

CHAPTER 11

WOODPULP, PULPWOOD AND PAPER AND PAPERBOARD SUPPLY, TRADE AND CONSUMPTION

Highlights

- In 1998 as a whole, production of paper and paperboard was slightly higher in Europe than in 1997, but lower in North America, despite higher consumption (imports rose and exports fell).
- North American pulp production fell, but in Europe, the level remained roughly unchanged; recovered paper and eucalyptus pulp continued to increase their share of total paper-making furnish.
- In 1998 world pulp markets were characterized by oversupply and weak prices, but production cutbacks restored market balance and prices were rising in mid-1999.
- Volumes of European pulpwood removals rose, but market conditions were generally stable or weak.
- European pulpwood imports from Russia and the Baltic countries, mostly to Finland and Sweden, continued to rise.
- In North America the pulpwood oversupply and high stock levels resulted in steeply falling prices.

This chapter analyses trends on markets for pulpwood, preceded by a brief discussion of developments for pulp and paper. It should be borne in mind that in the standard ECE/FAO terminology, "pulpwood" refers to all wood used as raw material for the manufacture of pulp, particle board and fibreboard. Therefore "pulpwood" includes "pulpwood, round and split" ("round pulpwood"), which may be either coniferous or non-coniferous, and "residues, chips and particles", a by-product of the sawmilling and plywood industries. (A diagram of the pulpwood breakdown is at the beginning of the roundwood chapter 7.)

11.1 Paper and paperboard

During 1998, apparent consumption of paper and paperboard rose moderately in Europe and North America (by 1.3% and 2.4% respectively). European apparent consumption was at just over 80 million m.t. a record level. In North America, consumption reached 87.5 million m.t. but this was still well below the 96.6 million m.t. recorded in 1995. In Russia, however, apparent consumption fell quite sharply, after the temporary improvement recorded in 1997.

Production of paper and paperboard in Europe rose by just over 2%, to 87.7 million m.t. with similar growth for all major assortments (table 11.1.1). Newsprint rose to a record level. Strong growth was recorded for production of "other printing and writing paper" (the major growth sector, linked to copiers and printers in homes and offices) for Finland, Germany and Austria. However, Europe's fourth largest producer France, fell by over 10%.

In the United States, production of paper and paperboard dropped by 0.8%, to 75.8 million m.t., although apparent consumption rose by 1.7%. The country's trade balance changed quite strongly; imports rose by 1 million m.t. and exports fell by a similar amount, so that United States net imports rose from 3.4 million m.t. in 1997 to 5.4 million m.t. in 1998. This trend may be attributed to the rise in the dollar exchange rate. Canadian apparent consumption also increased, by 0.7 million m.t. despite a fall in production of 0.4 million m.t.; exports fell by over 1 million m.t., so it is possible that stocks have risen.

TABLE 11.1.1

**Production of paper and paperboard in Europe, the Russian Federation and North America,
1995 to 1998**
(1000 m.t.)

	1995	1996	1997	1998	Change 1997 to 1998	
					Volume	Per cent
NEWSPRINT						
EUROPE	10,203	9,617	10,502	10,730	228	2.2
of which :						
Sweden	2,346	2,283	2,411	2,478	67	2.8
Germany	1,726	1,572	1,618	1,630	12	0.7
Finland	1,425	1,327	1,470	1,483	13	0.9
United Kingdom	873	976	1,030	1,043	13	1.2
France	890	783	909	922	13	1.4
Norway	973	913	798	835	37	4.6
Other countries	1,969	1,763	2,266	2,339	73	3.2
Russian Federation	1,457	1,245	1,198	1,394	196	16.4
Canada	9,226	9,025	9,205	8,623	-582	-6.3
United States	6,351	6,303	6,544	6,501	-43	-0.7
North America	15,577	15,328	15,749	15,124	-625	-4.0
OTHER PRINTING AND WRITING PAPER						
EUROPE	28,830	28,695	31,915	32,644	729	2.3
of which :						
Finland	6,457	6,014	7,121	7,700	579	8.1
Germany	5,872	5,702	6,390	6,620	230	3.6
France	3,096	3,141	3,350	3,004	-346	-10.3
Italy	2,594	2,662	2,751	2,780	29	1.1
Sweden	2,047	2,170	2,459	2,545	86	3.5
Austria	1,764	1,787	1,826	2,003	177	9.7
Other countries	7,000	7,219	8,018	7,992	-26	-0.3
Russian Federation	486	433	441	467	26	5.9
Canada	4,882	4,689	4,966	5,113	147	3.0
United States	23,042	22,553	24,328	24,174	-154	-0.6
North America	27,924	27,242	29,294	29,287	-7	0.0
OTHER PAPER AND PAPERBOARD						
EUROPE	40,220	40,382	43,335	44,293	958	2.2
of which :						
Germany	7,229	7,459	7,945	8,061	116	1.5
Italy	4,033	4,114	5,101	5,276	175	3.4
France	4,633	4,632	4,884	5,132	248	5.1
Sweden	4,766	4,565	4,886	4,856	-30	-0.6
United Kingdom	3,454	3,460	3,670	3,667	-3	-0.1
Finland	3,060	3,100	3,558	3,520	-38	-1.1
Other countries	13,045	13,052	13,291	13,781	490	3.7
Russian Federation	2,130	1,546	1,703	1,679	-24	-1.4
Canada	4,605	3,758	3,805	3,805	0	0.0
United States	56,133	53,115	45,577	45,137	-440	-1.0
North America	60,738	56,873	49,382	48,942	-440	-0.9

