Finnish Forest Sector Economic Outlook 1998–1999

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Executive Summary

In spite of the crises in Asia and Russia, the export markets and especially the domestic market for Finnish forest products have continued to develop favourably. The Finnish forest sector's output has continued to increase and prices have also developed comparatively favourably, with the exception of sawnwood. Production of paper and paperboard, production of sawnwood, commercial fellings and the consumption of imported wood will all reach record levels this year. Next year, the development of the forest sector will be characterised by greater than usual uncertainty about future market developments. The rate of growth of demand will slowdown and the pressure for lowering world market prices for forest products will increase. As a result, also the growth of the Finnish forest industry's output will slowdown and product prices will tend to decline rather than rise. This weakening will also be felt in the roundwood market. Accordingly, stumpage prices are expected to decline slightly next year compared with the average level of the current year.

Economic Outlook

The fairly good economic growth has continued in the main export markets of the Finnish forest industry, promoted by strong domestic demand. However, the crises affecting Japan, the emerging economies of East Asia and Russia have weakened the economic prospects. In the current year, the real GDP growth in the Finnish forest industry's export markets, weighted with their share of total exports, is estimated at 2.5 per cent, which is 0.5 percentage points less than last year. Next year, this figure is estimated to decline to about 2 per cent, as the crises in Japan and the emerging economies are reflected more strongly in the EU countries and the United States. The growth of domestic demand will also slowdown clearly next year, though growth in the construction sector will still be quite strong.

Forest Industry's Production, Export and Prices

The production of sawnwood will grow by 4 per cent this year as a result of the growth in exports and domestic demand, which means that a new production record will be achieved (11 million m^3). Next year, the growing supply of sawnwood in the European market will result in increased competition, causing Finland's exports to stagnate at this year's level. Owing to good domestic demand, the production will still grow by 1 per cent. The production and exports of plywood will grow by 3 per cent this year and 2 per cent in 1999.

Last year, the average export price (in Finnish mark) of sawnwood rose by as much as 19 per cent compared with the 1996 level. Towards the end of the year, prices stopped rising and started to decline. The weak price development has continued this year, and the average Finnish mark export price of sawnwood is projected to drop by 8 per cent compared with last year's average. In 1999, the

Finnish mark export price of sawnwood is forecast to decline by 3 per cent, whereas plywood prices are expected to remain at last year's level.

Demand for paper products has continued to grow in spite of the downturn in the world economy. Production and exports will still increase by 10 per cent this year. As a result of the weakening global economic prospects and increased competition in the EU region, the paper industry's exports and production will grow by only 2 per cent next year. The market development for paperboard products has been comparatively stable, and no major changes are foreseen next year. The production of paperboard will grow by 4 per cent this year and 2 per cent in 1999.

The Finnish mark-denominated export prices of paper products will go up by 5 per cent this year, compared with a decline of 8 per cent last year. However, the improved price development will be temporary, because next year the Finnish mark/euro-denominated prices are forecast to remain at this year's level. Paperboard prices rose by 2 per cent last year, and the growth is projected to continue at the same rate this year and next.

Forest industry's Costs, Capacity Utilisation and Profitability

The forest industry's costs have been developing at a reasonable pace. The unit costs applicable to all sectors of industry in Finland have in fact been nearly one third below the OCED countries' long-term average. The paper industry's capacity has been almost fully utilised – this year the capacity utilisation rate is estimated to reach 97 per cent and next year 96 per cent. The sawmilling industry's capacity utilisation will be slightly lower, 94 per cent this year and 93 per cent next year.

The forest industry's earnings for 1998 will improve slightly compared with last year, amounting to about FIM 13 billion. The return on investment is about 13 per cent. No major changes are foreseen in the solvency of the three leading companies, and the equity ratio is estimated to remain around 40 per cent. The forest industry's domestic capital expenditure will continue to decrease this year, amounting to about FIM 5 billion. The turnover of domestic production plants is estimated at about FIM 100 billion for this year, increasing by 2 per cent next year.

Roundwood Market

The record-high production of forest products is also reflected in large felling volumes. Commercial fellings are estimated at a total of 55 million cubic metres for this year. Sawlog fellings will increase by 2 per cent and those of pulpwood by 6 per cent compared with 1997. Imports of wood have grown very strongly during the current year, and are estimated to exceed last year's imports by up to 40 per cent. As a result, wood imports will for the first time reach the level of 12 million cubic metres. Average sawlog and pulpwood stumpage prices for 1998 are estimated to be about 2 per cent above last year's level. The forest industry's demand for wood in 1999 will be roughly at this year's level, and fellings are estimated to be about 55.5 million cubic metres. The growth of wood imports will slowdown, but imports will again reach a new record level of 13 million cubic metres. The imports already correspond to about one fifth of the industry's total wood consumption. Because of the forest industry's weakening economic prospects, sawlog stumpage prices will go down by 1–4 per cent next year and pulpwood prices by 0–2 per cent, compared with this year's average levels.

Profitability of Non-Industrial Private Forestry

Investment expenditures related to timber production in non-industrial privately owned forests (NIPF) will increase this year by about FIM 50 million compared with last year. This means that investments on silviculture and basic improvements will exceed

FIM 950 million, which is slightly over FIM 200 million below the peak level achieved in the early 1990s. Because of extensive compulsory regeneration, investments are likely to remain at this year's level in 1999. State subsidies in NIPF will also remain virtually unchanged, with the main emphasis on the improvement of young stands. Gross stumpage earnings from non-industrial private forests will increase by about 7 per cent this year compared with 1997, amounting to FIM 9.3 billion. Next year, incomes will go down slightly. Total investment expenditures related to NIPF will correspond to 10–11 per cent of gross stumpage earnings, this year and next.

The profitability of wood production in NIPFs improved slightly during last year. This year and next, the costs of forest regeneration and silvicultural measures are projected to go up slightly, whereas the unit costs of basic improvements and road construction will go down. The profitability of wood production as a whole will remain good this year and 1999.

Labour Markets in Forest Sector

The number of jobs in the pulp and paper industry will increase slightly in 1998, following a prolonged decline. However, in the mechanical wood products industry, employment will remain unchanged, and jobs will continue to disappear, especially in the joinery industry. As the growth of production and exports of forest products will slowdown, employment in 1999 is predicted to return to the level experienced in 1997. In spite of increased fellings, employment in forestry will remain at last year's level both in 1998 and 1999, and no major improvement is foreseen in the relatively high rate of unemployment.

Roundwood Market Business Survey

According to the roundwood market business survey, respondents in the forest industry expect purchases of domestic roundwood and imported wood to increase in 1999 compared with this year, with pulpwood accounting for most of the growth. Of the non-industrial private forest owners, 41 per cent – which is more than last year – say they intend to sell wood next year. In the sawmilling and plywood industry, more respondents expect sawlog stumpage prices to go down than to go up, whereas forest owners expect sawlog prices to rise. As far as pulpwood prices are concerned, the forest industry's and forest owners' expectations are rather similar. A majority of the forest industry's and forest owners' representatives expect prices to go up by 2–10 per cent.

1 World and Finnish Economic Outlook

1.1 World Economy

The international economic environment of the Finnish forest industry during the period under review is characterised by major regional variations and growing uncertainty. On the one hand, the currency and financial crises in Asia and Russia have added to the uncertainty, which has been reflected for example in high volatility in stock markets. On the other hand, the economic activity and stability in the United States and the EMU countries have resulted in positive expectations. So far, the difficulties in Japan and the emerging economies have not significantly depressed economic activity in the EU region. Among the Finnish forest industry's major export markets, economic growth has been particularly strong this year in Germany, France, the Netherlands, Belgium and Spain, though growth rates are projected to slowdown next year. However, the weak economic development in Japan and the United Kingdom is likely to continue next year as well. In the United States, economic activity has not slowed down significantly, though a turn towards slower growth is expected next year. The possible continuation and even deepening of the crises in Japan, and in Asia, Russia and the emerging economies constitutes a particular element of uncertainty in next year's outlook.

World Economic Recession Bottoms Out in 1998?

The crisis in the emerging economies of East Asia, which began in the summer of 1997, has deepened and expanded during the current year. The rapid decline in world economic activity is illustrated by the fact that still in May this year the IMF predicted world growth for this year at 3.1 per cent, but in September this figure was revised down to 2.1 per cent. If this forecast is to be realized, it would imply that the world economic growth for this year would be weaker than at any time since 1991.

According to the IMF's projection, the world economic slowdown would bottom out during the current year, to be followed by a slight recovery and output growth of 2.5 per cent next year. Economic growth in the Finnish forest industry's main export markets is also estimated at an average of slightly below 2.5 per cent (Table 1). Still, according to the IMF, there is a considerable risk that the development may be weaker than foreseen. For example, if confidence in the Asian financial markets cannot be restored, the situation may turn out to be worse than expected. Particularly important in this context is the development in Japan and how well the United States and the EU countries will be able to adapt their monetary and fiscal policies to the changing conditions in their economic environment.

The economic and political crisis in Russia and the continued poor performance of the Asian economies have added to the uncertainty over economic development in the United States and the European Union. One result of this increasing uncertainty is

that economic projections have been supplemented with so-called crisis scenarios. The starting point for these scenarios is the assumption that the development in Japan and the emerging economies will deteriorate further and that it will spread to Latin America and gradually also to the United States and the EU region (for details, see pages 16–18).

Euroland Driving World Economic Growth

The reasonably good growth prospects in the *EMU-11* countries (so called *Euroland*) will continue this year and next, primarily driven by strong domestic demand. Investments and consumer demand have shown good growth at the beginning of the year, and at an annual level private consumption in the Euroland is likely to grow by 2.5 per cent, which is one percentage point more than last year. Consumer confidence has been strengthened by the improved economic prospects and declining unemployment figures. However, the average seasonally adjusted rate of unemployment in the Euroland, according to Eurostat, was still at the high level of 11.1 per cent in July.

Table 1. *Economic Growth Forecasts (real GDP, annual per cent change).*

	Share of Finland's forest industry's export value,%	Realised GDP growth, % 1997	IMF* 1998	IMF* 1999	Deutsche Bank 1998**	Deutsche Bank 1999**
Weighted with forest industry's' export shares		**3.0**	**2.5**	**2.4**	**2.4**	**2.1**
EU	68.4	2.6	2.9	2.5	2.8	2.4
Euro countries	46	2.5	3.0	2.8	2.9	2.6
Asia***	9.5	6.6	1.8	3.9	–0.6	2.1
United States	5.0	3.9	3.5	2.0	3.6	2.8
Eastern and Central Europe***	4.0	2.8	3.4	3.6	0.5	–0.7
Russia	3.1	0.9	–6.0	–6.0	–3.0	–6.0
Latin America	2.0	5.1	2.8	2.7	2.5	2.2
Germany	17.9	2.2	2.6	2.5	2.7	2.3
United Kingdom	16.5	3.4	2.3	1.2	2.3	1.0
France	6.7	2.3	3.1	2.8	3.0	2.5
The Netherlands	5.5	3.3	3.8	3.0	3.5	2.7
Belgium	4.5	2.7	2.7	2.6	2.7	2.4
Spain	4.2	3.4	3.8	3.6	3.8	3.5
Italy	2.9	1.5	2.1	2.5	2.2	2.4
Denmark	3.3	3.5	2.5	1.9	2.6	2.0
Sweden	3.2	1.8	2.9	3.3	3.1	2.8
Canada	0.4	3.7	3.0	2.5	3.1	2.9
Japan	3.2	0.8	–2.5	0.5	–2.4	0.3
China	0.6	8.8	5.5	5.5	6.0	5.5

* IMF's World Economic Outlook was published on September 30, 1998

** Deutsche Bank Research's Economic & Financial Outlook was published on September 1998

*** IMF's and Deutsche Bank Research's projections for Asia and Eastern and Central Europe differ partly because the research institutes define these regions differently. For example the IMF's projections cover a much larger area than the corresponding projections by Deutsche Bank Research.

Among other things, declining world market prices of commodities have contributed to the low rate of inflation in the Euroland. The HWWA overall commodities index was lower in August this year than it has been at any time since 1986. According to Eurostat, the inflation rate in August was 1.2 per cent at an annual level. The rate of inflation is expected to remain below the 2 per cent target set by the European Central Bank (ECB). Average economic growth in the Euroland for next year is estimated to be only slightly below this year's figures – the IMF predicts GDP growth of slightly below 3 per cent for 1999.

There would not seem to be any major risks related to the launching of the euro currency in 1999, because possible pressures for change have already been discounted in the market, and the economies of the member countries have largely operated as a uniform currency-region even before this point. The interest rates of the EMU countries will converge towards the end of the current year. Though the turmoil in Russia and Asia has caused currency pressures outside these regions, the currencies in the Euroland have remained stable in relation to each other. The euro currency is expected to strengthen somewhat next year in relation to the US dollar and the pound sterling (according to the IMF's estimate in September).

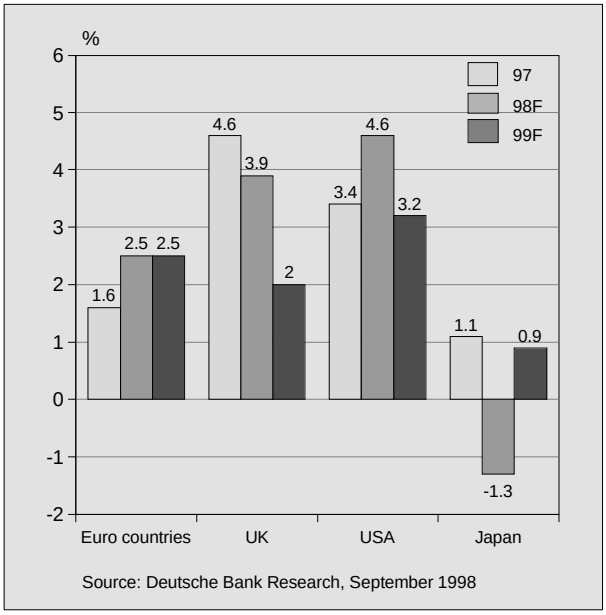

Figure 1. *Private Consumption Expenditures in the Export Countries 1997–1999F (annual per cent change).*

Germany and France Going Up, the United Kingdom Down

Among the Finnish forest industry's main export markets, *Germany's* economy has strengthened compared with last year. GDP growth for 1997 amounted to 2.2 per cent, and the growth rate for the current year is estimated at 2.6 per cent, and for next year only slightly below this. The economic growth in the last few years has been largely due to buoyant exports, but the engine of growth this year and next is domestic demand. Private consumption is expected to grow in real terms by about 1.4 per cent this year and 2.0 per cent next year. Growth figures at this level were last time reached in 1992. Deutsche Bank Research predicted in September that construction activity in Germany's private and public sectors will recover during 1999. Last year, construction activity still declined by 2.2 per cent, but for this year a growth of 0.2 per cent is predicted and for next year 1.0 per cent.

Though Germany's competitiveness has improved as a result of lower unit costs, export growth will slowdown due to the poor development in Asia and Russia. The very low rate of inflation, about one per cent this year and an estimated 1.3 per cent next year, has made it possible to keep interest rates at a low level. As of the beginning of 1999, the Bundesbank's monetary policy will be the European Central Bank's (ECB) responsibility. However, no major changes in interest rates are expected. The current German Bundesbank rate (repo rate) of 3.3 per cent is also expected to be the starting level for the ECB's repo rate as of the beginning of 1999.

The Bundestag elections in Germany led to a coalition government of SDP and the Greens. Though

the new government's economic policy gives somewhat more emphasis to a Keynesian demand-driven economic policy than Helmut Kohl's government, any changes are likely to be relatively small in practice, e.g. because of the restrictions imposed by the EMU.

In the *United Kingdom* the economic growth continues to slowdown. In the first six months of the year, GDP growth declined to the long-term trend level for the first time in six years. The economic survey conducted by the Confederation of British Industry (CBI) in July, also showed that the industry's confidence was at its lowest level since 1990, and that confidence in the industry's export performance was at an 18-year low. The slowdown of economic growth is due to declining exports and weakening domestic demand. Exports have declined as a result of the appreciation of the pound sterling and the Asian turmoil. Domestic demand has been impaired, among other things, by more restrictive fiscal and monetary policy measures during 1997 and early 1998. The Bank of England raised interest rates five times since June 1997, to meet the inflation target of 2.5 per cent. Because domestic and international economic growth has weakened towards the end of the year, thereby relieving inflationary pressures, the Bank of England reduced its key interest rate in early October by 0.25% and again in early November by 0.5% to 6.75%.

In spite of the slowdown in economic activity, there are no signs of a recession in the United Kingdom. Import demand has remained fairly strong in the first half of the year, which, accordingly, has caused the deficit in the trade balance to grow. The construction and service sectors have continued to develop reasonably favourably, though signs of a decline are already to be seen. The number of building permits for housing starts decreased by 10.9 per cent in the second quarter compared with the first quarter, and construction activity declined by 4 per cent. Rising real consumer incomes are expected to maintain domestic demand, though at a clearly lower level than previously.

GDP growth may again speed up in the second quarter of next year as the balance of trade improves, as monetary policy is eased and public-sector consumption picks up. Pre-Budget Report, published by the Treasury in early November, forecasts GDP growth for 1998 of 2.75% and for the next year 1–1.5%.

In *France* the favourable economic development has continued, primarily driven by domestic demand. In July, consumer confidence rose to record levels. A key reason for the solid confidence is the favourable development of underlying economic indicators. The rate of unemployment has been going down throughout the year, amounting according to Eurostat to 11.8 per cent in July, compared with 12.5 per cent at an annual level last year. Inflation has been moderate. The National Institute of Statistics and Economics, INSEE, predicts a one per cent increase in producer prices for the current year, and no major change is expected for next year.

Construction activity seems to have picked up slightly in this year. Building permits for single-family houses also increased markedly in the first four months of the year. In addition, domestic demand has grown faster than last year. Economic growth is estimated at about 3 per cent for this year and only slightly less for 1999. The main risk factors that may jeopardise the favourable economic growth are the direct and indirect effects on the French economy of the economic crisis in the emerging markets of the world.

The favourable economic growth also continues in the other major European markets of the Finnish forest industry. For example in *the Netherlands*, *Belgium* and *Spain*, which accounted for 14.2% of the total value of Finland's forest products exports last year, the IMF expects GDP growth to continue at a rate of 2.6–3.6 per cent in 1999. In *Italy* economic development is still weak, but a turn for the better is foreseen next year. In *Denmark* economic growth is estimated to go down clearly from 3.5 per cent last year to about 2 per cent in 1999 (Table 1).

Sweden's economy has clearly recovered since last year, when GDP growth was only 1.8 per cent.

In its forecast published at the end of September, the central bank (Riksbanken) estimates economic growth at about 3 per cent for this year and next. Especially domestic demand growth is solid and consumer confidence in continued economic growth strong. The labour market situation also indicates that the growth of consumption will continue to increase. The rate of unemployment has been going down since the middle of last year (the unemployment rate for 1997 was 8.0 per cent) and it is estimated to drop to about 6.7 per cent in annual terms this year, and to 6.2 per cent next year (IMF). According to a statement issued by Riksbanken at the end of August, the current depreciation of the Swedish krona is temporary, and in conflict with the fact that the underlying economic growth potential remains strong. The depreciation of the Swedish krona is rather seen to reflect the general unrest caused by the economic turmoil in the emerging markets and the contagion of this unrest via Norway to Sweden. Because the Swedish krona does not have an EMU buffer to support it, it is more sensitive to changes than the Finnish mark.

Among the transition economies in *Central and Eastern Europe*, Hungary and Poland are still enjoying buoyant economic activity, in spite of the Russian crisis. According to a forecast published by Deutsche Bank Research in September, GDP growth in Poland is estimated at 5.2 per cent and in Hungary at 5 per cent for next year. Finland's exports of forest product to Poland have increased strongly in recent years, currently amounting to almost FIM 1 billion. *Russia*'s economy will plunge yet again this year, though there were signs of a definite improvement last year. Expectations concerning Russia's development have become continuously more pessimistic and the uncertainty is growing. Following the devaluation, rationing and the crisis in the banking system, imports to Russia will clearly contract this year and next.

Growth Slowing Down in the United States

The strong economic performance in the *United States* has continued in the first half of the year. Strong consumer confidence has been reflected e.g. as strong growth in housing construction and bank loans. In July housing sales were at record levels, and about 18 per cent greater than in the same period last year. In annual terms, real GDP growth in the first six months of the current year amounted to 3.5 per cent. However, the growth is expected to slowdown towards the end of the year. The Federal Reserve Bank *Beige Book*, which gathers information on current economic conditions in different Bank Districts, reported in November that the pace of economic expansion moderated in September and October. Retail sales were mostly at or below merchants' expectations, but there were only scattered reports of unanticipated inventory accumulation. Real estate and construction activity remained generally robust, especially in residential markets, but most Districts reported that more stringent credit standards were a factor slowing commercial real estate activity. Manufacturing activity continued at relatively high levels, but was the sector most often cited as showing signs of softening.

The appreciation of the US dollar against the yen and against the currencies of the emerging markets has depressed export prospects, while at the same time resulting in increased imports, which has caused the balance of trade to deteriorate rapidly. Inflationary pressures are kept low by weakening growth prospects, low world market prices of commodities, favourable growth of productivity and low price expectations. The moderate price development, the uncertainty in financial markets and the growing caution by lenders caused the Federal Reserve to reduce the central bank rate at the end of September by 0.25 percentage points. A similar reduction was repeated in October, cutting the rate to 5 per cent.

The poor economic performance of Asia and Russia, and especially the possible spreading of neg-

ative effects to Latin America, is the biggest risk factor which might further depress current economic prospects. A key question from the viewpoint of the world economy is whether the unprecedented boom in the United States will end in a soft landing, or whether weakening export demand and a possible decline in exchange rates will plunge the US economy into recession.

Canada's economic development has been subject to forces which move the economy to opposite directions. On the one hand, the poor development in Asia reduces especially exports of Canadian forest products to this region. On the other hand, continued favourable demand in the United States has compensated for these losses (in 1996 the US absorbed 71 per cent of Canada's exports of forest products). Exports have been boosted by the depreciation of the currency – the Canadian dollar depreciated against the US dollar to a historic low in August. However, to curb the depreciation of the currency, Canada's central bank raised the central bank rate at the end of August by one percentage point to 6 per cent, though it was cut by 0.25 percentage points at the end of September, right after the Federal Reserve's reduction.

