------------------|-------|
| Forest and other wooded land | mill. ha                | 23.0  |
| Growing stock volume         | mill. m <sup>3</sup>    | 2 024 |
| Scots pine                   | "                       | 954   |
| Norway spruce                | "                       | 688   |
| Birch                        | "                       | 311   |
| Other broadleaves            | "                       | 71    |
| Volume increment             | mill.m <sup>3</sup> /yr | 81.0  |
| Scots pine                   | "                       | 36.0  |
| Norway spruce                | "                       | 26.4  |
| Birch                        | "                       | 14.3  |
| Other broadleaves            | "                       | 4.3   |

Source: Finnish Forest Research Institute

## Age structure development of the Finnish forests



## Growing stock volumes according to eight national forest inventories



Source: Finnish Forest Research Institute

## Forest ownership in Finland, 1992–2001

| Ownership category   | Forest land<br>mill. ha | Forestry land<br>mill. ha | %            |
|----------------------|-------------------------|---------------------------|--------------|
| Non-indust., private | 12.3                    | 14.1                      | 53.5         |
| Industrial, private  | 1.8                     | 2.1                       | 7.8          |
| State                | 5.0                     | 8.8                       | 33.6         |
| Other public         | 1.1                     | 1.3                       | 5.1          |
| <b>Total</b>         | <b>20.2</b>             | <b>26.3</b>               | <b>100.0</b> |

Source: Finnish Forest Research Institute

## Non-industrial private ownership of forests, 1999

| Ownership group                 | %                      |                        |
|---------------------------------|------------------------|------------------------|
|                                 | On holdings/<br>owners | On forest<br>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 12.3 million ha.*

*Source: Finnish Forest Research Institute*

## Growing stock volume by ownership category, 1992–2001

| Ownership category   | Scots pine | Norway spruce | Broad-leaves | mill. m <sup>3</sup> |              |
|----------------------|------------|---------------|--------------|----------------------|--------------|
|                      |            |               |              | Total                | %            |
| Non-indust., private | 579        | 521           | 273          | <b>1 373</b>         | 67.8         |
| Industrial, private  | 96         | 50            | 28           | <b>174</b>           | 8.6          |
| State                | 224        | 82            | 60           | <b>366</b>           | 18.1         |
| Other public         | 55         | 35            | 21           | <b>111</b>           | 5.5          |
| <b>Total</b>         | <b>954</b> | <b>688</b>    | <b>382</b>   | <b>2 024</b>         | <b>100.0</b> |

Source: Finnish Forest Research Institute

## Annual volume increment by ownership category, 1992–2001

| Ownership category   | Scots pine  | Norway spruce | Broad-leaves | mill. m <sup>3</sup> /yr |              |
|----------------------|-------------|---------------|--------------|--------------------------|--------------|
|                      |             |               |              | Total                    | %            |
| Non-indust., private | 22.2        | 20.7          | 14.2         | <b>57.1</b>              | 70.5         |
| Industrial, private  | 4.6         | 2.2           | 1.5          | <b>8.3</b>               | 10.2         |
| State                | 7.0         | 2.3           | 2.0          | <b>11.3</b>              | 14.0         |
| Other public         | 2.1         | 1.3           | 1.0          | <b>4.3</b>               | 5.3          |
| <b>Total</b>         | <b>36.0</b> | <b>26.4</b>   | <b>18.6</b>  | <b>81.0</b>              | <b>100.0</b> |

Source: Finnish Forest Research Institute

## Mean growing stock volume and annual increment by ownership category, 1992–2001

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

| Ownership category      | Mean volume<br>m <sup>3</sup> /ha | Increment<br>m <sup>3</sup> /ha/yr | Increment<br>% |
|-------------------------|-----------------------------------|------------------------------------|----------------|
| Non-industrial, private | 110                               | 4.6                                | 4.2            |
| Industrial, private     | 95                                | 4.5                                | 4.7            |
| State                   | 67                                | 2.1                                | 3.1            |
| Other public            | 101                               | 4.0                                | 4.0            |
| <b>Total</b>            | <b>98</b>                         | <b>3.9</b>                         | <b>4.0</b>     |

