Chapter 3
Effects of the December 1999 Storms on European Timber Markets

Highlights

- *Severe windstorms felled 193 million m^3 of roundwood in December 1999, the equivalent of 2 years' harvest in affected countries.*
- *Roundwood markets in Europe were in chaos with sharp falls in prices initially, although some order had been restored by mid 2000.*
- *Government measures intervened to stabilise markets, assist forest owners and provide necessary infrastructure. Some planned harvests were postponed outside the storm-damaged zones.*
- *Considerable roundwood was salvaged quickly, or stored, before the onset of attack by pathogens or fire.*
- *Existing trade channels within Europe were strengthened and new markets were found in central and eastern European countries and in Asia.*
- *Similar to the 1990 storm's effects on wood products markets, the fluctuations in supply and price were absorbed during primary processing and there were little distinguishable effects in sawnwood, panels and pulp production, prices or sales.*
- *Greater market calamity was mitigated through sector solidarity.*
- *The crisis will have some long-term benefits for the sector due to its valuable public relations opportunities, new export and energy markets, and development of harvesting, transportation and manufacturing capacity.*

3.1 Introduction

3.1.1 Three storms of unprecedented violence sweep Europe in one month

Europe was swept by severe windstorms in December 1999 which left paths of destruction in many European forests, especially in France, Germany and Switzerland. Millions of trees were broken and uprooted and millions of cubic metres of roundwood were left for forest managers to harvest before the onset of infestations of insects and disease or fires.

While some countries experienced the equivalent of several years worth of harvest in a day, some localities had most of their forests felled with sudden, direct consequences for the forest-based industries and people's livelihoods, not to mention ravaged landscapes. While over time the forests will regenerate, the scars of the storm will last for generations in the worst hit communities.

There were in fact three hurricanes that struck Europe in December 1999. An early windstorm on 4 December, named Anatol, caused damage principally in Sweden and Denmark. The second major storm, named Lothar, came on 25-26 December and decimated forests in northern France, Switzerland, Germany, Belgium and other countries to the east. And then the third wind and rainstorm, named Martin, followed on 27-28 December and swept through the southern half of France, moving eastward through Switzerland, Austria and ending in the Baltic countries unless there was unreported damage in Russia.

3.1.2 What happened when, where and why?

The purpose of this special chapter on the market effects of the storm extensive damage is multi-fold. First, there has never been a storm measured which resulted in such damage, and the impacts on timber markets are both immediate and will continue to skew markets for 2 to 3 years. Second, as explained below, this storm will not be the last and lessons learned this year can help after future storms, both in the countries which sustained damage this time, and for those countries which incur storm damage the next time. And third, the Joint Timber Committee and European Forestry Commission Session will discuss the storm damage as a special topic; this chapter provides background information and brings forth topics for discussion.

Information for this chapter was collected primarily through two meetings held in Geneva which focussed on the storms' effects on markets. The first meeting brought together representatives of the governments[1], trade and forest owners from France, Germany and Switzerland in March 2000. Later in June, the Joint FAO/ECE/ILO Committee on Forest Technology, Management and Training discussed the storms and their effects on forest management and forest products markets as their special topic. The secretariat is indebted to the meeting participants for their insight and information for this chapter. In addition the trade press has documented the evolving situation and their information is incorporated here. Finally the Timber Committee established a clearing house for information on its website in January 2000 and the links to other websites, especially those in France, Germany and Switzerland were beneficial too.

Although this chapter focuses on the 3 main countries which sustained storm damage, France, Germany and Switzerland (in alphabetical order as well as in order of magnitude of damage sustained), numerous other countries incurred substantial damage. In Germany, the overall material damage was estimated at over $10 billion, including $1 billion in forests. Lack of mention of other countries' situations is not intended to reflect any opinion on the part of the authors, but rather either a lack of information or a lack of time in preparing the chapter.

This story focuses on the forest sector market effects, however there were also during the storm or in the clear up phase, terrible consequences in some localities for wildlife habitat, for personal property struck by falling trees, for infrastructure such as electric and telephone lines, etc. Other economic sectors were also decimated and lack of mention does not indicate a lack of recognition and concern, but rather a focus on this sector.

Most tragic of all was the loss of life. In Europe, at least a hundred deaths can be attributed to the storm. Perhaps the most affected group has been forest workers engaged in the extremely hard and dangerous work of clearing wind thrown trees. There were 19 deaths in German harvesting operations alone. Our sincere sympathies go out to all victims of the storm.

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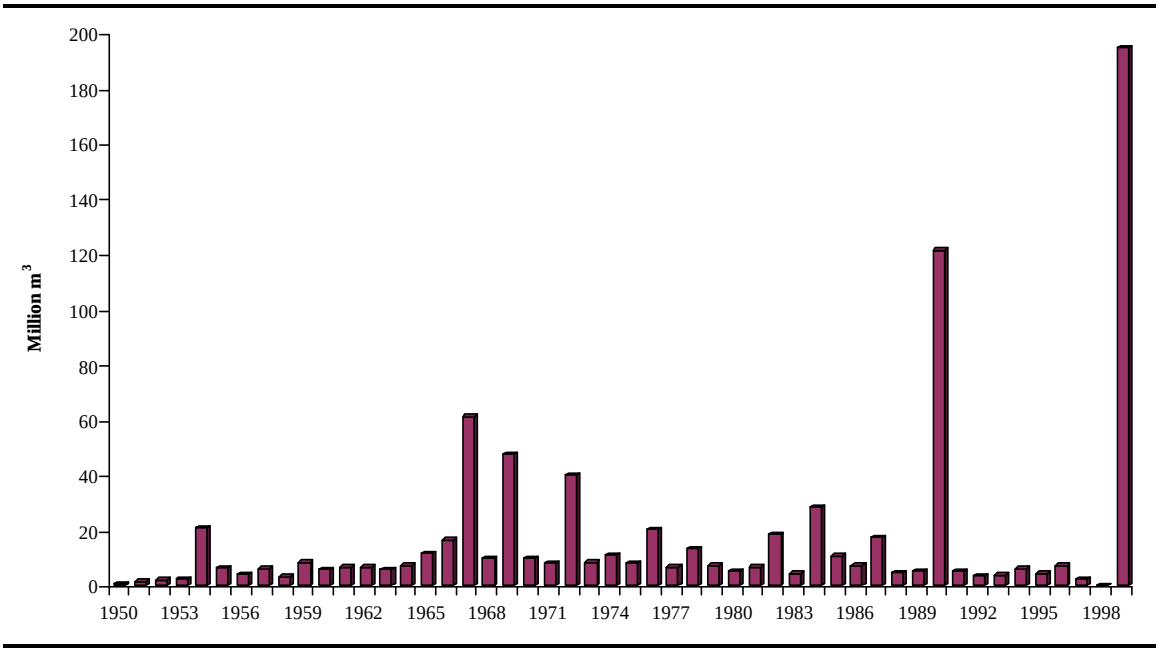
[1] *The authors are especially grateful to the leaders of delegations to the two meetings: From France: Mr. Paul Delduc and Mr. Roger Bonneviale, Ministère de l'Agriculture et de la Pêche, and Mr. Pierre Verneret, Fédération Nationale du Bois; from Germany: Mr. Johannes Dengg, Federal Ministry of Food, Agriculture and Forestry; and from Switzerland: Mr. Thomas Grünenfelder, Office fédéral de l'Environnement, des Forêts et du Paysage.*

GRAPH 3.1.1
Windstorm damage in European forests, 1950-1999



Source: Mr. Mart-Jan Schelhaas, Altera, Netherlands, 2000.

