



## 3 Forestry in Finland

### 3.1 Utilisation of Wood Resources

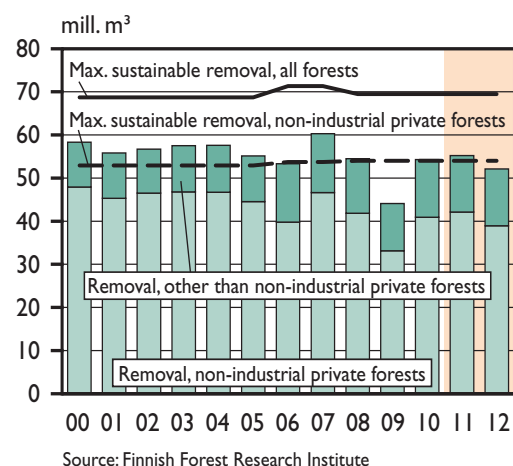
*In 2008–2010, the Finnish forest industry used an average of 60 mill. m<sup>3</sup> of roundwood annually, of which 50 mill. m<sup>3</sup> was domestic roundwood. The projected used of roundwood in 2011 is 65 mill. m<sup>3</sup>. Finland's roundwood imports in 2009 fell to half of the preceding years' levels, marking a significant change in the industry's roundwood procurement. Roundwood imports nevertheless increased by one third in 2010. Finland has abundant forest resources, and these are easily sufficient to cover the need for softwood. However, there continues to be a need to import certain categories of roundwood, in particular birch pulpwood.*

Finland has almost 23 mill. ha of forest, and the total volume of growing stock is approximately 2300 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 104 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 2100 mill. m<sup>3</sup> with an annual increment of approximately 100 mill. m<sup>3</sup> (or 4.8%). Growing stock drain amounts to about 68 mill. m<sup>3</sup> p.a. (or 3.2%). Roundwood reserves are therefore 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 is as much as 94 mill. m<sup>3</sup>, taking account of all tree species. Annual fellings of roundwood meeting the dimensional requirements for industrial wood (see figure) in recent years have been about 53 mill. m<sup>3</sup>, or 77% of the calculated maximum sustainable removal. In non-industrial private forests, the proportion of the maximum sustainable removal harvested is about the same as this.

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 assets are 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



*Removals of industrial wood and maximum sustainable removal, 2000–2012.*

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 about 60% of all roundwood, both domestic and imported) consumed by the forest industry is from such forests. The volume of imported roundwood has been about 20% of the total.

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 (upper limit) to which fellings could rise without prejudicing the size of future removals.

Fellings 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 widespread in Finnish forests. Spruce harvests, for example, have been high until recently and spruce reserves have decreased slightly since 2000.

From a wood resources viewpoint, pine has the best potential for quickly meeting an increase in the demand for roundwood, both as sawlogs and pulpwood. Comparison shows that the utilisation rate for spruce resources is highest, and imports of spruce have been high, running at an annual 3–5 mill. m<sup>3</sup>, but in 2009 and 2010 imports dropped to 1 mill. m<sup>3</sup>. The industry's birch consumption is greater than the level which the maximum sustainable removal in Finnish forests will allow, and consequently more than half of the industry's birch requirement has been imported since 2000. In 2009, however, the situation changed and birch imports collapsed.

Roundwood imports from Russia fell by half in 2009 from the previous year's level, due to factors such as high prices and export duties. The collapse in imports from other countries was even greater. Though Finnish roundwood resources are easily sufficient to replace imported pine, there could be a scarcity of spruce, and

domestic birch will only be sufficient to replace a proportion of imported birch. As part of its process of adjustment to changed circumstances, the industry has begun to replace birch with pine in pulp production, and birch plywood production has been cut. Imports of birch pulpwood more than doubled in 2010, however, due to the strong demand for hardwood pulp. During 2011, imports of softwood pulpwood have also been growing strongly. With the Finnish forest industry needing about 10 mill. m<sup>3</sup> less wood than in 2006 and 2007, its roundwood procurement will be easier.

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, an increasing volume of small-diameter trees is chipped into energy wood.

