

**The Tertiary Component of  
the Forest Sector  
in British Columbia.**

**The Next Twenty Years**

**Discussion Paper**

---

CANADA-BRITISH COLUMBIA PARTNERSHIP AGREEMENT ON FOREST RESOURCE DEVELOPMENT: FRDA II

---

**Canada** 

**BC** 

# **The Tertiary Component of the Forest Sector in British Columbia.**

## **The Next Twenty Years**

by  
**Ernst & Young**

*This study was prepared under the direction of the Working Group to the  
Opportunity Identification program of the Canada-British Columbia  
Partnership Agreement on Forest Resource Development: FRDA II.  
The Working Group members are:*

**Dr. Bill Wilson**

Forestry Canada  
Pacific Forestry Centre  
506 West Burnside Road  
Victoria, B.C. V8Z 1M5

**Roger Ennis**

British Columbia Trade  
Development Corporation  
Ste. 703-999 Canada Place  
Vancouver, B.C. V6C 3E1

**Peter Fisher**

B.C. Ministry of Forests  
Economics and Trade Branch  
1450 Government Street  
Victoria, B.C. V8W 3E7

DP-OI-92.03

**September 1992**

*This report was originally prepared and released in advance of the  
Forest Summit Conference held in Vancouver, B.C., in September, 1992.*

**The Tertiary Component of the Forest Sector  
in British Columbia  
The Next Twenty Years**

A Report by

 **ERNST & YOUNG**

**Author: Eric Morgan, MBA, CMC**

Director, Management Consulting, Western Region  
Ernst & Young  
2300, 700 West Georgia Street  
Vancouver, B.C., V7Y 1C7  
(604) 683-7133

**Other Members of Ernst & Young Study Team:**

Senior Advisor: Leonard Delicaet, P. Eng., M.Sc., FCMC  
Other Advisors: Jay Van Brunt, MBA  
Douglas Jagger, P.Eng., MBA  
Jim Swanson, Ph.D.

## Highlights

- More than 360,000 jobs are linked to the forestry industry... approximately one in four jobs in British Columbia. The scope and economic significance of the forest industry in British Columbia is much greater than previously thought.

- Jobs linked to the forest industry can be classified into four components:

Primary forest processing sector	23,000 jobs
Secondary manufacturing sector	61,000 jobs
Tertiary sector	45,000 jobs
Induced economic activity	<u>232,000 jobs</u>
	<u>361,000 jobs</u>

- The tertiary forest sector is the least understood. The base of knowledge of this sector and its impact upon economic activity in British Columbia are the focus of this paper.
- The tertiary forest sector includes the many suppliers of goods and services that directly support the primary and secondary forest industry.
- Compared to the rest of the industry, the tertiary sector employs a higher proportion of people with university or technical education, pays on average higher wages, is environmentally friendly and adds significant value to the industry and the provincial economy. Tertiary sector jobs also generate exports without forest resource content.
- Industries around the world that have achieved and preserved world-class competitive positions tend to be grouped into industry clusters that include the suppliers, service providers and support organizations required by these industries. Their competitiveness is to a large extent influenced by the presence of strong home-based suppliers and service providers -- the tertiary sector of these industries.
- Tertiary sector inputs, machinery and services are sources of technology, ideas and skilled human resources which are required to retain competitively priced products and develop value-added products. Their local presence and close proximity to the primary and secondary forest sectors fosters close working relationships, exchange of know-how and mutual pressures to progress.
- The tertiary forest sector in British Columbia has the potential to be even more internationally competitive. There is significant growth potential to serve domestic and foreign markets. With proper leadership, this sector can help the overall industry continue to be the most significant contributor to provincial economic prosperity.
- However, the tertiary forest sector cannot prosper if it is linked to depressed primary and secondary industry sectors. The potential to excel and the synergy of the tertiary sector can only be realized if the overall industry is robust.

- If the growth potential is capitalized upon, the tertiary forest sector in British Columbia could provide 100,000 jobs by the year 2010... approximately the same number of jobs expected in the primary and secondary forest industry sectors.
- These 200,000 jobs in the primary, secondary and tertiary forest sectors could generate approximately 240,000 additional induced jobs by the year 2010. The result would be approximately 440,000 jobs, or more than one out of every six jobs in the province, linked to forestry.

Achieving the industry's potential will require leadership, cooperation and action from the many industry stakeholders. We urge all participants at the Forest Summit Conference to actively discuss this topic and make the necessary commitment towards achieving world-class competitiveness and a new "sunrise" for British Columbia's forest industry .

## Table of Contents

	<b>Page</b>
Background	1
A Model of the Forest Industry	1
The Tertiary Sector of the Forest Industry	2
The Concept of a "World Class Competitive Cluster"	8
A Vision of a "World Class Competitive Cluster" in British Columbia by the Year 2010 and Beyond	11
The Potential Size and Significance of the Tertiary Forest Sector	12
Our Commitment to Conference Participants	14
Acknowledgements	15

## **Background**

Research into the historical significance of the forest industry to British Columbia and to Canada suggests that it may be the single most important contributor to our current national prosperity and quality of life.

This past year was one of the most difficult years for the forest industry in Canada. British Columbia companies recorded their largest net loss in history—approximately one billion dollars. The results for the rest of the Canadian forest industry were similarly poor.

