

# B.C. Coast: Competitiveness and Outlook to 2020

**Forest Sector Competitiveness:  
Finding a Pathway to Renewal**

**June 2007 Symposium  
Vancouver, BC**

**By: Russell Taylor**



**INTERNATIONAL WOOD MARKETS GROUP**

**( R.E. TAYLOR & ASSOCIATES &**

**INTERNATIONAL WOOD MARKETS RESEARCH)**

**Vancouver, B.C., Canada**

**+1 604-801-5996 [www.woodmarkets.com](http://www.woodmarkets.com)**

# Presentation Outline:

1. BC Coast: Background
2. BC Coast: Competition & Competitiveness
3. BC Coast: Current Processing Sector
4. BC Coast: Possible Processing Options
5. BC Coast: Outlook to 2020
6. BC Coast: Next Steps

## Incorporating the Report:

**B.C. Coast Strategic Options: Current Business, Future Opportunities & Outlook to 2020 for: Coast Forest Products Association, Vancouver, B.C. (March 2007) and funded by FII**

# Presentation Based on Travel & On-Going Analysis & Research

- ◆ Our extensive travels in the last 5 +/- years include assessing competitiveness in 25 countries:
  - **Southern Hemisphere**: Australia, New Zealand, Chile, Brazil, South Africa
  - **Asia**: Japan (many trips), China (25 trips), S. Korea, Taiwan, Vietnam
  - **Europe (15 trips)**: Sweden, Finland, Belgium, Germany, Austria, Czech Rep., Romania, Lithuania, Latvia, Estonia, W & E Russia, Siberia
  - **USA/Canada**: extensive, regular visits
- ◆ On-going Research & Existing Reports:
  - WOOD Markets Newsletter & WOOD Markets '06
- ◆ Multi-Client Reports: Europe & Russia; Clearwood Pine; Global Cost Benchmarking; China Book, etc.

# WOOD Markets' Multi-Client Reports

## EUROPE & RUSSIA WOOD PRODUCTS INDUSTRY TRENDS & OUTLOOK

Strategic Assessment of the European & Russian Industries and Their New/Entrepreneurial Business Models

AVAILABLE AUGUST 2003

Prepared by R.E. Tytler & Associates Ltd.  
Published by International Wood Markets Research Inc.

R.E. Tytler & Associates Ltd. INTERNATIONAL WOOD MARKETS RESEARCH INC.



### FEATURING:

- Benchmarking of Log and Lumber Production Costs
- Analysis of Current European & Russian Business Cases
- A Strategic Look at Expanding Capacity in Europe and Western/Eastern Russia
- Outlook on Log and Lumber Exports to the U.S. and Asia
- Review of the Current Status of Europe's Wood Products Industry
- Assessment of Potential Risks of Doing Business in Russia

From the publishers of WOOD MARKETS MONTHLY INTERNATIONAL REPORT, WOOD Markets 1996, 2000 & 2002 and many other strategic industry reports

## 2006 EDITION WOOD MARKETS

The Solid Wood Products Outlook - 2006 to 2010

A GLOBAL MARKET PERSPECTIVE WITH A DETAILED ANALYSIS OF NORTH AMERICA

- COVERING lumber, panels (plywood, OSB, MDF, particleboard) and timber
- FEATURING an in-depth analysis of selected U.S. end-use lumber products & market segments
- INCLUDING an analysis of international trade and major importing/exporting countries

Prepared and published by  
International WOOD MARKETS Group Inc.

**WOOD MARKETS**

Incorporating: R.E. Tytler & Associates Ltd. INTERNATIONAL WOOD MARKETS RESEARCH INC.

LUMBER • PANELBOARDS • TIMBER • ENGINEERED WOOD • ECONOMICS • MARKETS • FORECASTS

## GLOBAL LUMBER/SAWN WOOD COST BENCHMARKING REPORT

### Featuring:

- A profile of the major sawn wood-producing regions in North America, Europe and the Southern Hemisphere
- Benchmarking of log costs, sawmilling costs, lumber revenues and margins for over 25 key countries or regions
- Cost summaries and analyses based on information gathered from over 200 sawmills
- Enhancements for this year include a breakout of the U.S. West Coast into two regions and Eastern Canada into three separate regions



2006  
Basis



Available June 30, 2007

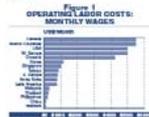
**WOOD MARKETS**  
PRICEWATERHOUSECOOPERS  
THE BISH GROUP

## WOOD MARKETS MONTHLY INTERNATIONAL REPORT

VOLUME 11, NUMBER 1 • FEBRUARY 2006  
Featuring Lumber, Panels and Wood Products Analysis

### Global Competitiveness Low-Cost Labor Regions Winning

In many global products (such as furniture, cabinets, flooring, millwork and doors) and even commodities (like plywood), low labor rates provide a competitive advantage. This has been especially evident in the U.S. in terms of furniture imports from China, and also in plywood and millwork shipments from Brazil and Chile. The relative competitiveness of China versus Canada and the U.S. is very evident (Figure 1). Essentially, countries like China and Vietnam can employ forty to fifty workers for the price of one North American worker. As we discussed in our China cost report, countries like China are now incorporating state-of-the-art capital with low labor rates to achieve the lowest production costs in the world. So, depending on your industry, beware!



MARKETS • PRODUCTS • ANALYSIS • RESEARCH • FORECASTS

### WHAT'S INSIDE

- 1 Analysis
- 2 OSB Capacity Growth
- 12 Monthly Prices: World Lumber & Panel Prices
- 10 Price Forecasts: One-Year Price Outlooks
- 4 Features
- 4 Special Reports: Western Red Cedar
- 6 Global Statistics
- 6 Australia, Europe, USA, Canada

### GLOBAL PRICE TRENDS



## CLEARWOOD (PINE) LUMBER, MOULDING & MILLWORK SECTOR

OUTLOOK TO 2008

THIRD EDITION • Available December 2003

Prepared by R.E. Tytler & Associates Ltd.  
Published by International Wood Markets Research Inc.

