GROWING THE BC INTERIOR VALUE ADDED WOOD SECTOR

BACKGROUND REPORT

Prepared for:

The Southern Interior Beetle Action Coalition

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1 INTRODUCTION – THE VALUE ADDED IMPERATIVE

British Columbia has a long, storied tradition of generating wealth and other benefits for our citizens. But now we stand at a precipice, caught in the eye of the perfect storm of a changing climate, increasingly fickle markets, and an unrelenting wave of globalization. The future of our forest-dependent communities – which remain a critically important part of the economic backbone of this province – depends on our choice of collective vision and ability to create increasing benefits from our forest resource through a vibrant, resilient, and economically healthy forest sector with the capacity to create those benefits.

Historically, our forest strategy has revolved almost singularly around producing high volumes of commodity goods at the lower end of the wood products value spectrum for export – dimension lumber, pulp and paper, and increasingly raw logs. This strategy served us well until the 1990's. But the world is changing, and so too are our fortunes. While we hope it will always be a large part of our forest product mix, the commodity game is fleeting, and we now find ourselves out of step in our ability to compete with low-cost producers from further and further afield – even if we open up new markets. Concurrently, our system of stewardship on our publicly-held lands has meant that we continue to enjoy an abundance of arguably some of the highest quality wood fibre in the world. New opportunities for forest products and services abound.

Now is as good a time as any to revisit our forest product manufacturing strategy, and perhaps a good place to start would be to pose a few simple questions related to the products that we manufacture. Will we create and market the higher value products that match the quality of our publicly owned wood fibre? Will we capitalize on the growing markets for high-end appearance wood products, like doors and windows, mouldings and millwork, cabinetry, furniture, flooring, prefabricated housing, and the like? Will we continually renew our wood product mix in response to markets? In other words, will we decide to develop the full potential of the wood value chain, thereby enabling the creation of a viable and economically significant industry?

The actions needed to fully develop our wood value chain are numerous and nuanced. The important point is that BC's value added industry is incredibly well poised to compete in global markets and to do so sustainably. We have highly sought after wood species. We have a comparatively strong environmental track record of responsible forest stewardship. We have numerous competitive advantages in the forms of geographic proximity to robust markets, strong supply chain infrastructures, ample business support services, thoughtful market intelligence, state-of-art technologies, a strong design tradition, a skilled workforce, and most importantly, a yearning on the part of forest-dependent communities to remain vital. In other words, we have all the ingredients to make this work.

Any thoughtful person turning their mind to the issue quickly sees that, for decades, forest stakeholders and policy makers have talked about 'value added' wood products as a panacea to cure the woes of a cyclically ailing forest sector and to fulfill the needs of our forest-dependent communities. As summarized later, we continue to search for success, making it all too easy to dismiss another strategy as rhetoric; a mere flight of fancy. However, that same thoughtful person will also be struck by the realization that, while we have spoken much about how to extract more value from our forest resource, we generally have not acted on our own advice.

There is a pressing need right now for us all – community members, Aboriginal peoples, industry, government, unions, NGOs, academics, and any other interested parties – to assemble our collective will to move the value added agenda forward in a meaningful way. There are a number of schools of thought as to how such movement should be achieved, ranging on a continuum from minor tinkering to fundamental reforms of forest resource control, with corresponding degrees of practicality associated with each. Considered as a whole, the actions and strategies outlined in this report are at neither end of that continuum. They are intended to be impactful, practical, affordable, and subject to evolution in the future as conditions change. We believe that they represent a good road map for action on the value added imperative so important to so many British Columbians.

The nature of this report is shaped in part by the results of outreach conducted by the authors to a number of value added wood sector entrepreneurs, government officials, associations representing segments of the wood products industry, academia and the forest lending industry. In addition, First Nations now hold a large position in the forest sector, and the challenges they face in many ways are a microcosm of the larger value added wood sector. Therefore, this project also reached out to the First Nations Forestry Council and a number of First Nations business entities. It is important to be clear about the scope of First Nations-related content in this report:

a. The scope is confined to structural business elements for First Nations to successfully integrate and contribute to the larger strategy. It has a business focus and does not extend to other important but more politically related components such as consultation and accommodation of aboriginal rights, increased First Nations access to tenures and other First Nations' specific socio-economic factors.
b. The views are derived from those First Nations entities that currently or historically have direct experience in the sector.

2 VALUE CHAIN ANALYSIS

At the foundation of this report are two major themes. First, the forest sector in British Columbia is overly reliant on the production of commodity goods, like dimension lumber and pulp and paper. While this strategy has served us well for more than a century now, global forces of shifting economies and increasingly fierce competition mean that we must refocus our forest strategy, the products we make, and the markets we serve. This leads to the notion of value added wood products as a potential panacea and the second major theme of this report; that a viable path forward for fostering sustainable growth in the BC's value added wood products sector is to take a 'value chain' approach. Each of these themes underpins the logic of this report and is discussed in turn.

In 2000, the noted economists, Roger Martin and Michael Porter characterized Canada as standing at a crossroads, "facing a choice of whether to tackle serious weaknesses in its microeconomic fundamentals of competitiveness or accepting a lower standard of living. […] Canada has pursued the latter road" (Martin and Porter, 2000). At the root of Canada's problem of 'weaknesses in its microeconomic fundamentals' is the fact we have, for years, fostered and promoted a business culture of 'replication' by producing high volumes of interchangeable commodity products destined for cyclical export markets. In the fleeting commodity game, competitive advantage is gained through efficiencies; by producing higher and higher volumes and lower and lower costs in order to achieve economies of scale. Unfortunately, it is becoming increasingly difficult to compete with nations – particularly in the Southern Hemisphere – producing virtually identical products using lower cost raw materials and lower labour cost inputs. Over time, this need to compete on costs leads to a

downward pressure on commodity prices. This, coupled with a reliance on volatile export markets, is most definitively not a recipe for success.

Instead, Canada should be striving for a culture of 'innovation', and one means of doing so is by producing value added wood products. Value added wood products refer to the basket of forest-derived products – millwork, doors, windows, cabinetry, furniture, fencing, decking, structural systems, manufactured homes, and so on – that require processing steps in addition to the primary breakdown of logs. While a simplified argument, the reality is that value added wood processing leads to the creation of more wealth and jobs per tree cut, meaning that it is more conducive to our broader societal goal of sustaining our BC's forests for future generations. As such, most stakeholders – First Nations, companies, governments, environmental groups, communities, and labour organizations – generally agree that value added approaches represent a viable, realistic, and prudent strategy for maintaining the economic health of our province and the social fabric of our rural communities. That said, the value added wood products sector has yet to gain significant traction. This report seeks to understand the reasons for this lack of uptake, and puts forth recommendations for changing this course.

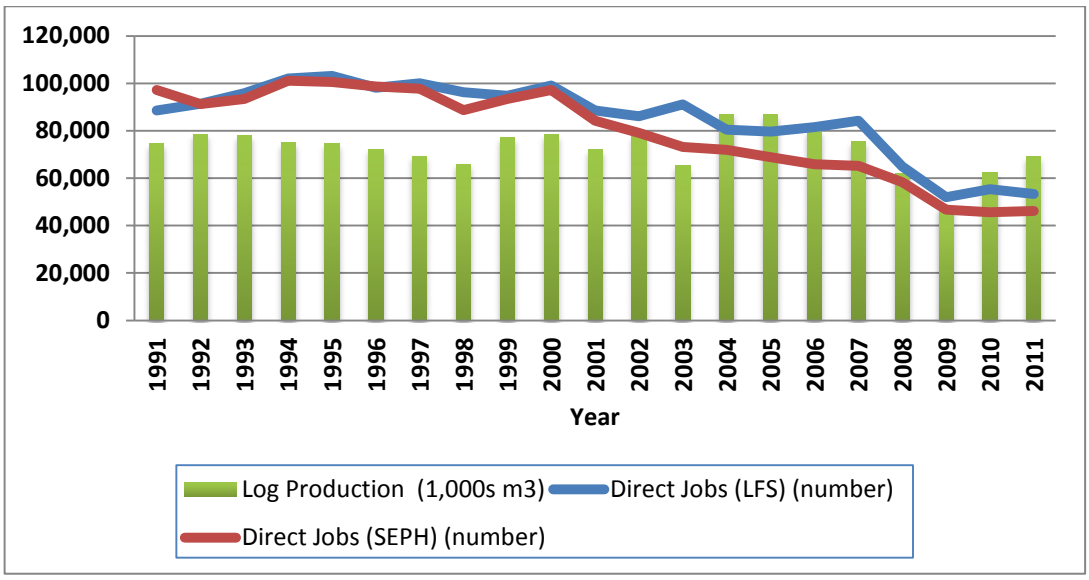
As a starting point, this report adopts a 'value chain' approach in describing the hurdles faced by value added producers, and proffering potential solutions for overcoming them. Kozak and Maness (2005) define a value chain as a "strategic collaboration of organizations for the purpose of meeting market objectives over the long term and for the mutual benefit of all 'links' of the chain. Developing a value chain approach therefore requires a collaborative rather than a competitive approach in our forest sector and should be approached strategically and at a high level of influence." In every section of this report, collaborative approaches and recommendations at the highest levels are stressed as a means of moving the concept of value added wood products from rhetoric to reality. Interestingly, the value chain concept also aligns well with Martin and Porter's (2000) notion of collaborative business clusters as a path forward for fostering a culture of innovation in business communities. Innovation, they claim, "tends to be facilitated by the presence of a cluster, particularly where the cluster is concentrated geographically." That given, a clustering approach to fostering growth and success in BC's value added wood products sector is also a recurring recommendation in this report.

3 FOREST SECTOR ECONOMIC BENEFIT TRENDS

3.1 British Columbia Employment

Employment in BC's forest sector peaked with a labour force above 100,000 in 1995; however, since this period, employment has been trending downward. At the same time, the timber harvested continued rising until 2005 before beginning to fall in the period around the recession of 2008 and 2009, but has since started to recover. Overall, while the timber harvest has fluctuated over the 1995 to 2011 period, the average has been 71.9 million cubic metres annually. In 1995, a total of 75.4 million cubic metres was harvested, while the harvest in 2011 was 72.6 million cubic metres, representing a decline of 3.7% between these two periods. Conversely, the labour force in the forest sector has dropped considerably, declining from approximately 102,000 in 1995 to approximately 50,000 in 2011, a decline of 51%.

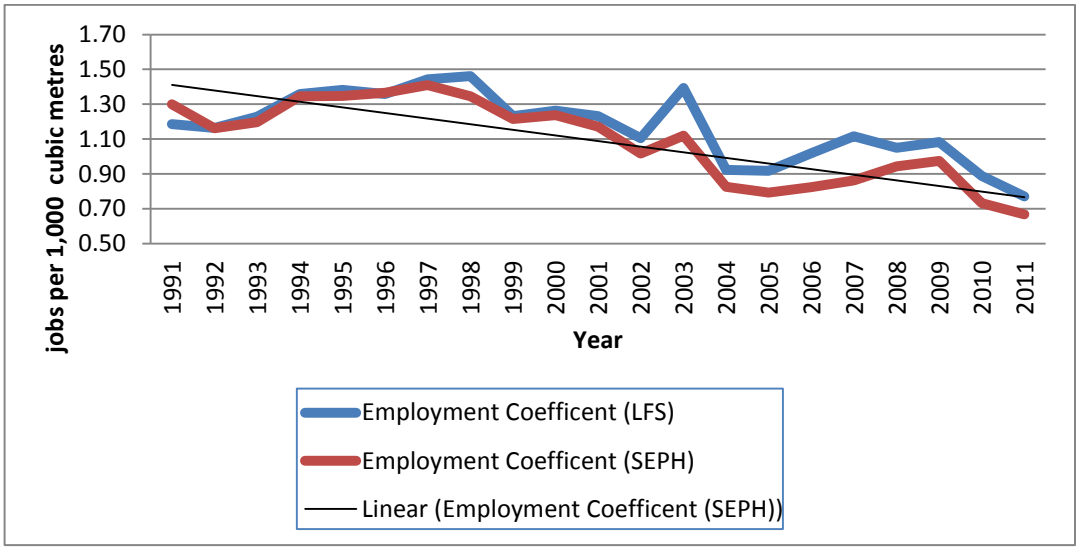
Figure 1: BC's Forest Sector Labour Force And Total Provincial Harvest, 1991 to 2011



Source: Canadian Forest Service (2013).
Note: Forest Sector labour force is presented using both the Labour Force Survey (LFS) data and Survey of Employment, Payroll and Hours (SEPH)

The figure below outlines the employment coefficient (jobs per 1,000 cubic metres of timber harvested) from 1991 to 2011. Over this period, the employment coefficient has generally trended downward in British Columbia, with jobs per 1,000 cubic metres dropping from around 1.30 in 1991 to less than 0.8 jobs per 1,000 cubic metres in 2011.

