

*Innovation and Value Added  
The Québec-Canada Experience and some  
of the Global Trends*

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CORMA

10 Novembre 2005



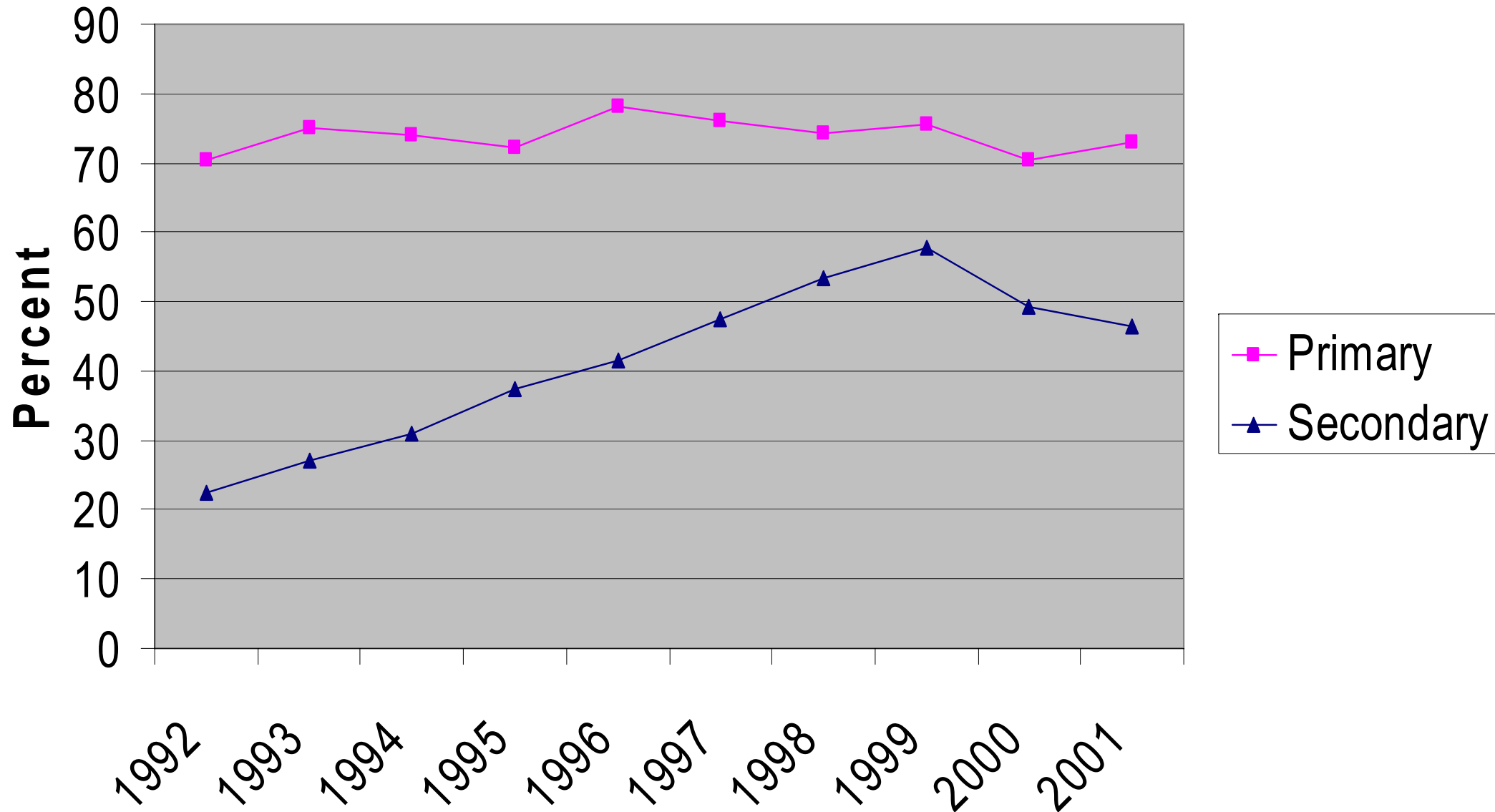
# *Plan of Presentation*

- The state and trends of Québec-Canada Value Added Sector
- How and why Innovation happened?
- The drivers behind EWP and Industrialization of the Building Process
- The Engineered Wood Products
- The manufactured House Industry
  - One opportunity for value creation
  - Value Creating Networks



