



## 3 Forestry in Finland

### 3.1 Utilisation of Wood Resources

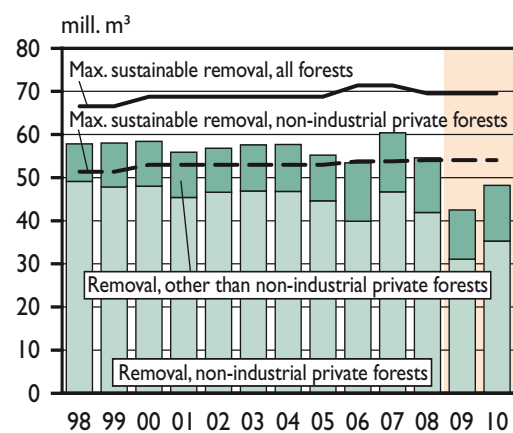
*In recent years, almost a quarter of the Finnish forest industry's roundwood procurement has consisted of imported roundwood, even though Finland has abundant forest resources. This situation is changing, however, because imports of roundwood are falling considerably. If birch imports also fall, it will not be possible to compensate for this by procuring similar volumes domestically. In 2006–2008, the industry used an average of 74 mill. m<sup>3</sup> of roundwood annually, of which 56 mill. m<sup>3</sup> was domestic roundwood. These figures do not apply at all to 2009 though, as roundwood consumption is expected to have dropped to 50 mill. m<sup>3</sup> for the year.*

Finland has almost 23 mill. ha of forest, and the total volume of growing stock is approximately 2200 mill. m<sup>3</sup>. Pine accounts for 50% of this, spruce for 30%, birch for 17% and other broad-leaved species for 3%. The annual increment in the growing stock is about 99 mill. m<sup>3</sup>. Some 2.4 mill. ha of forest, mainly in Northern Finland, is 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 2000 mill. m<sup>3</sup> with an annual increment of almost 97 mill. m<sup>3</sup> (or 4.8%). Growing stock drain amounts to about 69 mill. m<sup>3</sup> p.a. (or 3.4%), and so roundwood reserves are increasing by a small amount each year.

The maximum sustainable removal is approximately 70 mill. m<sup>3</sup> of useful wood per year,

while the maximum justifiable in silvicultural terms (maximum potential removal) is as much as 94 mill. m<sup>3</sup>, taking account of all tree species. The annual removal of roundwood meeting the dimensional requirements for industrial wood in recent years (see figure) has been about 56 mill. m<sup>3</sup>, or 80% of the calculated maximum sustainable removal. In non-industrial private forests, the proportion of the maximum sustainable removal harvested is slightly higher.

Some 63% of Finland's commercial forests are in the possession of non-industrial private owners, 22% are owned by the state, 9% by companies and 6% by other groups of owners. The state's forest ownership is concentrated in Northern Finland, which is why the average increment in the growing stock for the state's holdings is low compared with forests in other ownership. Forests in non-industrial private ownership account for 70% of the growing stock increment, state-owned forests for 13%, company-owned forests for 11% and the rest



Source: Finnish Forest Research Institute

*Removals of industrial wood and maximum sustainable removal, 1998–2010.*

for 6%. The non-industrial private forests are of crucial importance for the industry's roundwood procurement, as about 75% of the domestic roundwood (and almost 55% of all roundwood, both domestic and imported) consumed by the forest industry is from such forests. The volume of imported roundwood has risen to 25% of the total. This situation is changing, however, as imports of roundwood for the full year 2009 will be down by half on the 2008 figure.

The accompanying 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 Finnish Forest Research Institute's calculation is an optimisation calculation, in which the relative prices of different roundwood categories affect the structure of the estimates of maximum sustainable removal.

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. Spruce harvests, for example, have been very high in recent years, and spruce reserves have decreased slightly since 2000.

Roundwood imports from Russia have collapsed in 2009, due to high prices and other factors. Though Finnish roundwood resources are easily sufficient to replace imported Russian pine, there will be a scarcity of spruce, and domestic birch will only be sufficient to replace a proportion of imported Russian birch. As part of its process of adjustment to changed circumstances, the pulp industry has begun to replace birch with pine.