The aims of the National Forest Programme 2015 (2008; updated 2010) include an increase in the use of domestic industrial wood and energy wood, which was also the case in the previous National Forest Programme 2010 (1999). The significance of this aim has grown as imports of roundwood have fallen considerably. The 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 in 2007 it did rise to a record level (59 mill. m<sup>3</sup>) though quickly fell back again with the decline in the industry's production. By contrast, the use of forest chips (mainly felling residues from clear

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

Tree species	Consumption 2008–2010, mill. m <sup>3</sup> /yr		% of maximum sustainable removal	
	Domestic wood	Wood total	Domestic wood	Wood total
Pine	23.1	24.8	72	77
Spruce	18.6	20.2	77	83
Birch	7.4	11.6	68	106
Total	49.1	56.6	73	84

*In addition, the industry consumed 3.4 mill. m<sup>3</sup>/yr of aspen and unspecified imported wood.*

*Source: Finnish Forest Research Institute*

cutting) for energy purposes has risen rapidly since 2000. In recent years, approximately 4–6 mill. m<sup>3</sup> in forest chips has been used annually in thermal and other power plants. Such use of wood material unfit for industrial products is in fact 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

*The uncertainty over the world economy was also felt in roundwood markets in August 2011, when the softwood sawlog price began to fall as the market outlook for sawnwood deteriorated. Pulp demand is still high, which is sustaining the demand for pulpwood. Following a good start to the year, the volume of commercial fellings for the full year 2011 is projected to be 53 mill. m<sup>3</sup>, which is a little above the previous year's figure. Imports of industrial wood and chips are expected to be up by 7% to 12.3 mill. m<sup>3</sup>. Annual average stumpage prices are expected to be up for the full year 2011 by 3% in the case of softwood sawlogs and 2–5% for pulpwood.*

*Commercial fellings are forecast to decline to 50 mill. m<sup>3</sup> in 2012, with the decrease occurring principally in non-industrial private forests. The growth in imports of industrial wood will slow down, because Russia's accession to the WTO will be accompanied by a transitional period for roundwood export duties. Sawlog stumpage prices in 2012 are expected to be down slightly year on year, on account of a weaker price trend in sawnwood and plywood. A slight drop is also anticipated in pulpwood stumpage prices, as production of pulp, paper and paperboard will remain almost unchanged. The demand for energy wood continues to be good in 2011 and will remain so in 2012, and the amounts used in thermal and other power plants are forecast to grow further. Energy plant gate prices of energy wood will also rise a little.*

### Uncertainty Returns to Roundwood Markets

The first half of 2011 was quiet for roundwood sales, but sales picked up during the summer. In January–September, the member companies of the Finnish Forest Industries Federation purchased a total of 17.7 mill. m<sup>3</sup> of wood from forests in non-industrial private ownership, which was 20% less than a year earlier. This was also about one fifth below the average for the past 10 years. The increased uncertainty in the world economy in late July has led some roundwood buyers to exercise caution, and there was already some evidence of this in the August roundwood sales.

Commercial felling activity has been brisk, owing to the volume of standing roundwood stocks purchased earlier. For roundwood harvested in 2011 that was sold in the period 1 April 2008 – 31 December 2010, it is still possible to obtain 25% tax relief in roundwood sales revenue taxation. In January–August, commercial fellings totalled 34.6 mill. m<sup>3</sup>, which is a year-on-year increase of 10%. This figure is also 6% above the 10-year average for commercial fellings. Stocks of harvested wood at the start of 2011 were estimated at about 11 mill. m<sup>3</sup>, which is about 2 mill. m<sup>3</sup> above the 10-year average.

### Downward Pressures on Roundwood Prices

Commercial fellings for the full year 2011 are forecast to reach almost 53 mill. m<sup>3</sup>, which is slightly higher than for the previous year. This increase has occurred in non-industrial private forests, and concerns pulpwood in particular. Stocks of harvested wood are estimated to rise by nearly 2 mill. m<sup>3</sup>, bringing the total to more than 12 mill. m<sup>3</sup> at the end of 2011.