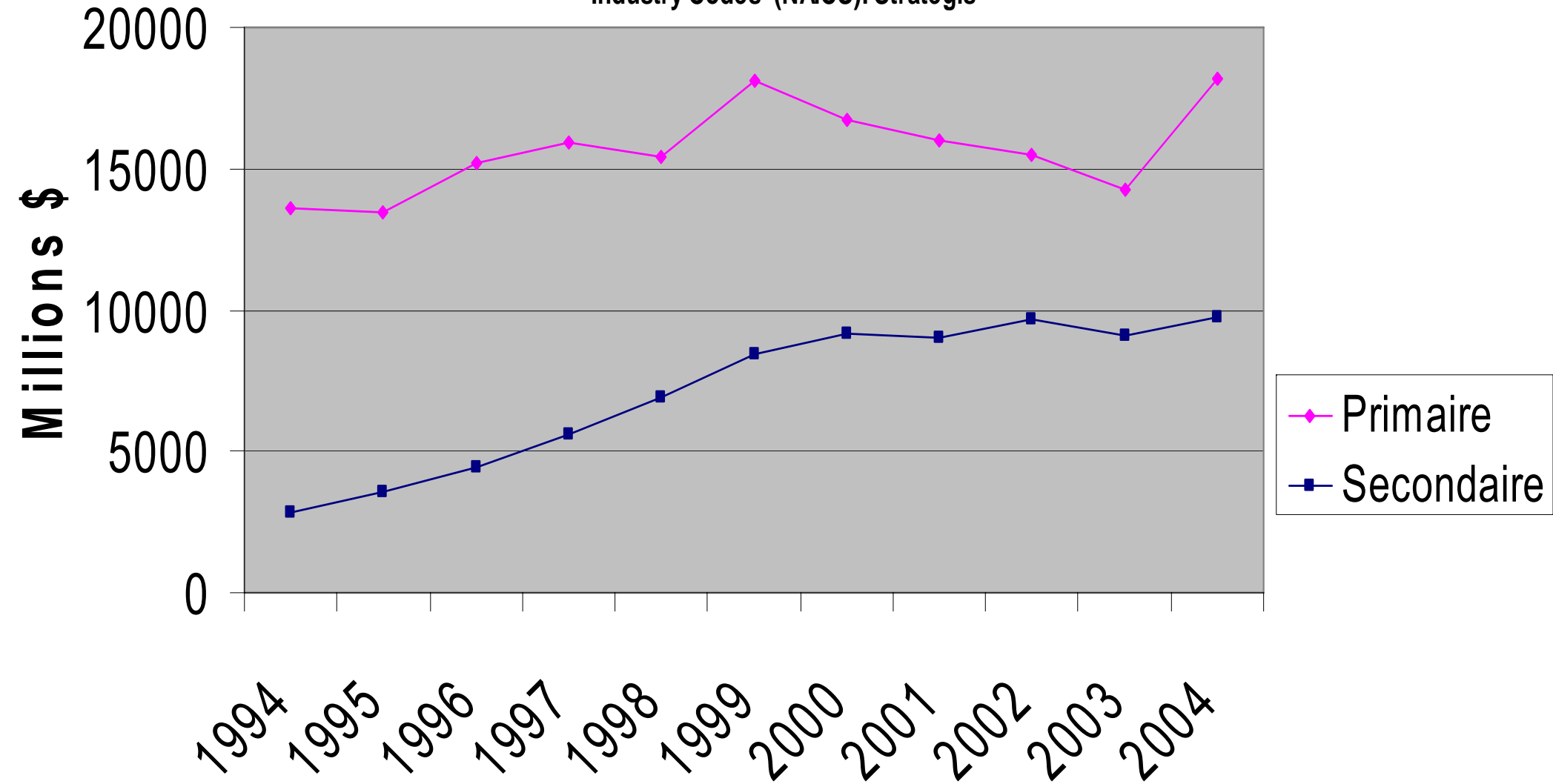
# Export Index Canadian Wood Products

Industry Codes (NAICS): Strategis



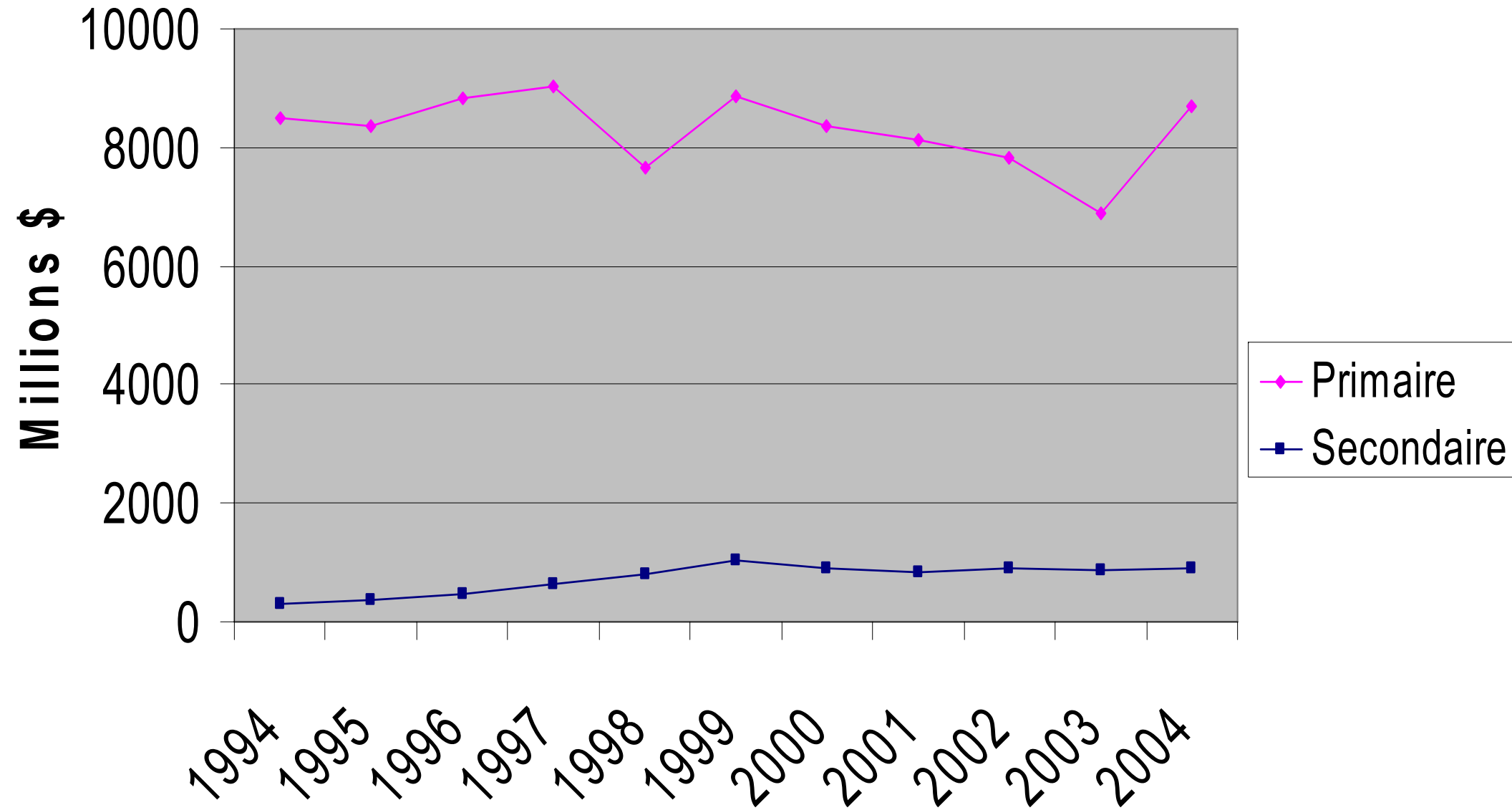
# Exports Wood Products From Canada

Industry Codes (NAICS): Strategis



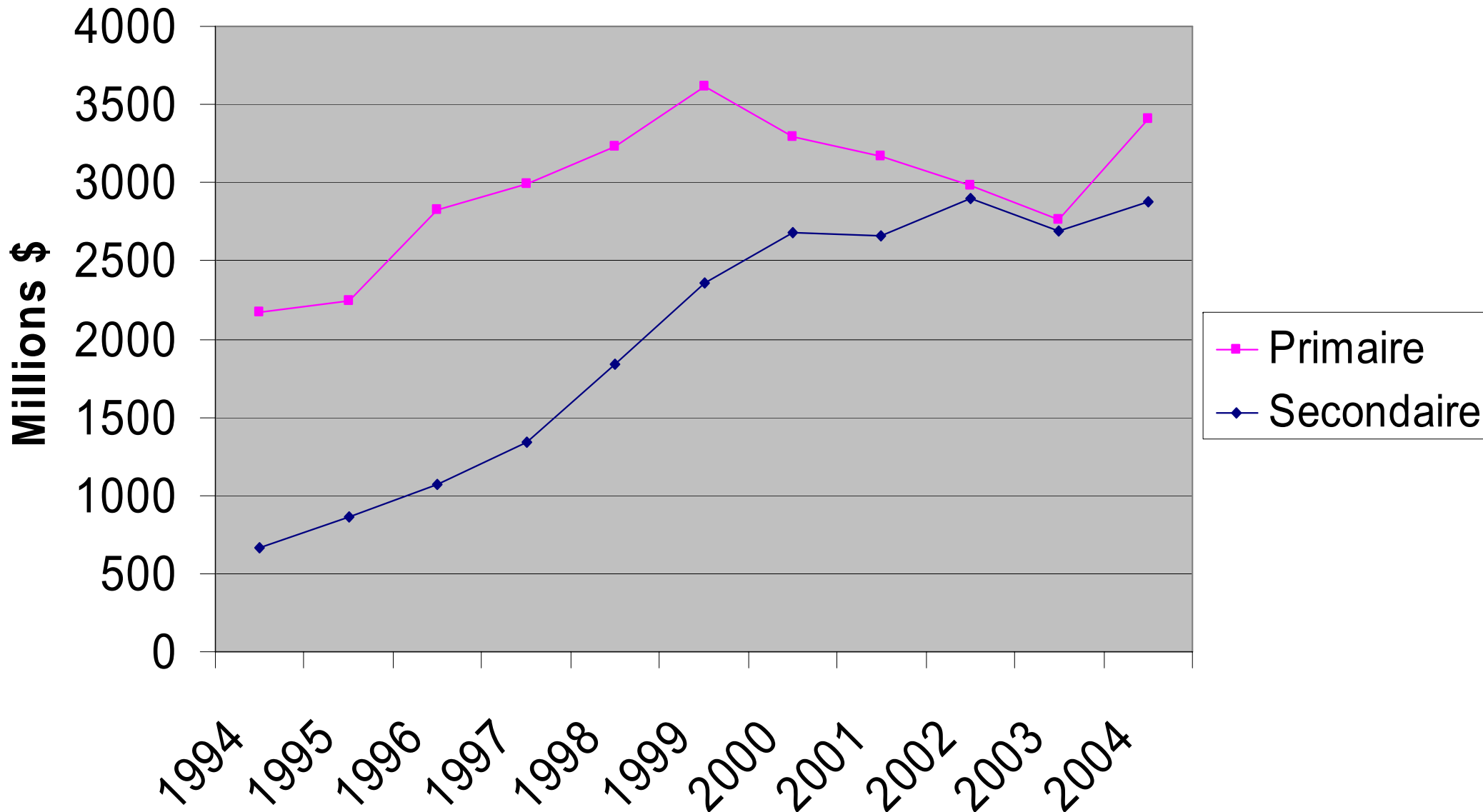
# Exports British Columbia Wood Products

Industry Codes (NAICS): Strategis



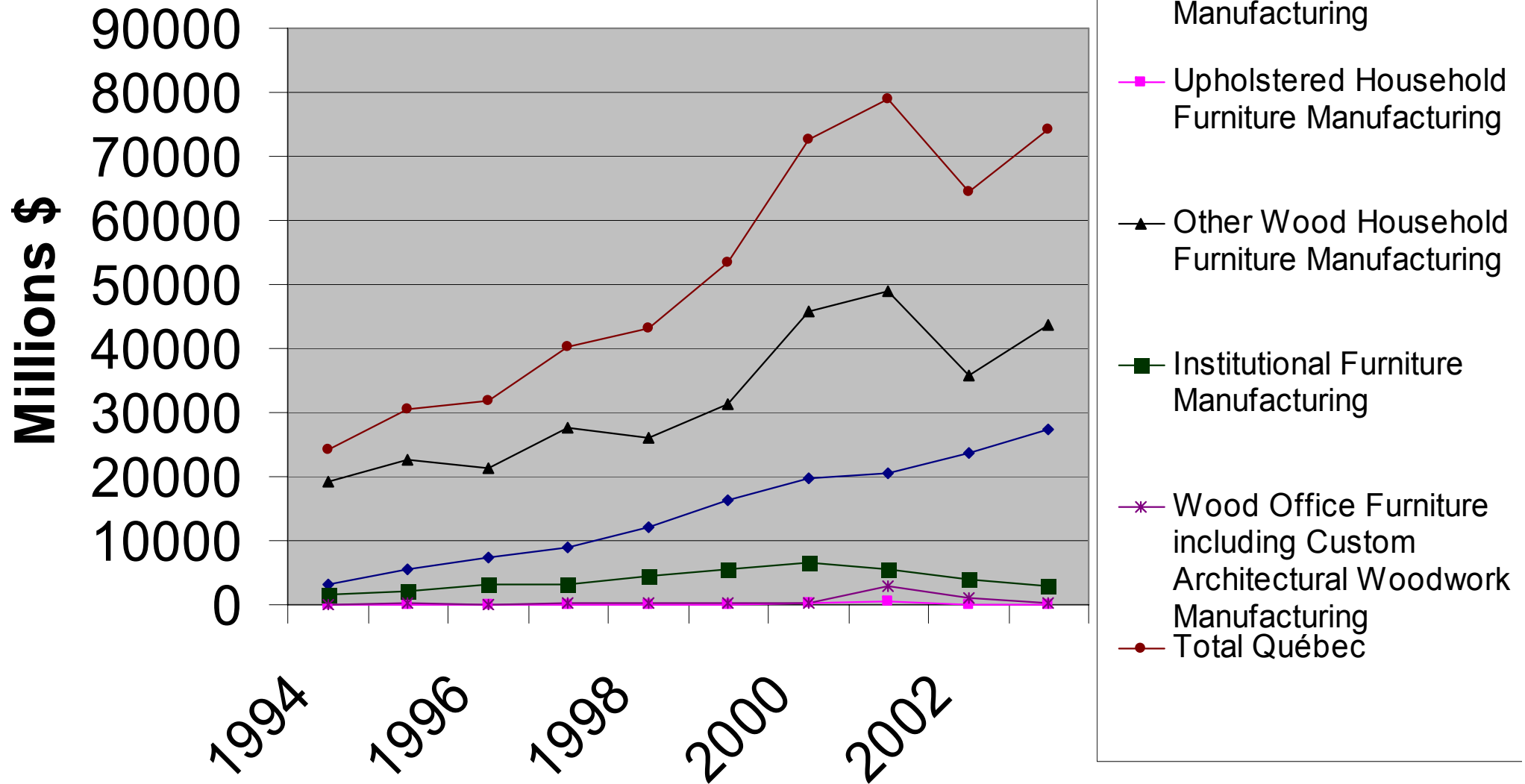
# Exports Québec Wood Products

Industry Codes (NAICS): Strategis

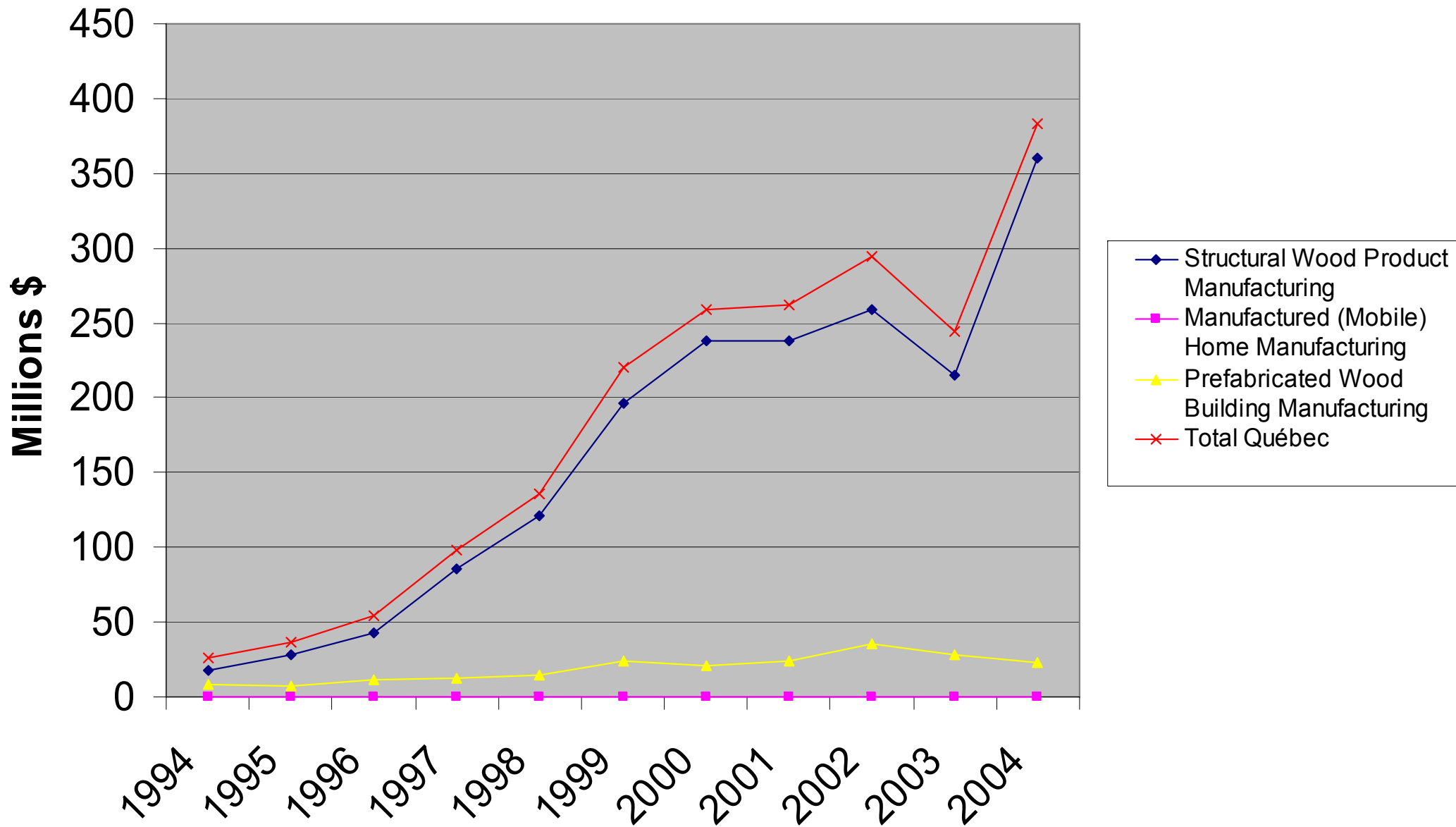


# Exports of Furniture from Québec, by Category

Industry Codes (NAICS) : Strategis



# Exports of Building Systems from Québec



# *What was given to Québec Value Added Sector*

- Geographical
  - Some significant local market
  - Proximity to significant U.S. markets
  - Hardwoods → Furniture
  - Diversity of wood species

# *What was given to Québec Value Added Sector*

- Human resource
  - Pool of available experts and R&D scientists
  - Pool of laboring people (tradition of textiles, apparel, plastics industries)
  - Tradition of furniture making (400 years of craftsmanship, more than 100 years of industry, Victorian, Contemporary styles)

# *What was partly given, partly done for Québec Value Added Sector*

- Localities and regions rural or semi-rural where there is no dominant large industry (aluminum, pulp and paper, etc)
- Modern transport infrastructure (mostly roads for trucking)

# *What was done by Québec for the Value Added Sector*

- Fiscal (General programs)
  - Fiscal advantages for resource-regions
    - The goal is to overcome the distance-to-markets disadvantage
    - 10-year tax break for companies creating a manufacturing or processing facility in resource-regions, including:
      - Income tax
      - Tax on capital
      - Break on the contribution to the Health Services Fund

# *What was done by Québec for the Value Added Sector*

- Fiscal (General programs)
  - R&D Tax Credit
    - The goal is to foster industry R&D, both internally or via third party
    - R&D expenditures deducted from revenues
    - Under the form of a tax credit
    - Up to 35% of R&D expenditures returned in cash

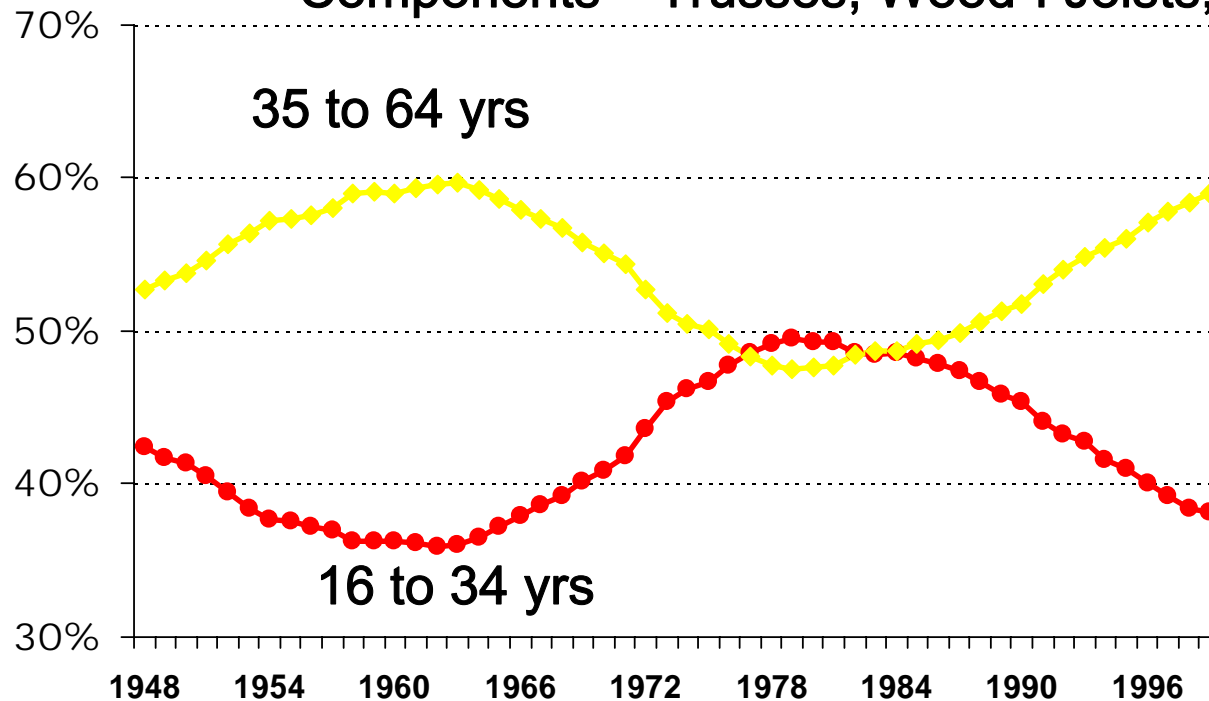
# *The Driving Forces behind the raise of EWP and the Industrialization of the Building Process*

Implications from an ageing population?