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

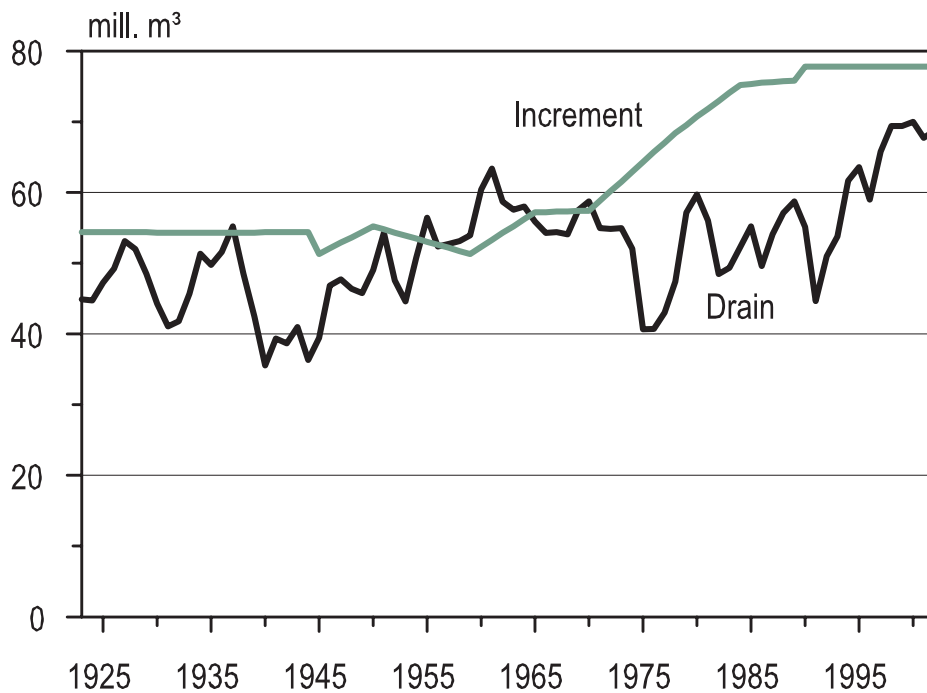
Increments for 1995–99 are forecasts.

Drain refers to losses in growing stock due to fellings, silvicultural measures and natural mortality.

Source: Finnish Forest Research Institute

|               |   | 1990–94     | 1995–99     | mill. m <sup>3</sup> /yr<br>2000–02 |
|---------------|---|-------------|-------------|-------------------------------------|
| Scots pine    | I | 34.0        | 34.5        | ..                                  |
|               | D | 20.0        | 25.1        | 27.2                                |
| Norway spruce | I | 26.4        | 25.5        | ..                                  |
|               | D | 22.3        | 27.8        | 28.4                                |
| Broadleaves   | I | 17.4        | 17.8        | ..                                  |
|               | D | 11.0        | 12.5        | 13.2                                |
| <b>Total</b>  | I | <b>77.8</b> | <b>77.8</b> | ..                                  |
|               | D | <b>53.2</b> | <b>65.4</b> | <b>68.8</b>                         |

## Growing stock increment and drain, 1923–2002



## Multiple production of forests, 2000–2002

| Product                     |                           | 2000  | 2001  | 2002   |   |
|-----------------------------|---------------------------|-------|-------|--------|---|
| Commercial roundwood        | mill. m <sup>3</sup> o.b. | 56    | 53    | 54     |   |
| Non-commercial roundwood    | mill. m <sup>3</sup> o.b. | 6     | 6     | 6      |   |
| Commercial forest berries   | m.t. <sup>1</sup>         | 5 806 | 7 785 | 4 797  | <sup>1</sup> Quantities offered for sale, in metric tons.                                 |
| Commercial forest mushrooms | m.t. <sup>1</sup>         | 982   | 672   | 219    |   |
| Lichen picked for exporting | m.t.                      | 314   | 287   | 319    |   |
| Deer venison                | m.t.                      | 9 015 | 9 495 | 12 120 | Sources: Finnish Forest Research Institute, Finnish Game and Fisheries Research Institute |
| Hare venison                | m.t.                      | 662   | 520   | 502    |   |
| Forest game birds           | m.t.                      | 184   | 184   | 189    |   |
| Fur-bearing animals         | 1000 indiv.               | 275   | 308   | 224    |   |
| Reindeer meat production    | m.t.                      | 2 100 | 2 000 | 2 400  |   |