Figure 2: BC's Forest Sector Employment Coefficients, 1991 to 2011



Source: Canadian Forest Service (2013).

3.2 BC Comparison to Other Provinces

3.2.1 Employment Coefficient Comparison

When compared to other provinces that have established value added wood sectors and active value added wood strategies, British Columbia's employment coefficients are noticeably lower. In addition, while British Columbia's employment coefficient has been steadily declining since 2000, the employment coefficients in Ontario and Québec have actually been trending upwards. In New Brunswick and Manitoba, the employment coefficients are significantly higher than in British Columbia. New Brunswick's employment coefficient has only started trending downwards since 2006, while Manitoba has remained relatively stable for the past 17 years before spiking up recently.

Table 1: Employment Coefficients for Selected Canadian Provinces, 1991 to 2011

	1991 to 1993	1994 to 1996	1997 to 1999	2000 to 2002	2003 to 2005	2006 to 2008	2009 to 2011
	(Jobs per 1,000 cubic metres)						
Manitoba	3.55	3.34	2.89	3.84	3.59	3.28	4.70
Ontario	2.68 - 3.01	2.52 - 3.06	2.86 - 3.13	2.86 - 3.22	2.94 - 3.65	3.78 - 4.43	3.41 - 4.79
Québec	2.68 - 2.81	2.12 - 2.48	2.05 - 2.39	2.24 - 2.70	2.26 - 2.85	2.57 - 2.93	2.82 - 3.38
New Brunswick	1.38 - 1.74	1.51 - 1.59	1.52 - 1.59	1.69 - 1.73	1.77	1.62	1.39
BC	1.19 - 1.22	1.35 - 1.37	1.32 - 1.38	1.14 - 1.20	0.91 - 1.08	0.88 - 1.06	0.79 - 0.91

Source: Canadian Forest Service (2013).
Note: Three year averages have been derived using both the Labour Force Survey (LFS) data and Survey of Employment, Payroll and Hours (SEPH)

3.2.2 Manufacturing Revenues Comparison

Another key indicator of the economic value to provincial economies is the revenue derived from forest goods manufacturing. While all other provinces harvest considerably less timber volume than in BC, they all maintain competitive revenues from forest sector goods manufacturing when compared to BC. As illustrated in the table below, Québec has achieved similar levels of revenue from manufacturing in the forest sector compared to BC, even though Québec has averaged a timber harvest of 37.8 million annually or 49% of the harvest of British Columbia over the past twenty years.

Table 2: Revenue from Forest Goods Manufactured by Province, Selected Dates 1991 to 2010

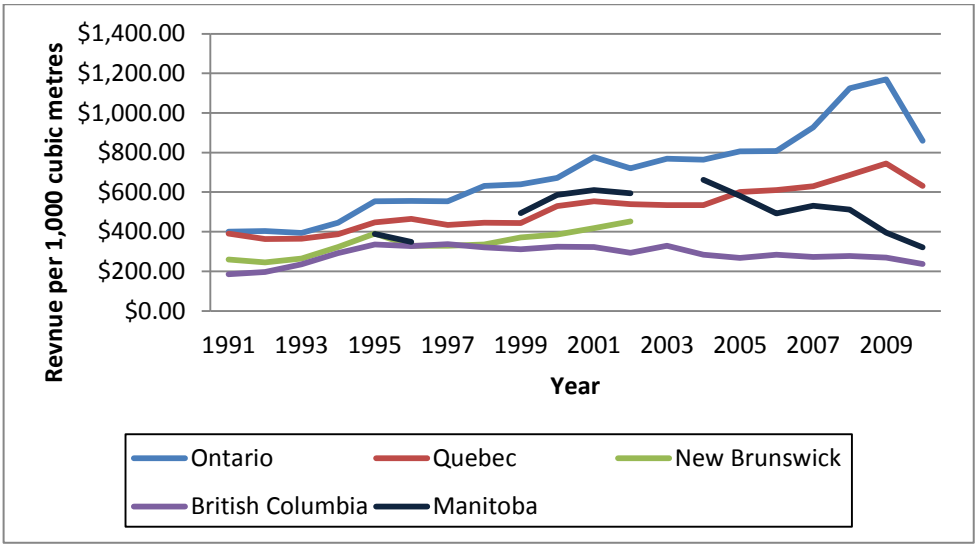
	1991	1994	1998	2002	2006	2010
	($ Millions)					
Québec	11,314	14,809	19,315	22,408	21,714	16,671
British Columbia	13,781	21,914	21,114	22,887	22,753	14,697
Ontario	9,544	11,578	15,225	18,957	16,748	11,118
New Brunswick	2,240	2,985	3, 871	4,512	n/a	n/a
Manitoba	n/a	772	1,072	1,250	1,234	410

Source: Canadian Forest Service (2013).

Ontario, with over $11 billion in revenue from goods manufacturing, has revenues only 25% less than British Columbia's in 2010; however, Ontario, with an average timber harvest of 23.2 million cubic metres over the past twenty years, has a provincial timber resource of less than one-third of that available in British Columbia. For New Brunswick, there was $4.5 billion in goods manufactured in 2002, representing 20% of the revenue value experienced in British Columbia in the same years; however, the average New Brunswick harvest of 10.4 million cubic metres is only 13% of that of British Columbia.

The figure below highlights the revenue from forest goods manufacturing per 1,000 cubic metres of timber harvested in the province. All of the provinces observed have higher per cubic metre values than in British Columbia. In 2010, both Ontario and Québec had values of over $600 per 1,000 cubic metres, while British Columbia had a revenue value of just over $200 per 1,000 cubic metres – this represents a revenue value of only one-third of that in Québec and one-quarter of that in Ontario.

Figure 3: Revenue per 1,000 Cubic Metres Harvested By Selected Province, 1991 to 2010

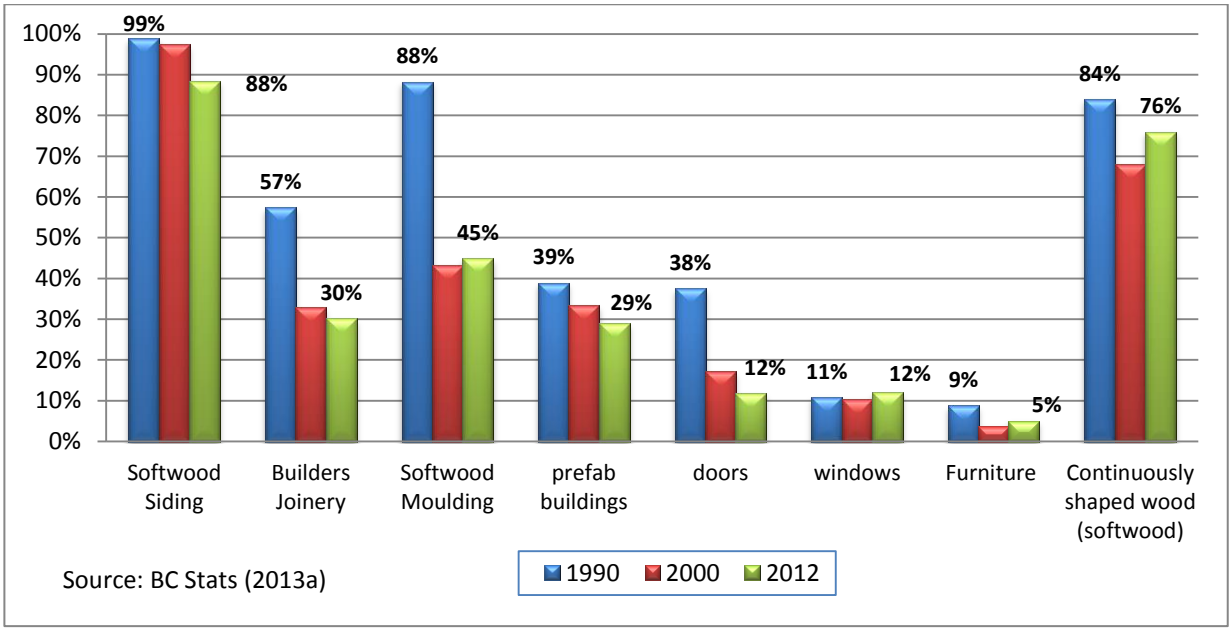


Source: Canadian Forest Service (2013).
Note: Is based on revenue for Forest Goods Manufacturing divided by 1,000 cubic metres harvested

3.2.3 BC Share of Canadian Value Added Wood

The figure below highlights British Columbia's share of the value added wood sector exports for various sub-sectors in 1990, 2000, and 2012. As illustrated, for most value added wood sub-sectors, the share has declined, with only window manufacturing gaining share over this period.

Figure 4: British Columbia's Share of Canadian Value Added Wood Exports



Among the value added sectors in British Columbia, the largest categories in 2012 by sub-sector include prefabricated buildings at $63.5 million, furniture at $58.0 million, and siding (western red cedar and softwood) at $40.3 million.

Stumpage is a component of cost for the forest sector along with logging, labour costs etc.. The capacity of industry to pay stumpage and cover other costs of production is directly influenced by the value of wood products manufactured or, more accurately, the 'margin added' in manufacturing. Due to the very nature of the commodity business, the real, inflation adjusted value of lumber and pulp has been in long decline as global competitors have pursued cost reduction-based competition strategies. This in turn has manifested in reduced stumpage revenues to the public timber owner in BC. Stumpage revenues have declined from over $1.5 billion in 1997 to a provincial government forecast of $0.580 billion in fiscal 2013/14, rising only modestly to $0.664 billion in fiscal 2015/16 (Ministry of Forests, Lands and Natural Resource Operations, 2013).

Sawmills, pulp, paper, and veneer mills comprised 52% of the municipal major industrial tax base in BC in 2010 (Davies Transportation Consulting et al, 2012). Due to the extensive number of mill closures that have occurred (in excess of 30, or 28%, since 2006, many more before then), downward negotiation of tax rates for some remaining mills, and other influences, much tax burden has shifted from major industrial taxpayers to other municipal taxpayers. In 1998, major industrial taxpayers carried 8% of the municipal revenue burden, but only 4.5% (approximately half) in 2011 (Ministry of Community, Sport and Cultural Development, 2012). The imminent impacts of the mountain pine beetle epidemic will result in the future closure of a significant number of mills in the interior, which will further burden non-major industrial municipal taxpayers. The most vulnerable communities and taxpayers are those in highly forest-dependent communities.

3.3 BC Interior Value Added Potential

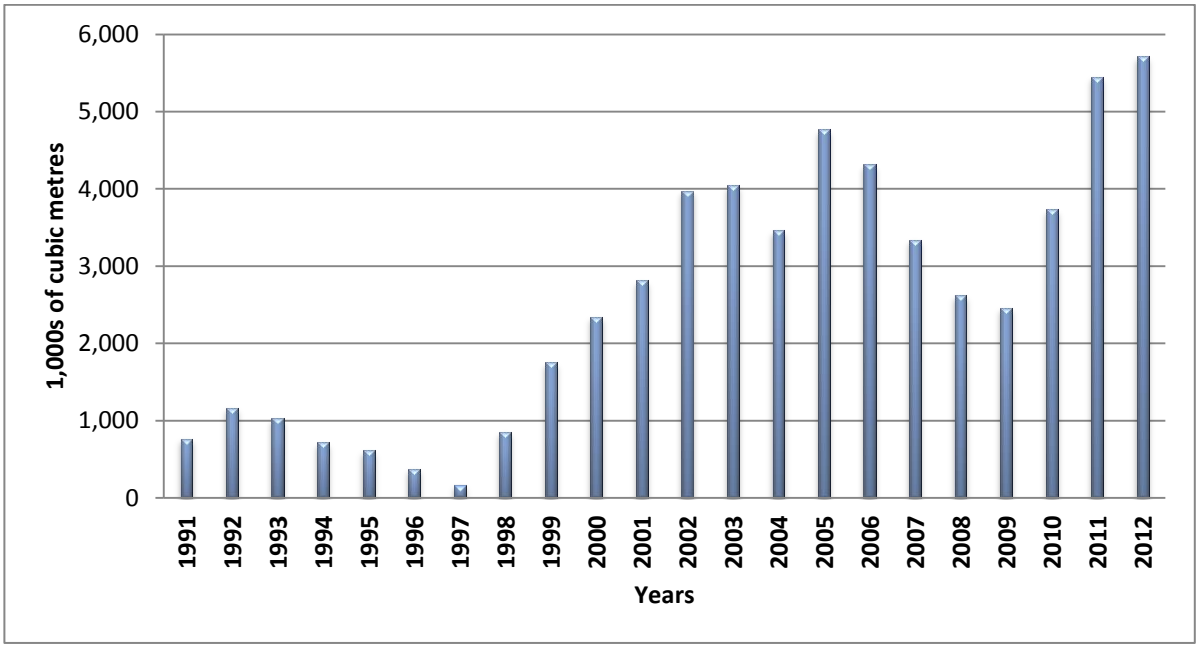
3.3.1 BC Interior Mill Consumption

The table below outlines the number of primary processing facilities by product category and the estimated volume of logs used by each between 2006 and 2009. As illustrated, the majority of the timber volume used went to lumber mills in the interior. Other product categories, which include log home building, fence post mills, utility pole mills and the shake and shingle sector, have averaged 522,500 cubic metres over the past four years or just over 1% of the total log volume utilized by mills in the interior of British Columbia.