The rise in sawnwood prices in the early part of 2011 has turned around into a slight decline, which is evident in the autumn as a downward pressure on softwood sawlog prices. On the basis of forest use notification data kept by Forestry Development Centre Tapio, the supply of roundwood in the autumn will be good. In autumn 2010, there was a considerable volume of storm-damaged roundwood on the market from August onwards (damage totalled

Roundwood type/ Ownership group	2010 mill. m <sup>3</sup>	2011 mill. m <sup>3</sup>	Change %	2012 mill. m <sup>3</sup>	Change %
Commercial fellings, total	52.0	53.0	2	49.9	-6
Non-industrial private forests <sup>1</sup>	40.7	41.7	3	38.4	-8
Company and state-owned forests <sup>2</sup>	11.3	11.4	0	11.5	1
Sawlogs	21.6	21.6	0	21.0	-3
Pulpwood	30.0	31.0	3	28.6	-8
Imports of industrial roundwood	11.5	12.3	7	12.7	3
Commercial fellings and roundwood imports, total	63.5	65.4	3	62.6	-4
Stocks of harvested roundwood	10.7	12.6	17	12.4	-1

<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.

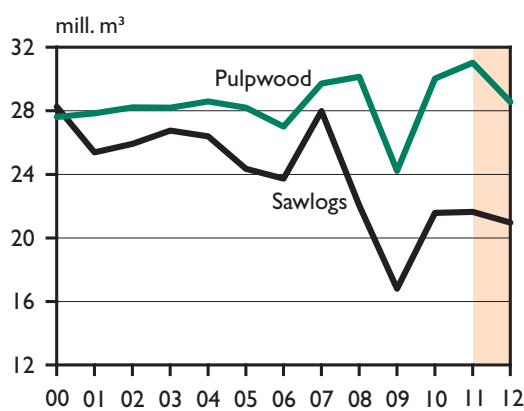
8.1 mill. m<sup>3</sup>), following the storms of late July and early August, and this was also a factor in the drop in roundwood prices at that time.

Although plywood demand is still stronger than that for sawnwood, even birch sawlog prices have fallen in the wake of those for softwood sawlogs, as birch sawlogs are mainly from the same stands as softwood sawlogs. In addition, the growth in plywood demand is expected to slow down in the second half of 2011. Even taking into account the falling price trend in the latter part of the year, the annual average stumpage prices of pine and spruce sawlogs are projected to be up by 3% for 2011 from the previous year's figure. The annual average stumpage price for birch sawlogs will be up by even more, around 9%, due to the low comparison figure a year earlier.

With pulp production and prices remaining close to their 2010 high, the demand for pine

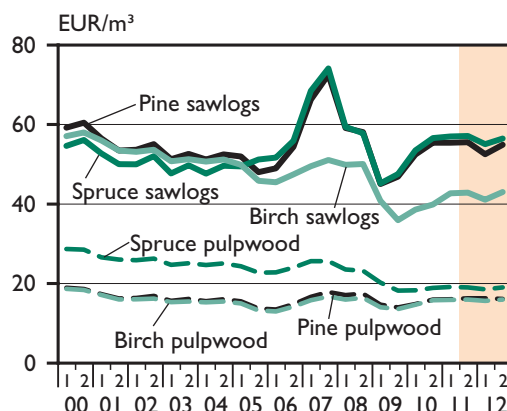
and birch sawlogs is expected to push up annual average stumpage prices by 3–5% for the full year 2011. For spruce pulpwood, the annual average stumpage price is forecast to be up by 2%, as the demand for paperboard and also magazine paper has been greater than a year earlier.

The stumpage prices given in the business cycle forecasts are weighted by standing sales. Since the start of 2011, the Finnish Forest Industries Federation and the Finnish Forest Research Institute have also published stumpage prices by felling purpose (regeneration, thinning, first thinning), which highlights the significance of harvesting costs, in particular, within the stumpage price. In June 2011, for instance, the pine sawlog stumpage price was an average of EUR 7.6 higher for regeneration than thinnings, and the corresponding difference for pine



Source: Finnish Forest Research Institute

Commercial fellings of sawlogs and pulpwood, 2000–2012.



