



**United Nations  
Economic Commission for Europe**



**Food and Agriculture Organization  
of the United Nations**

**GENEVA TIMBER AND FOREST DISCUSSION PAPER 36**

**VALUE-ADDED WOOD PRODUCTS MARKETS, 2001-2003**

*by*

*Mr. Jukka Tissari, Mr. Craig Adair and Dr. Al Schuler*



**UNITED NATIONS**



United Nations Economic Commission for Europe/  
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UNECE



Timber Branch, Geneva, Switzerland

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Geneva, 2003

## Note

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## Abstract

*Value-Added Wood Products Markets, 2001-2003* presents the trade of wood furniture, builders' carpentry and joinery, profiled wood and engineered wood products. The UNECE Timber Committee follows these markets as they are drivers for primary forest products production and trade, and therefore have policy implications and ultimately effects on sustainable forest management. This *Discussion Paper* is the full text of an abbreviated chapter in the *Forest Products Annual Market Analysis, 2002-2004*.

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## Preface

Increasingly, forest products are traded as value added products, such as joinery or furniture, rather than primary products or roundwood. This is profoundly influencing the patterns of world trade as certain countries, such as Italy or China, with relatively limited forest resources, but with comparative advantages in design or manufacture, have become major players on world forest products markets, generating new trade flows. Others are becoming suppliers of raw material, but have been unable to develop their exports of value added products. It is no longer possible to understand demand for forest products without a good analysis of trends for value added products. Faced with this situation UNECE and FAO have for several years been monitoring these markets as well as those for the more traditional assortments. *Value-Added Wood Products Markets, 2002-2003*, analyzes the trade and production of further-processed primary forest products, both within, the UNECE region and its trading partners).

This paper is divided into 2 parts: 1. value-added products of wooden furniture, builders' joinery and carpentry and profiled wood, and 2. engineered wood products. It provides more detail than the short chapter of the same name, and by the same authors, in the *Forest Products Annual Market Analysis, 2002-2004* published in early 2004. Both the chapter and this paper were produced as background material for the annual UNECE Timber Committee Market Discussions in October 2003.

I would like to thank the authors of the paper and the others who have contributed to it, as well as their organisations and institutions. The ability to generate productive partnerships such as these is a key part of UNECE's comparative advantage. They and their affiliations are presented in the Acknowledgements.

This publication is a further contribution of UNECE, FAO and their partners to monitoring trends in the forest and forest products sector, which is at the core of the sustainable development of the region.



Brigita Schmögnerová  
Executive Secretary  
UN Economic Commission for Europe

## Acknowledgements

The secretariat expresses its sincere appreciation for the valuable work and generous contributions by Mr. Jukka Tissari<sup>1</sup>, Market Development Officer in Wood Products, International Trade Centre UNCTAD/WTO (ITC<sup>2</sup>), who analysed the value-added markets for this paper and the associated chapter. The secretariat thanks him for his continued participation in our work. He is a member of the UNECE/FAO Team of Specialists on Forest Products Markets and Marketing, and has transferred to Indufor Consulting, headquartered in Helsinki, Finland. He authored all sections except the one on engineered wood products.

The section on engineered wood products was written by Mr. Craig Adair<sup>3</sup>, Director, Market Research, APA-the Engineered Wood Association and Dr. Al Schuler<sup>4</sup>, Research Economist, United States Department of Agriculture, Forest Service. They have updated their more lengthy analysis published in the *Forest Products Annual Market Review 1999-2000*, and its updates for the *Review 2000-2001 and 2001-2002*, in order to show the important market developments for engineered wood products in North America. Dr. Schuler is also a member of the UNECE/FAO Team of Specialists on Forest Products Markets and Marketing.

Mr. Adair's and Dr. Schuler's continued analysis provides valuable insight into this important market sector. Engineered wood products continue to innovate in their design and applications. They were part of the solution to the "sound use of wood" as recommended at the UNECE Timber Committee and FAO European Forestry Commission seminar in Romania in 2003. Composed of sawnwood, veneer and panel products, engineered wood products are a part of primary products demand.

We appreciate the valuable assistance of Mr. Tapani Pahkasalo, Masters Degree Candidate, Department of Forest Economics, University of Helsinki, who worked with us on the original chapter during the summer of 2003, and who prepared this paper's graphics for publishing.

Your comments on this paper will be referred to the authors. The secretariat may be contacted at:

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## Highlights

- While the international trade in furniture has continued to create more export opportunities for developing countries, the year 2001 witnessed at least a temporary 2-3% combined fall of imports in key markets.
- The most stable growth segments were wooden bedroom furniture, “other” wooden furniture (destined for living/dining rooms, shops, miscellaneous uses), and wooden seats.
- China is pressing hard to take over the world’s number two and three furniture exporter titles from Germany and Canada, all three tailing Italy.
- In builders’ joinery and carpentry (BJC), the world imports slipped 2.4% in 2001, and profiled wood suffered a 5.3% decline, due to decline in hardwood side of the business.
- Growth in BJC continued in wooden doors and shingles and shakes, while windows have been losing ground constantly in 1997-2001.
- Growth in engineered wood products (EWPs) production and consumption in North America has been phenomenal with glulam, I-beams and laminated veneer lumber (LVL) now comprising about 5% of structural lumber demand.
- New generations of EWPs with hybrid formulations are being produced with a wider variety of species.
- Factors driving demand for EWPs include decreased availability of old growth timber, new conversion technology, better adhesives technology, worldwide adoption of performance-based building codes, and the intense competition fostered by globalization.
- While the potential gains of higher value-added processing allure new countries to develop exports of secondary processed wood products, there is a risk of falling into a cycle of “immiserising growth” i.e. increased output but which increases poverty.
- As new countries enter into export business, their competitiveness depends most often on lowering production costs and product prices against immediate regional rivals, instead of real product and process-related strengths like better materials, operational efficiencies, total quality or enhanced design and marketing.
- In a fierce price competition, lower returns are received in spite of higher participation in exports, so a race-to-the-bottom may come about.
- The retailers and buyers’ groups from the industrialized countries may reinforce this trend through their continuous search for the most cost-competitive supply chains worldwide.

