3 Forestry in Finland

3.1 Utilisation of Wood Resources

Finland’s abundant forest resources are sufficient to satisfy the timber needs of the Finnish forest industry, with the exception of birch. Almost 50 per cent more birch is consumed than the estimated maximum sustainable removal will allow, the shortfall being made up by imported birch. In 1997–1999, commercial fellings and wood consumption by the forest industry were at record highs. The forest industry was consuming an average of 67 million cubic metres of wood a year, of which 56 million cubic metres was of Finnish origin. In 2000 and 2001, the industry’s wood consumption is forecast to be even higher.

Finland has 23 million hectares of forest, and the total volume of growing stock is approximately 2000 million cubic metres. Pine accounts for 47 per cent of this, spruce for 35 per cent and broad-leaved species for 18 per cent. The annual increment in the growing stock is about 76 million cubic metres. Some 2.4 million hectares of forest, mainly in Northern Finland, is wholly or partially excluded from commercial timber production. Forestry can be practised across an area of more than 20 million hectares, containing a growing stock of approximately 1900 million cubic metres with an annual increment of 74 million cubic metres.

Sixty-five per cent of Finland’s timber-production forests is in the possession of non-industrial private owners, 20 per cent is owned by the state, nine per cent by companies and six per cent by other groups of owners. The state’s forest ownership is concentrated in Northern Finland, which is reflected in the low average increment in the growing stock compared with forests in other ownership. Forests in non-industrial private ownership account for 74 per cent of the increment in growing stock, state-owned forests for 11 per cent, company-owned forests for 10 per cent and the rest for five per cent.

From the timber procurement viewpoint, the non-industrial private forests are of crucial importance, as 75–85 per cent of the domestic roundwood used by the forest industry is from such forests; the proportion is 65–75 per cent if imported timber is taken into account. In 1997–1999, removal of industrial wood averaged 57 million cubic metres per year. In 2000 and 2001, the removal figure will rise by a further 3–4 million cubic metres per year. This is not far short of the targets contained in the National Forest Programme (annual removal of 63–68 million cubic metres until 2010).

The calculation of maximum sustainable removal is based on information about the amount, composition and annual increment of the growing stock, and assumes that the standard of silviculture will remain unchanged. The calculation indicates the level to which fellings could rise without prejudicing the size of future removals. It is an optimisation calculation prepared at the Finnish Forest Research Institute (METLA) and includes the effect of roundwood price differentials on the composition of the maximum sustainable removal. The
maximum sustainable removal has risen steadily because the volume of growing stock has continually increased, and silviculture, at least in recent years, has been quite intensive. The additional funding granted with the National Forest Programme will probably secure silvicultural investment at this level at least in the immediate future. The increase in maximum sustainable removal seems to have levelled off, but at the present rate of timber resource use this is set to rise in the future.

Felling which exceeds the maximum sustainable removal on a temporary basis only will not jeopardise future harvests. Flexibility of this kind, which is justifiable in silvicultural terms, is extremely widespread in Finnish forests, especially in spruce stands. In spruce-dominant forests in Southern Finland, the average volume of growing stock is 172 cubic metres per hectare, compared with only 101 cubic metres per hectare in pine-dominant forests. Spruce harvests have been very high in recent years and spruce reserves have no longer been increasing.

Timber resources would have allowed considerably more felling (see graph) in the last twenty years than has actually occurred, but in recent years felling has increased at a rate above the estimates of maximum sustainable removal. The proportion of the maximum sustainable removal harvested is particularly great in non-industrial private forests, at over 90 per cent.

The table shows the Finnish forest industry’s consumption of timber by species, and compares these figures with the maximum sustainable removals estimated for Finnish forests. In addition to the quantities stated in the table, the industry also uses some aspen and unspecified timber. Non-industrial use of wood is insignificant. The information in the table is not presented by roundwood type because, from a practical viewpoint, the distinction between sawlogs and pulpwood is often flexible, harvesting of sawlogs also accumulates pulpwood, and the wood pulp industry uses large quantities of sawmill chips, etc.