These bottom line results, compounded by the intense public debate about the future use of the forests has led some pessimists to predict an inevitable decline for the forest industry in the province.

Industry stakeholders are unsure about what should be done to improve the future contribution of the forest industry to British Columbia's and Canada's prosperity. Unfortunately, the current debate about the future of the industry is charged with emotions, misconceptions and single-issue perspectives.

There is consensus, however, that the industry needs to be restructured to compete successfully in global markets. The participants at the Forest Summit Conference face a major challenge addressing the nature of the required restructuring and the strategy to make it happen.

To help focus discussion on the critical issues and stimulate debate, the Conference organizers commissioned three studies. This paper presents the findings of the second study—the definition, quantification and assessment of the tertiary forest industry in British Columbia now and in the future.

This study is not a full-scale analysis of basic research into the subject; rather, it is a thought and discussion generator, based on a review of existing literature and, more importantly, in-depth discussions with numerous industry stakeholders.

## **A Model of the Forest Industry**

### **Traditional Perspective**

The industry is traditionally perceived as consisting of two broad sectors, known as the primary and secondary forest industries. The primary sector is comprised of organizations and people that work directly with the forest, extracting its resources and performing the primary processing operations. The secondary sector consists of those manufacturing operations that take the output of the primary sector and add value through further processing.

This traditional view of the industry limits the scope to an economic sector that employed approximately 84,000 people and generated 8.2% of British Columbia's Gross Domestic Product (GDP) in 1991, according to B.C. government statistics.

## A New Perspective

This study provides a much wider view of the forest industry in the province. This new perspective includes the many suppliers and service providers that support the forest industry, and the induced economic activity and employment that the overall forest industry creates in the province.

A model of the forest industry, shown in Figure 1, provides a representation of this new view of the overall industry, with the forest as its foundation.

The centre of the figure describes the primary and secondary forest industry and identifies some representative outputs of these two sectors.

The primary and secondary forest sectors are supported by a network of organizations, institutions and people which supply goods and services—the tertiary forest industry sector. At present, this sector is largely undefined and generally overlooked as a component of the forest industry.

The industry model also includes the induced economic activity and employment or "multiplier effect" generated by the forest industry. This multiplier effect is generated by company purchases and the re-spending of forest industry wages. These expenditures generate demand for products and services such as hospitality, airlines, food, housing, transportation and retail goods. This induced demand exists only because of the presence of the forestry industry in British Columbia. Hence, these jobs and economic activity are indirectly linked to the future of the forest industry.

From this perspective, in excess of 360,000 workers in British Columbia, or about one in four jobs in the province, are linked to the forest industry.

## The Tertiary Sector of the Forest Industry

### Structure

Through a series of workshops and interviews with major industry stakeholders, the study team arrived at a consensus on the types of organizations that should be included in the tertiary forest sector. While the selection was subjective, due care was exercised to ensure that exclusions could be logically explained.