R.E. Tytler & Associates Ltd. INTERNATIONAL WOOD MARKETS RESEARCH INC.

NEW TO THIS EDITION:  
RESULTS AND OUTLOOK  
OF U.S. INDUSTRY-WIDE  
SURVEY ON DISTRIBUTION  
CHANNEL DYNAMICS



### FEATURING:

- In-depth analysis for senior executives evaluating their corporate business strategies and options in the Clearwood sectors
- An overview of global plantation-pine timber and lumber supply-side dynamics
- A review of the strategic implications of domestic vs. off-shore production and where it is consumed in the U.S. market
- A profile of moulding distribution channels and their market shares in various end-use sectors and products
- Five-year forecasts on U.S. supply, consumption and prices

## THE CHINA BOOK: Wood Products Industry and Market Review

Strategic Assessment of China's Growing Force as the World's Low-Cost Production Engine & Exporter

PREPARED AND PUBLISHED BY  
International WOOD MARKETS Group, Inc.

NOW AVAILABLE

R.E. Tytler & Associates Ltd.

INTERNATIONAL WOOD MARKETS RESEARCH INC.



FIRST EDITION



### FEATURING:

- A comprehensive overview of China's wood products industry and its global competitiveness
- Assessment of China's timber resources and imported raw material supply sources
- Timely analysis of China's evolving distribution systems for softwood/hardwood products
- China's domestic market consumption and its for foreign wood imports
- An overview of investment opportunities and insights on "Doing Business" in China

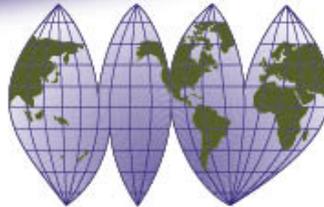
# GLOBAL LUMBER/SAWN WOOD COST BENCHMARKING REPORT

## Featuring:

- A profile of the major sawn wood-producing regions in North America, Europe and the Southern Hemisphere
- Benchmarking of log costs, sawmilling costs, lumber revenues and margins for over 25 key countries or regions
- Cost summaries and analyses based on information gathered from over 200 sawmills
- Enhancements for this year include a breakout of the U.S. West Coast into two regions and Eastern Canada into three separate regions



2006  
Basis



Available June 30, 2007

**WOOD  
MARKETS**

PRICEWATERHOUSECOOPERS 

**THE BECK GROUP**

# Global Lumber Benchmarking Report:

## By Major Country & Region

## 2006 & 2007 Q2 Costs: Preliminary Findings

WOOD MARKETS  
Group

# CFPA Report: Terms of Reference

- ◆ To provide an assessment on coastal B.C. products, markets, costs, constraints and opportunities, including an outlook to 2020.
- ◆ To evaluate new or potential product and market opportunities for the coastal forest industry.
- ◆ To assess how to develop a competitive advantage.
- ◆ A key component of the work plan involved assessing the cost structure of the B.C. Coast in terms of log and processing costs.
- ◆ No assessments were made on remanufactured or specialty (non-commodity or value-added) products – only commodity wood products.

# 1. Looking Back, How Did the BC Coast Industry Get Where it is Today?

- ◆ The coastal B.C. manufacturing industries have always been dependent on access to profitable export markets, as a relatively small percentage of the lumber and veneer produced in coastal B.C. is consumed in Canada.
- ◆ Coastal manufacturers were low cost producers and were able to take advantage of its relatively easy access to a huge supply of unique, old-growth, high-quality timber, producing and shipping lumber and plywood at competitive global prices.

# Tougher Times in the 1990s

**Starting perhaps in the late 1980s and becoming more relevant in the 1990s, a number of key factors impacted the Coast's competitive position:**

- ◆ **Increased government stumpage rates.**
- ◆ **Major changes in government timber harvesting policies and increased regulations and costs.**
- ◆ **Increased environmental pressure and a reduction in the economic timber land base.**
- ◆ **Older primary mills that were not upgraded and became high-cost relative to global competitors.**
- ◆ **Markets changed from green lumber to kiln-dried or heat-treated, creating problems for hem-bal.**