Consumption of birch is almost 50 per cent above the level of maximum sustainable removal in Finnish forests. About half of the birch for industrial use is thus imported as birch pulpwood. Perhaps somewhat surprising, spruce resources are also being used to the full (spruce imports are low but increasing). The level of maximum sustainable removal of spruce stands that is justifiable in silvicultural terms is, however, much higher than the figures in the table indicate, which allows some
room for manoeuvre, especially in the case of spruce sawlogs. According to the maximum sustainable removal calculations, spruce harvests can be sustainably increased in as little as about ten years from now. From a wood resources viewpoint, pine, and especially sawlogs, represents the best and quickest opportunity to meet the need for increased timber consumption.

3.2 Roundwood Markets

The growth in exports of Finnish forest industry products has raised the industry's demand for roundwood and increased roundwood prices during 2000. The rise in stumpage prices has been greatest in spruce sawlogs, whose price will have risen this year by about 10 per cent. With the domestic roundwood markets operating efficiently, roundwood imports this year will be up by only two per cent. In 2001, a new record may again be achieved in commercial fellings. As demand grows next year, the volume of imports is forecast to rise again to a new record level, 14.4 million cubic metres. The rise in stumpage prices is predicted to continue in 2001, because demand will be growing and prices of forest industry products will increase.

The growing demand on sawnwood markets has increased the demand for sawlogs considerably in 2000. In particular, the demand for spruce sawlogs and the higher prices being fetched are helping to push domestic fellings to a new record. Roundwood trade progressed well in the first half of the year, due to the encouraging situation on the end-product markets. In the 1990s, negotiations on stumpage prices typically led to indecision by the market in the spring and tended to bias roundwood sales towards the autumn. In 2000, however, roundwood purchases have been distributed more evenly throughout the year, which has stabilised the market.

New Record for Commercial Fellings

Commercial fellings are estimated to have increased by about five per cent in 2000, to almost 58 million cubic metres. The sawlog harvest will be up by six per cent and pulpwood by three per cent. The quantities of sawlogs and pulpwood harvested this year will be almost equal, due to the strong demand for both sawmilling and paper industry products.

The supply of roundwood from spruce-dominant stands in non-industrial private forests has been high this year. However, total fellings increased more in company-owned than in private forests in the first half of the year, and fellings in company-owned forests for 2000 as a whole will be up by about six per cent. Felling in forests of the Finnish Forest and Park Service will this year remain at the level of 1999, at 4.4 million cubic metres.

The prices of the different sawlog species have become more uniform since the beginning of 1999, and at the end of this year the prices of spruce, pine and birch are already very close to each other. Weekly statistics show that the rise in sawlog prices levelled off in the summer, but in the autumn they again began to rise. The prices of pine and spruce pulpwood began to decline slightly in summer 2000, which, according to the industry, was merely a result of the qualitative variation in the distribution of stands. The demand for spruce sawlogs has picked up so much that its price will be up this year by 10 per cent on last year’s average, despite the ample supply of sawlogs. The stumpage price of pine sawlogs will be up this year by an average of only four per cent. The real price trend differs from the nominal trend, however, because both last year and this year only spruce sawlog prices have actually risen in real terms. In relation to export prices of pine and spruce sawnwood, stumpage prices of
Forestry in Finland

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sawlogs have risen this year to a level higher than at any time in the 1990s, which is already visible in the deteriorating profitability of sawmilling.

The price trend for the different types of pulpwood has been even more uniform in 2000 than for sawlogs. Due to the high demand for magazine paper the average stumpage price for spruce pulpwood will be up this year by about four per cent. On the pine and hardwood pulpwood markets, imports continue to be high, although the domestic supply of pine pulpwood is also plentiful. As a result, the average prices of pulpwood this year will be at last year’s level, even though the rise in the price of chemical pulp has been dramatic.