More expensive labor!

Encourage automation – pre-fabrication

Components – Trusses, Wood-I Joists, Panelized Walls



# *The Manufactured House or Panelized House takes Advantage of Labor Shortage*

- Labor shortage is at the forefront of most cited problems in a NAHB national survey
- The lack of qualified labor becomes a chronic problem
- Sub-contractors are unable to attract and retain responsible workers
- The quality and consistence of wood materials tend to deteriorate

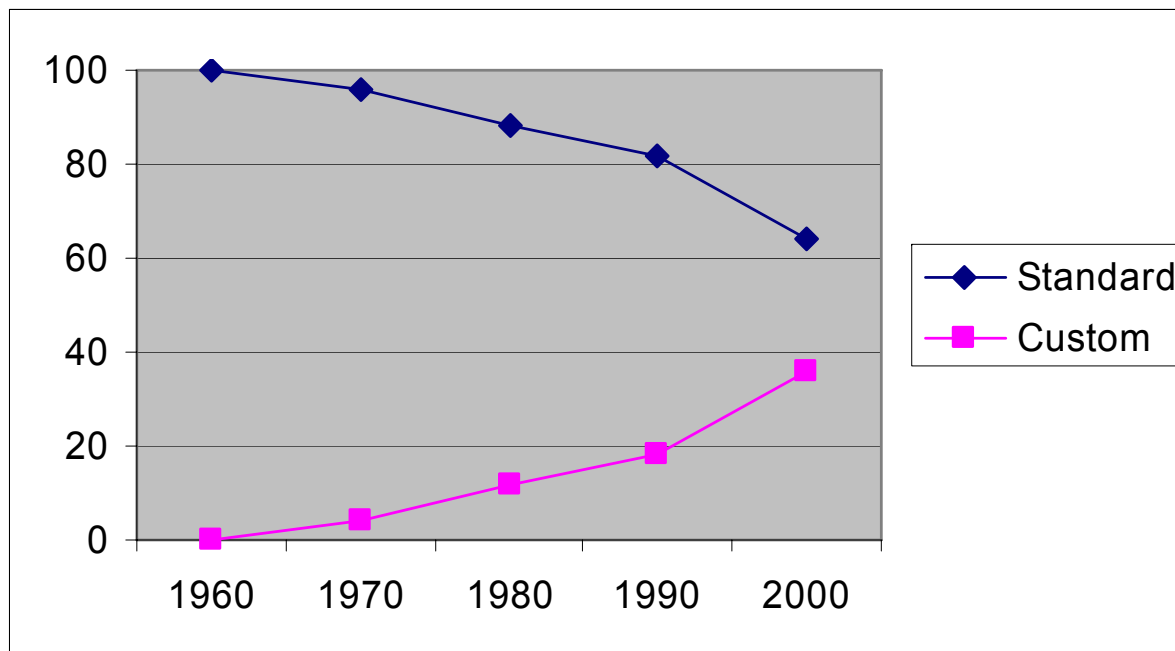
# Examples of labour efficiencies when using EWP

	<b>Application</b>	<b>Conventional Solution</b>	<b>EWP Solution</b>
1.	« Headers » Garage doors	Two 2x10's nailed together	One LVL Beam
2.	Floor system	conventional floor with 133 pieces	Wood I system with 80 pieces (40% less)
3.	Main Beams	Three or four 2x12 nailed	One LVL beam 3 ½" (8.9 cm) One Parallam Beam One Glulam Beam
4.	Roof truss	roof truss with metal plates and conventional softwood lumber members	roof truss with metal plates and MSR lumber (25% less wood fiber)

# *The Driving Forces behind the Industrialization and Componentization Process*

**Custom Economy:** Biotechnologies, telecommunications, micro-processors, custom houses, cell phone, DVD, Starbucks coffee, specialized TV channels, custom furniture and cabinets from IKEA

**Standardized Economy:** Suburb development , desktops, VHS, radial tire, K-car, SuperMarket, Nescafé, National Network TV, K Mart



Source: A. Schuler

# *The Trend Towards Custom*

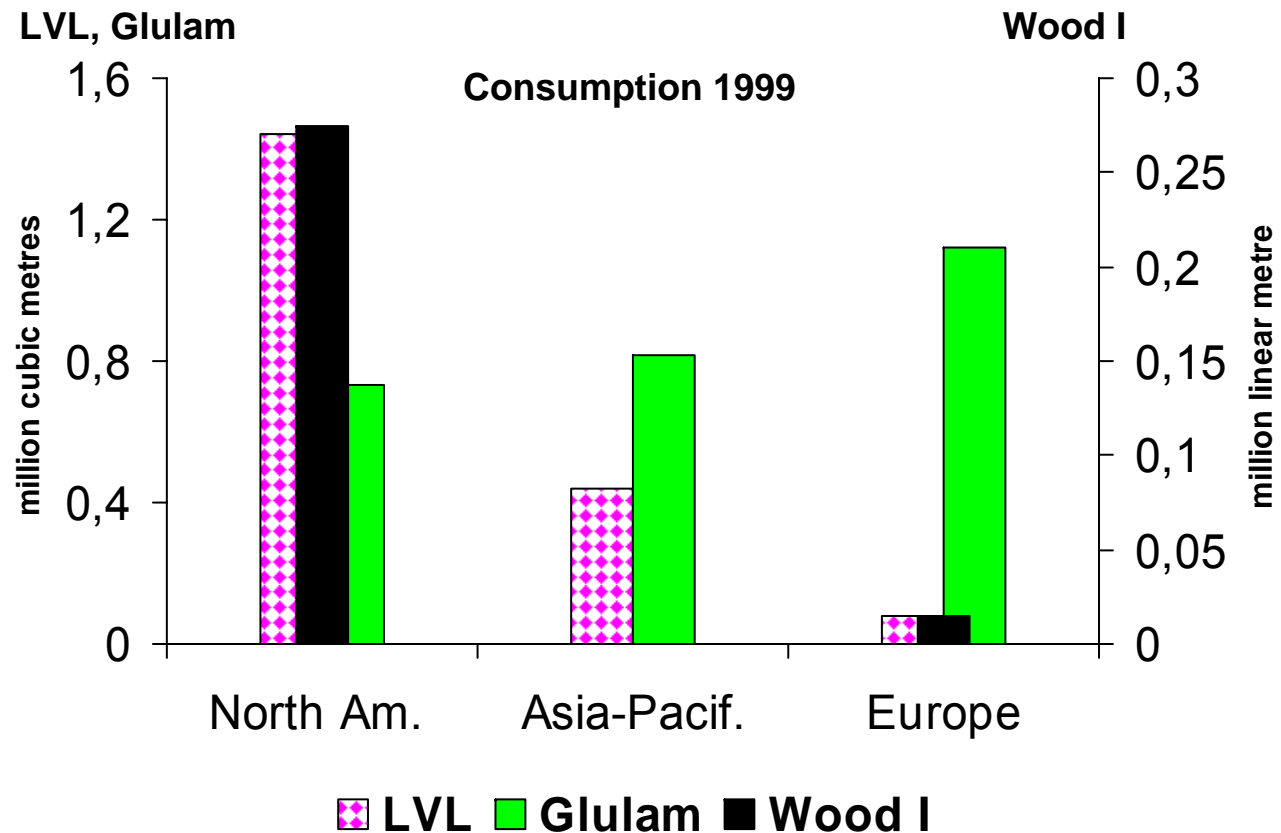
- North American houses are larger and increasingly different from each other
- Lots of gadgets
  - Home Cinema; Central sound system;
  - Recycling center; Domotics.
- The median price tripled during the last 20 years, climbing from \$64 000 in 1980 to \$200 000 in 2004
- The percent of 2 storey or more houses went from 17% in 1971 to 52% in 2001

*Definitions :*  
*Engineered Wood Products (EWP)*

1. Structural Composite Lumber (SCL)
  - Laminated Veneer Lumber (LVL)
  - Parallel Strand Lumber (PSL)
  - Oriented Strand Lumber (OSL)
2. Engineered Wood Joists and Beams
  - Wood-I Joists and Beams
  - Open Web Joists and Beams
    - Metal plated
    - Entirely wooden and glued
3. Glued Laminated Beams (Glulam)

# Regional Markets for EWP

***Glulam is the only EWP used everywhere  
LVL & Wood I are specific to North America***



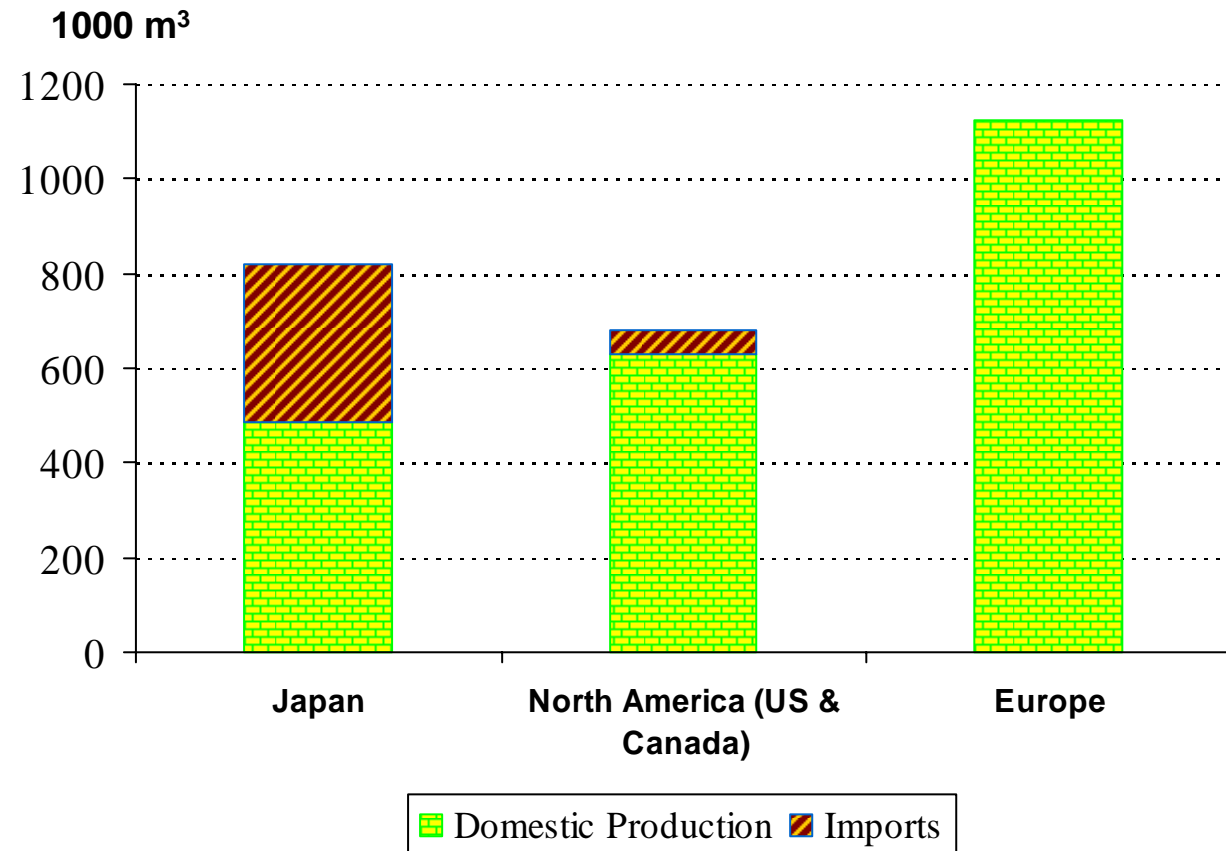
# North American Markets for EWP

	New Resid. <u>Constr.</u>	<u>Non-Res.</u> Constr.	Repair/Remod. <u>Export/Other</u>		
Glulam	52%	38%	10%	=	100%
Wood I	83%	7%	10%	=	100%
SCL*	60%	20%	20%	=	100%