The table below also illustrates the volume of logs exported from the British Columbia Interior region each year and over the past four years. On average, 410,000 cubic metres have left the region each year. In addition, the timber harvest has exceeded the processing volume used in three of the four years.

Additionally, as illustrated in the figure below, the volume of timber exported each year from the entire province is considerably higher, reaching 5.7 million cubic metres in 2012 alone.

Figure 5: Log Exports from British Columbia, 1989 to 2012



Source: BC Stats. 2013b.

Table 3: Estimated Interior British Columbia Primary Log Use, 2006 to 2009

	2006		2007		2008		2009	
Primary Log Use	**# of Mills**	**Est. Volume Used**	**# of Mills**	**Est. Volume Used**	**# of Mills**	**Est. Volume Used**	**# of Mills**	**Est. Volume Used**
		(000 m^3)		(000 m^3)		(000 m^3)		(000 m^3)
Lumber Mills	113	51,542	111	48,185	94	35,471	81	28,657
Veneer/OSB Mills	17	6,409	17	6,024	14	4,313	12	3,460
Pulp Mill Wood Rooms	13	789	13	924	11	872	11	895
Chip Mills	5	1,363	6	1,256	6	1,365	6	1,230
Shake and Shingle Mills	5	14	4	7	3	7	(See 'Other Mills')	
Other Mills	57	492	60	551	61	573	51	446
Log Exports		361		417		449		415
Total Primary Log Use	210	60,970	211	57,364	189	43,050	171	35,103
Harvest		61,792		53,699		45,672		37,654

Source: BC Ministry of Forests, Lands and Natural Resource Operations (2008) (2009) (2010) (2011).

3.4 Scenarios for Value added Expansion

3.4.1 Current Forecast for the Forest Sector

Employment in the BC forest sector peaked in 1995. A declining trend has continued to the present and is highlighted by the negative impact on numerous rural communities across the interior of BC as sawmilling operations close and capacity shifts to fewer large capacity sawmills utilizing far fewer workers than sawmilling traditionally had. The BC Forest Service reports that, between 2006 and 2009 alone, primary sawmill numbers declined from 113 to 81 facilities, a decline of 28% in four years.

It is forecasted that the decline in primary forest processing employment will persist and become even more exacerbated as pulp mill capacity continues to decline as well. In addition, the log harvesting sector is moving towards larger quota logging operations using more efficient equipment and moving greater distances with their logging operations, resulting in further employment declines in this sector. With the anticipated decline in available timber volumes as a result of the mountain pine beetle epidemic's impact on future timber supply in the southern interior, the future *status quo* scenario does not look positive for many forest dependent communities.

3.4.2 Alternative Scenario

An alternative scenario that would help to offset the decline in the primary forest sector would be to see more wood available to expand the value added wood products sector and target marketing to support growth in the part of the value added sector that does not use round wood as an input. Collectively, this focus would begin to recapture employment losses in the overall forest sector forward as the wood supply in the interior contracts.

The table below outlines the employment and sales coefficients for various value added wood sectors (See Canadian Forest Service Report 2008). The table outlines the four value added sub-sectors that utilize raw logs or are closely associated with round log inputs. This data is then used to build two scenarios including:

- Scenario 1 – based on capturing a new incremental volume of 400,000 cubic metres annually in the value added sector, which represents the volume exported from the interior of BC over the past four years.
- Scenario 2 – based on capturing a new incremental volume of 800,000 cubic metres annually in the value added sector, which represents the volume exported from the interior of BC over the past four years plus an additional 400,000 cubic metres or 7.5% of the volume exported from the BC coastal region in 2012.

In discussions with value added representatives, it is viewed that these volumes could be easily accommodated by growth in the various value added sub-categories. In fact, in the case of the log home and timber framing industry, markets are anticipated to expand quickly over the next two to three years as pent up demand will result in a jump in new orders (Bramseleven. 2013. pers comm.). If local producers are unable to secure fibre, it will result in an opportunity lost for the interior.

Table 4: Increased Employment and Sales for Interior Value Added Producers Associated with Increased Log Supply

	Reman	Engineered Wood	Other Wood	Log Home & Timber Framers	Total
Coefficients					
Jobs/'000s m^3	0.51	0.80	1.01	3.03	n/a
Sales/ m^3	$160	$390	$110	$470	n/a
Scenario 1 – Increase of 400,000 m^3					
Increase in logs	100,000 m^3	100,000 m^3	100,000 m^3	100,000 m^3	**400,000 m^3**
New jobs	50	80	100	305	**535**
Increased sales	$16 million	$39 million	$11 million	$47 million	**$113 million**
Scenario 2 – Increase of 800,000 m^3					
Increase in logs	200,000 m^3	200,000 m^3	200,000 m^3	200,000 m^3	**800,000 m^3**
New jobs	100	160	200	610	**1,070**
Increased sales	$32 million	$78 million	$22 million	$94 million	**$226 million**

For those components of the value added wood products sector that are not directly dependent on round wood as an input, increased sales are also anticipated as the US housing market emerges from the recession of 2008 and the construction sector begins to bounce back. In discussions with BC Wood Specialties Group, it is believed that sales can be steadily increased in these value added wood sub-categories over the next ten years. In the first five years, it is felt that the sectors can conservatively capture back 25% of sales lost since 2008 and that the following five year sales can

be grown by an additional 25%.[1] This growth is reflected in the table below and illustrates a potential increase in employment of 800 new jobs and new sales of $110 million by the end of ten years for this group of value added sub-categories. It is important to note that this employment is incremental to the forestry, logging and primary manufacturing employment created in the primary production of the sawn fibre for further value added manufacture.

Table 5: Value Added Scenario for Employment and Sales Associated with Increased Market Access

	Year 0 to 5 - 25% Increase in Sales		Year 5 to 10 - 25% Increase in Sales		End of 10 Years	
	Jobs	**Sales**	**Jobs**	**Sales**	**Jobs**	**Sales**
Cabinets	140	$17.50 million	140	$17.50 million	280	$35.00 million
Furniture	105	$11.25 million	105	$11.25 million	210	$22.50 million
Millwork	110	$15.00 million	110	$15.00 million	220	$30.00 million
Pallets, Containers, Shakes, Shingles	45	$11.25 million	45	$11.25 million	90	$22.50 million
Totals	**400**	**$55.00 million**	**400**	**$55.00 million**	**800**	**$110.00 million**

Collectively, the total value added wood sector in the interior of British Columbia could expand by 1,870 jobs and increase revenues by $326 million over the next 10 years. It is anticipated that this employment and business growth would take place across many interior communities, including numerous rural communities that have lost primary processing facilities in recent years.

4 SUCCESS FACTORS FOR VALUE ADDED STRATEGY

Before turning to what we can learn from the other jurisdiction's success, it is important to draw attention to an existing success factor pertinent to BC, the need for deep involvement of First Nations in all future development of the value added wood sector. First Nations collectively hold a very large proportion of the provincial timber resource in their control, they have aspirations to move up the value chain beyond timber harvesting, partnership opportunities with First Nations abound and the kinds of challenges faced by First Nations are a microcosm of the larger value added wood sector. Capturing these opportunities open to First Nations is a key success factor for BC's future value added wood sector.

To help to ground the recommendations in this report, we conducted four high level reviews and case studies of jurisdictions noteworthy for their success in creating higher value products:

- Finland was chosen due to the similarities that exist between the primary wood product sector in that country and BC, with large components of softwood lumber, pulp and paper, and panel products, and the predominance of coniferous timber that supplies the industry;
- Québec was chosen for comparison within a Canadian context as a jurisdiction which has a timber supply comprised mostly of softwoods, but with an important component of hardwoods,

[1] In discussions with BC Wood Specialities Group membership and members' revenues have declined between 25% and 40% since the last Canadian Forest Service value added wood survey in 2006, with most of that decline occurring after the 2008 recession.

which together feed a very vibrant value added wood products sector compared to most other Canadian provinces;

- A case study was conducted of the Bluewater Wood Alliance (BWA) of southeast Ontario, a value added wood industrial cluster based on the Austrian Clusterland model that creates leverage and synergies for its members; and
- A case study was conducted of the BC wine industry. The history of industrial development in our wine industry provides some fascinating insight into the strategies that lead to the creation of added product value in a non-wood product context, many of which are transferable to the wood product sector.

The complete reviews and case studies mentioned above are included in this report as Appendices A-C. When considered together, it is possible to synthesize a number of the factors that contributed to the success of the value added strategies pursued, summarized below.

4.1 Recognition That Government is Part of the Wood Value Chain

It is very evident that government is an essential part of the wood value chain, with the capacity to use its legislative and policy tools to add value at numerous points including raw material flows, business and investment climate, research and development, product development, education and skills training, and marketing. While this is true even in jurisdictions where most timberland ownership is in private hands, it is doubly true in BC where 94% of the timber resource is owned and administered by the Crown. Government recognition of its place in the wood value chain is critical for growth in the sector.

4.2 Government Leadership and Influence

In successful jurisdictions, government fulfils a leadership role toward the development of the wood product segment of the economy and uses its unique position of influence to advance development. The wood products industry is unlike most other parts of economies in at least two respects. Firstly, due to the extensive nature of the industry and its impacts, society has unusually strong views about the nature of, and benefits it desires from, the development of the sector. Secondly and critically important, societies look to government leadership, not private sector leadership, to define the purposes for which, and for whose benefit, we are developing the wood product industry.

To illustrate what we mean by the latter point, consider that the fundamental purpose for Finland's National Forest Program is *"To increase the welfare of Finnish citizens through the diverse use of forests in compliance with the principles of sustainable development."* This purpose underpins the national motivation for Finland's forest sector strategies.

4.3 Collaboration of Organizations toward a Single Vision:

There are obviously numerous segments of society with a stake in the wood products value chain, including private enterprises of all sizes, government, communities, First Nations, academia, and so on. Fundamental to the success of wood value chain development is strategic collaboration among these segments and organizations within society, but such collaboration requires the presence of a single, shared vision. The power of such vision is evident in the history of success in Finland, Québec, and the BC wine industry. In 2009 in BC, the Working Roundtable on Forestry made the

emphatic point that government was uniquely positioned to lead us toward such a single, shared vision for the forest sector in BC. Shared vision 'pulls' us toward a defined future that we all aspire to.

4.4 Broad-based Agreement on Strategies to Achieve the Vision

A significant contributor to the success of valued added product development over time in Finland and in the BC wine industry was a broad-based agreement upon the strategies that participants in the value chain would pursue. While shared vision pulls us toward a specific future, strategies describe 'the right things to do' to create that future. If a shared vision for the wood product industry in BC includes a vibrant value added wood sector, success depends, in part, on building a broad-based agreement among participants in the wood value chain as to what those 'right things to do' are for BC – a broadly supported strategy.

4.5 Raw Material for the Product Supply Chain

A success factor in common in the case studies we looked at was that the value added sector in question had well-functioning supplies of raw material (logs, lumber, cropland) to supply the value chain. Solutions observed include a very large and free timber/log market (Finland), a value added sector so competitive that it can import raw logs (Finland, Québec), lumber supplies through a well-functioning supply links between primary and secondary manufacturers (Québec, Finland) and financial assistance to convert low value crops to higher value crops (BC wine industry). In every case, government played a role in ensuring a functioning market or raw material supply for the value chain, using the range of tools at its disposal.

4.6 Business Collaboration between Primary and Value Added Wood Manufacturing

A well-known success factor for value added wood production is the degree of business-to-business collaboration between primary wood product manufacturers and value added wood manufacturers. The adoption of industrial clustering approaches (Finland, Bluewater Wood Alliance, and Québec to a degree) is a powerful technique to build such collaborations. The benefits of collaboration are manifested in raw material supply management, both in terms of 'getting the right log to the right mill' and in lumber supply from primary manufacturers up the value chain to value added wood product manufacturers. Numerous other benefits can be produced through these collaborations in other parts of the wood value chain including R & D, marketing, skills development and training and so on.

In some cases 'collaboration' is internalized in individual, integrated enterprises, such as in the case of Finland's Stora Enso which, from within its total solid wood production in 2013 of 6 million cubic metres, 50% will be in value added wood products as we commonly define them in BC (Stora Enso website). In other cases, such as Québec, value chain collaborations occur between huge numbers of mostly non-integrated enterprises.

4.7 Financial Incentives for Forest Industrial Development

In all of the examples we reviewed, various forms of financial incentives in the business environment played or play and important part in forest industrial development. In Finland, tax and subsidy supports for new business start-ups are provided in some regions. SME's receive some incentives in the form of loans, tax policy or subsidy for certain forestry operations, and forest enterprise is supported in regional development policy.