However, in both Europe and North America, the broadly positive data for the year as a whole conceal a different trend if monthly or quarterly data are analyzed. The latter show a progressive decline over the year, which continued over the first months of 1999. Quarterly data from the Confederation of the European Paper Industries (CEPI) show a drop for every quarter in 1998. The first quarter of 1999, although higher than the last of 1998 was below that of the first quarter of 1998. Monthly data for the United States from American Forest & Paper Association (AF&PA) show rather similar levels in 1997, 1998 and the first months of 1999 for production of paper. However paperboard production in the second half of 1998 was significantly lower than in the corresponding period of 1997. In January through May 1999 however, production of paperboard was only marginally below the level of early 1998. For the first quarter of 1999, CEPI reported the following changes (supplied to it by other industry associations) compared to the first quarter of 1998:

Western Europe (CEPI):	-2.1%
United States (AF&PA):	-0.6%
Canada (CPPA):	+6.7%
Japan (JPPA):	-1.1%

(CPPA is the Canadian Pulp and Paper Association and JPPA is the Japanese Pulp and Paper Association.)

The positive trend for Canada (which was specially marked for newsprint, uncoated mechanical, uncoated woodfree and sanitary and household grades) contrasts strongly with that for the other producers.

11.2 Woodpulp

Total European pulp production in 1998 showed little change over 1997 (table 11.2.1). Increases in Sweden, Austria, Poland and especially Finland, were in contrast to falls in Norway and France.

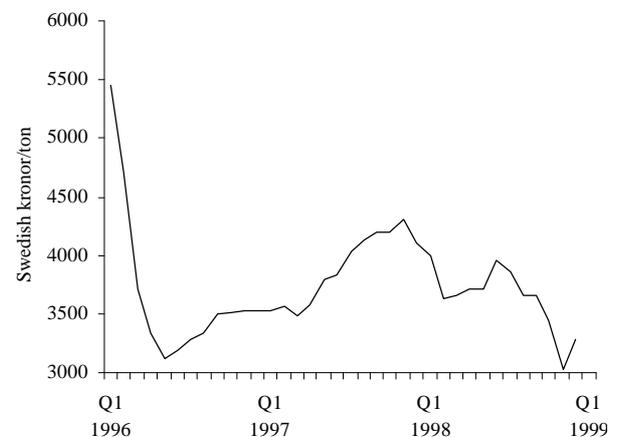
Russia recovered some of the ground lost in 1996 and 1997 as production of both mechanical and chemical pulp increased in 1998. This demonstrated that in certain circumstances, notably when there is an active international commodity market, it is possible to raise the level of Russian production. It is believed that much of the Russian production was exported.

In North America on the other hand, pulp production (chemical and mechanical combined) fell by 2.5% or nearly 2.2 million m.t. (a drop of 0.95 million m.t. for Canadian mechanical pulp and 1.27 million m.t. for United States chemical pulp).