Though non-industrial use of roundwood – principally household firewood – is also of importance in forest management terms, its main

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

Tree species	Consumption 2006–2008, mill. m <sup>3</sup> /yr		% of maximum sustainable removal	
	Domestic wood	Wood total	Domestic wood	Wood total
Pine	25.6	28.3	80	88
Spruce	22.6	26.0	93	107
Birch	7.6	15.6	70	143
Total	55.8	69.9	83	104

*In addition, the industry consumed 3.6 mill. m<sup>3</sup>/yr of aspen and unspecified imported wood.*

*Source: Finnish Forest Research Institute*

significance is in terms of energy use. In the tending of young stands, an increasing volume of small-sized trees are chipped into energy wood.

The aims of the National Forest Programme 2015 (2008) include an increase in the use of domestic industrial wood and energy wood. This aim has now risen in prominence considerably, as it is now known that roundwood imports from Russia have collapsed. The National Forest Programme states that this aim will require forest owners to engage more actively in using advisory services on the potential of their forests.

Overall use of domestic industrial wood has not grown since 2000, although it did increase to a record level in 2007 (59 mill. m<sup>3</sup>), falling again during 2008 (52 mill. m<sup>3</sup>) with the decline in the industry's production and when there was still plentiful supplies of imported wood. By contrast, the use of wood chips (mainly felling residues from clear cutting) for energy purposes has risen rapidly in the current decade. In recent years, approximately 3 mill. m<sup>3</sup> in wood chips has been used annually in thermal and other power plants, and in 2008 this figure had already risen to 4 mill. m<sup>3</sup> (see featured topic, p. 38). Such use of wood material unfit for industrial products is very high: wood-based energy accounts for about 20% of all energy consumed in Finland and about 60% of the Finnish forest industry's energy consumption (black liquor from the pulp industry, tree bark, sawdust, etc.).

## 3.2 Roundwood Markets

*Commercial fellings in 2009 will not exceed a total of approximately 40 mill. m<sup>3</sup>. Commercial fellings in non-industrial private forests are down by 26%, whereas fellings in company-owned forests and in forests owned by Metsäliitus are down by 15%. Imports of roundwood for the full year 2009 are expected to be just half of the previous year's figure, falling to less than 10 mill. m<sup>3</sup>. Despite the decline in felling volumes and imports, stocks of harvested wood are still high.*

*The demand for softwood sawlogs is increasing, and it is expected that this will prevent any further decline in their stumpage prices. Stumpage prices for the year as a whole will nevertheless be 23% below the average for 2008. The market for birch plywood is weak, and the demand for birch sawlogs has consequently been low. The remainder of 2009 will see further downward pressure on pulpwood stumpage prices as a result of the large stocks of roundwood and the cuts in paper and pulp capacity. Although the price level will not rise, the roundwood sales revenue tax relief still available in 2010 is expected to improve roundwood supply in the latter months of 2009. In contrast to other roundwood categories, the demand for forest energy has been good in 2009, and the use of wood chips for thermal and other power plant use is forecast to be up in 2009 to 4.5 mill. m<sup>3</sup>.*

*In 2010, forest industry production will be up slightly, and the industry will prepare for this growth by keeping roundwood stocks high. Commercial fellings will be up by 15% on the 2009 figure, as roundwood imports are expected to remain at their 2009 level. Nominal stumpage prices of softwood sawlogs will rise by 4–8%, as sawnwood production growth will boost the demand for sawlogs. The fall in birch sawlog stumpage prices is expected to be reversed into a slight rise. Stumpage prices of softwood pulpwood will remain at close to their 2009 levels as the reduced volumes of imported roundwood and domestic sawmill chips will be replaced with domestic pulpwood from thinning, in particular. However, birch pulpwood stumpage prices are*

*expected to decline further. The demand for forest energy will continue to be good, and thermal and other power plant use is forecast to grow to 5.5 mill. m<sup>3</sup>.*

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### Trough Turning into Recovery in 2009

In 2009, the roundwood market has been affected by an exceptional number of negative factors simultaneously. Between 1993, which was the start of the forest taxation transition period, and 2007, the volume of final cutting in forests in non-industrial private ownership was high, but since 2007 the supply of roundwood has been inexorably switching over to thinnings. In preparing for Russia's programme to increase its export duties on roundwood, the pulp and paper industry, in particular, expanded its stocks of harvested roundwood significantly during 2008, through both imported roundwood and domestic wood from first commercial thinning. The closures and shutdowns of wood processing production units have reduced the demand for wood on the roundwood market in 2009. Almost the only positive factor on the roundwood market has been the growth in domestic demand for forest energy.