Through its Québec Crown Corporation, Investment Québec (IQ), the province maintains a comprehensive suite of tax credit, venture capital and loan guarantee programs that are either targeted for the secondary wood product industry or are accessible to it. IQ has a dual role to act as a financial institution as well as an economic development agency.

At a critical stage in its infancy, the BC wine industry received $1800/hectare of government assistance to replace low value vines with higher value grape producing vines. The Bluewater Wood Alliance was supported in its formation by public funding in addition to membership fees.

4.8 Value Added Wood Research, Development and Education

The capacity to innovate is a central success factor for any value added wood industry, and government plays a major role in all cases. Within its National Forestry Program, Finland has a target to invest public funding of 200 million euros per year across the entire forest sector. This is a remarkable commitment to a single industrial cluster for a country with a population only modestly larger than that in BC. Over its more than 100-year history of industrial scale value added wood manufacture, Québec has created well developed institutions for wood-related research, product development, wood design, and wood education. This infrastructure is critical to feed the wood product manufacturing supply chain with knowledge, innovation, new products, and skilled labour. Many years ago, the BC Wine Institute established the innovative 'check-off' funding system whereby grape growers contribute $10 for every ton of their grape harvest, which is then matched in-kind by Agriculture Canada, creating a pool of resources to fund ongoing research, development to improve product quality, and other efforts. The Bluewater Wood Alliance has received research funding from FPInnovations, the Wood Manufacturing Council, the Wood Promotions Program of the Ontario Ministry of Northern Development, Mines and Forestry, and the Canadian Government's Scientific Research and Experimental Development program.

4.9 Strategic Targets and Measures:

In keeping with the axiom 'what gets measured gets done', targets and outcome measures create an essential 'dashboard' to feed information back about the how effective our strategies are over time. In the case of Finland, for example, its National Forest Program measures progress in terms of targets such as:

- A target to increase the value of the forest and wood products industries in Finland by 20%;
- Forestry and product manufacturing employment targets of at least 23,000 and 50,000 people;
- Public funding for research and development in the forest sector of 200 million euros per year.

In BC, government currently uses commodity lumber sales targets to China, Japan, and elsewhere to measure marketing program effectiveness.

4.10 Proactivity, Patience, and a Long-term Focus:

A key success factor that emerges from the case studies is an understanding that industrial development in the forest sector requires patience and a long-term focus. Programs must be planned with long lifespans, must be held relatively stable over long time spans, but must be open to evolution as new things are learned. Results are better when strategies are monitored, evaluated, and revised for improvement as opposed to opting for wholesale change or abandonment.

5 STRATEGIC ISSUES

The purpose of this section of the report is to describe the issues that face BC's value added wood products sector and its possible return to growth, with a focus on the interior of the province. These issues are organized and presented using a value chain approach comprised of:

- Vision and Government's Place in the Wood Value Chain
- Business Conditions and Finance
- Raw Material Supply
- Research and Technology
- Product Development
- Education and Skills Training
- Marketing

5.1 Issues Pertaining to Vision and Government in the Wood Value Chain

a) BC's Visions for the Forest Sector:

If we think of our vision for the benefits that we expect from our wood resource as the 'destination' we choose to travel to, strategy is the road we take to that destination – the road chosen depends on the destination.

In 2003, BC implemented a new plan for BC's forest sector, the *Forestry Revitalization Plan.* In introducing the plan to BC, government stated *'Our goal is to revitalize our forest industry and make it a global leader, renowned for the excellence of its products and practices."* The primary focus of the Plan was the revitalization of the large commodity lumber and pulp industry in BC. The Plan pointed to a need for change in response to the Softwood Lumber Agreement with the United States and the low return on capital in the BC industry (less than half of the return experienced in the sector in the rest of Canada), and the need to create conditions in BC where the industry could better compete globally.

While the primary goal or vision of the Plan was revitalization of the primary forest products industry, the Plan envisioned that addressing obstacles to global competitiveness for the primary forest sector would have a number of secondary, positive impacts which, taken together with revitalization of the primary industry, describe the end-state vision expected to be realized from the Plan. These secondary impacts were envisioned to include:

1. A positive impact on the pre-existing, steeply declining trend in socio-economic benefits for BC from its forest resource in terms of employment and Crown revenues; and
2. Diversification of the wood products sector enabled by the timber/log market reforms in the Plan, created by new entrants to the sector accessing the raw materials that they need to produce the highest value wood products possible from the resource.

In 2009, the Working Roundtable on Forestry proposed a vision for the BC's forest sector that "*British Columbia has a vibrant, sustainable, globally competitive forest industry that provides enormous benefits for current and future generations and for strong communities".* The provincial government acknowledged the vision of the Working Roundtable, and proceeded to take actions believed to build on the recommendations of the Working Roundtable, but there was no suggestion that the Working Roundtable vision would replace the 2003 *Forestry Revitalization Plan* vision. The provincial government strategy to act on the recommendations of the Working Roundtable on Forestry is documented in the April 2012 "*Our Natural Advantage – Forest Sector Strategy for British Columbia."*

In 2009, in response to the recommendations of the Working Roundtable on Forestry regarding diversification of the wood industry and the development of new products from wood, the provincial government introduced a new strategy and set of actions entitled *"Generating More Value from Our Forests".* The strategy includes a vision that *"By 2020, British Columbia's environmentally sustainable forest sector generates more economic value per hectare of forest-land than any other jurisdiction on Earth. Such economic activity will be driven by a more diversified and higher value manufacturing capacity and expanded markets. This will be achieved through innovation and a broad partnership among forest stakeholders, ranging from governments to First Nations to industries and workers; from small firms to global companies; from rural communities to large urban centres."* The 2012 *"Our Natural Advantage"* strategy of the province discussed above makes no mention of the 2009 *"Generating More Value from Our Forests"* strategy.

The Council of Forest Industries (COFI) is the voice of the primary wood manufacturing sector in BC and is a key stakeholder and partner in any discussion about the future of the forest sector. The vision of COFI is *"To advance the competitiveness and sustainability of British Columbia's forest industry as the primary contributor to the economic growth and stability of the province, now and into the future."*

FPInnovations is the largest forest sector research institute in Canada, carries out programs in all provinces, and is an important contributor to the development of the wood value chain in BC. FPInnovations is guided by the Forest Products Association of Canada Vision 2020 which states *"By 2020, the Canadian forest products industry will power Canada's new economy by being green, innovative and open to the world. It is a place to grow and prosper. Our goals are:*

- Deliver a further 35% improvement in sector's environmental footprint;

- *Renew the workforce with at least 60,000 new recruits including women, Aboriginals and immigrants;*
- *Generate an additional $20 billion in economic activity from new innovations and growing markets."*

Forestry Innovation Investment corp. is an important BC Crown corporation that invests public funding in a number of programs, such as in product market development, research, and education/information. The current vision of the corporations is *"The British Columbia forest sector is innovative, diverse and prosperous, based on sustainable forest practices and a commitment to continuous product and market development."*

A number of observations can be made about the important forest sector visions enumerated above:

1. We have a number of visions in play, different interests are pursuing different visions, and they are not necessarily in harmony;
2. None of the visions could fairly be represented as a consensus vision that includes the value added wood sector, which has an important stake in the future of the sector;
3. Most of the visions presume that their pursuit would place the degree of public benefit, such as employment or revenue for public services, on an increasing, more positive trend than the trend described in section 3.2 of this report;
4. The visions are oriented such that the 'destination' or primary purpose for developing our forest resource is an industrial sector in a high state of competiveness. The benefits that flow to the public from its forest resource are seen as secondary attributes of the vision.

With regard to point 4 above, there is another, fundamentally different orientation for a vision for our forest sector that could be considered, one that envisions that the primary purpose for developing our forest resource is to create and increase benefits for citizens. Achieving such a vision is not possible without a competitive forest sector with capacity to create and increase citizen benefits. However, the role of the private sector is to generate competitive returns for companys' shareholders/owners within the investment environment it chooses, not to be concerned with creating public benefits. It falls to government to be concerned with increasing public benefits from the forest resource.

The challenge for BC is to consider a consensus vision to increase the benefits to citizens from forest resources, and to seek the policy and investment conditions that result in a forest industrial sector with capacity to increase benefits for citizens. The importance of this choice of vision, our possible 'destination', is that is has a major influence on the nature of strategies chosen, our 'road to the destination', to develop the wood value chain, and on how limited public and private resources are used.

b) Government in the Wood Value Chain:

The provincial government defines its relationship with wood products manufacturers primarily through forest tenure and the short and long-term contractual relationships between the Crown and sector participants that hold the forest tenures. From these licensor-licensee relationships grow forums for interaction, lines of communication, and relationships to pursue mutually-held interests of the parties, sometimes adapting legislation and policy to do so. Over many years, the government institution has developed a fairly comprehensive understanding of the manufacturing business, interests, and challenges of the tenure holder, which enhances the ability of the government to solve

issues in the public interest. Given the long, 140-year history of tenure policy in BC, this relationship is highly developed between government and large lumber and pulp manufacturers that hold large, replaceable forest tenures.

Holders of smaller replaceable tenures, including woodlot license, community forest agreement, and First Nations woodland license tenure holders, typically do not engage in wood product manufacture – they are market loggers. The same is true for most holders of short-term, non-replaceable BC Timber Sales licenses. Consequently, within these licensor-licensee relationships, the government maintains ongoing relationships and policy discussions with these communities of tenure holders, primarily focused on tenure rights and obligations, the impacts of legislation, and timber pricing. In a nutshell, where a forest tenure link exists between government and participants in the forest economy, government assumes an active role in the wood value chain – it sees itself as part of the wood value chain and makes significant contributions to the development of the wood value chain.

Between 1988 and 2003, the government administered a forest tenure program for value added wood manufacturers, a so-called 'bid proposal' program that directed timber to the value added manufacturing sector. While the tenure program existed, government actively maintained legislation, policies and programming specific to the value added wood manufacturing sector, and adapted its organization to include specialists in value added wood policy. Regular lines of communication developed between the tenure holders and the ministry in support of relationships and problem solving.

With the cessation of the bid proposal program in 2003, government's place in the wood value chain changed fundamentally, from being a direct supplier of raw materials for higher value added manufacturing to being a direct supplier of raw material to an enlarged timber/log market, effectively moving government to an arms-length relationship with the multi-billion dollar-per-year value added wood manufacturing sector and its interests, business needs, and challenges.

A major influence upon how government defines its place in the wood value chain is rooted in the *Ministry of Forests and Range Act,* the legislation that creates the "Ministry of Forests and Range" as it was before the Ministry of Forests, Lands and Natural Resource Operations. Importantly, the Act directs the ministry to "*encourage a vigorous, efficient and world competitive timber processing industry".* The *Forest Act* defines timber simply as trees in all raw forms, and a timber processing facility (therefore industry) as one that processes timber or wood residue or both (*i.e.* primary log breakdown mills, pulp mills, pellet mills, bioenergy plants, perhaps future bio-economy products facilities). Therefore, the long and highly developed government-client relationship with primary lumber and pulp producers is firmly rooted in, and consistent with, the government direction to the ministry expressed in the *Ministry of Forests Act.*

The purpose of the ministry described above has remained unchanged since 1979, when the first *Ministry of Forests Act* came into being. By defining the purpose of the ministry as described above, government has stopped short of including in the mandate of the ministry, for example, *"the encouragement of a vigorous, efficient and world competitive value added wood manufacturing industry".* 1979 was a long time ago, and the products, markets and values that may be derived from BC's wood resource have evolved dramatically since then. In 1979, a value added wood products sector as we currently know it did not exist for the ministry to interact with.

As a result of the fundamentally changed relationship between government and the value added wood sector since 2003, the ministry is no longer organized, staffed with expertise, or funded to take an active, assertive place in the wood value chain pertaining to the solid wood value added sector. The relationship capacity of the government to engage with the various sub-sectors of the value added wood industry in solving wood value chain development problems in R&D, technology transfer, product development, raw material supply, manufacturing and marketing is very limited.

5.2 Issues Pertaining to Business Conditions, Finance and Manufacturing

It is interesting and a concern that the value added sector in Canada occurs primarily in the eastern part of the country – Québec, Ontario, and Manitoba. This can be explained, in part, by an abundant high quality hardwood resource, which is well suited to appearance-grade wood products, but this does not tell the entire story. Manitoba, for instance, is home to one of the most successful window manufacturing firms in the world (Loewen Windows), which employs hundreds of workers and has global market reach with its high-end Douglas-fir windows. Interestingly, Douglas-fir does not occur in Manitoba, but it is indigenous to British Columbia. Perhaps even more interesting is the fact that window components are not even sourced from BC, but rather come from the Pacific Northwest of the United States (this is not unlike Denmark, which has created a world leading teak furniture industry by sourcing raw materials offshore). Clearly something is afoot in British Columbia. Put simply, we lack the enabling environment required to foster and nurture a viable, sustainable, and profitable value added wood products sector. This has much to do with the business conditions present, and various business issues that value added producers in this province must contend with.