## 1. Introduction

### 1.1 *Can secondary processing make a difference?*

The big import markets have permanently grown more conscious about the sustainability of tropical timber and all related products that hint any tropical origin. This is partly unjustified because the criteria, against which sustainable timber harvesting is assessed, have been without exception first developed outside the tropical world. It is therefore no surprise that market access continues to be a major concern for the tropical producers, and particularly in primary processed commodity products.

As a manifestation of the losing-out trend, the international trade in primary forest products from tropical forests has steadily fallen in the past decade. At the same time trade in secondary processed tropical wood products — mainly furniture — has increased impressively and now accounts for over 40% of the combined trade value. In addition, much of the value-added products are made of plantation timbers, which come available in uniform quality and sufficient volume, and stir less environmental concern. Value-added products also fetch higher unit prices along a more diverse range of products, many of which are not sold by species, but rather for a specific end use. They also offer important ways for improving processing efficiency through utilization of intermediate products and off-cuts, as well as optimizing the timber properties to specific end uses.

In this regard, the higher value-added wood products appear to carry a particular promise for sustainable development of forest industries for many countries, including equally tropical countries and countries in transition.

### 1.2 *Policy processes stepped up*

Countries throughout the tropics are embarking on varied regional or national processes to enhance value-added processing of tropical timber for greater multiple benefits and for better sustainability record amidst dwindling availability of tropical wood.

Approaches range from a ministerial conferences (hosted by African Timber Organization), to regional expert consultations and country projects (tropical Asia), and to sector-specific work spearheaded by national industry

associations such as Brazilian Association of Mechanically Processed Timber (ABIMCI).

As a commodity body responsible for tropical timber, the International Tropical Timber Organization (ITTO) is supporting this work on all three regions and all levels, which reaffirms its commitment towards value-added processing and competitive forest industries in the tropics. These two goals are likely to feature strongly in the new ITTA (International Tropical Timber Agreement), which is currently being re-negotiated.

All regional processes recognize the importance of well-managed plantation forests, but true success stories are still few, mainly limited to rubberwood in Malaysia and eucalyptus and pines in parts of Latin America. Tropical Africa's low plantation rates pose particular problems for long-term capture of timber processing opportunities.

## 2. Import trends of secondary processed wood products in 2000-2001

### 2.1 *Wooden furniture by product groups*

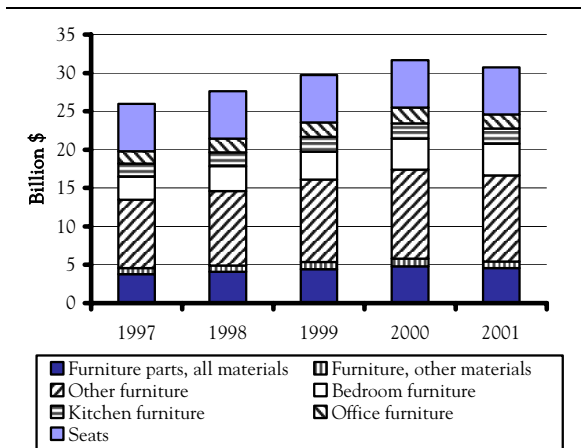
World imports of wooden furniture and parts amounted to \$32.1 billion<sup>5</sup> in 2001, which was 2.8% less compared to \$33.0 billion peak reached in 2000. This includes furniture parts and components made of all materials. Without parts, the wooden furniture trade amounted to \$27.5 billion in 2001, down by 2.5% from \$28.3 billion in 2000 (graph 2.1).

Even though the long-term growth trend in imports appears to be firmly in place, the year 2001 produced a temporary slowdown for trade, reflecting the economic woes in major markets. Nevertheless, imports from the developing market economies have continued to grow faster than overall imports in most major markets. The global impact of the Chinese furniture supply will multiply due to the capacity expansion currently underway.

Top-5 importers accounted for 65% of the world trade. United States alone purchased one third (\$10.7 billion) of all imports (graph 2.2). Germany (\$3.3 billion), France (\$2.6 billion), the United Kingdom (\$2.3 billion) and Japan followed (\$1.9 billion) as the leading import markets.

<sup>5</sup> \$ in United States dollars throughout this publication

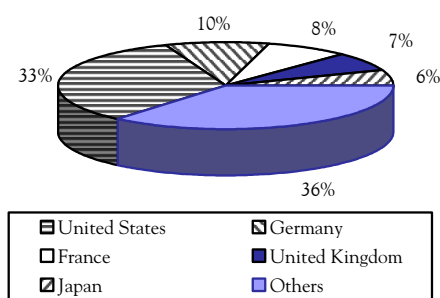
Graph 2.1  
World imports of wooden furniture by product group, 1997-2001



Note: Seats are of wood, cane, osier, bamboo, etc.

Source: UN COMTRADE, 2003

Graph 2.2  
Major importers of wooden furniture and parts, 2001



Note: World imports \$32.1 billion.

Source: UN COMTRADE, 2003.

## 2.2 Builders' joinery and carpentry and profiled wood

World imports of builders' joinery and carpentry (BJC) slipped 2.4% in 2001 from the previous year, to \$5.94 billion. Profiled wood suffered a bigger decline, after losing 5.3% of import value in 2001, down to \$2.70 billion (graph 2.3).

