# *Chapter 9*
# *Wood-based panels supply, trade and consumption*[1]

## Highlights

- In Europe and North America the wood-based panels industries are restructuring to increase profitability in the sector which has seen rapid capacity expansions, intense competition and prices under pressure.
- Better than the other wood sectors, North American consumption of wood-based panels in 2001 was steady at 63 million $m^3$ due to continued strength in residential construction.
- European consumption of wood-based panels dropped by 6% in 2001 in the EU/EFTA subregion, down to 43 million $m^3$ following the 7% increase in 2000, and by 1% in "Other Europe"; both subregions' consumption fell as a consequence of the economic slowdown.
- Russian Federation consumption of wood-based panels climbed 15% in 2001, to reach 4 million $m^3$, confirming the recovery of the sector.
- Continued substitution by oriented strand board (OSB) resulted in decreased softwood plywood production (and capacity) in 2001 in the United States.
- In Europe, softwood plywood production in EU/EFTA countries was down, due to cutbacks by the major producers, Finland and Germany, but production increased by more than 6% in "Other Europe" and by almost 13% in the Russian Federation.
- OSB production in North America continued upwards in 2001, reaching 20.0 million $m^3$, however the gain masked considerable difficulties in profitability, as capacity was greater than what the market could bear.
- In Europe production of OSB set a new record level of 1.6 million $m^3$, 28% higher than in 2000 as new mills came on stream and others reached operational capacity.
- As the European particle board industry restructured in 2001, the EU/EFTA subregion production dropped by 6% to 28 million $m^3$ and the "Other Europe" subregion by 2.8% to 7.0 million $m^3$.
- MDF production in 2001 in North America remained close to 2000 levels, at 3.3 million $m^3$.
- MDF production in the EU/EFTA subregion in 2001 continued its rapid expansion, setting a new record of 7.4 million $m^3$, commensurate with demand by furniture and laminated flooring.
- MDF production in "Other Europe" subregion expanded in 2001 to 1.5 million $m^3$. Major increases occurred in Poland and Romania.

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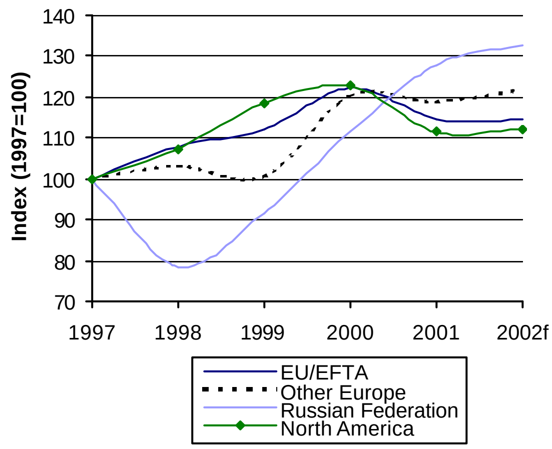
## Secretariat introduction

The secretariat would like to thank Mr. Henry Spelter for working together with us on this chapter, as well as helping us on other chapters too. Mr. Spelter is a specialist in forest products markets in the Timber Demand and Technology Assessment Research Work Unit at the Forest Products Laboratory of the USDA Forest Service. This is the second time that he has contributed to this chapter. Such collaboration has proved to be mutually beneficial in the past and continues to be so this year too.

While the basis for this chapter is UNECE/FAO statistics, considerable material in the chapter came from two trade associations, the Composite Panel Association (CPA) in the United States and the European Panel Federation (EPF). We rely on contributions from these important sources.

This chapter discusses recent trends in wood-based panels markets in the Commonwealth of Independent States (CIS), Europe (EU/EFTA and "Other Europe") and North America (United States and Canada). The analysis focuses on particle board, medium density fibreboard (MDF) and structural panels, e.g. softwood plywood and oriented strand board (OSB). Please note that the definition of panels excludes veneer sheets and that particle board excludes OSB.

GRAPH 9.1.1
**Consumption of wood-based panels in the UNECE region, 1997-2001**




***Note:*** f = The Timber Committee's forecast trend for 2001 to 2002, made at the October 2001 session, was applied to the 2001 figure.
***Source:*** UN COMPTRADE/EFI, 2002.

## 9.1 Overview

Notwithstanding the recession in North America overall consumption of wood-based panels in 2001 maintained 2000 levels mostly due to the lively construction sector. Consumption dropped slightly by 0.2% to 62.5 million m$^3$ (table 9.1.1 and graph 9.1.1).

In Europe as a whole, the economic activity of end use sectors followed the trend of the overall economy experiencing a slowdown. Consumption of wood-based panels dropped by 3.7% to 53.9 million m$^3$ following the 9.2% increase in 2000. Particle board consumption dropped by 2 million m$^3$, while fibreboard and plywood consumption stagnated. In the EU/EFTA group of countries, which represents 80% of total consumption, consumption was down by 4.4%. In "Other Europe" countries, consumption of wood-based panels was down marginally, by 1.1%.

In contrast, in the Russian Federation wood-based panels consumption followed the trend of the last two years, confirming the recovery of the sector, it was up by 14.5% and reached 4.2 million m$^3$.

For the North American economy in general, 2002 is a year of recovery. In the wood-based panels sector, a key element is that the recovery has been paced by construction and, in particular, its residential components. These showed exceptional resilience throughout the prior downturn, which kept the recession from being more severe. The dramatically low interest rates in the United States in 2001 have kept long-term mortgage rates below 6.6%, which is the lowest level when viewed in the context of the past three decades (see chapter 2, section 2.2.1). Besides interest rates, a second factor accounting for strong home demand is demographics, the net population gain is a factor for the continued housing strength. The brisk pace of construction activity has boosted demand for panels, although by not enough to cancel the continued capacity overhang from previous years.

Increasing globalization is also changing trading patterns in wood products. Throughout 2001 and into early 2002, the terms of trade from the viewpoint of North American producers were hurt by the exceptional strength of the United States dollar. The weakness of the real facilitated Brazilian panel exports to Europe at the expense of North American producers. Exports to the Far East were also hurt by the strength of the dollar. One development that did not occur was significant inflows of panel imports from Europe, especially in oriented strand board, due to overcapacity of the product there. In early 2002, however, the dollar began to reverse direction and had fallen significantly against major world currencies by mid-year.

Wood-based panels trade flows in Europe over the period 1996 to 2000 show an increase in exports from CEEC to EU/EFTA more sharply since 1997, as this group of countries are developing their production capacity in particle board, MDF and more recently

TABLE 9.1.1
**Apparent consumption of wood-based panels in the UNECE region, 1997-2001**
*(Million $m^3$)*

| | *1997* | *1998* | *1999* | *2000* | *2001* | *% of total* | |
|---|---|---|---|---|---|---|---|
| | | | | | | *1997* | *2001* |
| EU/EFTA | | | | | | | |
| Particle board and OSB | 25.53 | 26.68 | 27.95 | 29.46 | 27.66 | 67.6 | 63.9 |
| Plywood | 5.77 | 5.80 | 5.74 | 6.05 | 5.99 | 15.3 | 13.8 |
| Fibreboard | 6.47 | 8.26 | 8.62 | 9.73 | 9.62 | 17.1 | 22.2 |
| Total | 37.77 | 40.74 | 42.31 | 45.25 | 43.28 | 100.0 | 100.0 |
| Change on previous year | | | | | | | |
| – Volume | | 2.97 | 1.56 | 2.94 | -1.97 | | |
| – % | | 7.9 | 3.8 | 7.0 | -4.4 | | |
| Other Europe | | | | | | | |
| Particle board and OSB | 6.61 | 6.49 | 6.43 | 7.37 | 7.28 | 73.7 | 68.4 |
| Plywood | 0.63 | 0.69 | 0.62 | 0.89 | 0.96 | 7.1 | 9.0 |
| Fibreboard | 1.72 | 2.05 | 1.95 | 2.50 | 2.41 | 19.2 | 22.6 |
| Total | 8.96 | 9.24 | 9.01 | 10.77 | 10.65 | 100.0 | 100.0 |
| Change on previous year | | | | | | | |
| – Volume | | 0.27 | -0.23 | 1.76 | -0.12 | | |
| – % | | 3.1 | -2.5 | 19.6 | -1.1 | | |
| Russian Federation | | | | | | | |
| Particle board and OSB | 2.30 | 1.71 | 2.06 | 2.43 | 2.85 | 69.5 | 67.5 |
| Plywood | 0.37 | 0.40 | 0.41 | 0.55 | 0.59 | 11.1 | 14.1 |
| Fibreboard | 0.64 | 0.50 | 0.56 | 0.72 | 0.78 | 19.3 | 18.4 |
| Total | 3.31 | 2.60 | 3.03 | 3.69 | 4.23 | 100.0 | 100.0 |
| Change on previous year | | | | | | | |
| – Volume | | -0.71 | 0.43 | 0.66 | 0.53 | | |
| – % | | -21.4 | 16.4 | 21.8 | 14.5 | | |
| North America | | | | | | | |
| Particle board and OSB | 24.01 | 26.50 | 31.24 | 32.25 | 32.63 | 47.0 | 52.2 |
| Plywood | 19.99 | 20.17 | 20.83 | 20.52 | 20.32 | 39.2 | 32.5 |
| Fibreboard | 7.05 | 8.16 | 8.44 | 9.86 | 9.55 | 13.8 | 15.3 |
| Total | 51.05 | 54.83 | 60.51 | 62.62 | 62.50 | 100.0 | 100.0 |
| Change on previous year | | | | | | | |
| – Volume | | 3.78 | 5.68 | 2.12 | -0.12 | | |
| – % | | 7.4 | 10.4 | 3.5 | -0.2 | | |

***Source***: UNECE/FAO TIMBER database, 2002.

OSB (table 9.1.2 and graph 9.1.2). Parallel to this trend, intra EU/EFTA flows are dropping in the same proportion.