**Roundwood Supply from Private Forests at High Level**

The forest industry’s roundwood purchases from non-industrial private forests in January–August 2000 amounted to almost six million cubic metres more than in the corresponding period in 1999, which included a quite spring. In contrast, roundwood trade in the latter part of the year is expected to be less busy than last year. As in previous years, and on account of the high demand for sawlogs, standing sales have been higher than delivery sales. Standing sales will account for about 82 per cent of the market in 2000. The price trend in delivery sales

<table>
<thead>
<tr>
<th>Roundwood type/owner category</th>
<th>1999 mill. m³</th>
<th>2000f mill. m³</th>
<th>Change %</th>
<th>2001f mill. m³</th>
<th>Change %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial fellings, total</td>
<td>55.3</td>
<td>57.9</td>
<td>+5</td>
<td>60.1</td>
<td>+4</td>
</tr>
<tr>
<td>Non-industrial private forests</td>
<td>47.8</td>
<td>50.2</td>
<td>+5</td>
<td>52.1</td>
<td>+4</td>
</tr>
<tr>
<td>Company-owned forests</td>
<td>3.1</td>
<td>3.3</td>
<td>+6</td>
<td>3.5</td>
<td>+6</td>
</tr>
<tr>
<td>Finnish Forest and Park Service forests</td>
<td>4.4</td>
<td>4.4</td>
<td>0</td>
<td>4.5</td>
<td>+2</td>
</tr>
<tr>
<td>Sawlogs</td>
<td>27.3</td>
<td>29</td>
<td>+6</td>
<td>29.8</td>
<td>+3</td>
</tr>
<tr>
<td>Pulpwood</td>
<td>28.0</td>
<td>28.9</td>
<td>+3</td>
<td>30.3</td>
<td>+5</td>
</tr>
<tr>
<td>Roundwood imports</td>
<td>13.2</td>
<td>13.5</td>
<td>+2</td>
<td>14.4</td>
<td>+7</td>
</tr>
<tr>
<td>Commercial fellings and roundwood imports, total</td>
<td>68.5</td>
<td>71.4</td>
<td>+4</td>
<td>74.5</td>
<td>+4</td>
</tr>
</tbody>
</table>

**Commercial fellings and roundwood imports, 1999–2001**

**Forest industry stocks of harvested timber at six-month intervals (June 30 and December 31), 1989–2000, 1000 m³**

Source: Finnish Forest Research Institute (Metla)
has been weaker than in stumpage prices, due to the demand structure of the industry.

The high purchase quantities at the start of the year have swollen the forest industry’s stocks of wood stands. The industry’s stocks of harvested wood amounted to 8.3 million cubic metres at the end of June 2000, which can be regarded as normal in relation to the 1990s trend. Stocks of softwood sawlogs fell by one million cubic metres compared with the start of the year, due to the increase in production in the sawmilling industry. Stocks of pulpwood, which constitute almost 70 per cent of the forest industry’s total stocks, fell by only 0.5 million cubic metres in the first six months of 2000.

**Busy Year for Roundwood Imports**

In 1999, imported roundwood accounted for about 17 per cent of all wood consumed by the Finnish forest industry. With the domestic roundwood markets operating efficiently, the proportion of imported roundwood used by the industry in 2000 will be slightly lower than last year. The export tax imposed by Russia on its roundwood exporters disrupted trade at the start of the year, when the export charge of EUR 5 per cubic metre reduced Finnish imports of Russian roundwood in January to half their normal level. The tax has since been removed from birch pulpwood and import quantities are rising to the level of last year. Roundwood imports for the sawmilling industry, in particular, have been increasing this year.