The rate of unemployment dropped to 8.3 per cent in August, the lowest since August 1990. In spite of the favourable development in the labour market, the number of building permits for housing starts during the period January to July this year was 3.0 percentage points lower than in the corresponding period last year. Fellings and forestry output have also declined by 12.5 per cent in the first half of this year compared with June 1997. The production of sawnwood in the first six months of the year was 2.3 per cent lower than in the same period last year. In spite of the poor performance in these sectors, the economy as a whole, boosted by strong domestic demand, grew by 2.6 per cent during the first half of the year. For next year, GDP growth is estimated at 2.5–3 per cent.

Uncertainty Continues in Japan

Japan's economic performance has been poorer than expected. As late as the end of last year, the IMF still predicted 2.6 per cent GDP growth in Japan for the current year. In a forecast published in September, the figure is the same but negative. According to the Bank of Japan's monthly report for September, the economy is still being plagued by reduced industrial and housing investment and low consumption in the private sector. In addition, inventories are at a high level, real incomes are declining and unemployment is on the rise. Though real interest rates are record-low (close to zero per cent), the economy shows no signs of revival. The weak economic development has also been reflected as a clear decline in import demand. For example during the period April to June, the seasonally adjusted imports from the EU countries declined by 8.5 per cent compared with the preceding quarter. The central bank's, Tanka's, report for September also showed that the industry's and consumers' expectations concerning the future development of the economy have deteriorated further.

During the autumn, the government has implemented financial incentives and reforms in the financial sector with the aim of restoring confidence in the country's economic development. However, many experts still regard these actions as insufficient. A significant improvement would be the approval of new laws in Parliament which would restore confidence in the banking and financing sector. In addition, new stimulating actions are expected, such as a decrease in income tax.

In *East Asia* the economic decline has continued. According to the IMF, economic growth in the *ASEAN* countries (Hong Kong, Singapore, Taiwan and South Korea), whose combined relative weight in the world economy equals that of France, is estimated to decline by –10.4 per cent during the current year, while still contracting slightly during next year (–0.1 per cent). *China*'s strong economic growth has continued, though at a slower pace than last year. China's GDP growth is estimated at about 5.5 per

cent this year and next, which is clearly lower than last year (8.8 per cent). A major question mark in connection with Asia's future growth is whether China is going to devalue its currency. This would inevitably put pressure on the region's other currencies, and would also have negative ramifications for the entire world economy.

1.2 Finnish Economy

The further deterioration of the Asian crisis in combination with the Russian turmoil put an end to this summer's discussions concerning the possible overheating of the Finnish economy. The decline in export growth will certainly retard Finland's strong economic growth in 1999. Inflation and interest rates will remain low. The euro will strengthen in relation to the US dollar and other EU currencies outside the Euroland. The major threats to economic development are external – to which extent will the deepening and spreading of the economic crisis in the emerging markets be reflected in the Finnish economy?

Economic Growth to Slowdown in 1999

Economic growth in the current year has been clearly stronger than predicted one year ago, mainly because of favourable export growth in the first half of the year. According to various forecasting institutes, GDP growth for 1998 will be 4.8–5.5 per cent. The aggravation of the Asian crisis, particularly in Japan, and the Russian situation have put an end to talk of any overheating of the economy. In the second half of the year, export growth will be significantly weaker than in the first six months. GDP growth for 1999 is estimated to slowdown to 3–4 per cent. Exports to Russia and the crisis-ridden Asian countries will remain low, and the crisis will also affect exports indirectly, as economic growth in

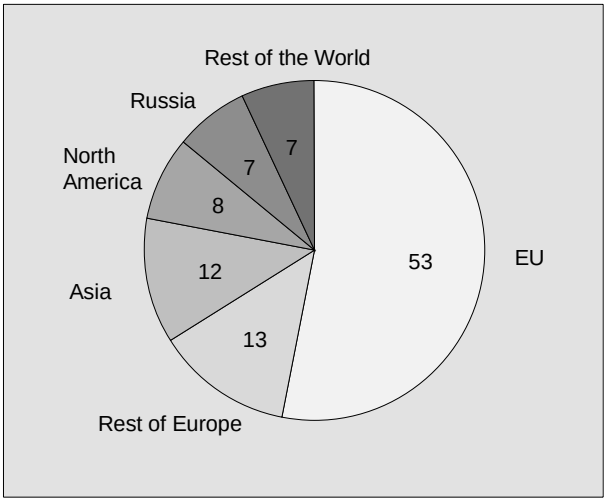

***Figure 2**. Finland's Exports by Region in 1997 (percentage shares).*

Europe will slowdown to some extent. As far as the forest industry is concerned, the decline in exports will be partly due to the slower growth of production capacity. In addition, the appreciation of the euro against the US dollar and the Swedish krona will also put downward pressure on exports.

As export performance weakens, the importance of domestic demand for maintaining economic growth will be emphasised. Following the decline in the savings rate, consumption will grow faster than real incomes. According to economic forecasting institutes, private consumption will grow during the current year by about 4 per cent. For next year, the growth is projected to be 3.5–4 per cent. If the uncertainty over the future course of the world economy is prolonged, the unrest may spread to private households, causing a reduction in consumption growth.

Investments will grow clearly slower this year than in 1997. Next year, industrial capital expenditures will revive, primarily because of growing investments in small and medium-sized companies.

The unemployment rate in 1997 was 12.5 per cent, calculated on the basis of the EU's statistical practice, which has been adopted by Statistics Finland. The unemployment rate is estimated to go

Table 2. *Forecasts for the Finnish Economy.*

	Realised	Ministry of Finance		ETLA	
	1997	1998	1999	1998	1999
*GDP, %	6.0	5.5	4.0	5.0	3.5
*Exports, %	12.8	8.7	4.7	9.0	5.0
*Investments, %	12.2	9.2	6.0	6.0	7.0
–private	13.3	11.5	8.2	7.0	8.0
–public	6.7	–3.4	–8.0	0.0	0.0
*Building construction, %	17.2	11.0	5.5	11	8.0
Change in consumer price index, %	1.2	1.5	2.0	1.5	1.7
Unemployment rate, %	12.7	10.5	9.0	11.0	10.0
Helibor, 3-month, %	3.2			3.7	4.0

*volume change
The Ministry of Finance published its forecast on September 1, 1998 and ETLA, The Research Institute of the Finnish Economy, its own forecast on September 9, 1998.

down to about 11 per cent this year and next year to 9–10 per cent. However, the structural problems have got worse, with a continuing increase in the number of long-term unemployed. The importance of the labour market will grow with the launch of the single currency. Instead of exchange rates, balancing factors will include for example wages and the professional and regional mobility of the labour force.

Prospects in the Construction Industry

According to the Confederation of Finnish Construction Industries, total construction output will grow by 11 per cent during the current year. The growth will be strongest in new construction, which will be one fifth greater than last year. The decline in the volume of new construction to less than half during next year will also halve the output of total construction. Renovation and modernization activity will grow by about 5 per cent and civil engineering by about 2 per cent in 1998 and 1999.

Housing starts for one-family and row houses, which are particularly important for sawnwood demand, will grow by 15 per cent during this year, in terms of cubic metres. The growth will continue at the same pace in 1999. The growth in housing construction will remain at 10 per cent, as the number of housing starts for apartment blocks will stay at the current year's level. The growth of construction activity is particularly strong in the Helsinki metropolitan region, and in other population centres in the southern parts of the country, where the increasing number of job opportunities results in growing population densities. Commercial and industrial projects remain virtually unchanged at this year's level, while agricultural building activity goes down. Altogether, next year new building construction projects with a volume of 37 million cubic metres will be launched, which is 3 per cent more than in the current year. In spite of the strong growth, which started in 1996, construction activity is still at a low level. The combined volume of new housing starts in 1999 is estimated at 13 million cubic metres, which is 6 million cubic metres less than on average during the 1980s.

Euro Expected to Strengthen

Consumer prices have continued to rise moderately in spite of the strong economic growth. The rise for this year has corresponded to the average in the EMU countries. The decline in raw material prices has reduced inflationary pressures. Consumer prices have primarily been raised by rising prices for houses and flats. Inflationary pressures are not expected until early in the year 2000, when the current collective wage agreement expires.

The launch of the single currency at the beginning of next year will cause EMU countries' interest rates to converge. Previously, it was believed that countries with low interest rates such as Finland would slightly raise their interest levels to minimise the need to reduce interest rates in countries with high interest rates such as Ireland, Italy and Spain. However, the deepening and spreading of the Asian crisis, in combination with the Russian turmoil, have restricted inflationary pressures, so the European Central Bank is expected to start with a repo rate of 3.30 per cent, which is at the level of the repo rates in Germany and France. The repo rate in Finland is slightly higher, at 3.40 per cent. The pressures for appreciation of the euro against the US dollar are likely to keep the interest level down in relation to the United States. However, keeping interest rates at the current level would not be a problem for Finland because of the minimal inflationary pressures.

No improvement in price-competitiveness is expected next year, because of the pressures for appreciation of the euro against the dollar. The growing uncertainty in the world economy has also caused the Swedish krona to depreciate.

Impacts of Asian and Russian Economic Crises on the Finnish Forest Industry

The economic crises in the emerging market countries started in Thailand in the summer of 1997, and soon spread to the other countries of East Asia. The recession and financial crisis in the world's second largest economy, Japan, further aggravated the situation. In the summer of 1998 the crisis spread to Russia, where the ruble depreciated strongly and the country was plunged into serious political and economic turmoil. In the autumn, the Russian crisis spread to Latin America.

When assessing the implications of these crises for the Finnish forest industry, it is useful to distinguish between direct and indirect effects on foreign trade. *Direct effects* refer to an immediate decrease in exports to the crisis-ridden economies, and an improvement in these countries' relative competitiveness in the world market for forest products as a result of the depreciation of their currencies. *Indirect effects* refer to the impact of the crisis on economic activity in the United States and EU countries, and the effects that these impacts have in turn on the Finnish forest industry. (The impact of the Russian turmoil on roundwood imports is discussed on pages 53–54).

In the crisis countries, import prices of forest products go up in local currencies, and their consumption goes down. As a result, imports into the crisis countries decline. It has been estimated that the market for paper and paperboard products in the entire Asia-Pacific region will decrease by one million tons in 1998 (Malassu 1998). Though this figure as such is small, it is significant, because in this event the market would contract for the first time since 1981. Malassu (1998) also predicts that Asia's net imports of paper and paperboard products will decrease from slightly less than 8 million tons in 1996 to only 3 million tons by the year 2000. Japan's imports of sawnwood will also decrease markedly.

The direct impacts of these crises on foreign trade will depend on the crisis-ridden countries' share of world forest industry's foreign trade. The Table at the bottom of the box shows the crisis countries' production, imports and exports of forest products. In addition, the Table shows what share the countries represent in the Finland's forest industry exports.

Finland's exports of forest products in 1997 to the countries that are now in crisis or in immediate danger of contagion, was only about 10 per cent of the value of total exports. This is roughly equal to the combined exports to Belgium and the Netherlands. Therefore, the direct effects of the crisis on the Finnish forest industry's exports are going to be relatively small. For example, if the value of exports to the crisis countries in 1999 were halved compared with the value in 1997, and if no compensating markets were found, this would cause exports to decrease by FIM 4.4 billion. This would probably correspond to a decline of about 5–7 per cent on the total value of exports in 1999.

Besides the decrease in exports to the crisis countries, the Finnish forest industry's competitive environment, e.g. in the US and the EU market would become more difficult. In products where the crisis countries represent a major share of global imports, there will emerge an oversupply situation. For example, Asia accounts for about 12 per cent of world paper and paperboard imports, whereas Japan accounts for more than 10 per cent of world sawnwood imports. The Asian markets are particularly important for North American producers. Suppliers are trying to replace the decreased demand in Asia by shifting the supply to other markets. This is bound to result in increased competition, for example in the Finnish suppliers' major market, the EU region. This will in turn put downward pressure on world market prices.

The crisis countries are also manufacturers and exporters of forest products. As the crisis countries' currencies have depreciated sharply in relation to the Finnish mark, and possibly next year in relation to

the euro, these countries' relative competitiveness is likely to improve. Currency depreciation is one major part of competitiveness, along with inflation and production costs. In the crisis countries, competitiveness may have been boosted by the more favourable exchange rate, but also by changes in other factors. For example according to Malassu (1998), the manufacturing costs of bleached Indonesian hardwood pulp will go down in the short term by about 40 per cent and in the medium term by 20–25 per cent, compared with the pre-crisis situation. Though the importance of the crisis countries as competitors to the Finnish forest industry in major products (sawn softwood and softwood fibre-based printing and writing papers) is comparatively moderate, the crisis will add to the downward pressure on the world market prices of all forest products (the effect of the Russian turmoil on the country's sawnwood exports are discussed in section 2.1).

The longer the crisis lasts, the greater its indirect impacts on the Finnish forest industry. The United States' and the EU countries' exports to the crisis countries will decline whereas imports will increase, as a result of which trade balances will deteriorate. Still, it should be noted that a decrease in exports from the United States and the EU countries to Asia and Russia is not going to cause any immediate major effects on these countries' economic activity. Exports from the United States and the EU to the crisis regions accounts for only about 4 per cent of these regions' GDP (Deutsche Bank Research 1998).

However, recent developments have shown that the effects of the crises may be considerably more severe than the simple analysis of trade statistics would give reason to believe. For example banks' and investors' capital and credit losses, share price fluctuations in stock markets and a weakening in consumer and business confidence (psychological factors) may turn out to be more important than changes in trade flows.

Though the negative impacts of the Asian and Russian crises on world economy are doubtless serious, it has been noted in various contexts that there are also favourable implications, for example for the United States and the EU countries (Liu et al. 1998). Particular reference has been made to the declining raw material prices as a result of the crisis to their lowest levels for several decades. This in turn results in alleviation of inflationary pressures in the US and the EU countries, and thereby allows a less restrictive monetary policy, which in turn creates better opportunities for consumption and investments. For example Liu et al. (1998) have estimated that the US construction sector will expand by 0.7–0.8 percentage points more than it would have done without the effects of the crisis. On this assumption, demand for sawnwood and plywood could also increase more than under normal conditions.

The negative impacts of the crises on the Finnish forest industry will remain comparatively modest during 1998, because in the EU countries and the US domestic demand and intra-regional trade will serve as engines of economic growth. Though demand for forest products will remain relatively favourable, world market prices are more likely to decline rather than rise.

The situation in Japan appears to have deteriorated further during the autumn. In addition, certain observers consider it increasingly probable that China will have to devalue its currency next year, and that this will cause a vicious circle of devaluations in emerging economies. The effects of the crises in the emerging markets may also be reflected ever more strongly in Latin America.

With the crises possibly deteriorating further, share prices can be expected to go down globally, which in turn would be reflected in increasingly cautious consumer behaviour and declining demand. On this assumption, the effects of the crisis would increasingly slowdown economic activity in the United States and the EU (IMF 1998). In this event, also the price development of Finnish forest products would be clearly weaker than expected and export volumes smaller, as a result of which profitability and capacity utilisation rates might go down even to 1996 levels. If this turns to be the case, then the forecasts for the Finnish forest sector development for

1999, presented for example in this review, would be far too optimistic.

The uncertainty regarding the development of the world economy and of Finland's forest products exports during next year is indeed greater than usual. A particularly big question mark related to the projections is, how large a role psychological factors will play in the actions of consumers, industry and investors. If the fear of a recession turns into hysteria, it tends to feed on itself.

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Table. *Crisis Countries and Forest Products 1997 (mill. cubic metres and mill. t.) (in brackets percentage share of the world total figure).*

	Production	Imports	Exports	Share of Finland's forest industry's export value,%
		Sawnwood		
Asia's crisis countries	25.1 (8)	10.8 (12)	0.3 (0)	8
China*	16.6 (5)	0.7 (0.7)	0.07 (0)	0
Russia	15.6 (5)	0.04 (0)	4.3 (5)	0
Latin America	15.3 (5)	0.5 (0.5)	2.0 (2)	0
World total	312.4	91.4	93.3	100
		Paper and paperboard		
Asia's crisis countries	47.8 (16)	8.5 (12)	6.2 (8)	5
China*	30.3 (10)	3.6 (5)	1.0 (1)	0.8
Russia	3.3 (1)	0.05 (0)	1.5 (2)	3
Latin America	12.0 (4)	2.4 (3)	1.7 (2)	2
World total	291.5	69.9	77.4	100

Asian crisis countries = the Philippines, South Korea, Hong Kong, Indonesia, Japan, Malaysia, Singapore, Thailand
*There is no acute economic crisis in China, but its currency may be devalued
Latin America = Argentina, Brazil, Chile, Mexico, Venezuela
Sources: FAO (1998) preliminary estimates; Metla (1998) Forest Statistics Bulletin No. 447, Sept. 8, 1998

The Emu and Finland's Forest Industry

The third stage of the European Monetary Union (EMU) and the changeover to the euro will be realised on January 1, 1999 in the eleven countries elected to participate in May 1998. The value of the euro in relation to national currencies will be determined according to conversion rates, which are based on bilateral exchange rates of the member countries' currencies on December 31, 1998. However, the conversion rate at which the participating countries' currencies will be pegged to the euro will not be confirmed until January 1, 1999, and the decision is irrevocable.

The euro will become the currency of a large economic area, the size of which corresponds to that of the United States. The EMU countries at present account for 30 per cent of world production and for about 17 of world foreign trade, the corresponding figures for the United States being 35 and 15 per cent, respectively. The future importance of the euro will depend on the extent to which it is used as an international reserve currency, and investment and trading currency side by side with the US dollar. This, in turn, will depend on the internal stability of the euro and foreign countries' confidence in its future stability. Internal stability is important because exchange rate expectations are determined on the basis of the real exchange rate, taking into account differences in inflation. Accordingly, one of the major objectives of the monetary union is to maintain internal price stability.

The EMU plays an important role in the European process of integration, so it is going to have both political and economic impacts in the countries participating in the monetary union. Following the implementation of the monetary union, the national exchange rate will be abolished and the EMU market will become Finland's home market. The more Finland trades with the member countries, the greater the benefits of the monetary union. And the more uniform the production structures in the member countries, the smaller the disadvantages of the union. According to a poll among major industrial companies conducted by the Research Institute of the Finnish Economy (ETLA), the EMU is expected to have favourable, though small, effects on corporate strategies. Impacts are expected to be greatest on forest products companies' strategies, e.g. with a view to investments directed to Finland, though even in this industry, effects will not be very big.

The EMU is just one among the many factors influencing the Finnish forest industry. Other important factors are e.g. the long-term demand trends for forest products and the globalisation of markets. As a result of the globalisation of business and financial markets, different regions are increasingly tied to each other, as the effects of the crises in Asia and Russia illustrate. The collapse of Asian currencies has reduced the Euroland's competitiveness in relation to Asia. Next year, assuming continued growth in the euro area, the real and nominal euro exchange rates are projected to strengthen relative to other currencies, because the economic growth in other regions, such as the United States and the United Kingdom, will slowdown.

The EMU's influence on the Finnish forest industry will depend, among other things, on how large a share of the industry's exports the EMU countries account for, and the currency to be used in this trade. A key issue is also how the value of the euro will develop in relation to other currencies and what kind of exchange rate policy the European Central Bank (ECB) and Finland's competitors outside the EMU are going to employ.

The euro's future share of the Finnish forest products exports can be estimated on the basis of the geographical distribution of exports and the division between different invoicing currencies. In 1997 the EMU countries accounted for 46 per cent of the value of Finland's exports of forest products, though their share varied from product to product. Based on the division between different invoicing currencies, the euro's share of forest products exports, excluding the United Kingdom and Sweden, would be 40 per cent (according to 1994 statistics). This estimate is a rough approximation, which is further complicated e.g. by the uncertainty to what extent the trade with the United Kingdom will be euro-based. In addition, the US dollar and the Swedish krona play a greater

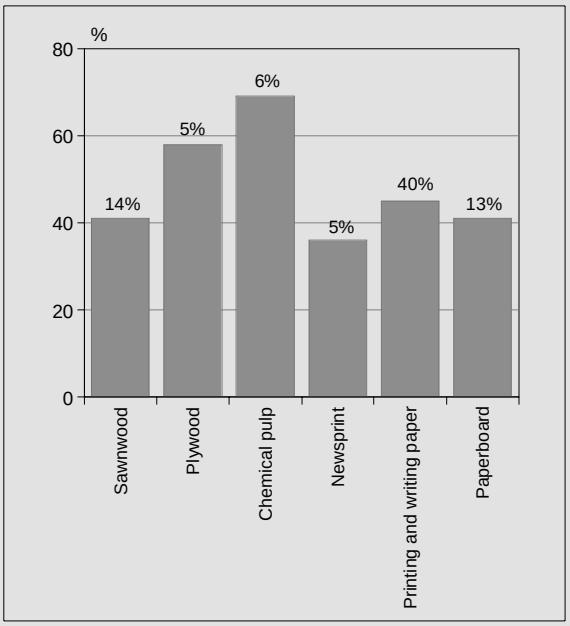

Figure. *EMU Area's Relative Share of the Value of Finland's Exports of Forest Products in 1997. (The figure on top of each bar refers to each product's share of the total value of forest products exports.)*

role in exports than their shares of total invoicing imply, and their weight is difficult to estimate. About a quarter of Finland's exports of forest products is priced in US dollars, and the dollar is also commonly used in exports e.g. to Asia.

Next year, there will no longer be any exchange rate risk in the EMU's internal trade, but it will naturally prevail in trade with countries outside the EMU. For example, if demand for forest products decreases within the monetary union, competing countries such as Sweden could in principle improve their competitiveness through exchange rate adjustments. However, any major exchange rate adjustments are probably unlikely in Sweden. For example according to the central bank, Riksbanken, Sweden is striving for a credible economic policy and low inflation, which demands a stable exchange rate policy.