Also since 1998, non-UNECE exports to both North America and EU/EFTA have increased considerably at a rapid pace. The major economic, financial and currency crisis affecting Asia, which boosted hardwood plywood exports, may explain this development.

In North America, the rapid expansion of the OSB and MDF export industry in Canada has taken place at the same pace as the increase of Canadian exports to the United States.

The European Panel Federation is launching a campaign under the theme “For environmental reasons: Use more wood”, based on results of a recent study on life cycle analysis on a wide range of wood-based products, including panels. EPF has also made

TABLE 9.1.2

**Major wood-based panels trade flows in UNECE region 1997-2000**

*(% of global trade)*

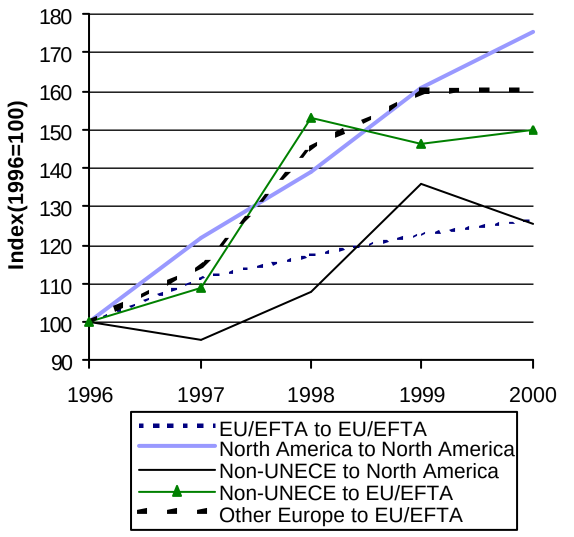
| | | From: | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EU/EFTA | | | | | | Other Europe | | | CIS | | North America | | | Non-UNECE | | | | | | Grand total |
| | To: | DEU | FRA | AUT | BEL | FIN | Total | POL | CZE | Total | RUS | Total | CAN | USA | Total | IDN | MYS | BRA | NZL | THA | Total | |
| EU/EFTA | Germany | | 1.0 | 1.4 | 0.4 | 0.4 | 5.4 | 0.6 | 0.3 | 1.3 | 0.1 | 0.2 | 0.1 | 0.3 | 0.4 | 0.2 | | 0.3 | | | 0.6 | 8.0 |
| | United Kingdom | 0.5 | 0.6 | 0.1 | 0.4 | 0.4 | 3.5 | | | 0.4 | 0.3 | 0.3 | 0.1 | 0.4 | 0.5 | 0.4 | 0.3 | 0.4 | | | 1.3 | 5.8 |
| | Netherlands | 0.7 | 0.3 | 0.1 | 0.7 | 0.2 | 3.2 | 0.1 | | 0.1 | | | | 0.1 | 0.2 | 0.1 | | | | | 0.3 | 3.8 |
| | Italy | 0.4 | 0.4 | 0.8 | | 0.1 | 1.9 | | | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | | 0.1 | | | 0.3 | 3.0 |
| | France | 0.6 | | 0.1 | 0.6 | 0.1 | 2.5 | | | 0.1 | | | | | 0.1 | 0.1 | | | | | 0.3 | 2.9 |
| | Spain | 0.1 | 0.7 | | 0.1 | | 2.0 | | | | | | | 0.1 | 0.1 | | | | | | 0.2 | 2.3 |
| | Denmark | 0.5 | | | | 0.1 | 1.2 | 0.1 | | 0.2 | 0.1 | 0.1 | | | 0.1 | | | | | | 0.1 | 1.6 |
| | Sweden | 0.1 | | | | 0.2 | 0.9 | 0.1 | | 0.3 | 0.1 | 0.1 | | | | | | | | | | 1.3 |
| | Belgium | 0.3 | 0.2 | | | | 0.7 | | | | | | | | | 0.2 | | 0.1 | | | 0.4 | 1.2 |
| | Switzerland | 0.3 | 0.2 | 0.3 | | | 1.0 | | | | 0.1 | 0.1 | | | | | | | | | | 1.1 |
| | Austria | 0.5 | | | | | 0.8 | | 0.1 | 0.2 | | | | | | | | | | | | 1.0 |
| | Total | 4.3 | 3.6 | 2.9 | 2.2 | 1.9 | 25.5 | 1.1 | 0.5 | 3.4 | 0.9 | 1.1 | 0.4 | 1.2 | 1.6 | 1.4 | 0.4 | 1.2 | | | 4.1 | 35.5 |
| Other Europe | Poland | 0.3 | | | | | 0.5 | | 0.3 | 0.6 | | 0.1 | | | | | | | | | | 1.2 |
| | Total | 0.7 | 0.1 | 0.3 | | 0.1 | 2.1 | 0.3 | 0.6 | 1.8 | 0.3 | 0.5 | | | 0.1 | | | | | | 0.2 | 4.7 |
| CIS | Russian Fed | 0.1 | | | | | 0.2 | 0.1 | | 0.1 | | 0.2 | | | | | | | | | | 0.5 |
| | Total | 0.1 | | | | | 0.2 | 0.2 | | 0.4 | 0.4 | 0.7 | | | | | | | | | | 1.4 |
| North America | United States | 0.2 | | | | | 0.6 | | | | 0.4 | 0.4 | 17.5 | | 17.5 | 1.4 | 0.8 | 0.7 | | | 4.1 | 22.7 |
| | Canada | 0.1 | | | | | 0.1 | | | | | | | 1.8 | 1.8 | | | | | | 0.1 | 2.0 |
| | Total | 0.3 | 0.1 | | | 0.1 | 0.7 | | | 0.1 | 0.4 | 0.4 | 17.5 | 1.8 | 19.3 | 1.4 | 0.8 | 0.7 | | | 4.2 | 24.7 |
| Non-UNECE | Japan | | | 0.1 | | | 0.2 | | | | | | 0.8 | 0.2 | 1.0 | 4.7 | 3.5 | | 0.7 | | 9.5 | 10.7 |
| | China | 0.2 | | | | | 0.3 | | | | | | | | | 1.2 | 1.6 | | 0.1 | 0.2 | 3.7 | 4.0 |
| | Hong Kong | | | | | | 0.2 | | | | | | | 0.1 | 0.1 | 0.8 | 1.2 | | 0.1 | 0.2 | 2.8 | 3.1 |
| | Taiwan P.o.C | | | | | | 0.2 | | | | | | | 0.1 | 0.1 | 1.1 | 1.0 | | 0.1 | 0.1 | 2.6 | 2.9 |
| | Republic of Korea | | | | 0.1 | | 0.1 | | | | | | 0.1 | 0.1 | 0.2 | 0.9 | 0.7 | | | 0.2 | 2.3 | 2.6 |
| | Mexico | | | | | | | | | | | | | 0.7 | 0.8 | 0.1 | | | | | 0.2 | 1.0 |
| | Saudi Arabia | | | | | | 0.1 | | | | | | | | | 0.6 | 0.1 | | | | 0.8 | 1.0 |
| | Total | 0.4 | 0.1 | 0.2 | 0.3 | 0.1 | 2.0 | | | 0.4 | 0.3 | 0.3 | 1.1 | 1.8 | 2.9 | 11.2 | 9.6 | 0.5 | 1.3 | 1.0 | 28.1 | 33.8 |
| Grand total | | 5.8 | 3.8 | 3.4 | 2.6 | 2.2 | 30.5 | 1.7 | 1.1 | 6.1 | 2.4 | 3.0 | 19.0 | 4.8 | 23.8 | 14.1 | 10.8 | 2.4 | 1.4 | 1.1 | 36.7 | 100.0 |

***Note:*** AUT = Austria, BEL = Belgium, BRA = Brazil, CAN = Canada, CHE = Switzerland, CHL = Chile, CHN = China, CZE = Czech Republic, DEU = Germany, ESP = Spain, EST = Estonia, FIN = Finland, FRA = France, GAB = Gabon, GBR = United Kingdom, HRV = Croatia, HUN = Hungary, IDN = Indonesia, ITA = Italia, JAP = Japan, KOR = Republic of Korea, LVA = Latvia, MAL = Malaysia, MEX = Mexico, MYS = Malaysia, NLD = Netherlands, NOR = Norway, NZL = New Zealand, PNG = Papua New Guinea, POL = Poland, P.o.C = Province of China, PRT = Portugal, RUS = Russian Federation, SVK = Slovakia, SWE = Sweden, THA = Thailand, USA = United States, ZAF = South Africa.

***Source:*** UN COMTRADE/EFI, 2002.

GRAPH 9.1.2

**Major wood-based panels trade flows, 1996-2000**




***Source:*** UN COMTRADE/EFI, 2002.

public two studies showing that wood products act as carbon sinks. EPF is of the opinion that the wood industries should be recognised as using wood in the most eco-efficient way. Policies encouraging countries to use biomass as renewable energy in the context of the Kyoto Protocol coupled with subsidies will increase competition for the raw material. EPF believes that only where the quality of the wood or the residues does not permit its use in production should these be destined to renewable energy.

## 9.2 Plywood

Overall plywood, softwood and hardwood, apparent consumption in EU/EFTA countries was down marginally by 1%. In "Other Europe" and in the Russian Federation apparent consumption increased by 7.9% and 7.2%, respectively. Exports in the Russian Federation were just over 1 million m$^3$, a 100% increase in 5 years (tables 9.2.1 and 9.2.3).

### *9.2.1 Softwood plywood*

Softwood plywood production in North America continued on its downward path in 2001. Production declined by 4.6%, from 17.4 million m$^3$ in 2000 to 16.6 million m$^3$ in 2001 (table 9.2.4). Six facilities, which altogether account for over 1 million m$^3$ of capacity, closed (table 9.2.2). This came on top of seven closures in 2000. Although two of these 13 plants reopened in 2002, the permanent closure of the remaining nine have left the industry with about 2 million m$^3$ less capacity, or a 13.0% reduction in two years. Production by EU/EFTA countries in Europe was down by 5.0% to 1.7 million m$^3$, due to cutbacks by the major producers, Finland and Germany. Softwood plywood output increased in "Other Europe" and in the Russian Federation, by 6.3% and 12.9% to 458,000 m$^3$ and 140,000 m$^3$, respectively.