3.1.3 How exceptional is the 1999 storm damage?

Storms have frequently caused "catastrophic" damage to Europe's forests – windblows of over 20 million m^3 have occurred about 10 times since the early 1950s (graph 3.1.1). The damage sustained in 1990 and 1999 was by far the worst of all these years. There is insufficient evidence to demonstrate that storms are becoming more frequent or more severe. However, enormous storm damage has occurred regularly and, it is safe to assume, will occur again.

For very large volumes of wood to blow down, two conditions are necessary: an excessively powerful meteorological event and a forest ecosystem with insufficient wind resistance. Both conditions were met in 1999. "Lothar" and "Martin" were exceptionally violent storms.

A bizarre meteorological combination combined 3 factors which unleashed the 26-28 December storms: 1. a blast of strong polar air, 2. a jet stream oscillating between 350 and 400 kph compared to the normal 100 kph, and 3. a series of zones of extremely low pressure at low altitudes. Taken separately, none of these factors would have set off a storm of this magnitude, but taken together they detonated an explosion which ripped through Europe.

After one wave of wind passed, another followed as the turbulence created more zones of depression mixed with mounting humid tropical air. The result was heavy rain and dense, wet snow where temperatures were below freezing. At higher altitudes tree limbs snapped and saplings bent over from the weight of the heavy, wet snow. Clean-up became dangerous, if not impossible, above the snow line.

Wind velocities near Geneva, Switzerland on top of the Jura Mountains, exceeded 200 kph (approximately 125 miles per hour). In other areas of Switzerland winds were measured at 240 kph. In France, most of the country sustained winds near 150 kph or above in one of the two storms. In many areas of France and western Switzerland, heavy rains throughout December preceded the storms (reaching record rainfalls for the year). This meant little resistance from water-soaked soils to the movement of the root systems. Many trees were simply blown down while others were broken, leaving more unusable wood than in the uprooted trees.

Based on historical observations, the worst months for storm damage in forests are September, November, January and February (doctoral thesis by Dr. D. Doll, University of Lyon, 1988, as reported by La Forêt Privée, nos. 198 and 199). These averages will undoubtedly be changed by the December 1999 storms.

The sensitivity of the forest to storms is of course a function of the site, the species and the silviculture. However, a report prepared for the French authorities attributes the increase over time in forest damage due to storms in France to a number of factors:

- *a greater forest area;*
- *higher standing volume per hectare;*
- *replacement of (relatively wind stable) coppice and coppice with standards by high forest;*
- *more stands with high dominant height; and*
- *increase in certain conifers, such as Douglas fir, spruce and fir. (Source: Birot, et al. "Expertise collective sur les tempêtes, la sensibilité des forêts et sur leur reconstitution", 2000".)*

3.2 Damage magnitude: the equivalent of 2 years' harvest in 3 days!

The most severe storm damage occurred in France, Germany and Switzerland, however many other countries sustained significant damage (graph 3.2.1 and table 3.2.1). In the 8 countries sustaining significant damage, the windthrow was equivalent to 2 years' harvest. In all of Europe the damage was equivalent to a half year's harvest.

TABLE 3.2.1

December 1999 windthrow versus 1998 annual removals in Europe

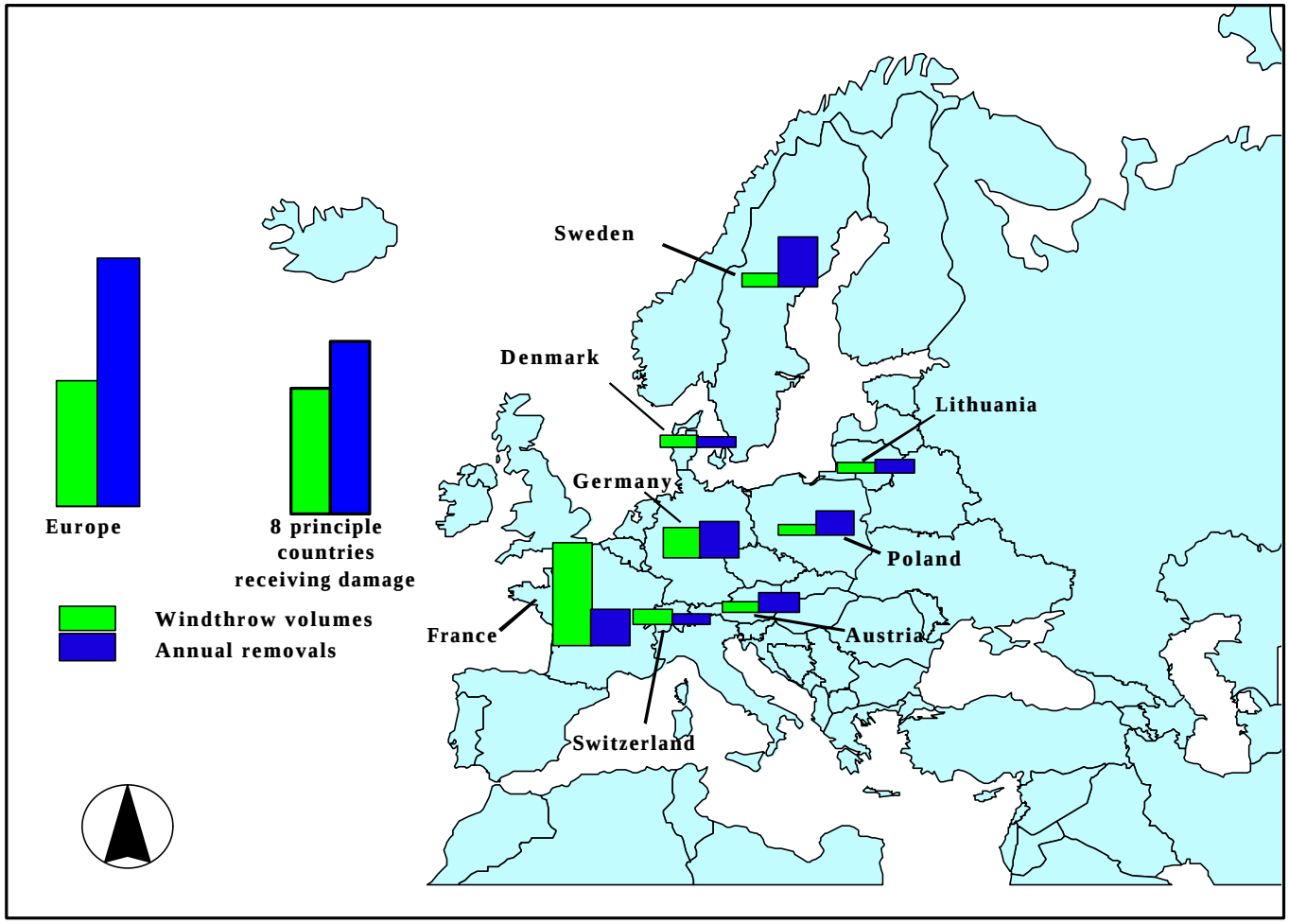
(Million m^3)

	Windthrow volumes	Annual removals	% of annual removals
France	139.6	42.9	325.4
Germany	30.0	39.0	76.9
Switzerland	12.1	4.2	288.1
Sweden	5.0	58.1	8.6
Denmark	3.5	2.2	159.1
Poland	2.0	23.3	8.6
Austria	0.4	14.0	2.9
Lithuania	0.4	4.9	8.2
Subtotal	193.0	188.6	102.3
Belgium	Minor	4.1	-
Estonia	Minor	6.1	-
Latvia	Minor	10.0	-
Spain	Minor	15.6	-
Other countries		156.4	-
Total Europe	193.0	380.8	50.7

Sources : National reports; ECE/FAO TIMBER database; and www.unece.org/trade/timber, 2000.

GRAPH 3.2.1

Windthrow versus annual removals in Europe, 1999



Sources: ECE/FAO TIMBER database; national reports; and www.unece.org/trade/timber, 2000.