In the first half of 2009, the demand for roundwood was low, which in turn caused a steep drop in stumpage prices. The nominal stumpage price of pine sawlogs, for instance, was almost 30% lower in June than a year earlier, and more than 40% below the summer 2007 peak in prices. Softwood sawlog stumpage prices are nevertheless expected to have risen slightly since the summer, due to the gradual pick-up in sawnwood demand and production. Pulpwood prices are continuing to be kept in check by the drop in demand resulting from the production limits and capacity closures in the pulp and paper industry, and the high level of harvested roundwood stocks. The average 2009 prices of both sawlogs and pulpwood are expected to be down by 23–26% on the 2008 figures.

Key factors affecting the roundwood market currently are the cautious recovery in softwood

Commercial fellings, roundwood imports and end-of-year stocks of harvested wood, 2008–2010.

Roundwood type/ Ownership group	2008 mill. m <sup>3</sup>	2009 mill. m <sup>3</sup>	Change %	2010 mill. m <sup>3</sup>	Change %
Commercial fellings, total	51.7	39.6	– 23	45.3	15
Non-industrial private forests <sup>1</sup>	41.2	30.6	– 26	34.8	14
Company and state-owned forests <sup>2</sup>	10.5	9.0	– 15	10.5	17
Sawlogs	21.5	14.9	– 31	16.9	14
Pulpwood	30.1	24.6	– 18	28.3	15
Roundwood imports	20.0	9.4	– 53	9.5	1
Commercial fellings and roundwood imports, total	71.7	49.0	– 32	54.8	12
Stocks of harvested roundwood	16.7	13.6	– 18	13.1	– 4

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

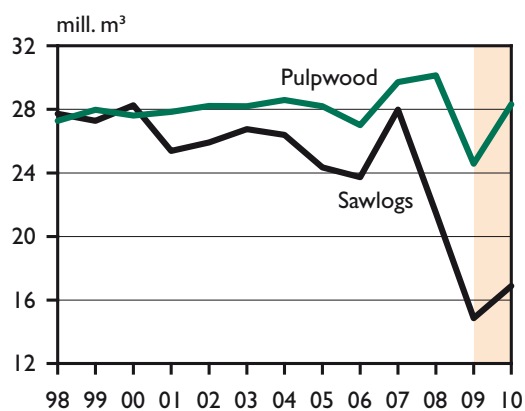
<sup>2</sup> Metsähallitus manages state-owned forests

Sources: Finnish Forest Research Institute and National Board of Customs.

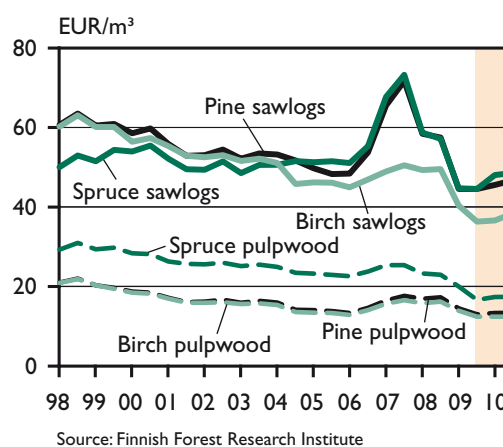
sawlog demand and the fixed-term tax relief on income from roundwood sales, which was enacted in July 2008 with the aim of balancing out the effects of fluctuations in the economy. The tax relief has boosted roundwood supply by narrowing the gap between the current solvency of buyers and the price expectations of sellers waiting for an improvement in the economy. Roundwood sales in 2009 will be weighted towards the final months of the year. In January–September, only 5.7 mill. m<sup>3</sup> was purchased, which in a normal year would be the amount bought by the end of February. The decline in felling has been more moderate, due to the good winter for timber harvesting. In the spring, felling volumes collapsed, however. In all, sawlog fellings in January–August were just

over one third, and pulpwood fellings almost one fifth, below the average for the previous five years.

