

## 3 Forestry in Finland

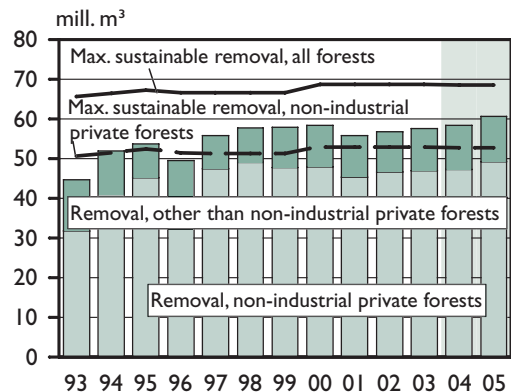
### 3.1 Utilisation of Wood Resources

*Finland's abundant forest resources are sufficient to meet the Finnish forest industry's demand for roundwood, with the exception of birch. The industry's demand for birch is some 40% higher than the estimated maximum sustainable removal will allow, and this shortfall is made up by imported birch. In 2001–2003, the forest industry's roundwood consumption and commercial fellings were at record highs, with consumption averaging 71 mill. m<sup>3</sup> of roundwood a year, of which 55 mill. m<sup>3</sup> was of Finnish origin. The level of roundwood procurement and consumption in the industry will be up slightly in 2004 and also in 2005.*

Finland has 23 mill. ha of forest, and the total volume of growing stock is approximately 2050 mill. m<sup>3</sup>. Pine accounts for 47% of this, spruce for 34%, birch for 15% and other broad-leaved species for 4%. The annual increment in the growing stock is about 83 mill. m<sup>3</sup>. Some 2.8 mill. ha of forest, mainly in Northern Finland, are wholly or partially excluded from commercial roundwood production. Forestry can thus be practised across an area of more than 20 mill. ha, containing a growing stock of about 1900 mill. m<sup>3</sup> with an annual increment of approximately 81 mill. m<sup>3</sup>. Growing stock drain amounts to about 69 mill. m<sup>3</sup> p.a., and so roundwood reserves are increasing annually by a small amount. The standard of Finnish forest management has been endorsed by the Pan European Forest Certification scheme.

The maximum sustainable removal is approximately 69 mill. m<sup>3</sup> of useful wood per year, and the maximum justifiable in silvicultural terms is as much as 93 mill. m<sup>3</sup>, taking account of all tree species. The removal of roundwood meeting the dimensional requirements for industrial wood in recent years has been about 57 mill. m<sup>3</sup>, or 83% of the calculated maximum sustainable removal. In non-industrial private forests, the proportion of the maximum sustainable removal harvested has been almost 90%.

Some 62% of Finland's commercial forests are in the possession of non-industrial private owners, 24% are owned by the state, 9% by companies and 5% 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



Source: Finnish Forest Research Institute

*Removals of industrial wood and maximum sustainable removal*

*Wood consumption by the forest industry and maximum sustainable removals in Finland*

Tree species	Consumption 2001–2003, mill. m <sup>3</sup> /yr		% of maximum sustainable removal	
	Domestic wood	Wood total	Domestic wood	Wood total
Pine	23.6	26.3	74	82
Spruce	24.8	28.2	103	117
Birch	6.4	13.7	63	136
Total	54.8	68.2	83	103

In addition, the industry consumed 2.5 mill. m<sup>3</sup>/yr of aspen and unspecified imported wood.

for 72% of the growing stock increment, state-owned forests for 12%, company-owned forests for 11% and the rest for 5%. From the viewpoint of the industry's roundwood procurement, the non-industrial private forests are of crucial importance, as about 80% of the domestic roundwood (and about 65% of all roundwood, both domestic and imported) used by the forest industry is from such forests. However, this proportion has been slowly declining as imports have risen; imported roundwood now accounts for about 20% of the total.

The table shows the Finnish forest industry's consumption of roundwood, and compares these figures with the maximum sustainable removal estimated for Finnish forests. 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.

The level of maximum sustainable removal has risen because the volume of growing stock has been rising continuously and silviculture has been quite intensive. The additional funding from the National Forest Programme will help secure a high level of silvicultural investment. The increase in maximum sustainable removal has slowed, but with the present

use of roundwood resources the maximum sustainable removal will increase again in the future.

Felling in excess of 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 high, at 173 m<sup>3</sup>/ha. Spruce harvests have been very high in recent years and spruce reserves have no longer been increasing.