\* Structural Composite Lumber other than Wood-I

# Consumption of Glulam vs Imports

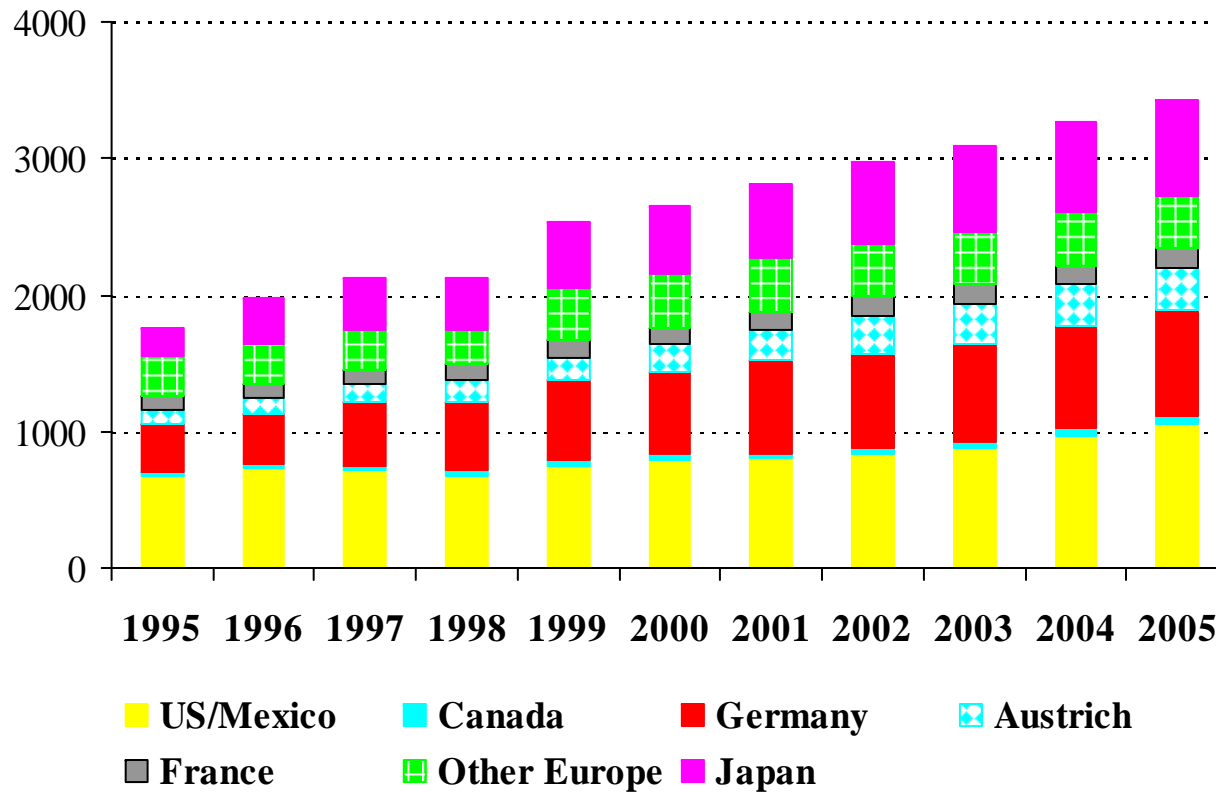
*Glulam is the only EWP or which trade is really international  
The trade is mostly from Europe and N. Amer. to Japan*



Source: APA 2000, Jaako Poyry 2000, & Japan Customs Bureau 2000

# World Production of Glulam

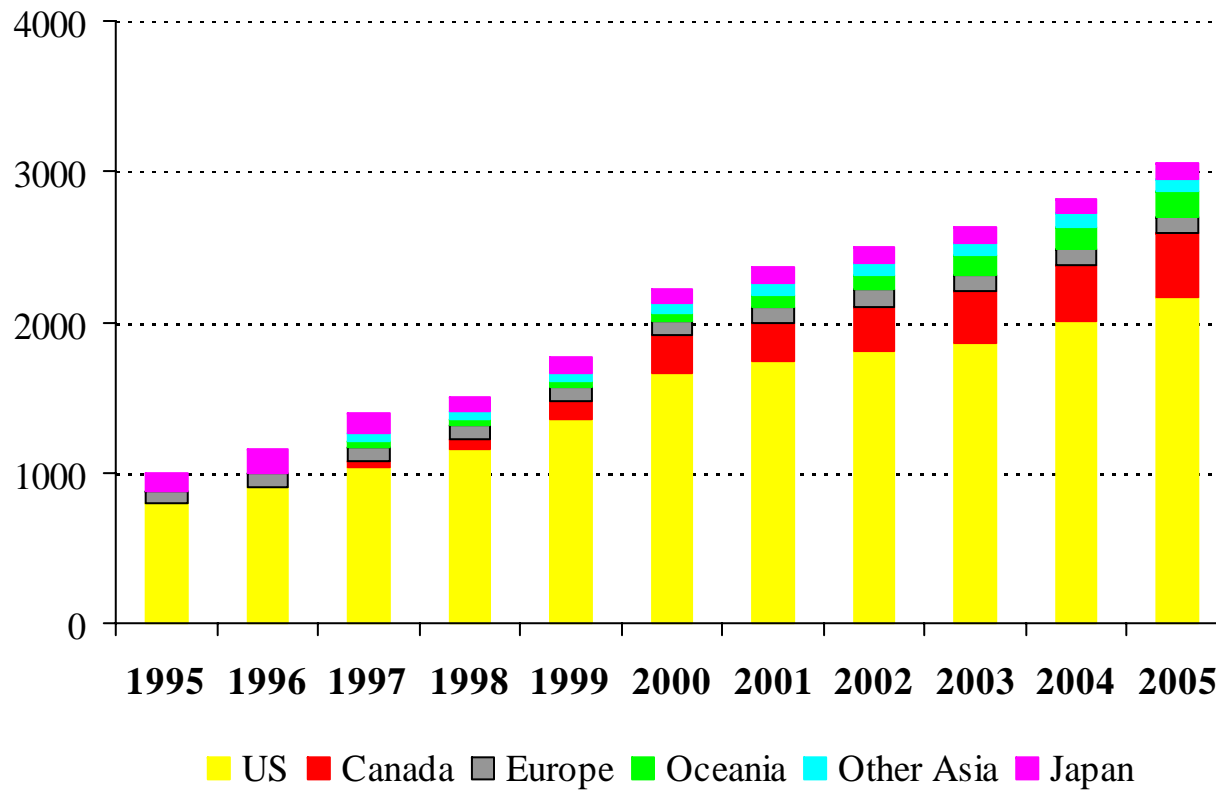
Thousand Cubic Metres



Source; R. Taylor & Assoc. Wood Markets Monthly, Sept. 2000

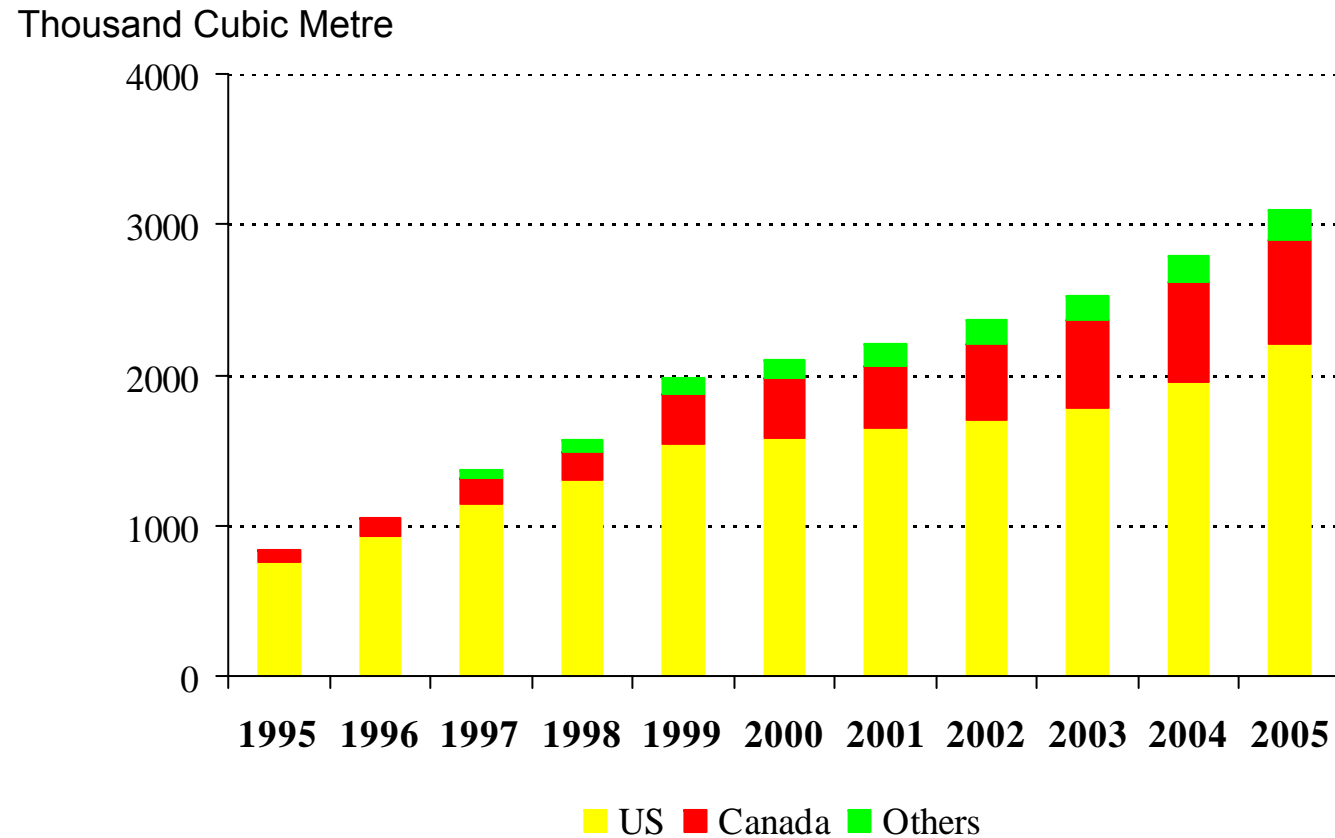
# World Production of LVL

Thousand Cubic Metre



Source: R. Taylor & Assoc., Wood Markets Monthly, Sept. 2000

# World Production of Wood I



Source: R. Taylor & Assoc., wood Markets Monthly, Sept. 2000

# Why so much growth in the Production of EWP?

**Environmental issues and softwood trade dispute (Canada-US)**



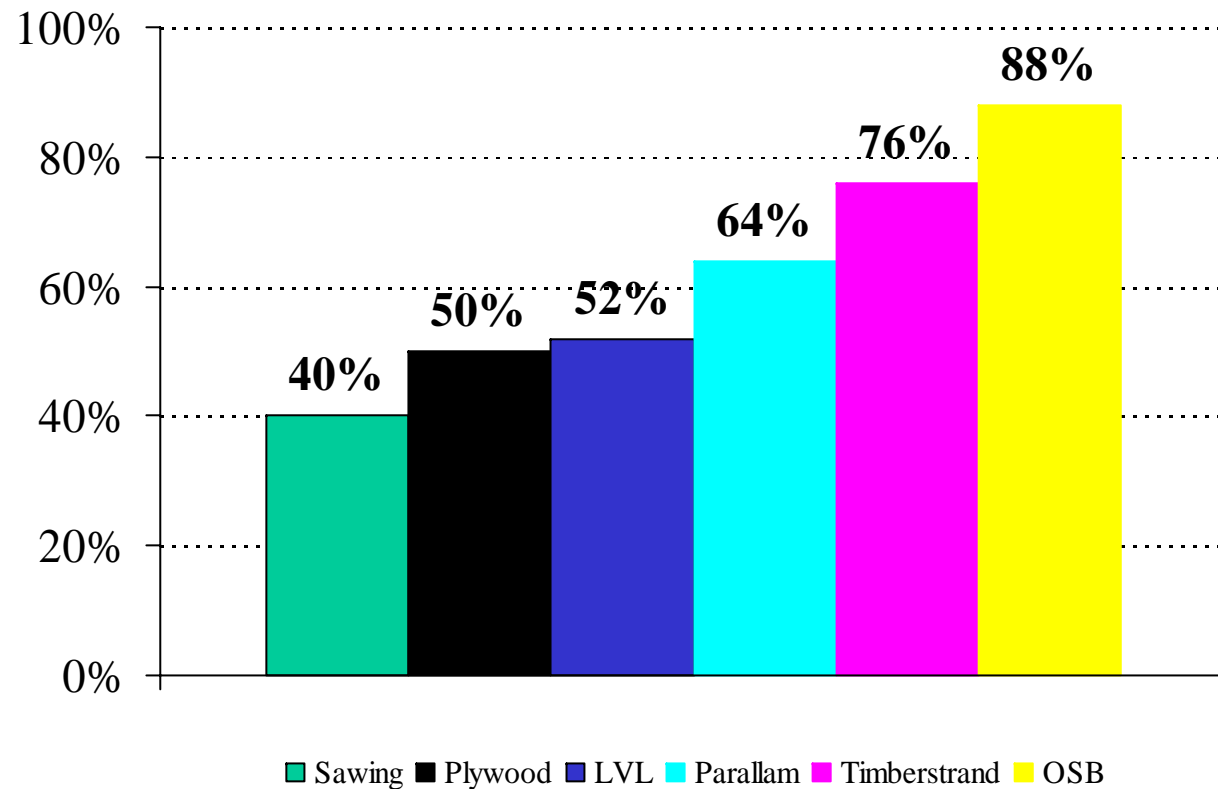
**Relative wood scarcity and decreasing log quality, resulting in increased wood price in North America & Extreme variations in commodities prices**