Over the last five years, the composition of imports has changed as the relative proportion of imported spruce sawlogs has increased and birch pulpwood decreased. Independent sawmills, in particular, have increased their imports of sawlogs considerably. Information gathered from the members of the Finnish Forest Industries Federation shows that in 1999 birch pulpwood still accounted for 56 per cent of roundwood imports. Imports of roundwood and wood chips in 2000 will be up by about two per cent on last year, to 13.5 million cubic metres; pulpwood accounts for about 9.5 million cubic metres of this and sawlogs for about 2.5 million cubic metres, with the remainder being waste wood and chips.
The change in the forest product export price index this year and in 2001 is expected to be different to the change in the stumpage price index for domestic roundwood (both inflation-adjusted using the wholesale price index). The export price index will rise, whereas the stumpage price index will fall.

In 1999, the export price index fell by about 1.5 per cent on the previous year’s level, despite the favourable development in export prices at the end of the year. However, there were differences amongst the product groups: nominal export prices rose for sawnwood and pulp, but fell for plywood, paper and paper products.

The stumpage price index rose in 1999 by slightly more than one per cent on the previous year. This was due to the rise in the price of spruce and birch sawlogs; the average prices of pine sawlogs and pulpwood, on the other hand, fell. The stumpage price index for 1999 was in fact more than 10 per cent above the long-term trend for 1978–1998 (see graph). The slump in the index in the early 1990s is explained by the deep recession in Finland during those years.

The export price index for 2000 is expected to increase 3.5 per cent on last year’s level. In 2001, it is expected to rise further, by more than eight per cent on this year’s figure. By way of comparison, it should be noted that in 1995, at the peak of the business cycle, the real export price index rose by almost 15 per cent.

Although stumpage prices have rise in nominal terms during the current year, in real terms they will be down on last year by between 0.1 and 7.8 per cent, depending on the roundwood species. On average, the stumpage price index for all types of roundwood will be two per cent lower than last year. Nevertheless, the importance of the deflator chosen for use in assessing this year’s trend should be emphasised. If the estimated stumpage prices are inflation-adjusted by the consumer price index, the stumpage price index would rise from last year by almost two per cent. The real stumpage price index is expected to fall in 2001 from its level for this year, by 0.2 per cent.

**Stumpage Price Index and Forest Product Export Price Index**

Pekka Ollonqvist

The change in the forest product export price index...
Demand for Sawlogs Shifting to Pine

With theeconomic outlook for the forest industry’s export markets remaining good in 2001, the demand for roundwood will continue to rise. Exports of sawnwood will be up by slightly less than paper industry exports, and the busy construction sector in Finland will also ensure the demand for sawlogs remains high in 2001. Whereas this year the demand for sawlogs has been biased towards spruce, in 2001 the increase in exports of pine sawnwood will boost the demand for pine sawlogs and consequently fellings of pine.

Thanks to the demand for paper and rising paper prices, the emphasis on the Finnish market will shift more towards pulpwood than at present. Furthermore, new capacity for the wood pulp industry in eastern Finland will come on stream, which will rely to a great extent on imported wood.

There are currently no foreseeable factors that would significantly weaken the supply of wood from non-industrial private forests in 2001 compared to the current year. The trend is, in fact, quite the opposite, as the transition period in the forest taxation system will help to maintain the good supply of sawlog-dominant stands. Pressures for a rise in stumpage prices will thus be moderate again in 2001.

Roundwood trade from non-industrial private forests will increase in 2001 by around four per cent. Fellings from the industry’s own forests will continue to be high, and the Finnish Forest and Park Service will increase its fellings by 2–3 per cent. The high demand being sustained for forest industry products and the rise in prices will serve to increase fellings on the domestic roundwood markets next year to another new record, or about 60 million cubic metres.

The rise in stumpage prices, especially for pulpwood, will also be restrained by imports of roundwood, which will increase next year by almost seven per cent, to around 14.4 million cubic metres. If the supply on domestic markets proves to be lower than assumed here, the increase in imports in 2001 may turn out to be even higher.