Source: Finnish Forest Research Institute

Semiannual stumpage prices by roundwood category, 1/2000–2/2012 at 2010 prices (cost of living index)

pulpwood was EUR 2.5. On delivery sales, the only price published is the average roadside price weighted by the volume of delivery sales. Due to lot size, felling schedules and cross-cutting, the delivery sales price may even be lower than the stumpage price for certain types of roundwood.

### Roundwood Procurement Down Slightly in 2012

The commercial felling volume in 2012 is forecast to be 50 mill. m<sup>3</sup>, which will be slightly less than in 2011. Fellings are forecast to drop by 8% in non-industrial private forests, but to rise a little in forests owned by companies and by Metsähallitus. Sawlog fellings will be down because of the lower level of sawnwood production and export prices. Since a significant share of pulpwood is harvested on regeneration sites, pulpwood removal will also be down slightly, although pulp, paper and paperboard production is forecast to remain more or less at the 2011 level. Pulpwood imports are expected to increase. The industry's harvested roundwood stocks at the end of 2012 are expected to be unchanged from a year earlier.

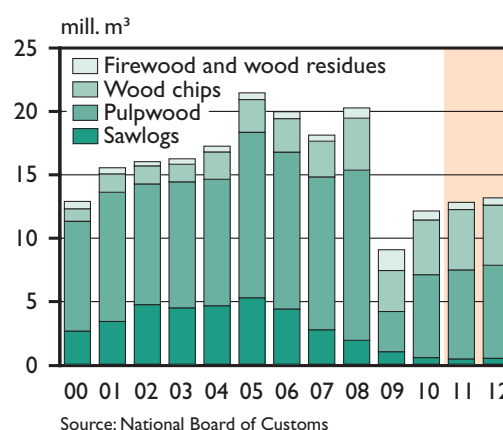
In 2012, sawlog demand will be down due to the slight reduction in sawnwood production, and so annual average sawlog stumpage prices are forecast to be down by 1–2%. Pulpwood stumpage prices are also expected to be a little lower, as production of end products will remain close to the 2011 level. Given this, the Myllykoski paper mill closure is not expected to have a very significant impact on the spruce pulpwood market.

Taxation of roundwood sales will rise at the start of 2012, when the tax on capital income is increased from 28% to 30%. Taxation of capital income will also become mildly progressive, as capital income in excess of EUR 50,000 will be taxed at a rate of 32%. This may slightly reduce roundwood supply in the first half of 2012, as the tax change of 2 percentage points will increase forest owners' costs by about EUR 1/m<sup>3</sup> for softwood sawlogs, and by about EUR 0.5/m<sup>3</sup> for pulpwood. On the other hand, the supply of winter stands is considerably greater

than the supply of stands with summer access or good access under wet, unfrozen ground conditions, so the level of roundwood sales in the first half of the year will depend on the structure of roundwood demand.

About 60% of all timber imported to Finland is from Russia. On the basis of the compromise solution forged between the European Commission and Russia in November 2010, Russia promised to reduce its export duties on roundwood considerably in the future. Currently, the export duties on roundwood are 25% of the customs clearance value for softwood and for birch of diameter greater than 15 cm, though a minimum duty of EUR 15/m<sup>3</sup> must be paid. Birch pulpwood of diameter less than 15 cm is free of duty. The duty on chips is 5% of the customs clearance value.

Although the timetable for reducing export duties on roundwood should be bound up with the progress on negotiations over Russia's



Volume of imported roundwood by category, 2000–2012.

Average stumpage prices in non-industrial private forestry, 2010–2012.