**The Builders love the result – Better value for the money**

# *EWP provide a better yield – resulting in reduced losses and better prices*

Yield in end-product (%)



Source: Forintek, TJ MacMillan, USDA FS

# Competitive advantage – EWPs

## *Allowing to use less fiber to build a house*

### **Conventional Floor System**

- 1700 lin. feet (531 metres) softwood lumber/house
- with 1.3 million single family houses in the U.S.,  
**8.25 million cubic metres of fiber/yr.**

### **Wood-I Joist Floor System**

- 50% less wood fiber  
(Spelter, 1997 FPL GTR 99)  
19.2 “ (48.75 cm) centre to centre, LVL flange, same sub-floor  
thickness, OSB web stock)
- **Represents 4 million cubic metres of fiber/yr.**

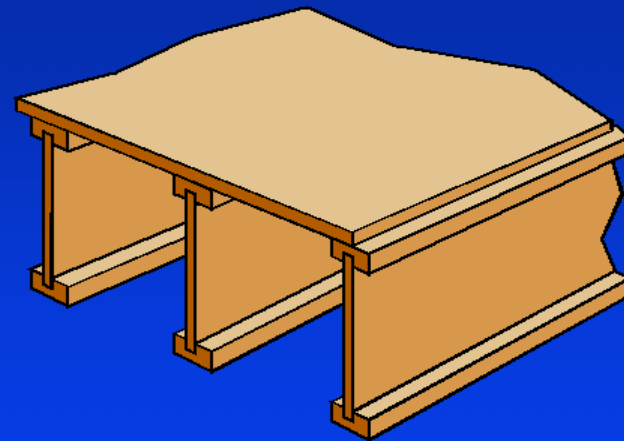
# *The driving forces behind EWPs*

Builders/Customers prefer the product for its  
Superior Quality and its  
Less Volatile Price

# Why Builders prefer EWP?

## **I-Joist Are More Consistent**

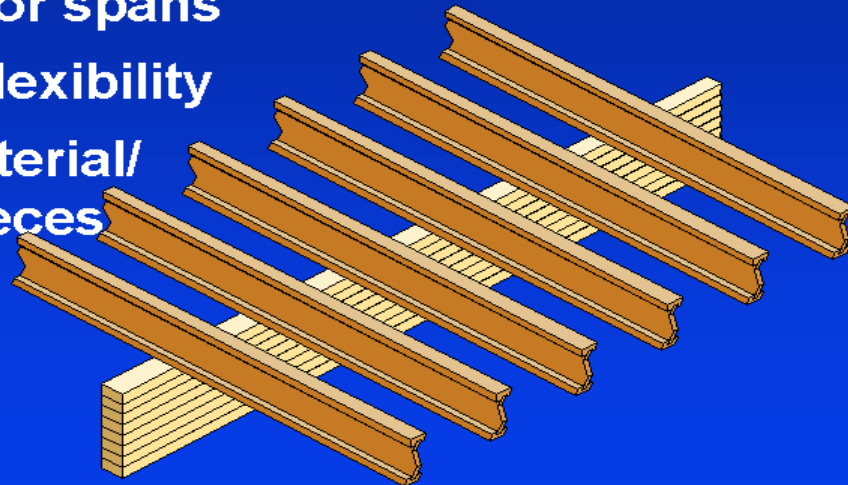
- No shrinkage
- No Crowning
- Consistent dimensions
- No Defects
- No Warpage



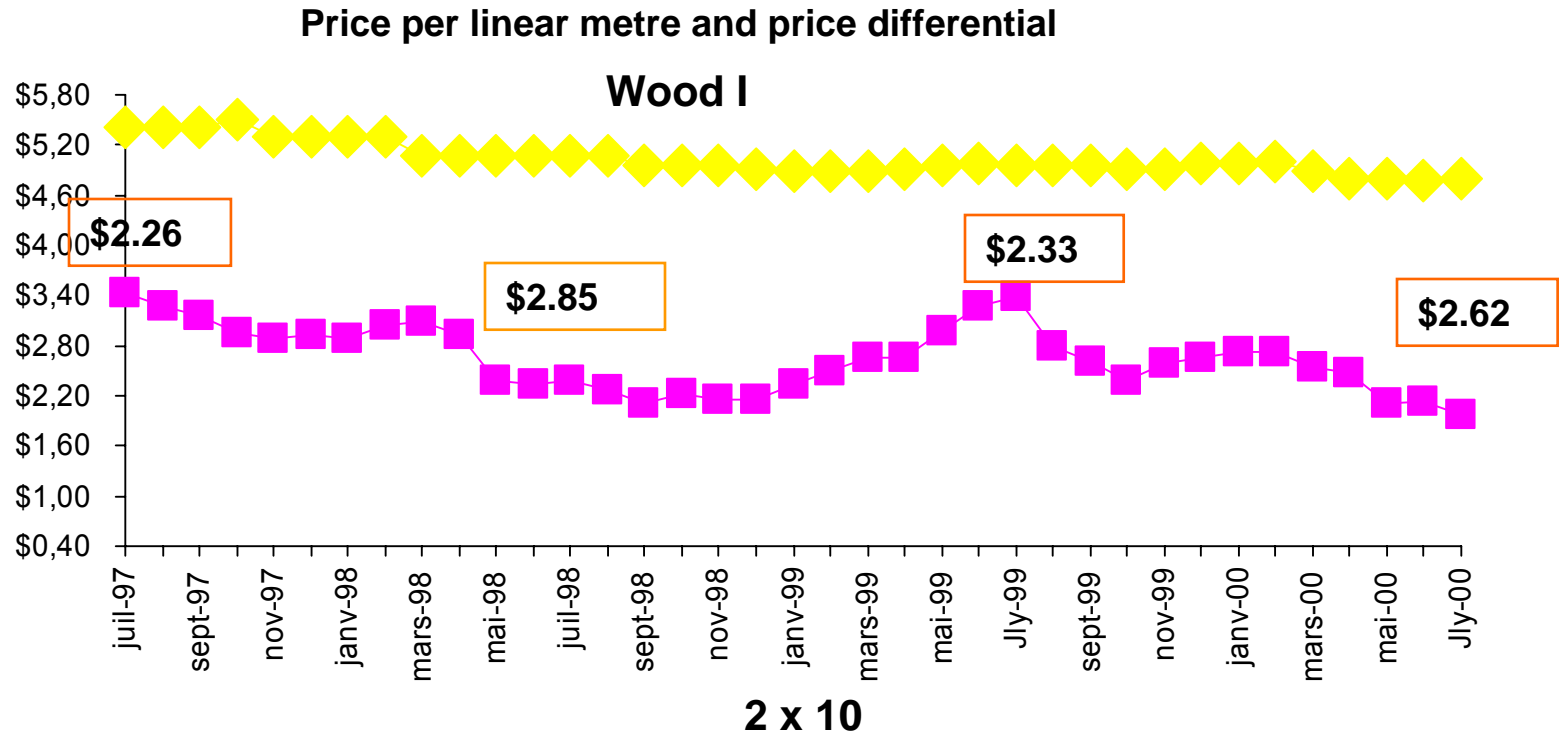
# Why Builders prefer EWP?

## **Strength, Stiffness, Long Lengths**

- Long floor spans
- Design flexibility
- Less material/  
fewer pieces
- Less  
labor



# Price of Wood I vs Softwood 2x10



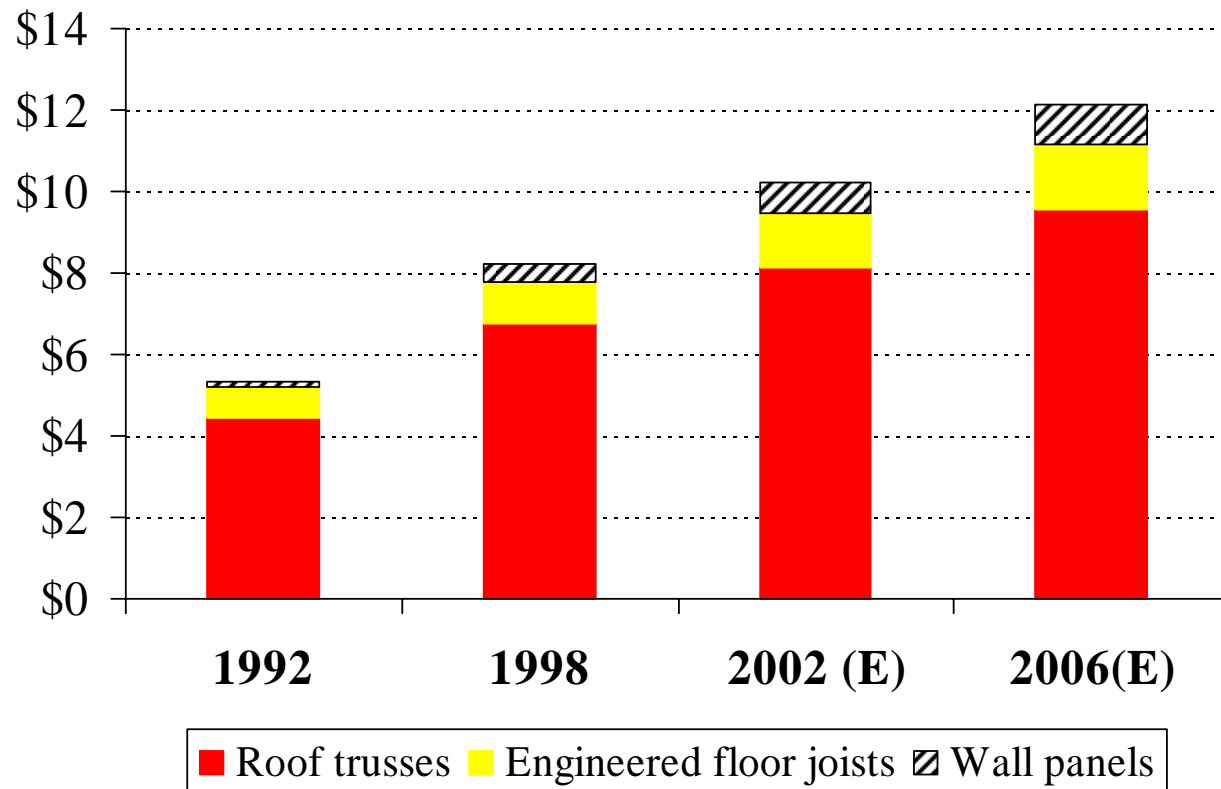
- 9-1/2" Wood I, average delivered in 6 US citites
- 2 x 10 No. 2 & Btr. SYP, KD, 14', Westside, Price delivered to the mill

Sources: *Random Lengths Publications and Engineered Wood Trends*

# *Growth in the Component Manufacturing Industries*

Gross Sales, Billion \$US

Growth of 100% between '92 and '02



Source: WTCA – Woodwards, Aug. 2001

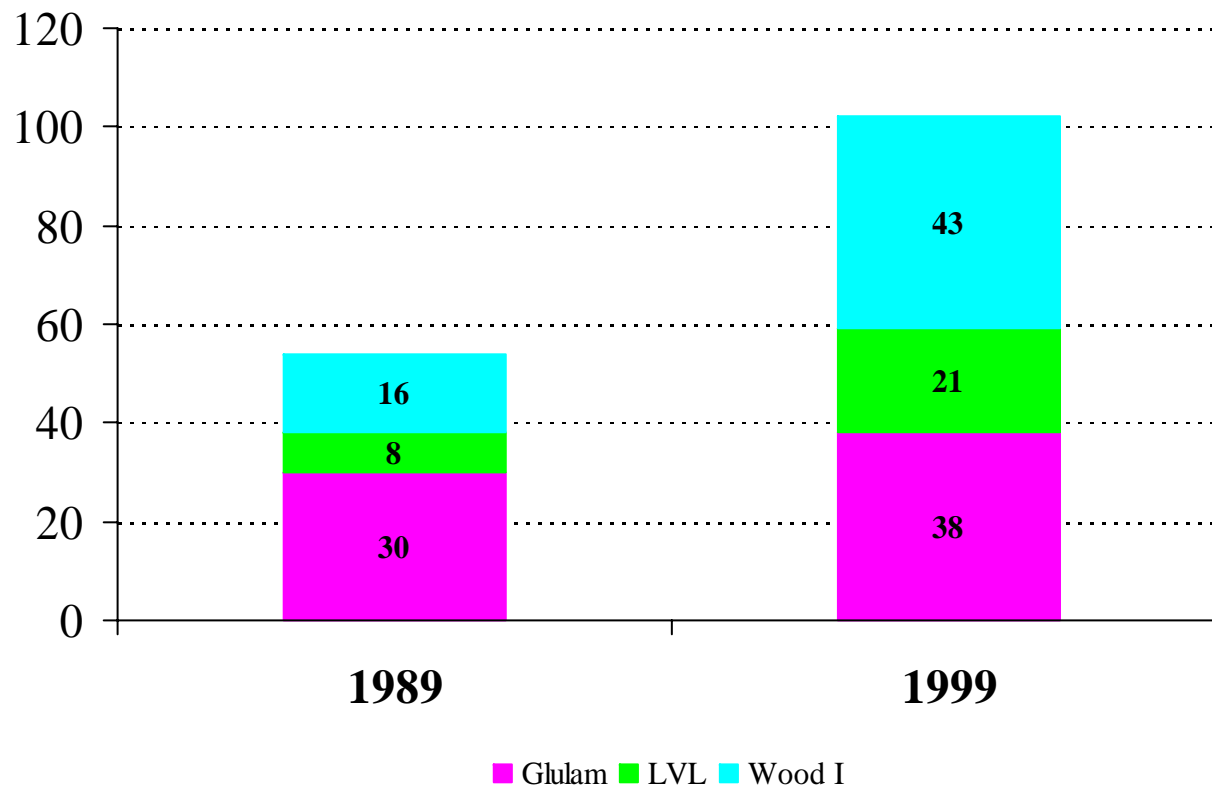
# *Market Share of Components in the US Housing Market 2000*