From a wood resources viewpoint, pine has the best potential for quickly meeting an increase in the demand for roundwood. The industry's birch consumption is currently almost 40% greater than the level of maximum sustainable removal in Finnish forests will allow, and the shortfall is imported as birch pulpwood. The proportion of birch resources harvested is not very high, as birch procurement is hampered by the fact that a significant proportion of birch grows in softwood-dominant forests; only 9% of Finnish forests are birch-dominant. The table also shows that domestic spruce resources are being used to the full. Imports of spruce in recent years have been running at 3–4 mill. m<sup>3</sup> p.a. According to the maximum sustainable removal calculations, spruce harvests can be sustainably increased in as little as about ten years from now.

Non-industrial use of roundwood – principally household firewood – is also of importance in forest management terms, but its main significance is in terms of energy use. In the tending of young stands, a growing volume of small-sized trees are chipped into fuelwood. The significance for forest management may grow if stands marked for first thinning no longer attract the interest of wood purchasers.

The aim of the National Forest Programme (1999) is to increase the use of domestic industrial wood and fuelwood (particularly felling residues). The use of industrial wood has not yet increased, but the use of felling residues and small-sized trees for energy purposes has tripled since 1999. In energy production, the use of wood material unfit

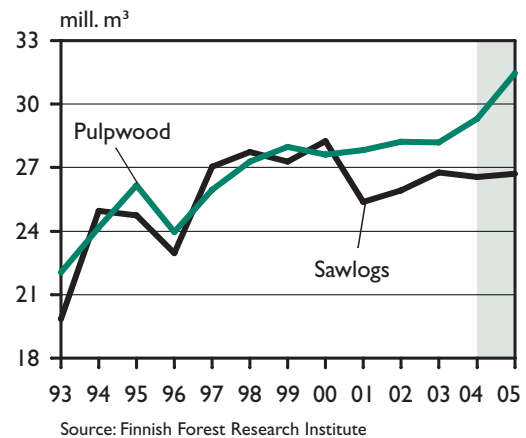
for industrial products is very high: wood-based energy accounts for 20% of all energy consumed in Finland and 60% of the Finnish forest industry's energy consumption.

### 3.2 Roundwood Markets

*Production forecasts indicate that the Finnish forest industry's roundwood consumption in 2004 will be up by 5%, to 77 mill. m<sup>3</sup>. The increase in imports is expected to be insufficient to satisfy the industry's need for roundwood, and so commercial fellings will have to increase as well. The latter will need to rise to a total of 56 mill. m<sup>3</sup> by the end of 2004, even assuming that almost 2 mill. m<sup>3</sup> of already harvested roundwood stocks are used. Stumpage prices in 2004 will be 3–4% below the 2003 figures, mainly on account of lower pulpwood prices. Roundwood consumption will continue to increase in 2005, to a level exceeding 78 mill. m<sup>3</sup>. Average softwood sawlog prices are expected to remain at the 2004 level, while softwood pulpwood prices will rise slightly. Little room will be left for reducing stocks in 2005, and so the roundwood need will have to be met by importing an additional 1 mill. m<sup>3</sup> and by increasing commercial fellings of pulpwood by 2 mill. m<sup>3</sup>.*

#### Purchase Volumes Below Target, Fellings Unchanged

Production in the Finnish pulp and paper industry increased in the first six months of 2004, and sawnwood production remained high. The industry's need for pulpwood has therefore increased, in particular. The drop in stumpage prices that began in summer 2003 led to a reduction in roundwood sales in the subsequent autumn, with the result that the forest industry's roundwood procurement in 2003 fell short of the target by 6 mill. m<sup>3</sup>. Roundwood sales in

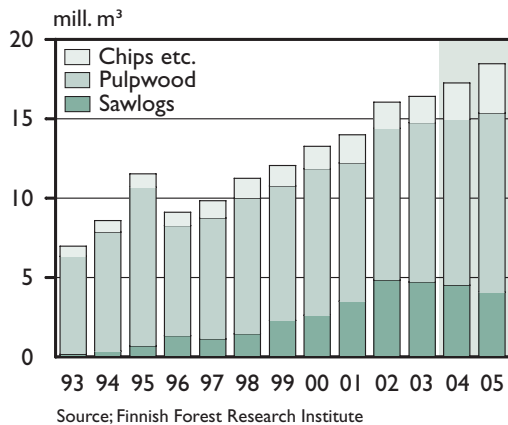


Commercial fellings of sawlogs and pulpwood, 1993–2005

2004 have been comparatively slow in relation to the industry's purchase target of 47 mill. m<sup>3</sup> announced at the start of the year, but sales have begun to pick up in September.