United States exports of softwood plywood to traditional markets such as Mexico, the Caribbean and Europe were once again down by 29.6% to 390,000 m$^3$. This was due to competition from Brazil, the increased competitiveness of which can be traced to the decline in value of its currency compared to the dollar. Canadian exports of softwood plywood were up by 16% to 675,000 m$^3$.

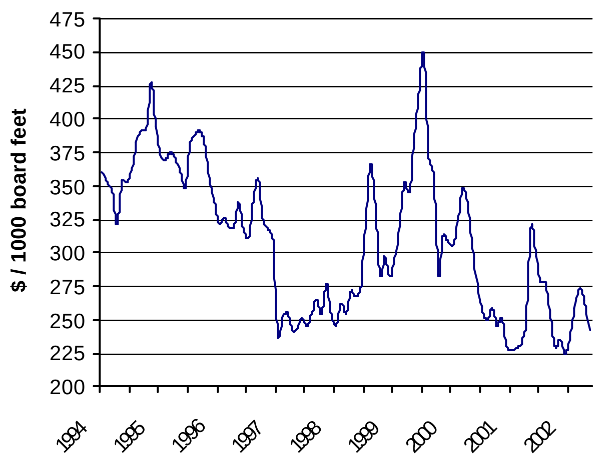
Imports into the United States, although relatively small, also rose, due to the same phenomenon. They attained 751,000 m$^3$, or 54.2% increase from 2000. Brazilian imports to North America approximately doubled.

By mid-2002, the dollar had sharply reversed course. Compared with the euro it had fallen from 1.16 to parity. As the dollar's slide accelerated, some traders expressed the view that markets lost by American exporters in Europe could begin to be recaptured. However, as Brazil is the main competitor for North American plywood in international markets, continued exports of low priced Brazilian plywood may reduce the likelihood of a significant recovery of market share for North American producers in Europe.

North American structural panel prices were volatile but overall continued to trend lower (graph 9.2.1). Excessive prior construction of capacity left surplus in OSB, which aborted price rallies for all structural panels and tended to return prices to near breakeven levels. The continued rationalization of plywood capacity, the restraint in new OSB capacity

GRAPH 9.2.1

**North American structural panel composite price, 1994-2002**




***Source:*** *Random Lengths Export*, 2002.

TABLE 9.2.1
**Plywood balance in the UNECE region, 1997-2001**
*(Million $m^3$)*

| | *1997* | *1998* | *1999* | *2000* | *2001* | *Timber Committee estimate for 2002*[1] |
|---|---|---|---|---|---|---|
| EU/EFTA | | | | | | |
| Production | 2.96 | 3.19 | 3.25 | 3.34 | 3.27 | 3.39 |
| Imports | 4.66 | 5.11 | 5.04 | 5.35 | 5.31 | 5.33 |
| Exports | 1.86 | 2.50 | 2.54 | 2.63 | 2.59 | 2.71 |
| Net trade | -2.81 | -2.61 | -2.49 | -2.72 | -2.72 | -2.62 |
| Apparent consumption | 5.77 | 5.80 | 5.74 | 6.05 | 5.99 | 6.02 |
| | | | | | | |
| Other Europe | | | | | | |
| Production | 0.92 | 0.87 | 0.93 | 1.02 | 1.10 | 1.18 |
| Imports | 0.36 | 0.37 | 0.42 | 0.49 | 0.55 | 0.54 |
| Exports | 0.65 | 0.55 | 0.73 | 0.62 | 0.69 | 0.70 |
| Net trade | 0.29 | 0.18 | 0.31 | 0.13 | 0.14 | 0.16 |
| Apparent consumption | 0.63 | 0.69 | 0.62 | 0.89 | 0.96 | 1.01 |
| | | | | | | |
| Russian Federation | | | | | | |
| Production | 0.88 | 1.10 | 1.32 | 1.48 | 1.60 | 1.66 |
| Imports | 0.04 | 0.03 | 0.00 | 0.04 | 0.01 | 0.01 |
| Exports | 0.56 | 0.74 | 0.91 | 0.97 | 1.02 | 1.07 |
| Net trade | 0.52 | 0.71 | 0.91 | 0.94 | 1.01 | 1.06 |
| Apparent consumption | 0.37 | 0.40 | 0.41 | 0.55 | 0.59 | 0.60 |
| | | | | | | |
| North America | | | | | | |
| Production | 19.68 | 19.52 | 19.78 | 19.51 | 18.77 | 18.52 |
| Imports | 1.85 | 2.24 | 2.72 | 2.62 | 3.06 | 2.90 |
| Exports | 1.54 | 1.59 | 1.67 | 1.61 | 1.52 | 1.53 |
| Net trade | -0.31 | -0.65 | -1.05 | -1.00 | -1.54 | -1.37 |
| Apparent consumption | 19.99 | 20.17 | 20.83 | 20.52 | 20.32 | 19.89 |

[1] = The Timber Committee forecast trend for 2001-2002, made at the October 2001 session, was applied to the 2001 figure.
***Source***: UNECE/FAO TIMBER database 2002.

TABLE 9.2.2
**United States plywood mills closed, by capacity, 2001**
*(1,000 $m^3$)*

| *Owner* | *Location* | *State* | *Capacity* |
|---|---|---|---|
| Boise Cascade | Emmett | Idaho | 160 |
| Collins Pine | Klamath Falls | Oregon | 150 |
| Geertsen Group | Springfield | Oregon | 90 |
| Georgia Pacific | Louisville | Mississippi | 260 |
| Linnton Plywood | Portland | Oregon | 200 |
| Willamette | Ruston | Louisiana | 155 |
| TOTAL | | | 1 015 |

***Source***: USDA Forest Service, 2002.

additions, the continued strength in housing and recovery in the general economy improves prospects for market conditions in 2003.

### *9.2.2 Hardwood plywood*

Hardwood plywood consumption in North America was up by 8.1% in 2001 reaching 3.9 million $m^3$, mostly due to an important increase in imports, which were up by 10.4% to 2.2 million $m^3$. South east Asia is the main supplier (table 9.2.5).

TABLE 9.2.3

**Production and trade of plywood in the UNECE region, 1998-2001**

*(1,000 $m^3$)*

| | 1998 | 1999 | 2000 | 2001 | Change 2000 to 2001 | |
|---|---|---|---|---|---|---|
| | | | | | Volume | % |
| **PRODUCTION** | | | | | | |
| EU/EFTA | 3 191 | 3 251 | 3 337 | 3 273 | -64 | -1.9 |
| of which: | | | | | | |
| Finland | 992 | 1 076 | 1 170 | 1 140 | -30 | -2.6 |
| France | 541 | 546 | 558 | 508 | -50 | -9.0 |
| Italy | 420 | 450 | 450 | 418 | -32 | -7.1 |
| Other Europe | 869 | 931 | 1 017 | 1 098 | 82 | 8.0 |
| of which: | | | | | | |
| Poland | 178 | 223 | 261 | 256 | -5 | -1.9 |
| Latvia | 150 | 155 | 156 | 176 | 20 | 12.6 |
| Czech Republic | 108 | 110 | 115 | 150 | 35 | 30.4 |
| Russian Federation | 1 102 | 1 324 | 1 484 | 1 600 | 116 | 7.8 |
| North America | 19 517 | 19 779 | 19 515 | 18 772 | -742 | -3.8 |
| Canada | 2 049 | 2 228 | 2 244 | 2 326 | 83 | 3.7 |
| United States | 17 468 | 17 551 | 17 271 | 16 446 | -825 | -4.8 |
| **EXPORTS** | | | | | | |
| EU/EFTA | 2 499 | 2 544 | 2 628 | 2 587 | -41 | -1.6 |
| of which: | | | | | | |
| Finland | 832 | 939 | 1 006 | 1 009 | 3 | 0.3 |
| Belgium | … | 403 | 380 | 343 | -37 | -9.8 |
| Other Europe | 551 | 729 | 615 | 686 | 70 | 11.4 |
| of which: | | | | | | |
| Czech Republic | 92 | 120 | 140 | 146 | 6 | 4.3 |
| Latvia | 138 | 129 | 128 | 143 | 15 | 11.8 |
| Russian Federation | 736 | 913 | 974 | 1 018 | 44 | 4.5 |
| North America | 1 588 | 1 668 | 1 614 | 1 518 | -96 | -5.9 |
| Canada | 755 | 956 | 941 | 1 030 | 89 | 9.5 |
| United States | 833 | 712 | 673 | 488 | -185 | -27.5 |
| **IMPORTS** | | | | | | |
| EU/EFTA | 5 107 | 5 036 | 5 345 | 5 308 | -37 | -0.7 |
| of which: | | | | | | |
| United Kingdom | 969 | 972 | 1 041 | 1 143 | 102 | 9.8 |
| Germany | 1 105 | 1 021 | 1 149 | 1 066 | -83 | -7.2 |
| Other Europe | 374 | 417 | 486 | 547 | 61 | 12.6 |
| of which: | | | | | | |
| Slovakia | 88 | 90 | 82 | 132 | 50 | 61.0 |
| Czech Republic | 30 | 54 | 72 | 80 | 8 | 11.1 |
| Russian Federation | 29 | 3 | 38 | 12 | -26 | -68.0 |
| North America | 2 237 | 2 716 | 2 615 | 3 063 | 448 | 17.1 |
| Canada | 273 | 222 | 230 | 374 | 144 | 62.4 |
| United States | 1 964 | 2 494 | 2 385 | 2 689 | 304 | 12.7 |