Commercial fellings for the whole of 2009 are forecast to be down by 23% on the 2008 figure, to about 40 mill. m<sup>3</sup>. Commercial fellings in forests in non-industrial private ownership will be down by 26% to 30 mill. m<sup>3</sup>, and fellings in company-owned forests and in forests owned by Metsähallitus will be down by 15% to 10.5 mill. m<sup>3</sup>. Due to the drop in sawnwood production, commercial fellings of sawlogs are expected to have fallen in 2009 by as much as 31%, whereas for pulpwood the reduction is estimated at only 18% on account of the stocks of harvested roundwood having been maintained. Harvested roundwood stocks are expected to remain high in



Commercial fellings of sawlogs and pulpwood, 1998–2010.



Semiannual stumpage prices by roundwood category, 1/1998–2/2010 at 2008 prices (cost of living index)

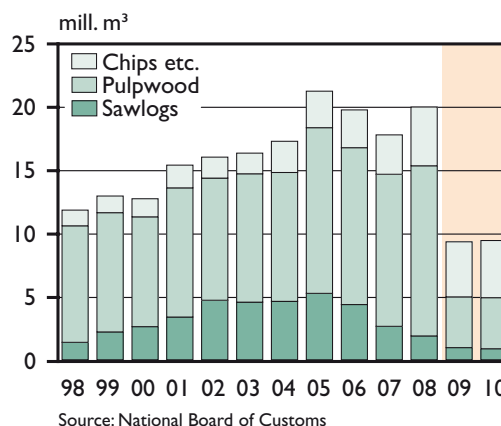
the latter part of 2009. The importance of domestic stocks in the forest industry's roundwood procurement is increasing, because the volume of roundwood imported from Russia or stored on the Russian side of the border is declining. Domestic stocks of harvested roundwood at the end of 2009 are estimated to be almost 14 mill. m<sup>3</sup>, which is approximately 5.5 mill. m<sup>3</sup> more than the average for 1999–2008.

### Commercial Fellings Up Slightly in 2010

The demand for wood products, pulp and paper on the most important export markets is picking up slightly in the second half of 2009, but the increase in production is expected to be low still. In 2010, the combined total of commercial fellings and roundwood imports is forecast to grow by 12% to about 55 mill. m<sup>3</sup>. Stocks of harvested roundwood will again be quite high, at about 13 mill. m<sup>3</sup>. Commercial fellings are forecast to increase to 45 mill. m<sup>3</sup>. Sawlog and pulpwood removals will be up by almost the same percentage on the 2009 figures. Thinnings are again expected to account for a high share of the total. As the harvesting costs for thinnings are greater than those for final cutting, sawlog stumpage prices are forecast to rise by only 4–8% on the 2009 figures, while pulpwood stumpage prices will remain close to the 2009 level.

### Forest Industry Relying on Domestic Roundwood

Although in 2008 the Finnish forest industry was still importing Russian roundwood, it was making preparations for imports of Russian sawlogs and pulpwood to stop completely as a result of the Russia's proposed increase in its export duties on roundwood, to a minimum of EUR 50/m<sup>3</sup>, which was to take place on 1 January 2009. The late 2008 decision to postpone the duty increases no longer had a major effect on the situation. The coincidental timing of the duty decisions and the deep recession in export markets has hastened the structural change in the Finnish forest industry that had already begun earlier.



Volume of imported roundwood by category, 1998–2010.

Average stumpage prices in non-industrial private forestry, 2008–2010.