In a sense, this lack of an enabling environment for BC's value added industry is confounding. The sector is extremely well positioned and offers numerous advantages, in spite of an increasingly fierce competitive landscape worldwide. For instance, value added producers see near them an abundant source of high quality fibre, have established and efficient supply chains, and geographic proximity to some of the most lucrative and wood-friendly markets in the world (ie, the United States, Canada, and, to a lesser degree, Japan). On this latter point, the ability to provide mass customization (eg, cabinetry), customized solutions (eg, timber building), and after-sales service (eg, engineering drawings) is far superior to competing regions across the ocean. In addition, value added producers generally have business savvy, a high degree of managerial competence, and skilled workforces in place. Last but not least, BC has a comparatively strong track record in environmental stewardship and responsibility; a differentiating attribute that cannot be ignored in an increasingly fickle and environmentally conscious customer base. In short, it is difficult to imagine, in some ways, why BC is not a world leader in the production and sales of value added wood products.

In 2007, DeLong et al. set out to address some of these problems by characterizing the business-related issues faced by the value added wood products sector, as well as the factors that limit their growth. While the report aggregates these issues for firms across Canada, most apply to the situation in BC. The key findings of the report are summarized below:

- Most value added firms can be categorized as small and medium enterprises (SMEs), with most procuring raw materials locally and selling primarily into domestic markets. The main competition for Canadian value added wood products firms comes from China and the United States.

- Most value added firms consider themselves less a part of the forest industry, and more a part of the manufacturing sector. Interestingly though, one of the key concerns for value added producers in BC relates to forest policy and the control that a few large primary forest companies exert over wood supply.
- At the time of the study (prior to the economic downturn of 2008), most firms had made substantial investments (in the previous five years), generally in the forms of upgrading equipment, machinery, and tools.
- Firms in BC are significantly less established compared to firms across Canada, especially Québec and Ontario. Most value added firms actively engage in setting up long-term supply chain partnerships, and many have long-term business strategies in place. Value added firms that were more established and members of formal industry associations were more likely to be profitable in the long-run.
- The top five factors limiting the growth of value added wood producers (in order) are: taxation policies; increased competition; access to financing; limited market and demand; and raw materials supplies.
- The factors which seem to contribute most to the profitability of value added wood enterprises include the degree to which they are engaged in new product development initiatives, the ability to provide competitive pricing and quick delivery, and the ability to attract financing.

Several recurring themes emerge from this analysis, not the least of which is that value added producers in BC must contend with increased competition (discussed above), perceptions that forest policies are not designed with them in mind and lead to diminished access to the grades and species of wood fibre that they require (discussed in another section of this report), and taxation burdens. Comparatively speaking, the corporate tax rate in BC is not out of line with other provinces in Canada and is, in fact, lower than most – 2.5% for income eligible for the federal small business deduction, and 10% for all other income. However, with federal taxes built in, corporate taxes are substantially higher than other competing countries.

One of the key findings related to factors limiting growth of value added producers is the limited access to financing that many of them seem to face. Although the default rate on debt capital is very low in the value added wood product sector, access to loan capital is a significant barrier for business entry and growth. Confidence that the supply chain for a value added wood enterprise is sound is the single greatest consideration for lenders before they will risk capital. For example, forest tenure represents to lenders security of raw material for the supply chain, and is the underlying reason that enterprises frequently press government for secure, replaceable forest tenures. Financial institutions' willingness to lend is profoundly improved if there is a guarantor for the loan.

For wood product manufacturers that lack forest tenure, lenders may be encouraged if the supply of raw material is made secure through alternatives to forest tenure, such as firm supply agreements, partnerships or similar alliances. It was mentioned earlier that the value added wood sector has great difficulty establishing supply partnerships with large lumber producers due to the rather rigid nature of the production processes of large producers. Over time, the value added wood sector has had greater success establishing supply relationships with small- and medium-sized lumber producers and with 'custom cutters'.

There is a critical point in the design, modification or construction, and associated capitalization of a mill when a decision must be made as to what customers the mill will manufacture for, what those

customers need, and therefore what products the mill will be built to be capable of producing. It can be the case that there is a specific add-to-cost to incorporate into the mill the flexibility to manufacture raw material products for a number of different value added wood manufacturers. Access to loan or venture capital can be the key ingredient to forge a lasting supply partnership or alliance between a primary lumber producer and a value added wood enterprise. This kind of integration between primary and secondary manufacturers is a key feature of jurisdictions that have been successful in growing their value added wood production.

5.3 Issues Pertaining to Raw Material Supply

Raw material supply uncertainty is now most frequently ranked as the single greatest obstacle to growth, threat to survival, or barrier to entry for a number of value added wood sub-sectors. Without sufficient access to raw material, value added wood entrepreneurs do not have a viable business. Ensuring that competitive value added wood entrepreneurs can consistently acquire raw material is of paramount importance.

This was confirmed in a study by Kozak *et al.* (2003) on supply impediments in BC's value added sector. At that time, 46% of the respondents to a survey stated that the majority of the lumber that they procured came directly from sawmills, while 43% cited lumber distributors as their main source. The remaining 11% do not use either of these suppliers, with many opting to perform the primary breakdown process themselves. In either case, the survey also found that the vast majority of value added firms in BC had problems procuring lumber that met their specifications, especially in the remanufacturing, engineered building components, millwork, and miscellaneous other products segments, each with more than 75% of the firms stating as much. The key problems seemed to revolve around receiving lumber that was misgraded, had an unacceptable appearance (with respect to grain, figure, colour, etc.), inconsistent moisture contents, and drying defects (*e.g.* checks and cracks). In the final analysis, value added producers felt that primary lumber producers are not producing products meant for them, and that it would be a tremendous benefit to develop long-term supply chain partnerships with sawmills if it meant a consistent supply of on-grade raw materials. In fact, many value added producers would be willing to pay a premium to ensure the delivery of a consistent product.

Value added wood entrepreneurs consistently affirm an ability to pay competitive prices for the right raw material, whether in log form or sawn wood form, but there are a number of challenges in the wood value chain / supply chain that may preclude an opportunity for them to offer and pay these prices. When wood fiber flows to its highest-value use, as was envisioned in the 2003 *Forestry Revitalization Plan*, the economy, entrepreneurs, and the public owners of the resource benefit. To the extent this does not occur, wealth leaks out of the wood value chain. Mending flaws in the wood value chain / supply chain is, therefore, a high priority for anyone interested in the value added wood sector.

The provincial government continues to manage timber apportionments of some 15 million cubic metres per year in BC Timber Sales (and 2 million cubic metres per year in the Forest Service Reserve and Small Scale Salvage apportionments). The government is therefore an important part of the raw material supply chain for the value added wood manufacturing sector.

BC Timber Sales was established in 2002 to enable BC to move to a market-based system for timber pricing. The agency has 3 purposes:

1. To sell 20% of the provincial AAC through competitive auctions to provide a credible market reference point for the value of timber for other timber pricing purposes;
2. To provide a reliable source of supply to the market through competitive auctions; and
3. To maximize net revenues to the province from the sale of the timber.

Purposes ii) and iii) above are subordinate to purpose i), and must be conducted in a way that does not compromise purpose i). As a consequence, to maximize the usefulness of its timber sale transactions for timber pricing purposes, BC Timber Sales mimics the way that large tenure holders, primarily lumber producers, configure their timber harvests in terms of attributes of size/timber volume, species composition, terrain conditions, harvesting systems, and so on. This feature of the BC Timber Sales timber marketing mission – the mimicry of major licensee timber harvest configurations – makes many timber sales less suitable or financially viable for value added wood customers or those that would log and perform primary milling operations for them.

This speaks to a critical supply-side issue facing value added wood producers in BC, predominantly the small and medium enterprises that characterize the sector. Many simply lack the scale to become meaningful actors within the forestry value chain, a situation which is exacerbated by policy and tenure structures that are explicitly designed with the needs of large companies and timber licensees in mind. Several solutions have been employed across business sectors to address this very common issue, many of which revolve around aggregating producers to achieve economies of scale. For example, formal group buying networks can be established to enhance bargaining power, but this requires a good deal of coordination, cooperation, and organization. Shared use / business incubation facilities have been explored, with mixed results (eg, the Wood Enterprise Centre in Quesnel), but their main focus is on providing small producers with access to capital-intensive equipment that they could otherwise not afford, as well as office space and business services. Perhaps the solution that holds the most promise is in the creation of a geographic cluster of value added wood products manufacturers that can work collectively to achieve scale. Many examples of such clusters exist (see section on the Bluewater Wood Alliance). The fundamental idea behind a business cluster is that numerous market advantages can be gained by formally grouping geographically proximate firms within the same industry in a collaborative manner. One such advantage revolves around the ability to source supplies in larger volumes to meet the needs of many member firms, therefore achieving economies of scale. While a simple concept to grasp, the reality is that clusters are difficult to establish and coordinate, requiring a good deal of background training.

Very many value added wood entrepreneurs prefer not to be in the business of forestry or logging, preferring to purchase on the market only the specific raw material they need for their particular business. Some value added wood product manufacturers require a certain species of log, quality, or size of log to derive the product demanded by their markets. Others need a certain type of sawn fibre. For example, a producer of laminated wood beams may require good grade, square-edged Douglas fir lumber, or a custom log home builder may require a 40 foot-long cedar log with a certain, large, minimum top diameter. In typical interior forests, such species or logs are mixed with other timber / logs unsuitable for the purposes of the value added wood product manufacturer. A number of difficulties may arise that inhibit the flow of ‘the right log to the right mill’ for maximum product value generation.

First Nations are increasingly becoming a significant economic player in BC's forest sector. British Columbia's Ministry of Forest Lands & Natural Resources First Nations Division web page states that, "At the end of April 2012, First Nations held 12.7 million cubic meters/year of Allowable Annual Cut (AAC) within competitive and direct award forest tenures. This represents 15.5% of the provincial AAC. Of the 12.7 million, 4.9 million (or 6.0% of the provincial AAC) is within competitively held forest tenures and 7.8 million (9.5% of the provincial AAC) is within direct award forest tenures." The web page further states that "An additional 395,000 more AAC was awarded to First Nations since the previous quarter."

Within this large wood basket, individual holdings tend to be relatively small, lacking the economy of scale needed to build integrated companies capable of forest management, logging, value added manufacturing and marketing. While First Nations are generally interested in value added manufacturing, they have limited experience in the area and many other community priorities take away leadership capacity and focus on developing opportunities

Many First Nations do not have the capital, experience or capacity (administrative, financial or professional) to manage their own forest company, therefore, many harvest their volume under some type of operating agreement with existing forest companies. While these arrangements provide stable returns and operating certainty, many First Nations have expressed interest in creating more value and employment from volume under their control. There is a dearth of information about the nature of the wood profile under First Nations control and therefore how the profile may support the value added wood sector. The number of value added wood industry partnerships with First Nations has increased in the last decade, but a general lack of understanding between the parties has slowed relationship development, which extends to potential, higher level strategic collaborations, making it more difficult to effectively address each of their concerns. Consequently, there are a limited number of long-term success stories. Those few are almost all in business partnerships where a major forest company supplies management capacity, capital, marketing and distribution systems. In potential partnerships between First Nations and value added wood enterprises, the SME's that characterize the sector face similar limiting factors as do First Nations businesses.

There has been a major movement by lumber manufacturers in the interior of BC to 'cut-to-length' logging systems that result in logs being bucked to relatively short sawlog lengths in the woods, rendering what may have been higher-value logs, for example building logs or logs needed for long timbers for the timber frame house industry, unsuitable for that end use. Value added wood entrepreneurs able to pay high prices or trade for such logs find that they exist in far smaller quantities than used to be the case due to changed logging practices for the lumber industry.

Log sort yards are a known way to extract special log types and making them available to value added manufacturers, used extensively in the form of dry-land sorts on the BC coast. However, it is very difficult to make log yards economically profitable in most parts of the interior. The cost of a log sort yard is typically $8-12 per cubic metre on each cubic meter of timber volume that enters the yard, not just those of higher value. It is far less costly, perhaps $2 per cubic metre, to sort logs at the roadside in the woods, and direct 'the right log to the right mill' straight from the woods to the place of end use. Sorting at roadside commonly includes separating logs of different species and log products such as peeler logs, large and small sawlogs, and species sorts for Douglas fir or cedar. If a viable log yard exists, the practice of sorting logs in the woods enables only those logs to which

value can be added in the log yard to arrive in the yard. Log yard viability depends on being able to add value that exceeds the $8-12 per cubic metre cost of running the log sort yard.