The table shows only part of the story as the volumes of windthrow were based on surveys in January and February 2000. Some mountainous regions were surveyed by air due to roads blocked by fallen trees and snow. However the damage reports had not changed significantly by summer 2000.

The storm damage represents a sudden, involuntary increase in supply, making available a large amount of wood, whatever the levels of demand. It follows from this that the seller – the forest owner – loses all freedom of action in the market discussions, and becomes a price-taker. Among the options to protect prices and market equilibrium and to minimize losses (in the absence of government intervention) are the following, all of which forest owners put into action:

- *Reduce supply as much as possible (e.g. by leaving wood in the forest or arranging for other suppliers not to harvest).*
- *Spread supply over a longer period (e.g. by stocking harvested roundwood).*
- *Find new or increase existing outlets (e.g. energy, raw material exports).*

Also entering into the equation were the higher harvesting costs and lower productivity due to difficult operating conditions. Logging crews were in limited supply and therefore costs for their services rose.

Transport costs were higher than normal because of scattered location of logging sites. Hauling distances increased dramatically to transport roundwood to mills outside the storm zones, either for export or for domestic markets unable to draw from local forest resources due to temporary logging bans.

Governments are faced with difficult policy dilemmas of how to help the main losers, i.e. the forest owners, who have not only seen the prices they receive fall and their production costs rise, but also the destruction of capital stock for several decades. Governments must act quickly without penalizing wood buyers or infringing the international law in matters such as migration of labour, subsidies to domestic producers, etc. Governments also provided many forms of assistance as explained below.

The real question is what percentage of the fallen timber would be usable and removable from Europe's forests? Government estimates were that only 50 to 75% of the storm-felled timber would ever make it to the market. Much of the rest would be left in the woods because it is either too damaged to be economically removed, or because it is inaccessible in mountains or on steep hillsides.

Other large portions of the damaged timber would be consumed in local uses, mainly for firewood, which will never show in national statistics. Some additional volumes were given to sawmills by owners of small forest tracts in compensation for clearing roads and forests, and these volumes too will not appear in statistics. One of the lessons learned in Germany after the last major storms in Europe in 1990 was that approximately 30% of the estimated windthrow removals from forests could never be found in the official statistics. There were also reports of theft of logs during the disorder which followed the storms.

Of the approximately 140 million m^3 of roundwood blown down in France, only 55 million m^3 were estimated to be recoverable (Fédération Nationale du Bois, May 2000). As of May 2000 most of that, about 30 million m^3, was still in the forests, although a small volume was properly stocked there. Approximately two-thirds of the windthrow was on private forests (90.1 million m^3) and the rest on public forests. By the end of May, the equivalent of a year's harvest had been removed from forests.

In Switzerland, about 40% of the storm-felled timber was harvested and most of that already sold in June 2000 – six months after the storm. Another 35% will be recovered until spring 2001 and the remaining of 25% will be left in the forest and never reach the market.

In Switzerland, wood will be removed if it:

- *presents a hazard, for example blocking streams or creating a potential landslide;*
- *presents a phytosanitary risk;*
- *disturbs recreational uses of the forest;*
- *hinders regeneration;*
- *(and last but perhaps of greater importance than the above) is economical.*

Fallen timber will not removed from Swiss forests if:

- *extraction costs are higher than expected revenue;*
- *it might prevent landslides or erosion;*
- *it might aid regeneration;*
- *it is valuable for nature conservation. (Source: Messrs Y. Kazemi and R. Jenni from FAO/ECE/ILO Joint Committee tour, 2000.)*

In all countries trees which were not uprooted, but either blown over or are leaning with some of their roots still in the earth, are being left until last for cutting.

Of the amount that will be removed from forests, veneer logs from large-diameter hardwoods like beech and white oak are the most valuable. Sawlogs for sawnwood and barrel production, especially of oak and beech, but also of spruce, fir (including Douglas fir) and pine will be of high value too when they did not sustain any damage. Therefore, the processing of these high-value logs has had priority in the clearing operations.

The small-diameter and damaged larger diameter logs for pulp, panel and fuel production will be the majority of the volume, but not all of this will be merchantable.

Competition for the low-priced pulpwood was keen between buyers for pulp, fuel and panel production.

The breakdown between hardwoods and softwoods varies by country. In Germany and Switzerland 20% was estimated to have been hardwood (Tropical Timbers (now hardwoodmarkets.com), February, 2000). In France, this ratio reaches 35%.

The breakdown between private and public forests varies by country. In Switzerland, 40% was in private and 60% was in public forests. In France, 14% of the volume of the fallen timber was located in state-owned forests, 20% in community-owned forests and the rest in private forests.

The value of the storm-felled timber varied considerably based on its quality (normal parameters of size, straightness, number of natural defects, plus potential quality reductions due to storm-related damage), location, degree of difficulty in harvesting and durability against fungal attack and bacteriological discoloration. For example, to avoid sharp price drops, it is necessary to move beech out of the forest as quickly as possible because of its susceptibility to discoloration.

3.3 Market effects: potential enormous imbalances mitigated through sector solidarity

3.3.1 Surplus supply on the forest floor

The sudden volume of roundwood on the ground sent shock waves through Europe's roundwood markets. However, prices for most wood products were relatively unaffected: sawnwood, panel and pulp prices did not change considerably with the lower raw material costs. The secondary-processed wood products, like furniture, cabinetry, joinery and other value-added products did not feel the roundwood glut as all effects had been dampened by this point in the chain.

Some mitigating factors exist: 1. the economic situation is good throughout most of Europe and Asia meaning a high demand for the roundwood and its products; and 2. the storms' occurrence in December gave some lead time to remove or store and protect logs before the threat of attack by forest pests or fire. Nevertheless, the heavy snows at higher elevations and the wet soils at lower elevations meant restricted logging in many forests.

3.3.2 Stocking roundwood to soften market impact

To stretch the roundwood oversupply over the longest time frame possible, many forest managers stocked logs in the forest, partly aided by government subventions in France, Germany and Switzerland. The German authorities went further and provided financial incentives to cover sawmills' increased inventory carrying costs for stocking sawnwood at the mill. For the same purpose, the French government granted low-interest loans.

Stocking has its costs and government assistance (e.g. subsidies for investment) was usually instrumental in inciting forest managers to initiate long-term storage. In Baden-Württemberg, Germany, 20% of the windthrown logs had been stocked in the forest or in adjoining areas as of May 2000 (Le Bois National, June, 2000).

The mechanisms for stocking roundwood assure protection against insect, fungal and bacterial attack and help to relieve market pressure. Submersion in water was used heavily in the 1990 storms, but was closely scrutinised this year because of potential water pollution from run-off, seepage into the ground water or direct pollution of the water body in which it is posed. As a result special storage ponds were created at a relatively high cost to protection against pollution. The protection against the runoff from log storage was a subject of debate between the forest sector and environmentalists.

The main method used for long-term storage of valuable logs remains water spraying, either close to the damaged forests, if the initiative comes from the forest owner or at the mill yard. The effect of spraying with water is the same as that of submersion: it keeps logs too wet for infestation by pathogens (insects and fungi).

Dry storage is also possible if the logs can be protected from bacteria, fungi and insects by covering logs and in some cases replacing the oxygen with other gases. Beech, which deteriorates in quality faster than other species, is sometimes stored dry to avoid water discoloration, but this is quite risky.

Logistics and transport proved to be severe bottlenecks in processing and distributing large volumes of wood. In Germany, there have been strong and successful efforts to increase transport capacities: by train, 200,000 m^3 per month, by ship, 150,000 m^3 per month, and by truck, 200,000 m^3 per month.