Rise in Stumpage Prices Will Continue Next Year

Although stumpage prices will continue to rise in 2001, the price trend for the different types of roundwood will nevertheless differ from this year’s situation. The demand for sawnwood in the main

Average stumpage prices in non-industrial private forests

<table>
<thead>
<tr>
<th>Roundwood</th>
<th>1999 FIM/m³</th>
<th>2000f FIM/m³</th>
<th>1999/2000f change, %</th>
<th>2000f/2001f change, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pine sawlogs</td>
<td>271</td>
<td>282</td>
<td>+4</td>
<td>+4</td>
</tr>
<tr>
<td>Spruce sawlogs</td>
<td>239</td>
<td>263</td>
<td>+10</td>
<td>+2</td>
</tr>
<tr>
<td>Birch sawlogs</td>
<td>269</td>
<td>270</td>
<td>+1</td>
<td>+1</td>
</tr>
<tr>
<td>Pine pulpwood</td>
<td>89</td>
<td>89</td>
<td>0</td>
<td>+3</td>
</tr>
<tr>
<td>Spruce pulpwood</td>
<td>132</td>
<td>137</td>
<td>+4</td>
<td>+5</td>
</tr>
<tr>
<td>Birch pulpwood</td>
<td>88</td>
<td>88</td>
<td>0</td>
<td>+2</td>
</tr>
</tbody>
</table>
market area, Europe, will be higher for pine because the rapid increase in the price of spruce sawnwood causes substitution between the two species. The price of spruce sawlogs will not therefore rise as markedly as it has done in 2000, even though spruce exports to Japan will still be increasing. The average price rise for softwood sawlogs next year is forecast to be 2–4 per cent. Of the different pulpwoods, the stumpage price of spruce pulpwood is expected to increase the most, by five per cent, as a result of the rise in magazine paper prices. The price increase for chemical pulp will also be reflected in the price of pine pulpwood, which will rise by an average of three per cent from this year’s average. The high imports of birch pulpwood will ensure that the rise in its price will be slightly below the other pulpwoods, at about two per cent.

In the absence of the balancing effect of recommended prices, the regional characteristics of the roundwood market will become more emphasised. In regions of high demand, especially in eastern Finland, which will be gaining new pulpwood capacity, the rise in prices could be a little above average. In Northern Finland, on the other hand, the rise in stumpage prices in 2001 may be lower than presented here.

### 3.3 Investment and Profitability in Non-Industrial Private Forestry

*Total investment in timber production in Finnish non-industrial private forestry will reach FIM 1.05 billion this year. Regeneration obligations mainly due to clearcutting of spruce stands have increased the level of planting and thus total expenditure. Thanks to the growing amount of forest extension and planning, state funds are being used more effectively this year and will continue to be in 2001. This will also lead to more investment in timber production by the private forest owners themselves. This year, gross stumpage earnings will rise to over FIM 10 billion for the first time, which will boost the level of funds for future investment purposes.*

For the sixth successive year, the net earnings for non-industrial private forestry are above the long-term average. However, continued increases in income in the future will not be possible under the present formula, by increasing fellings of spruce sawlog stands. Nevertheless, it appears that the conversion of growing stock into cash has been very popular this year and will continue so in 2001. Even a rise in costs will not prevent new records being set for net earnings.

### Total Investment Exceeds FIM 1 Billion

The level of investment by non-industrial private forest owners in 1999 was a little under FIM 700 million. This figure will be exceeded in 2000, however, mainly as a result of the statutory regeneration obligations arising from the increased clearcutting...
of spruce stands. As spruce usually grows on nutrient-rich land, regeneration by planting has increased as a proportion of the total area of forest regeneration. In 1999, the expenditure by forest owners themselves rose for the first time to over 70 per cent of the total investment in timber production. This year and in 2001 the corresponding proportion will be slightly under 70 per cent.

In 1999, about FIM 30 million less in state loans and subsidies was used than in 1998. Partly for this reason, the total investment in timber production last year was below FIM 1 billion. In the current year, however, investment should exceed FIM 1 billion, provided that use of state subsidies has been successfully marketed to forest owners. In 2001, total investment will increase somewhat from this year’s level.