There are some exceptional cases where log yards may be profitable and be a source of special wood fiber to value added wood manufacturers. These opportunities are found in regions where there are timber types that have a relatively high proportion of high value logs and there are enough buyers to consistently warrant the log yard costs incurred to make that fiber available. The Revelstoke Community Forest Corporation log yard is an example of where these circumstances occur, making it profitable in most years to sort and sell products such as cedar for poles and other products, Douglas-fir house logs, and large clear spruce logs that are sold as tonewood.

As mentioned previously, the most economically efficient place to sort logs in the interior of BC is in the woods, from where they may ideally go directly to their place of highest and best use (pulp, lumber, value added wood manufacture). For this to occur, a number of conditions must be present in the market:

- The owner of the logs must be open to selling logs to more than one buyer;
- The price paid for the logs must exceed costs of stumpage, logging, sorting, and transporting the logs to their end use location, plus a profit for the log seller; and
- The value of the end product must be sufficiently high as to allow a profit for the log buyer.

There are instances now in the timber market when the above conditions are met and value added wood manufacturers receive raw materials. Most of the variables described above are a function of productivity and market forces. However, current stumpage policy can act as an impediment to a log reaching its highest and best use. In interior timber pricing policy, the principle of 'least cost-highest stumpage' is applied to Crown timber. The interior policy includes a tenet that the timber end-use will be for commodity lumber, and timber transportation allowances are given only to the nearest large lumber mill, as that results in the 'least cost-highest stumpage' paid for the timber. When the value added wood facility that would buy the logs is more distant from the timber than the nearest large lumber mill, the price the value added producer is able to pay for the log goes down by the amount of the added transportation cost. This feature of timber pricing policy puts downward pressure on the amount of timber that can economically flow to its highest and best use, and results in the pursuit of the highest Crown stumpage at the cost of the added GDP and worker taxation that would result of the log flowed to its highest and best use.

Large lumber mills in the interior of BC produce a relatively narrow range of commodity lumber products in large volumes, at extremely high speeds and at globally competitive costs. This approach to timber processing is not conducive to the production of much smaller orders for non-commodity lumber in particular grades or in various states of drying. That part of the value added wood sector that requires such sawn fiber for raw material, therefore, has a very difficult time creating supply relationships with large mills.

Mid-sized and small primary log breakdown mills with associated replaceable forest tenure have historically been an important part of the raw material supply chain for value added wood products manufacturers. These mills are often designed with the flexibility to do 'custom lumber cutting' in the volumes and with the characteristics (grade, species, dimensions, drying conditions, etc.) demanded by a range of value added wood manufacturers. This market niche is not usually suited to the large, high speed commodity mills common in the industry; therefore, small and large mills are not normally

competitors in the same market space, but are competitors in the standing timber market to a degree. The number of small- and medium-sized mills in BC has long been in decline as their owners have sold their tenures to larger companies, motivated by a profit opportunity or by competitive pressures in the standing timber market. There is an impending period in the near-term when small- and medium-sized mills will experience intense competitive pressure for timber supply as the supply contracts in the interior due to the mountain pine beetle or other reasons, placing more of them in jeopardy of closure.

The series of lumber trade conflicts between Canada and the United States also impacts the supply of sawn fiber from major BC lumber producers to value added wood manufacturers, including those that do not hold replaceable tenure. The nature of these effects is briefly described below.

During periods when no trade agreement is in place:

- Major lumber producers may prefer to sell lumber into the U.S. market rather than to domestic value added wood manufacturers because, in past 'quota' based trade agreements, quota was awarded to the 'importer of record'. In addition, if during the period of conflict the U.S. collects countervailing and anti-dumping duties and later agrees to refund them, in the past the refunds have gone back to the importer of record;
- If a value added wood manufacturer is able to reach a supply agreement with a BC lumber producer, the producer will charge at the time of purchase the anticipated future duty refund the producer believes it will 'lose' by selling the lumber to a BC value added wood manufacturer;
- When the value added wood manufacturer exports an end product to the U.S., it pays any countervailing and anti-dumping duties on the lumber input it used, plus duties on any value added to the lumber;
- The cost impacts resulting from the above reduce the competitiveness of affected value added wood manufacturers, their ability to purchase raw material goes down, and either business closures or production curtailments ensue. Lumber supply is then diverted to foreign markets unaffected by the countervailing or anti-dumping duties, such as China, where value is added and product shipped back to the U.S. duty-free.

During times when a trade agreement is in place, BC value added wood manufacturers seeking lumber supply face the following conditions:

- Lumber producers may prefer to sell to the U.S. over BC customers knowing that there is a risk that a future trade agreement may be a quota agreement and quota will be awarded to the importer of record. This holds true even if the current agreement is tax-based for BC, as is the case now;
- If value added wood products manufacturers have in their product line goods that are subject to the trade agreement, having a reduced export history to the U.S. prior to the trade agreement being in place will have a reduced quota if such a future quota agreement becomes a reality;
- The 'first mill' provision of the current softwood lumber agreement, which enables certain manufacturers to register for exemption from export tax on their products, requires that the manufacturer not hold a forest tenure, including BC Timber Sales licenses. This provision has negative supply consequences for manufacturers, and few companies have availed themselves of the 'first mill' provision as a result;
- The costs that the current agreement typically adds to value added wood manufacturer's exports exceeds the freight costs to ship the lumber to a low-cost jurisdiction, such as China,

where it can be further processed and exported back to the U.S. duty and tax free. This makes the BC manufacturer less competitive for the lumber supply domestically.

Since the current softwood lumber agreement came into effect in 2006, numerous independent wood products manufacturers have gone out of business or dramatically curtailed production. The vast majority of such companies attribute this to either the softwood lumber agreement, lack of access to raw material in BC, or both. These independent companies are nimble, adept at doing business in the U.S. and other markets, and can adapt, mix, and customize products to suit changing demands at different parts of the housing cycle in the U.S.. Given that these companies do not hold replaceable forest tenures and purchase their raw material on the open market, ensuring that such wood product manufacturers are appropriately exempted from a future softwood lumber agreement is essential.

As mentioned earlier, the BC government manages approximately 15 million cubic metres per year of timber supply through BC Timber Sales. There are an additional approximately 4.2 million cubic metres per year of timber in woodlot licenses and community forest agreements province-wide that are not associated with timber processing facilities. First Nations hold large timber volumes in non-replaceable licenses and increasingly hold more replaceable timber tenures. Within these large wood baskets, there are volumes of timber for which the highest and best use, from a public interest perspective, is in the manufacture of value added wood products. However, there is limited information available to the timber sellers (BC Timber Sales, First Nations, community forest agreements, woodlot license holders) and the potential buyers (value added wood products manufacturers or their raw material suppliers) about this part of the timber supply.

The interests of a seller of timber / logs to the value added wood sector can be expressed by some key questions:

1. What special timber do I have that might be of interest (species, sizes, sorts, etc)?
2. How much volume of that special timber do I have in my inventory?
3. Who might want this volume, now and in the future?
4. What might this volume be worth if I could identify, sort, and sell it?
5. When could I make this volume available, and would that be in sufficient quality and timing to be of interest to my value added wood products customers?
6. Will removing this volume reduce or eliminate my ability to sell logs to other buyers, such as large lumber manufacturers?
7. Can I lawfully cooperate with other sellers or buyers for mutual advantage?

The interests of the prospective buyer – the value added wood product manufacturer – can be expressed by some similar key questions:

1. What are the characteristics of logs / timber that I need (quality)?
2. How much do I need (quantity)?
3. Who has it and where is it?
4. What does it cost and can I pay the price?
5. When do I need it?
6. Can I lawfully cooperate with other sellers or buyers for mutual advantage?

Many of these questions could be addressed, at least partially, by collecting better information about the fibre supply, and making that information available to buyers and sellers. The market can then

determine if the information is useful and what (if any) further improvements are warranted. This better information could be presented and managed in several forms and levels of detail:

1. *Detailed 'forest stand-level' inventories*. To create these inventories, timber cruising procedures are adapted and log grades defined by the seller are assigned to trees, net timber volume factors are assigned to trees, the data is computer compiled, and the data is further refined into 'end use log sorts' defined by the seller to further describe timber volumes and log attributes of interest to the buyer(s);
2. *A consolidated inventory of fiber available to the value added wood sector contained in a larger network of timber sellers and their forest tenures*. To create a consolidated inventory:
    a. A cluster of willing collaborators (potentially BC Timber sales and some community forest agreement and woodlot license holders) agree to make public more information about their timber holdings;
    b. The geographic location of collaborator's fiber is mapped into GIS map layers;
    c. The individual collaborator's inventories are combined into one database;
    d. A predictive matrix is constructed to predict the location of certain log grades and end use sorts of interest to the value added wood sector;
    e. The inventory is made available to the market through a web-based portal.
3. *A 'Virtual Log Sort Yard'.* Through further technical refinement of the consolidated inventory above, which is primarily of value at a strategic level, combining it with the more detailed forest stand-level inventories mentioned above, and making the information available to the market on a web-based information management system that allows buyers and sellers to connect for the purposes of market transactions, such as *WoodsourceBC,* a very inexpensive 'Virtual Log Yard' could be created.

This concept implemented on the supply side of the timber market could assist value added wood products enterprises to improve and focus their supply chains, yield needed supply information to entrepreneurs considering entering the sector, and support timber supplier efforts to cluster for synergy. While leadership will initially be required to pursue the concept, if its presence in the wood value chain adds value to the timber resource, many timber suppliers would be willing to accept the modest costs associated with the concept. For a fulsome description of this concept, see Appendix D.

5.4 Issues Pertaining to Research and Technology

BC is significantly challenged to address the research and technology interests and needs of the value added wood products sector. The company structure in the sector is almost entirely small- and medium-sized enterprises. In such enterprises, management capacity is heavily focused on day-to-day operations, with limited ability to focus on short and long term research interests. The highly consolidated primary wood sector in BC and Canada has shared research needs among a small number of industrial players, and deep management capacity to engage with the research community. The BC value added wood sector has hundreds of industrial players, which means that individual engagement between them and the research infrastructure is not practically possible.

The various product sub-sectors in the value added wood industry have differing research needs to increase productivity in a fairly wide range of manufacturing processes and to continually renew

product offerings. In addition, the make-up of the BC sector itself, in terms of product mix, is substantially different than that of Québec, Ontario, or Manitoba, for instance, with their large furniture and appearance wood products industries. This diversity between provincial sectors increases the challenge for research institutions like FPInnovations and the Canadian Forest Service to be responsive to the particular needs of the value added wood sector in each province.

Much of the capacity for research on the value added wood products sector in BC is situated within the two universities offering degree programs in forestry – UBC and UNBC. While UNBC does not have a program devoted to wood products and wood science, it is certainly engaged in wood products research with faculty and a number of graduate students engaged in research projects. Some of their recent successes include the development of a concrete product made from beetle-killed wood, the use of terahertz spectra to determine the quality of wood inside standing trees, and the development, demonstration, and ongoing monitoring of a bioenergy plant / biomass gasification system (using wood furnish) that provides energy to the campus. Recently, UNBC was awarded significant funds from the BC Knowledge Development Fund and the Canadian Foundation for Innovation to establish EvaluTree – high end research infrastructure for measuring wood properties and wood quality. Finally, UNBC is establishing the Wood Innovation and Design Centre in downtown Prince George, and has aspirations of building one of the world's first programs dedicated to tall wood building design.

With 17 full-time faculty members, more than 30 research associates and postdoctoral fellows, and approximately 75 graduate students, UBC's Department of Wood Science is one of the largest and most established research units of its kind in the world, and one that is recognized as an international leader in the domain. The department attracts over $5 million per year in outside research funds and has established several labs with state-of-the-art analytical and processing equipment (including the Centre for Advanced Wood Processing which contains a multi-million dollar state-of-the-art wood processing laboratory). Faculty members are engaged in a wide variety of research projects, many of which relate directly to the value added sector. Broadly speaking, research in the department revolves around four topical themes: wood science and wood products manufacturing; business operations and community wellbeing; timber building technology; and forest biotechnology and biomaterials. While the research projects at UBC's Department of Wood Science are too plentiful to enumerate for the purposes of this report, it is notable that over 350 refereed journal articles have emanated from the department over the past five years.

Apart from research capacity in BC universities and occasional benchmarking studies on the part of the Canadian Forest Service, the main wood research and technology provider is FPInnovations, a national research institution. While FPInnovations has infrastructure in all of the large wood producing regions of Canada, its governance and decision making is done through a committee structure at a national scale. The source of funding for FPInnovations is roughly one-third each from the federal government, provincial governments, and industry members. Industry members pay their share through a system of check-offs. FPInnovation's value added wood programming is driven largely by the availability of provincial funding.