Inside the BJC category, wooden doors, frames and thresholds have remained on a steady growth trend throughout 1997-2001, reaching \$1.68 billion import value worldwide. Unspecified "other" BJC, which comprises e.g. assembled parquet panels, shuttering and miscellaneous products, measured two times more in trade value (\$3.31 billion) in

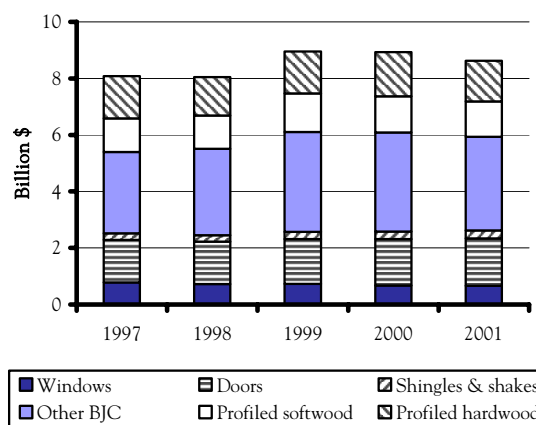
2001. On the other hand, it showed a setback in 2001: world imports were down by 5.4%. Trade in wooden windows and frames have been on a steady decline and reach the level of \$660 million annually. Shingles and shakes, a small product group dominated by the United States-Canada trade, has kept growing.

Profiled softwoods have slightly grown in trade value over the period 1997-2001, while hardwoods have declined. Trade has however remained fairly steady without major upheavals. But a cause of concern might be the 7.4% decline in profiled hardwoods in 2001. Canada and Italy were bigger importers of profiled wood than the United Kingdom, and Belgium-Luxembourg was ahead of France. These top-8 countries accounted for 70% of the world imports, and top-5 held 53%.

Top-5 import markets accounted for 60% of world trade in BJC, with the United States alone taking 29% of imports (graph 2.4). Declines in Germany and Japan contributed most to the overall fall of world imports, compounded by diminishing imports by France, Austria, and the Netherlands. The United States, the United Kingdom and Italy recorded growing imports in 2001.

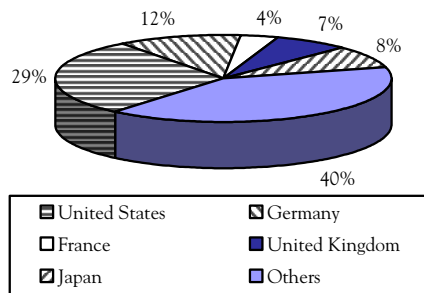
As for profiled wood, only Italy and France continued to grow their imports in 2001. All other markets imported less than a year ago (graph 2.5).

Graph 2.3  
World imports of builders' joinery and carpentry and profiled wood by product group, 1997-2001



Source: UN COMTRADE, 2003.

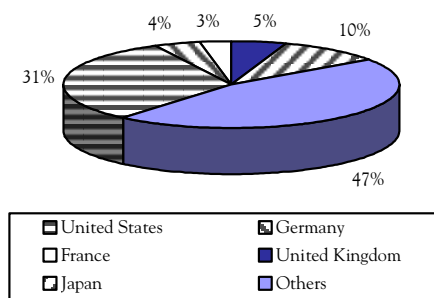
Graph 2.4  
Major importers of builders' joinery and carpentry,  
2001



*Note:* World imports \$5.9 billion.

*Source:* UN COMTRADE, 2003.

Graph 2.5  
Major importers of profiled wood, 2001



*Note:* World imports \$2.7 billion.

*Source:* UN COMTRADE, 2003.

### 3. Origins of imports in 2000 and 2001

#### 3.1 Wooden furniture

Origins of imported wooden furniture have not undergone major changes during 2000-2001 (table 3.1). Asian sources have won market clout to the detriment of Europe and Canada. The percentage win for Asia has been small (1.4 percentage points) but one must remember that this alone translates into \$118 million increase in trade value. China's influence is even greater than this, because its market penetration in the United States has reduced

the shares of the rest of Asia. Bilateral trade comparison in 2000-2001 shows massive gains for China in the United States furniture market: \$259 million trade expansion in finished wooden furniture and \$59 million additional exports in parts. Major losers in the meanwhile have been Canada, the European countries, Taiwan P.O.C., (but may reflect trade re-routes), Indonesia, the Philippines and Korea. The only Asian country that has not lost out under China's pressures is Malaysia.

In Europe, the intra-regional trade continues strong and impedes growth of the Asian deliveries. Two thirds of the French imports are from Europe, and slightly less than half – and growing – of the German and United Kingdom imports of wooden furniture are from within the old continent. Eastern European deliveries keep growing, and will soon become the main source for Germany's imports. Due to shipments from South Africa and Ghana, the United Kingdom imported in fact more furniture from Africa (under "others") than from Latin America.

The Japanese imports continue to grow under Asian rule, with nearly 80% market share. China, Taiwan P.O.C., Thailand and Malaysia share much of the Japanese markets for imported furniture.

Trade in furniture parts (not covered in table 3.1) is firmly dominated by a few key supplier countries. For the United States market, Canada delivers 35% of parts imports, but China is fast approaching, currently holding 23% of the United States imports. China's trade value in furniture parts has grown four-fold between 1997-2002. Due to customs recording differences, the distinction between furniture parts and semi-finished or knock-down furniture may sometimes be diluted. Mexico and Taiwan P.O.C. follow with less than 10% of the imports each.