3.3.3 Price effects: universally down, but to varying degrees

Roundwood prices in France, Germany and Switzerland as well as in other affected countries in some cases fell sharply. Despite initial government measures or agreements between forest owners associations and the wood industry federation to suggest a 20% reduction in sawlog, veneer log and pulpwood prices, roundwood prices fell by more, initially by at least 30%. The solidarity in Switzerland between local industry and their nearby forest owners was broken when international buyers offered substantially lower prices but for massive volumes. Log buyers defended reduced prices citing the high incidence of breakage and loss in sawing due to fissures in

broken logs. The same could not be substantiated for pulplogs and energy wood, yet they too were often offered at lower prices to rid forests of fuel for fire, insects and disease.

Despite government intervention, markets found their new equilibrium at considerably lower roundwood prices than before. When the price fell low enough, buyers, including foreign buyers, were enticed to purchase, aided by the fortunate strong demand for wood products in 2000. Beech was in surplus and it also has been in high demand over the last few years for furniture, cabinetry and panelling, not only in Europe, but even more so in China, Korea and Japan.

How much did roundwood prices drop? The price reduction ranged from 20 to 100% with many sawlogs sold from 20 to 50% below their values before the storm. High value logs sought by veneer, sawnwood and barrel manufacturers that did not sustain visible damage, especially oak, maintained high prices. Beech logs were sold at 20 to 60% reductions to avoid the first heat waves in May which accelerated degradation by fungal staining. Spruce logs in Switzerland dropped some 30% in price (graph 3.3.1). Some quantities of roundwood on smaller forests were simply given away to entice loggers to haul away a few downed trees.

In Germany, by mid 2000, fir logs at the roadside were 30 to 35% lower and spruce logs were down less, by 25 to 30% over pre-storm prices (Le Bois Naional, July 2000). Beech logs were down 15% and oak had not changed price from 1999.

In Switzerland the sawlog prices fell on an average by 27% over 1999 prices from January through April 2000 (Swiss Federal Bureau of Statistics, June 2000). Roundwood prices had been declining in general throughout 1999, and this 27% reduction is a weighted average of the drop in spruce and fir log prices by 27.6% combined with beech log prices of 22.8% against the 4 months preceding the December storms. The price change is perhaps only partly due to the storm surplus, sawlog prices have fallen by 41% since 1992.

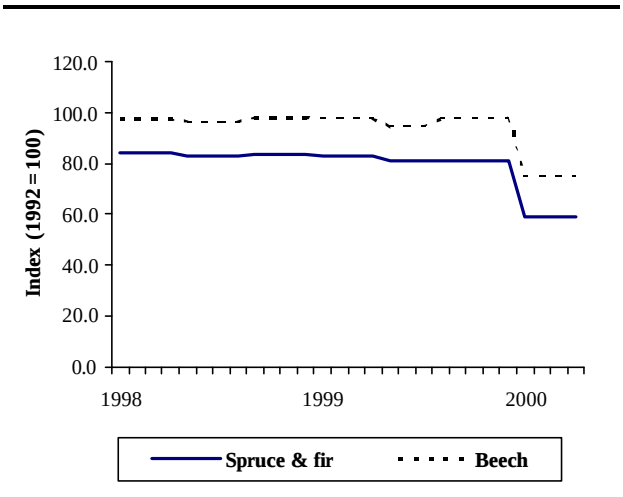
In France in the 2 months following the storm, pulpwood (also used for panels and fuel) and small-diameter logs were sold at a symbolic price. Average diameter sawlogs were down 70 to 80% from autumn 1999 prices. And large-diameter logs were selling at 50 to 80% of their pre-storm price depending on the species (La Forêt Privée, February 2000). Some higher-value logs of cherry and oak were reportedly purchased at premium prices, partly from concern for the near-future availability of needed raw materials in light of the harvesting freeze.

Pulpwood prices sunk. Competition from pulp, panel and energy producers did not buoy the market price (graph 3.3.2). In Switzerland pulpwood used for production of panels and pulp fell only by 4% from late 1999 to early 2000, much less than higher-valued sawlogs (Swiss Federal Bureau of Statistics, June 2000). In spite of the enormous supply of pulpwood, the prices of wood from the forest to the paper industry kept constant at the level of December 1999. But the prices of that wood to the wood-based panel factories fell by 17% in the period of January to April 2000.

Fuelwood prices fell in Switzerland at approximately the same rate as pulpwood, i.e. 3.9% between late 1999 and the first third of 2000 (Swiss Federal Bureau of Statistics, June 2000).

GRAPH 3.3.1

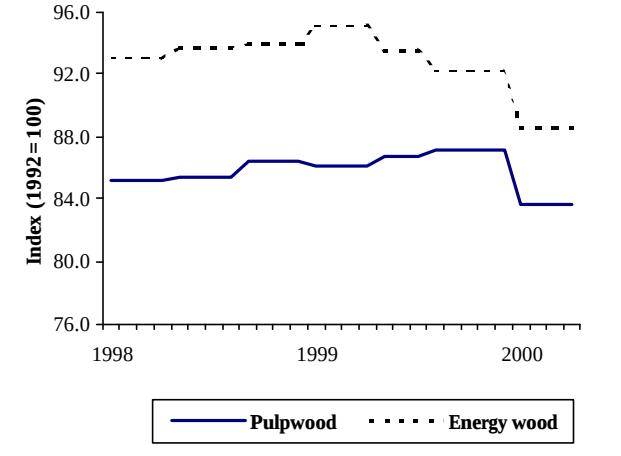
Sawlog prices in Switzerland, 1998-2000



Source: Office fédéral de la Statistique (Switzerland), 2000.

GRAPH 3.3.2

Pulpwood and energy wood prices in Switzerland, 1998-2000



Source: Office fédéral de la Statistique (Switzerland), 2000.

Fuelwood prices, for example fireplace wood, the highest valued fuelwood, dropped sharply. In urban areas such as Paris, firewood was sold at prices 75% lower than in early December 1999. This is rather normal in urban areas following catastrophes which fell street trees because they are much less desirable for sawmills due to the high incidence of imbedded metal and other foreign objects. Paris is a rather particular example however because of the enormous damage done to peri-urban forests (Bois de Vincennes, Bois de Boulogne and Forêt de Fontainebleau, among others, including national treasures such as the park and gardens surrounding the Château de Versailles). These forests have great value for leisure and recreation and the losses near the homes of millions of people sensitised them to the value of their forests. Hopefully the regeneration of these same forests and parks will be of educational value for the renewability of forest resources.

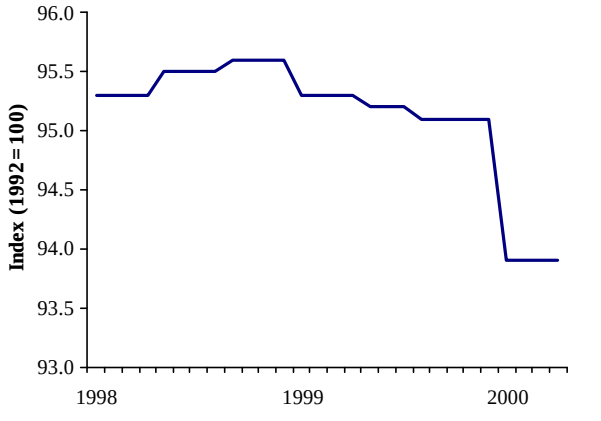
Initiatives described below to stimulate wood-based energy production did not have any immediate impact on fuelwood prices.

Sawnwood prices did not fall universally as a consequence of lower raw material costs. Sawmillers obtained lower yields from damaged stems, but were compensated by lower log costs. Beech sawnwood value fell slightly in Switzerland, but the graph may be misleading because of the combination of all quality levels (graph 3.3.3).

In Germany sawn hardwood prices may not necessarily have fallen only as a result of the storm (graph 3.3.4). Sawn softwood prices accelerated their 18-month decline, but this is probably due to overall market factors, not the temporary over-supply of roundwood (graph 3.3.5).