Few BC value added wood companies are members of FPInnovations, and their voice is almost entirely absent from FPInnovation decision making forums and committees. The Government of BC is represented by staff on the board of directors, National Research Advisory Committee and some of the Program Advisory Committees of FPInnovations. Not surprisingly, value added wood products do not figure prominently on the national research agenda in FPInnovations. Notable exceptions include the extension (not research) work conducted by the network of Industry Advisors across Canada (funded largely with provincial funds and designed to provide support to value added

producers) and the national programs coordinated by FPInnovations (much of which is conducted by universities) on innovations in value added wood products (eg, the Canadian Forest Service Value-2-Wood program, now defunct).

The low level of integration between the primary and value added wood sector in BC, combined with the low level of participation of the valued added sector in FPInnovations, further hampers the ability of the research community BC and at FPInnovations to address the interests of the value added wood sector. In contrast, for example, value added producer involvement in the Québec FPInnovations lab is higher, and the forest industry overall is more tightly knit, making it possible to bring a more broad set of industry interests to bear in research programs.

5.5 Issues Pertaining to Product Development

The abundance of high quality wood fibre in the province has meant that a diversity of value added wood products is being manufactured. The long list of value added wood products from can be broadly categorized into four groups: (1) remanufactured lumber, including components, mouldings, and millwork; (2) household products, including cabinets, doors, windows, and furniture; (3) structural products and systems, including engineered structural members and components, timber frame / log building, and manufactured homes; and (4) miscellaneous other products, including crafts, toys, musical instruments, pallets, and so on. Beyond these solid wood products, the excess pulping capacity that currently exists in the province and the recent emergence of the 'biorefinery' concept have led to the development of a new suite of fibre-based products (ie, derived with furnish from forest residues, sawmill byproducts, and recycled materials), such as thermal bioenergy products, liquid biofuels, biochemicals, bioplastics, nanocrystalline cellulose, pharmaceuticals, nutraceuticals, textiles, and other lignocellulosic biomaterials. While there is promise and appeal in these innovative products and their potential to add value, much of the technology has yet to be scaled up, and some of it is not yet economically viable.

In the final analysis, there is a huge basket of value added wood products that can and should be manufactured in BC. Unfortunately, there is insufficient recent empirical data or strategic thinking to suggest which markets should be pursued, which products have the greatest growth potential, or which products best align with our current (largely softwood) resource base. Common wisdom and industry participants suggest that value added producers in BC ought to be strongly pursuing the growing US market, especially in the areas of housing and household goods. The housing market, while still recovering from the economic downturn of 2008, is still large and growing. The geographic proximity of this market leads to all manner of competitive advantage through supply chain efficiencies, mass customization, and service provision. It is little surprise, then, that manufactured (factory-built) homes has been upheld as a viable value added proposition for BC's manufacturers. That said, there is salient need to research the many nuances inherent in entering this market prior to this being set a strategic direction for BC's value added wood sector.

It goes without saying that every house that is built, installed, or renovated also needs to be furnished with windows, doors, millwork, cabinets, furniture, and the like. While it has been argued that these are highly competitive markets – especially in light of the dominance of low cost producers from China and Southeast Asia – there is no reason that value added producers, with enough scale, could not differentiate themselves from these low-cost commodity producers with attributes like high quality, smart design for urban spaces, mass customization, after-sales service, and a strong track record in BC of sound environmental stewardship. One potential area of improvement for these appearance wood products might be in the development of a consistent and cohesive design

aesthetic that evokes the spirit of British Columbia. Other regions of the world – Denmark and Finland, to name a couple – have had unprecedented market success in developing and selling high quality and high value wood products with unique design sensibilities; Scandinavian furniture, for instance, embodies a distinct design vernacular and is one of the most successful product development initiatives in the world. There is no reason to believe that a similar collective approach could not take place in BC. In fact, in some ways, this is a step backwards. In the 1950s and 60s, BC embraced a cohesive design aesthetic – 'West Coast Modern'. While this movement achieved some market success, most notably in housing and furniture design, its moment has long since passed, and BC's current aesthetic could only be described as directionless. First Nations in BC, on the other hand, do have the advantage of a cohesive design aesthetic – through carvings, crafts, longhouses, and so on – that has been cultivated over millennia. It is an aesthetic that also has wide appeal in non-First Nations communities. Manufactured goods that incorporate First Nations designs stand a very good chance of success in global markets, especially those produced by First Nations. That said, care must be taken to produce such goods in an honest and culturally appropriate manner.

One of the key issues facing value added wood product manufacturers is that many lack in-house capacity and resources to design and develop new products. Progress on this front has recently been made with the creation of the Business Innovation Partnership (BIP), an initiative supported and funded by the BC Crown Corporation, Forestry Innovation Investment (FII). The service providers include FPInnovations, BC Wood Specialties Group, and Wood*WORKS!*, but it is the Centre for Advanced Wood Processing (CAWP) at UBC that is largely responsible for assistance to value added wood manufacturers interested in developing new products (note that the BIP terminology is no longer used, and that product development now falls under the broader envelope of the WoodFirst program). Value added wood products companies that are interested in developing a new product or product line can obtain funding from FII covering 50% of the project costs, meaning reduced financial risk for them. The program at CAWP is tailored to the specific needs of individual firms, and includes a broad range of product development activities, including design, engineering support, feasibility analyses, prototyping, troubleshooting, and product testing. To date, a number of successful clients have been served, including small furniture shops, panelized home manufacturers, cabinet manufacturers, window and door companies, timber framers, engineered flooring producers, architectural millwork suppliers, remanufacturers, passive home builders, and suppliers of exotic hardwoods and thermally-modified timbers. Projects have ranged from the design of a prefabricated room module for small-footprint homes and testing finishes for decorative wall panels, to optimizing router production processes for a new line of medium density fibreboard furniture and evaluating appropriate glues for a new engineered beam product. Importantly, this service has led to the incubation of a number of new value added wood processing firms and served to diversify the product lines of several others.

5.6 Issues Pertaining to Education and Skills Training

There is only one educational program in BC that is fully dedicated to education related to value added wood products – the BSc Wood Products Processing program in the Department of Wood Science (Faculty of Forestry), UBC. Notably, the only other formal program in this domain – the Wood Products Manufacturing program at BCIT's School of Construction and the Environment – was suspended several years ago due to low enrolments. This is true for its affiliated continuing education certificate programs in Industrial Wood Processing Management and Wood Products Sales and Distribution, as well. BC's other forestry school, UNBC, continues to offer a forestry degree. However, there is no formal wood products program in place, despite the presence of a few

faculty members with wood science backgrounds. Interestingly, UNBC is poised to offer a new Masters of Engineering program in tall wood design, as part of the recently announced Wood Innovation and Design Centre in Prince George.

The BSc Wood Products Processing program at UBC was developed in 1995 as a national program in direct response to a demonstrated need on the part of the Canadian value added wood products sector for university-trained managers. The program itself is described as a fusion of science, engineering, and business, with a focus on wood products manufacturing and operations (including basic and advanced wood science, wood processing technologies, machining, product design and construction, job costing and engineering economics, operations management, computer-aided design/computer-aided manufacturing, plant layout and design, advanced wood products, wood finishing, business management, and marketing) and 'soft' skills training (including troubleshooting, problem solving, teamwork, communication, and leadership skills).

Importantly, the program is offered in a five-year co-operative education program (70% of the students have participated), providing valuable and relevant industry-based experience for the students during their degree programs. In addition, students can complete a Minor in Commerce offered by the UBC Sauder School of Business by taking prescribed electives and/or can take courses in timber engineering and design as part of the newly formed Chair in Wood Building and Design, jointly administered by the Departments of Wood Science, Civil Engineering, and Architecture. By all accounts, the program is a success, with over 600 graduates since its inception and current enrollments of approximately 130 students. The program boasts a near-100% job placement rate, with many students finding meaningful employment as managers in the value added sector (both locally and abroad). However, a significant number of students get placed in the more traditional commodity forest products sector. While the program was explicitly designed to serve the value added wood products industry, it seems that that skill-set that students graduate with is also in high demand by lumber, structural panel, and related industries.

Related, but distinct, to the BSc Wood Products Processing program, is the Centre for Advanced Wood Processing (CAWP) administered by the Department of Wood Science at UBC. CAWP was established in 1996 as a National Centre of Excellence with the goal of supporting and promoting the competitiveness of the Canadian value added wood products sector. Leveraging the expertise that resides within the Department of Wood Science and affiliated units at UBC (eg, the School of Architecture and Landscape Architecture), and supported by one of the most advanced value added wood manufacturing machine labs in the world, one of CAWP's key mandates is the provision of specialist industry training to workplace learners.

Industry training at CAWP comes in many forms, including certificate programs, workshops, seminars, short courses, conferences, in-plant training, and e-Learning initiatives. Certificates (officially granted by UBC) are offered in the areas of kiln drying and wood finishing. Workshops and seminars are offered in the areas of quality management, marketing, tooling selection, digital fabrication technologies, computer-aided design and manufacturing (CAD/CAM), computer numerical control (CNC) manufacturing, wood identification, and wood finishing. A number of conferences have been organized on a variety of issues pertaining to the value added wood products sector, including marketing, timber engineering, and wood finishing. In-plant training takes place in the form of in-house quality improvement programs (the WoodMark Quality System, a third-party quality certification system administered by CAWP), and the RISE (Rapid Internal Skills Enhancement) program, a system of training templates that can be adapted by companies for use as their own internal training programs (notably this program was set up as means of addressing the significant gap that was left when the BC Wood Specialties Group Value Added Skills Centre in

Abbotsford, BC was closed in 2006). Finally, CAWP provides an e-Learning certificate designed to assist small value added entrepreneurs in upgrading their business skills and acumen. Sponsored by the Wood Manufacturing Council – Canada's national human resources woodworking sector council – the certificate includes modules in sales and marketing, quality management and control, safety and human resources management, production planning, factory layout and equipment justification, business finance, new product development, green marketing, and supply chain management. To date, more than 80 workplace learners have taken this certificate program.

The Emily Carr University of Art and Design offers an interesting option for students interested in value added wood products through its Industrial Design major. The program takes a very 'hands-on' approach to product development, design, prototyping, and creation of a variety of products, including household products and furniture. While the program is not material-specific, some of the faculty have backgrounds in wood design and teach courses specifically on this topic. Consequently, many of the major student projects are wood-based.

Finally, FPInnovations also provides workplace education, largely through its network of Industry Advisors. This takes place in the form of in-plant training on areas such as quality improvement and lean manufacturing. The BC Wood *WORKS!* program also continues, offering its suite of educational courses, tools, symposia, and online materials as part of the mandate of its umbrella organization, the Canadian Wood Council. These educational programs – often provided as free professional development courses – are offered to architects, structural engineers, and building professional to support the mandate of increased wood usage in the design of large-scale, nonresidential structures. The BC Wood Specialties Group no longer has a mandate for education, but provides a number of tools and guides for value added producers.

5.7 Issues Pertaining to Marketing

At the firm level, value added companies in BC – and the entire forest sector, for that matter – have long been known to be struggling with issues related to marketing and market research. According to Cohen and Kozak (2001), marketing in the forest sector has evolved over time in three distinct phases: a *forestry orientation* wherein the sale of forest products was limited only by the rates at which companies could produce goods; a *production orientation* wherein firms concentrated on producing goods that they were most efficient at; and a *marketing orientation* wherein companies had to interact and continually learn about the wants and needs of their customers in order to remain competitive. Unfortunately, the forest sector was slow to embrace the marketing orientation, and this issue remains to this day; marketing is oftentimes seen as a necessary evil, and not a potent competitive tool. This is exacerbated by the fact that firms today are now adopting a *knowledge orientation* – marketing activities driven by the continual flow of information vis-à-vis marketing research, which allows firms to pursue advanced and highly powerful business strategies such as mass customization. This orientation is grounded in a complete understanding of potential and existing customers, and has utility in limitless value added applications from timber framing to cabinet installation to furniture design.

The unfortunate reality, though, for many value added wood manufacturers in BC, is that they simply lack the scale and capacity to make marketing a business priority. There is consequently a woeful underuse of innovative promotional and social media tools that could serve to improve their collective competitive positions. Part of the problem seems to be a distinct lack of formal training with respect to modern-day marketing techniques and marketing research. However, a major issue is the fact that most value added producers are small and medium enterprises, meaning that the time and

energy that could be spent by managers pursuing new markets and developing innovative promotional campaigns is more typically spent 'putting out the fires' that are typically associated with the everyday activities of manufacturing smaller batch volumes of goods and managing a small group of workers.

One possible solution to this dilemma that has been successfully implemented in Finland, the United Kingdom, and Australia, to name a few examples is the use of generic, industry-wide marketing and branding campaigns. By aggregating companies with similar goods and sending out industry-wide promotional messages, such campaigns serve to overcome the scale problem faced by many smaller firms trying to market their own goods. While it becomes difficult for individual firms to differentiate themselves, generic advertising and branding of products does provide an opportunity for the sector as a whole to potentially penetrate new markets and perhaps flourish. Notably, this sort of strategy has been attempted before in BC (eg, the "Wood is Good" campaign), but past efforts have been poorly resourced, and have met untimely ends.