***Source***: UNECE/FAO TIMBER database 2002.

TABLE 9.2.4
**Production and trade of softwood plywood in the UNECE region, 1998-2001**
*(1,000 $m^3$)*

| | 1998 | 1999 | 2000 | 2001 | Change 2000 to 2001 | |
|---|---|---|---|---|---|---|
| | | | | | Volume | % |
| **PRODUCTION** | | | | | | |
| EU/EFTA | 1 724 | 1 793 | 1 840 | 1 748 | -92 | -5.0 |
| of which: | | | | | | |
| Finland | 454 | 578 | 629 | 610 | -19 | -3.0 |
| Germany | 428 | 364 | 357 | 316 | -41 | -11.5 |
| Austria | 150 | 155 | 155 | 155 | 0 | 0.0 |
| Other Europe | 361 | 380 | 431 | 458 | 27 | 6.3 |
| of which: | | | | | | |
| Israel | 109 | 109 | 109 | 109 | 0 | 0.0 |
| Czech Republic | 38 | 35 | 56 | 87 | 31 | 55.4 |
| Bulgaria | 23 | 44 | 53 | 65 | 12 | 22.6 |
| Poland | 45 | 56 | 60 | 51 | -9 | -15.0 |
| Russian Federation | 102 | 86 | 124 | 140 | 16 | 12.9 |
| North America | 17 481 | 17 695 | 17 409 | 16 606 | -802 | -4.6 |
| Canada | 1 749 | 1 928 | 1 944 | 2 026 | 83 | 4.3 |
| United States | 15 732 | 15 767 | 15 465 | 14 580 | -885 | -5.7 |
| **EXPORTS** | | | | | | |
| EU/EFTA | 1 330 | 1 272 | 1 413 | 1 386 | -27 | -1.9 |
| of which: | | | | | | |
| Finland | 383 | 510 | 546 | 520 | -26 | -4.7 |
| Austria | 153 | 154 | 199 | 254 | 55 | 27.5 |
| Other Europe | 150 | 344 | 200 | 205 | 5 | 2.4 |
| of which: | | | | | | |
| Czech Republic | 43 | 44 | 64 | 65 | 1 | 1.6 |
| Romania | 22 | 23 | 36 | 40 | 4 | 10.5 |
| North America | 1 173 | 1 207 | 1 136 | 1 065 | -71 | -6.2 |
| Canada | 466 | 642 | 582 | 675 | 93 | 16.1 |
| United States | 707 | 565 | 554 | 390 | -164 | -29.6 |
| **IMPORTS** | | | | | | |
| EU/EFTA | 3 198 | 2 689 | 3 022 | 2 862 | -160 | -5.3 |
| of which: | | | | | | |
| Germany | 1 105 | 1 021 | 1 149 | 1 066 | -83 | -7.2 |
| United Kingdom | 400 | 403 | 451 | 453 | 2 | 0.4 |
| Other Europe | 117 | 104 | 133 | 201 | 68 | 50.7 |
| of which: | | | | | | |
| Czech Republic | 8 | 13 | 19 | 62 | 43 | 226.3 |
| Israel | 18 | 28 | 48 | 48 | 0 | 0.0 |
| North America | 294 | 672 | 615 | 854 | 239 | 38.8 |
| Canada | 108 | 142 | 128 | 103 | -25 | -19.7 |
| United States | 186 | 530 | 487 | 751 | 264 | 54.2 |

***Source***: UNECE/FAO TIMBER database, 2002.

TABLE 9.2.5
**Production and trade of hardwood plywood in the UNECE region, 1998-2001**
*(1,000 $m^3$)*

| | 1998 | 1999 | 2000 | 2001 | Change 2000 to 2001 | |
|---|---|---|---|---|---|---|
| | | | | | Volume | % |
| **PRODUCTION** | | | | | | |
| EU/EFTA | 1 468 | 1 458 | 1 498 | 1 525 | 28 | 1.8 |
| of which: | | | | | | |
| Finland | 538 | 498 | 541 | 530 | -11 | -2.0 |
| Italy | 410 | 440 | 440 | 408 | -32 | -7.3 |
| France | 403 | 401 | 410 | 388 | -22 | -5.4 |
| Denmark | 2 | 2 | 1 | 95 | 94 | 9400.0 |
| Other Europe | 509 | 551 | 585 | 640 | 55 | 9.3 |
| of which: | | | | | | |
| Poland | 133 | 167 | 201 | 205 | 4 | 2.0 |
| Latvia | 150 | 155 | 156 | 176 | 20 | 12.6 |
| Czech Republic | 70 | 75 | 59 | 63 | 4 | 6.8 |
| Lithuania | 36 | 32 | 38 | 50 | 12 | 33.0 |
| Russian Federation | 1 000 | 1 238 | 1 360 | 1 460 | 100 | 7.4 |
| North America | 2 036 | 2 084 | 2 106 | 2 166 | 60 | 2.8 |
| Canada | 300 | 300 | 300 | 300 | 0 | 0.0 |
| United States | 1 736 | 1 784 | 1 806 | 1 866 | 60 | 3.3 |
| **EXPORTS** | | | | | | |
| EU/EFTA | 1 168 | 1 272 | 1 215 | 1 201 | -14 | -1.1 |
| of which: | | | | | | |
| Finland | 449 | 429 | 460 | 489 | 29 | 6.3 |
| Belgium | ... | 314 | 285 | 263 | -21 | -7.4 |
| Other Europe | 401 | 385 | 415 | 481 | 66 | 15.8 |
| of which: | | | | | | |
| Latvia | 138 | 126 | 128 | 142 | 14 | 11.1 |
| Poland | 67 | 66 | 79 | 96 | 17 | 21.8 |
| Russian Federation | 627 | 913 | 974 | 1 018 | 44 | 4.5 |
| North America | 415 | 461 | 479 | 453 | -25 | -5.3 |
| Canada | 289 | 314 | 360 | 355 | -4 | -1.2 |
| United States | 126 | 147 | 119 | 98 | -21 | -17.6 |
| **IMPORTS** | | | | | | |
| EU/EFTA | 1 909 | 2 347 | 2 323 | 2 446 | 123 | 5.3 |
| of which: | | | | | | |
| United Kingdom | 570 | 569 | 590 | 690 | 100 | 17.0 |
| Belgium | ... | 366 | 354 | 334 | -20 | -5.7 |
| Other Europe | 258 | 313 | 353 | 347 | -6 | -1.8 |
| of which: | | | | | | |
| Slovakia | 69 | 73 | 62 | 90 | 28 | 45.2 |
| Estonia | 58 | 60 | 57 | 64 | 6 | 11.3 |
| Russian Federation | 25 | 3 | 38 | 12 | -26 | -68.0 |
| North America | 1 943 | 2 044 | 2 000 | 2 209 | 209 | 10.4 |
| Canada | 165 | 80 | 102 | 271 | 169 | 164.9 |
| United States | 1 778 | 1 964 | 1 898 | 1 938 | 40 | 2.1 |

***Source***: UNECE/FAO TIMBER database, 2002.

## 9.3 Oriented strand board

OSB production in North America continued its rapid upward trend in 2001. From 19.7 million m$^3$ in 2000, production climbed by nearly 1.5%, to 20.0 million m$^3$ (tables 9.3.1 and 9.3.2). The gain masked considerable difficulties for the industry to earn a profit, as the amount of capacity was greater than what the market could bear. Consequently two older, less efficient plants were closed in 2002. Furthermore, no new plants will come on line in 2002 because previous plans were postponed or cancelled. Nonetheless, continued excess supply required significant curtailments in mid-year as prices hovered near breakeven cost levels.

In Europe production of OSB set a new record level of 1.6 million m$^3$ in 2001, as new mills came on stream and others reached operational capacity (table 9.3.1). Four new mills came on stream in 2001 in Belgium, Bulgaria and Germany with a total capacity of nearly 1 million m$^3$, raising the total number of mills to eleven. Two of these mills are located in "Other Europe", Bulgaria and Poland, with a total capacity of 0.5 million m$^3$.

According to the European Panel Federation (EPF) *Annual Report*, the expansion of OSB consumption in Europe is due partly to the development of existing markets such as walls and roofs in structural applications, but above all to new applications: timber frame housing, flooring, packaging, decoration, repair and renovation and do-it-yourself markets. Capacity figures are reported in the *Annual Report*, for Europe as a whole.

The largest capacity expansion will take place in North America. In Europe, where capacity expanded rapidly over the past years, little change is expected to 2003. Notwithstanding, European production will increase during this period as on average, mills are working at 50% of the installed capacity (table 9.3.3).

It is increasingly obvious that OSB in North America is a maturing commodity. This is illustrated by, among other things, the significantly closer correlation of its price with the price of sawnwood, a complementary, older, well-established product. Both are used primarily for construction and both are delivered on site and used simultaneously. It is not surprising therefore that in 2001 their price movements

TABLE 9.3.1
**OSB balance in the UNECE region, 1997-2001**
*(Million m$^3$)*

| | *1997* | *1998* | *1999* | *2000* | *2001* | *Timber Committee estimate for 2002*[1] |
|---|---|---|---|---|---|---|
| EU/EFTA | | | | | | |
| Production | 0.57 | 0.58 | 0.92 | 1.24 | 1.17 | 1.70 |
| Imports | 0.70 | 0.91 | 1.06 | 1.38 | 1.43 | 1.38 |
| Exports | 0.48 | 0.53 | 0.42 | 0.76 | 0.74 | 0.95 |
| Net trade | -0.22 | -0.37 | -0.64 | -0.62 | -0.69 | -0.43 |
| Apparent consumption | 0.79 | 0.96 | 1.56 | 1.86 | 1.86 | 2.13 |
| Other Europe | | | | | | |
| Production | 0.15 | 0.36 | 0.37 | 0.37 | 0.46 | 0.46 |
| Imports | 0.12 | 0.13 | 0.15 | 0.28 | 0.40 | 0.40 |
| Exports | 0.21 | 0.30 | 0.38 | 0.45 | 0.46 | 0.47 |
| Net trade | 0.09 | 0.17 | 0.23 | 0.16 | 0.07 | 0.07 |
| Apparent consumption | 0.06 | 0.19 | 0.14 | 0.20 | 0.40 | 0.39 |
| North America | | | | | | |
| Production | 14.50 | 16.21 | 17.97 | 19.75 | 20.04 | 20.82 |
| Imports | 4.99 | 5.81 | 6.64 | 6.86 | 7.28 | 7.27 |
| Exports | 5.20 | 6.04 | 6.89 | 7.09 | 7.46 | 7.72 |
| Net trade | 0.21 | 0.23 | 0.25 | 0.23 | 0.18 | 0.45 |
| Apparent consumption | 14.30 | 15.98 | 17.72 | 19.53 | 19.86 | 20.37 |

[1] = The Timber Committee forecast trend for 2001-2002, made at the October 2001 session, was applied to the 2001 figure.