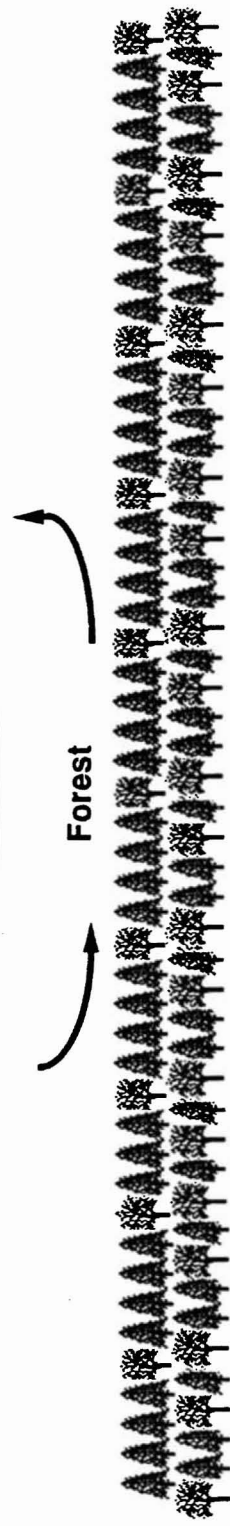
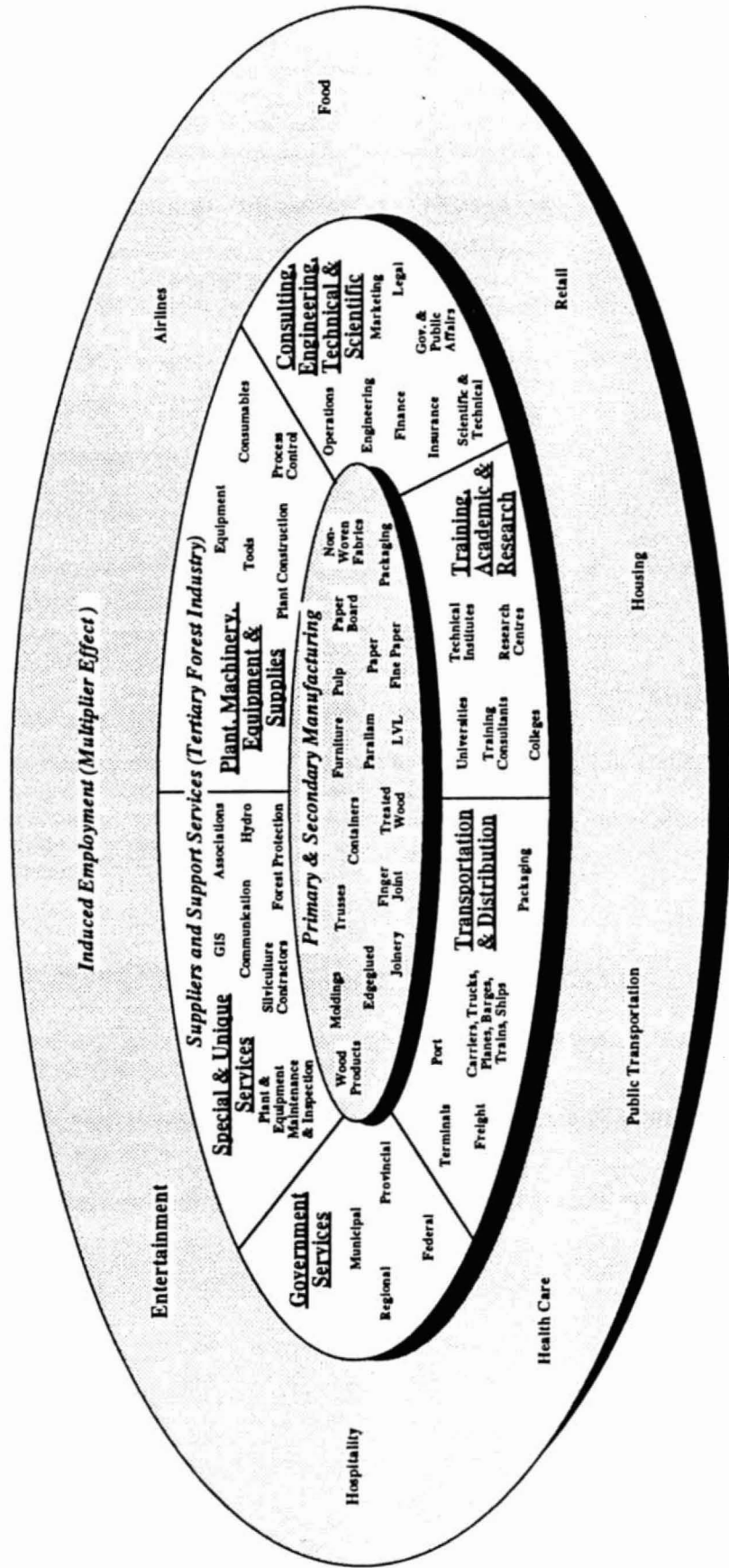
The types of companies and organizations selected as representing the tertiary sector were grouped into six major segments. Outlined below are some of the most representative types of organizations in each segment.

#### *1. Plant, Machinery, Equipment and Supplies*

- Plant facilities builders and manufacturers
- Manufacturers and distributors of:
  - Process machinery & equipment
  - Process control equipment
  - Small equipment, tools and hardware supplies
  - Consumable supplies



# Forest Industry Model - Figure 1



## ***2. Consulting, Engineering, Technical and Scientific Support Services***

- Management, financial, operations, engineering, technical, and other consultants and advisors
- Forestry and silviculture consultants
- Ecology and environment consultants
- Scientific and technical advisors
- Manufacturing process, design and construction engineers

## ***3. Training, Academic Education and Research***

- Universities, colleges and other learning agencies
- Education and training professionals
- Research institutions

## ***4. Transportation and Distribution***

- Freight Forwarding
- Packaging and protection
- Terminal services
- Carriers
- Port authorities

## ***5. Government Services***

- Regional governments
- Provincial government
- Federal government

## ***6. Special and Unique Services***

- Silviculture and forest management contractors (e.g. planting and pruning)
- Many different forest industry associations
- Specialized services (e.g. Geographic Information Systems (GIS), fire fighting, camps support, communications)
- Maintenance and inspection

## **Size and Significance**

To determine the size and significance of the tertiary forest sector we used two approaches which yielded very similar results:

- A macro analysis using the British Columbia Input/Output Model (BCIOM) and other publicly available data; and,
- A micro analysis in which we estimated the size of individual sub-sectors of the tertiary forest industry.

### *Size of the Tertiary Forest Sector by Segment*

The tertiary forest sector includes approximately 45,000 jobs. Table 1 provides a breakdown of these jobs by each of the six major segments.

**Table 1**  
**Tertiary Sector Employment by Segment**

<b>Segment</b>	<b>Employment</b>	<b>%</b>
Plant, Machinery, Equipment and Supplies	11,000	24%
Consulting, Engineering, Technical & Scientific Services	7,500	17%
Training, Academic Education and Research	2,000	4%
Transportation and Distribution	7,000	16%
Government	9,500	21%
Special and Unique Services	8,000	18%
<b>Total Tertiary Sector</b>	<b>45,000</b>	<b>100 %</b>

Source: Ernst & Young

## Employment & GDP

Table 2 provides a breakdown of forest industry employment and GDP in 1991, compared to that for the overall province.