More Emphasis on Projects to Manage the Forest Environment

The Government’s budget proposal for 2001 reserves a sum of FIM 366 million to ensure sustainable timber production. The main aim of the measures to be implemented with this allocation is to advance the goals set in the National Forest Programme. Since 1998, the priority in ensuring timber production in non-industrial private forests has been in tending of young stands and in harvesting fuelwood, and this will continue in 2001. A sum of FIM 260 million has been reserved for the costs of all works, of which FIM 140 million is for tending of young stands.

Forestry also involves furthering the management of the forest environment and carrying out afforestation. A total of FIM 25 million is reserved for promoting environmental management. The allocation in last year’s budget proposal was FIM 15 million. A further sum of only FIM 22 million has been reserved for 2001 for afforestation costs to be funded from the main budget division for agriculture. A much larger sum is needed for compensating the loss of earnings already experienced in afforestation; FIM 30 million has been reserved for this in the budget proposal.

Stumpage Earnings in Non-Industrial Private Forestry Rise to FIM 10 Billion

In 1999, stumpage earnings from non-industrial private forests fell by over two per cent on 1998, to FIM 9.2 billion. In 2000, stumpage prices have risen considerably and commercial fellings have increased in non-industrial private forests by 3–4 per cent on last year’s figure. This year, gross stumpage earnings from non-industrial private forests will be FIM 10.2–10.4 billion. In real terms, this is an all-time high for stumpage earnings from non-industrial private forests. At today’s prices, even a level of FIM 8 billion has only been reached in 1974, 1980 and four times in the late 1990s. In 2001, a further rise in stumpage prices will boost gross stumpage earnings to almost FIM 11 billion.

As the production of sawnwood has increased substantially in recent times, felling in non-industrial private forests has concentrated on sawlogs. As a result, well over two thirds of all stumpage earnings has been from sawlogs. In 1999, spruce sawlogs constituted almost 45 per cent of all stumpage earnings in Southern Finland, and this figure is expected to be even higher for 2000.

Gross Earnings in Southern Finland over FIM 1000 per Hectare

Since 1995, gross stumpage earnings in non-industrial private forestry have remained above the long-term average. In Southern Finland, earnings per hectare are above the level of the previous cyclical peak (1989) for the fourth successive year, and in Northern Finland for the third successive year. Last year did not follow the trend, however, as gross stumpage earnings fell below FIM 690 per hectare of forest land; the drop on the 1998 level was nevertheless only FIM 25 per hectare (see table). Earn-
Income from commercial fellings has averaged more than FIM 900 per hectare, and in Northern Finland almost FIM 250 per hectare.

Income from commercial fellings has been an average of 91 per cent (1989–1999) of the recorded gross stumpage earnings for non-industrial private forestry; the remainder includes the estimated value of wood for household use and insurance indemnities. Income from sawlogs has constituted an increasing proportion of stumpage earnings in the 1990s, rising from two thirds to 70 per cent. Spruce has clearly become the most important species in terms of income from roundwood sales. Indeed, in the 1990s, income from spruce rose to over half of the total (54 per cent in 1999). The growth has been due to the high demand for spruce sawnwood and magazine paper.

Nothing is expected to prevent gross stumpage earnings per hectare rising this year and in 2001 to almost FIM 800. In Southern Finland the average gross stumpage earnings will exceed FIM 1000 per hectare. This will be achieved even if the growth in felling volumes is below the forecast production growth in the forest industry and with only a fairly modest rise in stumpage prices. The rise in the average stumpage price weighted by felling volume will be balanced by the increase in the proportion of cheaper thinning roundwood harvested.