- Roof Truss: pre-fabricated 60-70%
- Floors: engineered wood joists 30-40%
- Walls: panelized 7-40%

# *EWP plants in US-Canada*

*The number of plants doubled and the average size of each one is larger*

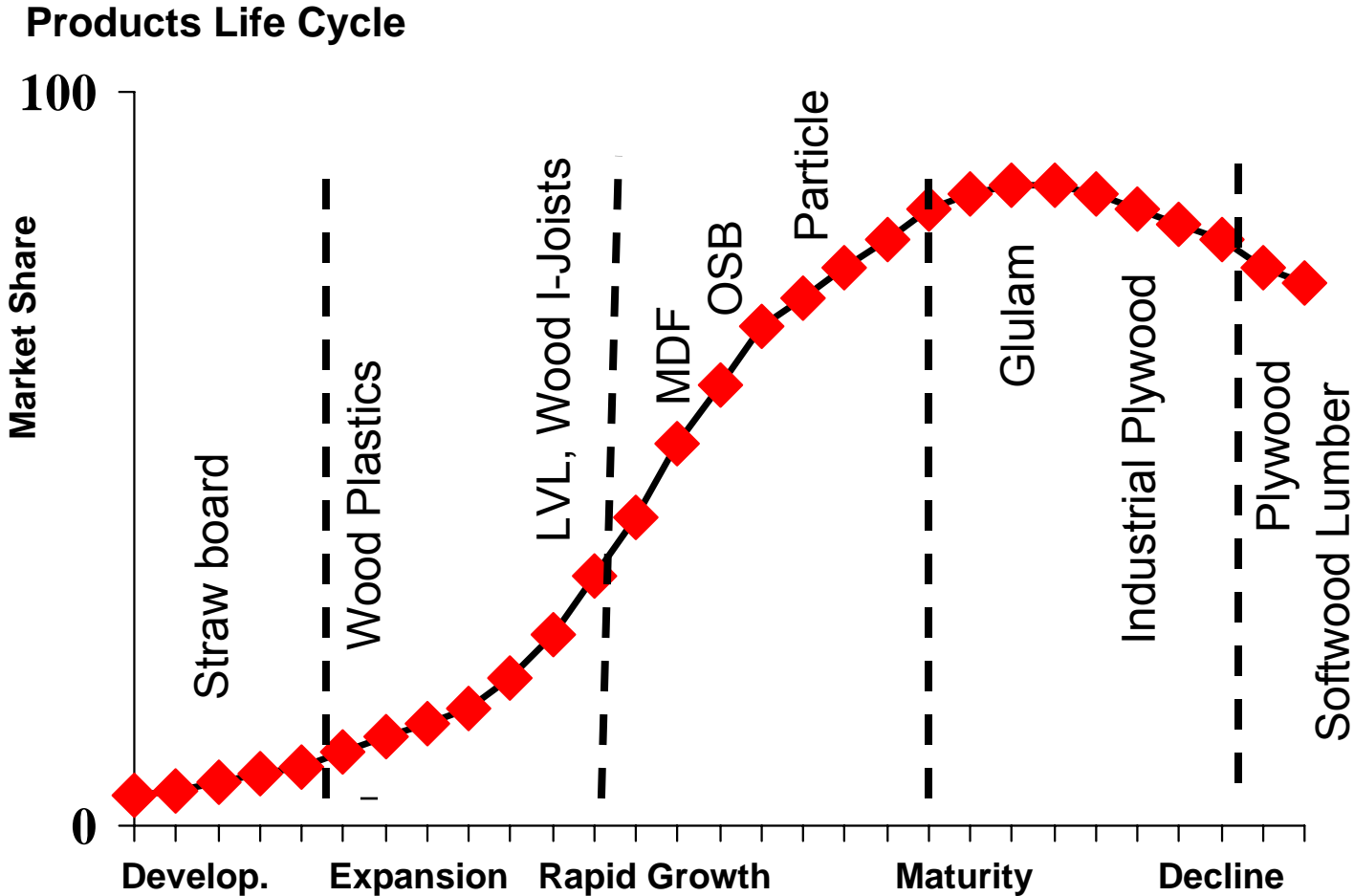
Number of plants



Source: APA

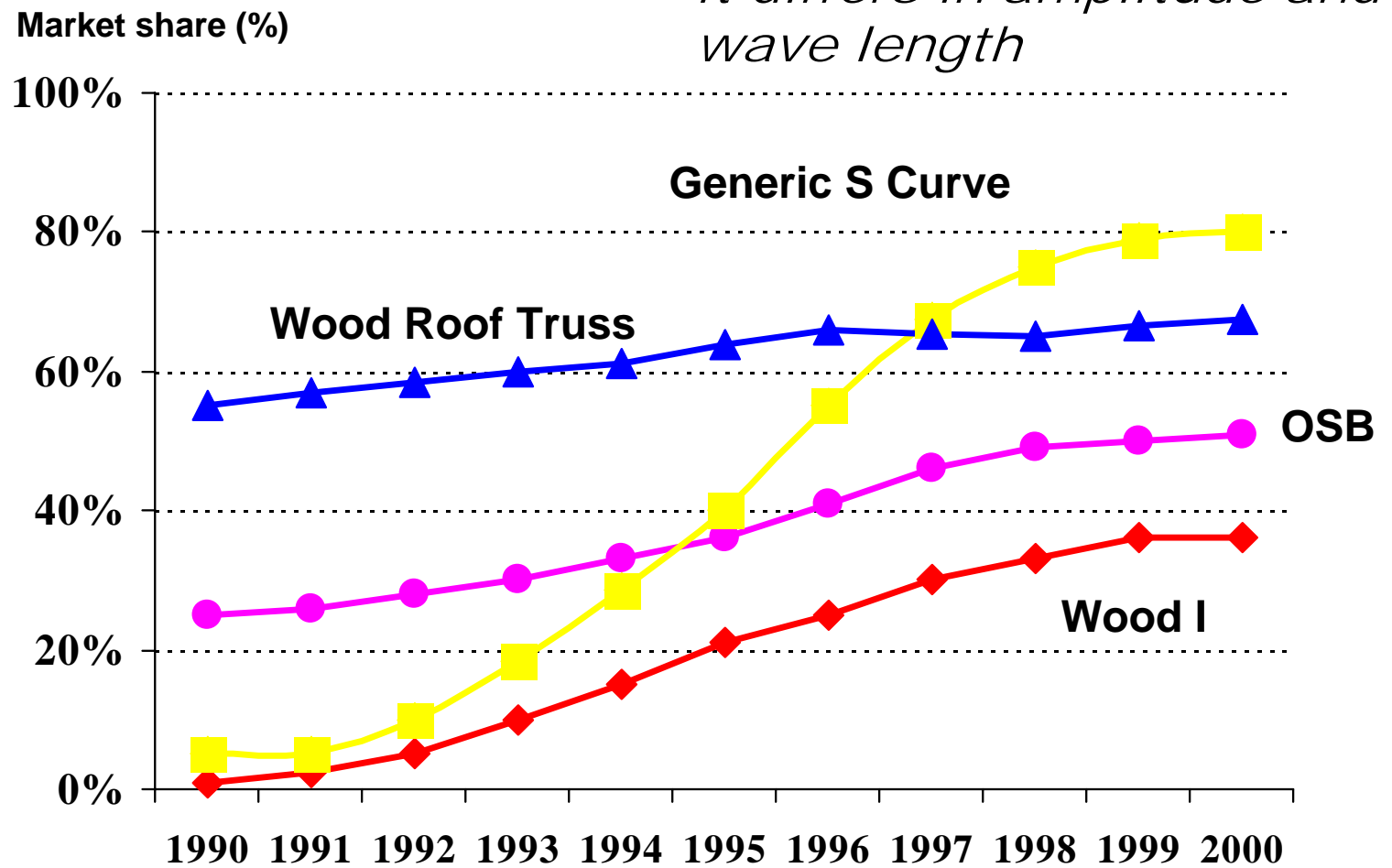
# « Life Cycle of Wood Products »

*Efficiency, Competition, decline in quality of conventional products, etc.  
driving force behind the development of EWP*



# *S Curves of EWP*

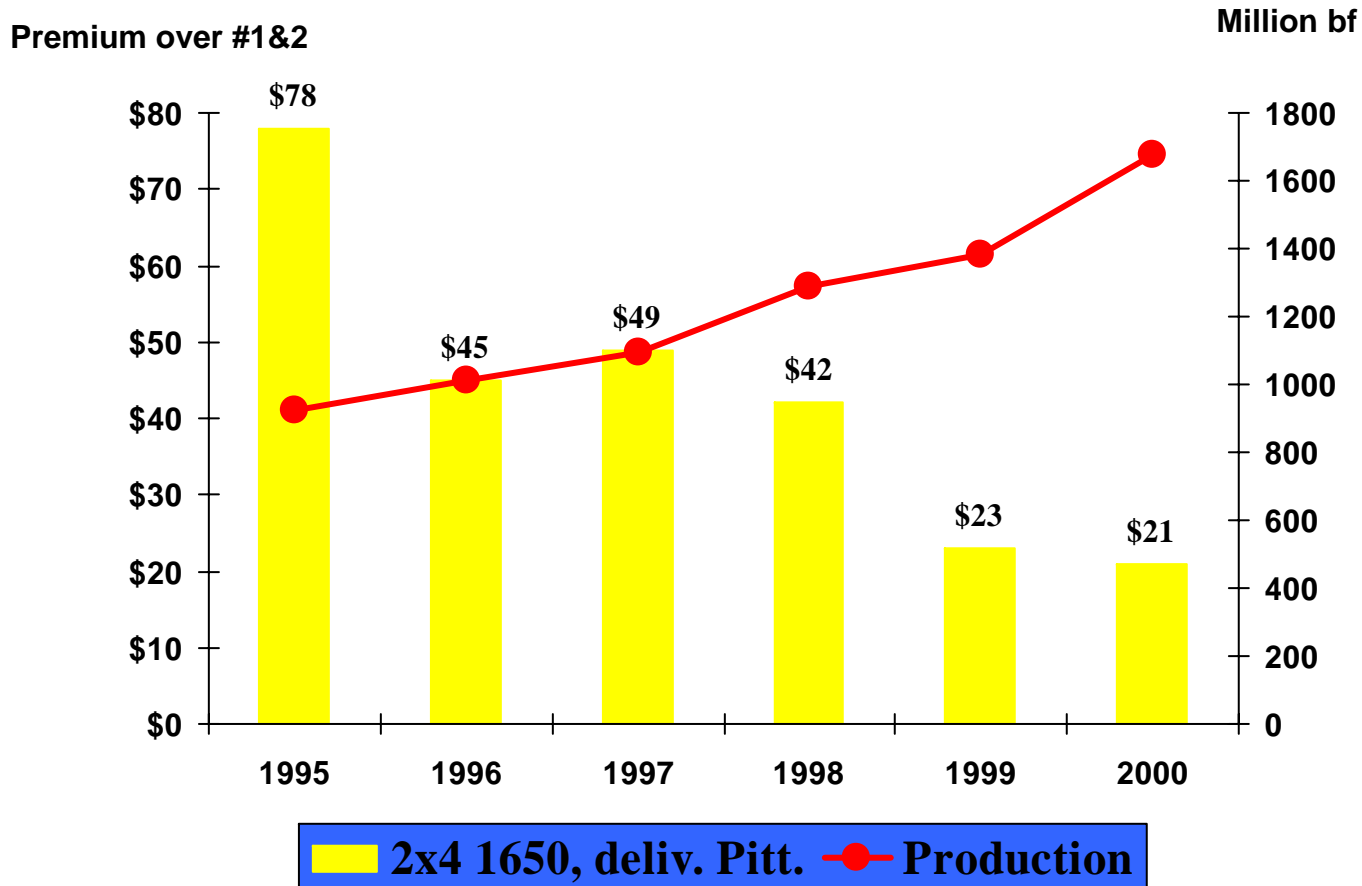
*All products have one but it differs in amplitude and wave length*



# A problem potentially with EWP

**It is easy to add too much capacity too quickly in a young expanding market**

# The MSG (MSR) premium diminishes as production increases



As production doubled over the past 5 years  
– the premium decreased almost 400%