Trade patterns are fairly similar in the major European markets, as Italy is the prime source of furniture parts for the United Kingdom, France and Germany. These markets have not been taken over by Chinese imports, a pattern that is now clear in Japan (33% from China).

Table 3.1  
Origins of five major countries' furniture imports, 2000-2001  
(%)

Regions	United States		Germany		France		United Kingdom		Japan	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
Asia	47.0	48.4	9.2	8.4	14.4	14.0	31.4	29.2	79.6	80.6
North America	23.8	23.2	0.4	0.3	0.9	0.8	3.6	2.8	4.7	4.0
EU/EFTA	18.4	17.6	45.4	45.2	67.6	67.3	47.1	49.4	14.7	14.4
Eastern Europe and Russia	1.4	1.3	41.2	42.7	10.2	11.2	8.7	10.0	0.5	0.5
Latin America	8.5	8.5	1.5	1.0	5.0	4.3	3.6	3.2	0.1	0.1
Others	1.1	1.1	2.4	2.4	1.9	2.5	5.6	5.3	0.4	0.4
Total imports billion \$	9.5	9.4	2.8	2.9	1.9	1.8	1.8	2.0	1.6	1.6

*Note:* Excluding furniture parts.

*Source:* UN COMTRADE, 2003.

Table 3.2  
Origins of five major countries' builders joinery and carpentry imports, 2000-2001  
(%)

Regions	United States		Germany		France		United Kingdom		Japan	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
Asia	12.2	10.0	12.9	8.4	15.8	15.4	21.4	19.9	30.3	30.0
North America	68.2	67.4	0.5	0.3	1.1	1.9	7.1	7.7	26.4	23.2
EU/EFTA	5.9	6.0	49.8	51.2	72.8	72.6	50.0	52.4	35.0	37.9
Eastern Europe and Russia	0.5	0.5	29.4	32.8	5.9	5.7	6.3	5.7	2.1	1.9
Latin America	12.1	14.5	0.3	0.3	3.0	3.1	6.8	5.3	0.2	0.2
Others	1.0	1.4	7.1	6.9	1.3	1.3	8.3	9.1	6.0	6.8
Total imports billion \$	1.7	1.7	0.9	0.7	0.2	0.2	0.4	0.4	0.5	0.5

*Source:* UN COMTRADE, 2003.

Table 3.3  
Origins of five major countries' profiled wood imports, 2000-2001  
(%)

Regions	United States		Germany		France		United Kingdom		Japan	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
Asia	18.0	15.0	11.3	12.7	6.2	7.0	25.1	21.8	70.3	72.5
North America	28.7	25.1	1.5	2.5	2.0	1.5	15.8	14.6	16.3	12.6
EU/EFTA	4.1	4.1	60.9	59.4	74.1	74.3	53.5	58.0	10.5	11.5
Eastern Europe and Russia	0.6	0.6	22.7	22.3	9.5	10.3	1.8	2.2	-	0.1
Latin America	43.0	49.7	0.6	0.4	5.6	4.0	2.1	1.4	0.8	1.4
Others	5.6	5.5	3.1	2.8	2.6	3.0	1.5	2.0	2.1	2.0
Total imports billion \$	0.9	0.9	0.1	0.1	0.1	0.8	0.2	0.1	0.3	0.3

*Source:* UN COMTRADE, 2003.

### 3.2 Builders' joinery and carpentry and profiled wood

In BJC, more than 90% of the Japanese imports come from three regions. Europe has continued to win market shares from North American and Asian competitors (table 3.2).

In the United States, imports of BJC are dominated by North America (67%), with Latin America increasing its presence (14.5%) and Asia losing (10%). In Europe, France imports 73% of its

needs from developed Europe. More than half of the total imports of BJC in Germany and in the United Kingdom come from European sources. Eastern Europe increases further its role in Germany's imports (33%).

Latin American suppliers (mainly Mexico, Chile, Brazil) have grasped a dominant 50% share of the United States imports of profiled wood before North America (25%) and Asia (15%), who have both lost ground after 2000 (table 3.3).

Decking applications have been one new growth opportunity within the profiled wood segment. But building and furniture industries traditionally continue to use the bulk of imported profiles.

In Europe, most of the profiled wood originates from within the continent, with shares as high as 74% in France, to 59% in Germany, and 58% in the United Kingdom. United Kingdom imports much higher shares of its needs from North America and Asia than Germany or France. Among "other" suppliers, Oceania (New Zealand and Australia) has made a mark in the United States with trade for over \$44 million worth of profiled softwood sold in 2000 and 2001. Africa has been a small supplier of profiled hardwoods to the French and United Kingdom markets.

In Japan, the Asian suppliers of profiled wood (nearly all in hardwoods) have increased their market shares to 72.5% of total imports, leaving 13% of the market to North America and 11.5% to Europe.

#### 4. Market drivers for value-added wood products

The framework of market drivers that influence the further development of tropical wood product industries in particular, also has implications for the development of wood industries worldwide (table 4.1). The compilation is rough and non-exhaustive in the sense that industries adjust to the given conditions differently in various market segments and product sectors. But enough common threads can be identified to pull the table together, and draw some examples to support it.