# Hemlock-Balsam Issues

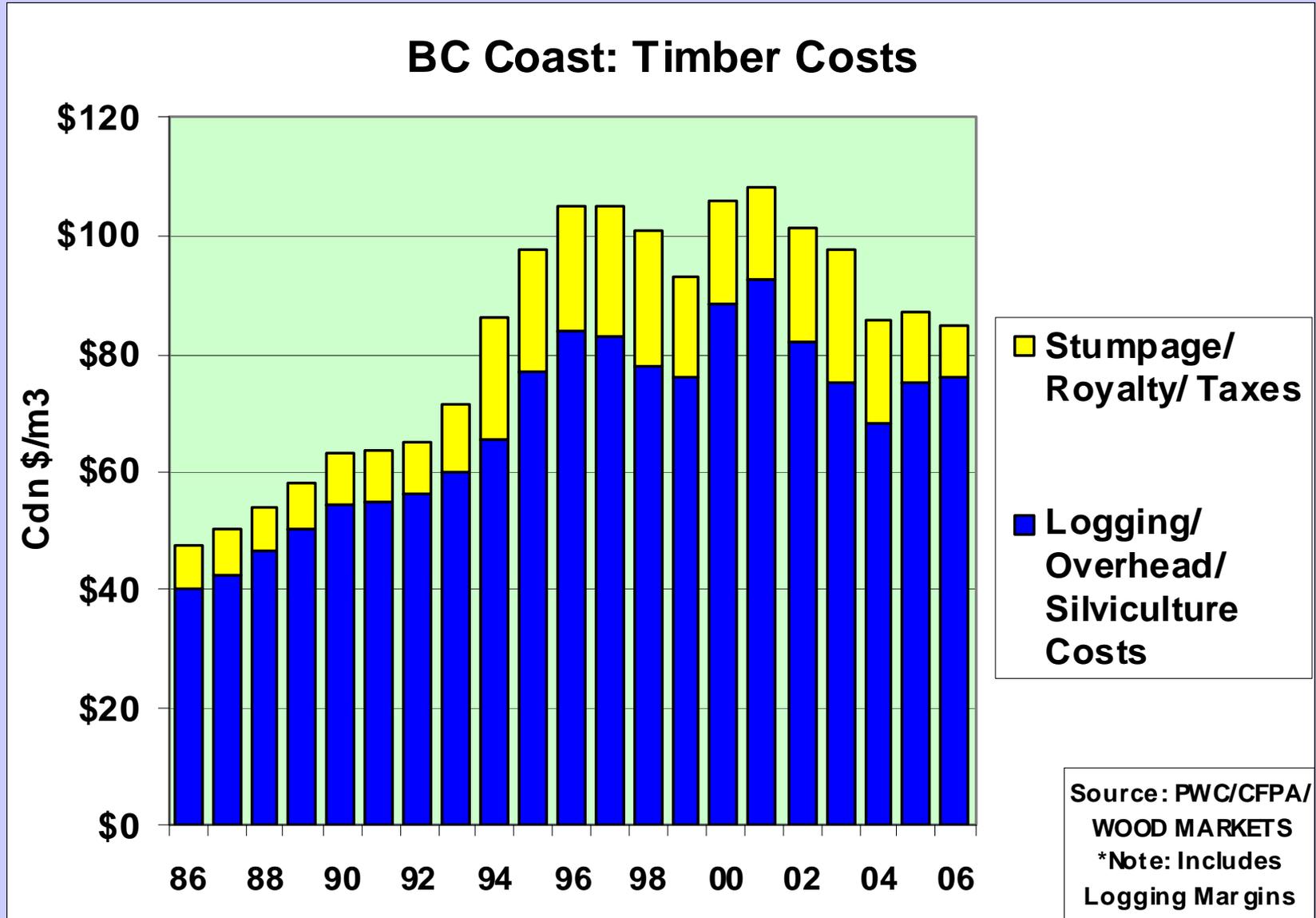
- ◆ Hemlock represents 60% of the Coast's growing stock but is the most uneconomic.
- ◆ Inherent qualities within species also have tremendous impacts on uniformity and this all works against lumber and veneer manufacturers.
- ◆ Hem-Bal has 4 key negative characteristics that impact processing costs & product out-turns:
  - Compression wood
  - Rot
  - Shake
  - Moisture content.

**It should be noted that the defects are less prevalent in second-growth hem-bal.**

## 2. BC Coast: Competitiveness Issues

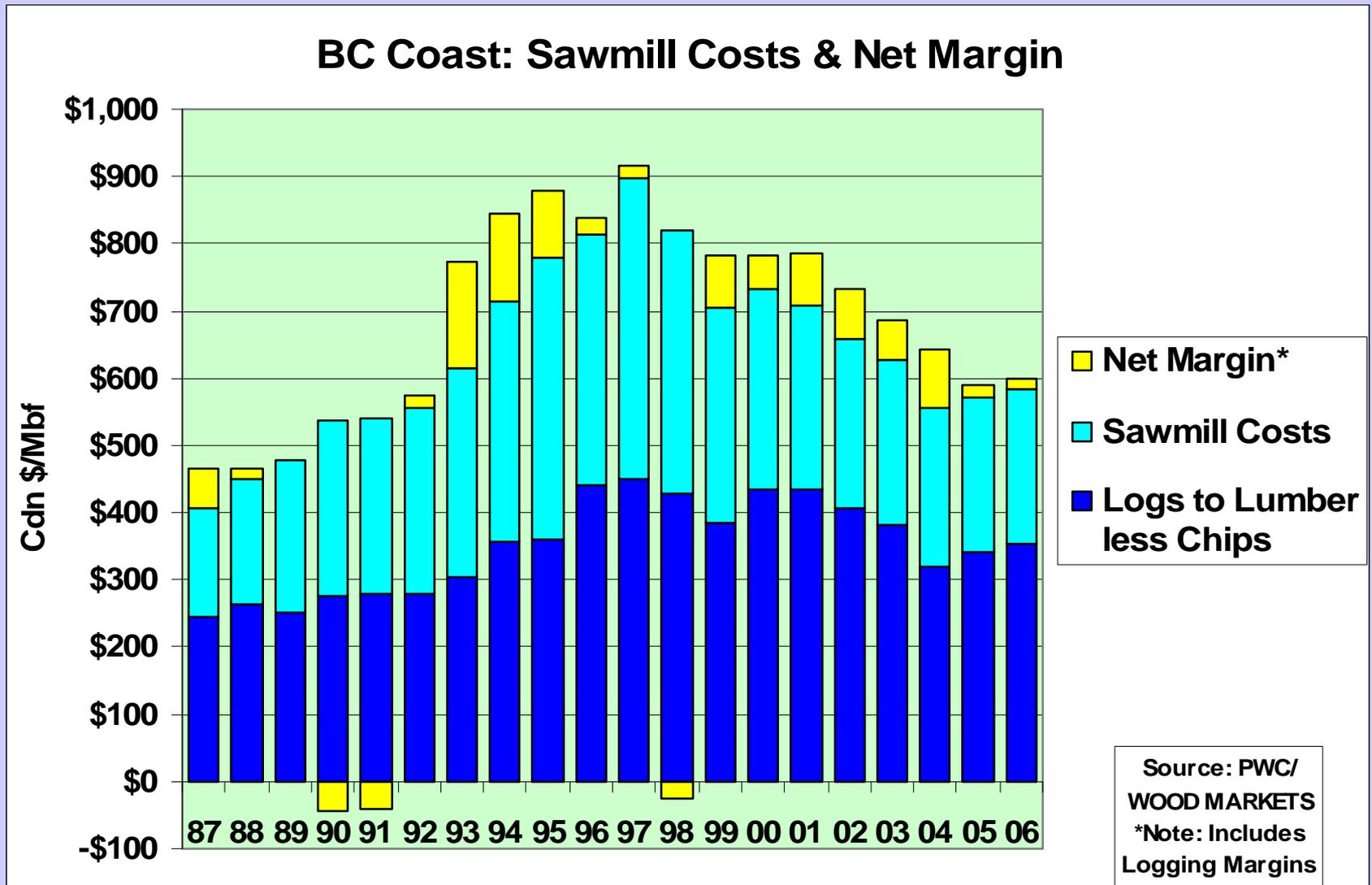
- ◆ **Whitewood Delivered Timber Costs:**  
On a global basis, the B.C. Coast whitewood (Douglas fir and hemlock-balsam) costs today are at the higher end of North America log costs but are somewhat closer to the global average.
- ◆ However, higher valued western red cedar, Douglas fir and other niche species are normally more able to offset these higher logs costs.
- ◆ Hemlock-balsam timber: Is more uneconomic due to the inherent wood quality constraints, higher processing costs and lower sales returns.