### Costs Set to Rise only Moderately

The gross costs of timber production in non-industrial private forestry can be divided into four cost

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**Balance sheet calculations for non-industrial private forestry, 1997–2001f, FIM/ha at 1999 prices (wholesale price index)**

<table>
<thead>
<tr>
<th></th>
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</thead>
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<tr>
<td><strong>Gross stumpage earnings, FIM/ha</strong></td>
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<td></td>
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<tr>
<td>Whole country</td>
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<td>712</td>
<td>687</td>
<td>760</td>
<td>810</td>
<td>506</td>
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<td>Southern Finland</td>
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<td>933</td>
<td>903</td>
<td>1 000</td>
<td>1 060</td>
<td>650</td>
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<td>260</td>
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<td>74</td>
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<td><strong>Subsidies, FIM/ha</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whole country</td>
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<tr>
<td><strong>Net earnings, FIM/ha</strong> (before taxes and external capital costs)</td>
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<td></td>
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<tr>
<td>Whole country</td>
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<td>670</td>
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<td>Northern Finland</td>
<td>184</td>
<td>211</td>
<td>193</td>
<td>210</td>
<td>230</td>
<td>176</td>
</tr>
</tbody>
</table>

Northern Finland = Oulu and Lapland provinces
Sources: Statistics Finland and Finnish Forest Research Institute (Metla)
items: 1) regeneration (clearing the cutting area, soil preparation of the regeneration site, and artificial regeneration); 2) managing young stands (tending of seedling stands, supplementary planting and improving young stands); 3) forest improvement (pruning, fertilisation, ditching, and construction and maintenance of forest roads); and 4) forest administration (e.g. fees to local forest management association and other general costs incurred in administering forests (based on costs of the average reduction in site productivity tax)). The first three of the cost items are part of the total investment in timber production.

Costs are also divided into state subsidies and costs met by the forest owners themselves. This does not include the costs of borrowed capital, which in the case of forest improvement loans amounted to about FIM 35 million (FIM 2.6 per hectare) in 1998. The costs do, on the other hand, include the value of the work done by the forest owners.

The gross costs of timber production and administration in non-industrial private forestry amounted to an average of FIM 110 per hectare in 1999 for the whole country, of which one fifth was covered by state subsidies (see table). In Southern Finland the costs totalled FIM 130 per hectare, and in Northern Finland about FIM 70 per hectare. In Northern Finland, one third of the costs was covered by state subsidies.

Forest regeneration and administration have been the largest cost items, each accounting for about one third of total costs. Comparison of the late 1990s with the years 1989–1991 reveals that management of young stands and administration have increased as a proportion of total costs, while regeneration and forest improvement have decreased.

The gross costs of non-industrial private forestry have risen since the mid-1990s (see graph), although in real terms their 1999 level was the same as in 1989. The expenditure on managing young stands has more than doubled because the backlog of seedling stand management has been cleared in response to the take up of state subsidies for the purpose. The increase in expenditure on this work will continue, as both the volume and per-hectare unit costs will probably rise. Artificial regeneration in areas of spruce-dominant final cutting will increase total regeneration costs.

Annual changes in non-industrial private forestry costs are significantly smaller than the annual fluctuations in income. Regeneration costs depend mainly on the fellings of previous years, whereas the amount, and therefore the cost, of young stand management and forest improvement is clearly influenced by the policy on state subsidies. Current statistical compilation does not allow the reasons for changes in actual administration costs to be fully identified.

**Forest into Cash at Record Pace - Net Earnings Soar**

In 1999, the net earnings from timber production in non-industrial private forestry (gross stumpage earnings – gross costs + subsidies) amounted to
approximately FIM 600 per hectare. In Southern Finland the net earnings, at FIM 797 per hectare, were four times the corresponding figure for Northern Finland, FIM 200 per hectare (see table). In the recession years 1991–1993, the net earnings from non-industrial private forestry plummeted to about half the level they had been at the end of the 1980s (see graph). They have since risen to a level considerably higher than in the previous cyclical peak, and the new century has begun with record net earnings: over FIM 700 per hectare for 2000. If the trend in the domestic and export markets continues as projected, the net earnings in Southern Finland will rise in 2001 to over FIM 1000 per hectare.

The net earnings share (net earnings/gross stumpage earnings x 100) has risen to an extremely high level, almost 90 per cent (see graph). The amount of gross stumpage earnings corresponding to the net earnings share can be invested in other activities than timber production.