***Source***: UNECE/FAO TIMBER database, 2002.

TABLE 9.3.2

**Production and trade of OSB in the UNECE region, 1998-2001**

*(1,000 $m^3$)*

| | *1998* | *1999* | *2000* | *2001* | *Change 2000 to 2001* | |
|---|---|---|---|---|---|---|
| | | | | | *Volume* | *%* |
| **PRODUCTION** | | | | | | |
| EU/EFTA | 583 | 923 | 1 235 | 1 174 | -61 | -4.9 |
| of which: | | | | | | |
| Germany | 0 | 0 | 329 | 286 | -43 | -13.1 |
| France | 100 | 100 | 270 | 270 | 0 | 0.0 |
| United Kingdom | 223 | 223 | 236 | 260 | 24 | 10.2 |
| Other Europe | 360 | 365 | 365 | 462 | 97 | 26.6 |
| of which: | | | | | | |
| Poland | 350 | 350 | 350 | 450 | 100 | 28.6 |
| Romania | 10 | 15 | 15 | 12 | -3 | -20.0 |
| North America | 16 210 | 17 971 | 19 753 | 20 042 | 289 | 1.5 |
| Canada | 6 274 | 7 694 | 7 847 | 7 942 | 95 | 1.2 |
| United States | 9 936 | 10 277 | 11 906 | 12 100 | 194 | 1.6 |
| **EXPORTS** | | | | | | |
| EU/EFTA | 530 | 423 | 764 | 743 | -21 | -2.7 |
| of which: | | | | | | |
| Ireland | 186 | 186 | 191 | 191 | 0 | 0.0 |
| France | 19 | 7 | 231 | 150 | -81 | -35.0 |
| Other Europe | 298 | 382 | 448 | 461 | 13 | 3.0 |
| of which: | | | | | | |
| Poland | 170 | 290 | 328 | 283 | -45 | -13.7 |
| Slovakia | 57 | 28 | 83 | 104 | 21 | 25.3 |
| North America | 6 041 | 6 887 | 7 091 | 7 456 | 365 | 5.2 |
| Canada | 5 952 | 6 727 | 6 932 | 7 308 | 376 | 5.4 |
| United States | 89 | 160 | 159 | 148 | -11 | -6.9 |
| **IMPORTS** | | | | | | |
| EU/EFTA | 905 | 1 063 | 1 385 | 1 433 | 48 | 3.5 |
| of which: | | | | | | |
| Spain | 262 | 275 | 501 | 501 | 0 | 0.0 |
| Germany | 200 | 292 | 310 | 319 | 9 | 2.9 |
| United Kingdom | 110 | 67 | 72 | 94 | 22 | 30.8 |
| Netherlands | 98 | 111 | 111 | 77 | -34 | -30.5 |
| Other Europe | 133 | 155 | 284 | 396 | 112 | 39.4 |
| of which: | | | | | | |
| Slovakia | 43 | 69 | 53 | 209 | 156 | 294.3 |
| Poland | 50 | 43 | 52 | 74 | 22 | 42.2 |
| North America | 5 811 | 6 636 | 6 865 | 7 279 | 414 | 6.0 |
| Canada | 59 | 123 | 111 | 112 | 1 | 1.3 |
| United States | 5 752 | 6 513 | 6 754 | 7 167 | 413 | 6.1 |

***Source***: UNECE/FAO TIMBER database, 2002.

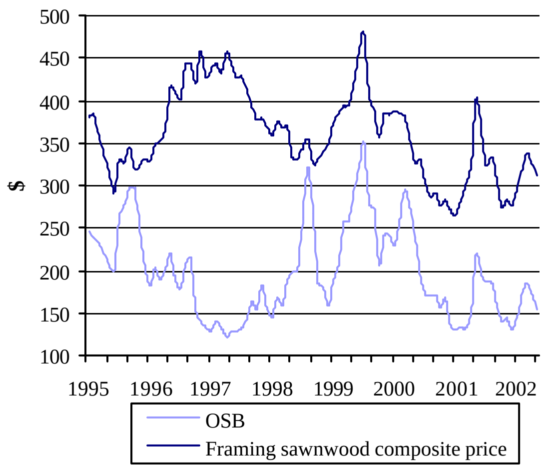
TABLE 9.3.3
**Capacity development in the OSB industry, 2001-2003**
*(1,000 $m^3$)*

| | 2001 | 2002 | 2003 |
|---|---|---|---|
| North America | 21 847 | 22 017 | 23 437 |
| Europe | 3 110 | 3 110 | 3 260 |
| China | 10 | 10 | 10 |
| Latin America | 130 | 480 | 830 |
| Rest of the World | 0 | 0 | 131 |
| | 25 097 | 25 617 | 27 468 |

***Source***: *Annual Report*, European Panel Federation, 2002.

were nearly identical (graph 9.3.1). In previous years of OSB history, however, this was not the case. Rapid growth of market share led to different levels of demand while greater growth of capacity led to periodic market imbalances different from those experienced in the better balanced sawnwood sector. These caused prices to soar or crash and evolve along separate lines than sawnwood, as the historical price correlations show. The tighter contemporary price correlation among these products, a phenomenon that has continued in 2002, indicates that OSB has arrived at a similar level of maturity. This also implies that future levels of profitability will be more restrained, more like those in the sawnwood business than the sometimes extraordinarily high levels that many who have invested in OSB have come to expect.

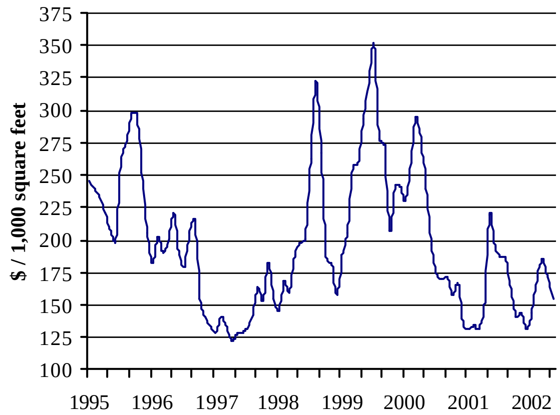
GRAPH 9.3.1
**Prices of OSB and framing lumber in the United States, 1995-2002**




***Notes:*** Price for OSB is $ / 1,000 square feet on a 7/16-inch basis. Price for framing sawnwood compcsite is $ / 1000 board feet.
***Source:*** *Random Lengths Yardstick*, 2002.

North American structural panel prices were volatile in 2001 and continued at generally low levels (graph 9.3.2). Excessive prior construction of OSB capacity left markets oversupplied. The continued rationalization of plywood capacity, the restraint in new OSB capacity additions, and the continued strength in housing coupled with recovery in the general economy improves the prospects of better markets in 2003. There is potential for substantial new capacity additions as many former plans, aborted by the slump, remain on the shelves. A strong profit recovery could launch those plans and result in another round of substantial capacity additions, on the order of 5 million $m^3$ by 2006 if all plans are carried out.

GRAPH 9.3.2
**OSB price, United States, 1995-2002**




***Note:*** On a 7/16-inch basis.
***Source:*** *Random Lengths Yardstick*, 2002.

Exports and imports of OSB in North America to and from markets outside the region are small. The main offshore outlet is Asia, where announced capacity has not yet appeared. There were some expectations that European mills would enter the vast American market. This has not occurred to any appreciable extent. Although imports tripled in 2001, they amount to less than 100,000 $m^3$, most of which came from plants in Germany, France, Poland and the United Kingdom.

Some European producers have contracted with North American quality certification agencies to grade their panels for the United States market, but differences in grading procedures, product requirements and distribution channels have apparently kept those producers from aggressively marketing much OSB. North American users, for example, expect one side of a panel to have a screened, slip-resistant surface, which would require a process modification for North American-bound output. Likewise, thickness swell and other property requirements in Europe and America differ, which again require different formulations in the process. Companies need local representatives, which requires a large sales volume to justify. North American distribution channels are also well established.

## 9.4 Particle board

Particle board production in North America declined in 2001 reflecting the greater concentration of use of this product in industrial sectors. From 11.7 million m$^3$ in 2000, production retreated by 2.1%, to 11.5 million m$^3$ (tables 9.4.1 and 9.4.3).

Production of particle board in Europe in 2001 dropped following a record year in 2000. In EU/EFTA countries production fell by 1.9 million m$^3$ to 27.9 million m$^3$ or 6.3%. In "Other Europe", production was down by 2.8% to 7.0 million m$^3$. Markets for particle board remain very competitive with prices under pressure. The industry continues to rationalise and restructure production and increase profitability, which is reflected in variations at the country level. In Germany the major producer, production fell by 12.8%, in Sweden by 8.8%, in Finland by 8.9% and in Denmark by 8.1%; while in other countries such as Austria production was up by 8.1%. The same occurred in "Other Europe": production increased by 14.6% in Lithuania and by13.9% in the Czech Republic and dropped by 11.9% in Turkey and 6.2% in Poland.