# BC Coast: Timber Costs



Del'vd log costs vary for old-growth & 2<sup>nd</sup> growth = still high

# BC Coast: Costs & Net Margin



**Earnings Eroding (note: includes logging margins)**

# Competitiveness Summary: BC Coast

- ◆ **Sawmilling: B.C. Coast whitewood processing costs are at the high end of the global spectrum.**
- ◆ **This is mainly because of the use of head rig mills to process larger logs as compared other regions that process smaller or 2<sup>nd</sup> growth logs.**
- ◆ **Many of the large, head-rig sawmills and plywood mills that depended on large, fine-grain, old-growth logs have permanently closed.**
- ◆ **The coast's high sawmilling costs limit its mills' potential to economically participate in commodity structural markets.**

### 3. BC Coast Current Processing Sector

◆ Current operations that have survived can provide some insight into what the processing industry might look like in another 10+ years given further re-engineering and adaptation.

◆ Conceptually, the current B.C. Coast wood processing industry is made up of the following main segments and log inputs:

Mill Type	Log Required	Market
Custom Cut - Specialty	Higher grades specialty sort	Cut to order and/or high value
High volume	Smaller log	Commodity focused
High volume WRC	Small log + Lumber & Better log	Focused products and customers
Other mills	Standard log	Wide # of products & customers
High volume Veneer mills	Chip'n'saw and peeler	Engineered wood
Plywood/Engineered mills	Peeler	Panels/Engineered wood products

# B.C. Coast Current Processing: Opportunities & Limitations

The analysis conducted in the CFPA project indicates 4 successful, existing business cases:

- 1. High-volume cedar sawmills: targeting specialty, semi-commodity, and some commodity products.**
- 2. Custom-cut or specialty/niche-oriented sawmills: targeting specialty products & markets.**
- 3. Veneer mills: focusing on Douglas fir timber (possibly a fit for hemlock-balsam?).**
- 4. High-volume sawmills processing small-diameter and second-growth hemlock and Douglas fir logs: low costs is a logical fit for commodity markets.**

# B.C. Coast: Current Processing Assessment by 3 Major Species

Existing Product Opportunites Fit with BC Coast						
		Appearance WRC	Appearance Fir	Appearance Hemlock	Commodity Hemlock	2nd Growth Hemlock
<b>Fibre</b>	Hemlock acceptable	-	-	6	3	4
	Sufficient unencumbered volume available	6	5	7	5	5
	Delivered log cost	6	6	5	2	3
	<b>Total Fibre Score</b>	6.0	5.5	6.0	3.3	4.0
<b>Market</b>	Current market conditions	9	7	5	3	2
	Acceptance of hemlock	-	-	4	4	4
	Future market/product Trend	7	5	4	3	6
	<b>Total Market Score</b>	8.0	6.0	4.3	3.3	4.0
<b>Capacity</b>	Expertise on coast	9	9	9	9	9
	Is there capital capacity on coast	6	5	5	5	5
	<b>Total Capacity Score</b>	7.5	7.0	7.0	7.0	7.0
<b>Weighted Product Ranking (out of 10)</b>		<b>7.2</b>	<b>6.2</b>	<b>5.8</b>	<b>4.6</b>	<b>5.0</b>

Rating System based on a scale of 1-9 (1-3 = Poor or challenging; 4-6 = Fair or possible; 7-9 = Good)

**From Industry survey: Cedar = good; Hemlock = fair (poorest)**

## 4. BC Coast: Possible New Processing Options

Five significant “engineered” products were also analyzed as new or potential business opportunities for the B.C. Coast (using the same rating scale):

- Plywood (still 2 mills operating) ;
- OSB;
- LVL;
- MDF; and
- Particleboard (no mills left operating).