Apart from the rather weak levels of production of paper and paperboard described in the previous section, there are other factors influencing the level of ECE region pulp production, notably the continued

GRAPH 11.2.1

Swedish export price for chemical pulp, 1996 to 1999



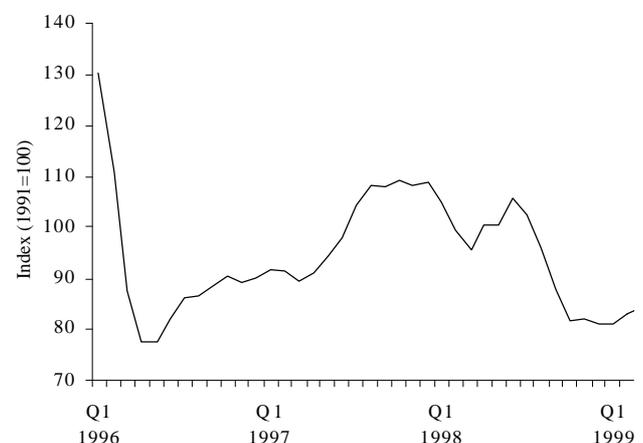
Source: "Forest Products Prices, 1996-1998", *Timber Bulletin*, UN-ECE/FAO, 1999.

growth in use of recovered fibre and the growth in the importance of hardwood, especially eucalyptus, pulp. Eucalyptus pulp now dominates world commodity trade in hardwood pulp and comes essentially from outside the ECE region (with the exception of Iberia). Tropical plantation-based producers of eucalyptus and other hardwood pulps are now the world's lowest cost producers and as such exercise a strong influence on the markets of both hardwood and softwood pulps (which to a certain extent are substitutes for each other, at least in the medium term).

Although only a relatively small part of pulp production is "market pulp" (i.e. pulp produced

GRAPH 11.2.2

Import price index for chemical pulp in Germany, 1996 to 1999



Source: ZMP, official statistics, 1999.

specially for commodity markets, rather than from integrated production facilities), developments for this assortment give a strong signal to other parts of the sector. These developments influence profitability of pulp mills and thereby their ability to pay for pulpwood. For that reason, it is worth describing recent trends for market pulp.

Conditions on world pulp markets are determined by a delicate balance between real final demand, production capacity, stocks and the perceptions of market participants as to the short-term outlook. This leads to a rather cyclical market with occasional very strong and rapid price movements. (The most spectacular recent example of the latter was in 1995/96

TABLE 11.2.1

Production of woodpulp in Europe, the Russian Federation and North America, 1995 to 1998
(1000 m.t.)

	1995	1996	1997	1998	Change 1997 to 1998	
					Volume	Per cent
MECHANICAL WOODPULP						
EUROPE	12,904	11,809	13,247	13,265	18	0.1
of which :						
Finland	3,797	3,489	4,469	4,637	168	3.8
Sweden	2,861	2,753	2,959	3,018	59	2.0
Norway	1,627	1,502	1,534	1,457	-77	-5.0
Germany	1,266	1,133	1,220	1,191	-29	-2.4
France	934	757	845	762	-83	-9.8
United Kingdom	548	490	537	509	-28	-5.2
Other countries	1,871	1,685	1,683	1,691	8	0.5
Russian Federation	1,245	976	899	1,060	161	17.9
Canada	11,550	10,973	11,354	10,402	-952	-8.4
United States	6,167	5,918	5,401	5,437	36	0.7
North America	17,717	16,891	16,755	15,839	-916	-5.5
CHEMICAL WOODPULP ^a						
EUROPE	24,178	23,581	25,685	25,649	-36	-0.1
of which :						
Sweden	7,326	7,094	7,535	7,523	-12	-0.2
Finland	6,291	6,204	7,149	7,247	98	1.4
France	1,884	1,758	1,985	1,915	-70	-3.5
Portugal	1,617	1,594	...	...	...	...
Spain	1,481	...	...	...	...	...
Austria	1,229	1,206	1,251	1,274	23	1.8
Poland	767	776	828	867	39	4.7
Norway	930	839	900	846	-54	-6.0
Germany	718	719	763	782	19	2.5
Czech Republic	440	411	453	490	37	8.2
Slovakia	249	241	386	339	-47	-12.2
Other countries	1,245	1,259	1,360	1,291	-69	-5.1
Russian Federation	3,828	2,841	2,851	2,880	29	1.0
Canada	14,093	13,620	13,795	13,798	3	0.0
United States	60,927	59,506	54,964	53,696	-1268	-2.3
North America	75,020	73,126	68,759	67,494	-1265	-1.8

^a Including semi-chemical woodpulp and dissolving grades.

when the benchmark price fell from nearly \$1000 to about \$400 in a few months).