Roundwood	2008 EUR/m <sup>3</sup>	2009 EUR/m <sup>3</sup>	Change %	2010 EUR/m <sup>3</sup>	Change %
Pine sawlogs	57.7	44.5	-23	46.5	4
Spruce sawlogs	57.6	44.5	-23	48.2	8
Birch sawlogs	49.4	36.7	-26	38.1	4
Pine pulpwood	17.1	13.1	-23	13.3	1
Spruce pulpwood	23.0	17.0	-26	17.4	2
Birch pulpwood	16.0	12.6	-22	12.4	-2

Source: Finnish Forest Industries Federation and Finnish Forest Research Institute

In January–July 2009, Finland's imports of roundwood amounted to only 4.7 mill. m<sup>3</sup>, which is 40% of the level of a year earlier. Finland's imports from almost all the main exporting countries have fallen at almost the same rate. Due to the postponement of the duty decisions, the biggest share of imported roundwood was again from Russia, at 63%. The composition of the imports in terms of the roundwood categories represented has changed significantly, however. The imported volume of the most important roundwood category of previous years, namely birch pulpwood, fell by 84% year on year. Imports of pine and spruce pulpwood were also down by over 70%. The most important category of imported roundwood was wood chips, which totalled 1.6 mill. m<sup>3</sup> (36% of the total). Imports of firewood increased in January–June more than 15-fold (to 0.7 mill. m<sup>3</sup>) year on year. Since the start of 2009, wood chips, firewood and wood

residues together accounted for as much as 60% of all the wood imported from Russia. The total volume of wood imported to Finland for the full year 2009 is expected to be a little less than 10 mill. m<sup>3</sup>, and no increase on this figure is expected in 2010.

### New Thermal and Other Power Plants Boost Growth in Forest Energy Use

Roundwood sales in the first half of 2009 have been maintained almost exclusively by the good demand for forest energy. Felling residues and stumps obtained in final cutting and small-diameter trees obtained from improvement felling or first thinning in young stands are used for making wood chips. Poor quality large-diameter trees are also used for this purpose. In 2008, the use of wood chips in thermal and other power plants was approximately 4 mill. m<sup>3</sup>, from which about 8 TWh of energy was obtained.

The use of wood chips for the full year 2009 is forecast to grow to about 4.5 mill. m<sup>3</sup>. This growth still represents only a moderate increase in stocks, as the industry is engaged in preparing for the 2010 introduction of new power plants currently under construction.

The use of wood chips in 2010 is forecast to grow to about 5.5 mill. m<sup>3</sup>. The use of wood chips will also be boosted by the decrease in the volume of the forest industry's by-products and waste products for energy use in comparison with the years before the current recession. With felling residues from final cutting making up a smaller proportion of the total, the use of chips derived from small-diameter trees, though more expensive in terms of harvesting costs than conventional wood chips, is likely to push up the factory price of wood chips to about EUR 18/MWh.

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

*Total investment in timber production in Finnish non-industrial private forestry for the full year 2009 will rise to over EUR 230 mill. The amount of financing and work input by private forest owners in timber production investments in 2009 will amount to more than EUR 150 mill. of this total. Government subsidies are up by EUR 16 mill. on the 2008 figure, to approximately EUR 80 mill.*

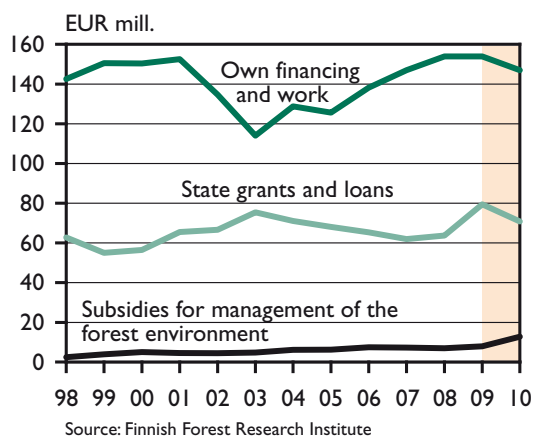
*The deep recession in the forest sector is pushing down the operating profit from non-industrial private forestry to a level of EUR 42–46/ha, and the drop in stumpage prices will also mean a collapse in the real return on assets for 2009. In 2010 the operating profit will improve, but will remain significantly below the long-term average.*

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### Clear Cutting When Roundwood Sales Were Good is Increasing Artificial Regeneration Costs

Total investment in timber production in Finnish non-industrial private forestry for the full year 2009 will rise to over EUR 230 mill. In 2010, the amount available in state subsidies under the Act on the Financing of Sustainable Forestry is likely to be almost EUR 10 mill. less than in 2009. Total investment in 2010 will be down considerably on the 2009 level.