Despite purchase volumes being 9% down, fellings in non-industrial private forests (28.5 mill. m<sup>3</sup>) in January–August 2004 dropped by only 1%, and the total volume of commercial fellings was less than 1% down on the same period in 2003. With commercial fellings down a shade, the increased fibre raw material need in pulp and paper production has been met by higher imports of wood chips and spruce pulpwood, and by using stocks of harvested roundwood.

The decline in stumpage prices that began in July 2003 continued for the remainder of the year. In 2004, however, stumpage prices have been fairly stable: by the end of September, stumpage prices for pine and birch had fallen by less than 1%. By contrast, the price of spruce sawlogs had risen by 4% and spruce pulpwood by about 2%. During the month of September, the stumpage prices of all types of roundwood grew by 1–3% on their August levels.



Volume of imported wood by type of roundwood, 1993–2005

### No Increase in Imports in First Six Months

Overall, roundwood imports have been below the level anticipated, totalling 10 mill. m<sup>3</sup> by the end of July 2004, which is 1% below the previous year's figure for the same period. A change in the structure of imports has occurred during this period, with an increasing emphasis on wood chips (including wood residues); imports of wood chips increased by 32% (0.28 mill. m<sup>3</sup>) in the first half of 2004.

With the forest industry's consumption of wood raw material growing at a faster rate than roundwood sales and imports in the first half of 2004, there has been a decline in the reserves of marked stands, in particular. The industry's stocks of harvested wood have also been reduced, falling by 1.3 mill. m<sup>3</sup> in January–June, to 7.6 mill. m<sup>3</sup>. This is 7% below the average summer reserves of the past five years.

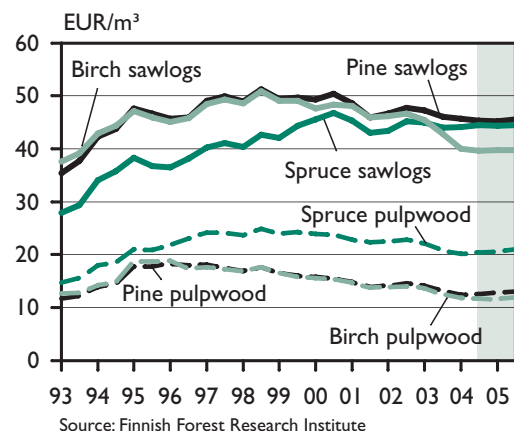
### Roundwood Sales Must Pick Up in Autumn 2004

Based on the Finnish forest industry's production volumes in the first six months, its use of roundwood in 2004 as a whole will rise to a new record (77 mill. m<sup>3</sup>), of which 47 mill. m<sup>3</sup> will have to be

met by roundwood production from non-industrial private forests. To achieve this target, late-autumn roundwood sales must pick up substantially.

Average stumpage prices of softwood sawlogs in 2004 are not expected to fall below the previous year's level, because high production volumes are keeping up the demand for sawlogs. On the plywood market, production in Russia and the other transition economies will ensure that competition remains tough. Consequently, the 2004 stumpage price of birch sawlogs is forecast to be about 10% down on the previous year's level; the same applies to the stumpage prices of pine and birch pulpwood. Although the growth in pulp and paper production has raised demand for fibre raw material, domestic purchases in the first half of 2004 were significantly lower than those for the same period the previous year. The price of spruce pulpwood has decreased in 2004, but by less than other pulpwood grades. The growth in magazine paper production has nevertheless increased the demand for spruce pulpwood, which, because of the decline in domestic sales, has had to be met by increasing imports.