At the beginning of 1998, pulp shipments rose and stocks fell, leading to a rise in prices (graphs 11.2.1 and 11.2.2). However, as feared in the last *Forest Products Annual Market Review* (prepared in July 1998) the situation was reversed in summer 1998. Shipments fell below production, stocks rose and prices fell. World bleached market pulp stocks, in August 1998, passed 3 million m.t. (*PaperTree Letter*). By the end of the year, the price of the benchmark grade, Northern Bleached Softwood Kraft (NBSK), fell to about \$425/ton. However already in autumn 1998, mills had cut production levels, in some cases by permanent closures, thus steadily reducing stocks. From early 1999, market pulp prices have been rising steadily because of the new-found market balance, to about \$520/ton in June 1999. Expert opinion is that this increase will hold for the time being.

The fact that the benchmark price for softwood pulp is in dollars means that the cost to buyers is influenced by both the pulp price level and currency movements. Thus the increase in NBSK price in 1999 was exacerbated for most European buyers by the fall in the euro over the same period. The hardwood pulp trade however is denominated in euros – the currency of the countries where most hardwood market pulp is sold.

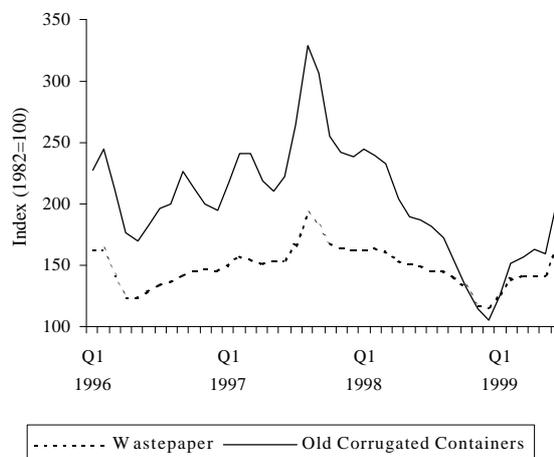
Although statistics are not available at present on supply, trade consumption and trade of recovered fibre, it is clear that the use of this raw material continues to grow in absolute and relative terms, especially in those countries which have large populations and therefore resources of recovered paper. The best example of this is Germany, Europe's largest producer of paper and paperboard, where recovered paper is the primary raw material for manufacture of paper and paperboard.

The price of recovered fibre tends to follow that of market pulp: indeed in the United States, the decline in recovered fibre prices in the second half of 1998 and their recovery in early 1999 reflects rather precisely the trend described above for chemical market pulp (graph 11.2.3).

An interesting recent phenomenon is the developments of markets and trade in "waste paper pulp" or "deinked market pulp" i.e. recovered fibre deinked and then dried for transport and sale. Increasingly paper producers wish to incorporate recovered fibre into their product, for cost reasons or to meet targets (commercial or legally imposed) for "recycled content", but do not have the possibility to

GRAPH 11.2.3

Prices of old corrugated containers and waste paper in the United States, 1996 to 1999



Source: Bureau of Labour and Statistics, United States, 1999.

install a deinking plant. In both Europe and North America, companies are now supplying deinked recovered fibres, ready for incorporation into the fibre furnish. This material is also entering international trade and should in future be monitored separately.

11.3 Markets for pulpwood

This section presents trends for supply, trade and prices of pulpwood. Unlike pulp markets, which are truly global, those for pulpwood are more local or regional in nature, and strongly influenced by local conditions, such as the economic health of a mill, or developments for other forest products. In particular there is competition for roundwood between sawmills, pulpmills, panel manufacturers and, in some areas, energy producers; furthermore sawmill residues are a major component of pulpwood supply, so that there is a degree of symbiosis between the two sectors.

Increasingly fibre from used wood products such as pallets or demolition wood is used as "pulpwood". In particular it is a raw material for some panels. There is at present however, no statistical system in place to monitor this.

On the basis of data for production of pulp and panels, it is possible to estimate "derived pulpwood requirements". In Europe as a whole, "derived pulpwood requirements" in 1998 were at about the same level as in 1997 (table 11.3.1). For Europe, increases in Finland, Poland, Germany and Sweden, compensated falls in Italy, Norway and France (table 11.3.2).