**Table 2**  
**Forest Industry Employment and GDP**  
**1991**

	Employment		GDP <sup>(1)</sup>	
	(000 jobs)	%	(\$billions)	%
<b>British Columbia Total</b>	1,489	100%	75.8	100%
<b>Forest Industry</b>				
Primary & Secondary Sectors	84(2)	5.6%	6.2	8.2%
Tertiary Sector	45(3)	3.0%	2.1	2.8%
<b>Total Forest Industry</b>	129	8.6%	8.3	11.0%

(1) Gross Domestic Product at factor cost in 1991 current dollars

(2) Includes logging company employees involved in silviculture

(3) Includes private silviculture contractors and government forestry employees

Source: Statistics Canada and BCIOM data, adjusted to reflect Ernst & Young's industry model

Traditionally, estimates of primary and secondary forest industry employment includes government employees, silviculture contractors and some other operations which are part of the tertiary forest sector. This study defines the primary and secondary forest sector as equivalent to the Statistics Canada definition of: i) forestry and logging, ii) wood industries and iii) pulp and paper and allied products.

Table 2 identifies 84,000 jobs in the primary and secondary forest sectors and 45,000 jobs in the tertiary sector in 1991, for a total forest industry employment of 129,000 jobs. This direct and indirect employment generated by the forest industry represents 8.6% of provincial jobs—approximately one in every twelve jobs.

In terms of GDP, the tertiary forest sector contributes \$ 2.1 billion, representing 2.8% of the provincial economy in 1991. The forest sector overall contributes \$ 8.3 billion, representing 11% of the provincial economy.

**Table 3**  
**Forest Industry Employment and GDP**  
**1984 - 1991**

	1984		1991	
	Jobs (000)	GDP(1) (\$billions)	Jobs (000)	GDP(1) (\$billions)
<b>British Columbia Total</b>	1,191	56.8	1,489	75.8
<b>Forest Industry</b>				
Primary & Secondary Sectors	91	5.2	84	6.2
Tertiary Sector	32	1.7	45	2.1
<b>Total Forest Industry</b>	123	6.9	129	8.3

(1) Gross Domestic Product at factor cost in 1991 constant dollars

Source: Statistics Canada and BCIOM data, adjusted to reflect Ernst & Young's industry model

As shown in Table 3, when employment and GDP data for the last eight years are compared, the importance of the tertiary forest sector becomes more apparent. Between 1984 and 1991 employment in the primary and secondary forest industry decreased by approximately 7,000 jobs. In the same period, tertiary sector employment grew by almost 13,000 jobs.

Furthermore, when the model is used to compare the last eight years in relation to GDP, some interesting profiles emerge, as follows:

- the contribution to provincial GDP from the primary and secondary forest sector has grown from \$5.2 billion in 1984 to \$6.2 billion, measured in constant 1991 dollars. This represents a real growth of almost 20%.
- this additional GDP generation has been achieved with 7,000 fewer workers, indicating increased automation and value-added production.
- the tertiary sector contribution measured in constant 1991 dollars has grown from \$1.7 billion in 1984 to \$2.1 billion in 1991, representing real growth exceeding 23%.
- the total contribution to provincial GDP from the forest industry has grown from \$6.9 billion to \$8.3 billion representing real growth exceeding 20% in eight years.

## *Payments to Government*

It is difficult to isolate the tertiary sector of the forest industry from the rest of the economy in terms of payments to governments. Nevertheless, the economic significance of the industry to British Columbia and Canada can be shown by taxes and other payments to governments. For example, the overall forest industry, including the tertiary sector, paid in excess of one billion dollars in taxes to all levels of government in 1991; in essence, an amount similar to the operational losses of almost one billion dollars that the industry recorded in the year. Approximately 60% of these payments were in the form of stumpage fees.

Additionally, employee income tax and other payroll deductions in all three sectors of the forest industry totalled approximately \$1.8 billion dollars in 1991.

## *Induced Employment*

Forest sector expenditures and the spending of employee wages create a demand for additional goods and services in the marketplace. This incremental economic activity or multiplier effect generates indirect and induced employment. It represents a stimulus to the economy which is a direct result of the primary and secondary activities of the forest industry.

Part of this stimulus is represented by the tertiary forest industry—the indirect employment in the forest sector. The remaining part of this stimulus is the induced employment generated in the rest of the economy.

There is wide discrepancy in the literature about how significant this multiplier effect could be, particularly in relation to induced employment beyond the tertiary forest sector. This study has identified 45,000 jobs associated with the tertiary forest sector; hence, the disagreement relates to the induced employment in the rest of the economy. Table 4 provides three different estimates of this indirect and induced employment.

**Table 4**  
**Indirect and Induced Employment in the Forest Industry in**  
**British Columbia (000 jobs)**

	BCIOM Multiplier	"Two" Multiplier	"3.293" Multiplier
Primary & Secondary Sectors	84	84	84
Indirect and Induced Jobs	116	168	277
Less: Tertiary Sector (Indirect Jobs)	45	45	45
<b>Net Induced Jobs</b>	<b>71</b>	<b>123</b>	<b>232</b>
<b>Total Forest Industry Jobs</b>	<b>200</b>	<b>252</b>	<b>361</b>
<b>Ratio Forest:Province Jobs</b>	<b>1:7</b>	<b>1:6</b>	<b>1:4</b>

Source: Ernst & Young

The BCIOM, working with 1984 input/output economic relationships adjusted to 1991 GDP and employment statistics, provides very conservative estimates of 71,000 additional jobs attributed to the induced multiplier effect. These 71,000 jobs, together with the 45,000 jobs in the tertiary sector (the indirect employment) produces a multiplier of approximately 1.4 for every base forest industry job. With 84,000 base jobs, the provincial model identifies direct, indirect and induced employment of approximately 200,000 jobs in 1991. This is believed to be extremely conservative. It identifies approximately one in every seven jobs in British Columbia related to the forest industry.