Unless roundwood sales pick up in autumn 2004, production restrictions will have to be introduced on account of the raw material shortage. If stumpage



Semiannual stumpage prices by type of roundwood, Q1/1993–Q2/2005 at 2003 prices (cost of living index)

*Forecasts of commercial fellings and roundwood imports, 2003–2005.*

Roundwood type/ Ownership group	2003 mill. m <sup>3</sup>	2004 mill. m <sup>3</sup>	Change %	2005 mill. m <sup>3</sup>	Change %
Commercial fellings, total	55.0	55.9	2	58.2	4
Non-industrial private forests <sup>1</sup>	46.7	47.1	1	49.2	4
Company-owned forests	3.5	3.8	9	3.9	2
Finnish Forest and Park Service forests	4.8	5.0	3	5.1	2
Sawlogs	26.8	26.6	-1	26.7	0
Pulpwood	28.2	29.3	4	31.5	7
Roundwood imports <sup>2</sup>	16.4	17.2	5	18.4	7
Commercial fellings and roundwood imports, total	71.4	73.1	2	76.6	5
Stocks of harvested roundwood	8.9	7.2	-19	7.8	7

<sup>1</sup> Includes municipalities, parishes, etc.

<sup>2</sup> Excluding firewood

prices were to be increased, the profitability impact would not be as significant in the pulp and paper industry as in the wood products industry, because stumpage prices represent a significantly smaller proportion of the total costs of pulp and paper products. Bearing in mind, too, the improved outlook for export prices of softwood pulp and magazine paper in 2005, one solution to the impending raw material shortage would therefore be to introduce a moderate increase in the price paid for softwood pulpwood. The smaller diameter requirements for spruce pulpwood introduced by roundwood purchasers have also been a step in the same direction. If autumn 2004 continues to be wet and mild, and the ground therefore still very soft and unfrozen, fellings will have to be concentrated on final cutting stands next to roads that can support the heavy loads, but the availability of such stands is limited. This increases the prospect of having to restrict production on the basis of roundwood procurement problems.

## **Roundwood Consumption at a Peak in 2005**

Production forecasts indicate that the Finnish forest industry's roundwood consumption in 2005 will rise by about 2%, to over 78 mill. m<sup>3</sup>. This additional demand is expected to be covered by an increase in imports (to a total of 18.5 mill. m<sup>3</sup>) and in commercial fellings from non-industrial private forests (to a total of 49 mill. m<sup>3</sup>). The 2 mill. m<sup>3</sup> increase in fellings would consist primarily of pulpwood, as sawnwood production and sawlog needs will be unchanged from the previous year.

Although high sawnwood production volumes will maintain the good level of demand for sawlogs, no increase in stumpage prices is expected in 2005. This is because sawnwood prices are being held down by the oversupply on sawnwood export markets, thus restricting the sawmilling industry's scope for paying higher sawlog prices. With birch plywood prices expected to rise slightly in 2005, the fall in birch sawlog prices should come to an

## Forest Product Export Price Index and Stumpage Price Index

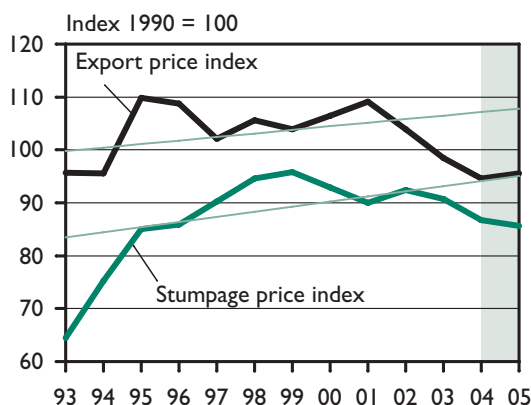
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The forest product export price index, which measures the real change in forest product export prices, will be down in 2004 by over 3.5% on the previous year's level, because export prices have fallen for all forest products except pulp. The stumpage price index, which measures the average price of roundwood, will be down by over 4%. Both indices are based on prices adjusted for inflation using the wholesale price index.

With nominal export prices for pulp and paper industry products rising slightly, the forest product export price index is expected to rise in 2005 by about 1% on the 2004 level. The stumpage price index will fall by over 1%, despite an end to the decline in nominal stumpage prices. In 2005, the forest product export price index will be more than 4% lower than its 1990 level, while the stumpage price index will be about 14% below its 1990 level.

Both indices have experienced a rising trend throughout the period 1990–2003. The forest product export price index has risen more slowly than the stumpage price index, the difference being about 0.4 percentage points. The stumpage price index in 2003 was over 2.5% below its linear trend calculated for the period 1990–2003, and the forest product export price index was about 7.5% below its linear trend for the same period. For both indices, the deviation from the trend has continued to increase during 2004.