TABLE 11.3.1
Derived pulpwood requirements in Europe and North America, 1995 to 1998
(million m³ equivalent)^a

	1995	1996	1997	1998
EUROPE				
Mechanical woodpulp	32.26	29.52	33.12	33.16
Semi-chemical woodpulp	4.33	4.17	4.62	4.48
Chemical woodpulp ^b	109.13	106.52	115.90	115.94
Particle board	43.23	43.88	46.67	47.61
Fibreboard	10.83	10.98	11.67	11.86
Total	199.77	195.06	211.98	213.05
Change on previous year				
- Volume		-4.71	16.92	1.07
- Per cent		-2.4	8.7	0.5
NORTH AMERICA				
Mechanical woodpulp	44.29	42.23	41.89	39.60
Semi-chemical woodpulp	13.00	12.71	12.44	12.32
Chemical woodpulp ^b	339.29	330.67	310.14	304.26
Particle board	27.63	31.83	33.91	37.11
Fibreboard	13.00	13.16	13.17	13.64
Total	437.22	430.60	411.55	406.93
Change on previous year				
- Volume		-6.62	-19.05	-4.62
- Per cent		-1.5	-4.4	-1.1

^a Equivalent volume of wood in the rough, calculated from data on production of pulp and panels, using the following conversion factors :

Mechanical woodpulp :	1 m.t. = 2.5 m ³ equivalent
Semi-chemical woodpulp :	1 m.t. = 3.0 m ³ equivalent
Chemical woodpulp (incl. dissolving) :	1 m.t. = 4.8 m ³ equivalent
Particle board :	1 m ³ = 1.4 m ³ equivalent
Fibreboard :	1 m ³ = 1.8 m ³ equivalent

^b Including dissolving pulp.

In North America, on the other hand, pulpwood requirements fell, by nearly 7 million m³, because of the falls in pulp production (still by far the largest consuming sector, 87% of the total, despite the growth for panels, notably OSB and, to a lesser extent, MDF). According to the American Pulpwood Association (APA), pulpwood receipts in the United States (i.e. the volume of pulpwood received by mills) fell by 1.8% in 1998. Although the decline was more than two times greater for softwood, it still accounts for 65% of the total. Softwood still accounts for 65% of the total. The decline affected all regions except the north-east. Of the national total of 247 million tons of pulpwood receipts, 183 million tons (75%) were in the APA South region (South Central and South Atlantic). In Canada, pulpwood consumption was rather stable

between May and November 1998, then rose quite sharply to May 1999 (source Statistics Canada).

European pulpwood removals increased by about 2.9 million m³ (2.6%) in 1998 with higher than average increases in Finland, and a fall in France (table 11.3.3). German pulpwood removals rose sharply after the steep fall in 1997, to reach a more "normal" level of 10.4 million m³.

In the United States, pulpwood removals rose by 0.4%, to 185.1 million m³. This rise, combined with the fall in pulpwood receipts reported by APA (see above) would indicate that pulpwood stocks have risen; indeed this is confirmed by the fall in prices which is described below.

TABLE 11.3.2
Derived pulpwood requirements in selected countries, 1995 to 1998
(million m³ equivalent)^a

	1995	1996	1997	1998	Change 1997 to 1998	
					Volume	Per cent
Finland	39.65	38.72	45.42	46.28	0.86	1.9
Sweden	43.15	41.71	44.29	44.51	0.23	0.5
Germany	20.61	19.84	21.12	21.55	0.43	2.1
France	15.86	15.26	17.00	16.80	-0.21	-1.2
Spain	10.96	11.09	...	...	...	...
Austria	9.47	9.24	9.65	9.79	0.15	1.5
Portugal	9.37	9.32	...	...	...	...
Poland	7.01	7.37	7.86	8.57	0.72	9.1
Norway	9.20	8.45	8.70	8.38	-0.32	-3.6
United Kingdom	5.34	5.27	5.47	5.48	0.01	0.1
Belgium-Luxembourg	5.44	5.74	5.08	4.96	-0.12	-2.3
Italy	6.29	5.62	6.45	4.83	-1.62	-25.1
Canada	104.60	103.19	106.78	105.73	-1.05	-1.0
United States	332.62	327.41	288.67	282.77	-5.90	-2.0

^a Equivalent volume of wood in the rough calculated from data on production of pulp and panels using the conversion factors given in the footnote a/ to previous table.

TABLE 11.3.3
Removals of Pulpwood, 1995 to 1998
(million m³)

	1995	1996	1997	1998	Change 1997 to 1998	
					Volume	Per cent
EUROPE	116,081	106,560	110,076	112,992	2,916	2.6
Finland	22,968	20,968	22,781	24,053	1,272	5.6
Sweden	24,600	21,400	21,800	22,200	400	1.8
France	11,414	9,698	10,978	10,800	-178	-1.6
Germany	11,738	10,241	8,738	10,417	1,679	19.2
Russian Federation	23,300	18,761	16,276	16,520	244	1.5
Canada	31,089	...	...	...	...	...
United States	150,000	149,263	153,240	154,029	789	0.5

It is not possible, unfortunately, to identify precisely trade volumes for round pulpwood, as this assortment is included together with logs by the Harmonised System in "wood in the rough". It is however possible to glean some information from the table 7.3.5 "Exports and imports of industrial wood in the rough" (found in the chapter 7 on roundwood).