For the Finnish forest industry the EMU will bring several benefits relative to the competitors outside the monetary union. Trading costs will go down as the exchange rate risk is eliminated from internal trade, as incomes and production costs are priced in the same currency. Other benefits include access to the EMU area's large capital markets and the low inflation and price stability projected for this area. For example, the decision to establish Stora–Enso's headquarters in Helsinki can be seen as a sign of the Swedish owners' effort to achieve greater integration with the euro area.

The advent of the EMU creates new possibilities, especially for small companies of woodworking industry currently serving the home market. It will open up an expanding internal market and a possibility of obtaining additional investment funds. On the other hand, the increased competition resulting from the euro also constitutes a major challenge to these companies.

One of the downside effects of the EMU is that the national economies will no longer be able to use exchange rate adjustments as means to balance business cycles. Though a joint monetary policy is likely to result in better control over economic fluctuations in the EMU countries, the problem of adjustment to national disturbances will remain. An important means for adaptation will be flexible pricing of inputs, such as labour and raw materials, and measures to improve the efficiency of production. In the Finnish forest industry, the exchange rate buffer has been particularly beneficial for the sawmilling industry in competing for market share in world markets, so price pressures are likely to increase in the sawmilling industry in particular. The paper industry has taken precautions for the monetary union at an earlier stage, e.g. by acquiring production capacity within the European Union and outside it, by striving for greater unit size and by strengthening its balance sheets.

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2 Forest Industry

2.1 Export, Production and Prices of Wood Products Industry

Finland's production and exports of soft sawnwood are estimated to increase by about 4 per cent during the current year compared with 1997. Next year the growth of demand for wood industry products will be slowed down by the negative effects of the Asian and Russian crises on economic growth in Europe. The domestic construction sector is the engine of growth for sawnwood production, with production increasing by one per cent, whereas exports will remain at the 1998 level. Production and exports of plywood will grow by about 3 per cent during the current year, and by about 2 per cent next year. As a result of the general uncertainty in the market, the price of sawnwood has not recovered as expected and in annual terms the unit price of Finland's exports of soft sawnwood will decline by about 8 per cent this year and by about 3 per cent in 1999. Plywood prices have developed more favourably, with the average export price of plywood rising by 12 per cent during the current year. Next year, the price is projected to remain at the 1998 level.

Exports of Wood Products Industry Increase in 1998

Housing construction has increased in the first half of the year in many of Finland's major European export markets. Accordingly, Finland's exports of soft sawnwood increased by 12 per cent in the first six months of the year, compared with the same period last year. The growth of exports will slowdown towards the end of the year. Exports of birch plywood have also developed favourably during the current year, whereas exports of spruce plywood have declined. The EU countries are still the most important export market both for sawnwood and plywood. In 1997, about half of Finland's production of sawnwood and more than 70 per cent of its plywood production went to the EU countries (Table 3).

Following the decline in demand in Japan, Finland's exports of sawnwood to Asia have dropped by about 30 per cent during the first half of the current year, compared with the same period last year. The decline in exports to Asia has been balanced by increased exports to Europe and Africa. Exports of plywood to Asia declined in the same period by about 10 per cent, as demand for spruce plywood has gone down. The competing suppliers, Sweden and Canada, have also redirected their exports: Sweden to its main markets in Europe, and Canada to the domestic market and the United States. Finland and Sweden have also strongly increased their exports of sawnwood to United States in the first half of the year, though export volumes have been comparatively small.

The growth of production in European producer countries, combined with the decline in exports to Asia, has resulted in oversupply of sawnwood in the European market, in spite of the reasonably good growth of consumption. According to Japanese estimates (Japanese Forest Agency), demand for imported sawnwood from Europe is expected to decline by a total of about 40 per cent during the current year compared with 1997. The poor growth of demand in Japan has affected the European sawnwood market, in spite of the fact that the 2 million cubic metres of sawnwood exported from Europe to Japan equals only about 6 per cent of the Europe's total sawnwood exports.

The collapse of sawnwood demand in Japan has also led to oversupply in the United States and Canada, though strongly increasing housing construction in North America has resulted in increased consumption of sawnwood. In addition, the situation in Canada is complicated due to the Softwood Lumber Agreement between Canada and USA, which restricts duty free exports of sawnwood from Canada to US. Thus, the agreement makes it more difficult for Canada to increase its market share in the United States. Of Russia's total exports of 4 million cubic metres of sawnwood, Japan takes about 11 per cent, so in absolute terms the volume is so small that any decline in exports is virtually insignificant for the trade flows.

Though housing construction has expanded in many of Finland's major export markets, estimates published by Euroconstruct in June 1998 show that the growth of housing construction in Europe will slowdown slightly during the current year. In the United Kingdom signs of a decline in construction were already to be seen at the beginning of the year, and the weak performance can be assumed to continue for the rest of the year. However, according to projections by Deutsche Bank Research, Germany's investments in housing construction will grow in real terms by 0.2 per cent during 1998. The development is encouraging compared with a decline of 2.5 per cent in 1997. Construction confidence indicators also show improved prospects for construction.

The declining trend in sawnwood prices, caused by the oversupply of whitewood in the summer of 1997, has continued in Europe during the first half of the current year. In North America, too, the oversupply of sawnwood has caused prices to decline

Table 3. *Finland's Sawnwood and Plywood Industry in 1997 (1000 m^3).*

	SOFT SAWNWOOD	% of production	PLYWOOD	% of production
Production	10 600	100	987	100
Domestic use*	3 090	29	108	11
Exports				
EU	5 219	49	727	74
Asia excl. Japan	372	4	27	3
Japan	553	5	15	1
Africa	1 135	11	1	0
North America	23	0	35	4
Russia	5	0	2	0
Others	203	2	72	7

Source: Finnish Forest Industries Federation
* Domestic use = production - exports

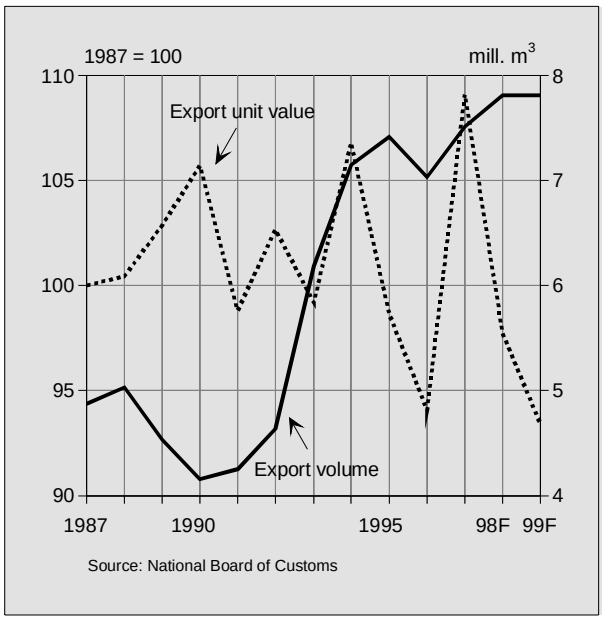


Figure 3. *Export Volumes and Real Export Unit Value for Sawnwood in 1987–99F.*

Figure 4. *Export Volumes and Real Export Unit Value for Plywood in 1987–99F.*

since May 1997, being now 25 per cent below last year's price level. Declining prices have also affected Finnish exports, causing the unit price of exported whitewood to decline by 20 per cent from July 1997 to May 1998, and that of redwood by 6 per cent in the same period. However, the declining trend appears to have been broken in the summer. Whitewood prices have traditionally fluctuated more widely than those of redwood, among other things because of their different end uses. Most of the spruce is used as structural timber and for temporary constructions in the cyclical construction industry, whereas pine, for example in the United Kingdom, is widely used in joinery products (e.g. for windows), which are in good demand in the continuously growing housing renovation market.

Export prices of Finnish plywood have developed better than the export prices of sawnwood. Exports of plywood from the United States to Europe have decreased because of growing domestic demand. The price level of plywood has gone up both in Europe and the US. The average export price of Finnish spruce and birch plywood has risen by about 10 per cent in the first half of the current year compared with the same period of 1997. The average price of total plywood exports has risen even more strongly because of the increased export share of birch plywood, which is about twice as expensive as spruce plywood. During the current year, birch plywood has accounted for 58 per cent of total plywood exports.

Boosted by the growth of construction activity in Europe, Finland's exports of sawnwood will grow during 1998 by nearly 4 per cent. The weak trend in export prices will continue, and the Finnish mark unit price of soft sawnwood is estimated to decline by about 8 per cent in 1998 compared with last year. The growth of plywood exports will also slowdown compared with last year as a result of weakening demand for spruce plywood. Plywood exports will grow by about 3 per cent in 1998 and the average plywood export price will rise by 12 per cent compared with 1997.

Table 4. *Forecasts for Production and Exports of Sawnwood and Plywood, 1 000 m³ (percentage changes are shown below the respective figure).*

	PRODUCTION			EXPORTS		
	1997	1998F	1999F	1997	1998F	1999F
SAWNWOOD	10 600	11 000 +4	11 100 +1	7 511	7 800 +4	7 800 0
PLYWOOD	987	1 020 +3	1 040 +2	879	910 +3	930 +2

Demand For Sawnwood Remains Moderate in 1999

No major changes are expected in European housing construction in 1999 compared with this year's activity. Housing construction will increase slightly in Germany and France, while in the United Kingdom prospects continue to weaken. A favourable feature in the European construction sector is the growth in renovation construction activity, which will grow by an average of 3 per cent in the EU area in 1999. A growth of this magnitude was last recorded in 1994.

In view of the development in the construction sector, demand prospects for sawnwood in Europe will be reasonably good during 1999, but the price development is weak. In Europe, any strengthening of prices is unlikely, unless demand recovers in Japan. In addition, the economic growth in the United States is expected to slowdown in 1999, which will depress the region's demand for forest products, adding to the downward price pressure. In the case that demand in the United States will contract, the supply of Canadian sawnwood to Europe may increase, if also demand in Japan remains depressed.

The repercussions of the Asian turmoil are also making themselves felt in the plywood market. The Asian region produces and consumes about half of the world's plywood. Because Asia's real competitiveness relative to European and North American producers has improved as a result of the depreciation of the region's currencies, there is a possibility, that for example, Indonesia will direct its exports to Europe. This is bound to put downward pressure on plywood prices. About 40% of Indonesia's plywood has traditionally been exported to Japan. So far, an increase in the Asian plywood industry's export supply has been hampered by rising costs for freight and imported production inputs, and by a shortage of short-term loan financing.

Russia's economic recession, in combination with the development in Asia, is likely to cause growing price pressures in forest products markets. Because Russia's export products are priced in US dollars, the devaluation of the ruble does not necessarily have any immediate effect on the export prices of Russian sawnwood. If rising inflation does not outweigh the competitive advantages obtained through the devaluation, exchange rate adjustments may also be used in Russia to reduce dollar prices.

Table 5. *Forecasts for Nominal Export Prices of Soft Sawnwood and Plywood (change on the previous year, %*).*

	1997 change, %	1998F change, %	1999F change, %
Sawnwood	19	–8	–3
Plywood	5	12	0

* export prices are export unit values in Finnish mark

However, because of Russia's production and logistic problems, it is unlikely that Russia would be able to exploit the potential advantages of the devaluation to any major degree and significantly increase its exports to Europe. Sweden's competitiveness has also improved as a result of the depreciation of the Swedish krona during the current year. According to Riksbanken, the decline of the krona will, however, stay temporary because of the country's favourable economic development.

As the value of euro is projected to appreciate with respect to other currencies during 1999, Finland's competitiveness can be expected to decline in the markets outside the EMU, where the most common trading currency is the US dollar. Still, the relative share of exports outside the EMU is relatively small compared with the wood products industry's total production. In the sawmilling industry, this share is smaller than the domestic share.

In 1999, Finland's exports of soft sawnwood are predicted to remain at last year's level, assuming that European construction activity will remain at roughly the level achieved in 1998. The export unit price is estimated to decline 3 per cent. Plywood exports are predicted to grow by about 2 per cent as a result of increased exports of birch plywood, and the unit export price is expected to remain at the 1998 level.

Sawnwood Demand Growth Continues in Finland

Domestic demand for sawnwood will increase by 5 per cent in 1998 from the last year's level (2.9 million cubic metres) as a result of increasing housing construction, the growth in share of one-family houses and increased renovation activity. According to the August 1998 review of the Confederation of Finnish Construction Industries, the volume of housing starts will grow by 10 per cent in 1999, with building renovation and modernization activity growing by 5 per cent.

About 80 per cent of the domestic consumption of sawnwood in Finland is used for construction purposes, especially for construction of one-family houses. The construction of one-family houses is estimated to grow by 13 per cent this and next year (in terms of the number of houses). Due to the growth of construction, Finland's consumption of sawnwood is estimated to grow by 5 per cent in 1999, reaching a level of about 3.2 million cubic metres.

Domestic consumption of sawnwood and increased exports will increase Finland's production of sawnwood in 1998 by about 4 per cent compared with 1997, when sawnwood production reached a record of 10.6 million cubic metres. In 1999, the production will grow by about one per cent compared with 1998 as a result of growing domestic demand.

Plywood production will grow as a result of increased exports from 987 000 cubic metres in 1997 to slightly over one million cubic metres in 1998. In 1999, plywood production is forecasted to grow by 2 per cent. Finland's plywood production capacity has expanded during the 1990s from about 0.6 million cubic metres to the current level of more than 1.2 million cubic metres, boosted in particular by the increased production of softwood plywood. Based on investment plans for the period 1997–99, the plywood production capacity is expected to increase by slightly less than 100 000 cubic metres.

2.2 Export, Production and Prices of Pulp and Paper Industry

Finland's exports of paper increased by 18 per cent in the first half of 1998 as a result of good demand situation and due to successful increasing of market shares. The growth of exports have slowed down towards the end of the year. Paper production is projected to increase by an average of 10 per cent during 1998 and chemical pulp production by 4 per

cent. Owing to the reasonably favourable economic growth within the European Union, exports of paper and paperboard are forecasted to increase by 2 per cent in 1999. However, exports of market pulp will go down in 1999, as the production will be increasingly used in domestic paper production. Should the euro currency become as strong as predicted at present, the competitors outside the EMU, primarily Sweden and Canada, are likely to get a slight competitive edge in the paper markets next year. Because of the appreciation of the currency and the repercussions of the Asian crisis, Finnish mark export prices of paper are projected to remain at this year's average level. Export prices of paperboard are expected to grow by 2 per cent in 1999.

The European Union is still the most important export market for Finland's pulp and paper industry, absorbing nearly two-thirds of the production (Table 6). The EU region's apparent consumption of newsprint increased in 1997 by 4 per cent, and the consumption of other printing and writing papers by 12 per cent. Finland supplied 16 per cent of the EU region's imports of newsprint and an average of 30 per cent of its imports of other printing papers. Finland's exports of paper to the former Soviet Union and East-European countries increased strongly during 1997. For example exports of fine paper to Russia were more than 30 per cent up on 1996, and exports of magazine paper to Poland and Hungary more than doubled. However, the export volumes to these regions are still relatively modest.

Chemical Pulp Inventories Building Up During 1998

The NORSCAN inventories of the five biggest chemical market pulp producer countries continued to grow in the summer, amounting to slightly less than 1.8 million tons at the end of September 1998. Producers' attempts to raise market pulp prices have failed. The inventory level is about 0.2–0.3 million tons higher than the market equilibrium, in which prices typically begin to rise. According to Utipulp's statistics, chemical pulp buyers' inventories have already started to go down in July and August 1998.

The HWWA index, which describes the world market price of softwood market pulp, has gone down by 20 per cent during the first ten months of 1998. The PIX pulp price index maintained by the

Table 6. *The Finnish Pulp and Paper Industry in 1997 (1 000 tons).*

	CHEMICAL PULP	% of production	PAPER	% of production	PAPERBOARD	% of production
Production	6 620	100	9 543	100	2 606	100
Domestic use*	4 965	75	859	9	521	20
Exports						
EU	1449	22	5 998	63	1 306	50
Asia	128	2	712	7	364	14
United States	5	0	630	7	82	3
Russia	5	0	85	1	32	1
Others	68	1	1 259	13	301	12

Source: Finnish Forest Industries Federation
* Domestic use = production – exports

Figure 5. *Chemical Pulp Export Volume and Real Export Unit Value in 1987–99F.*

Finnish Options Exchange (FOEX) declined in November 1998 to 460 dollars per ton, which is more than 20 per cent below the year-ago figure of 590 dollars. The pulp market is, however, likely to pick up towards the end of the year and the price level may begin to recover gradually, provided that also inventories go down. The Finnish mark price of chemical pulp exported from Finland has risen by as much as 15 per cent during the first half of 1998, in spite of declining world market prices.

The foreign currency-based prices of coated magazine paper have increased in the first half of 1998 by nearly 10 per cent in the UK market and by nearly 20 per cent in the French and German markets, compared with 1997. The market prices of newsprint and uncoated magazine paper also increased by 10–20% in the first half of the year. Among various paper grades, the oversupply situation is most prominent in fine paper. Nevertheless, Finnish paper producers announced price increases of 4–8% for October 1998 shipments. However, these price increases are unlikely to go through as such because of the growing uncertainty over world economic development. In spite of the uncertain situation in the Asian market, there have been no major increases in the supply to Europe from outside suppliers.

According to paper industry statements during this year, the close links between pulp and paper prices have ceased to exists, primarily to the extent that the price development of market pulp no longer would have any immediate impacts on paper prices. Though value added in the manufacture of paper products has increased, chemical pulp is still a key component in the paper industry's production costs. The price of chemical pulp is reflected in the price of fine paper – the product most closely linked to chemical pulp – and the effect is then transferred to other paper grades as a result of the substitution between grades. Against this background, the long-term interdependencies of paper and pulp prices are unlikely to disappear. Unless the price of chemical pulp begins to rise clearly, paper prices are not going to change much, either.

The Finnish paper industry's competitive position in the main market in Western Europe has been most clearly enhanced by the fact that Canada's exports of paper and paperboard to Europe (of which newsprint accounts for 70%) have declined by 14 per cent during the period of January-August 1998. This decline has occurred in spite of the competitive advantage that Canada has enjoyed through the depreciation of its currency, e.g. against the pound sterling, the German mark, the Swedish krona and Finnish mark. Imports of chemical pulp from Canada to Europe decreased during January-August by only one per cent compared with the same period last year. The Finnish mark has appreciated relative to the competing countries' currencies: by 14 per cent against the Canadian dollar, eight per cent against the US dollar and six per cent against the Swedish krona during January-October 1998. Though this has impaired the nominal competitiveness of the Finnish forest industry, its real competitiveness is still good.

Finland's Paper Production Increases Strongly in 1998

Spurred by capacity expansions and high capacity utilisation rates at the mills, the production of paper increased by 13 per cent in the first half of the year, with exports increasing by 18 per cent. The production of chemical pulp increased in the same period by slightly over 5 per cent. The development is expected to be slightly weaker in the second half of the year, and on this basis the total production of paper in 1998 is estimated to increase by an average of 10 per cent and that of chemical pulp by 4 per cent. The production of paperboard is estimated to increase by about 4 per cent in 1998. The reason why paper exports increase more than pulp exports is, among other things, the good demand for magazine paper, the product category with high relative share of mechanical pulp in the papermaking furnish.

Finland's exports to Asia have declined in all major product categories during the first half of 1998, coated magazine paper making the only exception. Exports of pulp and paper to the economies in transition in eastern Europe increased during the first half of the year, though in absolute terms the export volumes are comparatively small.

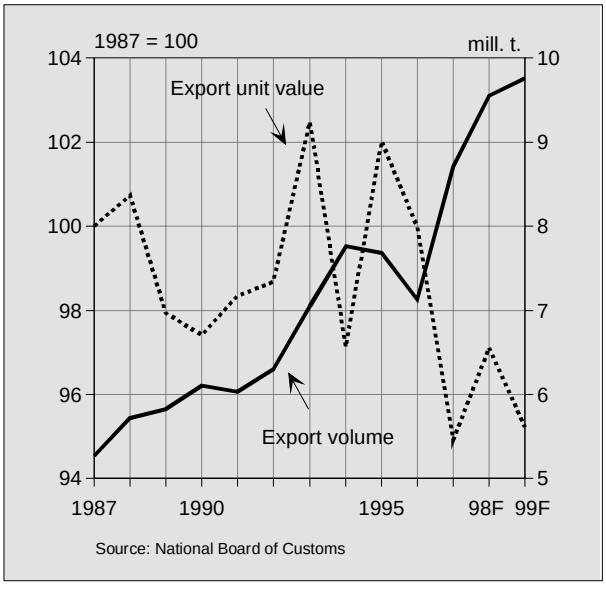


Figure 6. *Paper Export Volume and Real Export Unit Value 1987–99F.*

Figure 7. *Paperboard Export Volume and Real Export Unit Value in 1987–99F.*

The Finnish mark export prices of paper are projected to rise by an average of 5 per cent during 1998, and the prices of paperboard, for which market growth is generally slower, by 2–3%. The Finnish mark price of chemical market pulp will rise by about 4 per cent over the average level achieved in 1997, as a result of the weaker development during the summer and early autumn.

Slow Growth of Paper Production in 1999

Viewed against the background of the economic growth in the export markets and the development of production capacity, the pulp and paper industry's prospects for next year are reasonably good. Private-sector consumption in the EU countries is predicted to grow at an average rate of two per cent in 1999. Though economic growth is slowing down in the United Kingdom, the decline is balanced by the

Table 7. *Pulp and Paper Industry Production and Export Forecasts, 1 000 tons (change on the previous year, %, shown below the respective figure).*

	PRODUCTION			EXPORTS		
	1997	1998F	1999F	1997	1998F	1999F
CHEMICAL PULP	6 620	6 900 +4	7 000 +2	1 631	1 570 –4	1 500 –4
PAPER	9 543	10 500 +10	10 700 +2	8 707	9 550 +10	9 700 +2
PAPERBOARD	2 606	2 700 +4	2 750 +2	2 094	2 140 +2	2 180 +2

improvement in Germany and France. It is difficult assess the development in export markets outside Europe, because the severity and speed of any contagion from the Asian crisis and Russia's economic turmoil are difficult to foresee. Most probably, there will hardly be any possibilities for increased exports outside Europe, perhaps with the exception of the US market. The competition for market shares will also intensify in Europe. The possibility for increased exports from Finland is therefore primarily based on the comparatively favourable situation in European markets, and above all on the limited growth of competing supplies in the market for high-quality printing and writing papers.