The forest product export price level rose continuously from a minimum in 1991 up to the year 2001, but has since fallen significantly. In 2005 it will be at almost its 1992 level. After the low of 1993, a recession year, stumpage prices rose continuously in real terms until 1999. Stumpage prices in 2005 will be slightly below their 1996 level.



Sources: Research Institute of the Finnish Economy,  
Finnish Forest Research Institute and Statistics Finland

*Forest product export price index, stumpage price index and their linear trends (inflation-adjusted by the wholesale price index)*

end. On the pulpwood market, the expected rises in the production and export prices of softwood pulp and printing and writing papers is forecast to lead to a 4% increase in the price of pine pulpwood and to reinforce the trend in birch pulpwood prices to some extent.

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

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*Total investment in timber production in Finnish non-industrial private forestry in 2004 will be almost EUR 170 mill. In 2005, investment will be slightly higher but nevertheless considerably below the level seen in the early years of the decade. By contrast, state funds for management of the forest environment in non-industrial private forests have increased by almost 50% during the current decade. In 2005, state funding for these purposes will amount to nearly EUR 6 mill.*

*Net stumpage earnings in 2004 will be down by EUR 4/ha on the previous year's figure, to EUR 97/ha, but will rise in 2005 to EUR 101/ha. Profitability, calculated as the investment return on forest ownership, has weakened during 2004 as a result of the fall in stumpage prices, and the return in real terms will be negative, at -1%. In 2005, the return is expected to rise to over 4%, a level equal to the 1993-2003 average.*

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#### **Drop in Timber Production Investment**

The amount of timber production investment funded by forest owners themselves increased in real terms almost continuously from the first half of the 1990s to the start of the current decade. However, since 2001 this level of financing has been on the decline. In the last two years, the extent of artificial regeneration has fallen by almost 10%, and the tending

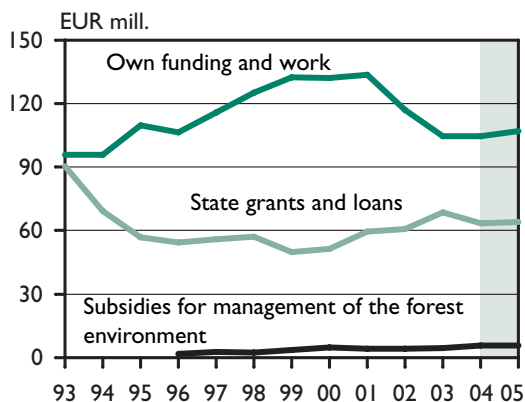
of young stands by over 5%. These two areas correspond to over two thirds of the total investment in timber production in non-industrial private forestry. In 2003, the amount of funding by private forest owners themselves amounted to about EUR 105 mill., and will be almost the same in 2004. In 2005, this figure will be slightly higher, but nevertheless below EUR 110 mill.

Almost EUR 70 mill. of state funding was used for timber production in 2003. The focus of this funding was on the tending of young stands, which is work that also requires a substantial amount of funding and work input from forest owners themselves. Total investment in non-industrial private forestry in 2003 rose to about EUR 173 mill., whereas in 2004 it will be just under EUR 170 mill. In 2005, investment will be up slightly in real terms.

#### **Decline in State Subsidies**

The real level of state subsidies in 2003 marked a return to the position of ten years ago. This high subsidy level was the result of a supplementary budget of EUR 9 mill. to help finance work on the tending of young stands that was postponed from 2002. In 2004, the level of state subsidies is again at around EUR 63 mill. The Government's budget proposal for 2005 reserves a total of approximately EUR 64 mill. in grants and loans for timber production in non-industrial private forestry. In the 1990s, loan financing lost its importance almost completely, and in the current decade only about EUR 0.5 mill. annually has been given in loans.

In non-industrial private forestry, state subsidies are now allocated not only to timber production but also for furthering the management of the forest environment. A separate allocation is reserved for this purpose in the budget; the first such allocation (almost EUR 2 mill.) was made in 1996. In less than ten years the funding used for management of the forest environment has tripled. The Government's budget proposal for 2005 contains an allocation of almost EUR 6 mill., which is about the same as the subsidies for forest roads.