First, Europe's leading importers of round pulpwood, Finland and Sweden both increased these imports significantly. Imports of wood in the rough increased by no less than 37% for Finland, to 9.2 million m³, and by about 20% for Sweden, to nearly the same level. Finnish wood raw material imports were at record levels and the subject of some political discussion. Almost all these volumes concern pulpwood, largely

from the Baltic countries and Russia. Russian exports of wood in the rough also expanded by 10.4% to reach 19.7 million m³, although part were sawlogs, notably to Japan. As Russian log exports to Japan fell by 1.4 million m³, most of the increase was pulpwood.

The Baltic Countries reported the following increases in exports of wood in the rough, (coniferous and non-coniferous): Estonia, +0.88 million m³ (+30%) and Latvia, +0.64 million m³ (+30%). The increase in Lithuania was marginal. Altogether in 1998, the three Baltic Countries exported 7.3 million m³ of wood in the rough, mostly pulpwood, 27% more than in 1997.

Finnish and Swedish imports of wood in the rough amounted to 18.4 million m³ in 1998. This concerned essentially pulpwood, and was equivalent to just over 20% of derived pulpwood requirements. Thus about a fifth of pulp production in Finland and Sweden is based on imported roundwood. (Another 1 million m³ of pulpwood supply concerns imported residues and chips)

Trade in wood residues, chips and particles is particularly hard to monitor because of the scattered sources of the material, classification difficulties, etc. Further complicating the analysis is the many local factors which play a role. Recent years have seen additional factors to the normal ones of price, location, and quality, as determinants for trade in wood residues. Landfill charges have in many cases made simple dumping or burning of residues expensive, or forbidden, and disposal by burning is sometimes not allowed because of contamination. Improved collection systems have improved supply of residues from secondary wood processing industries.

In 1998, German exports of wood residues, chips and particles dropped by nearly a quarter, to 2.7 million m³, after the sharp increase in 1997, to 3.5 million m³ (table 11.3.4). This level is still well above the 1.9 million m³ reported in 1995. Steep upward movements between 1997 and 1998 were recorded for exports by France, Switzerland and Sweden, and imports by Italy, Finland, Germany and Norway, while marked downward movement was recorded for exports by the Czech Republic, France and Austria.

North American exports, mostly of chips, dropped by 8% to 7.3 million m³. Japan is still the most important destination, as it imported 13.7 million m.t. in 1998, 1.1% less than in 1997. However, the pattern of imports changed: Japanese chip imports from the United States fell by 10.1% or 0.5 million m.t., while imports from other sources hardly fell at all, or rose. This may be attributed to the strength of the dollar over this period. Canadian exports of wood

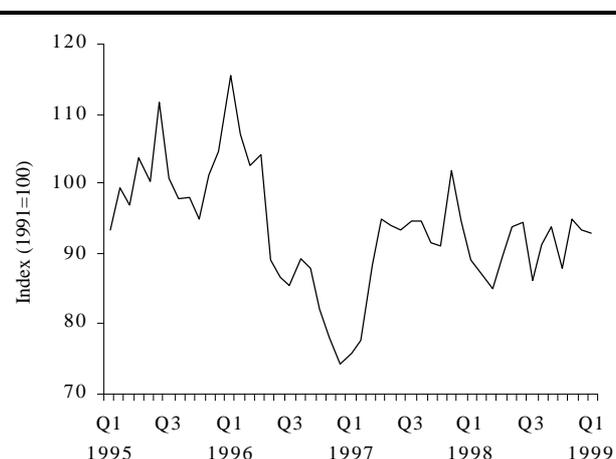
residues, chips and particles, to all destinations, including the United States, fell by nearly 30%, to just over 1.2 million m³.

Prices on European pulpwood markets varied, but in early 1999 were generally stable, with some weak tendencies:

- In Germany prices for *industrieholz* (essentially round pulpwood, with some "other industrial wood") were on average 10% higher in 1998 than in 1997, with further rises in early 1999 (graph 11.3.1). However, no clear trend is visible. Prices for residues have been rising steadily but slowly since the end of 1996, and stood in May 1999 at 103.4 (index 1995 = 100) compared to just over 90 in late 1996;

GRAPH 11.3.1

Pulpwood prices in Germany, 1995 to 1999



Source: "Forest Products Prices, 1996-1998", *Timber Bulletin*, UN-ECE/FAO, 1999.