TABLE 9.4.1
**Particle board balance in United States and Canada**
*(1,000 m$^3$)*

| | *2000* | *2001* | *% change* |
|---|---|---|---|
| Canada | | | |
| Production | 2 517 | 2 783 | 10.6 |
| Imports | 389 | 436 | 11.9 |
| Exports | 1 112 | 1 204 | 8.2 |
| Apparent consumption | 1 794 | 2 015 | 12.3 |
| | | | |
| United States | | | |
| Production | 9 256 | 8 738 | -5.6 |
| Imports | 2 144 | 2 505 | 16.8 |
| Exports | 470 | 489 | 4.0 |
| Apparent consumption | 10 930 | 10 754 | -1.6 |

In recent years one of the problems afflicting particle board markets in North America has been the faster growth of capacity than of demand. Operating rates were thus depressed and pricing power was weak. At least three plants have been, or will be, closed permanently. With the rebound in the economy and flat capacity, conditions are expected to improve in 2003. According to the EPF *Annual Report*, in EPF member countries the 2.48 million capacity expansion of 2000 was followed in 2001 by a smaller capacity increment (table 9.4.2). This is a major restructuring process taking place in the European industry. Ten less competitive plants closed in 2001, representing 1.8 million m$^3$, 8 extension projects of 1.4 million m$^3$ total were implemented and two new mills of 0.9 million m$^3$ came on stream. The net change in 2001 was a gain of 0.46 million m$^3$ in capacity.

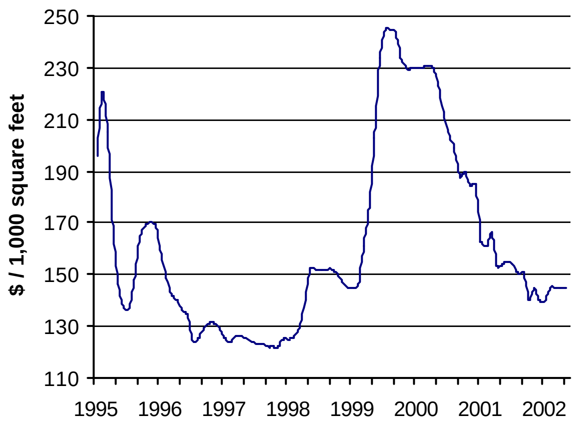
TABLE 9.4.2
**Capacity development in the particle board industry, 2001-2002**
*(1,000 m$^3$)*

| | *2001* | *2002* |
|---|---|---|
| Europe | 45,881 | 46,531 |
| North America | 14,396 | 14,833 |
| China | 5,740 | 5,940 |
| Latin & South America | 5,891 | 5,791 |
| South-east Asia | 5,655 | 5,655 |
| North-east Asia | 2,756 | 2,756 |
| Australia and other Asia | 1,284 | 1,384 |
| Other | 2,424 | 2,424 |
| TOTAL | 84,027 | 85,314 |

***Source***: *Annual Report*, European Panel Federation, 2002.

In 2001 in North America, prices experienced about a 10% drop in industrial grades from the previous year (graph 9.4.1).

GRAPH 9.4.1
**Particle board prices in the United States, 1995-2002**




***Note:*** Underlayment grade.
***Source:*** *Random Lengths Yardstick*, 2002.

Exports of particle board from Canada have tripled since 1991, but virtually all of it was to the United States. Exports of particle board from the United States

TABLE 9.4.3

**Production and trade of particle board in the UNECE region, 1998-2001**

*(1,000 $m^3$)*

| | *1998* | *1999* | *2000* | *2001* | *Change 2000 to 2001* | |
|---|---|---|---|---|---|---|
| | | | | | *Volume* | *%* |
| **PRODUCTION** | | | | | | |
| EU/EFTA | 27 500 | 28 140 | 29 712 | 27 850 | -1,862 | -6.3 |
| of which: | | | | | | |
| Germany | 9 375 | 9 491 | 10 012 | 8 726 | -1,286 | -12.8 |
| Italy | 2 950 | 3 070 | 3 200 | 3 240 | 40 | 1.3 |
| France | 3 482 | 3 587 | 3 544 | 3 162 | -382 | -10.8 |
| Spain | 1 880 | 2 203 | 2 783 | 2 783 | 0 | 0.0 |
| Belgium | ... | 2 437 | 2 450 | 2 250 | -200 | -8.2 |
| Austria | 1 700 | 1 680 | 1 970 | 2 130 | 160 | 8.1 |
| Other Europe | 6 348 | 6 540 | 7 222 | 7 018 | -204 | -2.8 |
| of which: | | | | | | |
| Poland | 2 124 | 2 266 | 2 681 | 2 515 | -166 | -6.2 |
| Turkey | 1 525 | 1 643 | 1 884 | 1 659 | -225 | -11.9 |
| Czech Republic | 640 | 700 | 720 | 820 | 100 | 13.9 |
| Hungary | 440 | 457 | 484 | 484 | 0 | 0.0 |
| Russian Federation | 1 568 | 1 987 | 2 335 | 2 500 | 165 | 7.1 |
| North America | 10 475 | 13 132 | 11 773 | 11 521 | -252 | -2.1 |
| Canada | 2 347 | 2 436 | 2 517 | 2 783 | 266 | 10.6 |
| United States | 8 128 | 10 696 | 9 256 | 8 738 | -518 | -5.6 |
| **EXPORTS** | | | | | | |
| EU/EFTA | 8 472 | 8 169 | 8 655 | 8 480 | -175 | -2.0 |
| of which: | | | | | | |
| Germany | 1 658 | 1 586 | 2 050 | 1 929 | -121 | -5.9 |
| Belgium | ... | 1 823 | 2 012 | 1 778 | -234 | -11.6 |
| Austria | 1 233 | 1 182 | 1 393 | 1 567 | 174 | 12.5 |
| France | 1 278 | 1 332 | 992 | 1 105 | 113 | 11.4 |
| Other Europe | 1 234 | 1 426 | 1 612 | 2 046 | 433 | 26.9 |
| of which: | | | | | | |
| Czech Republic | ... | 421 | 398 | 482 | 84 | 21.1 |
| Poland | 145 | 290 | 324 | 446 | 123 | 37.9 |
| Russian Federation | 97 | 95 | 135 | 120 | -15 | -11.1 |
| North America | 1 597 | 1 496 | 1 582 | 1 693 | 111 | 7.0 |
| Canada | 1 073 | 1 054 | 1 112 | 1 204 | 92 | 8.2 |
| United States | 524 | 442 | 470 | 489 | 19 | 4.0 |
| **IMPORTS** | | | | | | |
| EU/EFTA | 6 699 | 6 416 | 6 552 | 6 431 | -121 | -1.9 |
| of which: | | | | | | |
| Germany | 1 594 | 1 230 | 1 284 | 1 199 | -85 | -6.6 |
| United Kingdom | 1 043 | 996 | 1 093 | 1 170 | 77 | 7.1 |
| France | 622 | 621 | 680 | 673 | -7 | -1.0 |
| Netherlands | 622 | 636 | 636 | 600 | -36 | -5.7 |
| Other Europe | 1 182 | 1 182 | 1563 | 1 909 | 346 | 22.1 |
| of which: | | | | | | |
| Poland | 406 | 184 | 304 | 420 | 116 | 38.1 |
| Slovakia | 92 | 86 | 95 | 275 | 180 | 189.5 |
| North America | 1 647 | 1 885 | 2 533 | 2 941 | 407 | 16.1 |
| Canada | 219 | 469 | 389 | 436 | 46 | 11.9 |
| United States | 1 428 | 1 416 | 2 144 | 2 505 | 361 | 16.8 |

***Source***: UNECE/FAO TIMBER database, 2002.

have remained relatively flat over the past decade and go predominantly to Canada and Mexico. As with other panels, a strong dollar handicaps United States exports to Europe and Asia. As in North America, in Europe most of the trade in particle board is intra-European, only 10% of exports is exported outside the region, mostly to South East Asia and smaller volumes to China and North and South America.

## 9.5 Fibreboard

Overall fibreboard consumption in North America dropped in 2001 by 3.1% to 9.6 million $m^3$ due to an important drop in hardboard consumption in the United States. MDF consumption showed only a slight decrease from 2000 levels (tables 9.5.1 and table 9.5.2). The United States and Canada did not provide new data for insulating board. In EU/EFTA countries overall fibreboard consumption remained at 2000 levels, 9.6 million $m^3$, influenced by the continued growth of the MDF industry, which represents 76.4% of total fiberboard consumption. In the "Other Europe" subregion consumption in 2001 dropped by 3.6% to 2.4 million $m^3$, although production had increased significantly by 6.9%. In the Russian Federation consumption increased by 8.3% to 0.8 million $m^3$.

### *9.5.1 Hardboard*

Production of hardboard in 2001 in North America dropped by 16.4%, to 1.2 million $m^3$ due to an important decrease in the United States of 20.8% (table 9.5.3). In EU/EFTA, "Other Europe" and in the Russian Federation hardboard production remained close to 2000 levels showing slight changes.