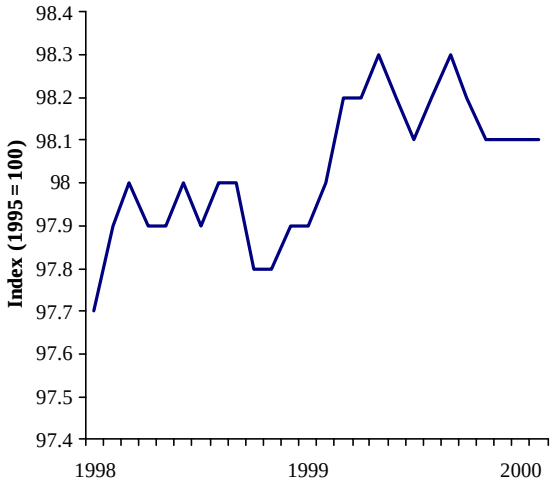
The freeze on harvesting any standing trees in France, Switzerland and Germany which went into effect immediately after the storms meant that mills located outside of the damage zones have had to use raw material from regions affected by the storm. This imposed higher transportation costs, some of which were mitigated by government subventions or amendment of regulations in

GRAPH 3.3.3
Spruce and fir sawnwood prices in Switzerland, 1998-2000



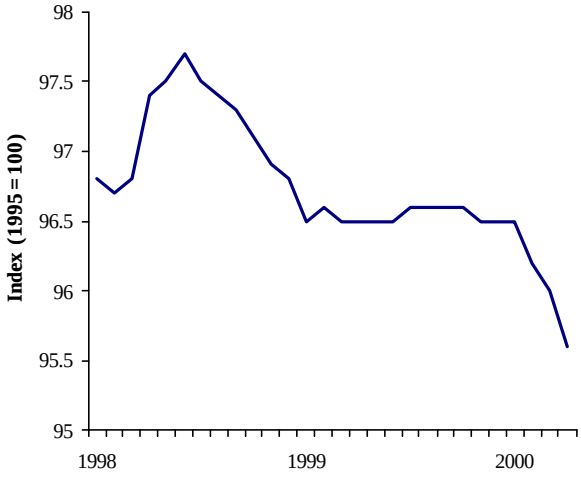
Source: Office fédéral de la Statistique (Switzerland), 2000.

GRAPH 3.3.4
Sawn hardwood prices in Germany, 1998-2000



Source: Statistisches Bundesamt, 2000.

GRAPH 3.3.5
Sawn softwood prices in Germany, 1998-2000



Source: Statistisches Bundesamt, 2000.

favour of the timber transport. Despite solidarity in the forest and forest industries sector, the consequence of frozen harvests in forests which escaped the storms' damage meant costly inefficiencies in 2000. Sawmills "blessed" with surplus raw material in the storm zone had lower cost raw materials those mills "saved" from the storms that had to buy logs from unusually greater distances due to frozen national cuts (graph 3.3.6).

In Switzerland sawn spruce and fir prices registered a 1.2% average decline from pre-storm prices (Swiss Federal Bureau of Statistics, June 2000). The weak prices were especially apparent in lower quality sawnwood for packaging. As in roundwood, some of the decrease may be due to other factors because sawnwood prices are down over 6% from 1992.

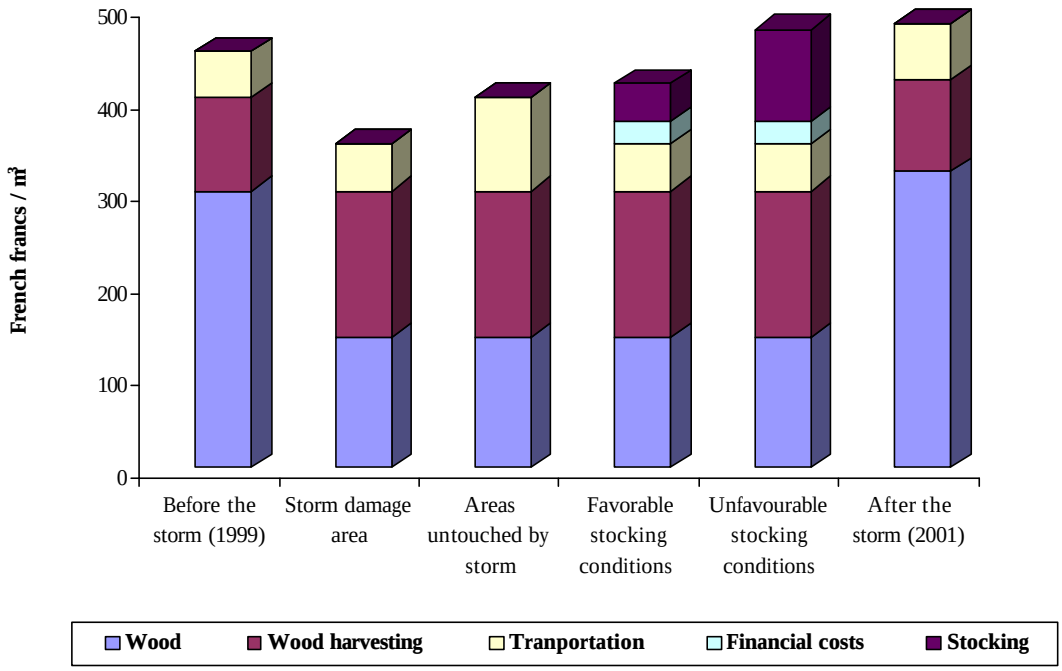
Owners of small and large forests were the immediate losers from the storms. Not only did they face devastation of decades of planned forest management, in which their carefully-planned sustainable harvest schedule was destroyed, but they also incurred high costs of storm clean-up. These costs were not always compensated by sales of logs, especially when some logs were damaged or of less-valued species and sizes.

Some foreign logging crews were brought into the most damaged areas and some brought efficient harvesting equipment. There were more crews waiting to assist but unfortunately regulations about hiring temporary workers from certain countries, especially outside the EU, caused delays.

The trade press is to be commended for quickly publishing warnings to loggers untrained in the dangers of cleaning up after windstorms. Universally the first objective in the sanitation fellings was to protect loggers from any injury. But unfortunately this objective was not met and as happens each time, injuries were sustained and lives lost. More than 40 people sustained fatal injuries, all to untrained, non-professional forest workers and more non-fatal injuries were incurred according to reports to the June 2000 FAO/ECE/ILO Joint Committee on Forest Technology, Management and Training.

The Timber Committee established a clearinghouse for information and also published press releases calling attention to potential dangers. The Joint FAO/ECE/ILO Committee had published an Acute Forest Damage Manual [2] following the 1990 storms and it too was put on the website.

GRAPH 3.3.6
Additional costs of spruce and fir logs from storm damaged forests in France, 1999 to 2001



Note: .As of July 2000, roughly 7 francs=$1.
Source: Fédération Nationale du bois, 2000.

[2] *ECE/TIM/DP/7.*

3.3.4 Production effects: difficulty in measurement at this early stage

Obviously there has been an increase in roundwood removals from storm-damaged forests. But are these increases compensated by reduced harvests elsewhere in the countries as anticipated? The answer will only show in statistics for 2000 which will be received around March 2001.

And if there was increased roundwood produced, was it being turned into increased production of sawnwood, cants or sleepers/railroad ties? The first forecasts of production statistics will be available at the Timber Committee Session in October 2000 and any increases in production should show for sawnwood, panels and roundwood. Even then it may be difficult to determine whether increases in production are a result of demand-pull or supply-push, although this may show in strength of prices.

One case example for 1.3 million m^3 of wind-thrown roundwood in Switzerland sheds light on the initial resolution of the problem during the first quarter of 2000, i.e. through 31 March (table 3.3.1).