According to the FAO's projections, the growth of production capacity for woodpulp in the period 1999–2000 will be slower than in the past few years, averaging 0.6 per cent, with the production capacity for paper and paperboard growing by 1.4 per cent on average. Accordingly, Finland's exports of paper will grow more than the total supply. Because the biggest investment projects in Finland have been completed and the capacity is nearly fully utilised, any increase in production will be a couple of percentage points, at the most.

The euro is projected to appreciate next year against the US dollar and the pound sterling, which is likely to boost the price-competitiveness of competitors outside the EMU, notably Sweden and Canada, in the paper market in 1999. The fact that Finland's real competitiveness has improved by a third during the 1990s will balance any differences in competitiveness. In spite of possible exchange rate advantages achieved by the competitors, Finland's exports of paper and paperboard are forecast to increase by about 2 per cent in 1999, because demand growth will be best for Finland's most important export products, printing and writing papers. Among the various grades, export growth is likely to be fastest for magazine paper, estimated at about 4 per cent. Exports of market pulp are estimated to continue to decline in 1999, because minor increases in production will be primarily directed to domestic paper production.

On the basis of the estimated demand-supply situation, and in view of the increased uncertainty about economic development, paper product prices are unlikely to rise next year compared with this year's average prices. In addition, the low rate of inflation in the EU region will keep pressures for higher prices at a moderate level. The expected appreciation of the euro e.g. in relation to the US dollar, the pound sterling and the Swedish krona is also going to reduce euro-based prices. About half of the Finnish pulp and paper industry's export income for next year is expected to be paid in other currencies than the euro. The euro/Finnish mark price of chemical pulp is predicted to stay on this year's average level, unless producers decide to cut back their production more than estimated in order

Table 8. *Forecast for Nominal Export Prices of Pulp and Paper (change on the previous year, %).*

	1997	1998F	1999F
Chemical Pulp	+6	+4	0
Paper	–8	+5	0
Paperboard	+2	+2	+2

*export prices and Finnish mark export unit values

to raise the price level. Should the downward pressure on world market prices grow, also capacity utilisation rates may decline compared with this year's, as forest products companies strive to counteract price declines by capacity shut-downs.

In the paperboard industry, domestic demand is more important than in the paper industry, because the domestic market absorbs about one fifth of the production. In addition, the paperboard market is characterised by smaller price and volume fluctuations than the paper market, and slower overall growth. In line with the growth of demand in the European packaging industry, paperboard exports are predicted to grow by 2 per cent in 1999. Export prices for paperboard are estimated to rise by a couple of per cent in 1999, though the economic problems in Russia and the possible devaluation of the Chinese currency are causing growing uncertainty (Russia and Asia accounted for nearly 20% of Finland's exports of paperboard in 1997).

2.3 Costs and Profitability of the Forest Industry

The Finnish forest industry's costs have continued to develop at a moderate pace. The industry's unit labour costs for this year have been nearly one third below the OECD countries' long-term average. The forest industry's production capacity is nearly fully utilised and its economic result for this year will be good, slightly better than last year's. However, the uncertainty concerning the future will be reflected in the industry's financial performance and in the companies' share prices. Provided that the worst-case scenarios for the Asian and Russian crises do not come true, profits will continue to develop satisfactorily during next year. The international restructuring of major forest industry companies is likely to continue, which will strengthen these companies' position in the globalising forest products market.

Wood Costs Increase Moderately

The degree of mechanisation in wood harvestingby the industry and the Forest and Park Service has risen during the past decade from about 50 per cent to nearly 90 per cent. According to statistics, this has caused unit costs to go down, even in nominal terms, by nearly one quarter. Nominal unit harvesting costs (FIM/m^3) declined last year by 3.5 per cent, while the degree of mechanisation in harvesting in industry- and state-owned forests rose from 86 per cent to 89 per cent. At the same time, long-distance transport costs of wood rose by slightly over 3 per cent, whereas forwarding costs remained unchanged.

Harvesting and transport account for slightly less than one third of the mill net price of wood, with stumpage thus accounting for two thirds. The forest industry's wood supply costs increased last year by about 4 per cent. Taking into account the projected stumpage prices, wood costs are predicted to rise by about 2 per cent this year. Next year, wood costs will stop rising as a result of declining stumpage prices.

The industry has increased its imports of wood significantly and they are projected to reach a record level of about 12 million cubic metres this year. Imports are expected to remain high next year as well. The possible appreciation of the euro

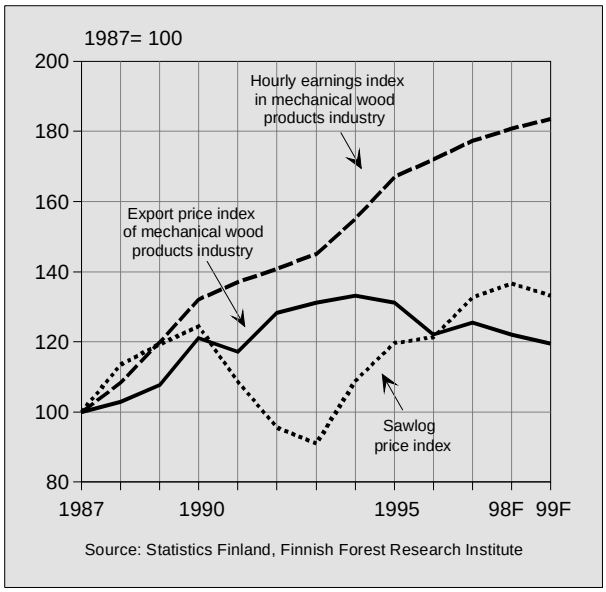


Figure 8. *Nominal Export Prices of Mechanical Wood Products and Input Prices in 1987–99F.*

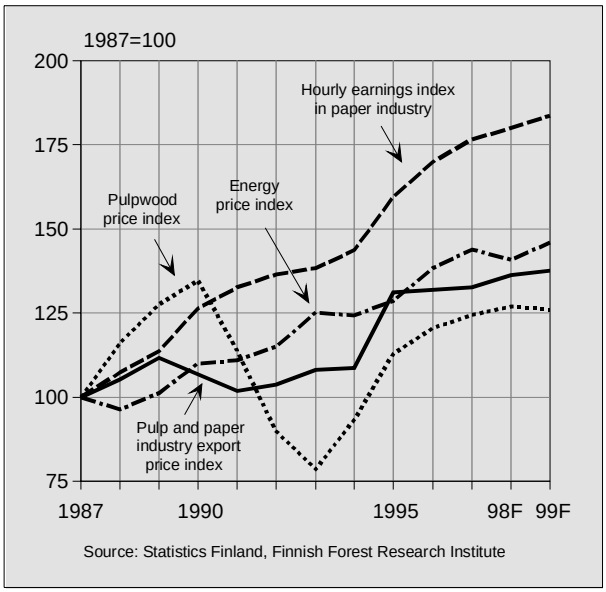


Figure 9. *Nominal Export Prices of Pulp and Paper Products and Input Prices in 1987–99F.*

against the US dollar would cause a reduction in the price of US dollar-based wood imported from Russia.

Minor Changes in Labour Costs

The moderate two-year collective wage agreement puts a ceiling on wage increases up to January 2000. As result, labour cost increases will be moderate. Annual incomes of paper industry workers had risen by slightly over 2 per cent by the end of the first half of 1998 and in the wood products industry by slightly below 2 per cent. The high rate of unemployment continues to retard any additional wage increases, and even the strike by salaried forestry employees would not seem to affect labour costs to any major degree. Still, the industry's favourable earnings development has somewhat contributed to wage drift.

Energy prices have shown a declining trend. Import prices of petrochemical products went down by as much as 17 per cent in the year to August 1998. The world market price is at an eight-year low. Electricity tax and the tax on fuels for heat generation based on their carbon content were raised at the turn of the year by 20 per cent. However, electricity generated with wood and wood-based fuels was later granted a compensatory subsidy intended to make up for the electricity tax, which helped to reduce the forest industry's tax burden. The additional tax on electricity and fuels was again raised in September 1998 to finance income tax cuts. As a result of the changes in taxation in 1998, the forest industry's energy taxes for 1999 are estimated to total about FIM 650 million, which is slightly over FIM 100 million more than in 1997.

This year's US dollar price of crude oil is projected to be lower than last year's average price. The possible appreciation of the euro against the US dollar would result in a further decrease in the prices of petrochemical products in Finland. All in all, no major changes are expected in the world market prices of raw materials during next year.

High Capacity Utilisation Rates

The consistently strong demand has resulted in high capacity utilisation rates in the forest industry. The capacity utilisation rate in the forest industry as a whole is estimated to reach 96 per cent for the current year. Based on production forecasts for next year, capacity utilisation would remain high at 95 per cent in 1999. Still, the increased uncertainty over the future market development may cause strong fluctuations in production figures, and thereby also in capacity utilisation rates.

In particular, the strong activity in the domestic construction sector contributes to high production levels of sawnwood, plywood and joinery products. Spurred by the record production, capacity utilisation in the sawmilling industry rose to 92 per cent in 1997. In line with the production forecast of about 11 million cubic metres, the capacity utilisation rate would rise this year to 94 per cent, going down slightly to 93 per cent in 1999 because of the slower growth of production.

Export prices of sawnwood have recently gone down slightly, also affecting the industry's earnings development. The domestic prospects for next year appear favourable owing to the continued brisk activity in the domestic construction market. In contrast, the uncertainty in the Asian market may also be reflected in the Finnish sawmilling industry – directly through declining exports to Japan and indirectly via the North American and EU market.

In the paper market, demand for magazine paper has continued to grow steadily both in coated and uncoated grades. As a result, capacity utilisation rates have slightly improved during the first half of the current year compared with 1997. Basically the same also applies to newsprint. The overcapacity in coated fine paper has decreased somewhat compared with the situation at the beginning of the year. Along with the growing demand in Europe, this has boosted the industry's overall capacity utilisation rate. Based on current production forecasts, the capacity utilisation rate for this year is estimated at 97 per cent and at 96 per cent for 1999.

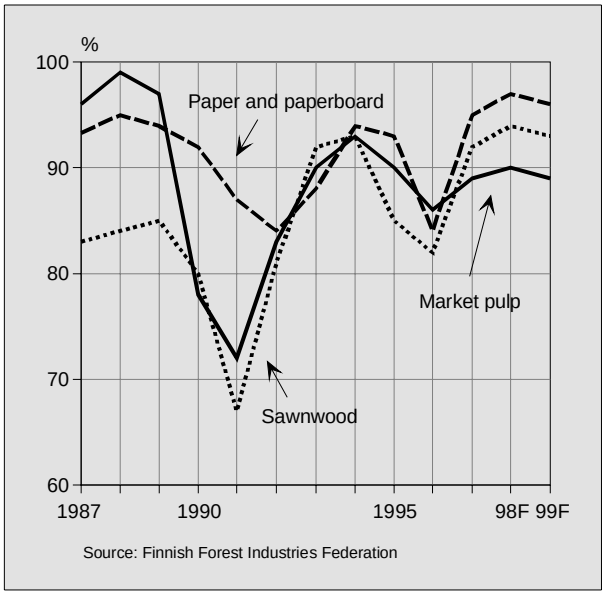


Figure 10. *Capacity Utilisation Rates in the Forest Industry in 1987–99F.*

In the packaging products group (cartonboard and liner) production figures have continued to develop at a stable pace and prospects are generally favourable. The production capacity has been in virtually full use this year and is expected to remain so next year. Based on current production forecasts, the capacity utilisation rate of the paper and paperboard industry as whole is estimated at up to 95 per cent. The high capacity level is maintained in spite of the fact that the weak market situation for chemical pulp and fine paper has forced the industry to resort to temporary production cutbacks. Also, next year the capacity utilisation rate is likely to reach a level of 95 per cent.

Uncertainty in the Market Overshadows Next Year's Profits

According to statistics, forest products companies' earnings after financial items doubled compared with last year, amounting to a total of about FIM 10

billion. Still, earnings fell short of the record achieved in 1995 by about FIM 2 billion. The combined turnover of the companies covered by the statistics amounted to nearly FIM 115 billion, of which the domestic production plants accounted for about FIM 90 billion. The return on investment was 11.5 per cent.

In spite of declining prices for chemical pulp and sawnwood and overcapacity for fine paper, the forest industry is expected to achieve better earnings than last year. Though the earnings development of the biggest forest products companies has deteriorated in the second quarter of the year compared with the first quarter, earnings for the first six months of this year were still nearly one and a half times the earnings in the same period last year.

The forest products companies' comparable earnings after financial items for this year are estimated at about FIM 13 billion, and the return on investment at about 13 per cent. The combined turnover of domestic business units is estimated at slightly below FIM 100 billion. The forest industry's solvency is estimated to improve further. All of the three biggest forest product companies have an equity ratio of about 40 per cent.

The unstable price development of forest products and the restructuring of the industry make it difficult to work out comparable numerical estimates of next year's earnings development. However, the industry's turnover is estimated to increase by 2 per cent, which results in a turnover of FIM 102 billion for the industry's domestic business units. In spite of the increased uncertainty in the market and the probable slight appreciation of the euro, the industry's profitability is expected to remain at this year's level.

In early June, Finnish Enso and Swedish Stora decided to join forces to create the world's biggest paper and paperboard group, Stora-Enso. The group's combined production capacity for paper and paperboard is about 13 million tons a year, and this year's turnover is estimated at FIM 65–70 million. Enso's turnover for last year was slightly over FIM 29 billion.

The forest industry's investments in Finland declined from slightly over FIM 10 billion in 1996 to about FIM 6 billion in 1997. Capital expenditures are likely to decline further this year to about FIM 5 billion, and no major growth is foreseen for 1999. On the other hand, most of the forest industry's production machinery is technically in top condition, so the need for investing in existing capacity is relatively small. Accordingly, the Finnish forest industry is already allocating over half of its investments to production plants outside Finland.

2.4 Labour Force in the Forest Industry

Employment in the forest industry will increase slightly in 1998, following a prolonged decline. However, the employment situation varies between sectors. Employment will increase most in the paper industry and in the closely related paper and paperboard products industries, and in the publishing and printings sector. In the mechanical wood products industry, the employment situation will remain unchanged and especially the joinery industry will continue to shed jobs. The improvement in the employment situation is a cyclical phenomenon, so because of the expected slowdown in growth of the forest industry's production and exports in 1999, the employment situation is predicted to return to 1997 levels.

Minor Changes in Employment

The forest industry's employment will improve in 1998 by nearly 3 per cent. If the furniture and publishing and printing industries are included, employment will improve by more than 4 per cent. In 1998, the forest industry will employ 75 000 persons. Including also the furniture and publishing and

printing sectors, the total amount adds to 124 000 persons. The growth of the forest industry's production in 1999 is forecast to slowdown to a level below the long-term trend of the industry's productivity growth. Therefore, demand for work in the forest industry and, accordingly, employment will contract slightly in 1999 compared with this year.

The mechanical wood products industry is estimated to employ a total of 33 000 persons in 1998, which is basically the same as in 1997. The pulp and paper industry is estimated to employ a total 42 000 persons in 1998, which is five per cent more than in 1997. Publishing and printing industry is estimated to employ a total of 35 000 persons, which is three per cent more than in 1997. The number persons employed in the furniture industry will increase to 14 000 during the current year, which is 17 per cent more than in 1997.

Employment in the forest industry as a whole is predicted to deteriorate slightly in 1999, returning roughly to the 1997 level as a result of slower average growth of production and exports. Employment will primarily decline in the mechanical wood products industry, because its production is estimated to decline or remain unchanged. In the pulp and paper industry, the favourable employment situation is likely to prevail in 1999. In sectors producing mainly to the domestic market, such as the furniture industry and publishing and printing, the employment situation is predicted to remain good in 1999 because of good consumer confidence and continued favourable demand prospects. In the publishing and printing industry, however, the development of exports to Russia brings an element of uncertainty.

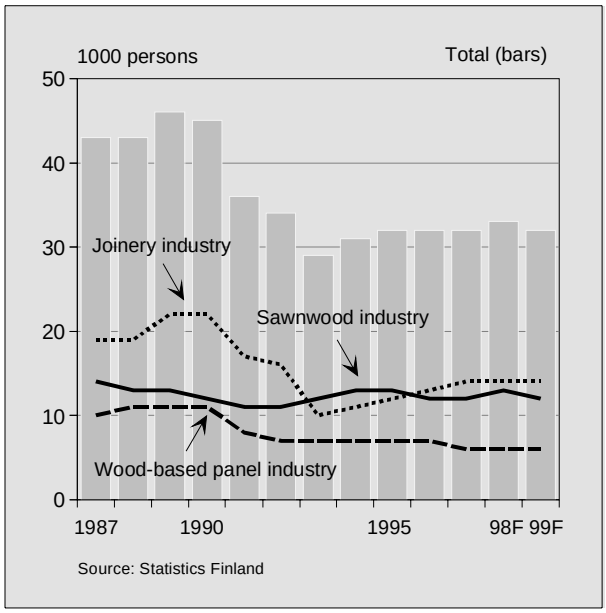


Figure 11. *Employment in the Mechanical Wood Products Industry in 1987–99F (1 000 persons).*

Wood Products Industry

The total number of jobs in the mechanical wood products industry in 1998 will on average remain at the previous year's level. In 1999 employment is expected to decline by about 3 per cent as a result of improved productivity. However, the employment situation will vary a lot between different sub-sectors. In the sawnwood industry employment is expected to increase by about 8 per cent, to a total of about 13 000 man-years. No major increases are foreseen in the inputs of salaried employees or entrepreneurs, so the increase will be entirely due to an increase in the total number of workers from about 8 000 to more than 9 000. In 1999, the growth of the sawnwood industry's production is predicted to slowdown to one per cent, causing employment to deteriorate in 1999 roughly by as much as it improved in the previous year, thereby returning to the situation that prevailed in 1997.

The rate of unemployment in the sawnwood industry was 11 per cent in 1997 and it is estimated to decrease to about 10 per cent in 1998. In 1999, the unemployment rate will rise again slightly as result of the predicted decline in employment.

Employment in the plywood and wood-based panel industry is estimated to improve by about 3 per cent in 1998. It remains unchanged in 1999 in

spite of capacity expansions, due to the industry's good productivity growth in relation to its existing capacity. On this basis, the number of employed would be about 6 000. In contrast, the joinery industry's employment would seem to go down by about 8 per cent in 1998, resulting in a total of about 14 000 employed. In 1999, the joinery industry's employment is predicted to remain at this year's level as a result of the favourable prospects for domestic demand.

The combined employment in the wood products and joinery industry is estimated to equal 47 000 man-years in 1998. Out of this total, primary processing, i.e. sawnwood, plywood and wood-based panels manufacture, will account for 19 000 man-years (40%), and further processing of wood into joinery products and furniture for 28 000 man-years.

Paper Industry

Employment in the paper industry is estimated to increase by about seven per cent in 1998. In pulp and paperboard production the number of employed will remain the same as in 1997. The pulp, paper and paperboard industries together will employ four per cent more persons in 1998 than in 1997. In addition, the paper and paperboard industry will employ 14 per cent more persons and publishing and printing industry five per cent more. In view of the market prospects in export markets and at home, employment in paper production and converting is unlikely to increase in 1999 in spite of the production growth of 2 per cent, and it will remain at the current year's level.

In 1998 woodpulp production is projected to employ 15 000 persons, paper production 16 000 persons and paperboard production 4 000 persons. The paper and paperboard products industry is forecasted to employ 7 000 persons and publishing and printing industry 35 000 persons. On this basis, the pulp and paper production and converting will employ a total of 77 000 persons, which is 62 per cent of the total number of persons employed in the forest industry, with the mechanical wood products industry employing the remaining 38 per cent.

According to preliminary estimates, the rate of unemployment in the paper industry in 1998 is likely to remain at the previous year's level of five per cent, which is quite low as such. However, at the same time, the general employment situation in the industry is improving, with the greatest increase in the number of wage earners This situation probably reflects the disparity between demand and supply in the labour market, with the recruitment of new employees directed at persons with different qualifications from those that are unemployed. In contrast, the unemployment rate in publishing and printing industry will go down from about 8 per cent in 1997 to 6 per cent in 1998, following an overall improvement in employment in this sector. No major changes are expected in the unemployment rates of the paper industry or the paper products sector during 1999, because the general employment situation in these sectors is predicted to remain on average at the current year's level.

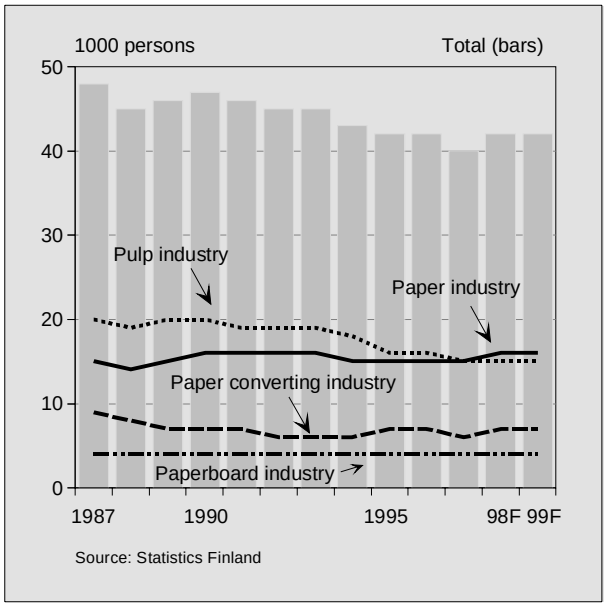


Figure 12. *Employment in the Pulp and Paper Industry in 1987–99F (1 000 persons).*

Megatrends and Prospects for the Finnish Forest Sector

The future of the forest sector is dependent on a number of external forces, megatrends, which can be divided into general and sectoral trends. *General trends* have so far been mainly related to changes in population and income levels, which have had a comparatively direct effect on forest products demand. In addition, technological development has been an important driving force also in the forest sector.