Source: Finnish Forest Research Institute

*State and forest-owner funding of investments in non-industrial private forestry, 1993–2005 at 2003 prices (cost of living index)*

## Decline in Stumpage Earnings

Stumpage earnings of non-industrial private forest owners were about the same in 2002 and 2003, at about EUR 1.55 billion. This is significantly below the stumpage earnings level of 1997–2000 in real terms. In 2004, it appears that gross stumpage earnings will drop by 3–4%, to less than EUR 1.5 billion, as a result of the lower stumpage prices for all roundwood categories except spruce sawlogs. In 2005, the improved economic situation for the Finnish forest industry will also be evident in the roundwood market, which will mean rising stumpage prices and an increase in felling volumes. Gross stumpage earnings of non-industrial private forest owners will thus return to the level of 2002–2003.

In 2003, total investment in timber production in non-industrial private forestry was more than 11% of gross stumpage earnings. The investment rate for 2004 looks likely to be down slightly on the previous year. Both earnings and investment are forecast to rise in 2005, resulting in an investment rate of a little over 11%.

## Net Earnings Remain at Around EUR 100/ha

Gross stumpage earnings in 2004 will be down by EUR 3/ha to EUR 112/ha, due to the fall in stumpage prices. In 2005, the increase in fellings and the modest price rise in softwood pulpwood grades are expected to raise gross stumpage earnings to EUR 115/ha. Total costs (investment plus management) of non-industrial private forestry are expected to increase a little in 2004, to about EUR 20/ha, and to remain at this level in 2005.

Net earnings from non-industrial private forestry in 2003 amounted to EUR 101/ha. In 2004, net earnings will be EUR 97/ha, due to the lower stumpage prices. With costs remaining unchanged, the additional fellings and the small increase in stumpage prices are expected to raise net earnings in 2005 to EUR 100/ha.

*Non-industrial private forestry balance sheet calculation for 2003 and forecast for 2004–2005. EUR/ha*

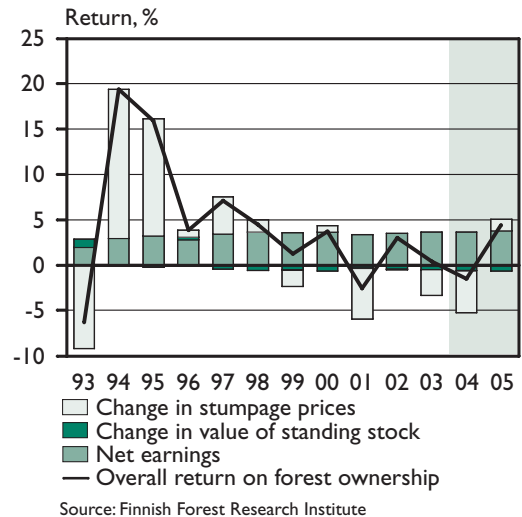
	2003	2004	2005
<b>Gross stumpage earnings</b>			
Whole country	115.3	112.0	115.0
Southern Finland	148.7	145.0	149.0
Northern Finland	46.5	43.0	46.0
<b>– Gross costs</b>			
Whole country	19.4	19.6	19.9
Southern Finland	22.7	23.0	23.3
Northern Finland	12.4	12.5	12.7
<b>+ Subsidies</b>			
Whole country	5.1	4.8	4.7
Southern Finland	5.1	4.7	4.6
Northern Finland	5.2	4.9	4.8
<b>= Net earnings (before taxes and external capital costs)</b>			
Whole country	101.0	97.0	100.0
Southern Finland	131.0	127.0	131.0
Northern Finland	39.3	36.0	38.0

Northern Finland is defined as the Provinces of Oulu and Lapland  
Sources: Statistics Finland and Finnish Forest Research Institute

## Return on Forest Ownership to be Over 4% in 2005

Based on average stumpage prices, the 2003 return on forest assets calculated in terms of the harvest value was 0.4%. In 2004, the fall in stumpage prices will mean a return of -1.5%, while in 2005 the slight rise in stumpage prices will produce a return of over 4%. The real investment return on forest ownership in the period 1993–2003 was an average of 4.6%.

The overall return on forest ownership is made up of several factors: stumpage earnings minus the costs of timber production (= net earnings); the change in value of the standing stock; and the change in stumpage prices. The variation in stumpage prices has a decisive effect on the harvest value of the standing stock (volume of standing stock x stumpage price by roundwood type), which can occasionally cause even large fluctuations in the percentage return. In the calculation of harvest value, which describes the value of forest assets, the volume of the standing stock is based on the annual



*Overall real return on forest ownership, 1993–2005 (cost of living index)*

growing stock volume calculated on the basis of the national forest inventories and felling volumes, and average annual stumpages prices are used.