TABLE 9.5.1
**Fibreboard balance in the UNECE region, 1997-2001**
*(Million* $m^3$)

| | *1997* | *1998* | *1999* | *2000* | *2001* | *Timber Committee estimate for 2002*[1] |
|---|---|---|---|---|---|---|
| EU/EFTA | | | | | | |
| Production | 6.40 | 8.09 | 8.49 | 9.28 | 9.70 | 9.82 |
| Imports | 3.93 | 4.53 | 4.69 | 6.21 | 5.89 | 5.83 |
| Exports | 3.86 | 4.36 | 4.56 | 5.76 | 5.97 | 6.40 |
| Net trade | -0.07 | -0.17 | -0.13 | -0.45 | 0.08 | 0.57 |
| Apparent consumption | 6.47 | 8.26 | 8.62 | 9.73 | 9.62 | 9.25 |
| Other Europe | | | | | | |
| Production | 2.01 | 2.29 | 2.27 | 2.62 | 2.80 | 2.92 |
| Imports | 0.57 | 0.76 | 0.67 | 1.12 | 1.06 | 1.04 |
| Exports | 0.86 | 1.00 | 0.99 | 1.24 | 1.45 | 1.55 |
| Net trade | 0.29 | 0.24 | 0.31 | 0.12 | 0.39 | 0.51 |
| Apparent consumption | 1.72 | 2.05 | 1.95 | 2.50 | 2.41 | 2.41 |
| Russian Federation | | | | | | |
| Production | 0.75 | 0.62 | 0.78 | 0.89 | 0.90 | 0.95 |
| Imports | 0.06 | 0.05 | 0.04 | 0.10 | 0.08 | 0.08 |
| Exports | 0.17 | 0.17 | 0.26 | 0.28 | 0.20 | 0.22 |
| Net trade | 0.11 | 0.12 | 0.22 | 0.18 | 0.12 | 0.14 |
| Apparent consumption | 0.64 | 0.50 | 0.56 | 0.72 | 0.78 | 0.81 |
| North America | | | | | | |
| Production | 7.32 | 8.24 | 8.43 | 8.41 | 8.18 | 8.25 |
| Imports | 1.08 | 1.24 | 1.64 | 3.11 | 3.26 | 3.63 |
| Exports | 1.34 | 1.33 | 1.63 | 1.67 | 1.88 | 1.94 |
| Net trade | 0.27 | 0.09 | -0.01 | -1.44 | -1.38 | -1.68 |
| Apparent consumption | 7.05 | 8.16 | 8.44 | 9.86 | 9.55 | 9.93 |

[1] = The Timber Committee forecast trend for 2001-2002, made at the October 2001 session, was applied to the 2001 figure.

***Source***: UNECE/FAO TIMBER database, 2002.

TABLE 9.5.2

**Production and trade of fibreboard in the UNECE region, 1998-2001**

*(1,000 $m^3$)*

| | 1998 | 1999 | 2000 | 2001 | Change 2000 to 2001 | |
|---|---|---|---|---|---|---|
| | | | | | Volume | % |
| **PRODUCTION** | | | | | | |
| EU/EFTA | 8 087 | 8 487 | 9 282 | 9 695 | 413 | 4.4 |
| of which: | | | | | | |
| Germany | 1 985 | 2 506 | 2 974 | 2 974 | 0 | 0.0 |
| Italy | 1 450 | 1 260 | 1 325 | 1 260 | -65 | -4.9 |
| Spain | 1 079 | 1 080 | 1 085 | 1 085 | 0 | 0.0 |
| France | 801 | 866 | 1 015 | 1 040 | 25 | 2.5 |
| Other Europe | 2 293 | 2 267 | 2 623 | 2 801 | 178 | 6.8 |
| of which: | | | | | | |
| Poland | 1 112 | 1 149 | 1 265 | 1 351 | 85 | 6.7 |
| Turkey | 357 | 348 | 422 | 386 | -36 | -8.5 |
| Bulgaria | 66 | 66 | 234 | 282 | 48 | 20.5 |
| Romania | 45 | 79 | 82 | 206 | 124 | 151.2 |
| Russian Federation | 618 | 777 | 890 | 903 | 13 | 1.5 |
| North America | 8 245 | 8 431 | 8 415 | 8 177 | -238 | -2.8 |
| Canada | 1 245 | 1 454 | 1 425 | 1 433 | 8 | 0.6 |
| United States | 7 000 | 6 977 | 6 990 | 6 744 | -246 | -3.5 |
| **EXPORTS** | | | | | | |
| EU/EFTA | 4 358 | 4 561 | 5 759 | 5 969 | 210 | 3.6 |
| of which: | | | | | | |
| Germany | 1 017 | 1 149 | 2 215 | 2 362 | 147 | 6.6 |
| France | 527 | 673 | 738 | 701 | -36 | -4.9 |
| Austria | 254 | 301 | 301 | 569 | 268 | 89.1 |
| Italy | 483 | 477 | 587 | 433 | -154 | -26.2 |
| Other Europe | 997 | 988 | 1 237 | 1 453 | 215 | 17.4 |
| of which: | | | | | | |
| Poland | 454 | 433 | 564 | 624 | 60 | 10.6 |
| Estonia | 195 | 179 | 196 | 188 | -8 | -3.9 |
| Russian Federation | 173 | 257 | 279 | 200 | -79 | -28.3 |
| North America | 1 331 | 1 633 | 1 669 | 1 883 | 214 | 12.8 |
| Canada | 883 | 1 147 | 1 171 | 1 434 | 263 | 22.4 |
| United States | 448 | 486 | 498 | 449 | -49 | -9.8 |
| **IMPORTS** | | | | | | |
| EU/EFTA | 4 533 | 4 690 | 6 207 | 5 894 | -313 | -5.0 |
| of which: | | | | | | |
| Germany | 675 | 630 | 1 320 | 1 126 | -194 | -14.7 |
| United Kingdom | 891 | 772 | 867 | 988 | 121 | 13.9 |
| Italy | 337 | 398 | 525 | 618 | 93 | 17.7 |
| Belgium | ... | 231 | 663 | 546 | -117 | -17.6 |
| Other Europe | 757 | 674 | 1 119 | 1 060 | -58 | -5.2 |
| of which: | | | | | | |
| Poland | 171 | 155 | 244 | 263 | 19 | 7.8 |
| Czech Republic | 54 | 97 | 146 | 205 | 59 | 40.4 |
| Russian Federation | 54 | 40 | 104 | 76 | -28 | -26.9 |
| North America | 1 244 | 1 641 | 3 112 | 3 258 | 146 | 4.7 |
| Canada | 212 | 246 | 529 | 514 | -15 | -2.7 |
| United States | 1 032 | 1 395 | 2 583 | 2 744 | 161 | 6.2 |

***Source***: UNECE/FAO TIMBER database, 2002.

TABLE 9.5.3
**Production and trade of hardboard in the UNECE region, 1998-2001**
*(1,000 $m^3$)*

| | 1998 | 1999 | 2000 | 2001 | Change 2000 to 2001 | |
|---|---|---|---|---|---|---|
| | | | | | Volume | % |
| **PRODUCTION** | | | | | | |
| EU/EFTA | 1 809 | 1 687 | 1 734 | 1 787 | 53 | 3.0 |
| of which: | | | | | | |
| Italy | 800 | 610 | 610 | 610 | 0 | 0.0 |
| Germany | 309 | 336 | 336 | 336 | 0 | 0.0 |
| France | 115 | 115 | 125 | 199 | 74 | 59.2 |
| Other Europe | 864 | 743 | 898 | 895 | -3 | -0.4 |
| of which: | | | | | | |
| Poland | 289 | 249 | 258 | 242 | -16 | -6.2 |
| Estonia | 177 | 170 | 177 | 180 | 3 | 1.7 |
| Russian Federation | 525 | 615 | 656 | 646 | -10 | -1.5 |
| North America | 1 377 | 1 361 | 1 379 | 1 153 | -225 | -16.4 |
| Canada | 108 | 136 | 141 | 173 | 33 | 23.1 |
| United States | 1 269 | 1 225 | 1 238 | 980 | -258 | -20.8 |
| **EXPORTS** | | | | | | |
| EU/EFTA | 1 100 | 1 172 | 2 116 | 2 290 | 173 | 8.2 |
| of which: | | | | | | |
| Germany | 453 | 557 | 1 319 | 1 377 | 58 | 4.4 |
| Austria | 107 | 131 | 131 | 207 | 76 | 58.2 |
| Other Europe | 475 | 516 | 466 | 501 | 35 | 7.5 |
| of which: | | | | | | |
| Poland | 105 | 152 | 172 | 188 | 16 | 9.2 |
| Estonia | 170 | 153 | 65 | 74 | 10 | 15.3 |
| Russian Federation | 173 | 257 | 279 | 200 | -79 | -28.3 |
| North America | 376 | 403 | 435 | 474 | 39 | 9.0 |
| Canada | 221 | 244 | 283 | 325 | 42 | 14.9 |
| United States | 155 | 159 | 152 | 149 | -3 | -2.0 |
| **IMPORTS** | | | | | | |
| EU/EFTA | 1 374 | 1 324 | 1 754 | 1 634 | -120 | -6.8 |
| of which: | | | | | | |
| Germany | 279 | 221 | 407 | 343 | -64 | -15.7 |
| United Kingdom | 192 | 141 | 250 | 233 | -17 | -6.8 |
| Belgium | ... | 98 | 199 | 208 | 9 | 4.5 |
| France | 128 | 110 | 172 | 180 | 8 | 4.8 |
| Other Europe | 394 | 338 | 450 | 501 | 52 | 11.5 |
| of which: | | | | | | |
| Czech Republic | 39 | 71 | 116 | 162 | 46 | 39.7 |
| Poland | 81 | 62 | 83 | 82 | -1 | -1.2 |
| North America | 341 | 407 | 507 | 501 | -5 | -1.1 |
| Canada | 78 | 68 | 211 | 189 | -21 | -10.2 |
| United States | 263 | 339 | 296 | 312 | 16 | 5.4 |

***Source***: UNECE/FAO TIMBER database, 2002.

### 9.5.2 Medium density fibreboard

North America, because of its huge production of sawnwood with its attendant residues, is a natural location for composites such as MDF. Because of the ready availability of low-cost wood residues, MDF has made rapid strides in the region. The diminished availability of clear, old growth Ponderosa pine also created a vacuum in moulding and millwork applications that MDF, with its superior machineability and finishing characteristics, was able to exploit. It continues to make great strides as a replacement for sawnwood, plywood and particle board in furniture. The rising popularity of thin laminate flooring has boosted MDF consumption. Use of MDF also serves as a replacement for hardboard in furniture and cabinetry. It is intermediate in manufacturing cost between plywood and OSB on the one hand and particle board on the other.