Other studies on this subject have proposed multipliers of two, three and over three times indirect and induced employment for every base job. For example, an article "The Forestry Chronicle", August 1988, developed by Jock Dobie, RPF, Ph.D, Forest Economist, Statistics Canada, estimated the indirect and induced multiplier for the forest industry in Canada to be 3.293 for every person employed in the forest-based industry.

A multiplier of 3.293 would generate approximately 232,000 additional induced jobs in the province as a result of the presence of the forest industry. These jobs, together with the 129,000 jobs in the primary, secondary and tertiary sectors would generate direct, indirect and induced employment of close to 361,000 in British Columbia—approximately one in every four jobs in the province.

Without significant research, it is difficult to determine the true multiplier for the forest industry in British Columbia. Preliminary analysis of the impact of the forest industry in other industries, like travel and hospitality, adds support to a higher multiplier. Some estimates propose that up to 20% of the business in the travel and hospitality industry in British Columbia is related to the forest industry.

Independent of which estimate you accept, the fact remains that the forest industry is a major contributor to the provincial economy and employment. The long term future prosperity of the province is, to a significant extent, directly linked to the future of the forest industry.

## **The Concept of a "World Class Competitive Cluster"**

### **Description**

Harvard University professor, Michael Porter, conducted a study of ten nations, published as "The Competitive Advantage of Nations" and a study of Canadian international competitiveness, published as "Canada at the Crossroads—The Reality of a New Competitive Environment". These studies found that internationally competitive industries tend to be linked together into clusters of related organizations that are mutually reinforcing, where one competitive segment of the industry helps create another.

These clusters are groups of industries connected by buyer-seller relationships involving primary and finished goods, specialized inputs and machinery used to make these goods, and associated services required by the industry. Some examples of these internationally competitive industry

clusters include:

- German Printing Press Industry
- Italian Footwear Industry
- American Entertainment Industry
- Japanese Robotics Industry
- Swiss Pharmaceutical Industry
- Swedish Forest Industry

An important conclusion from Porter's research was that the existence of local, home-based suppliers and related industries are a key determinant of national competitive advantage. He found their proximity creates the synergy that facilitates the process of innovation which is critical to sustained international success. Innovative technology, advanced machinery and systems, consulting services, and training and education are needed to constantly refine and create competitively priced products and develop new value-added products.

Compared to the Swedish forest industry cluster, the current Canadian forest industry cluster is relatively narrow and shallow. Table 5 shows the major components providing international competitiveness to the Canadian and the Swedish industry cluster, based on Porter's study.

**Table 5**  
**Forest Industry Cluster**  
**Internationally Competitive Components (1)**

Sweden	Canada
Logging	Logging
Pulp	Pulp
Paper	Paper
Paperboard/Paper Packaging	Sawmills
Sawmills	Wood Chips
Wood Chips	Building Materials
Building Materials	Consulting Engineering
Pre Fabricated Housing	Forest Fire Prevention
Other Wood Products	
Wood Furniture	
Chemicals	
Consulting Engineering	
Pulp & Paper Machinery and Equipment	
Harvesting Machinery	
Chainsaw Blades	
Sawmill Machinery	
Silviculture	

(1) Industries in Canada were considered "internationally competitive" when Canada's share of world market economy exports in the industry equaled or exceeded its overall average export share of 5.1 percent in 1989.

Source: Michael Porter, "Canada at the Crossroads", 1991



## Implications for British Columbia

Our analysis on this subject indicates that for British Columbia's forest industry to excel in global competitiveness, it must strengthen its "world-class forest industry cluster". This cluster would have four major **home-based** "world-class" components:

### *1. The Natural Resource: An internationally competitive source of quality fibre*

British Columbia has the high quality fibre—its quality and quantity are difficult to match by other competing regions of the world. However, as identified in the study on fibre supply and demand prepared by H.A. Simons Ltd. for the Forest Summit Conference, the present productivity of British Columbia's forest is among the lowest in the world. To compete effectively, the industry will have to rely on the extensive size of the forest land base. Silviculture and other forest management practices will also have to be improved.

In addition, the cost of the fibre is a significant concern. H.A. Simons study shows that fibre costs have increased significantly over the last few years, primarily because of stumpage increases. Today's cost structure is only marginally competitive compared to the southern U.S. industry, one of our main competitors.

### *2. The Manufacturing Capability: The manufacturing know-how and plant and equipment to produce competitive commodity products, and also, high quality value-added products*

British Columbia has state-of-the-art manufacturing capabilities in only some wood industries. There is potential to build on these current strengths to produce competitively priced commodity products and more value-added products.