In 2008, financing by private forest owners themselves rose to over EUR 154 mill. The corresponding figure for 2009 will be almost the same, but in 2010 it will be down somewhat. By contrast, the area for artificial regeneration as a result of the large amount of clear cutting in recent years has reached peak levels in 2009. In all, the amount of financing and work input by private forest owners in forest regeneration work in 2009 will be about EUR 75 mill. A total of EUR 80 mill. has been reserved in government funding for work to ensure sustainable roundwood production for 2009.



State and forest-owner funding of investments in non-industrial private forestry, 1998–2010 at 2008 prices (cost of living index).

### Tending of Young Stands and Energy Wood Again Account for Growing Share of State Subsidies

The government budget proposal for 2010 includes approximately EUR 71 mill. in state subsidies for work to ensure sustainable roundwood production, of which about EUR 55 mill. would be for the actual labour costs. Tending of young stands, harvesting of energy wood and chipping are all accounting for a growing share of state subsidies. In 2010, over EUR 30 mill. will be used for these, of which a quarter is likely to be for harvesting and chipping. Energy wood subsidies will help achieve the aim of boosting the use of renewable energy. It is possible that in 2010 the use of wood chips will already be half way (6 mill. m<sup>3</sup>) towards the 2020 target set for their use.

The increased subsidies will help achieve the ambitious targets set out in the National Forest Programme. Good results were already achieved in 2008 in the tending of young stands and construction of forest roads. Ditch cleaning and supplementary ditching fell shortest (60% attainment) of its target of 100 000 ha.

### EUR 5 Mill. Extra in Subsidies for Management of the Forest Environment

The commitment of the government to the National Forest Programme and to the related Forest Biodiversity Programme for Southern Finland is visible in the growing level of

appropriations: EUR 8 mill. for 2009 and EUR 13 mill. for 2010. The appropriations have tripled in less than a decade.

Most of the appropriations intended for management of the forest environment are in the form of an environmental subsidy aimed at securing the biodiversity of the forest environment. The rest of the appropriation is for funding the expenditure incurred in projects for managing the forest environment.

### Investment Rate in Timber Production in Non-Industrial Private Forests at its Peak

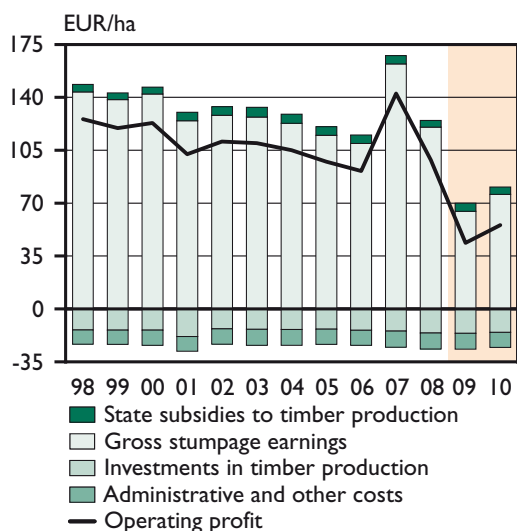
Stumpage earnings in non-industrial private forests in 2008 amounted to almost EUR 1.6 billion, which was down by almost 25% on the 2007 total. Stumpage prices in 2009 have continued to fall from the previous year's level. Felling volumes are also significantly below their level of 2008. For private forest owners this means a drop in stumpage earnings to EUR 850 million. With roundwood sales picking up in 2010, stumpage earnings are likely to rise by 10–15% on the 2009 figure.

Investment in timber production in non-industrial private forestry in recent years has accounted for 9–14% of gross stumpage earnings. This investment has focused strongly on artificial regeneration of clear cutting areas and

Non-industrial private forestry balance sheet calculation for 2008 and forecast for 2009 and 2010, EUR/ha.