The relative growth of the world's *population* has started to slowdown in recent years. However, population growth will continue at least until the middle of the next century. Still, the time has come to get gradually used to the thought that declining population growth will also mean declining growth of demand for forest products.

Besides the changes in population growth, it has become increasingly important also to take into account the *population and family structure*. The proportion of over 60-year-olds is growing notably in a large number of countries, particularly in Western Europe. Moreover, the number of single-person households in proportion to the total population is growing. For example, the demand for a number of goods, such as magazines, advertisements and many packaging products, is equally dependent on the number of households as on the number of people. Thus, the possible decline in the growth of demand for forest products in the next few decades will be slower than the mere decline in population growth would give reason to believe.

The *income levels* of the world's population will continue to rise. An important trend related to income development is the growth of the middle class, which plays a dominant role in consumption.

The *technology* related to the forest industry's processes and products has been largely imported to Finland. However, the Finns have been very good at applying technology developed elsewhere. This particular skill is most unlikely to disappear. In future also domestic innovations will become more likely, because inputs into research and development are growing and a national system for promoting innovations is under development.

One of the megatrends influencing the future of the forest sector is the requirement for *resource efficiency*. Generally referred to as Factor Four, this means that twice the output is achieved with half the resources. Thus, fundamentally this constitutes a demand for economic efficiency. The strive for resource efficiency also leads to a trend from raw material-based production to knowledge- and skill-based production. In practice, this means an increase in the value added processing.

Environmental values have long been an important megatrend affecting the development of the forest sector. They will be equally important in the future. Their effects will be seen both in the use of forest resources and in the production processes.

In the future, globalisation and liberalisation of international trade, and partly related to these, *tightening competition*, are megatrends which will become ever-more important. The tightening competition will lead to more efficient production and lower prices for standard products.

When examining *trends in individual product segments* in the forest sector, the forest industry's production is often divided into two categories, paper and paperboard on the one hand, and wood products on the other. However, these categories are not comprehensive, and a division originating from raw materials and industrial processes makes it difficult to distinguish any megatrends, which are largely determined by the final products markets. Therefore, in order to identify megatrends, the forest products industry must be viewed in a market-oriented perspective, which means it has to be divided into industrial sectors based on 1) printed media, 2) packaging, and 3) construction and furnishing. In addition, the energy production sector can be regarded as an important determinant of the forest sector megatrends.

So far, electronic media have not been able to replace *printed media*. Though traditional books and magazines, or documents printed on paper, will not disappear, the development of information technology and new habits related to reading and information processing may result in declining growth of demand for traditional printing and writing paper, even within the next few decades. A generation which has been surrounded by new technology ever since childhood does not necessarily continue parents' habits, especially as rapidly developing information technology is making it continuously easier to implement functions that demand very little or no paper at all.

Though the megatrends seem to pose a threat to the demand for current printing and writing papers, future development also offers new opportunities for

flexible and innovative producers. Digital printing technology, more widespread use of electronic filing, and possibly even recyclable books or magazines printed with erasable ink, require paper-based products that differ clearly from those available today, most of which do not even exist today.

In Finland, the production of *wood-based packaging* material is clearly smaller than the production of paper. However, at a global scale, the forest products industry's production of packaging materials, measured in tonnage terms, is as important as paper production. The demand for packaging materials is largely determined by the food and drink industry. This means that relevant megatrends must be sought within this industry. At present, the situation appears favourable from the forest sector's viewpoint. This favourable outlook is supported by the fact that increased electronic trading will lead to increased mail order sales and growth of demand for packaging materials.

The *wood products industry*, including production of converted timber products, has traditionally been growing slowly. From a global viewpoint, customers' preferences for certain materials are tied to local cultures. For example, the geographical differences between timber and brick housing are quite clear. These cultural differences are unlikely to change quickly. In the Finnish suppliers' traditional markets in Western Europe, new building activity is limited, whereas renovation still offers opportunities.

Globally, more wood is used for *energy* production than for manufacture of industrial products. Most of this fuelwood consumption is concentrated in developing countries. In Finland, the share of wood-based energy is greater than in other industrialised countries, primarily because energy is being recovered from industrial processes (mainly chemical-pulp process). Consequently, it is difficult to achieve any major increase in the use of wood for energy, but the bioenergy available in the forests, which is not very efficiently used at present, offers huge potential.

A Vision of the Finnish Forest Sector's Prospects

The megatrends and developments described in the foregoing are rather general, but they can be used to draw at least subjective conclusions regarding the Finnish forest sector's future development.

In spite of the abundant physical cutting potential, *industrial use of wood raw material* based on current quality requirements will only grow very slowly. On the other hand, the use of logging waste for energy production is growing rapidly. Wood from first thinnings is also likely to find profitable industrial use in future. The industry will continue to use imported wood at least in current quantities, and it may also begin to import high-quality hardwood pulp.

Due to the declining growth of demand for traditional forest products and the relatively high utilization level of domestic roundwood resources, the *production of paper* in Finland will grow at a slower pace than in the past. However, because of the increasing value added processing and production of special paper grades, the value of the production will continue to grow virtually unabated. The production of high-quality packaging board requiring a strong know-how input may also increase, especially if the industry will be able to develop new unique products.

The *output of sawn timber* will remain at most at current levels. In contrast, the *wood products industry's converting production* will finally get on the growth track, and will soon employ more people than the paper industry.

The production of the forest industry in Finland will be controlled by two or three major forest products companies. They will continue to grow through international mergers, and consequently, will belong to the world's 15 biggest companies. Before long, they will all be mainly in foreign ownership. The companies will, however, continue operations also in Finland, where advanced know-how and a developed infrastructure are available.

The *forest cluster* concept will be more widely adopted, and the know-how related to the cluster will result in new, high-value-added production. If investors come to regard the forest cluster as a sufficiently attractive investment opportunity, and new funds will start fuelling its development, the future of this sector may turn out to be totally different from what can be foreseen today. For example, giant chemical companies with their huge financial resources, coupled with biotechnology and genetic engineering, constitute a combination with may revolutionise future prospects. This does not mean only changing current processes, but also introducing totally new wood-based products.

Kettunen, J. 1998. Voiko metsä vielä vaurastuttaa Suomea? Suomen metsäklusteri vuoteen 2020. (Will the forest still bring added prosperity to Finland? The Finnish forest cluster until 2020. In the book by Reunala, A., Tikkanen, I and Åsvik, E. (editors): Vihreä valtakunta -Suomen metsäklusteri. (The Green Kingdom – Finland's Forest Cluster) Otava.

The Forest Industry's Cost Structure

The cost development and income distribution in the forest industry attract the attention of all its stake holders, from forest to stock markets. How much will there be left to the forest owner, paper industry worker, sawmill owner, taxman and investor? Individual sources of information often give different and disputable views.

The enclosed graphs, based on official statistics, are intended to give an overall view of how the forest industry's costs were distributed in 1996. The cost structure has been computed from the data published by Statistics Finland (Financial Statement Statistics of Industry and Construction, Statistics on the Structure of Industry and Construction), and the data published by Finnish Forest Research Institute (statistics related to wood use, costs and prices). The cost structure analysis presented is a preliminary comprehensive attempt to outline the forest industry's cost structure on the basis of official statistics. There are still many shortcomings in the cost distribution and the analysis related to it. For this reason, it should be seen as the first step towards a more and more accurate cost calculation.

The pulp and paper industry includes, in addition to pulp, paper and paperboard manufacture, also the manufacture of converted pulp and paper products, such as corrugated board, household papers and other products. However, the graphics industry is not included. The pulp and paper industry is characterised by intensive use of inputs such as capital and energy, chemicals and fillers.

The mechanical wood products industry includes, in addition to the sawmilling and wood-based panel industries, the manufacture of joinery products, wooden boxes and other similar wood products. This sector of industry is clearly more labour-intensive than the pulp and paper industry. Because of the prominent role of the sawmilling industry, wood costs account for a bigger share of the costs than in the pulp and paper industry.

In view of the industry's favourable financial performance in the past few years, 1996 was an exception, which is reflected in the relatively small share of capital costs. In 1996, the forest industry's business units situated in Finland had a combined turnover of FIM 89 billion, based on data derived from the Statistics on the Structure of Industry and Construction. The net earnings of the entire industry amounted to 2.5 per cent of turnover. The return on investment declined to 8.6 per cent, compared with 15.9 per cent year before, and 11.5 per cent in 1997. The mechanical wood products industry recorded a slight loss in 1996. The forest industry's effort to keep its indebtedness under control is reflected in the fact that net financial expenses remained under 3 per cent of turnover.

Wood Saving Trend

In accordance with the graphs, wood costs account for slightly over a third of total costs in the mechanical wood products industry and only slightly over one tenth in the pulp and paper industry. The low share of wood costs reflects the increased degree of value added processing. In the production of standard sawntimber, wood costs account for about two thirds of total costs and in the production of market pulp for nearly one half. However, the wood costs do not include the overhead costs in wood procurement, which would raise wood costs by less than 10 per cent, or below two percentage points. Over the years, the share of wood costs has been reduced, e.g. by moving debarking from the forest to the mill and, as reflected in the statistics, by the reduction in logging and transport unit costs.

The declining role of domestic wood in the industry's wood supply is reflected in the rapid increase in wood imports and by the fact that chemicals and fillers accounted for a cost of more than FIM 5 billion in the pulp and paper industry in 1995, whereas the stumpage earnings amounted to a total of only FIM 3 billion in the same year. Depending on the paper grade, the share of fillers may even account for over one third of the raw material costs.

In the mechanical wood products industry, the share of other materials and supplies is about twice, and in the pulp and paper industry nearly three times the wood cost. In the pulp and paper industry, imported wood already accounts for nearly a fifth of total wood costs and in the forest industry as a whole for about one tenth of total wood costs. According to

the most recent input-output tables dating back to 1993, all imported production inputs combined accounted for over one tenth of total costs in the mechanical wood products industry and one fifth in the pulp and paper industry.

Energy Costs Relative Small

The pulp and paper production is a particularly energy-intensive industry. However, energy costs account for only slightly over 10 per cent of total costs in this industry. The industry produces a large part of its energy from wood by burning pulp mill waste liquors, which does not show up in the energy costs. Against this background, part of the industry's wood cost could be allocated to energy costs, which would reduce even further the share of wood costs directly tied to end products.

Less Labour in the Mill, More in the Cluster

In the mechanical wood products industry, labour costs amount to slightly less than one fifth and in the pulp and paper industry slightly over one tenth of total costs. In the pulp and paper industry, labour productivity has been increasing rapidly for a long time. In the mechanical wood products industry, especially the sawmilling industry, labour productivity did not begin to increase clearly until the 1990s, when new technology was finally introduced at a major scale.

The decrease in labour costs has also been partly due to structural and cultural changes in major forest products companies. Previously, inside the mill and throughout the mill community, maintenance, service and repair functions and other supporting services were strictly in the hands of the forest products companies. A large part of the social services – housing, fire-fighting, and even schools and shops – were taken care of by the forest products companies.

Today, these functions are mostly handled outside the company, with the forest industry concentrating on its core businesses. Around these businesses, a network of companies and organisations- a forest cluster – has been created for providing services and production inputs to the industry. This trend is reflected in the low proportion of labour costs but also in the high proportion of other costs.

On the one hand, the high proportion of other costs is due to the fact that companies' business units do not always report their costs very accurately for official statistics. As a result, a part of the costs are booked under other expenses, though they should be booked under a totally different cost category. On the other hand, other costs include items which have become increasingly important for the company's development. Examples of such new and increasingly important cost items include research and product development, computer services, training and charges related to patents, licenses and royalties.

Better-for-Cheaper

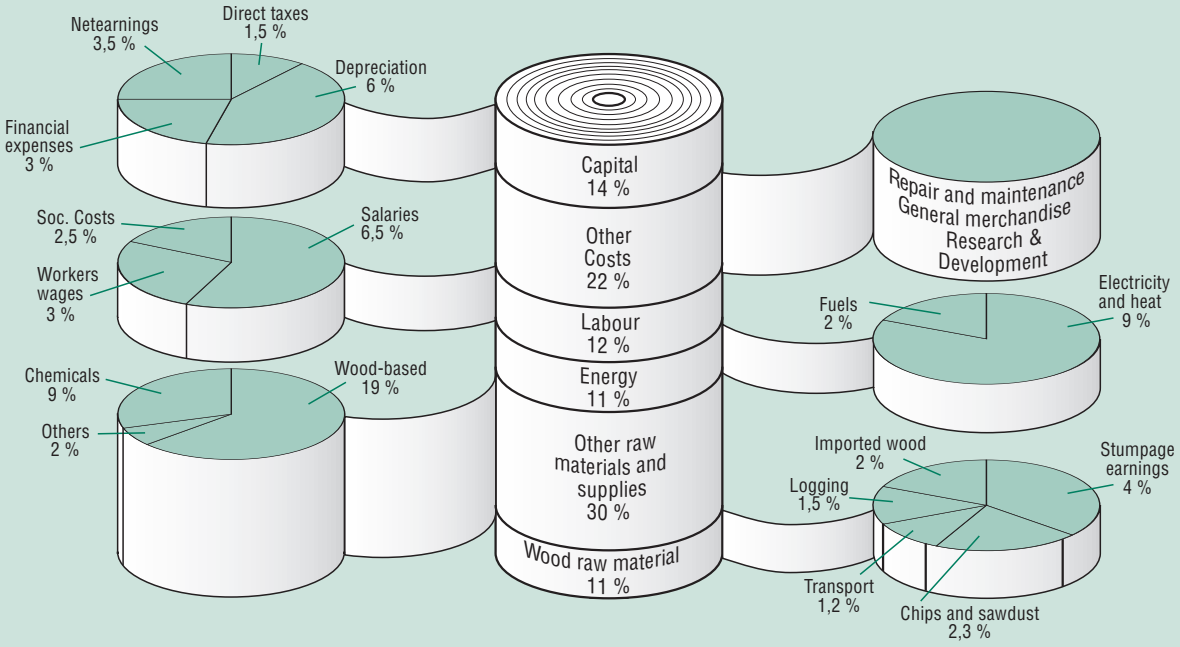
The analysis gives an indication of the Finnish forest industry's clear strategy towards an ever higher degree of value added processing and efficient use of resources. The industry's development in the immediate past was dominated by changes in product demand and the development of the relative prices of production inputs. For example, the availability of low-cost energy resulted in rapid growth of mechanical pulping process (printing papers), which is a particularly energy-intensive production process.

Apart from influencing the prices of tangible production inputs, the diversification of the market may also have a growing impact on the industry's future development; on the one hand, the market demands inexpensive, cost-effectively manufactured goods; on the other hand, consumers' changing environmental values are ever more strongly directing the future development. However, both these trends are controlled by a common factor, which is the strive for resource-efficient, environmentally friendly production technology and know-how: better-for-cheaper, as the saying goes.

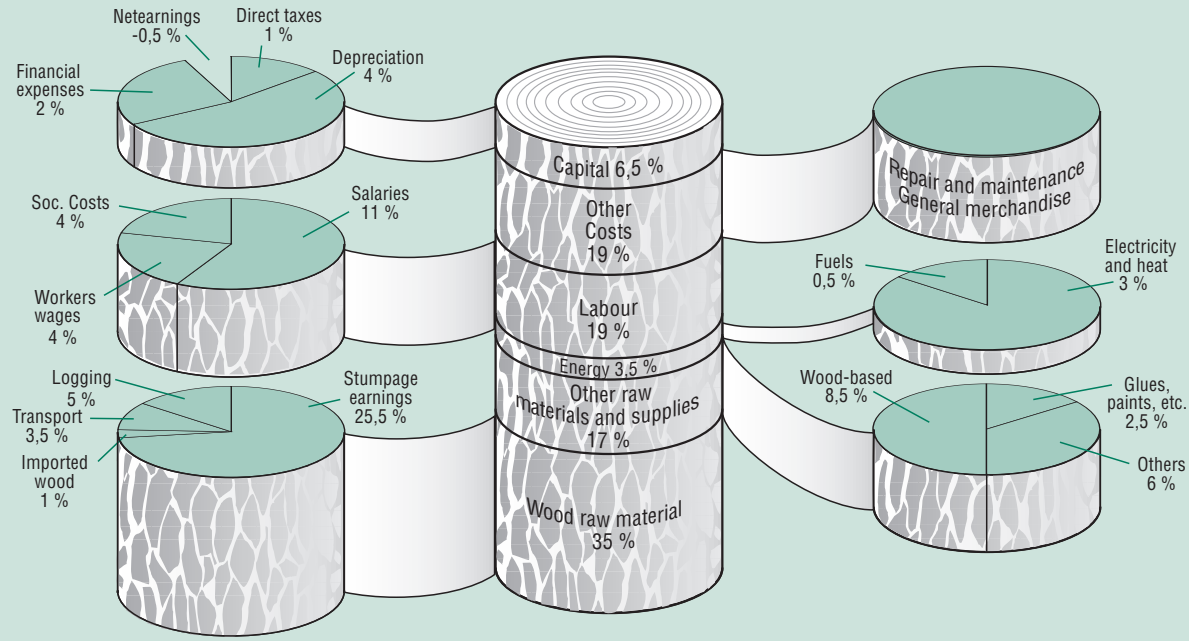
In the cost structure, this development will be reflected so that the direct cost shares of wood and labour will continue to go down. Still, wood will be at the core of the forest sector. The proportion of labour of the business units' direct costs will continue to decrease, but the cost of labour will be divided between other cost categories.

The share of other costs will increase, and accurate specification of these costs will become ever more important for assessing the sector's future development. A high enough net income and expectations regarding its favourable development secure investors' interest in the forest sector and thereby the realisation of investments to safeguard its future growth.

Pulp and Paper Industry Costs 1996, FIM 72 billion



Wood Products Industry Costs 1996, FIM 21 billion



Estimate: METLA

3 Forestry

3.1 Utilisation of Wood Resources

In the period 1995–1997, the industry's use of wood and removals reached record levels. The industry used an average of 60 million cubic metres of wood a year, with domestic wood accounting for 51 million cubic metres. In 1998 and 1999, the industrial use of wood is predicted to be much larger. Finland's abundant forest resources will meet the industry's demand for wood, with the exception of birch pulpwood. The use of birch exceeds estimated maximum sustainable removals by slightly over 30 per cent. On the same basis, spruce resources are being fully utilised.

Finland has 23 million hectares of forest with a growing stock of slightly over 1 900 million cubic metres, with pine accounting for 46, spruce for 36 and various broad-leaved species for 18 per cent. At the beginning of the 1990s, the annual increment of the growing stock was about 75 million cubic metres. An area of 2.5 million hectares has been left wholly or partly outside commercial wood production, primarily in northern Finland. Forestry is possible on an area of about 20 million hectares, with a growing stock of about 1 800 and an annual increment of 72 million cubic metres.

Private forest owners own 66 per cent of the commercial forest land, the state 20, companies 9 and other owner categories 5 percent. The state-owned forest resources are mostly in northern Finland, which is reflected in a low average annual increment compared with the other owner categories' forests. Privately owned forests account for 75 per cent of the increment, state-owned forests for 10 per cent, company forests for 10 per cent and other owners' forests for 5 per cent. Privately owned forests play a key role in the wood supply, because 70–80% of the industry's domestic wood supply comes from these forests; if imports are included, private forests account for 60–70% of the supply. In 1995–97, removals of industrial wood averaged 53 million cubic metres per year. In 1998

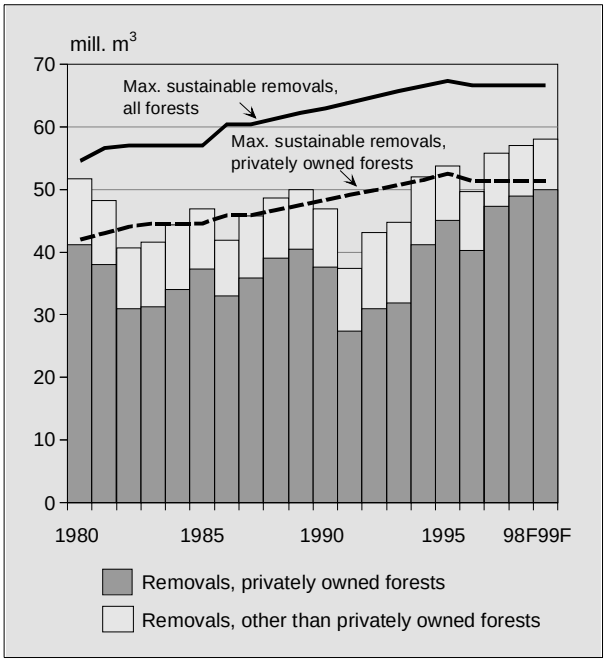


Figure 13. *Removals of Industrial Wood and Maximum Sustainable Removals.*

Table 9. *Industrial Use of Wood and Maximum Sustainable Removals.*

Tree species	Use of wood 1995–97	
	mill. m³/a	% of max. sustainable removals
Pine	22.9	72
Spruce	24.2	100
Birch	11.7	133
Total	58.8	91

Imported wood is included in use of wood.

and 1999, removals will increase by 4–5 million cubic metres.

The calculations of the maximum potential removals are based on data concerning the growing stock, its structure and annual increment, and the assumption that silvicultural activities will continue at present levels. The calculation shows the maximum allowable removals that are possible without jeopardising future potential removals. The calculation was computed by the Finnish Forest Research Institute and it is based on an optimisation framework, in which the price relationships between different timber assortments influence the structure of the estimated potential removals. The potential removals have increased steadily, because the growing stock has continued to expand, with a relatively intensive input of silviculture until recent years. According to the most recent calculations, the potential removals have stopped growing, but at current wood consumption levels they will still continue rising.

It should be noted that temporary overlogging in excess of the potential cut will not reduce future potential removals. Finland's forests offers abundant scope for silviculturally justifiable adjustments of this kind. This applies to spruce stands in particular. In southern Finland's spruce-dominated stands, the average growing stock is 165 m^3/ha, compared with only 96 m^3/ha in pine-dominated stands. Accordingly, spruce removals have been particularly large in recent years, so the growing stock in spruce forests may have gone down slightly.