Table 4.1

#### Logic of market drivers in tropical wood products

<b>Traditional end-uses</b>	<ol style="list-style-type: none"> <li>1. Sawnwood, plywood for construction</li> <li>2. Builder's joinery and carpentry</li> <li>3. Low-cost furniture</li> </ol>
<b>Market drivers</b>	<ol style="list-style-type: none"> <li>1. Rainforest &amp; social concerns (sustainability, responsibility)</li> <li>2. Consumer fashion: light-coloured woods have dominated for a long time</li> <li>3. Synthetic (aluminium, steel, PVC), natural (fibre plants, agro-waste) substitutes</li> <li>4. Substitution between wood species (temperate hardwoods, fast-growing plantation woods, softwoods)</li> <li>5. Consolidation and globalization of (mainly) northern forest industry &amp; distribution</li> </ol>
<b>Strategic response by industry</b>	<ol style="list-style-type: none"> <li>1. Certification of sustainable forest management and chain-of-custody</li> <li>2. Material combinations (if you can't beat substitutes, join with them)</li> <li>3. Engineered wood products and more efficient use of residues</li> <li>4. Move to higher value-added products from plantations</li> <li>5. Industry restructuring</li> <li>6. Clustering and value chain approaches</li> <li>7. Widening product mix (diversification)</li> <li>8. Entering into outsourcing and sub-contracting: the lowest-cost bases</li> </ol>
<b>Impacts of prices on development</b>	<ol style="list-style-type: none"> <li>1. Roundwood and commodity product real prices are in constant decline (plus sudden fall e.g. after Asian crisis).</li> <li>2. Some part of the gains of lower raw material costs will be passed on to the final consumer (lower selling prices of processed products).</li> <li>3. This increases the competitiveness of wood products in the marketplace and probably reduces rate of substitution.</li> <li>4. But there are upward price pressures that result from internalizing environmental and other up-grading costs (demanded by markets forces, international private and intergovernmental lenders to boost exports or to service debt). If these cannot be transferred in full, a "desperation production" cycle may occur.</li> <li>5. In absolute and relative terms profit margins at the producer side will decline.</li> <li>6. Race to the bottom? <ul style="list-style-type: none"> <li>Yes, if stay in mass markets: do-or-die under price erosion</li> <li>No, if products are diversified: product development, clever marketing, lasting total competitiveness, etc.</li> </ul> </li> </ol>

**Text Box 1    New EU Plywood Standard**

The European Community is changing its standards on wood-based panels. As of 1 April 2004 it will be compulsory for exporters to apply the 'CE Marking' based on European Union (EU) Standard EN 13986. Under the CE Marking system, wood-based panels traded in the EU must satisfy new health and safety requirements. Manufacturers will need to install quality-control systems in their factories for the regular testing of products and use a certified testing laboratory with third-party auditing. Many tropical plywood producers fear of being barred out of the EU markets because they are lacking the necessary certified testing laboratories.

Sawnwood and plywood markets are very competitive, and largely controlled by northern companies with more efficient production close to main markets. Tropical producers have faced falling prices and oversupply, partly bottlenecked by new product technical standards and buyers' requirements (certification). An example is the current plywood debate (text box 1).

This constitutes a major ad-hoc burden to tropical plywood producers, who are generally badly informed of international or regional standard development processes, may lack a competent national standardization body, and may face a daunting domestic industry restructuring challenge, like in the case of Indonesia.

Also, like in the case of Indonesia, the industry may face a daunting domestic restructuring challenge, that lowers even further industry's ability to react collectively to changing product standards.

On strategic responses in other industries, there are some positive examples on how secondary processed wood products have won back market shares from competing materials by efficiently embarking on technical standards. One such case can be reported from the United Kingdom wood windows industry (text box 2).

## **Text Box 2 Case study of window material competition in the UK**

Back in the early 1970s, aluminum and later on in 1980s PVC took control of the United Kingdom window market because they were sold as systems, backed with appropriate service and showing good standardization and low maintenance needs. Frequently, the synthetic window units came with double-glazing in convenient thickness, which was out of reach for the more robust wooden windows. Wooden windows suppliers focused too strictly on high joinery skills and left marketing and selling arguments to the hands of competitors.

Today, the United Kingdom window market consists of around 13 million units consumed per year (2001). PVC holds 56% of the market, wood 23%, aluminum and steel 21%. PVC windows have been on the market for 20 years. They were initiated and promoted heavily for the replacement market, and have since then reached a dominant position. Main arguments against wood were the short service life, need for frequent repairs and painting, and resulting high cost of maintenance. Much of that bad reputation was in fact caused by the careless handling and storing of frames in the building sites, and due to glazing done on site – instead of fully finishing and glazing the units in factories.

The United Kingdom wood windows industry has since the late 1990s taken decisive action to gain market shares back from PVC. Some of the measures taken are discussed below.

1. British Woodworking Federation has launched a Timber Window Accreditation Scheme, aiming at re-establishing consumer trust in wooden windows. It has established a strict quality label, which guarantees that its accredited members meet a set of manufacturing and performance standards. The Aim is for a 15 year guaranteed maintenance-free service life.
2. Introduction of total solutions concept: wooden windows are sold with (i) core product, (ii) service and (iii) utility. Total quality management (customer-focused) supports this strategy.
3. Technological advances: increasing use of laminated windows that swell less, and use of microporous coatings, which allow wood to “breathe”, i.e. change its moisture content according to weather conditions. Better security and thermal insulation properties are being sought.
4. A small but growing niche is wood/aluminium windows. Based on the optimization of desired properties of both materials, aluminium-clad wooden window units have been developed. In exterior side, aluminium provides the stability, weather resistance and carefree service life, while wood in the interior transforms into a home decoration piece with design advantage and warm appearance. Mechanically jointed together, the wood and aluminium pieces of the frame can be easily dismantled for service and repair.
5. Use of life cycle analysis (LCA). Research has shown that during the life cycle of windows, most environmental impacts are caused by leakage of energy. Manufacturing and finishing costs are only negligible (2-4%) of the total environmental effect. Wood-aluminium windows have proven the most environmentally benign in this respect. Both materials also recycle well.
6. Use of mass media and even TV-commercials to educate consumers on wood's benefits in high-quality window systems.