3.3.5 Trade flow effects: traditional channels strengthened and new ones established

One of the more positive outcomes of the windstorms was that they dispersed roundwood and sawnwood to new countries and in greater volumes. The trend in rising exports of European beech to China and other Asian destinations was documented last year in the Review. Now in 2000 there has been a massive increase in exports to China, in part due to dramatically rising consumption of roundwood (see special chapter 5 on China's forest products markets).

Switzerland, which had rarely exported logs to Austria, concluded a deal in early 2000 to export significant volumes of sawlogs. The traditional export market for roundwood with Switzerland is Italy, and fortunately the strong demand led to increased exports during the first quarters of 2000. Additional volumes of Swiss roundwood found markets across the border in France and Germany. All countries faced with large volumes of roundwood to sell have abandoned their desires to produce higher value-added exports and have been forced to export logs.

An unexpected trade has developed between the countries most affected by the storms. First quarter trade reports are showing beech roundwood imports by Germany from France have increased roughly 60% in the first quarter of 2000 compared to 1999 (ZMP, 2000) (table 3.3.2). Germany's exports of beech roundwood to France fell by 27% during the same period, but Germany exported 14 times more beech roundwood to Switzerland (table 3.3.3).

TABLE 3.3.1

Resolution of windthrown timber in one forest area in Switzerland, 2000

Destination	Volume (1,000 m^3)	%
Left with attached roots	440	34
Permanently left in forest	400	31
Harvested and sold	350	27
Wet storage	100	8
Dry storage	10	1
Total	1,300	100

Source: Service des forêts et de la faune du Canton de Fribourg (Switzerland), 2000.

TABLE 3.3.2

Imports of beech roundwood by Germany, 1999-2000 (m^3)

From	January 1999	March 2000	% Change 1999 to 2000
France	11,151	17,543	57.3
Switzerland	1,389	3,548	155.4
Denmark	1,427	3,319	132.6
Belgium	1,050	2,747	161.6
Romania	1,892	2,369	25.2
Czech Republic	1,477	1,658	12.3
Luxembourg	-	1,622	+++
Poland	1,322	1,140	-13.8
Slovakia	983	1,019	3.7
Other	3,361	2,847	-15.3
Total	24,052	37,812	57.2

Note: "+++" indicates increase over 300%.

Source: ZMP, 2000.

While omitted here for sake of presentation, ZMP also reported the unit value of the first quarter trade of beech roundwood. As roundwood includes many assortments for many uses, it is impossible to distinguish from customs statistics what countries imported veneer logs, which imported sawlogs and which imported pulpwood. Nevertheless some conjectures can be made that Germany imported high-quality roundwood from France and Switzerland in 2000, as the unit values were DM546 and DM583 respectively, both higher than for all other countries with the exception of the smaller volumes imported from Poland and Slovakia.

The astonishing development in Germany's exports of beech logs following the storms is the quadrupling of volume to China. Now the main export destination for beech logs, China takes a 30% share of Germany's exports of this valuable raw material. The export unit

value was DM490, 44% lower than in 1999. What could only be described as new trade channels in 2000 for beech roundwood, tremendous increases of roundwood were shipped to Poland and Switzerland, but at very small unit values, DM6 and DM26 respectively. Denmark, which also suffered substantial damage in the December storms to its beech forests, also increased imports of German roundwood in early 2000, by over 3 times compared to 1999.

The German trade of beech sawnwood gives some indications of new market channels (table 3.3.4). As in roundwood, the big increase was exports to China, which rose over 3 times to reach approximately 41,000 m^3 according to preliminary reports (ZMP, 2000). While the unit value at DM806 was down 27.4% from 1999, it was among the highest unit values, indicating the better qualities of sawnwood. Over 40% of Germany's exports also went east, to the Czech Republic and to Poland. However their much lower unit values at approximately DM30 indicate that this could have been low-quality, pallet and packaging wood. While beech roundwood exports to Spain fell off in the first quarter of 2000, sawnwood exports advanced.

Germany's imports of beech sawnwood give evidence additional evidence of strengthening of some traditional supply sources, however these imports are only 15% the volume of exports (table 3.3.5). Greater volumes of beech sawnwood were imported from France in early 2000 while imports from Switzerland dropped. Despite surplus volumes of beech roundwood available, German imports of beech sawnwood increased about 13% over 1999 (ZMP, 2000). Sawn softwood imports rose 4% in the first quarter of 2000 to reach 1.1 million m^3, roughly twice as

TABLE 3.3.3

Exports of beech roundwood from Germany, 1999-2000

(m^3)

To	January 1999	March 2000	% Change 1999 to 2000
China	45,203	184,299	307.7
Poland	1,108	117,190	+++
Switzerland	8,871	96,984	+++
Sweden	64,953	67,640	4.1
Denmark	15,394	51,885	237.0
Italy	19,372	32,572	68.1
Hongkong SAR	23,422	26,941	15.0
Austria	10,768	8,437	-21.6
Japan	1,691	6,767	+++
France	8,076	5,890	-27.1
Netherlands	1,829	5,890	222.0
Taiwan PoC	3,176	3,190	0.4
Turkey	-	1,076	+++
Other	11,322	4,433	-60.8
Total	215,185	613,194	185.0

Note: "+++" indicates increase over 300%

Source: ZMP, 2000.

TABLE 3.3.4

Exports of beech sawnwood from Germany, 1999-2000

(m^3)

To	January 1999	March 2000	% Change 1999 to 2000
Czech Republic	1,345	57,399	+++
Poland	2,391	58,273	+++
China	12,272	40,514	230.1
Spain	21,951	28,687	30.7
Hongkong SAR	18,107	12,530	-30.8
UK	8,648	9,784	13.1
Netherlands	7,746	9,578	23.7
Italy	8,023	9,295	15.9
Sweden	835	6,099	+++
Denmark	2,357	2,377	0.8
Belgium	1,339	1,639	22.4
Finland	1,840	1,492	-18.9
Austria	915	1,408	53.9
Other	7,838	35,184	+++
Total	95,607	274,259	341

Note: "+++" indicates increase over 300%.

Source: ZMP, 2000.

TABLE 3.3.5

Imports of beech roundwood by Germany, 1999-2000

(m^3)

From	January 1999	March 2000	% Change 1999 to 2000
Romania	9,365	5,523	-41.0
Poland	6,350	5,383	-15.2
Slovakia	3,311	5,136	55.1
Czech Republic	4,937	4,889	-1.0
Bosnia & Herzegovina	1,000	4,556	+++
Austria	1,113	3,596	223.1
France	2,984	3,566	19.5
Ukraine	1,170	2,136	82.6
Yugoslavia	1,837	1,316	-28.4
Switzerland	1,147	1,076	-6.2
Other	3,455	4,248	23.0
Total	36,669	41,425	13.0

Note: "+++" indicates increase over 300%.

Source: ZMP, 2000.

large a volume as sawn softwood exports which rose by 52% to reach over 500,000 m^3. Some of the largest volumes and greatest increases over the first quarter of 1999 were from France and Switzerland.

The table of Germany's first quarter exports of beech sawnwood has countries arranged in descending order by their 2000 volumes. If they had been ordered by 1999 volumes, Spain would have been first. However, in 2000 the first 3 places are taken by the Czech Republic, Poland and China. Reports from France indicate that substantial volumes of high quality sawn hardwood and roundwood are being shipped over the border to Spain, presumably at prices which make the French supply more advantageous. The windstorms in France also hit the Douglas fir producing region north of Spain, and some of these volumes were also exported south.