However, in relation to pulp and paper and secondary wood products manufacturing, the general perception of industry stakeholders is that the province has a significant challenge to improve its competitiveness.

### *3. The Suppliers and Support Infrastructure: The tertiary sector*

A competitive source of home-based:

- proprietary high technology machinery, process control and other equipment appropriate to exploiting the strengths and specialty niches best suited to British Columbia's forest resources,
- manufacturing supplies and technology (e.g. bonding products and technology) providing a source of new product differentiation,
- large and experienced consulting and engineering organizations and a supporting network of forest industry professionals with the know-how to serve local and new emerging foreign markets,
- organizations dedicated to technology advancement,
- the training, academic and research personnel and facilities working cooperatively with industry and government, to improve the capabilities of management and workers,
- the transportation and distribution systems and packaging technology to get the products to world markets in the most cost effective and efficient manner,

- government organizations acting in partnership with the industry to promote international competitiveness, and
- a variety of special and unique organizations to strengthen the industry, like the organizations providing GIS technology and fire fighting knowledge and equipment.

#### ***4. The Competitive Environment: Conditions that make it all possible***

Included are the underlying characteristics of the place that attracts the resources required to strengthen international competitiveness. British Columbia is one of the most desired locations to live in the world. Governments, at all levels, need to provide a political and economic environment conducive to world-class competitiveness to make it attractive to operate in the province.

## **A Vision of a "World Class Competitive Cluster" in British Columbia by the Year 2010 and Beyond**

The future of the tertiary forest industry will contribute to and benefit from the creation of a world-class forest industry cluster in British Columbia. An objective of this study is to stimulate debate on how to build this world-class competitive cluster. Pursuit of this objective requires agreement on what the fundamental characteristics of the needed cluster are. In other words, without an agreed vision of the cluster, we cannot agree on how to build it. This vision is also needed to identify the opportunities for growth in the tertiary forest sector.

For these reasons, this paper examines what this vision should be, as opposed to, how to get there. With this input, the Conference debate has a realistic chance of agreeing on a vision for growth and identifying the appropriate strategies to reach the vision.

With the help of industry stakeholders, the study team created a vision of what a successful, vibrant, thriving forest industry sector might look like in 20 years. The vision of the the forest industry in the year 2010 and beyond and its implications on the tertiary forest sector can be summarized as follows:

- There will be a successful, vibrant and thriving forest industry sector in British Columbia making a major contribution to the on-going prosperity and standard of living of British Columbians and Canadians. The tertiary forest sector will be a major component of the industry.
- The general public, governments, natives, the forest industry and other similar stakeholders will have reached consensus and agreement on an acceptable land use and tenure strategy. The strategy will ensure the most effective and efficient multiple use of the forest, in an ecologically sensitive, responsible and sustainable manner. Forest management, logging, silviculture and manufacturing technology will have satisfied most of the environmental concerns that currently burden the working forest.
- A spirit of partnerships between labour, management and governments will prevail. Strategies will ensure win-win results, based on mutual understanding, respect and cooperation.

- Home-grown research and development of new advanced technologies will differentiate Canadian industry. British Columbia's forest industry will provide world leadership in the technological advancements of the industry.
- The level of education and technical competence of the workforce will further differentiate our ability to produce technologically advanced specialty products.
- The overall context in which the industry will operate will have fostered the establishment of a world-class competitive cluster of mutually re-enforcing industries in the province. This cluster will include many organizations exporting large quantities of technologically advanced equipment, supplies and services. These exports will complement the fibre based value-added products exported by the rest of the forest industry.

The vision is built around assumptions about the underlying environment in year 2010 and beyond, most of which will influence the role, size and significance of the tertiary forest sector over this period. These assumptions were tested through several "sanity checks" with industry stakeholders and are summarized in Figure 2.

Some key conditions to reach a world-class forest industry cluster include:

- A new entrepreneurial mind-set with the energy and vision to lead this industry through the inevitable restructuring and into the new century.
- Public policy stability and competitive taxation to foster international competitiveness.
- Public support and trust in the forest industry.
- Labor, management and government acting in partnership to develop an internationally competitive industry.
- Education and training as main priorities for industry and government.

The environment generated by the above conditions will attract the necessary risk capital to finance the transition to our vision for the forest industry in 2010 and beyond. In a global economy, risk capital will only be attracted by an environment conducive to economic prosperity and the generation of wealth.

It is recognized that the transition to this new vision will be painful. The cost of retraining, education, research and development of new technology, modernizing manufacturing facilities and financing an expanded level of entrepreneurial activities will be very high.

The challenge is intimidating. However, if British Columbians rise to the challenge, the pay-back will be immense and will benefit many future generations. If this vision and conditions can be forged into objectives for all stakeholders involved, the future prosperity of the forest industry and British Columbia will be guaranteed.

## **The Potential Size and Significance of the Tertiary Forest Sector**

The vision points to significant growth and development in the suppliers and providers of services sector of the forest industry. Many new jobs will be created to replace and significantly expand the current base.

## Figure 2

### Assumptions Underlying the Vision of a World-Class Tertiary Forest Sector in British Columbia

#### General Assumptions

- Canada will be part of a continental free-trade zone.
- High-technology will differentiate Canada.
- Low-tech manufacturing will not be done in Canada.
- Economic globalization will reduce protectionism.
- Industry clusters will dominate the world economy.
- Environmental concerns will influence all actions.
- Labour, government & management working in partnership.