# ***Panelized Wall System***



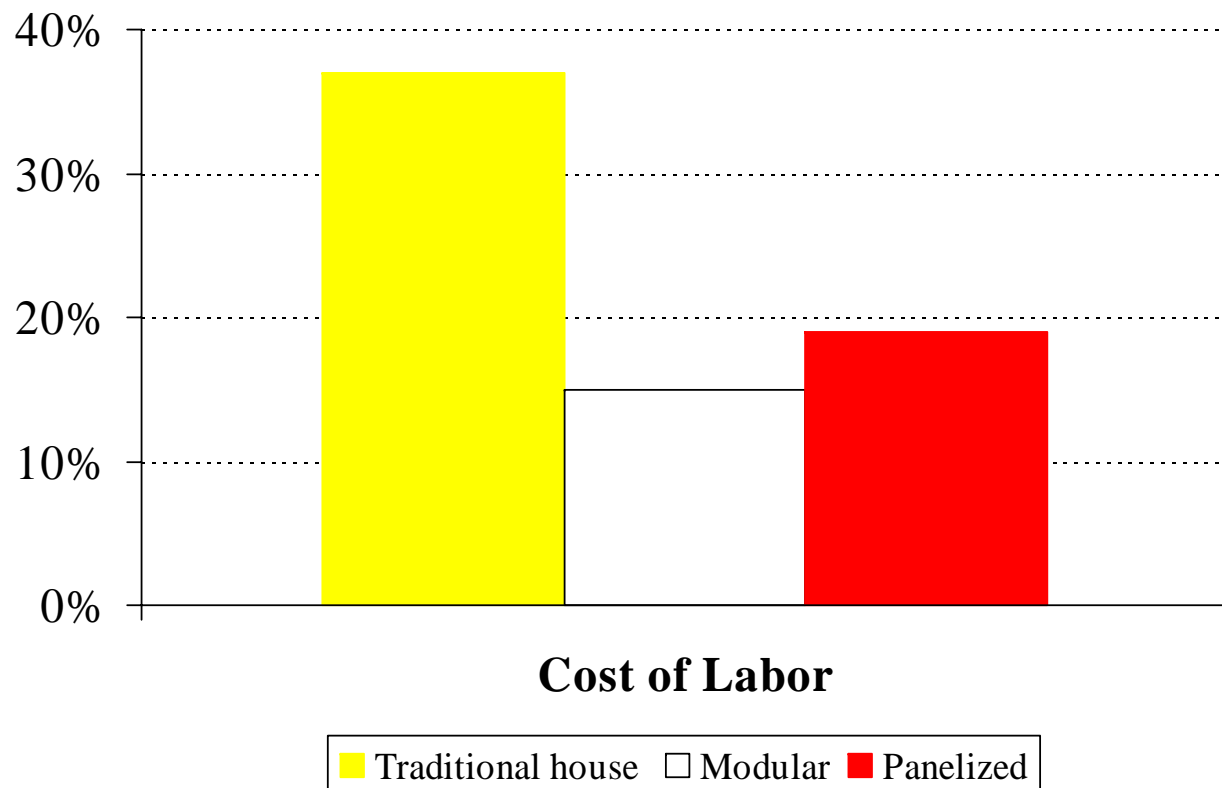
Source: Courtesy of APA

# ***Modular Construction***



Source: Courtesy of Cardinal Homes

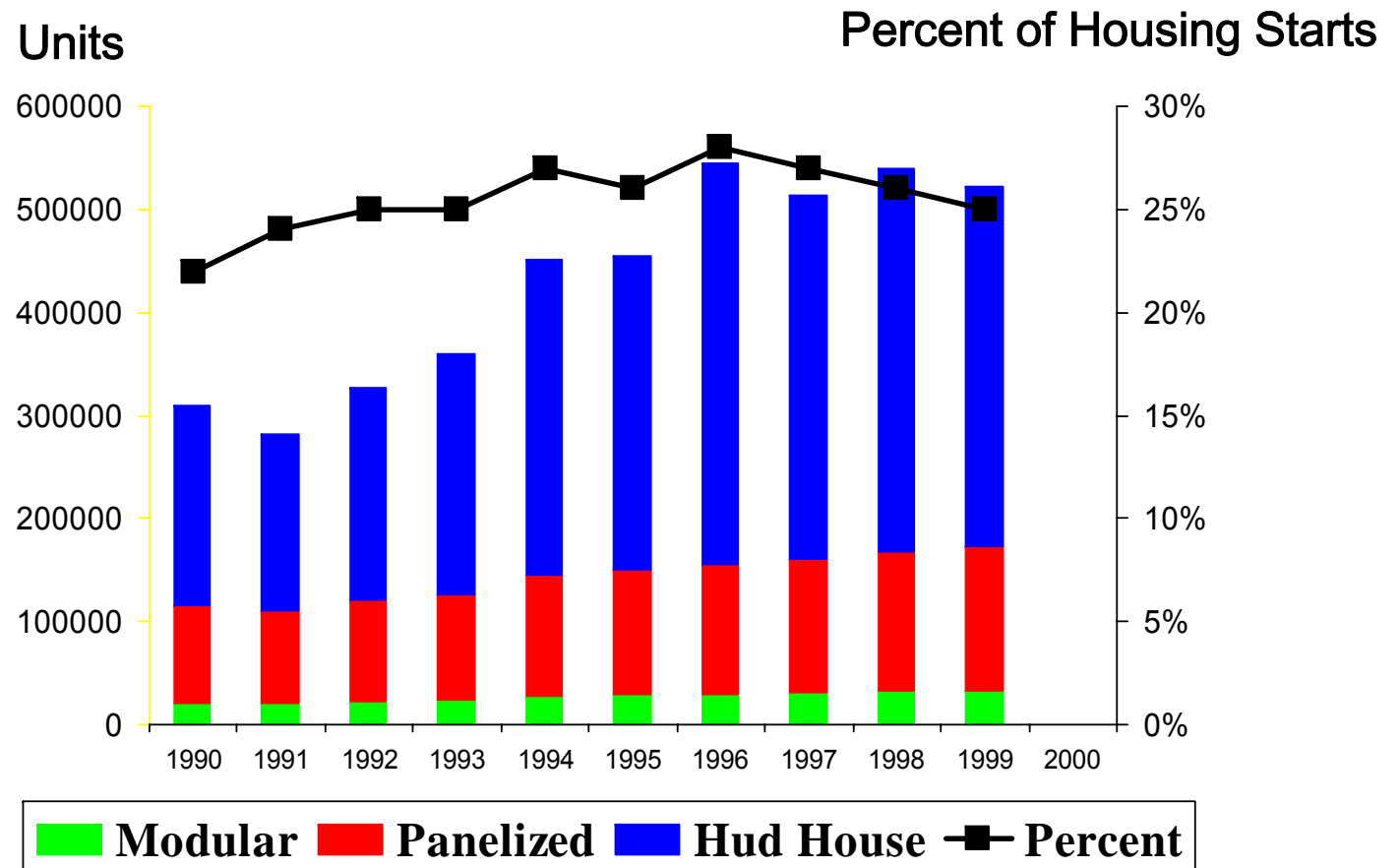
# *The Driving Forces behind the Industrialization and Componentization Process*



## *Panelized vs Stick Framing*

- 16% less labor and material cost
- 26% less wood fiber
- 37% less building time (cycle time)
- A traditional building site generates 3000 lb of wood waste, 38% of site waste!

# *Trends in the Manufactured House Industries In the US*



Source: Hallahan Associates, Nov. 2000

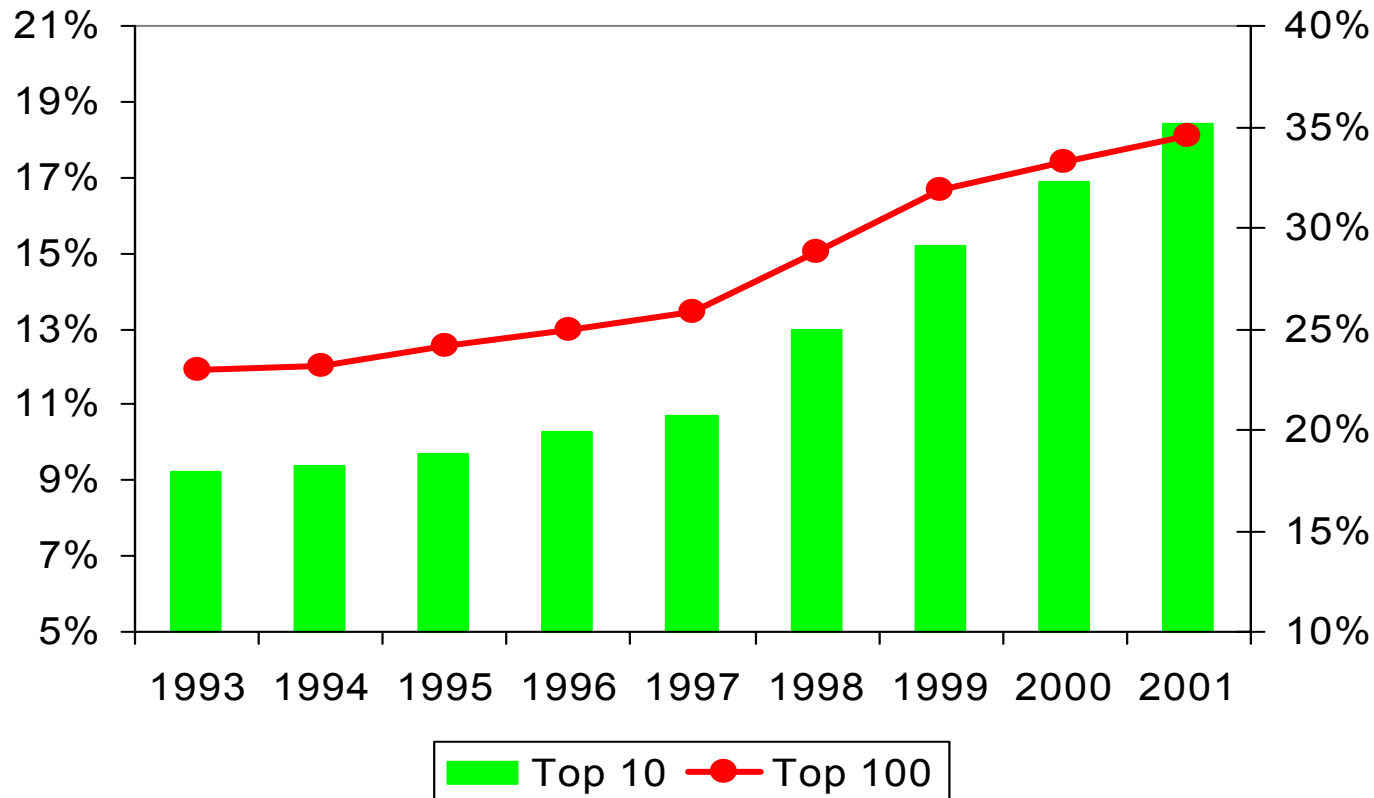
# *Trends in the US House Building Industries : Consolidation*

- HUD House
- Traditional House
- 348 671
- 1 640 000
- Top 100 : 95%
- Top 100 : 18,1%
- Top 10 : 79,2%
- Top 10 : 8,54%

# *Consolidation in U.S. Homebuilding will accelerate industrialization trends*

**Top 10 Market Share\***

**Top 100 Market Share\***



\* Homes closed by largest for-sale builders

Source: NAHB, Housing Economics, May 2002

# *Consolidation Rationale*

- **Land and development costs**
- **Access to capital**
- **Economies of scale**
- **Demographics**
  - **Labor force**
  - **Mobile society – national brands**

## *Consolidation – some implications*

- **Deeper pockets for R&D**
- **Quicker adoption of EWP and Innovative Building Systems**
- **Demand for easy to install and to maintain products**
- **National vs. regional builder**
  - **some builders want to sell the starter home, move up/custom, and retirement home**

# *Industrialization of the House Building Process*

- Definition : Convert the site building process into a manufacturing process (Automation - JIT - TQC - Supply Chain Management, etc. similar to car making)
- The results to date:
  - Accelerating in North America
  - Advanced in North Europe
  - Successful in Japan (especially with steel)

# *Can the softwood lumber industry contribute to the industrialization and component construction?*

- **Yes. If it can better understand where the construction industry is heading.**
- **Develop partnerships with construction companies (Pulte-LP-AbiCon)**
- **Develop manufacturing construction concepts (quality, JIT, supply chain management, etc.)**
- **Putting aside the commodities mentality**