As a result of these efforts taken, the quality image and environmental status of wooden windows has been elevated in the United Kingdom. The industry is today confident of winning back half of the new buildings market from substitutes in three years, and to reach half of the total market (including replacements) by 2010. Even unexpected backers have emerged: Greenpeace, an environmental NGO, has pledged open support to timber windows over PVC, based on timber's superior environmental performance when supplied with appropriate forest certification.

*Source: TTJ Timber Trades Journal (various issues), The European Window Markets, Euro Window (2001).*



## 5. Engineered wood product markets<sup>6</sup>

### 5.1 Overview of current markets

This section focuses on the North American market for glulam, I-beams, and laminated veneer lumber (LVL). While most of the engineered wood products (EWPs) are produced, traded and consumed in North America, two products are experiencing substantial production capacity increases outside North America – glulam and LVL. In addition, there are modest increases in European I-beam manufacturing capacity. And, as mentioned in previous issues of the UNECE/FAO *Forest Products Annual Market Review*, the predominance of wood-frame housing in North America favours EWPs that are used primarily in structural applications.

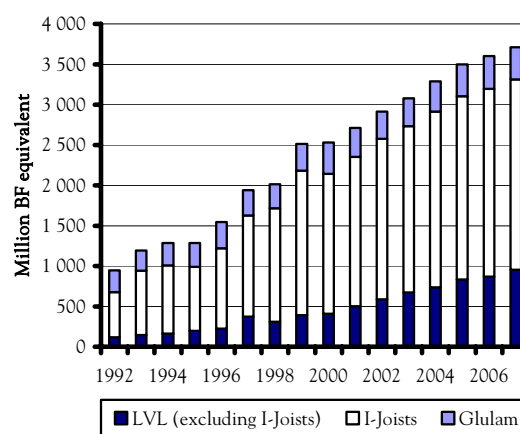
Growth in EWPs production and consumption has been phenomenal with glulam, I-beams<sup>7</sup> and LVL now comprising about 5% of structural lumber demand in North America (graph 5.1). The number of plants in North America has more than doubled in the past decade, growing from less than 60 plants in 1989 to more than 120 today. In addition, more plants are producing a new generation EWPs such as oriented strand lumber (OSL) and improved glulam products. Additionally, EWPs are produced with a wider variety of species, e.g. more hardwood LVL and a mixture of species used in the manufacture of OSL. Furthermore, the industry is enhancing existing products with hybrid formulations.

There are many factors driving demand for EWPs: decreased availability of old growth timber; new conversion technology; better adhesives technology; worldwide adoption of performance-based building codes; and the intense competition fostered by globalization.

Unfortunately world trade statistics for EWPs are unavailable because of a lack of tariff classifications for most of the EWPs. Often EWPs are reported as a combination of products, thus important market distinctions are unavailable. For instance, while breakouts are available for imports of different types of EWP in the United States, such data is combined for exports from the United States. They are often lost in trade data with other types of

similar products. For example, glulam is currently grouped with all types of glued wood products, until the United States Trade Commission establishes harmonized tariff codes for glulam.

Graph 5.1  
Production and consumption of engineered wood products in North America, 1992-2007



**Notes:** BF equivalent is the volumes of these 3 engineered wood products converted into board feet. Forecasts by APA, the Engineered Wood Association, 2003.

**Source:** APA, Regional Production and Market Outlook, APA Economics Report E169, 2003.

### 5.2 Glulam

North American glulam production fell almost 7% in 2002, owing to the slowdown in non-residential activity and exports (table 5.1). Glulam end uses depend heavily on residential markets (65%) with the next largest segment being non-residential applications (27%) (figure 5.1). The remaining 8% of the market is equally divided between export and industrial uses.

The key for growth is the nonresidential sector as nonresidential building designers embrace the provisions of the International Building code that allow greater heights and areas for wood construction. Furthermore, as 65% of glulam currently goes to residential end uses, this suggests market diversification may be a good strategy. European glulam manufacturers are currently trying to penetrate North American markets, but to date, they have had limited success (table 5.1). Most of the information on international trade in glulam is anecdotal – what we obtain by talking to United States and Canadian producers - and some Japanese import data. We can say that over 90% of Canadian exports go to the United States while 90% of United States exports go to Japan.

<sup>6</sup> By C. Adair, APA – the Engineered Wood Association, and A. Schuler, USDA Forest Service.

<sup>7</sup> I-beams are synonymous with I-joists.

Table 5.1  
Glulam statistics  
(1000 m<sup>3</sup>)

	2001	2002	2003	2004
<b>Production</b>				
United States	790.1	757.1	761.8	787.7
Canada	59.0	40.1	47.2	47.2
Total	849.1	797.2	809.0	834.9
<b>Trade</b>				
United States exports	40.1	33.0	35.4	37.7
United States imports	23.6	21.2	25.9	28.3
Canadian exports	30.7	16.5	18.9	18.9

*Source:* APA - the Engineered Wood Association, *Regional Production and Market Outlook*, APA Economics Report E168, 2003.

The APA forecast is based on continued market penetration of residential stock beams and an upturn in nonresidential construction expected in 2004. APA believes that new technology and product development will provide the basis for market share gains, particularly over solid sawnwood and beams. New generation, high strength beams provide more opportunities in the residential market. For example, recent innovations resulted in the development of products with better design and strength properties such as glulam made with LVL tension lams and beams incorporating a tension layer of a synthetic fiber reinforced polymer. Currently, five companies manufacture LVL with tension lams and two using the synthetic fiber reinforced polymers to achieve some niche markets with potentially large benefits. Finally, more companies are integrating the various EWPs to take advantage of engineered systems. A recent example is a new family of I-beam compatible glulam products taking advantage of the fact that products having the same depth facilitate the finishing of ceilings without extra work. This is a real advantage with the increasing scarcity of skilled labor.