Roundwood	2010 EUR/m <sup>3</sup>	2011 EUR/m <sup>3</sup>	Change %	2012 EUR/m <sup>3</sup>	Change %
Pine sawlogs	54.0	55.5	3	54.2	-2
Spruce sawlogs	55.2	57.1	3	56.1	-2
Birch sawlogs	39.4	42.8	9	42.5	-1
Pine pulpwood	15.5	16.2	5	16.1	-1
Spruce pulpwood	18.6	19.0	2	18.8	-1
Birch pulpwood	15.5	15.9	3	15.8	-1

Source: Finnish Forest Industries Federation and Finnish Forest Research Institute

WTO membership, the Russian leadership has continued to emphasise that a reduction in roundwood exports is one of its strategic goals. Over the last three years, Russia's total exports of roundwood have in fact fallen from 50 mill. m<sup>3</sup> to 21 mill. m<sup>3</sup>. Russia's official position is that its WTO membership will be in place by the end of 2011.

Total imports of industrial wood and chips are expected to be up by 7% to 12.3 mill. m<sup>3</sup> for the full year 2011, in spite of Russia's roundwood duties. With Russia's WTO membership not expected to lead to any substantial change in roundwood duties in 2012 due to the transitional period, the growth in imports in 2012 is forecast to slow to 3%.

### Delay in Legislation on Energy Subsidies for Small-Diameter Trees

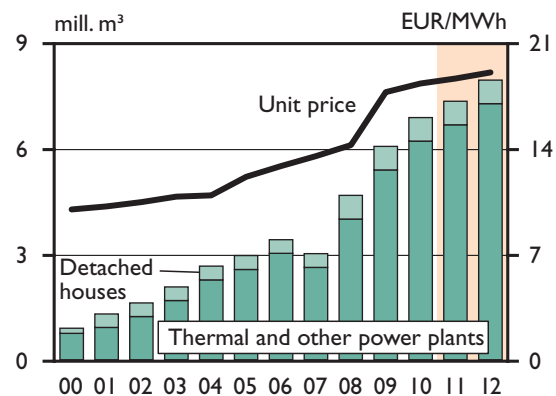
In 2010, the use of forest chips grew by 13% to 6.9 mill. m<sup>3</sup>. Thermal and other power plants account for 6.2 mill. m<sup>3</sup> of this, which is equivalent to an energy content of 12.4 TWh. Small-diameter trees account for 40% of the forest chip raw material used in thermal and other power plants, while large-sized stemwood accounts for 8%, felling residues for 36% and stumps for 16%. The biggest change from 2009 was the increase in the proportion of small-diameter trees and the corresponding reduction in the proportion of large-sized stemwood.

Energy wood use and demand are strongly dependent on energy and climate policy. Finnish legislation on energy excise tax and on promotion of power generation using renewable energy sources was revised in autumn 2010 and should have entered into force on 1 January 2011. The Act on the Promotion of Renewable Energy Generation should have replaced the earlier promotion of chip-based power, for which the relevant legislation was due to expire at the end of 2010. However, the entry into force of the new Act on the Promotion of Renewable Energy Generation was postponed until the end of March 2011, as the legislation did not receive immediate European Union approval. Consequently, no aid was obtainable for forest chips in power generation for the first three months of the year,

which led wood energy to be partially replaced by peat and coal.

European Union approval is still awaited for the Act on Energy Subsidies for Small-Diameter Trees, which was approved by the Finnish Parliament in December 2010. Taking into account the processing by the Commission, it is estimated that the energy subsidy system for small-diameter trees will enter into force no earlier than the start of 2012, which will also mark the entry into force of the new Act on the Financing of Sustainable Forestry, already delayed for a number of years. The harvesting of small-diameter trees can still in fact be supported in conjunction with improving young stands, on the basis of the existing Act on the Financing of Sustainable Forestry. The problem has been that the budget appropriations under this Act have been used up by the middle of the year, and in 2011 the situation is exceptionally difficult.