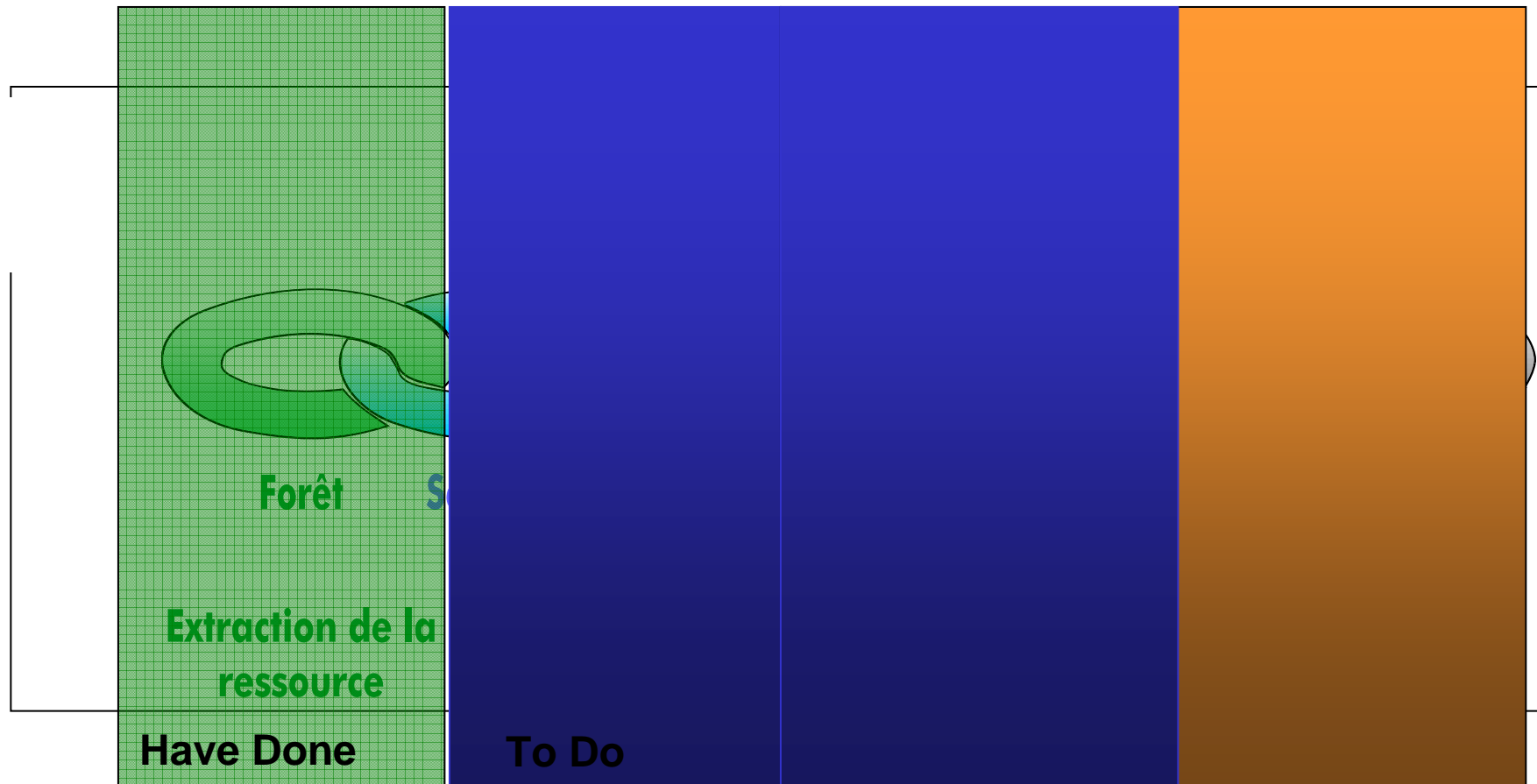
# *Innovative Businesses*

- Examples of success

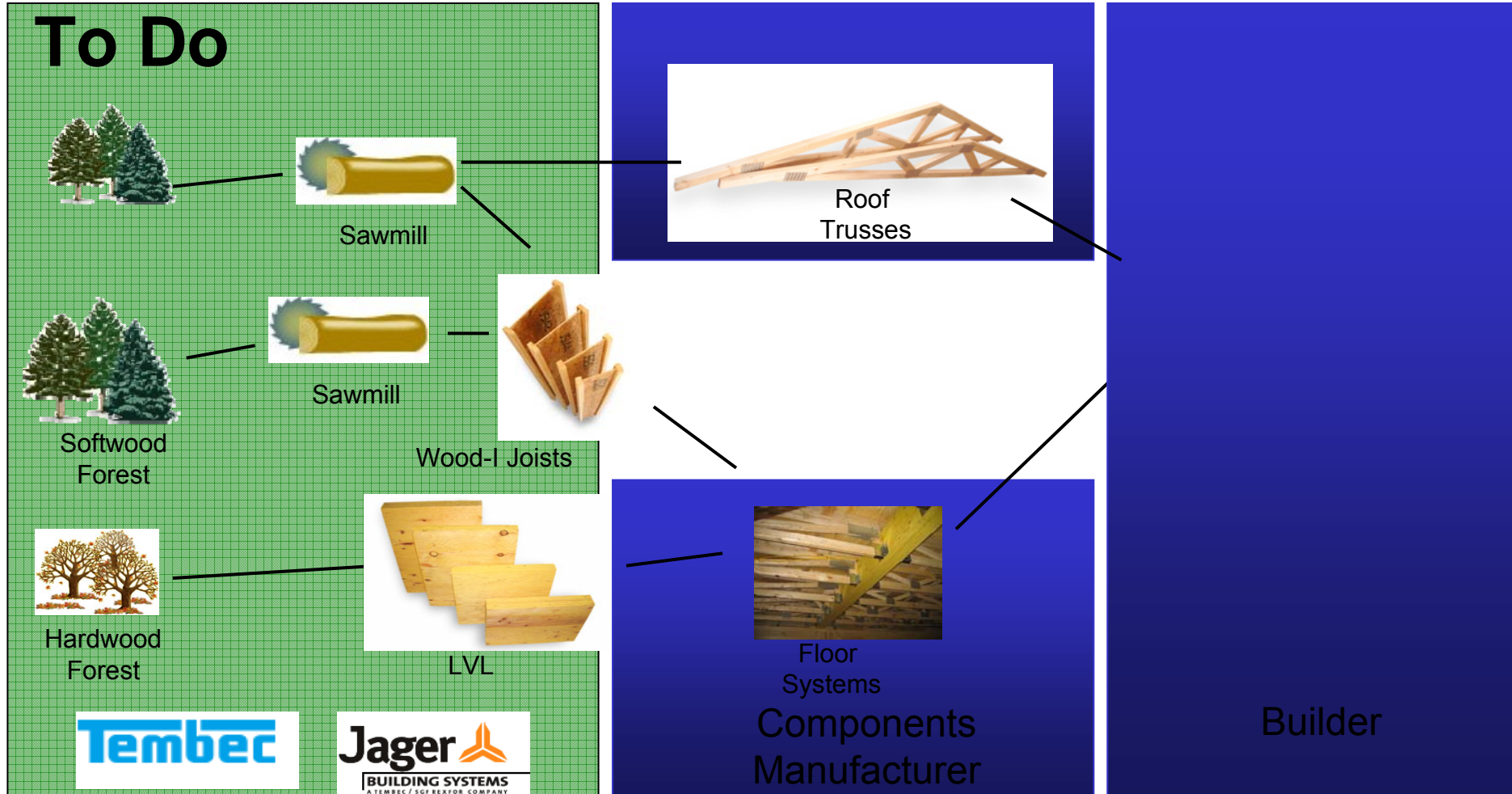


- There's still a long way to go until the bridge between the softwood lumber industry and the manufactured housing industry is closed...

# *Concepts to build a Value Creation Network: To Do, To Have Done and To Do Together*



# Value Creating Network Manufactured House



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## Press Room



### Abitibi-Consolidated and LP to Create a Joint Venture to Produce Engineered Wood

Thursday, November 7, 2002

News Release No: 136-11-2

Contact:  
 David Dugan (Media Relations)  
 Louisiana-Pacific Corporation  
 503.821.5285

Bill Hebert (Investor Relations)  
 Louisiana-Pacific Corporation  
 503.821.5285

Jacques Dalpé (Media Relations - Canada)  
 Louisiana-Pacific Canada Ltd.

Marc Osborne (Media Relations)  
 Abitibi-Consolidated Inc.(514) 394-2340

#### At least 70 new jobs to produce I-joists

Larouche, Québec, November 7, 2002 – Abitibi-Consolidated Inc. and Louisiana-Pacific Canada Ltd. (LP) today announced the creation of a joint venture that will produce I-joists, used mainly in woodwork in residential and commercial floor construction. The new mill, with annual production capacity of 70 million linear feet, will be located in Larouche, in the Lac Saint-Jean region of Quebec.

Nearly 70 jobs will be created at the beginning, and that number could reach 100 once the plant is operating at full capacity. Abitibi-Consolidated and Louisiana-Pacific will each own 50% of the joint venture and invest a total of CDN\$15 million.

The new mill, which will be built adjacent to the former CFL Structure Inc. mill, will begin operations early in 2003. The specialized equipment required for final assembly of the products will come from an LP mill in Oregon.

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### Louisiana-Pacific inks deal to frame Pulte homes

Brian J. Back

Portland-based Louisiana-Pacific Corp. (NYSE: LPX) announced today that it has become the exclusive supplier of engineered wood framing products to Pulte Homes Inc. (NYSE: PHM) of Bloomfield Hills, Mich.

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The three-year agreement provides Pulte Homes with set purchasing terms on LP I-joists, laminated veneer and rim boards--all used in framing a house. As an



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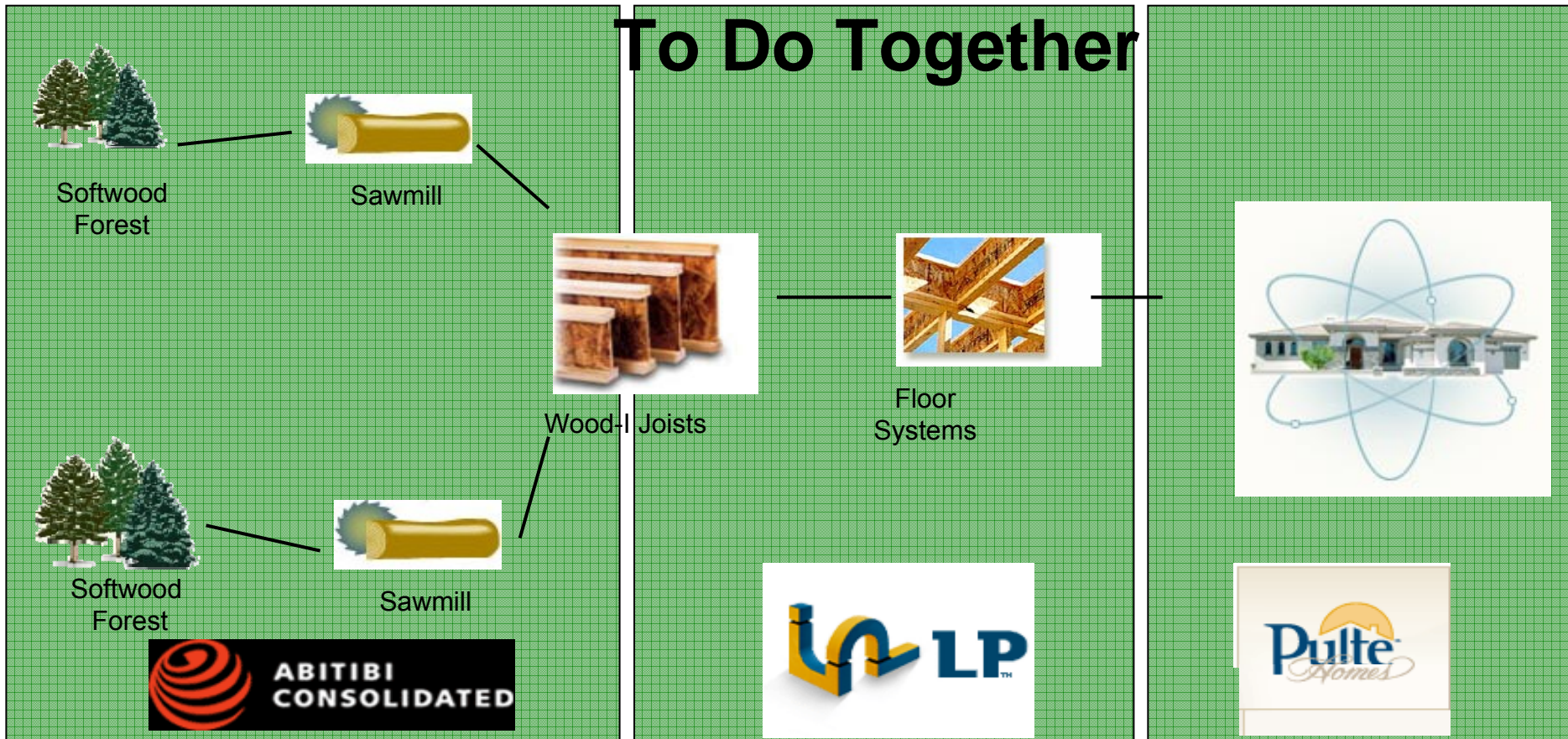
### Related Topics

- > [LP sells Montana mill to Roseburg](#) 2002-11-05, Portland
- > [Roseburg pays \\$20M for LP mill](#) 2003-02-24, Portland

**Blue collar**



# *Value Creating Network Manufactured House*



# *Value Creating Network Issues*

- Tomorrow's competition will be network against network
- What type of business do you have?
- Who do you want to partner with?
- What part of the network do you wish to, or can you control?
- Who controls the network intelligence?  
Design, Whole House Solution?

# *Conclusion*

- The house building industry is evolving towards its industrialization
- The challenges are
  - Superior performance design
  - Efficient manufacturing
  - Building Value Creating Network
- What role will be yours in future Value Creating Network of the prefab house industry?
- The challenge of innovation in products but mostly in business models