Figure 5.1

Glulam growth potential lies mainly in the non-residential sector



*Source:* APA, 2003.

### 5.3 Wooden I-beams

After increasing 7% in 2001, North American I-beam production increased 6% in 2002 to 299 million linear meters (table 5.2). APA expects production to continue growing over the next several years, however, the rate of growth is expected to taper off (APA Report E169). - Logistically and for reduced labor costs, it makes sense to see the North American production of I-beams increasing at a faster rate in Canada. Also, the current United States-Canada Softwood Lumber Agreement, which restricts Canadian exports of sawn softwood into the United States, does not place the same restrictions on value-added wood products trade. The problem is that 83% of the I-beams are used in new residential floor construction where they constitute over 40% market share for raised wood floors (figure 5.2). The main engine of growth for I-beams will continue to be the residential floor market. Another 4% market share is in walls and roofs. However as growth slows, the industry will target other market sectors. There is greater potential in residential remodeling applications, which currently consume 5% of production and nonresidential buildings, which currently have an 8% market share in North America. Market sector development will require concentrated marketing and promotion programs are initiated. Offshore export potential is not expected to be great with only small volumes going mainly to Japan.

Table 5.2  
**North American I-beam production and forecast,  
 2001-2004**  
 (million linear metres)

	2001	2002	2003	2004
United States	227	230	236	236
Canada	55	69	78	82
Total	282	299	314	319

Source: APA - the Engineered Wood Association, *Regional Production and Market Outlook*, APA Economics Report E169, 2003.

There will be a variety of alternative designs, ranging from LVL flanges with OSB webs, to machine stress rated (MSR) and conventional solid sawnwood flanges and more recently, Timberstrand™ or laminated strand lumber<sup>8</sup> (LSL) flanges. LSL is a relatively new EWP which is similar to OSB, but with longer flakes. These developments are aimed at providing the most efficient I-beam configuration for each application. Most of the trade in I-beams is cross border between Canada and the United States, with about 45% of Canada's production flowing to the United States.

#### 5.4 Laminated veneer lumber

Laminated veneer lumber (LVL) production, mostly softwood, totalled 1.76 million m<sup>3</sup> in 2002, an increase of 6% from 2001 (table 5.3). The demand for LVL is driven primarily by residential construction activity as 50% is used to construct I-beam flanges and 43% is used in header and beam applications (figure 5.2). Growth in 2002 was driven primarily by increasing demand for LVL beams and headers in a strong housing market.

Future growth will be impacted from the shift by some I-beam producers to solid lumber flanges (primarily MSR sawnwood), while other producers use Timberstrand™ (laminated strand lumber) for the flange in lieu of LVL. The rationale is a better fit of the product properties to the end use application. Therefore, future growth will be concentrated in the beam and header market where LVL has strong performance advantages over built-up (softwood) dimension lumber and solid sawn beams. However, LVL is facing new competition there too. For example, some manufacturers are experimenting with new laminated strand lumber (LSL) and oriented strand lumber (OSL) products. If these products are successful, it will probably be at the expense of LVL.

<sup>8</sup> "Lumber" is used simultaneously with sawnwood.

Figure 5.2  
**I-beams and LVL oriented to residential end uses**



Source: APA, 2003.

Table 5.3  
**North American LVL production, 2001-2004**  
 (1,000 m<sup>3</sup>)

	2001	2002	2003	2004
United States	1,513	1,589	1,683	1,768
Canada	156	173	187	215
Total	1,669	1,762	1,870	1,983

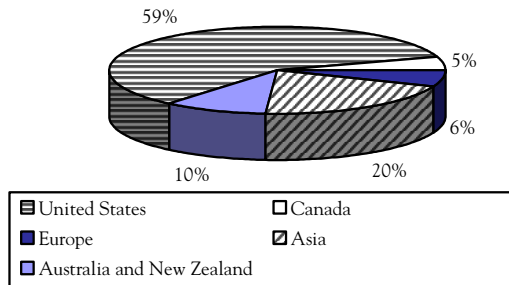
Source: APA - the Engineered Wood Association, *Regional Production and Market Outlook*, APA Economics Report E169, 2003.

LVL production outside North America is increasing primarily in Oceania and Asia (graph 5.4). In Asia, much of the new capacity is for both structural and nonstructural applications in Japan. Much of the new production in Asia is hardwood-based LVL that is used in industrial applications like furniture and cabinets whereas new capacity in Oceania is primarily softwood based, and used structurally. However, there are some capacity additions in Europe too. The Swiss company, Krono Holding Ag is building an LVL plant in Zary, Poland at its Kronopol headquarters. Construction of the 80,000 m<sup>3</sup> plant is to begin in summer 2003 with production starting up in early 2004. Some of the LVL production is destined for I-beam production as OSB is also produced at the Zary

complex. LVL is used for the I-beam flange and OSB for the web. Finally, most analysts believe it is only a matter of time before we see new capacity in South America, both softwood (southern yellow pine), and hardwood (eucalyptus) from Brazil and Chile. Lower production and raw material costs, plus new capacity (sometimes subsidized), outside North America suggests that in the future North American imports will increase.

Graph 5.2

**World LVL capacity, structural and nonstructural, 2002**



**Source:** “Laminated Veneer Lumber (LVL) and other Laminated Wood Products in the Pacific Rim, 1998 to 2003”. BIS Shrapnel Forestry Group, New Zealand, 2003.