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## Forest condition in Finland, 1992–2001

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Forest land area, total 20.2 mill. ha

| <b>Extent of damage<br/>affecting stand quality</b> | <b>% of forest land</b> |
|---|-------------------------|
| Totally damaged                                     | 0.3                     |
| Severely damaged                                    | 4.1                     |
| Moderately damaged                                  | 19.1                    |
| <b>Total</b>  | <b>23.5</b>             |

### **Damaging agents**

|  |                     |             |
|--|---------------------|-------------|
|  | Natural competition | 1.4         |
|  | Climatic factors    | 5.7         |
|  | Harvesting damage   | 1.1         |
|  | Moose               | 1.5         |
|  | Voles               | 0.0         |
|  | Insects             | 0.3         |
|  | Fungi               | 6.2         |
|  | Unidentified        | 7.3         |
|  | <b>Total</b>        | <b>23.5</b> |

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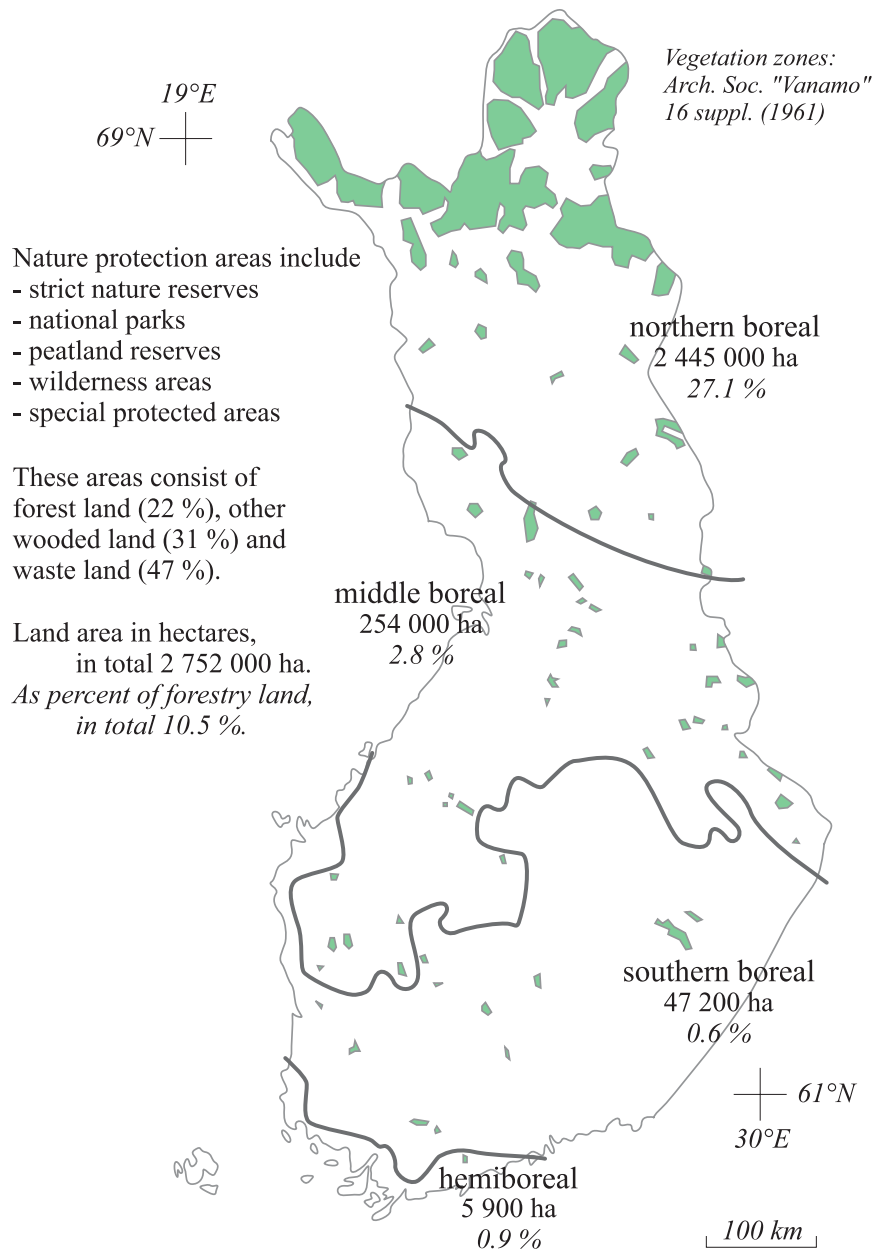
*In two-storeyed  
stands only damage  
affecting the  
dominant storey is  
taken into account.*