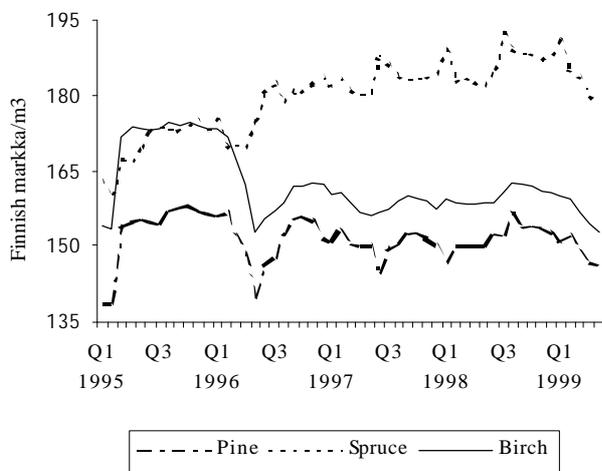
- In Finland, pulpwood prices in May 1999 were between 1.6% and 3.7% lower than in May 1998. This slow downward trend has been visible since spring 1998 (graph 11.3.2);
- Estonia and Latvia also reported lower prices and volumes;
- In Austria, there was a sharp upward price movement in the last quarter of 1998, after nearly two years with very little variation (graph 11.3.3);
- In Sweden, there was practically no change in prices for round pulpwood in 1997 or 1998, while prices for sawmill chips tended to decline.

These developments were in line with trends for European pulp markets: some rise in volumes, but uncertainty about price trends and the supply/demand balance in general. Local and regional pulpwood markets are more difficult to analyze than those for

TABLE 11.3.4
Exports and imports of wood residues, chips and particles, 1995 to 1998

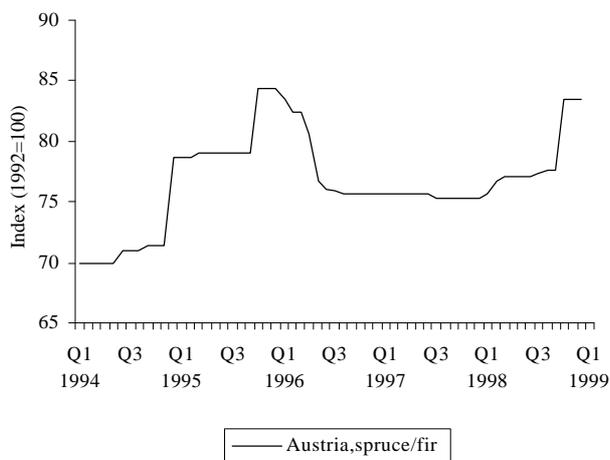
	1995	1996	1997	1998 (prelim.)	Change 1997 to 1998	
					Volume	Per cent
	(1000 m ³)					
EXPORTS						
EUROPE	7,848	8,778	7,826	6,997	-829	-10.6
of which :						
Germany	1,878	2,987	3,522	2,690	-832	-23.6
France	1,161	1,211	1,156	1,251	95	8.2
Austria	2,120	1,707	557	545	-12	-2.2
Belgium-Luxembourg	635	465	407	...	...	...
Czech Republic	492	552	479	339	-140	-29.2
Switzerland	171	182	226	301	75	33.2
Sweden	271	311	251	288	37	14.7
Netherlands	321	280	222	...	...	...
Norway	147	146	191	181	-10	-5.1
Finland	94	170	161	172	11	6.8
Other countries	558	768	655	601	-53	-8.1
Russian Federation	533.0	...	...	...	...	...
Canada	1,488	1,717	1,707	1,211	-496	-29.1
United States	5,552	7,237	6,212	6,069	-143	-2.3
North America	7,040	8,954	7,919	7,280	-639	-8.1
IMPORTS						
EUROPE	10,204	10,485	10,872	11,358	486	4.5
of which :						
Belgium-Luxembourg	1,195	1,117	1,866	...	...	...
Italy	1,235	1,155	1,499	1,703	204	13.6
France	1,552	1,114	1,278	1,217	-61	-4.8
Finland	582	740	943	1,079	136	14.4
Germany	453	720	873	1,001	128	14.7
Sweden	686	777	921	936	15	1.6
Norway	520	664	636	857	221	34.7
Austria	2,470	2,583	839	662	-177	-21.1
Switzerland	608	603	529	543	14	2.6
Hungary	121	199	450	...	...	...
Other countries	781	812	1,039	1,044	6	0.5
Canada	1,344	933	1,611	1,729	117	7.3
United States	1,227	1,583	1,464	1,022	-442	-30.2
North America	2,571	2,516	3,075	2,751	-325	-10.6