	2008	2009	2010
<b>Gross stumpage earnings</b>			
Whole country	120.5	64.7	76.1
Southern Finland	149.3	81.4	96.5
Northern Finland	60.0	29.5	29.7
<b>– Gross costs</b>			
Whole country	26.2	26.3	25.1
Southern Finland	30.5	30.6	29.5
Northern Finland	17.2	17.3	17.3
<b>+ Subsidies</b>			
Whole country	4.5	5.4	4.8
Southern Finland	4.2	5.2	4.6
Northern Finland	4.9	6.0	6.0
<b>= Operating profits (before taxes and external capital costs)</b>			
Whole country	98.7	43.9	55.8
Southern Finland	123.0	56.0	71.7
Northern Finland	47.7	18.3	18.4

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



Source: Finnish Forest Research Institute

*Earnings, costs and operating profit in non-industrial timber production, 1998–2010 at 2008 prices (cost of living index).*

on the tending of young stands. The investment rate for the full year 2009 will rise to a record 28%. In 2010 the investment rate will fall to about 23%, which is about the level seen in the recession years of the early 1990s.

### Sharp Drop in Operating Profit for Timber Production

The current economic recession began to affect the forest sector in the final quarter of 2007, and by early autumn 2009 there were still no clear signs of an improvement in the economy. Between the start of 2008 and summer 2009 stumpage prices had fallen in real terms by 19% for spruce pulpwood and by 25–28% for all other roundwood categories. The forest industry is cutting capacity and shutting down machines due to the market difficulties. Roundwood stocks are high, with the exception of softwood sawlogs. A positive factor in 2009 was the occurrence of cold winter conditions in Southern Finland, as this enabled the substantial reserves in winter stands to be accessed.

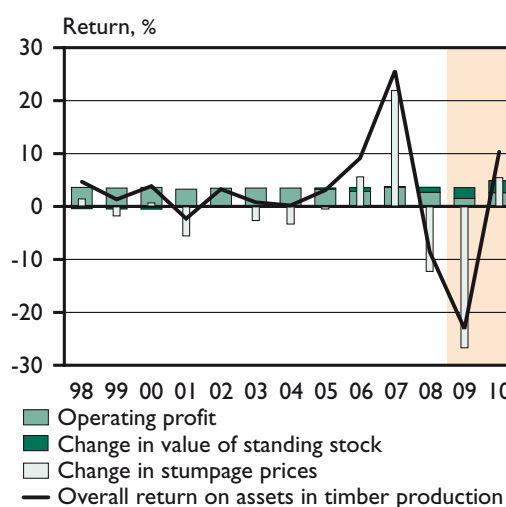
Stumpage prices, however, are at rock bottom in 2009, and the declining level of fellings has pushed down gross stumpage earnings to EUR 63–67/ha. In real terms, such a low point was last reached in the recession years 1992 and 1993. Total per-hectare costs of timber production for

2009 are, however, unchanged from the 2008 figure, at EUR 26/ha. In 2010, earnings will rise by about EUR 10/ha, but will nevertheless still be about 40% below the average for 2004–2008.

The operating profit from non-industrial private forestry for 2009 will be down to EUR 44/ha (before taxes). This is significantly less than half the average for the previous five years (EUR 111/ha). In 2010, the growing demand for softwood sawlogs is expected to push up their stumpage prices, and the tax relief still in force will encourage private forest owners to engage in felling and roundwood sales. Despite this, the per-hectare operating profit is likely to be less than EUR 60/ha.

### Sharp Drop in Return on Assets in Timber Production Continues in 2009

As a result of the fall in stumpage prices in 2009 the return on assets in timber production has plummeted to -23%. This is the second successive year of such a precipitous drop and almost exactly mirrors the steep climb seen in 2006 and 2007. These fluctuations in the return are now even greater than those seen at the descent into recession in the early 1990s and the subsequent emergence from it. 2009 represents a trough in terms of the return on assets, with a recovery expected in 2010, when even a fairly lacklustre rise will push up the return to around 10%.



Source: Finnish Forest Research Institute

*Overall real return on assets in timber production, 1998–2010 at 2008 prices (cost of living index).*