*Source: Finnish  
Forest Research  
Institute*





## Nature protection areas by vegetation zone



Source: Finnish Environment Institute (2003)

## KEY CONTACTS IN FINNISH FOREST RESEARCH

### FINNISH FOREST RESEARCH INSTITUTE

(Metsäntutkimuslaitos, METLA)

- **Vantaa Research Centre, Helsinki Unit**

Unioninkatu 40A, FIN-00170 Helsinki

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

Website: [www.metla.fi](http://www.metla.fi)

(Forest Resources and Economics, Administration)

- **Vantaa Research Centre, Vantaa Unit**

Jokiniemenkuja 1, FIN-01300 Vantaa

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

Website: [www.metla.fi/va](http://www.metla.fi/va)

(Forest Ecology and Production)

- **Joensuu Research Centre**

Yliopistokatu 7, FIN-80100 Joensuu

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

Website: [www.metla.fi/jo](http://www.metla.fi/jo)

(Silviculture and Forest Management)

### Research Stations of the Finnish Forest Research Institute:

- **Kannus Research Station**

Silmjärventie 2, FIN-69100 Kannus

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

Website: [www.metla.fi/ka](http://www.metla.fi/ka)

(Peatland Forestry, Bioenergy)

- **Kolari Research Station**

Muoniontie 21A, FIN-95900 Kolari

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

Website: [www.metla.fi/ko](http://www.metla.fi/ko)

(Timberline research)

- **Muhos Research Station**

Kirkkosaarentie 7, FIN-91500 Muhos  
Tel. +358 10 2111, fax +358 10 211 3701  
Website: [www.metla.fi/mu](http://www.metla.fi/mu)  
(Forest Condition, Forest Regeneration)

- **Parkano Research Station**

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

- **Punkaharju Research Station**

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

- **Rovaniemi Research Station**

Eteläranta 55, FIN-96300 Rovaniemi  
Tel. +358 10 2111, fax +358 10 211 4401  
Website: [www.metla.fi/ro](http://www.metla.fi/ro)  
(Forest Condition, Forest Regeneration)

- **Suonenjoki Research Station**

Juntintie 40, FIN-77600 Suonenjoki  
Tel. +358 10 2111, fax +358 10 211 4801  
Website: [www.metla.fi/su](http://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.fi](http://www.efi.fi)  
(Independent, Non-governmental Research Unit)



### **Finnish Game and Fisheries Research Institute**

(Riista- ja kalatalouden tutkimuslaitos)  
Pukinmäenaukio 4, FIN-00720 Helsinki  
Tel. +358 205 7511 , fax +358 205 751 201  
Website: [www.rktl.fi](http://www.rktl.fi)

### **Finnish Pulp and Paper Research Institute (KCL)**

(Keskuslaboratorio)  
Tekniikantie 2, FIN-02150 Espoo  
Tel. +358 9 43 711 , fax +358 9 464 305  
Website: [www.kcl.fi](http://www.kcl.fi)  
(Owned by paper industry)

### **Finnish Society of Forest Science**

(Suomen Metsätieteellinen Seura)  
Unioninkatu 40A, FIN-00170 Helsinki  
Tel. +358 10 211 2144, fax +358 10 211 2102  
Website: [www.metla.fi/org/sms](http://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. In addition to original research articles, the journal publishes review articles, research notes, discussion papers, book reviews, and information on forthcoming events. In 2000, the other scientific journal, *Acta Forestalia Fennica*, was amalgamated into *Silva Fennica*. The scope of *Silva Fennica* was broadened, so that *Silva* now publishes more extensive papers as *Silva Fennica Monographs*.