#### Wood Supply Assumptions

- Certain products will have a significant recycled content.
- Intensive forest management will be practiced.
- Bio-diversity and sustainability will be ensured.
- Harvesting will be highly automated.
- Tree scanning and log sorting will ensure best use and maximum yield.
- Fiber recovery will be significantly enhanced.

#### Market Assumptions

- Europe will be substantially self-sufficient.
- There will be a tendency for more commodity products to be produced from plantation wood.
- Wood based construction products will be environmentally the best alternative.
- Wood will be used extensively in industrial/commercial construction.
- Canada will specialize in specialty proprietary products.

#### Manufacturing Assumptions

- Manufacturing facilities will be smaller and automated.
- Non-integrated, niche oriented producers of wood products will prevail.
- Highly trained professionals will be required in most jobs.
- Canada's pulp and paper will exploit the fiber strengths.
- Entrepreneurs will want to have a technological advantage.
- Process control will be driven by technology.
- Bonding technology will produce new composite products.

#### Suppliers and Support Services Assumptions

- Technology innovation will take place locally.
- Home-grown R&D facilities will emerge.
- Selected high tech equipment will gain world acceptance.
- Commercialization of technology will be accelerated.
- Many education and training institutions will emerge.
- In-house training programs will be significantly expanded.
- Packaging and transportation will have major innovations.
- Major networks of professional advisors will emerge.

#### Government Assumptions

- A technology strategy will be in place.
- Policies will foster international competitiveness.
- Reducing the public debt will be a major objective.
- Government will provide leadership in land-use strategy.
- Government capabilities will be marketed jointly with industry.

H.A. Simons and NLK Consultants Inc., in their study of fibre supply and demand trends to the year 2010, have estimated that employment in the primary and secondary sectors could increase to in excess of 100,000 jobs.

Within this growth scenario and, given our vision of the industry, our analysis estimates that employment in the tertiary sector could increase to 100,000 jobs from the current 45,000 jobs. We have based this estimate on quantitative analysis of growth projections, but more importantly, on qualitative analysis of a number of areas where the tertiary sector in British Columbia is expected to develop increased competitive capabilities, as follows:

- High technology automation and process control equipment
- Specialization equipment
- Automated material handling process and equipment
- Pollution control, monitoring and related instrumentation
- Consultants, advisors and facilitators in many different areas
- Training professionals and organizations
- Technical based training
- Forest protection technology
- GIS and satellite technology for mapping and forest inventory management
- Silviculture technology
- Commercialization of related government expertise.

**Table 6**  
**Estimates of Indirect and Induced Employment in the Forest Industry in British Columbia in the Year 2010**  
**(000 jobs)**

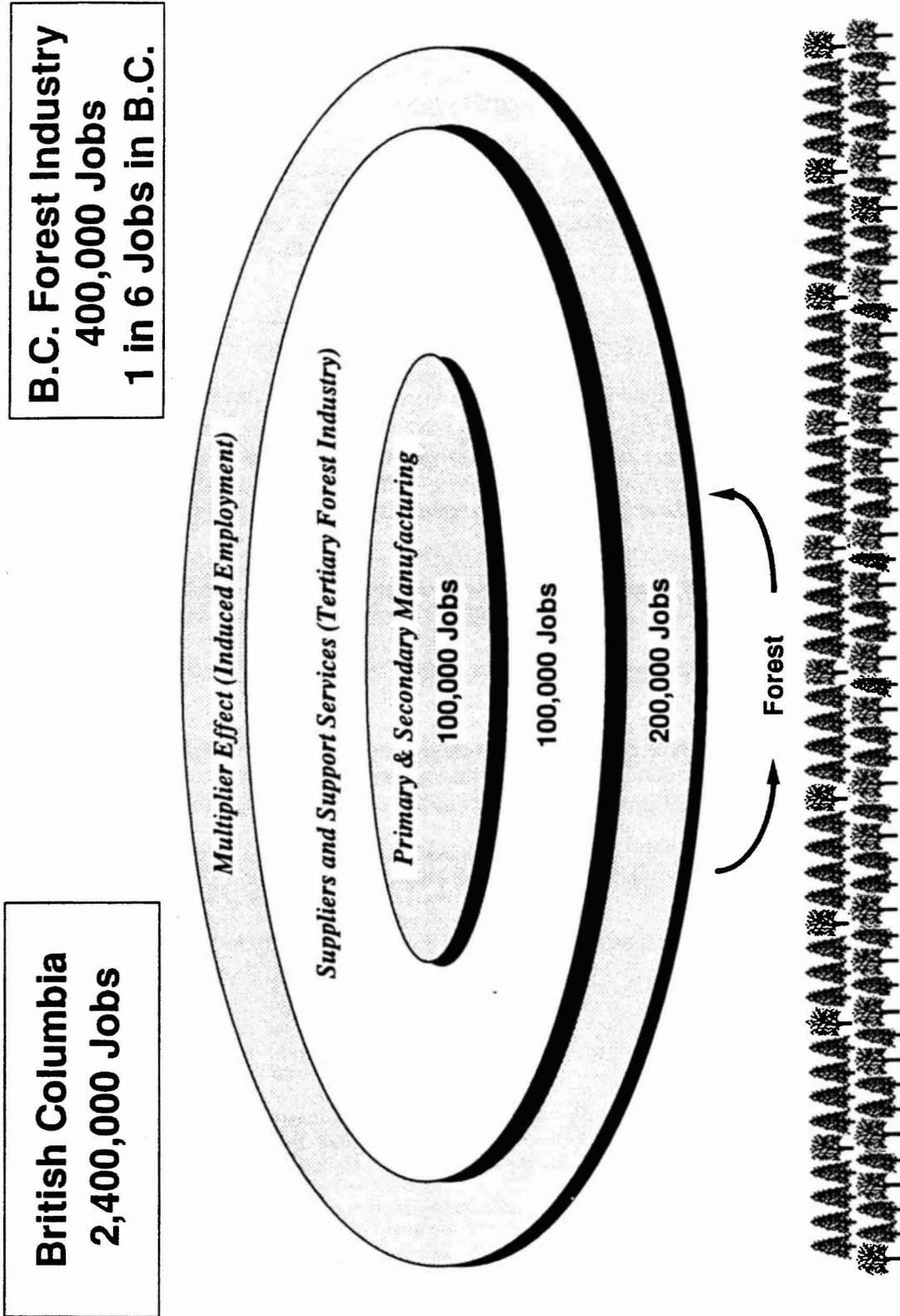
	3.293" Multiplier
Primary & Secondary Sectors	103
Indirect and Induced Jobs	339
Less: Tertiary Sector (Indirect Jobs)	100
<b>Net Induced Jobs</b>	<b>239</b>
<b>Total Forest Industry Jobs</b>	<b>442</b>
<b>Ratio Forest:Province Jobs</b>	<b>1 : 5.4</b>