In the first quarter of 2000, German exports of coniferous roundwood (logs and pulpwood) rose to most destinations, except the storm affected countries of Denmark, France and Switzerland (as well as Norway and Spain) (table 3.3.6). Imports of coniferous roundwood also rose, even more strongly (+69% between the first quarter of 1999 and 2000) (table 3.3.7). The main increases concerned Russia (+232%), France (+113%), Finland (+118%), Denmark (+423%), Sweden (+373%), Latvia (+254%) and Luxembourg (+473%). This list indicates two main factors:

- *Imports of storm-damaged roundwood from France, Denmark and Switzerland; and*
- *Imports from countries all around the Baltic to large new mills (sawmills and a pulpmill) located in north-eastern Germany, which have come on stream recently.*

Some volumes of storm-felled logs were traded over the internet. A few electronic marketplaces were set up to trade roundwood, as well as coordinate the movement of machinery and harvesting crews.

TABLE 3.3.6

Exports of coniferous roundwood from Germany, 1999-2000

(m^3)

To	January 1999	March 2000	% Change 1999 to 2000
Austria	301,926	356,478	18.1
Czech republic	160,905	183,038	13.8
Italy	70,938	115,572	62.9
Sweden	55,948	71,279	27.4
Belgium	22,469	32,088	42.8
Denmark	26,851	17,937	-33.2
Finland	13,034	17,043	30.8
Norway	21,590	13,558	-37.2
Netherlands	7,561	8,082	6.9
France	7,064	6,970	-1.3
Japan	7,981	8,076	1.2
Switzerland	5,540	5,269	-4.9
Other	6,799	12,705	86.9
Total	708,606	848,095	19.7

Note: "+++" indicates increase over 300%.

Source: ZMP, 2000.

TABLE 3.3.7

Imports of coniferous roundwood by Germany, 1999-2000

(m^3)

From	January 1999	March 2000	% Change 1999 to 2000
Russia	55,093	183,144	232.4
Belgium	113,193	150,300	32.8
Czech Republic	96,615	80,238	-17.0
France	26,703	56,966	113.3
Finland	23,257	50,848	118.6
Estonia	66,044	47,864	-27.5
Denmark	7,083	37,040	+++
Sweden	7,811	36,953	+++
Switzerland	17,297	29,817	72.4
Lithuania	7,177	20,159	180.9
Netherlands	10,830	24,501	126.2
Luxembourg	2,640	14,569	+++
Other	9,810	11,435	16.6
Total	443,553	743,834	67.7

Note: "+++" indicates increase over 300%.

Source: ZMP, 2000.

3.4 Comparisons with 1990 market effects: similar problems and solutions

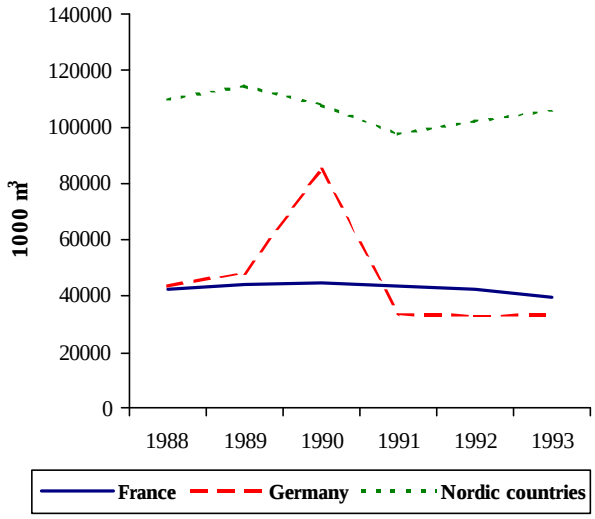
The last really large storm to hit Europe was in February 1990 when over 115 m^3 of wood was felled, mostly in Germany. It is interesting to trace the consequences of the 1990 storm as a guide to possible consequences of the 1999 storms. Disruptions to forest products markets occurred following the February 1990 storms as evidences by discontinuity of trends in roundwood production (removals) and trade. The comparisons to the earlier storms are complicated by the initiation of the transition process in 1990 from planned to market economies for some of the countries involved in the storm, e.g. in Poland as well as the reunification of Germany leading to breaks in statistical series just at the

crucial time. At the time of writing this chapter, the Swiss government is commissioning a study on the comparisons between the 1990 and 1999 storms. Hopefully some preliminary findings will be presented at the Joint Timber Committee and European Forestry Commission Session in October 2000 at their special topic discussion on the storm damages.

From the TIMBER database some changes in trends indicate possible effects of the 1990 storms on forest products markets for that year and the following year or two. Roundwood removals went up in 1990 and then fell off in 1991 to compensate (graph 3.4.1). Weak forest products demand in the early 1990s makes it difficult to isolate the storm's effects on markets in 1992 and 1993.

GRAPH 3.4.1

Roundwood removals in selected European countries, 1988-1993



Source: ECE/FAO TIMBER database, 2000.

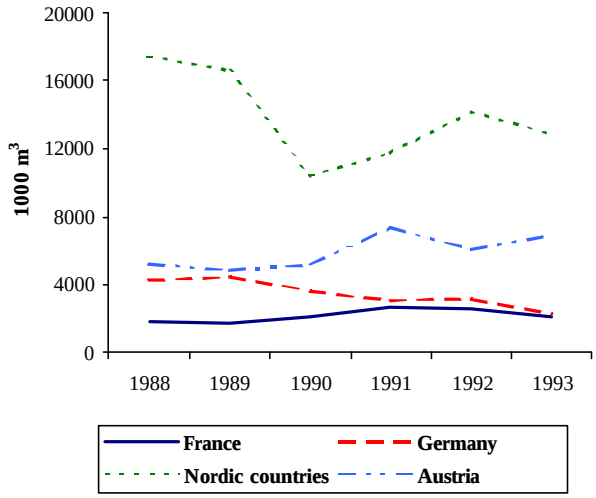
As in 2000, trade of roundwood accelerated in 1990 with Austria, Sweden and France buying large volumes of storm-felled roundwood (graph 3.4.2). Conversely, Germany which was hardest hit by the 1990 storm imported less and exported great volumes in 1990 and 1991 (graph 3.4.3). Similar to the situation in early 2000, the waves of market effects seem to have dampened before being reflected in the statistics after primary processing of sawnwood and panels.

The general economic state is beneficial in 2000 to stimulate the markets for the storm-damaged wood. However in 1990 the demand for construction was low in western Europe and the period of economic transition had just begun in central and eastern Europe. This year considerable quantities of roundwood and sawnwood, sometimes of lower qualities, have found markets in central and eastern European countries. Unfortunately in 1990 these same options were not available due to the economic and political situations.

In Switzerland the downward pressures on roundwood prices have been greater in 2000 than in 1990 (Swiss Federal Bureau of Statistics, June 2000). Hurricane Vivian, which struck Switzerland on 27 and 28 February 1990 felled almost 5 million m^3 of timber (roughly 40% of the 1999 volume). The drop in spruce and fir sawlog

GRAPH 3.4.2

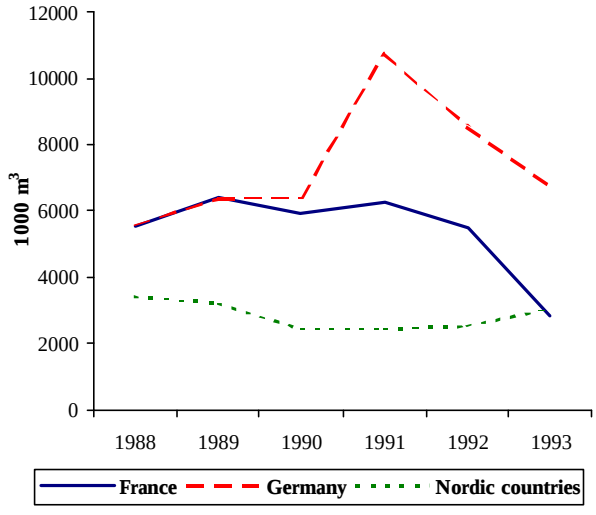
Roundwood imports in Europe, 1988-1993



Source: ECE/FAO TIMBER database, 2000.