### 5.5 Outlook for EWPs – an answer to globalization and the price cost squeeze?

Wood product companies all over the world are facing a more competitive environment – global competition, fierce substitute products at home, powerful retailers and environmental groups - all of which are impacting profitability (Ernesto Wagner, Oregon State University Research Brief, Wood Products Sector: Achieving Competitive Advantage in the 21<sup>st</sup> Century). They also share a common problem with other manufacturers of commodity products – a recent and prolonged period of deflationary prices driven by globalization trends that are causing a cost price squeeze. Production costs, including insurance, are increasing, but global competition does not allow manufacturers to raise prices. Many analysts are suggesting that the solution includes an emphasis on more “value added” products and processes. However Wagner suggests both product and business innovation are necessary, not just process innovations. Facing this sort of business environment, engineered wood

products can provide the wood products industry with a much needed “shot in the arm”.

Although the authors feel that EWPs have a bright future, they share at least one problem facing other wood products: a reliance on one market sector. Structural lumber and panel products rely on residential construction (new housing construction and remodeling) for 75% of their demand. EWPs, at least in North America, are even more concentrated, with most of the LVL, I-beams, and glulam going into single-family construction.

Irrespective of the concentration level, EWPs, with their superior predictable performance, are better positioned to gain market share in nonresidential and residential building applications as the world construction industry embraces performance based building codes. Furthermore, particularly in the UNECE region countries, demographic trends will dictate changes in building practices that favor the adoption of labor saving technology. For example, as in other manufacturing industries like autos, textiles, food processing, and electronics, industrialization trends have accelerated because they reduce labor content. For building construction, particularly housing, this means more of the house components are built in the factory, and transported to the building site.

Componentization favours products with predictable performance – engineered wood products - because it allows more efficient building design, hence less waste in the factory and the job site. Another factor, “green building materials”, is increasingly gaining favor with architects, design engineers, building fabricators and the general public. Engineered wood products are viewed as being “greener” than conventional wood products, and, in a life cycle cost perspective, are “greener” than steel and concrete (Bowyer, *et al*, *Forest Products Journal*, May 2001). Looking forward, EWPs should help the wood products industry capture market share and become more profitable in an increasingly competitive global market place.

## 6. Concluding remark

Even though the potential gains of higher value-added processed products would point towards developing exports of furniture and other SPWPs, there is a risk of tropical countries falling into a cycle of “immiserising growth” in these sectors, as highlighted in the last section of table 3.4.

In a fierce price competition, lower returns are received in spite of higher participation in exports, so a race-to-the-bottom becomes a likely scenario. The prices of most commodities, wood products included, has continued to decline in real terms for decades, despite the projections presented from time to time of looming shortages, which would boost prices.

As planted and genetically improved fast-growing timbers are increasingly used, the price is bound to hit a falling trend in most applications. This has already been well demonstrated in wooden seats, for example, where the production cost of a rubberwood “Windsor” chair has fallen from around \$11 a piece five years back to around \$8 a piece in Malaysia’s Muar district, and as low as \$5 a piece in Vietnam!

The falling unit costs work well for the retailers and buyers’ groups from the industrialized countries, transferring earnings opportunities for their reach. Only part of the manufacturing cost reductions are passed on to retail prices of final products. International buyers are well equipped to reinforce this trend through their bargaining power between the most cost-competitive supply chains worldwide.

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## Some facts about the Timber Committee

The Timber Committee is a principal subsidiary body of the UNECE (United Nations Economic Commission for Europe) based in Geneva. It constitutes a forum for cooperation and consultation between member countries on forestry, forest industry and forest product matters. All countries of Europe; the former USSR; United States, of America, Canada and Israel are members of the UNECE and participate in its work.

The UNECE Timber Committee shall, within the context of sustainable development, provide member countries with the information and services needed for policy- and decision-making regarding their forest and forest industry sector ("the sector"), including the trade and use of forest products and, when appropriate, formulate recommendations addressed to member Governments and interested organizations. To this end, it shall:

- i. With the active participation of member countries, undertake short-, medium- and long-term analyses of developments in, and having an impact on, the sector, including those offering possibilities for the facilitation of international trade and for enhancing the protection of the environment;
- ii. In support of these analyses, collect, store and disseminate statistics relating to the sector, and carry out activities to improve their quality and comparability;
- iii. Provide the framework for cooperation e.g. by organizing seminars, workshops and ad hoc meetings and setting up time-limited ad hoc groups, for the exchange of economic, environmental and technical information between governments and other institutions of member countries that is needed for the development and implementation of policies leading to the sustainable development of the sector and to the protection of the environment in their respective countries;
- iv. Carry out tasks identified by the UNECE or the Timber Committee as being of priority, including the facilitation of subregional cooperation and activities in support of the economies in transition of central and eastern Europe and of the countries of the region that are developing from an economic point of view;
- v. It should also keep under review its structure and priorities and cooperate with other international and intergovernmental organizations active in the sector, and in particular with the FAO (Food and Agriculture Organization of the United Nations) and its European Forestry Commission and with the ILO (International Labour Organisation), in order to ensure complementarities and to avoid duplication, thereby optimizing the use of resources.

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## ***Value-Added Wood Products Markets, 2001-2003***

This discussion paper presents the trade of wood furniture, builders' carpentry and joinery, profiled wood and engineered wood products. The UNECE Timber Committee follows these markets as they are drivers for primary forest products production and trade, and therefore have policy implications and ultimately effects on sustainable forest management. This *Discussion Paper* is the full text of an abbreviated chapter in the *Forest Products Annual Market Analysis, 2002-2004*.

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