Over the past twenty years, Finland's forest resources would have allowed clearly greater removals than those put into effect (Figure 13), but in recent years, cuttings have increased faster than the theoretical estimates of the maximum allowable removals. Estimated on this basis, the potential removals exceed the actual cut especially in southern Finland.

Table 9 shows a comparison of the industrial use of wood in relation to the maximum potential removals. In addition to the volumes given in the table, the industry is using a certain amount of wood that cannot be specified by species. The importance of non-industrial wood usage is minimal. The comparison is not presented by timber assortment, because at user level the limit between sawlogs and pulpwood is somewhat diffuse. Moreover, in sawlog harvesting also a large volume of pulpwood is accumulated, while the pulp industry is using large volumes of sawmill chips etc.

The use of birch wood exceeds domestic maximum potential removals by about 30 per cent, and about half of the birch pulpwood used by the industry is imported. Perhaps somewhat surprising, also spruce resources are in full use according to this comparison (imports of spruce are minimal). However, potential removals from spruce stands justifiable on silvicultural grounds are much larger than indicated by the level used in this comparison, so there is scope for adjustment, especially in the supply of spruce sawlogs. On the basis of the calculated potential removals, spruce cuttings can be increased sustainably already about ten years from now. In view of the growing stock, the potential for increased removals would appear to be greatest for pine timber.

3.2 Roundwood Markets

In 1998, the record-high production levels of the Finnish forest industries will raise the commercial roundwood production to 55 million cubic metres in Finland. In 1999, commercial roundwood production will only increase marginally as the growth in the forest industry production slows down and wood imports continue to increase. Demand for sawlogs will only increase slightly during 1999. The growth of the pulp and paper industry will slowdown, which is also reflected in pulpwood demand. Stumpage prices of pine and spruce sawlogs will rise by 3 and 2 per cent in 1998, and will decline by 2 and 4 per cent in 1999, respectively. Pine and spruce pulpwood prices in 1998 have been on average 2 per cent higher than in 1997. As a result of the increased wood imports, the reduced profits of the forest industry and the expanding domestic wood supply, sawlog stumpage prices will decline slightly in 1999 compared with 1998. In 1999, the price of pine pulpwood will experience a notable decline, whereas the price of spruce pulpwood will remain unchanged.

Roundwood Supply and Demand Remain Strong in 1998

The seasonal upswing on the roundwood markets in early autumn of 1998 was even sharper than in 1997. The roundwood markets picked up rapidly as the wood supply by non-industrial private forest owners increased to meet the high demand for wood. However, in 1998 the traded wood volumes will be about 5 per cent smaller than in 1997. Demand for wood increased in 1998 as a result of growing domestic and export demand for forest products. The wood supply was boosted once the forest owners and UPM-Kymmene – the largest forest company in Finland – reached a common understanding on wood prices.

The boom on the roundwood markets is likely to continue in the final months of 1998, but the growth will slowdown in 1999 as a result of growing pressures on forest product prices in Europe. The crises in Japan and the emerging economies will also have some negative impact on the growth in the EU economies. The slowdown of economic growth in combination with weakening consumer confidence will result in increased uncertainty in the building sector and main export markets for paper products. This uncertainty may also be reflected as a declining demand in the wood market.

Forest industries will continue to run down their timber inventories and this will further weaken the demand for roundwood from non-industrial private forests. In addition, the Russian turmoil, the strong depreciation of the ruble and rapidly growing demand for hard-currency income in Russia, will result in increased wood imports to Finland. This will substitute some of the domestic wood.

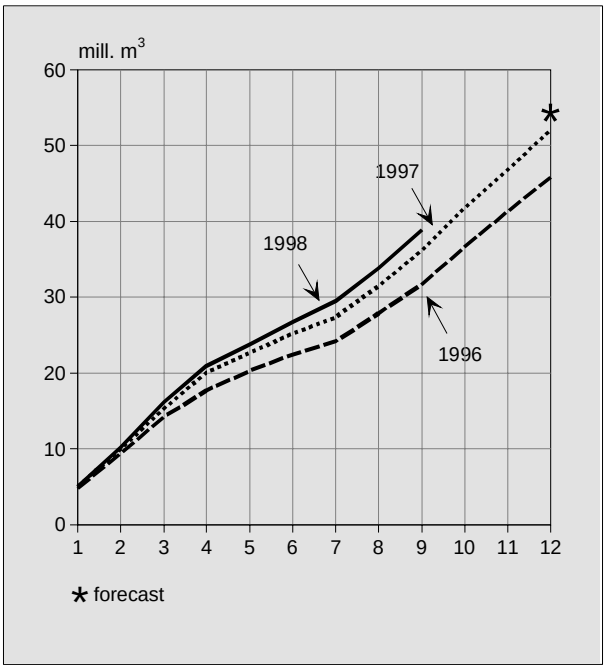


***Figure 14**. Commercial Roundwood Production by Month in 1996, 1997 and 1998.*

Table 10. *Commercial Roundwood Production and Imported Roundwood.*

Wood assortment/ owner category	1997 mill.m^3	1998F mill. m^3	Change %	1999F mill. m^3	Change %
Sawlogs	27.2	27.7	+2	27.9	+0.5
Pulpwood	25.8	27.3	+6	27.6	+1
Privately owned forests	47.1	49	+4	49.5	+1
Company forests	1.8	2	+10	2	0
Forest owned by Forest and Park Service	4.1	4	–2	4	0
Commercial roundwood production, total	53	55	+4	55.5	+1
Roundwood imports	8.5	12	+40	13	+8
Commercial roundwood production and imports, total	61.5	67	+9	68.5	+2

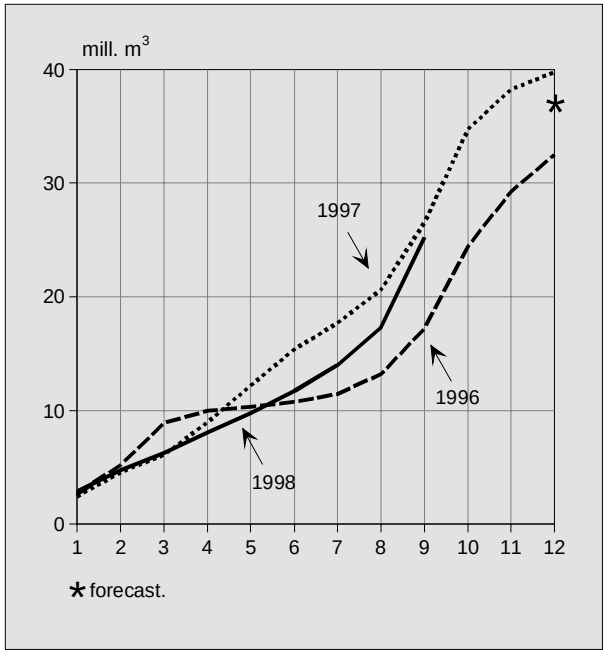


Figure 15. *Stumpage and Delivery Contracts from Privately Owned Forests by Month in 1996, 1997 and 1998.*

In 1999, wood supply will be influenced by – besides the general economic factors – also by the future outcome of wood price negotiations. The future of the current negotiating system will largely depend on the Finnish competition authorities' view of the system's impacts on free competition. Should price negotiations not materialise, or should they not lead to an agreement, private forest owners can be expected to be less willing to sell wood in 1999.

The long-lasted decline in the share of delivery sales of wood came to an end in 1998; this share is now rising. The decrease in agricultural production and the financial losses due to the poor harvest year of 1998 are also putting pressure on farmers to sell more wood.

Rising Stumpage Price Trend to Turn in 1999

In 1998, stumpage prices for sawlogs are expected to rise by about 2 per cent and those for pulpwood by

Stumpage Price Index and Forest Product Export Price Index

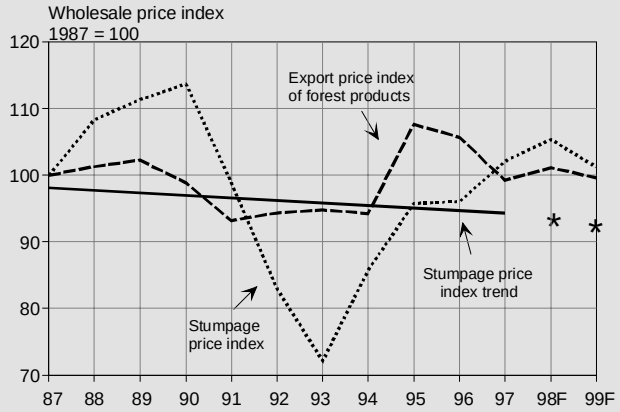
The real stumpage price index continued to rise during 1997, in spite of the decline in the forest product export price index. This year, both indices are expected to rise, whereas they will go down again in 1999.

In March 1997, an agreement was signed for the first time between forest industry and private forest owners, according to which the parties agreed on a common understanding concerning the future development of stumpage prices. The real stumpage price index for 1997 was on average 6 per cent higher than in the previous year, whereas the export price index was 6 per cent below the previous year's level. During the first half of 1998, there was no agreement and the stumpage prices floated freely. In June, the first and so far the only joint agreement on the future development of stumpage prices was reached. The agreement is between one of the three major forest industry companies in Finland, UPM-Kymmene, and the representatives of the private forest owners.

The real stumpage price index (Divisia-Törnqvist index) is predicted to rise during the current year to a nearly 3 per cent higher level than last year. This forecast is based on the assumption, that nominal stumpage prices remain at the September level until the end of the year. The continuous rise in the stumpage price index since 1994 will be broken next year. The index will return to last year's level as real stumpage prices go down by 1.6–5.5 %, depending on the timber assortment. The long-term trend, shown in the Figure below, has been computed using data from the period 1978-97. The major reason behind the declining trend is the exceptional developments in the Finnish economy in the early 1990s (e.g., the worst economic recession in this century).

The forest product export price index declined by about 6 per cent last year, compared with the previous year. However, the development varied greatly between different product categories. The wood products price index increased by about 4 per cent, while the chemical pulp, paper and paper products index declined by about 7 per cent.

In the first quarter of 1998, the forest product export price index began to rise, and will this year reach a level that is on average 2.6 per cent higher than last year. In 1999, the export price index is estimated to go down by about 1.5 per cent, especially due to declining real prices for sawtimber. The real price index of chemical pulp, paper and paper products will go down by about one per cent, and that of wood products by 3 per cent compared with this year's values.



Source: Finnish Forest Research Institute, Statistics Finland, National Board of Customs

Figure. *Real Stumpage Price Index and Forest Product Export Price Index, 1987–99F.*

Table 11. *Stumpage Prices for Non-Industrial Private Forests (FIM 1.0 = USD 0.20).*

Wood assortment	1997 FIM/m^3	1998F FIM/m^3	1998F/1997 change, %	1999E/1998F change, %
Pine sawlogs	264.7	273	+3	–2
Spruce sawlogs	217.6	222	+2	–4
Birch sawlogs	261.4	271	+2	–1
Pine pulpwood	94.5	96	+2	–2
Spruce pulpwood	128.5	131.5	+2	0
Birch pulpwood	92.8	94	+1	–1

about 5 per cent compared with the level in the autumn of 1997. Given this price development, the sawlog prices will rise by 2–3 per cent, and the price level of pulpwood by about 2 per cent in 1998. If the less-than-satisfactory profitability of the sawmilling industry does not improve, and if the declining price trend for chemical pulp will spread to paper and paperboard, this will further put downward pressure on stumpage and delivery prices in the roundwood market. This is supported by the fact that wood imports are likely to continue growing next year. Against this background, the pressure for lowering stumpage prices will increase in spite of the record overall earnings predicted for the forest industry in 1998.

In 1999, stumpage prices for pine sawlog will drop by 2 per cent, for spruce sawlog by 4 per cent and for birch sawlogs by 1 per cent as compared with the 1998 prices. Stumpage prices for spruce pulpwood will not change in 1999, whereas pine pulpwood prices will go down by 2 per cent and those of birch pulpwood by 1 per cent.

Wood Production and Wood Imports at the Record Levels

In 1998, commercial roundwood production, which reflect the general activity in forestry, will increase by 2 million cubic metres rising to 55 million cubic metres. As a result, the value added to the national economy from forestry will increase by about 4 per cent, which is slightly below the overall GDP growth in Finland. Driven primarily by the buoyant forest products demand in Western European markets, commercial roundwood production in 1999 will still increase by 0.5 million cubic metres from the 1998 level.

Roundwood production from the forest industry's own forests will remain at 2 million cubic metres in 1998, which is clearly less than the maximum annual sustainable removal level from these forests. Combined with the limited wood production from company forests in previous years, this has resulted in a considerable increase in the growing timber stock in the company forests.

Wood imports will increase strongly in 1998, reaching a level of about 12 million cubic metres, which is more than 3 million cubic metres above the 1997 level, and more than in any single year before. In 1999, wood imports may reach a level of 13 million cubic metres. The depreciation of the Russian ruble supports this trend. Most of the imported wood comes from Russia, and part of the benefits due to the depreciation of the ruble can be expected to go to Finnish importers, while another part will go to the Russian wood suppliers. In combination with the growing need for hard currency in Russia, this promotes the willingness of Russian suppliers to export their wood. Furthermore, the

weakening of US dollar against the Finnish mark and other euro-currencies, will also promote wood imports from Russia, as this wood is normally traded in dollars.

On the other hand, exports of raw wood will drop from the 1998 level of about one million cubic metres, especially if the currency of the main importer, Sweden, will depreciate against the Finnish mark and the euro in 1999.

3.3 Investments and Profitability of the Non-Industrial Private Forestry

Total investments in timber production in non-industrial private forests will increase this year by about FIM 50 million compared with 1997. This means that investments in silviculture and forest improvements will rise to more than FIM 950 million, which is slightly over FIM 200 million less than the peak in the early 1990s. Because of extensive compulsory regeneration, investments are expected to remain at this year's level in 1999. Public-sector inputs into private forestry will remain unchanged, with the main emphasis on the tending and improvement of young stands. The conditions for profitable timber production in privately owned forests improved somewhat last year, and are expected to remain good this year and next, in spite of rising costs in regeneration and silviculture. The unit costs of basic improvements and road construction will continue to go down in spite of ever-tightening environmental obligations.

Forest Owners' Own Input Will Increase

Last year, private forest owners' investments and the value of their own work in timber production increased to FIM 615 million, and is this year expected to reach FIM 650 million. In the past, this level has only been exceeded once, in 1991. This means that private forest owners' own input will rise to 70 per cent of total investments in timber production. In 1999, the investments in private forestry are likely to remain at this year's level.

In 1998 and 1999, the capital expenditure on regeneration of private forests is estimated at nearly FIM 500 million, of which slightly less than 20 per cent will be in the form of state grants. On the other hand, because of strongly increased clear fellings in recent years, forest owners have had to raise their own financial input. However, recent studies have shown that there is a considerable back-log of regeneration work in private forests.

Government Subsidies for Tending and Improvement of Young Stands

In the budget proposal for 1999, funds have been reserved for grants intended to safeguard timber production in private forests for a total amount of slight-

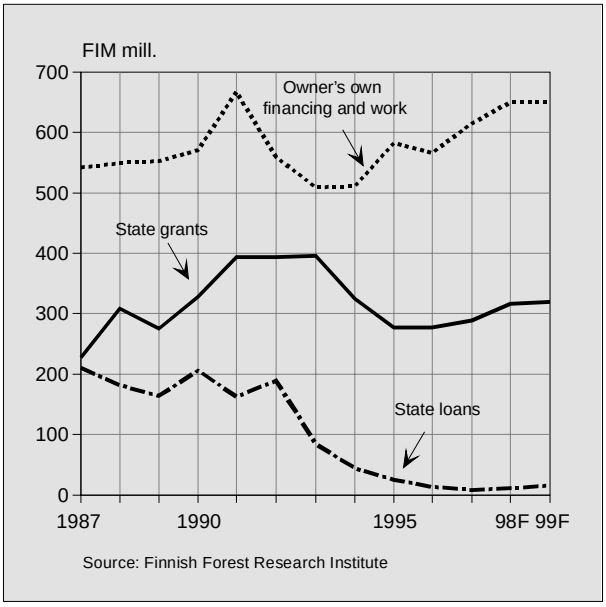


Figure 16. *Financing of Silvicultural and Forest Improvement Works in Non-Industrial Private Forests in 1987–99F (expressed in 1997 prices, FIM 1.0 = USD 0.20).*

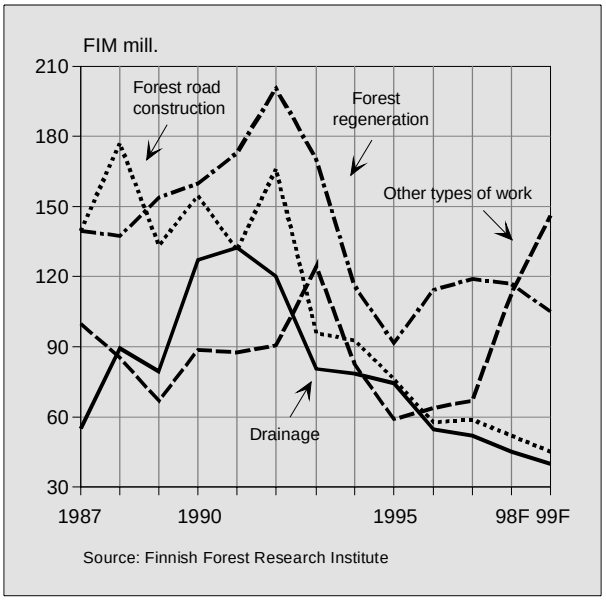


Figure 17. *State Financing of Silvicultural and Forest Improvement Works in Non-Industrial Private Forests in 1987–99F (expressed in 1997 prices).*

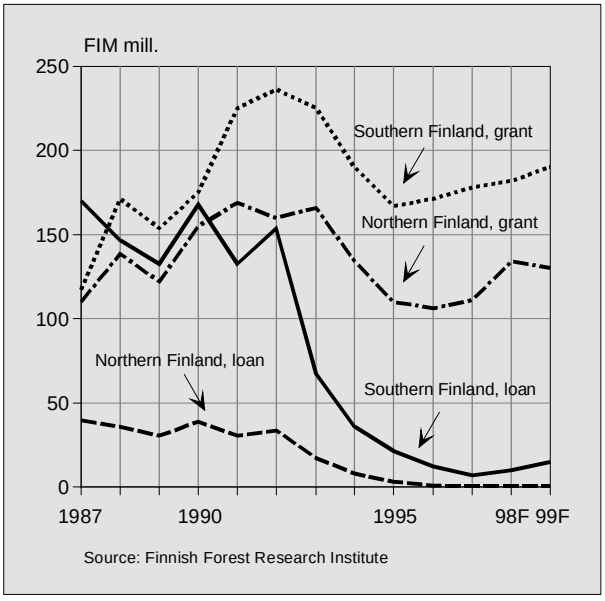


Figure 18. *State Financing of Non-Industrial Private Forestry in Southern- and Northern Finland in 1987–99F (expressed in 1997 prices).*

ly over FIM 290 million, of which FIM 14 million in the form of EU grants. Of this financial support, two thirds have been reserved for practical work and one third for planning, supervision, development, communication etc. In addition, the budget proposal includes FIM 2 million in the form of loans for securing sustainable timber production. On top of this, a reservation of FIM 14 million for financing joint investment projects will be transferred to 1999.

Subsidies for silvicultural improvement of young stands and harvesting of fuelwood will increase by nearly 20 per cent in 1999, compared with this year's level. In money terms, inputs into practical work have already reached a level of FIM 110 million, for example compared with only FIM 61 million in 1996. Financial support to forest regeneration, forest road construction and ditch cleaning and supplementary ditching will go down next year by 15–25%, depending on the type of work. Other forms of public subsidies for other types of work than improvement of young stands is FIM 86 million.

In 1999 a total of more than FIM 200 million is expected to be spent on the improvement of young stands. This means that treatment work will cover an area of more than 150 000 hectares, a level which was reached last time in 1993.

Also, in the next few years public subsidies will be primarily concentrated on the improvement of young stands, because the Ministry of Agriculture and Forestry has approved a campaign plan for improvement of young stands in 1998–2000. The employment effect of this campaign is estimated at 7 500 man-years. In addition, in the preparatory work aiming for the National Forest Programme, plans call for directing the government's direct financial support to the improvement of young stands and to joint projects such as ditch cleaning and supplementary ditching and forest road construction.

Field Afforestation is Decreasing

According to the agricultural forest action programme, field afforestation is supported by subsidising afforestation costs, by paying compensation for loss of income and subsidy for afforestation work. In the early stages of the field afforestation programme required by the EU, an annual sum of more than FIM 100 million was reserved for the actual afforestation costs. This year and next, only FIM 40 million has been reserved for the corresponding expenses, which are partly financed by funds carried forward from previous years.

The financing available for promoting sustainable forestry includes a grant intended for treatment of the forest environment, amounting to FIM 15 million, which is now included for the third time in the government's budget proposal. These funds will be used to finance projects intended to improve the forest environment, and to compensate forest owners for losses due to the obligation to preserve their forests' biodiversity.

Figure 19. *Private Forestry Real Operating Margin and Unit Cost Index in 1987–99F.*

Stumpage Earnings are Still Rising

In 1997, stumpage earnings from non-industrial private forests increased for the first time to the level that prevailed at the end of the 1980s. Last year, these earnings amounted to FIM 8.8 billion. This year, gross stumpage earnings will still increase slightly from last year's level, amounting to about FIM 9.3 billion. Next year, stumpage earnings will decline slightly from this year's. This means that total investments in private forestry will amount to 10–11% of gross stumpage earnings, this year and next.

Profitability of Forestry Going Up Slightly

The profitability of forestry, measured in terms of annual operating margins, will improve slightly during this year, and it is not predicted to change significantly in 1999. In 1997, the annual operating margin in forestry amounted to 87 per cent of gross income. This year, the margin is expected to be 2 percentage points higher than in 1997. The operating margin increased with increased gross stumpage earnings, though unit costs of timber production went up compared with the previous year. The total input into timber production measured in terms of the number of hectares treated went down last year in spite of increased stumpage earnings, and forest areas harvested. The annual operating margin shown in Figure 19 has been obtained by deducting variable and fixed costs of forestry (with the exception of interest on loans and forest tax) from the sum of gross stumpage income and public subsidies.