The demand for energy wood is also affected by the amount of peat in stock at the start of autumn. According to preliminary information gathered by the Association of Finnish Peat Industries, the amount of peat produced for energy use during summer 2011 was just short of 21 mill. m<sup>3</sup> (18.7 TWh), which is about 25% below the average. With the amount of peat stockpiled for at least 12 months being just 3.8 TWh in spring 2011, the peat stocks in spring 2012 will probably be very small. The reduction in peat production has normally been reflected in the demand for energy wood. Hence, the use of forest chips is expected to be up by 7% for the full year 2011, despite the difficulties of the



Sources: Finnish Forest Research Institute and Statistics Finland

Use of forest chips and the energy plant gate price, at 2010 prices (cost of living index).

first quarter, and will reach 7.4 mill. m<sup>3</sup> (14.8 TWh). The average energy plant gate price of forest chips is forecast to be up by 2% to EUR 18.7/MWh. The use of forest chips is forecast to grow further in 2012, to 8 mill. m<sup>3</sup> (16.0 TWh). The average energy plant gate price in 2012 is expected to reach EUR 19/MWh, due to an increase in harvesting and transportation costs.

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

*Forestry's rebound from the earnings figures of the 2009 recession year is continuing in 2011, though at a slowing pace. Gross stumpage earnings in non-industrial private forestry in Finland for the full year 2011 will be EUR 1.5 billion, due to a rise in stumpage prices, but in 2012 earnings will fall to EUR 1.4 billion. Investment in timber production will rise to EUR 215 mill. following the dip in 2010, and will reach EUR 220 mill. in 2012. The amount of financing and work input by private forest owners covers about 70% of the total timber production investment, the remainder being funded by the Government.*

*The per-hectare operating profit from non-industrial private forestry will rise to EUR 92/ha for 2011 as a whole. This is 4% up on the 2010 figure, but 10% lower than the post-2000 average. The operating profit in 2012 is expected to drop to below EUR 90/ha.*

#### Investment Rising After 2010 Setback

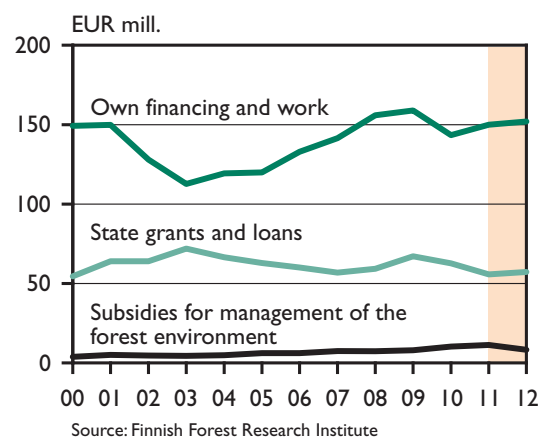
EUR 206 mill. was invested in Finland's non-industrial private forests in 2010. In real terms, this was 10% below the 2009 figure. The decrease in investment was attributable to the reduced level of activity in most forest management and improvement work. The amount of work in forest regeneration and improving

young stands during 2011 is expected to return to close to the long-term average, and investment to rise to over EUR 215 mill., rising by a further EUR 5 mill. in 2012.

The amount of financing and work input by private forest owners in 2010 as a proportion of the forest management and improvement work fell in real terms by almost 10%, to EUR 143 mill. The principal reasons were the year-on-year reduction in the amount of forest prepared for regeneration (-15%) and in the amount of work generally undertaken independently in artificial regeneration (-13%) and improving young stands (-15%). Forest regeneration was once again easily the largest recipient of the financing by private forest owners (EUR 62 mill.), and next in line were construction and basic improvement of forest roads (EUR 15 mill.) and preliminary clearing for thinning (EUR 11 mill.). The amount of financing by private forest owners in 2011 will rise to EUR 150 mill., and in 2012 to approximately EUR 153 mill.

#### Energy Wood Subsidies to be Separated from Other Timber Production Subsidies

Estimates by the Ministry of Agriculture and Forestry show that EUR 56 mill. in subsidies under sustainable forestry financing will be used on timber production investments in 2011, and EUR 24 mill. on energy wood harvesting and chipping. Contrary to plans, the new Act on Energy Subsidies for Small-Diameter Trees did



*State and forest-owner funding of investments in non-industrial private forestry, 2000–2012 at 2010 prices (cost of living index).*

Non-industrial private forestry balance sheet calculation for 2010 and forecast for 2011 and 2012, EUR/ha.