# B.C. Coast: Evaluation of New Product Opportunities

## New Product Opportunities Fit with BC Coast

		Plywood	LVL	OSB	MDF	Particle-board
<b>Fibre</b>	Hemlock acceptable	1	3	4	7	7
	Sufficient unencumbered volume available	5	5	2	1	1
	Delivered log cost	6	7	1	1	1
	<b>Total Fibre Score</b>	4.0	5.0	2.3	3.0	3.0
<b>Market</b>	Current market conditions	2	6	3	5	3
	Acceptance of hemlock	1	3	4	6	6
	Future market/product Trend	3	8	5	6	2
	<b>Total Market Score</b>	2.0	5.7	4.0	5.7	3.7
<b>Capacity</b>	Expertise on coast	7	2	1	1	1
	Is there capital capacity on coast	4	4	1	1	1
	<b>Total Capacity Score</b>	5.5	3.0	1.0	1.0	1.0
<b>Weighted Product Ranking (out of 10)</b>		<b>3.8</b>	<b>4.6</b>	<b>2.4</b>	<b>3.2</b>	<b>2.6</b>

Rating System based on a scale of 1-9 (1-3 = Poor or challenging; 4-6 = Fair or possible; 7-9 = Good)

**LVL = Fair (best); Others = Poor to Challenging**

# Summary of New Processing Options

- ◆ LVL = Only new product opportunities reviewed as being “a reasonable fit” for the B.C. Coast.
- ◆ LVL had the highest score (4.6 out of 9), although the economics as well as the market acceptance of hemlock-balsam veneer in LVL was considered “questionable” in the research conducted.
- ◆ Any engineered lumber product would be a good fit for the coast as the technology could counteract some of the inherent characteristics of hemlock-balsam which have contributed to higher lumber manufacturing costs of traditional lumber products relative to competing species.