GRAPH 11.3.2
Pulpwood prices in Finland, 1995 to 1999



Source: Finnish Forest Research Institute

GRAPH 11.3.3
Pulpwood prices in Austria



Source: "Forest Products Prices, 1996-1998", *Timber Bulletin*, UN-ECE/FAO, 1999.

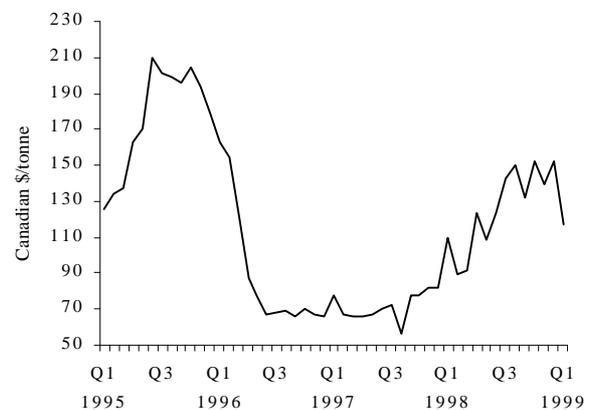
globally traded commodities such as pulp. In general finding pulpwood sellers and making contracts is a fairly lengthy business (often characterized by one strong buyer and many, small, often not well informed, sellers). For this reason, there are often regional agreements or recommendations which are valid for some time, so that pulpwood prices may move more slowly, up or down, than those for pulp.

In North America however, the down time and closures in the pulp industry, decided on by producers to restore the supply/demand balance on the pulp markets, combined with good logging conditions, and

high levels of sawnwood production (producing chips as a by-product) have caused a pulpwood glut (oversupply) in many areas, including such important areas as the United States South and north-east. According to *International Woodfiber Report*, in many regions of the United States and Canada, round pulpwood prices were about 20% lower in the second quarter of 1999 than in the same period of 1998, and sometimes barely over \$20/green ton, delivered to mill.

The export unit value of British Columbia chips (in Canadian dollars), rose steadily between mid 1997 and the end of 1998 (graph 11.3.4).

GRAPH 11.3.4
Export unit price of chips from British Columbia, 1995 to 1999

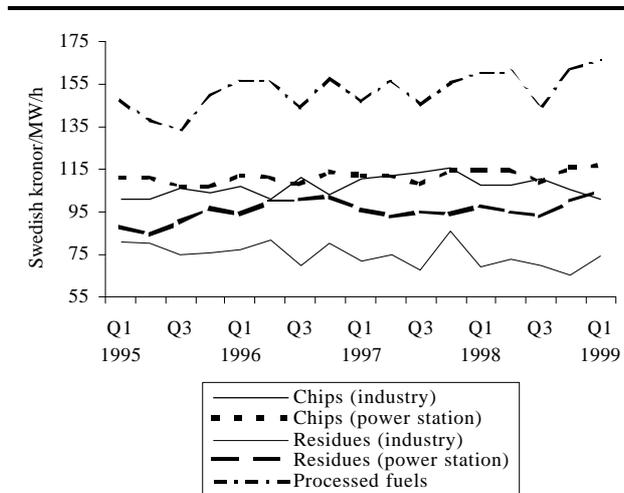


Source: Ministry of Forest, British Columbia, 1999.

Little up-to-date information is available on wood energy markets, as few countries have set up systems to monitor prices and volumes of energy wood. Although wood energy has attracted the attention of policy makers, the market is small and fragmented. An exception is Sweden, where prices remained stable through 1998 (graph 11.3.5).

The proceedings of the workshop held in Istanbul, Turkey in November 1998 on recycling, energy and market interactions, have recently been issued by the Turkish Ministry of Forestry. They contain several interesting and relevant papers on the situation and prospects for wood energy in a number of countries, although not, as yet, the type of recent and quantified data needed for publications such as the *Review*.

GRAPH 11.3.5
Swedish prices for wood energy



Source: NUTEK, 1999.