The areas covered by regeneration and silvicultural treatment decreased in 1997 compared with the previous year, in spite of the large removals and stumpage earnings. Investments have been depressed by rising unit costs and the costs caused by the obligations stated in the new forest improvement law.

Table 12. *Changes in Real Unit Costs in Timber Production.*

Type of Work	Share from the variable costs 1996–97, %	Change 1996–97, %	Forecast for the change 1997–98F, %	1998F–99F %
Forest regeneration and silviculture	69	6.0	1.6	4.0
Forest improvement	16	–1.4	–0.6	2.3
Construction of forest roads	14	–3.0	–3.5	–0.7

Forest Regeneration and Silviculture Unit Costs Going Up

The silvicultural unit cost index, which includes forest regeneration and improvement of young stands, rose last year by 6 per cent compared with the previous year. The index is projected to continue to rise, though at a slower pace. Silvicultural unit costs went up in all types of work, with the exception of clearing and thinning. In the improvement of young stands the unit costs went up by more than 10 per cent compared with the previous year. The new environmental regulations in the Forest Law, result in an increased need for planning and supervisions, pushing up forest regeneration costs this year and next.

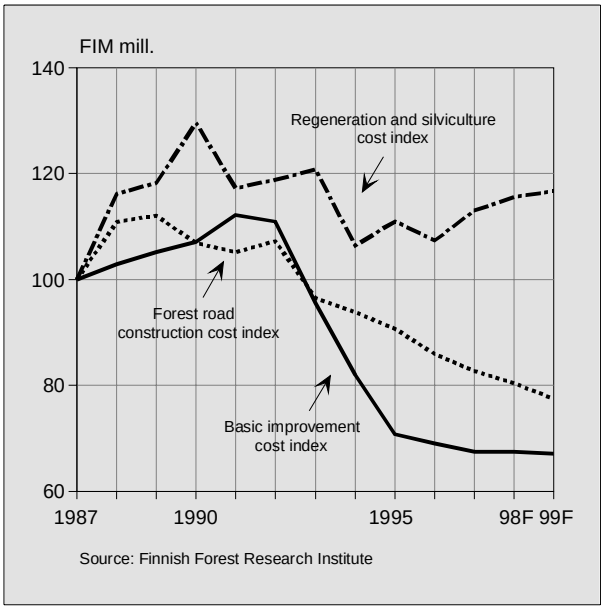


Figure 20. *Real Unit Cost Indices in TimberProduction in 1987–99F.*

Improvement Investments Unit Costs Going Down

Unit costs of forest improvement went down by 1.4 per cent last year, and they will continue to go down this year in spite of the growing area of forest improvement. Tightening competition between contractors has reduced unit costs in ditch clearing, which is the most important type of work in the timber production unit cost index shown in Figure 20. The costs of ditching work are expected to go up as there will be more environmental requirements. Unit costs in forest fertilisation and thinning have continued to rise. These categories of work together still account for less than one fifth of the total number of hectares in annual forest improvement investments.

In the construction of permanent forest roads, the number of main haulage roads and their share of the total kilometres went up last year. Average unit costs went down by 3 per cent. Unit costs will continue to go down. The work input on both in the construction of new roads and in basic improvement of old ones went up last year.

3.4 Labour Force in Forestry

In spite of growing removals, employment in the forestry in 1998 will remain at last year's level and no major improvements are expected in the relatively high rate of unemployment. The record production levels in forestry are projected to remain high in 1999, and for this reason, employment in forestry will stay at its current level.

No Major Changes in Employment Levels

Employment in forestry in 1997 equaled about 23 000 man-years. According to preliminary estimates, it will remain unchanged in 1998, because of a 4 per cent increase in commercial fellings. The total employment figure will be divided amongst the various profession followingly: Wage earners account for about 10 000 man-years, salaried employees 7 000 man-years, and the entrepreneurs and their family members 6 000 man-years.

In ten years, the employment level in forestry has dropped by about half. In 1988, employment in forestry equalled more than 40 000 man-years. The decrease has been greatest among the entrepreneurs and their family members: about 60 per cent. The decrease in forest owners' own work input is probably mainly due to the fact that they are getting older, are moving into cities and that the proportion of women is growing.

In the same period, the need for wage earners in forestry has decreased on average by about half. The need for workers in logging has decreased even faster due to the increasing degree of mechanisation (to less than half the level of ten years ago), whereas the need in silviculture has decreased somewhat slower than the average. The number of harvesters and their productivity has more than doubled in the same period. In 1988 there were less than 500 harvesters in operation, but presently about 1 200.

On the other hand, the work input by salaried employees in forestry has decreased by only about 15 per cent during ten years. As a result of this development, the relative proportion of salaried employees in forestry has gone up. Ten years ago, salaried employees accounted for less than 20 per cent of the work input in forestry, which was about the same level as in the sawmilling industry. In 1998, salaried employees accounted for more than 30 per cent of the work input, which is about the same level as for example in the paper industry.

Unemployment Rate Still High

Because of the rapid decrease in the demand for labour, the unemployment rate in the forestry has remained high, and it has not even gone down during the economic upswing as in other parts of the forest sector. In 1997 the unemployment rate in forestry

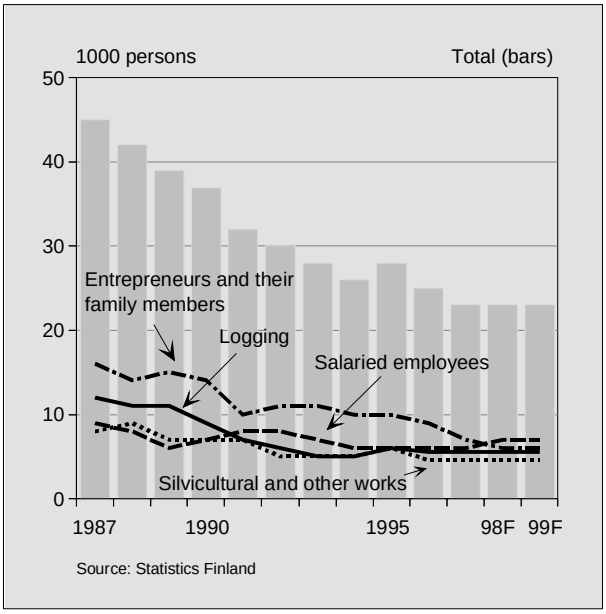


Figure 21. *Employment in Forestry in 1987–99F (1 000 persons).*

was 18 per cent. According to Statistics Finland, the projection for 1998 – based on the figures for the first six months – is 17 per cent and for 1999 roughly the same. At the same time, unemployment rates in all the forest products industry sectors will fall below 10 per cent during 1998.

The extension of government employment funds to silvicultural works, efforts to promote the use of wood for energy, the campaign for improving young forest stands and for reducing the planting backlog have not so far had any visible effect on employment figures in forestry, nor on unemployment rates. As growing logging volumes can be handled with the same or even a lower labour input owing to the rising degree of mechanisation, no significant change is to be expected in the overall employment situation in forestry.

Roundwood Imports of the Finnish Forest Industry

The roundwood imports have increased at a rate of 2 per cent per annum from 1980 until 1997. There was a temporary decline in imports in the early 1990s, following the collapse of the Soviet Union. On average, imports have amounted to slightly less than 8 million cubic metres a year throughout the 1990s. This year, imports are forecast to rise to 12 million cubic metres. About 80 per cent of the roundwood imported to Finland originates from Russia, with pulpwood accounting for about 90 per cent of total imports. Birch pulpwood has been the most important imported wood assortment in the 1980s and 1990s. However, in recent years the proportion of pine pulpwood has been on the rise. Last year, imported wood accounted for 13 per cent of the industry's total consumption of roundwood, and its share is predicted to rise to nearly 19 per cent next year.

Imported wood may be used as a *substitute* (replacement) or *complement* (supplement) to domestic wood in the forest industry. The impact of imported roundwood on the domestic market varies decisively, depending on its use. If imports are a substitute to domestic wood, an increase in the domestic stumpage price relative to the price of imported wood will increase imports. On the other hand, if imported wood is a complement to domestic supply, an increase in stumpage prices in Finland will also decrease demand for imported roundwood.

Imported Wood Complements Domestic Supplies

According to the theory of derived demand, an increase in the export price of chemical pulp and an increase in production capacity will strengthen import demand. Conversely, an increase in the import price of roundwood will reduce imports of wood. What does the empirical evidence tell us? In order to analyse this question, the preliminary research findings of Toppinen (1998) on the possible factors influencing imports of birch pulpwood are discussed below.

The empirical results for the period 1965–94 indicated, that Finland's imports of birch pulpwood have been boosted by the industry's increased production capacity and rising export prices for market pulp. The import price for birch pulpwood has not significantly changed the import volumes, which may be due to the fact that the import prices recorded in relevant statistics may not accurately measure the mill price of imported wood. However, an increase in the price of domestic roundwood appears to have depressed imports. This finding supports the assumption of birch pulpwood being a supplement to domestic wood. In fact, imports of birch pulpwood from Russia have been justified with the limited supply of birch pulpwood in Finland, which is not enough to satisfy the industry's current need for birch pulpwood.

Prices of Russian Wood are Going Down

The exchange rate of the Russian ruble has collapsed in the 1990s. A depreciation of the exporting country's currency tends to be transferred to hard-currency prices, that is, in the case of pulpwood, to dollar prices, depending on the competition in the market and the price elasticity of the supply. A decrease in the dollar price improves the price-competitiveness of Russia's exports of roundwood in relation to Finnish wood. However, no evidence is available on the connection between Finnish mark-denominated prices of pulpwood and the exchange rate of the Russian ruble. The imports of roundwood to Finland during the 1990s have increased when the exchange rate of the Russian ruble has plunged.

The imports of roundwood can be assumed to continue to change parallel with the changes in the forest industry's production capacity. A decrease in the US dollar-denominated export price of roundwood and an appreciation of the euro against the dollar will reduce consumers' purchasing power for imported goods in Russia. Since the dollar is an important currency also in the domestic Russian market, there is an incentive to strengthen the export supply of wood, particularly in the present economic situation. For example, difficulties in financing government expenses in the north-western regions of Russia will result in a growing need for export incomes, which can be obtained through the sales of

logging rights. A growing supply of logging rights can be expected to reduce stumpage prices in Russia. However, the impact of declining prices for wood imports to Finland cannot be predicted, because the research has not produced a statistically significant connection between wood imports and import prices. In addition, the accelerating rate of inflation in Russia may quickly offset any improvement in price competitiveness in wood exports produced by exchange rate fluctuations.

Russia's exports of roundwood also depend on the country's own forest industry's demand for wood. The decrease in Russia's production and exports of sawn timber in recent years has mainly been due to problems related to production, product quality and transportation, rather than due to insufficient price-competitiveness. Thus, any increase in exports in the near future will most likely depend on other factors than the exchange rate development of the Russian ruble. An increase in the Russian sawmilling industry's exports would strengthen demand for sawlogs, which would in turn boost the export supply of pulpwood, because Russia's pulp and paper production and its wood demand are unlikely to grow in the near future.

Poor Infrastructure Impairs the Supply from Russia

The future imports of roundwood probably depend more on the development of Russia's infrastructure, trading practices and logging and transport technology, than on the development of export prices. Therefore, major cultural and technological changes in wood harvesting and transportation are needed, in order to remove obstacles from increasing exports. The forest sector has received less resources for developing its activities than most other sectors of the Russian economy, at the end of and after the Soviet era. The resources available for a modernisation of the forest sector may be reduced further as the currency continues to depreciate.

Russia's current economic and political difficulties emphasise the importance of bilateral development programms for promoting foreign trade in roundwood. Forest sector co-operation programms between Finland and Russia – along the lines of the forestry development programme for Russia's north-western regions – may have an indirect favourable impact e.g. on the export supply of roundwood in north-western Russia.

Source:

Toppinen A. 1998. Kuitupuun tuonti ja siihen vaikuttavat tekijät Suomen metsäteollisuudessa. Käsikirjoitus, Metla, 8 s. (Imports of pulpwood and the factors that influence imports in the Finnish forest industry. Draft, Metla, 8 p.)

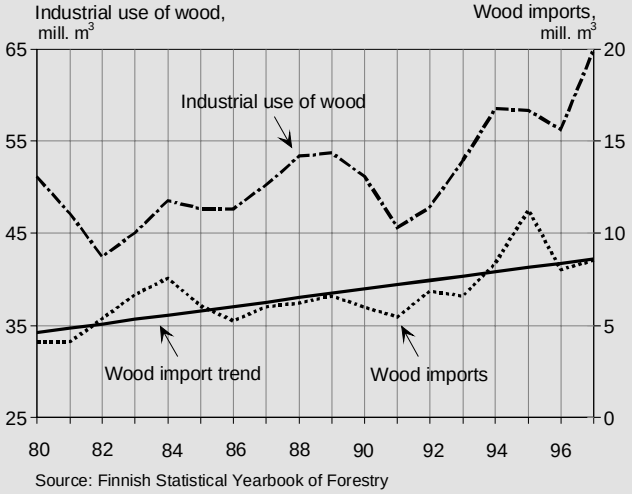


Figure. *Total Industrial Use of Domestic Roundwood and Imported Wood, and Wood Imports in 1980-97 (million cubic metres).*

The Kyoto Protocol and the Forest Sector

The Protocol on global climate change approved by the United Nations' Kyoto Summit in December 1997 is the first concrete step in the process of reducing emissions of global greenhouse gases. In the Protocol, industrialised nations and transition economies agree to reduce their average emissions of greenhouse gases by at least 5 per cent compared with 1990 emission levels. This objective shall be reached during the period 2008–2012, which is the first commitment period of the agreement outlined in the Protocol.

Sinks and the Kyoto Protocol

According to the Protocol, measures that will slow-down climate change include – besides reductions of emissions – sinks, i.e. actions to tie up carbon dioxide and other green house gases in vegetation and soil. It has been a common view that Finland would benefit from the sinks. Sustainably and progressively managed Finnish forests would tie up a major part of the carbon emitted into the atmosphere by traffic, industry and heating systems. However, according to the prevailing interpretation of the Kyoto Protocol, Finland's forests would be a source of carbon rather than a sink.

The fact is that the Kyoto Protocol covers only the sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990. According to the current interpretation of the intergovernmental climate panel, reforestation would not include forest regeneration after harvesting. As a result, the sinks referred to in the Protocol would exclude important sinks such as the increment of the current growing stock and the carbon tied up in forest products.

In practice, a sink in terms of Finnish forestry would mean, according to the current interpretation of the Kyoto Protocol, field afforestation. From this would still have to be deducted the conversion of forests land into building sites and roads. In the commitment period 2008–2012, field afforestation is estimated to create annually a carbon sink equaling on average 0.45 million tons of carbon dioxide. Correspondingly, the emissions due to conversion of forest land into built-up areas would equal 1.75 million tons of carbon dioxide. Calculated in this way, Finland's forests would turn into a carbon source equaling about 1.3 million tons of carbon dioxide by the year 2010.

According to professional estimates, the growing stock of Finland's forests could increase by 10–25 million cubic meters by 2010, with the corresponding carbon sink amounting to 13–32 million tons of carbon dioxide. Compared with calculations based on the interpretation of the Kyoto Protocol, the carbon sink caused by the increase in growing stock is significant. However, in the long term, the carbon sink of Finland's forests will be going down, because the amount of carbon tied up in forests cannot be increased indefinitely.

Significance of the Kyoto Protocol

Negotiations concerning the content and interpretations of the Kyoto Protocol are continuing, aiming for a final agreement. In fact, as indicated by the recent Buenos Aires Summit, it is questionable whether the agreement will become effective at all. However, the Protocol is expected to be ratified some time before 2010. For this reason, it is important to try to foresee and prepare for the possible effects of this agreement at national level.

The EU countries are allowed to decide between themselves how to divide the 8 per cent target reduction set for EU by the Kyoto Protocol. In negotiations between the EU's environmental ministers last summer, Finland was allocated a zero target, i.e. it is required to reduce its emissions to the 1990 level. In addition, it was agreed that sinks will not be considered because of the difficulty in interpreting them. Thus, on this basis Finland would neither benefit nor suffer from the carbon sinks in its forests. In this case, the success in meeting the reduction target would depend on how well emissions related to traffic, industry and housing could be reduced.

Reducing Emissions in Forest Industry

Reductions in carbon dioxide emissions from the production of electricity and heat will be playing a key role in meeting the emission target. Finland's forest industry is using about one third of all the electricity consumed by the national economy. However, the forest industry's share of the emissions is clearly less than its share of the energy consumption,

because waste liquors and waste wood account for a large part of the generation of electricity and heat. The industry's own electricity generation equals slightly less than 40 per cent of the total, whereas the pulp and paper industry is self-sufficient for its heat supply.

Assessing the impacts of the Kyoto Protocol on the industry is difficult, because in addition to the precise amount of reductions, also the means to achieve the reductions are still open. The primary measures presented so far by the Ministry for Trade and Industry include more efficient use of energy and a shift to renewable and low-emission energy production processes. Energy-saving agreements, the introduction of emission standards and expansion of nuclear power capacity are also mentioned as alternatives.

The forest industry's energy-efficiency has improved in recent years. Despite the fact that the energy-efficiency is already at a high level, future savings are still possible. For example, according to the results of the "Sustainable Paper" -technology program in Finland, it is possible to reduce electricity use in mechanical pulping process by 5–15% in the near future, and possible even by 50% in the long-run. In addition to improving the industry's energy-efficiency, the forest industry's emissions can also be reduced by changing the product structure towards a greater proportion of chemical pulp. This is because mechanical pulp process consumes 2–4 times more electricity per ton of pulp than chemical pulping methods. However, the Finnish industry's competitive position has been better in paper grades based on mechanical pulp. Yet, a strengthening of consumers' demand for less emission-intensive products might result in growing demand for chemical pulp-based paper.

An increase in the production of chemical pulp-based paper would not constitute a threat to the growing stock in Finland's forests, not even in the long term. On the contrary, it would result in improved utilisation of currently underutilised pine resources. Because chemical pulping uses about twice as much wood per unit of output as mechanical pulp manufacture, a shift to a greater proportion of chemical pulp in paper production would result in increased demand for wood. This, in turn, would result in pressures for higher stumpage prices.

In addition, the requirements to reduce emissions affects the relative competitiveness of the wood products industry and the pulp and paper industry. Particularly, since the share of energy costs is very small in the wood products industry compared to pulp and paper industry, it would become, ceteris paribus, relatively more competitive industry sector.

The Impact of Emission Control on Production Costs

Since 1990, Finland has regulated the production and consumption of energy by means of environmental taxes. However, in order to maintain the industry's competitiveness, the government has been unwilling to introduce major unilateral tax increases. The plans for introducing a uniform emission tax in the EU, also supported by Finland, have made slow progress. Since the planned minimum tax level would be lower than Finland's current carbon dioxide tax, the EU tax would not even reduce emissions in Finland. Environmental regulations could be introduced either for energy-using sectors of the economy, such as traffic and industry, or even for individual companies. Studies are in progress in Finland to determine the costs of emission reductions in various sectors. The intention is to take cost differences into account when introducing possible emission regulations. This is certainly a more cost-effective approach, than the requirement that the emissions of any sector or company should not be allowed to exceed the 1990 level. If sectors or companies fail to reduce their emissions to the required levels by investing in new technology, they would have to cut back their production.

International emission trading policy is mentioned in the Kyoto Protocol as one means to reduce emissions, but its principles remain to be agreed. Emissions permits could also be traded at national level. In the tradable permit approach, companies are allocated or sold a number of permits corresponding to the desired total emission level. Because there is a shortage of emission permits, the permits will acquire a price in the market. Companies in which reducing emissions is cheap will then sell permits to companies in which reducing emissions is more expensive. The greater the differences in production technology (i.e. in abatement costs), the more effective emission trading will be. The joint implementation mentioned in the Kyoto Protocol means that a government or company could accumulate credit for emission reduction that it finances in some other industrialised or transition-economy country with lower reduction costs.

The emission tax and emission standard result in non-recurring costs for the forest industry due to investments in abatement technology. In addition, the operating costs related to investments result in a permanent cost impact. In the case of the emission tax, the forest industry must also pay for the remaining emissions. The industry has traditionally been opposed to environmental taxes and instead supported emission standards as a means to restrict emissions.

A restriction of carbon dioxide emissions is likely to result in replacement of coal and peat by natural gas and wood fuels. For example according to the emission reduction scenario presented by Ministry of Trade and Industry, coal would not be used at all in the production of condensing power in 2025. On the other hand, a major increase in the use of natural gas would require investing in a new gas pipeline. Besides by using more natural gas, emissions could also be reduced by building more nuclear power capacity. According to new estimates based on Finnish energy system model, the reduction of greenhouse gas emissions to the level of 1990 would increase the average price of electricity for energy-intensive sectors by over 10 per cent compared to the present level.

Competitiveness and How to Maintain It

As regards the competitiveness of Finnish forest industry, the key question is what effects emission control policy will have on the forest industry in the competing countries. In Sweden, a large part of the electricity is generated with nuclear and hydroelectric power, which would not be affected by the carbon dioxide tax. In Canada, too, fossil fuels account for a smaller share of electricity production than in Finland. Against this background, a tax on emissions would seem to threaten Finland's competitiveness. However, several aspects make it complicated to assess the effects on competitiveness. First, the total amount of reductions varies by country. Also, the costs of reducing emissions vary by country. For example, the more energy-efficient the production already is, the more expensive it is to introduce further energy-saving measures.

A weakening of competitiveness with rising energy costs can be counteracted in a number of ways. However, according to current research, it would not be viable from a national economic point of view to exempt export sectors from the emission controls, because in this case corresponding reductions would have to be made in other sectors. A better solution could be to compensate the export sectors for increased energy costs, for example by cutting other taxes.

If the forest industry's competitiveness deteriorates significantly as a result of rising energy costs, the forest industry may move part of its production abroad. However, according to econometric studies, environmental standards would not have had any major effect on the locations of industrial plants in the United States. The greater the cost difference, the more profitable it is to move. If an emission tax is introduced, the incentive to move will therefore be greater than if there is a emission standard. According to numerical economic general equilibrium models, a certain proportion of the production would be transferred to countries outside the agreement. However, such models disregard several factors which may influence the decision where to locate production. Besides direct costs, several other factors influence companies' locating decisions. For example, it might be good for the corporate image to comply with stricter environmental standards also outside the home country.