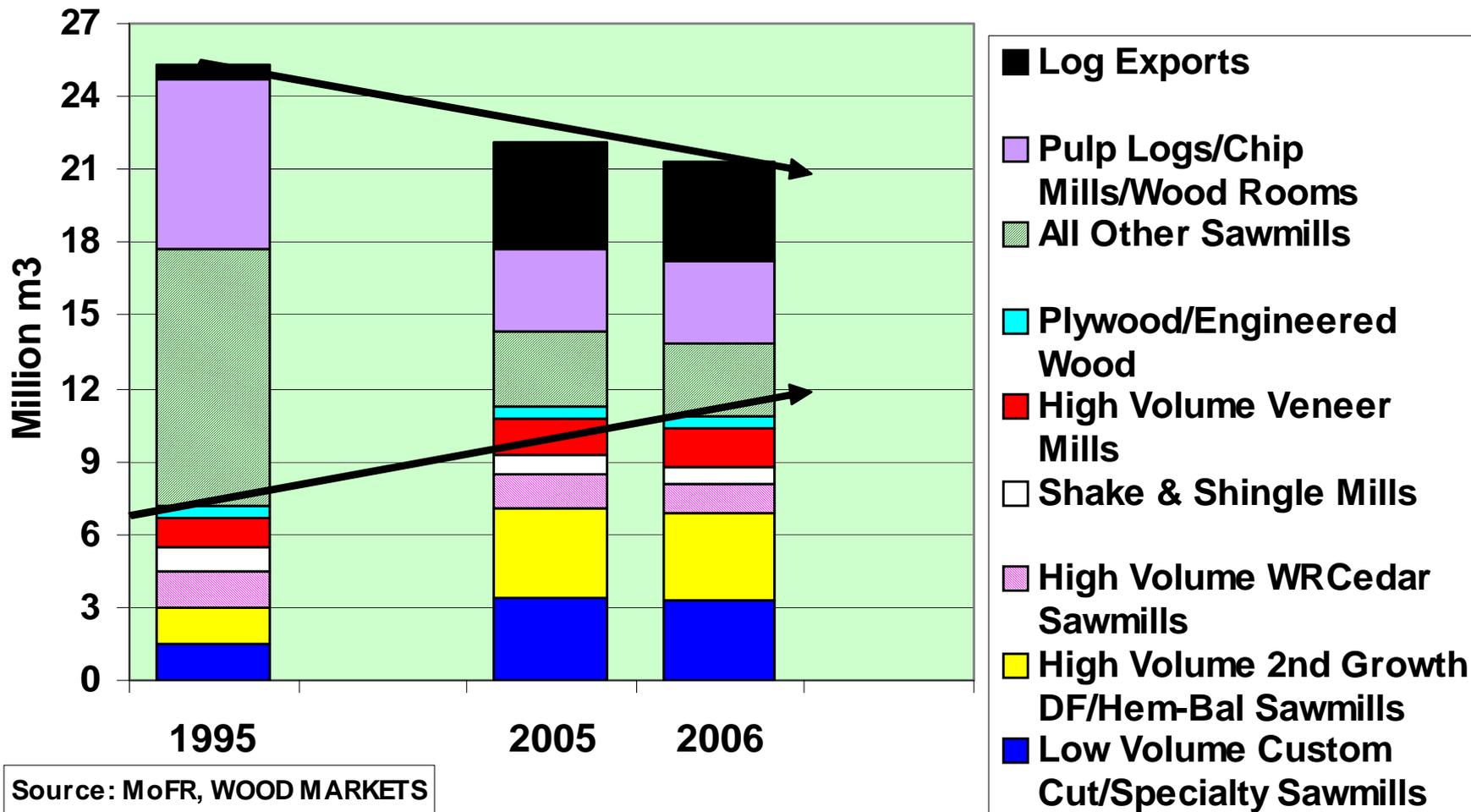
## 5. BC Coast: Outlook to 2020

### BC Coast Scenarios to 2020:

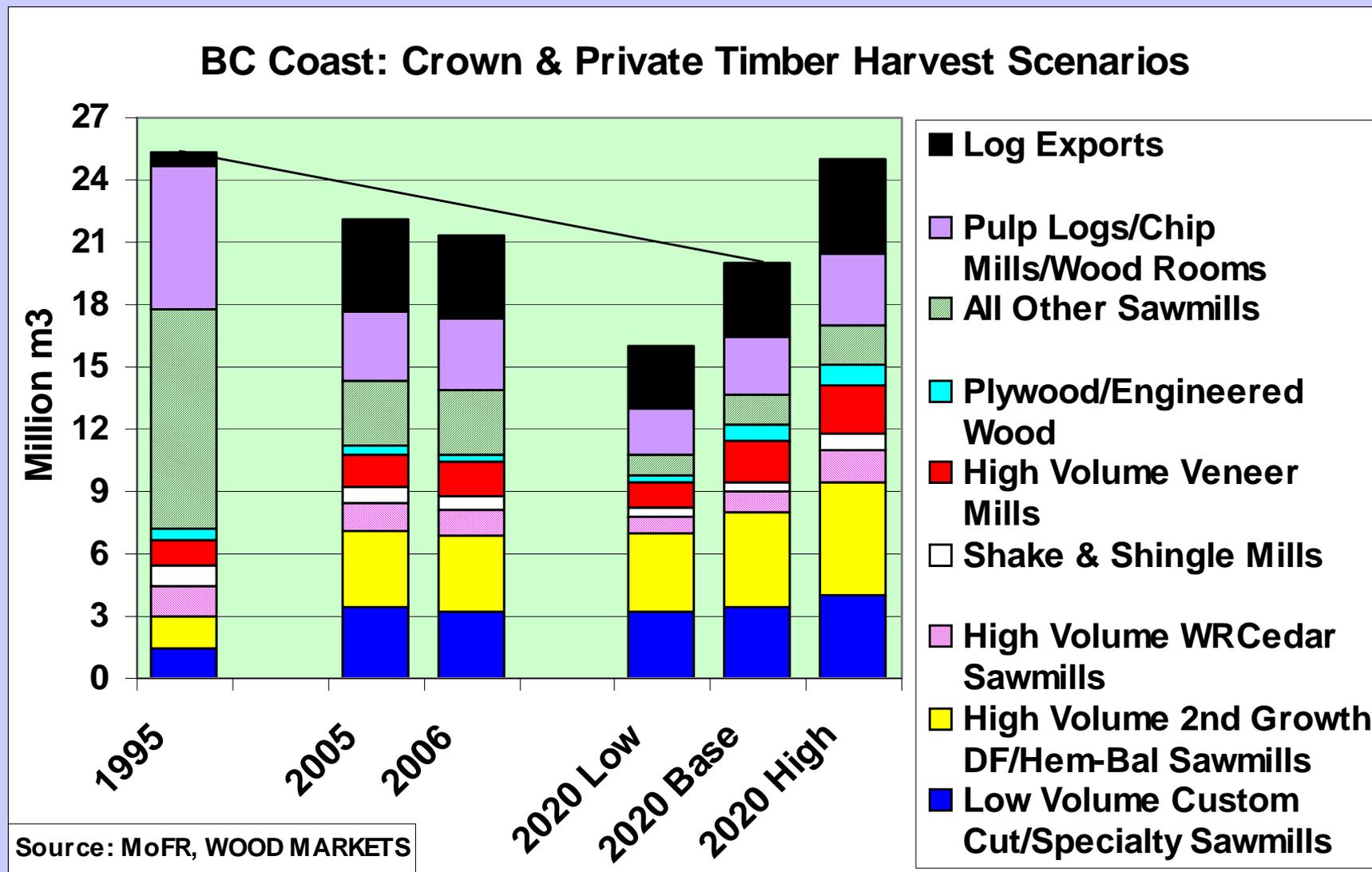
- ◆ **Two scenarios, a “low” and “high” case, have been considered in comparing the 2006 coastal B.C. industry to its potential structure in 2020.**
- ◆ **The potential impacts of these scenarios are extrapolated from the B.C. Coast in 2005/2006 and are projected to 2020.**
- ◆ **The business cases have been quantified through the use of actual & ‘projected’ timber harvest volumes**
- ◆ **A “base case” scenario has been projected in relation to the low and high scenarios.**

# BC Coast: Crown & Private Timber Harvest Trends

## BC Coast: Crown & Private Timber Harvest Trends



# BC Coast: Crown & Private Timber Harvest Scenarios



# BC Coast Scenarios to 2020

Relative to 2005/2006, the major trends in production capacity anticipated to take place by 2020 on the B.C. Coast include the following:

- ◆ Significant growth is forecast to occur in the manufacturing of second-growth lumber, veneer and engineered products.
- ◆ Custom-cut volumes and probably log exports are expected to remain relatively constant (subject to timber availability and may include more cedar or whitewood mills).
- ◆ A significant reduction in pulp wood production is expected as a direct result of the shift from old-growth far less decadent second-growth forests.

# BC Coast Scenarios to 2020

- ◆ Capacity in the “Other Mill” category, or those mills that were cutting old-growth logs for various markets, is expected to decline further from levels of 2005/2006. The mills in this category were mainly large, under-capitalized mills that specialized in cutting old-growth logs for wide variety of markets.
- ◆ Note: the outcomes will be directly related to how well the Coast’s major constraints are faced and/or managed.

# **“Low” Case Scenario in 2020**

## **Low Scenario = Harvest of 16 million m3:**

- **If there are only limited solutions found for the hemlock-balsam materials-handling issues (drying, grade out turn, yield).**
- **If the move into second-growth harvesting is slow (limiting cost reduction and the development of an open, unencumbered log market);**
- **Then: new capital investment will not likely flow and the Coast will likely achieve the 2020 low case result.**

# “High” Case Scenario in 2020

**High Scenario = Harvest of 25 million m<sup>3</sup> (similar to the harvest in 1995):**

- If solutions are found for the major constraints facing the coastal industry,
- Then: harvest volumes may achieve the high case the Coast region could regain its position as a significant and viable source of fibre and products for world markets.