GRAPH 3.4.3

Roundwood exports in Europe, 1988-1993



Source: ECE/FAO TIMBER database, 2000.

prices in 1990 averaged 16% (versus 28% in 2000) and beech sawlog prices fell 9% (versus 23% in 2000). Part of the explanation for the difference, other than the large disparity in windthrow volumes, was that in 1990 the storm's assault was at higher alpine valleys where coniferous species dominate. In 1999 the winds swept the Plateau Region in Switzerland between the Jura and Alps Mountains leaving more beech on the ground.

Another difference, not completely documented, may be the call in 2000 by some environmentalists for no intervention to clear up the damage. In Switzerland some new nature reserves were created where none of the damaged material would be salvaged. Other areas where there was no intervention in Switzerland were steep slopes where the fallen trees would promote regeneration, at least by blocking avalanches and rock slides. It is possible that some of these steep areas are inaccessible and thus where harvest costs and risks are greater than anticipated revenues. It also appears that there were less environmental restrictions in 1990 to establishing lake storage facilities.

3.5 Assistance by governments: quick and multi-dimensional responsiveness

Some government assistance was necessary following this natural disaster if the maximum amount of wood was to be brought to market and help provided to victims of the storms. In France, Germany and Switzerland, governments responded to the disasters by setting up a variety of means to assist the forest and forest industries sector. Many forest owners in these countries do not have any insurance against natural disasters, although it may be purchased. Many owners depend on governments to rescue them from such calamities, however there seem to be more discussions now about insurance schemes, either private, through associations or via governments.

3.5.1 France

In France measures were taken to stabilize markets by encouraging stocking of logs in forests in areas where they could be protected by water. But first forest roads had to be cleared and the government offered low-interest loans, 1.5% per year, for a maximum of 3 years, to assist in clearing the forests and stocking logs. Approximately $1 billion over 10 years was pledged to prepare forests for replanting and to replant. Additional funds were provided to reopen forest roads, take phyto-sanitary measures and to mobilise forest workers and equipment. Transportation was a bottleneck and weight limits on logging trucks were eased as well as subventions to assist in rail transportation. When France froze harvests of undamaged stands, financial assistance to offset increased transportation costs of storm-felled logs to mills in lesser damaged areas became essential to support the sector. In total, in early 2000, the French government allocated 2.5 billion francs (approximately $400 million at 6 francs/$) for the year plus another 12 billion francs (approximately $2 billion) in low-interest loans. While this will initiate important steps, the industry and forest owners claimed that these amounts were insufficient.

Halting the harvest of forests outside the damage zone had direct consequences for communities depending on the revenues of their forests. To them it seemed an oxymoron to have been spared of the damaging winds, but to have been prohibited from cutting in 2000! To reverse the situation where everyone is equally penalised, to a situation where everyone equally loses the least, the government provided low-interest loans to communities, both those hit by the storms as well as those whose forests were spared, but yet whose harvests were blocked in 2000.

3.5.2 Germany

Germany invoked the Forest Damages Compensation Act which immediately reduced harvests by 30% outside the windthrow areas. It also provides assistance and tax relief to forest owners. In contrast to France, there were no transportation subsidies, although weight restrictions on trucks were eased from 40 tons up to 46 tons. Despite some increased transport by rail and inland waterways, transportation remained a bottleneck in early 2000.

Subsidies and low-interest loans were made available for purchase of machinery and engaging emergency workers. The federal laender, specifically Baden-Württemberg and Bavaria earmarked approximately $60 million for removals of windfall timber, establishment of storage, reconstruction of roads, reforestation and transport to storage sites.

Additional funds were made available for promotion of the ecological qualities of timber products and further development of wood energy.

3.5.3 Switzerland

The priorities of the Swiss government were to 1. avoid accidents, 2. avoid damage to nearby forests, and 3. to use the fallen timber. To extend the processing time, 26 million Swiss francs (about $43 million) were provided for establishing stocking facilities to reduce market pressures. Funding was supplied to train loggers in order to avoid accidents and to provide harvesting credits (loans) to advance cutting.

Additional sums are allocated for promotion of the sector and to promote increased wood energy. It might be noted here that during the last few years, a number of European countries which are dependent upon nuclear energy, including Switzerland, have declared that they

will shut their reactors and turn to alternatives, including bio-fuels. Thus governments are currently favourable towards wood-based energy development.

In order to avoid the loss of money by harvesting timber which will never find an appropriate market and in response to ecologists demands, at least 3 million m^3, or 25% of the storm-damaged timber will be left in forests and some new nature reserves have been established.

Additional monies are pledged to undertake studies of the 1999 storms and to compare them to the situation in 1990 in order to be better prepared the next time. Case studies are being written on how forest owners and sawmillers coped with the crisis. More comprehensive analyses than this one are planned to document the consequences on the wood industry in Switzerland and how it impacted and was impacted by neighbouring countries.

3.6 Positive outcomes?

It is not the intention to minimize the disaster and its losses. However some more positive aspects merit mention.

The public relations opportunities of the storms were endless and experts in governments, state forest services and forest owners associations were busy responding to journalists while capitalising on the public's attention. The forest and forest industry sector received considerable attention during the first quarter of 2000 as the media covered the crisis. Foresters were shown as emotional individuals who were shocked when their years of sustainable management were destroyed. They explained that the best forest management plans cannot anticipate catastrophes like this, but that regeneration after a natural windstorm is no different than regeneration after a clearcut or a forest fire. Given introspection by the media into the local storm damages, the public sympathised with residents of small communities whose livelihood was jeopardised by loss of the local forest resources.

Losses of trees in a forest are different than losses of favourite urban trees along streets and in parks to a concentrated population. City dwellers mobilised to help clear debris and then stood back and realised that the urban landscape had been changed, at least in the short term. Fund-raising and collections were initiated to restore urban parks and forests. Private citizens can buy their own tree planted in the gardens of the Chateau de Versailles in France. In Switzerland school children replanted damaged forests and returned to care for their trees and watch them grow.

Governments and public officials were found to be concerned and compassionate for the plight of the forests and the forest-based industries. The attention towards the sector will be maintained over the medium term as loans are paid back and the industry and forest restores its equilibrium. Some of the funding will be beneficial in the long term for the sector too when it leads to development of capacity, for example in the promotion of wood energy, or modernization of harvesting equipment. Networks of fuelwood distributors were established or extended.

One positive outcome from the solidarity of a crisis is the teamwork that surfaces to help each other. Some forest owners associations were strengthened as a result of the common cause. Forest owners and managers that hired efficient logging crews got a lesson in efficient, mechanized and safe harvesting practices. These managers will consider re-engaging skilled professionals with modern equipment for future silvicultural treatments.

3.7 Conclusion

This chapter illustrates some of the initial effects on forest products markets in Europe as a result of the December 1999 storms. The magnitude of the damage is daunting but the resilience of the forest and forest industry sector in restoring calm so quickly is commendable. Unfortunately the effects of the storm will endure for decades in some localities where their forests were devastated. Certainly new forests will be generated, however for some small and medium-sized enterprises dependent on a local wood resource, the delay and the increased transportation costs in the interim may be too much.

Undoubtedly the effects of the storm will influence the statistics for the next couple of years, especially in the form of increased trade within Europe and increased exports to Asian markets too. The effect on removals may be mitigated by the use of stored logs in the forest and adjustments to normal harvest schedules in unaffected forests. If merited, further analysis will be undertaken in the Review next year as better statistics are available for removals, production, trade and prices.

Some positive outcomes must be considered too, such as valuable public relations opportunities, new export markets, new transportation and manufacturing capacity, increased production of wood energy, modernisation of some harvesting and sawmill equipment, new training and experience of loggers and a strengthened solidarity of the sector.