Because investments in production capacity and energy production are realised with a time lag, precautions needed to meet emissions levels according to the Kyoto Protocol should be taken well in advance. It is indeed problematic that several key questions are totally unresolved, though the first commitment period will begin ten years from now. It is not even certain whether the agreement will become effective at all.

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Ympäristöministeriö. 1998. Ilmastonmuutosta koskeva Kioton pöytäkirja. Ympäristöministeriön moniste no 34. (Ministry of Environment. 1998. The Kyoto Protocol on climate change. Ministry of Environment Bulletin No. 34.

On Economic Valuation of Forest Conservation

In decision-making and public debate related to environmental conservation, the economic costs due to conservation are often cited as an argument, whereas the benefits of conservation are regarded as "non-economic" factors, which are often left open or subject to speculation. For example, this is what has happened in conserving forest resources outside commercial wood production. However, from the viewpoint of economic science, the benefits from environmental conservation are as economic as the benefits brought by any other good. The problem is that the economic value of environmental conservation is not reflected in market prices, because environmental protection is a public good. Still, there is clear demand for the quality of the environment; for example housing prices in cities can be explained by environmental qualities of the area, such as the distance to the nearest park.

Several methods have been developed in environmental economics for measuring the "latent" demand for public goods, such as the quality of the environment. One approach is the contingent valuation method, which measures people's willingness to pay for conservation, and resembles a referendum. This method was used to evaluate the European Union's Natura 2000 nature conservation programme, one of whose objectives is to conserve additional 66 000 hectares of commercial forest land (Pouta et al. 1998 and Hilden et al. 1998). In a questionnaire sent to 2400 randomly selected Finnish households, the respondent was asked to "vote" for or against Natura or a corresponding conservation programme, while at the same time the questionnaire specified the cost effect per household caused by the programme. In addition, the respondent was asked to answer a number of other questions reflecting his or her attitudes and background factors. The questionnaire gave background information on the current status of environmental conservation in Finland. The questionnaires differed from each other in terms of the scope of the proposed conservation programme, the method of implementing it (Natura vs. a similar programme) and the cost effect to households of the conservation programme via increased taxes.

The questionnaire was carried out in October 1997. The response rate was 47%, which corresponds response rates obtained in similar studies in other countries. In the case, where a 3 per cent increase was proposed in the current forest conservation area, 53.4 per cent of the respondents voted for the programme. In cases where the proposed increase in conservation area was 6 or 9 per cent, the percentages voting in favour were 38.8 and 41.8, respectively. The Figure shows how the support of conservation varied with the cost effect to households. In the cases were 6 and 9 per cent increases were proposed, the results behaved consistently with the theory of rational choice. The support in favour of the conservation programmes declines with an increase in the cost effect. At a certain cost effect level, the support of the more extensive programme is bigger than that of the more limited programme. The dependence of the percentage in favour of the 3 per cent programme does not behave in a corresponding manner, which is apparently due to the fact that the cost effect presented to the respondents was too low.

As regards to the support for the conservation programme, two clearly different groups could be distinguished. The support was high among young affluent urban population, whose willingness to pay was FIM 940 on average. In other words, the respondents in this group were ready to vote in favour of the conservation programme, though its cost effect via the lump-sum tax would be FIM 940. The support was lowest among aged, low-income people living in the countryside, whose willingness to pay was FIM 260 on average.

Of the willingness to pay, 77 per cent could be explained with a statistical model in which the explanatory variables were the magnitude of the cost effect, the scope of the programme, the method of implementing it, the respondent's income level, age, place of residence and attitudes. According to the results, the support for the conservation programme declined with an increase in costs. Also, the support increased when the programme was restricted to a 3 per cent increase in the conservation area compared with the current level of conservation. Moreover, the support in favour of the conservation programme was partly explained by the fact whether the programme was proposed to be implemented within the frame-

work of the Natura 2000 network. The conservation programme proposed to be implemented as a part of Natura 2000 got less support than another corresponding hypothetical conservation programme. This is probably due to the problems related to the preparations of the Natura 2000 programme, and the consequently bad public image that the specific programme received among the people. The support in favour of conservation increased with an increase in the respondent's income level and it was bigger among young people and people living in cities than among old people living in the countryside. In addition, favourable attitudes to environmental policies and conservation explained part of the support of conservation. Among these explanatory variables, all the others except the scope of the programme were statistically significant.

The questionnaire was also designed to explore respondents' environmental attitudes and perceptions regarding the conservation programme's impacts. The people who voted against the programme believed that conservation would have large cost effects to national economy, whereas its supporters believed in major favourable environmental effects. Of the total number of respondents, 76 per cent considered it important that the benefits and costs of conservation are duly compared when making decisions concerning environmental conservation. About 71 per cent were strongly opposed to the statement in the questionnaire that an increase in real incomes is always more important than environmental conservation.

Based on the survey, an estimate of the economic benefits of conservation was computed. The total willingness to pay for the 3 per cent conservation programme, which best resembles the Natura 2000 proposal, was estimated at FIM 440–1380 million. According to the estimate by Hilden et al. (1998), the forest economic costs of the Natura 2000 programme on forest land protected by the nature conservation law amount to FIM 200–850 million.

The results of the study concerning people's willingness to pay for the Natura 2000 programme can, to a great extent, be explained on the basis of the theory of rational choice. However, to be able to give a more accurate picture of the economic aspects of the Natura 2000 programme in terms of a cost-benefit analysis, a more extensive study would have to be made both of the costs and the benefits of conservation.

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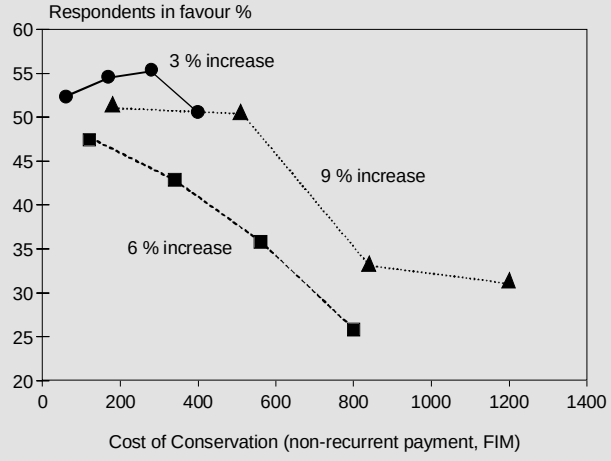

Figure. *Dependence of Support for Conservation on the Costs of Conservation (FIM).*

4 Roundwood Market Business Survey[1]

The forest industry expects purchases of domestic and imported roundwood to increase during next year, compared with the current year's volumes. Most of the increase will be in pulpwood. Of the forest owners, 41 per cent, i.e. more than last year, intend to sell timber next year. Investments in timber production will also increase compared with the current year. Both forest industry and forest owners expect stumpage prices to go up next year, with the exception of sawlogs, whose price the forest industry expects to go down slightly.

Implementation of the Survey

The survey is designed to examine the forest industry's and forest owners' expectations of price, demand and supply developments in the roundwood market. The data for the survey were collected by postal questionnaires sent to the respondents in August and September. The questionnaire concerning the forest industry was sent to all production plants based in Finland and to sawmills with an annual output of at least 5 000 cubic metres. Altogether the questionnaire was sent to 215 plants, of which 80 answers were received, 24 of them representing the pulp, paper and paperboard industry. When interpreting the results concerning pulp and paper mills, it is important to note the relatively low response rate. Answers by sawmills and plywood mills totalled 56. The pulp, paper and paperboard mills which answered the questionnaire represent about 40 per cent and the plywood mills and sawmills about half of their respective sectors' outputs. In processing the results, the distribution of quantities, prices and statements were weighted with the output.

Because of the large number of private forest owners (roughly 300 000), the survey was based on a sample. Thus, a sample of one thousand forest holdings was selected throughout the country by means of simple random sampling. The questionnaire was sent to the owners of the sampled forest holdings, and by the due date 522 forest owners had returned a questionnaire that fulfilled the requirements for the survey. The survey responses contains a greater-than-average number of large forest holdings and holdings owned by one person or jointly by spouses, so-called "family-owned holdings". How-

1. The roundwood market business survey is an independent part of the Forest Sector Economic Outlook. Its results have not been used as a basis for the forecasts presented elsewhere in the Outlook. The survey is based on a mail inquiry sent to forest industry plants and private forest owners in August and September. The forecasts of the Forest Sector Economic Outlook are based on the demand situation for Finnish forest products and the supply situation in the roundwood market. Moreover, the forecasts in the Outlook are founded on the underlying international and domestic economic development up to the middle of October. Thus, the projections presented in the survey and the Outlook may deviate from each other. For example, according to the survey, both forest industry and forest owners expect average stumpage prices to go up next year, whereas the Forest Research Institute forecasts a slight decline in prices.

ever, as regards to other characteristics of private forest ownership, the survey responses can be regarded to be a representative sample of the population characteristics. In computing the results, the distributions of quantities, prices and statements were weighted with the area of the forest land.

4.1 Stumpage Prices

In the same way as last year, the forest industry's and forest owners' expectations regarding the development of stumpage prices are quite close to each other (Figure 22). Both expect stumpage prices to go up next year compared with the current year's prices. In the forest industry, the balance figure for price expectations, i.e. the difference between respondents expecting prices to go up and those expecting them to go down was +13. Among forest owners, the corresponding figure was +31. A large majority of the forest industry representatives and forest owners who expected prices to go up estimated price increases to amount to 2–10 per cent.

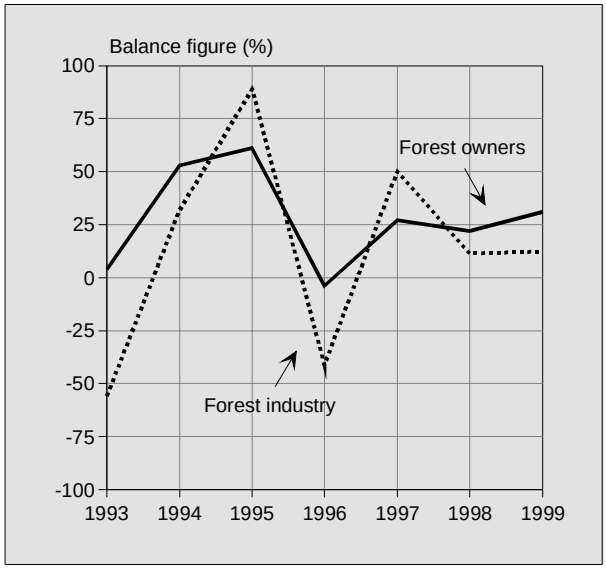

***Figure 22**. Forest Industry's and Forest Owners' Expectations of the Development of the Next Year's Stumpages Prices 1992–98.*

The forest industry assumes that next year's sawlog prices will remain roughly at this year's levels. However, there were slightly more production plants expecting prices to go down than plants expecting them to go up. In the sawmilling and plywood industries, there were slightly more respondents expecting sawlog stumpage prices to go down than respondents expecting them to go up, whereas in the pulp and paper industry the situation was the opposite.

On the other hand, forest owners expect sawlog prices to go up next year. Expectations are highest among forest owners in northern Finland. This may be partly due to the fact that of the three big timber buyers, only UPM-Kymmene has come to an agreement with the forest owners' on stumpage price development, and UPM-Kymmene does not buy timber from northern part of Finland. The number of forest owners expecting sawlog prices to go up is below average among forest owners in western part of Finland and among farmers.

Contrary to the price expectations for sawlogs, the forest industry's and forest owners' expectations regarding the price development of pulpwood are fairly close to each other. In the pulp, paper and paperboard industry, more respondents expected prices to go up than in the sawmilling and plywood industry. Among forest owners, the number of respondents expecting pulpwood prices to go up was higher than average in northern and in eastern parts of Finland and among pensioners.

4.2 Roundwood Demand

About 30 per cent of the production plants in the forest industry expected purchases of domestic roundwood to increase by 2–10 per cent. About one tenth of them expected purchases to decrease by 2–10 per cent during next year, compared with the purchases in current year. The difference between the number of production plants expecting sawlog purchase volumes to go up and the number of plants expecting them to go down, i.e. the balance figure, was +10

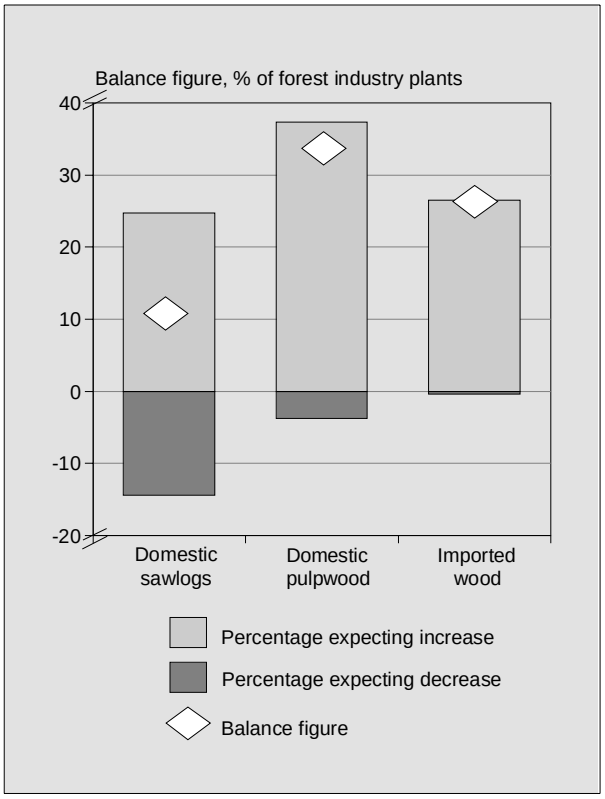

Figure 23. *Forest Industry s Expectatations of Purchase Volumes for Domestic Sawlogs, Pulpwood and Imported Wood in the Next Year.*

(Figure 23). Pulpwood purchase volumes are also expected to go up, with the balance figure reflecting a change in purchase volumes being +34. Pulpwood purchase volumes are expected to go up in the pulp, paper and paperboard industry, and also in the sawmilling and plywood industry. However, the latter two industries also included numerous respondents who expected purchase volumes to go down. The expectations among respondents in the sawmilling and plywood industry that pulpwood purchase volumes will go up, is probably partly due to the fact that sawlogs are primarily purchased from stands that also include pulpwood. Consequently, in order to purchase sawlogs, they also have to purchase pulpwood.

Wood Imports Will Increase

About 30 per cent of the production plants in the forest industry reported using imported wood during the current year. Nearly the same number of plants reported using imported wood also next year. Imported wood is primarily used by the pulp, paper and paperboard industry. In the sawmilling and plywood industry less than one fifth of the plants use imported wood. Of the plants using imported wood, three quarters estimated the purchase volumes of imported wood to remain at the current year's level during 1999. A quarter of the plants estimated purchase volumes of imported wood to increase by 2–10 per cent.

A large majority of the production plants in the forest industry expects that the quantity of timber stocks at mill, by waterways, at railway sidings and roadside landings will remain roughly at current year's level. Only slightly over one tenth of the plants expected their stocks to go down next year. Stocks of wood will go down most in the sawmilling and plywood industry.

4.3 Roundwood Supply and Investments in Wood Production

Forest owners will continue to sell timber at a major scale, in the same way as last year. Among the forest owners, 32 per cent had already made one timber sales contract during the current year. In addition, 19 per cent of the forest owners said they would still sell timber during this year. On this basis, over half of the forest owners, which is more than in last year's survey, have already sold or are planning to sell timber during the current year.

However, the industry's purchases of roundwood from private forests will be smaller than last year. The larger proportion of sellers this year than last year is mainly explained by the fact that the sample contains a greater number of large forest holdings,

which are selling timber more frequently than owners of smaller forest holdings. In eastern and in northern parts of Finland, timber sales will be less frequent than the average, as will sales from forest holdings owned by pensioners, estates (of diseased owners), and associations. In contrast, farmers are selling timber more frequently than the average, which is due to the fact that they own larger holdings than average.

Supply of Wood Will Increase

Among the forest owners, 41 per cent are planning to sell timber next year, whereas 51 per cent will abstain from selling timber. In the last year's survey, forest owners were asked to report their selling intentions according to a three-stage scale. According to the results, 24 per cent stated that they intend to sell wood, 43 per cent that they intend to abstain, and 33 per cent that they were still uncertain. The results of this year's survey show, that selling intentions in 1999 are higher than average among the farmers, while among pensioners' they are lower than average.

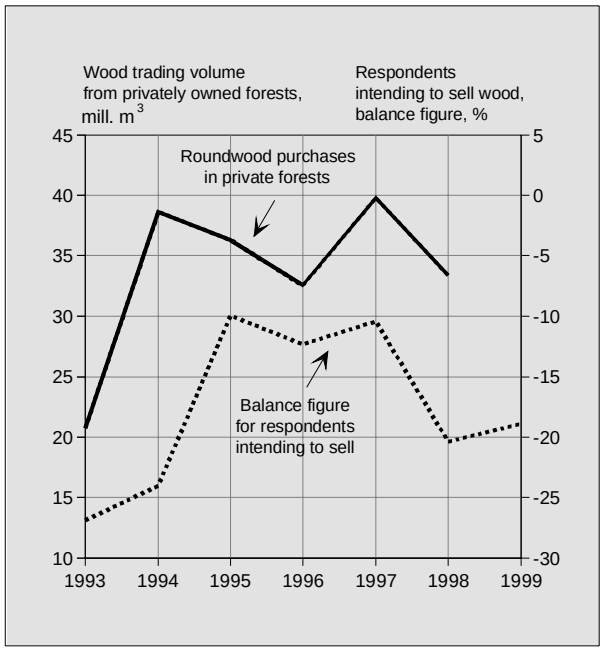

***Figure 24**. Private Forest Owners' Roundwood Sales Intentions and Realised Roundwood Purchases.*

The balance figure indicating timber sales propensity makes it possible to estimate whether the roundwood purchase volume will increase or decrease compared with the previous year (Figure 24). According to the figure, the timber sales propensity in the previous year is a good indicator of the following year's actual roundwood trading volumes. Because the balance figure is higher than last year, its would seem that next year roundwood purchases from private forests will exceed this year's volumes.

The forest owners who have already sold timber during the current year, or who intend to sell next year, if not earlier, expect sawlog sales volumes to decline clearly during next year and pulpwood sales volumes to remain at the current year's level. However, this does not provide a sufficient basis for drawing any conclusions regarding next year's timber supply of sawlogs and pulpwood. This is because such an estimate should be based on a comparison of corresponding sales estimates for different years. This kind of information has not been requested in previous years. Instead, the expectations of next year's sales volumes can be used in examining differences by region and by ownership categories.

Sale volumes of sawlogs from eastern part of Finland and from wage earners' forest holdings are estimated to decrease more than average. On the other hand, farmers expect sawlog sale volumes to decrease less than average. Pulpwood sale volumes are estimated to decrease more than average in eastern and in western parts of Finland. This is contrary to northern part of Finland, where pulpwood sale volumes are even expected to increase. Wage earners and pensioners also expect pulpwood sales volumes to decrease more than average.

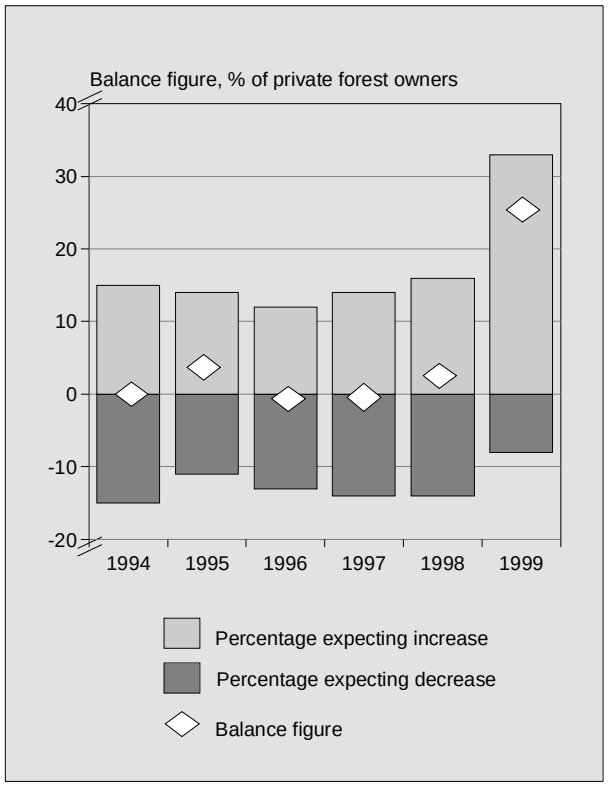

Figure 25. *Private Forest Owners' Plans for Next Year's Silvicultural and Basic Improvement Works.*

More than 70 per cent of forest owners intend to carry out or commission silvicultural and improvement works next year. In northern part of Finland and among estates, the proportion of forest owners planning silvicultural and improvement work was below average, among farmers above average. Forest owners carrying out such work during this year or who are planning to do such work next year, expect the work input to increase clearly during next year. The balance figure indicating a change in work input was +24 for this year, compared with a range of –1 to +3 in the previous five-year period (Figure 25). Work inputs in forest holdings owned by estates, associations and wage earners are expected to increase less than average during next year.

Investments in Wood Production on the Increase

The record logging volumes of recent years are also reflected in the investments in timber production in private forests. More than 60 per cent of forest owners have already carried out silvicultural and forest improvement works this year or intend to perform or commission such works next year. In northern part of Finland, slightly more than half of forest owners belong to this group. In forest holdings owned by estates and pensioners, silvicultural and improvement works were below average, whereas three quarters of farmers had carried out silvicultural and basic improvement works.

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The System of Forecasting Business Cycles in the Forest Sector (MESU) -research project

Purpose

• produce the Finnish Forest Sector Economic Outlook
• develop models for forecasting Finnish forest industry exports
• develop roundwood market forecasting models
• produce market reviews on the short term developments of the Finnish forest sector
• develop and maintain the MESU-data base

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