◆ **Base Case Scenario - Harvest of 20 million m<sup>3</sup>.**

## a) **Western Red Cedar to 2020**

- ◆ **It is the only sector on the coast that consistently generates enough value from log sales to make log harvesting profitable even at current, high coastal logging costs.**
- ◆ **Specific policy measures designed to support this sector should be developed to ensure that a steady supply is maintained at affordable levels to support a stable cedar processing industry.**
- ◆ **One significant conclusion developed from the project research was that the old growth harvest consumed in the specialty sector, including western red cedar, should be given full industry and government support.**

## b) Second Growth Processing to 2020

- ◆ A significant amount of the increasing second growth forests is hemlock-balsam.
- ◆ Along with finding solutions for the higher costs associated with manufacturing products from hemlock-balsam, a better understanding of the harvesting costs of the new second growth forest and the age class/harvest options needs to be developed and explored.
- ◆ This information will provide a better understanding of where the products produced from these forests could fit in the global market place.

# B.C Coast is Not Necessarily Competitive in Second Growth Logs

## BC Coast Hemlock vs. BC Interior SPF: Net Logs to Lumber Costs

Item		Unit	Hemlock	SPF	Hemlock Challenge
Log Cost		M3	\$61.00	\$61.00	
Lumber Recovery		(MFBM/M3)	0.280	0.295	
Logs to Lumber Cost		MFBM	\$217.86	\$206.78	-\$11.08
Grade Out turn	J-Grade or Select	MFBM		10%	-\$47.65
	#2 and better	MFBM	85.0%	80.5%	\$13.36
	Utility	MFBM	8.5%	8.0%	\$2.49
	economy	MFBM	1.5%	1.5%	\$0.67
	Wets	MFBM	5.0%	0.0%	\$13.87
Sales Average Impact					-\$17.26
Drying Costs		MFBM	\$31.50	\$18.00	-\$13.50
Total		MFBM			-\$41.84

**Net competitive disadvantage to SPF = C\$42/Mbf on lumber basis;  
However, BC Interior is a very low cost producing region...**

## c) Hemlock-Balsam to 2020

Two options identified for the coastal industry to consider when dealing with the variability of hemlock-balsam in second-growth and old-growth sawlogs are:

1. The first is to search for new technology that will improve the detection of defects prior to the log entering a production facility (either in the forest or in the sorting process), and/or technology that will improve the out-turns and reduce the costs of drying.
2. The second is to develop reconstituted or engineered products that are unaffected — or at least less impacted — by the inherent defects of moisture and compression wood and where a low cost raw material can be supplied.

# Summary: BC Coast Product Fits to 2020

<b>Current Rank</b>	<b>Species</b>	<b>Category</b>	<b>Growth Prospects 2020</b>
<b>1</b>	<b>WRC</b>	<b>Specialty</b>	<b>Flat to Good</b>
<b>2</b>	<b>D. Fir</b>	<b>Specialty</b>	<b>Flat to Good</b>
<b>3</b>	<b>D. Fir</b>	<b>Commodity</b>	<b>Flat to Good</b>
<b>4</b>	<b>Hem</b>	<b>Specialty</b>	<b>Flat to Good</b>
<b>5</b>	<b>Hem</b>	<b>Commodity</b>	<b>Flat to Poor*</b>

**\*Note: Hemlock Commodity 2<sup>nd</sup> Growth Prospects = Flat to Good**

# Product & Markets to 2020

- ◆ It should also be noted that the B.C. Coast is not really limited by any market or product restrictions or limitations – it is mainly limited by higher costs relative to competing products or suppliers (some hemlock would be the exception to this rule).
- ◆ As a result, cost reduction in delivered log costs and processing or in determining ways to define an economic timber base becomes a key theme in any coastal industry strategy.
- ◆ However, it needs to be pointed out that the U.S. and Japanese markets for coastal species represent over 90% of total B.C. Coast exports = there are relatively few market limitations in these two major markets (as compared to many other markets).

# Conclusions: Outlook to 2020

Within the 'specialty' category, there are three existing & successful coastal log and lumber segments:

1. Western red cedar products, which currently offer the best market and margin potential.
  2. Douglas fir and hemlock specialties, which, while viable, offer more limited mid-term growth opportunities.
  3. Specialty species, including yellow cedar, Sitka spruce and alder, which offer consistent niche business opportunities and margins.
  4. A 4th successful coastal segment is the Douglas fir veneer sector is another successful business sector and it has expanded more in the last ten years than any other sector (providing raw material to the expanding LVL business in Washington and Oregon)
- ◆ However, being competitive against competitors in export markets is a critical goal.

# Conclusions: Outlook to 2020:

**To ensure a healthy and vibrant coastal business, the following issues must be dealt with:**

- 1. The hemlock-balsam issues related to the materials-handling issues (grade out-turns, yields, drying) increase costs and limit product options –these constraints must be addressed to improve the future success of the coastal industry.**
- 2. The shift to second-growth fibre must be accelerated, where possible, in order to drive down logging costs while maintaining the existing and profitable specialty business = this is a natural evolution of the B.C. Coast that could create a new future.**