Despite the recession in the United States, MDF production in 2001 in North America remained close to 2000 levels, at 3.3 million $m^3$ (table 9.5.5). Production in the EU/EFTA countries in 2001 continued the rapid expansion of the industry, setting a new record of 7.4 million $m^3$; furniture and laminated flooring are the major users of MDF. According to the EPF *Annual Report*, MDF operating rates increased in 2001 to 88% of total capacity, setting also a new record. Production in "Other Europe" countries expanded in 2001 to 1.5 million $m^3$, or 12.8%. Major increases occurred in Poland 10.7% and Romania, where production increased to 174,000 $m^3$ as a result of new capacity coming on stream.

Following the capacity expansions of 0.5 million $m^3$ in Europe in 2001, in Germany, Slovenia and France, further expansions are announced in France and Spain in 2002 (table 9.5.4). The European MDF industry is also experiencing some restructuring as two relatively small mills, representing 200,000 $m^3$ were closed down in 2000.

TABLE 9.5.4
**Capacity development in the MDF industry, 2001-2002**
*(1,000 $m^3$)*

| | *2001* | *2002* |
|---|---|---|
| Europe | 11 998 | 12 671 |
| North America | 5 446 | 5 446 |
| China | 4 058 | 4 498 |
| Latin America | 1 962 | 2 767 |
| South-East Asia | 2 631 | 2 671 |
| North-East Asia | 1 743 | 1 770 |
| Australia and other Asia | 1 645 | 1 660 |
| Other | 390 | 520 |
| TOTAL | 29 873 | 32 003 |

***Source***: *Annual Report*, European Panel Federation 2002.

MDF exports in North America have largely been confined within the region, but imports from Europe and South America are making up a larger share of consumption. New Zealand, Chile and Germany are among new offshore suppliers. European exports to the Far East represent 7% of total exports. Exports from "Other Europe" to EU/EFTA, increased by 48.4% to 0.45 million $m^3$, the main exporters are Poland, Romania, Slovenia and the Czech Republic.

Industrial grade MDF prices have been reflecting the improved capacity utilization fundamentals and have gained about 5% over 2000, a level that has been maintained into the first half of 2002.

### 9.5.3 Insulating board

Production of insulating board in EU/EFTA and "Other Europe" rose by 4% to 0.54 million $m^3$ and by 3.2% to 0.42 million $m^3$ , respectively. The United States and Canada did not provide new data for insulating board (table 9.5.6).

## 9.6 Conclusion

The wood-based panels sector in Europe and North America has invested heavily in new production capacities and has been facing the cumulative effects of various market and structural outcomes. Demand has not always followed at the same pace as the capacity build-up, creating in certain cases manufacturing overcapacity, which, coupled with increased competition from other panel products and market sluggishness, have depressed prices. Under these conditions the OSB industry in North American and MDF in Europe have expanded at high annual growth rates. The need for increased profitability in difficult market conditions has seen relative recent less efficient mills closed and replaced by mills using the latest technology, while others are going through difficult financial situations.

## 9.7 References

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*Random Lengths Yardstick, 2002*. Eugene, Oregon.

TABLE 9.5.5

**Production and trade of medium density fibreboard in the UNECE region, 1998-2001**

*(1,000 $m^3$)*

| | *1998* | *1999* | *2000* | *2001* | *Change 2000 to 2001* | |
|---|---|---|---|---|---|---|
| | | | | | *Volume* | *%* |
| **PRODUCTION** | | | | | | |
| EU/EFTA | 5 734 | 6 293 | 7 064 | 7 405 | 341 | 4.8 |
| of which: | | | | | | |
| Germany | 1 566 | 2 032 | 2 500 | 2 500 | 0 | 0.0 |
| Spain | 969 | 970 | 975 | 975 | 0 | 0.0 |
| France | 636 | 691 | 830 | 781 | -49 | -5.9 |
| United Kingdom | 390 | 515 | 700 | 757 | 57 | 8.1 |
| Italy | 650 | 650 | 715 | 650 | -65 | -9.1 |
| Belgium | ... | 483 | 320 | 450 | 130 | 40.6 |
| Other Europe | 1 160 | 1 252 | 1 316 | 1 484 | 168 | 12.8 |
| of which: | | | | | | |
| Poland | 637 | 702 | 768 | 850 | 82 | 10.7 |
| Turkey | 357 | 348 | 284 | 259 | -25 | -8.8 |
| Romania | 10 | 16 | 38 | 174 | 136 | 357.9 |
| Bulgaria | 20 | 30 | 78 | 94 | 16 | 20.5 |
| Russian Federation | 80 | 140 | 215 | 239 | 24 | 11.2 |
| North America | 3 192 | 3 394 | 3 360 | 3 348 | -12 | -0.4 |
| Canada | 712 | 893 | 859 | 835 | -24 | -2.8 |
| United States | 2 480 | 2 501 | 2 501 | 2 513 | 12 | 0.5 |
| **EXPORTS** | | | | | | |
| EU/EFTA | 2 679 | 2 905 | 3 021 | 2 962 | -59 | -1.9 |
| of which: | | | | | | |
| Germany | 513 | 533 | 730 | 772 | 42 | 5.8 |
| France | 328 | 509 | 501 | 518 | 18 | 3.5 |
| Italy | 342 | 331 | 463 | 357 | -106 | -22.9 |
| Ireland | 295 | 287 | 287 | 287 | 0 | 0.0 |
| Other Europe | 281 | 195 | 305 | 453 | 148 | 48.4 |
| of which: | | | | | | |
| Poland | 212 | 126 | 181 | 184 | 4 | 2.0 |
| Romania | 1 | 1 | 31 | 156 | 125 | 403.2 |
| North America | 723 | 978 | 989 | 1 075 | 86 | 8.7 |
| Canada | 552 | 774 | 747 | 885 | 138 | 18.5 |
| United States | 171 | 204 | 242 | 190 | -52 | -21.5 |
| **IMPORTS** | | | | | | |
| EU/EFTA | 2 444 | 2 559 | 3 363 | 2 874 | -488 | -14.5 |
| of which: | | | | | | |
| Germany | 270 | 246 | 640 | 499 | -141 | -22.0 |
| United Kingdom | 572 | 496 | 421 | 386 | -35 | -8.2 |
| Belgium | ... | 130 | 449 | 326 | -123 | -27.4 |
| Spain | 297 | 309 | 309 | 309 | 0 | 0.0 |
| Other Europe | 254 | 230 | 423 | 422 | -1 | -0.2 |
| of which: | | | | | | |
| Poland | 60 | 68 | 106 | 126 | 20 | 18.6 |
| Israel | 13 | 51 | 66 | 66 | 0 | 0.0 |
| Russian Federation | 54 | 40 | 40 | 40 | 0 | 0.0 |
| North America | 704 | 973 | 2 310 | 2 359 | 49 | 2.1 |
| Canada | 92 | 113 | 261 | 260 | -1 | -0.4 |
| United States | 612 | 860 | 2 049 | 2 099 | 50 | 2.4 |

***Source***: UNECE/FAO TIMBER database, 2002.

TABLE 9.5.6

**Production and trade of insulating board in the UNECE region, 1998-2001**

*(1,000 $m^3$)*

| | 1998 | 1999 | 2000 | 2001 | Change 2000 to 2001 | |
|---|---|---|---|---|---|---|
| | | | | | Volume | % |
| **PRODUCTION** | | | | | | |
| EU/EFTA | 544 | 508 | 485 | 504 | 20 | 4.0 |
| of which: | | | | | | |
| Germany | 110 | 138 | 138 | 138 | 0 | 0.0 |
| Switzerland | 110 | 120 | 115 | 130 | 15 | 13.0 |
| France | 50 | 60 | 60 | 60 | 0 | 0.0 |
| Other Europe | 269 | 272 | 409 | 422 | 13 | 3.2 |
| of which: | | | | | | |
| Poland | 186 | 198 | 239 | 259 | 19 | 8.1 |
| Bulgaria | 7 | 7 | 78 | 94 | 16 | 20.5 |
| North America | 3 676 | 3 676 | 3 676 | 3 676 | 0 | 0.0 |
| Canada | 425 | 425 | 425 | 425 | 0 | 0.0 |
| United States | 3 251 | 3 251 | 3 251 | 3 251 | 0 | 0.0 |
| **EXPORTS** | | | | | | |
| EU/EFTA | 579 | 484 | 622 | 717 | 95 | 15.3 |
| of which: | | | | | | |
| Germany | 51 | 59 | 166 | 213 | 47 | 28.3 |
| Austria | 39 | 40 | 40 | 175 | 135 | 336.6 |
| Other Europe | 241 | 277 | 466 | 499 | 33 | 7.0 |
| of which: | | | | | | |
| Poland | 138 | 154 | 211 | 251 | 41 | 19.2 |
| Estonia | 25 | 27 | 129 | 113 | -16 | -12.3 |
| North America | 232 | 252 | 245 | 334 | 88 | 36.0 |
| Canada | 110 | 129 | 141 | 224 | 82 | 58.2 |
| United States | 122 | 123 | 104 | 110 | 6 | 5.8 |
| **IMPORTS** | | | | | | |
| EU/EFTA | 714 | 806 | 1 091 | 1 386 | 295 | 27.0 |
| of which: | | | | | | |
| United Kingdom | 128 | 135 | 197 | 369 | 172 | 87.5 |
| Germany | 126 | 163 | 273 | 284 | 11 | 4.0 |
| Italy | 77 | 129 | 189 | 243 | 54 | 28.6 |
| Netherlands | 142 | 140 | 140 | 151 | 11 | 8.0 |
| Other Europe | 109 | 106 | 246 | 137 | -109 | -44.3 |
| of which: | | | | | | |
| Poland | 31 | 25 | 56 | 56 | 0 | 0.7 |
| Lithuania | 5 | 4 | 14 | 11 | -3 | -19.7 |
| North America | 199 | 261 | 295 | 398 | 103 | 34.8 |
| Canada | 42 | 65 | 57 | 65 | 8 | 13.7 |
| United States | 157 | 196 | 238 | 333 | 95 | 39.9 |

***Source***: UNECE/FAO TIMBER database, 2002.