	2010	2011	2012
<b>Gross stumpage earnings</b>			
Whole country	110	115	107
Southern Finland	140	145	136
Northern Finland	47	51	47
<b>- Gross costs</b>			
Whole country	27	27	28
Southern Finland	30	31	31
Northern Finland	20	21	21
<b>+ Subsidies</b>			
Whole country	4,8	4,3	4,4
Southern Finland	4,7	4,1	4,3
Northern Finland	5,1	4,5	4,6
<b>= Operating profits</b> (before taxes and external capital costs)			
Whole country	88	92	83
Southern Finland	115	118	109
Northern Finland	32	35	30

Northern Finland is defined as North Ostrobothnia, Kainuu and Lapland regions.

Source: Finnish Forest Research Institute

not enter into force at the start of 2011, due to a delay in the decision required from the European Union, and this has hampered work to improve young stands and the harvesting and chipping of energy wood. The energy subsidies for 2011 had been used up by the end of June, as in 2010. In 2012, there will be EUR 57 mill. available in subsidies for forest management and improvement work, and EUR 20 mill. in subsidies for small-diameter energy wood.

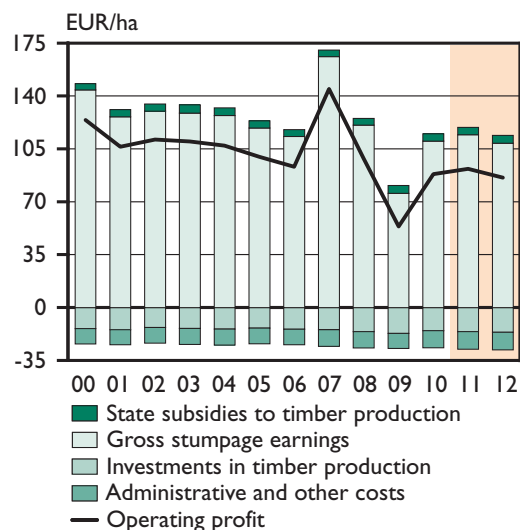
### Operating Profit from Timber Production Exceeds EUR 90/ha

Gross stumpage earnings in non-industrial private forestry in 2010 rose from the rock-bottom figure for 2009, but did not climb beyond EUR 1.4 billion, which was below the post-2000 average (EUR 1.6 billion). Gross stumpage earnings for 2011 will increase to EUR 1.5 billion, mainly as a result of the rise in stumpage prices, and per-hectare gross stumpage earnings will climb to almost EUR 115 (+4%). Earnings will again be below the average for the previous 10 years (EUR 122/ha). Earnings will rise to EUR 145/ha in Southern Finland and to more than EUR 50/ha in Northern Finland. In 2012, the increase in stumpage prices and felling volumes

will tail off, and gross stumpage earnings will be down by 5% year on year.

The total costs of timber production in 2011 will increase to more than EUR 27/ha (+4%), and in 2012 they are expected to rise by nearly EUR 1/ha. In Southern Finland, costs will increase to EUR 31/ha, and in Northern Finland to EUR 21/ha. Forest regeneration accounted for 23% of the total costs in 2010, which was also the case for the tending of young stands. As the activity in young stand improvements was down due to the subsidy financing problems, this accounted for a lower proportion of the costs, falling in 2010 by 4 percentage points year on year. Forest improvement accounted for 13% of the total costs of timber production, while the administrative and other costs concerning the entire forest holding accounted for 42%.

Provided that the euro area debt crisis does not lead to a new recession, and on the assumption that the economies of the industrialised countries continue on their anticipated slow-growth track, the operating profit from timber production in non-industrial private forestry in Finland will rise to more than EUR 90/ha for the full year 2011. This will be about 4% up on the 2010 figure, but 10% below the post-2000 average. In 2012, a minor dip in fellings and stumpage prices will push down the operating profit to a level significantly below EUR 90/ha.



Source: Finnish Forest Research Institute

Earnings, costs and operating profit in non-industrial timber production, 2000–2012 at 2010 prices (cost of living index).