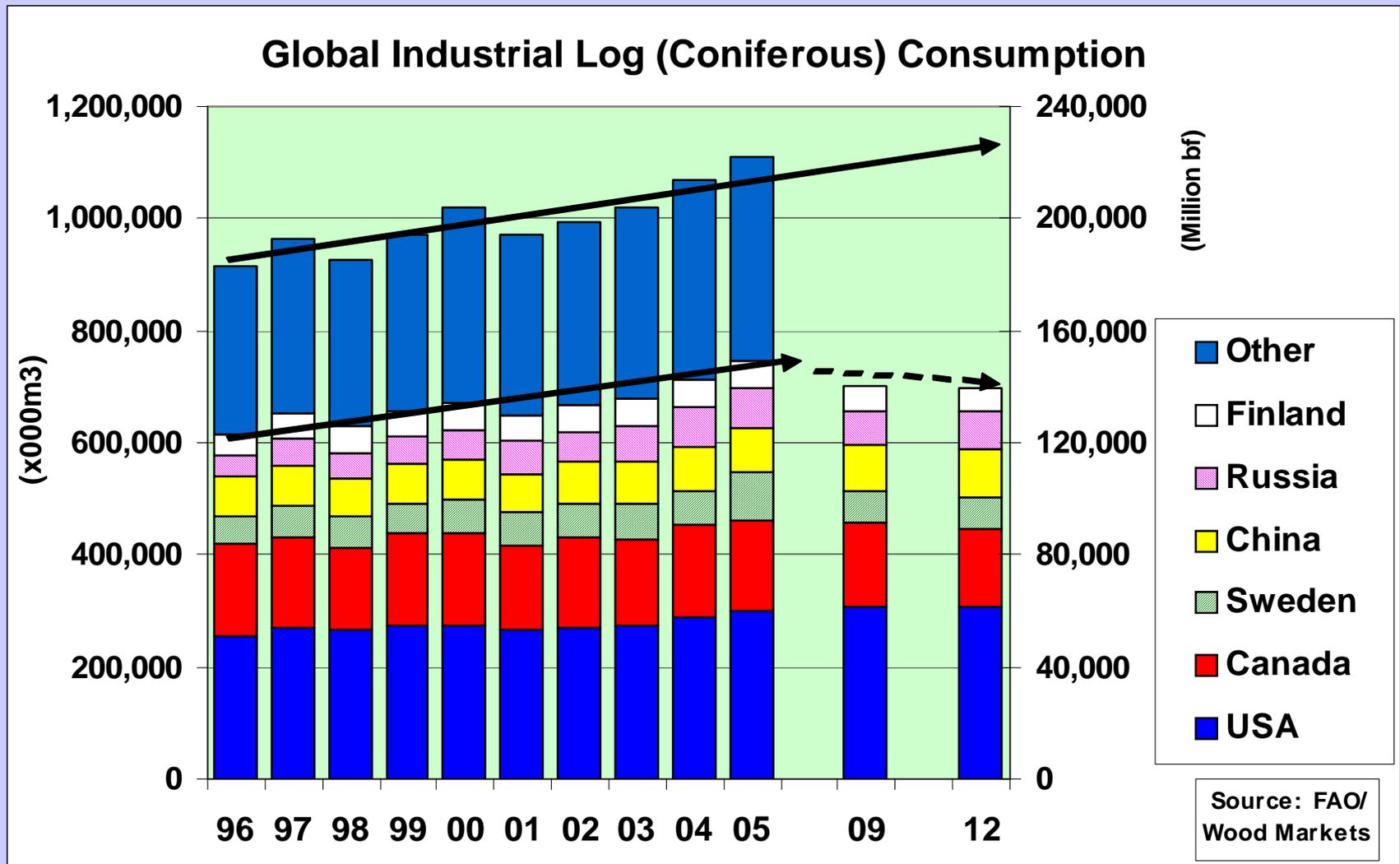
# Conclusions: Outlook to 2020

- 3.** Improved identification of the economic timber basket on the B.C. Coast must occur, and conversely, identification of the non-economic timber supply, with specific emphasis on the older-growth or merchantable hemlock-balsam timber inventory.
- 4.** A recapitalization of the manufacturing sector to allow for the newer technology to be applied in coastal production processes is vital, both for existing operations and potential new opportunities (such as composite or engineered wood as well as with second-growth timber).
- 5.** Development of a vibrant and open log market is crucial in order to ensure consistent available supply to operators and to avoid the current situation of constrained supply and price run-ups that causes customers to rethink their sourcing and stocking of coastal products.

# Some other Perspectives on the Future of the B.C. Coast

**May with some over-due luck, the B.C. Coast will benefit from potential global or North American timber shortages that are being projected in the next five years...**

# Is the World's Softwood Log Supply Going to Start Shrinking?



**New suppliers, higher prices or more finished products required to offset gap (if it is 'real')!**

## 6. Next Steps

### 1. Economic Timber Supply & Processing Options — Integration with MoFR

The objective is to evaluate key market/product fits for the B.C. Coast and determine the delivered log cost to a sawmill or processing plant that allows for a better understanding to accessing an economically viable log supply for processing businesses.

### 2. B.C. Coast Cost Analysis & Global Benchmarking

It is recommended that more current and accurate cost data be incorporated as an enhancement to the work conducted to date.

## Next Steps (con't)

### 3. Market & Product Research: Hemlock-Balsam

Additional research in products, markets and/or in new processing technologies to allow for improved information on the utilization of hemlock-balsam fibre qualities in both old-growth and second-growth.

### 4. Technical Standing Timber or Log Evaluations & Wood Quality Research

Technical research based on existing work elsewhere to better evaluate hemlock-balsam wood qualities on the stump (before harvesting) or before delivery to mill, i.e., to minimize harvesting of uneconomical hemlock.

For a copy of the report, visit:

[www.coastforest.org/](http://www.coastforest.org/)

or

[www.bcfii.ca/](http://www.bcfii.ca/)

or

[www.woodmarkets.com](http://www.woodmarkets.com)

[Russell Taylor RPF, MBA](#)

**President**

**International WOOD MARKETS Group Inc.**

**Vancouver, B.C., Canada**

**Suite 501 - 570 Granville Street**

**Vancouver, BC V6C 3P1**

**Tel: (604) 801-5996 or -5998 / Fax: (604) 801-5997**

**Email: [info@woodmarkets.com](mailto:info@woodmarkets.com)**

**[www.woodmarkets.com](http://www.woodmarkets.com)**