Source: Ernst & Young

Table 6 shows the total forest industry employment, including induced employment, using a multiplier of 3.293 jobs for every base industry job.

Figure 3 shows a vision for 2010 - a forest industry generating approximately 440,000 jobs in this province, or more than one in six jobs.

**Figure 3**  
**Direct, Indirect & Induced Jobs - Vision 2010**



## Our Commitment to Conference Participants

Ernst & Young commits to record the key points from the discussion of this paper at the Forest Summit Conference and send copies to all contributors, major industry stakeholders and registered participants that request a copy. We believe that this contribution is essential to ensure that the discussion leads to tangible results.

## Acknowledgements

This report was prepared at the direction of the Working Group to the Opportunity Identification Program of Forest Resources Development Agreement. This report and the Forest Summit Conference are part of an initiative supporting the development of a forest sector in British Columbia.

Funding for the project was provided in part by the Canada - British Columbia Partnership Agreement in Forest Resource Development: FRDA II.

Ernst & Young contributed the remainder of the project costs in support of the Forest Summit Conference.

A large number of senior industry stakeholders contributed to this study during interview and workshop sessions. We want to particularly thank the significant contribution made by the following individuals who provided input and gave us the benefit of their experience:

Astor, John	B.C. Trade Development Corporation
Binkley, Clark	University of British Columbia
Brinkman, Dirk	Brinkman Consultants
Bryan, Dick	Council of Forest Industries of B.C.
Calderbank, Karen	Statistics Branch, B.C. Trade Development Corporation
Cameron, Gordon	Western Wood Products Forum
Carter, Paul	Durande-Raute Industries
de la Roche, Ian	Forintek
Desaulniers, Neil	NLK Consultants
Dobson, Philip	MacMillan Bloedel
Ennis, Roger	B.C. Trade Development Corp.
Fisher, Peter	Ministry of Forests
Garner, Andrew	Paprican
Gellner, Brett	H.A. Simons
Gilbert, Phil	Council of Forest Industries of B.C.
Gisborne, Bert	The Gisborne Group
Higgins, Richard	B.C. Trade Development Corporation
Holm, Bob	B.C. Wood Specialties Group
Horne, Gary	Planning & Statistics, Ministry of Finance and Corporate Relations
Howard, Terry	B.C. Research
Hunter, Carl	Dalcor Consultants
Lea, Graham	B.C. Truck Loggers Association
Legg, Philip	IWA-Canada
MacKenzie, Neil	N. S. MacKenzie & Co.

Mayer, David	Mayer & Associates
McBride, Gail	B.C. Trade Development Corporation
McInnes, Dave	Weyerhaeuser
Mostardi, Stephen	B.C. Trade Development Corporation
Munro, Jack	B.C. Forest Alliance
Nielson, Tom	B.C. Institute of Technology
Oakley, Barry	Industry, Science and Technology Canada
Parks, Mike	Kockums Cancar
Reid, Patrick	Vancouver Port Corporation
Riley, Dave	Planning & Statistics, Ministry of Finance and Corporate Relations
Scaramella, Gianni	H.A. Simons
Shaw, Dave	Ministry of Economic Development, Small Business and Trade
Stevens, Geoff	Open Learning Agency
Tomlinson, Warren	Softac
Veuger, Fred	CAE Machinery
Widman, Charles	Sandwell
Wilson, Bill	Forestry Canada
Woodbridge, Peter	Peter Woodbridge & Associates