#### **Editorial office:**

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**Metsäteho**

Unioninkatu 17, FIN-00130 Helsinki  
Tel. +358 9 132 521, fax +358 9 659 202  
Website: [www.metsateho.fi](http://www.metsateho.fi)  
(R&D Unit for Timber Procurement and Production,  
mainly owned by Forest Industries)

**University of Helsinki**

Faculty of Agriculture and Forestry  
Forestry Departments  
Latokartanonkaari 7, FIN-00710 Helsinki  
Tel. +358 9 1911

**Viikki Science Library of Helsinki University**

(Applied biosciences)  
Viikinkaari 11 A, FIN-00710 Helsinki  
Tel. +358 9 191 58028, fax +358 9 191 58011  
Website: [www.tiedekirjasto.helsinki.fi](http://www.tiedekirjasto.helsinki.fi)

**University of Joensuu**

Faculty of Forestry  
Yliopistokatu 7, FIN-80100 Joensuu  
Tel. +358 13 251 111, fax +358 13 2513 590  
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**TTS Work Efficiency Institute**

(Työtehoseura)  
Melkonkatu 16 A, FIN-00210 Helsinki  
Tel. +358 9 2904 1200, fax +358 9 6922 084  
Website: [www.tts.fi](http://www.tts.fi)  
(Small-scale forestry, Forest work)

## Other useful contacts

### **Ministry of Agriculture and Forestry**

(Maa- ja metsätalousministeriö)  
Hallituskatu 3A, FIN-00170 Helsinki  
Tel. +358 9 16001, fax +358 9 16052 190  
Website: [www.mmm.fi](http://www.mmm.fi)

### **Ministry of the Environment**

(Ympäristöministeriö)  
Kasarmikatu 25, FIN-00130 Helsinki  
Tel. +358 9 16 007, fax +358 9 1603 9545  
Website: [www.ymparisto.fi](http://www.ymparisto.fi)

### **Finnish Environment Institute**

(Suomen ympäristökeskus)  
Mechelininkatu 34 a, FIN-00260 Helsinki  
Tel. +358 9 403 000, fax +358 9 4030 0190  
Website: [www.ymparisto.fi](http://www.ymparisto.fi)  
(Governmental expert management of environment)

### **Finnish Forest and Park Service**

(Metsähallitus)  
Vernissakatu 4, FIN-01300 Vantaa  
Tel. +358 205 64100  
Website: [www.metsa.fi](http://www.metsa.fi)  
(State-owned enterprise managing most of state forests)

### **Forestry Development Centre Tapio**

(Metsätalouden kehittämiskeskus Tapio)  
Soidinkuja 4, FIN-00700 Helsinki  
Tel. +358 9 15 621, fax +358 9 1562 232  
Website: [www.tapio.net](http://www.tapio.net)  
(Provides expertise particularly for private forestry)

  
**MTK Forest Group**

(MTK, Metsäryhmä)  
Simonkatu 6, FIN-00100 Helsinki  
Tel. +358 20 4131, fax +358 20 413 2403  
Website: [www.mtk.fi](http://www.mtk.fi)  
(MTK is the Finnish Federation of Agricultural and Forestry Producers)

**Finnish Forest Industries Federation**

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Snellmaninkatu 13, FIN-00170 Helsinki  
Tel. +358 9 13 261, fax +358 9 132 4445  
Website: [www.forestindustries.fi](http://www.forestindustries.fi)

**Finnish Forest Association**

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Tel. +358 9 685 0880, fax +358 9 6850 8820  
Website: [www.smy.fi](http://www.smy.fi)  
(Joint association for those related to forestry and forest industries)

**Statistics Finland**

(Tilastokeskus)  
Työpajakatu 13, FIN-00580 Helsinki  
Tel. +358 9 17 341, fax +358 9 1734 2750  
Website: [www.stat.fi](http://www.stat.fi)

*Source: Finnish Forest Association*



## Old-growth forest stand in northern Finland



*Source: Finnish Forest Research Institute*