Related to the foregoing, a First Nations cultural marketing niche has international appeal but it has been difficult to develop and implement a collective First Nations marketing strategy. First Nations tend to be independent. There is a delicate balance between capitalizing on this niche and being culturally insensitive, which inevitably is harmful for the businesses in the partnership and destructive of trust on the part of First Nations. Successfully realizing the potential of this niche takes time and will be based on first having built a broad level of trust through various other successful sector and business-level collaborations.

With little in the way of firm-level or industry-wide marketing programs for value added wood producers, the job of marketing goods to domestic and export markets must fall on the shoulders of government. To its credit, the Government of BC has done just this. For instance, the provincially funded Crown corp., Forestry Innovation Investment (FII), is the primary government entity engaged in wood product marketing in BC. Paraphrased, the provincial government has expressed the following priorities to FII for fiscal year 2013/14:

- Leading the Wood First initiative;
- Market advocacy, research and communications to promote the merits of wood and BC forest practices;
- Emerging markets development, such as through outreach to government agencies in China and early stage market development in India.

As the only shareholder in FII, the Government of BC issues an annual *'Government's Letter of Expectations'* to the corporation. For fiscal year 2013/14, the letter confirmed the priorities mentioned above, and further directed FII to:

- Achieve specific softwood lumber sales targets in China, Japan, and South Korea;
- Achieve a specific softwood lumber sales target in non-residential construction in the U.S. and in BC;
- Leverage the expertise and financial resources in Canada and internationally to create critical mass for the marketing priorities of the corporation.

In addition to the expectations set by government, FII refines its strategies through an ongoing program of international market research and consultation with forest industrial players and Natural Resources Canada. In consideration of the government expectations mentioned above and the market research and consultations with industry and the federal government, FII's service plan for fiscal year 2013/14sets an overall investment pattern as seen in the table below:

Table 6: FII Planned Expenditures 2013/14

Priority Activity	Budget
FII corporate support and self-initiated market outreach, development and Wood First studies directed by FII	$4.2 million
FII China and India operations	$3.6 million
Cost-shared marketing projects with BC trade associations, allocated through a call for proposals – China, India, Korea, Japan, U.S.	$7.0 million
Wood First program funding available to the Wood Enterprise Coalition	$2.5 million
Total	**$17.3 million**

FII manages a separate strategy for the Wood First program, and that strategy receives advice from the Wood First Advisory Committee. The committee is comprised of individuals with backgrounds in value added and primary wood manufacturing, architecture, wood design, engineering, construction, and building code policy. The advisory committee makes recommendations to the CEO regarding strategy, objectives, and investment categories for the Wood First program. At present, the strategy pursues the following objectives:

- Grow the culture of living and building with wood in BC and beyond;
- Maximize the appropriate use of wood in public and private projects;
- Strengthen BC's capacity to produce high quality wood-based products and building systems;
- Accelerate adoption of existing and emerging wood-based products and building systems; and
- Position BC as a world leader in sustainable and innovative wood-based products and building systems in design, production, and application.

For fiscal year 2013/14, the Wood First program strategy, informed by the advice of the Wood First Advisory Committee, outlines investment categories and funding for the program as seen in the table below:

Table 7: Wood First Program Strategy Priorities and Expenditures

Investment Category	Funding (millions)
Reduce building code, policy and perceived risk barriers to using wood in structural and architectural applications in BC.	0.276
Research to improve performance of wood in uses offering significant market potential and ensuring BC priorities are considered in the national research agenda.	0.115
Education about the benefits of using wood at the K-12, trade school, university and professional development level	0.575
Marketing, promotion and outreach to the public and students; government; designers; contractors/ developers, architects, engineers, builders, buyers, and trade media.	0.920
Manufacturing and marketing activities to improve sustainable manufacturing and marketing capabilities, and fill gaps in the supply of green building products.	0.600
Total	**2.486**

FII delivers the Wood First program in collaboration with the Wood Enterprise Coalition (WEC), a partnership of BC Wood Specialties Group, Wood *WORKS!*BC, the Centre for Advanced Wood Processing at UBC, and FPInnovations The WEC was formed in 2012 to bring together the former Business Innovation Program, research, market development and building code work that had previously been done by those organisations independently. The Business Innovation Program, formerly a stand-alone program of FII, provided rather direct support to the value added wood sector to increase its manufacturing and marketing capacity. It was highly valued by the value added wood sector and was typically over-subscribed. At present, the 'Manufacturing and Marketing' line item above is the closest funding envelope to the former Business Innovation Program, which was formerly funded at a level significantly higher than $600,000/year. Notably, several activities that were undertaken under the Business Innovation Program continue today, such as the product development aspect of this initiative (see section 5.5.).

The federal government currently plays a role in improving access to markets for BC wood products. The Expanding Market Opportunities (EMO) program of the federal government includes an offshore marketing element and a North American market element. In both elements, the EMO operates on an equal cost-share basis with wood product industry associations, with support from their respective provinces. The offshore markets element strives to diversify and expand export opportunities in countries such as Europe, Japan, China, and South Korea. Examples of activities under this element include demonstration projects, market research, expanding markets through improved linkages and interactions between committees of interest, and the provision of networking opportunities.

The EMO North American market element has a distinctly different focus than that of the offshore element. It focuses on raising awareness among designers, architects, builders, code officials, and various levels of government of the opportunities to use wood products in nonresidential buildings, typically built with steel and concrete. Demonstration projects and building codes research may also be undertaken as part of the program. In Canada, it promotes changes to building codes to reduce barriers to using structural wood building solutions in nonresidential buildings as a means of increasing wood market opportunities. Programs contain technical, educational, informational, demonstration, or building code research elements. Approved activities, with the exception of

demonstration projects and code research, are cost-shared on an equal basis between the EMO and wood product industry associations, with support from their respective provinces.

The priorities of the EMO program and those of FII align reasonably well, which creates opportunities for leveraging and partnering in funding between the federal and provincial governments and industry funders.

From the foregoing description, one can see that the marketing strategies, programs and funding priorities are the product of a series of influences:

- The overall vision and mission set for FII by government, a matter of choice;
- The annual priorities and government letter of expectations of the government, a matter of choice;
- The ongoing market research conducted by FII, which is fact based;
- Consultation between FII, forest sector industry players, and the federal government, a matter of sharing influence; and
- The advice of the Wood First Advisory Committee to the CEO, a product of negotiation, consensus seeking, and influence between experts in a number of industries.

The outcome on market-related programs of the interplay between the influences described above is that:

1. Programming and funding is strongly focused on increasing the market share of wood used in structural applications. While this focus is helpful for those value added wood products sub-sectors that create structural wood products, such as engineered wood products, it is less helpful for those increasingly important sub-sectors that do not make such products;
2. The geographic emphasis of structural wood product marketing is offshore, while the best market for many value added wood products is in North America, and perhaps the northwest U.S. in particular;
3. In an overall environment of constrained financial resources, it appears that the effect of the mentioned influences has been to disproportionately reduce the available resources that previously supported (in a direct way) the building of manufacturing and marketing capacity of all value added wood products sub-sectors, as were available under the former Business Innovation Program of FII.

6 RECOMMENDATIONS AND STRATEGIES

The purpose of this section of the report is to describe a number of practical strategies which, if implemented well, in combination, and sustained for the long-term, will slow the decline in the solid value added wood products sector and return the sector to growth. The focus here is on the interior of BC, but many of the recommendations are applicable province-wide. As with the issues previously described, these strategies are organized and presented in terms of the value chain concept comprised of:

- Vision and Government's Place in the Wood Value Chain
- Business Conditions, Finance and Manufacturing
- Raw material supply
- Research and Technology
- Product development

- Education and Skills Training
- Marketing

6.1 Recommendations Pertaining to Forest Sector Vision

With respect to a vision for the BC forest sector, the Working Roundtable on Forestry in 2009 made two insightful, critically important observations about successful implementation of a vision for the sector:

"We have observed that globally competitive and leading forestry jurisdictions around the world have two things in common:

- *Leadership – at all levels of government and in industry to support innovation, growth and investment; and,*
- *A Common Vision – for all those who affect and are affected by the forest sector."*

and,

""WE" all need to change and "WE" all need to take action. Without a collective effort, it is unlikely that we can improve the opportunities for the forest industry. We therefore need to work toward a common vision. The Roundtable also believes that the provincial government is fundamentally responsible for taking a leadership role in working with all of the parties involved in the forest sector to stimulate the dialogue and action that is required to advance a common vision."

We concur with the view of the Roundtable expressed above. If the current or future vision for the forest sector in BC includes a growing value added wood products sector, provincial government leadership will be critical for its success, as it is in other jurisdictions where a choice has been made to grow the sector. Successful leadership will include government creating a broadly supported vision to grow the sector, taking an assertive role in developing the wood value chain, making that role part of its ministry's mission and purpose, and organizing to execute the mission.

We make the following recommendations related to vision for the forest sector:

1. We recommend that the provincial government formally pursue the development and expression of an over-arching, guiding policy statement to establish that the purpose of forest resource management and forest industrial development is to increase the benefits to citizens from their forest resources. The policy statement should clearly articulate government's future intent, as a key player in the wood value chain, to foster the development of a competitive forest sector capable of increasing public benefits from the forest resource.
2. We recommend that the provincial government use its leadership position and influence at a senior level to build a consensus, common vision between all of the participants in the value chain for the future development of the value chain. To illustrate a tentative list of who these participants are, consider including representation from:
    a. Those that control the timber supply in BC (major companies, BCTS, First Nations, community forest holders, woodlot license holders, timber exporters);
    b. Value added wood enterprises from the range of sub-sectors in the industry;
    c. Large lumber manufacturers;
    d. Small, mid-sized and independent lumber manufacturers;
    e. Industrial participants in the emerging bio-economy;

f. Forest Innovation Investment
g. Logging contractor and BCTS registrant;
h. FPInnovations;
i. Academia;
j. Union of BC Municipalities (municipal taxation and community interests);
k. Ministries responsible for employment, forestry, revenue, economic development and worker training policy;
l. Wood product marketing funders and delivery agents;
m. Worker unions.

In setting the stage for the development of such a vision, the government should be clear that what is sought is a vision that is enduring, is shared by all parties to the vision, and which will be used by the government to shape policy choices and public investments going forward for the long-term, and by the private sector to guide collaboration between the participants in the wood value chain.

6.2 Recommendations Pertaining to Government in the Wood Value Chain

We make the following recommendations to modernize the ministry mandate and capacity to support the value added wood sector:

1. We recommend that the *Ministry of Forests and Range Act* be amended to include in the purpose of the ministry the encouragement of vigour, global competitiveness, and efficiency for manufacturers in the entire wood products value chain, including those in the solid wood value added product industry;
2. We recommend that government assist appropriate ministries to build internal organization, expertise, and capacity to engage in the strategic collaborations with solid wood value added sector entrepreneurs in each sub-sector necessary to resolve value chain development challenges;
3. While implementing these recommendations, we recommend that government be mindful not to disrupt the success of existing capacity in forms, for example, such as the Forest Innovation Investment Corporation and its effective delivery agencies.

6.3 Recommendations Pertaining to Business Conditions, Finance and Manufacturing

The following recommendations are made pertaining to improving business conditions and increasing access to capital for the value added wood products sector in BC.

1. We recommend that the province of BC review and deepen its venture capital programs, including tax credit programs, in a manner to increase access to capital for the value added wood manufacturing sector. In addition to other opportunities that emerge, government should:
    a. Seek new opportunities for capital investment program synergies between provincial programs and, for instance, federal programs that provide investment capital to Community Futures Corporations or the provincial regional development trusts;

   b. Adapt its existing BC Renaissance Capital Fund investment program, which is funded by the federal Immigrant Investor Program, by designating the BC value added wood sector as a target sector for investment. In the province of Québec, the wood product manufacturing sector is presently eligible to seek venture capital through Investment Québec from that province's Immigrant Investor Funding.
2. We recommend that government establish a loan guarantee program for the value added wood products sector in BC to ease access to loan capital for the sector. Recognizing that the loan default rate for the value added wood sector is very low and therefore the cost of the program is very low, the scale of the program should be maintained in the range of $50 million per year;
3. While the details of the program mentioned above should be developed in further consultation with the sector, we recommend that an advantageous focus could be to:
   a. Catalyze supply chain partnerships pertaining to raw material supply for the value added wood sector;
   b. Support the recapitalization of existing enterprises necessary to increase productivity, scale of production or entry into new markets;
   c. Support the entry of new wood value chain participants in the solid wood value added sector as was envisioned in the 2003 *Forestry Revitalization Plan*;
   d. Increase access to operating capital for the sector.
4. We recommend that the provincial government conduct a series of workshops / focus groups with the community of value added wood products firms and other interested stakeholders, with discussions revolving around the creation of more favorable business policies which serve to attract and retain value added wood products businesses, as well as to foster growth in small and medium enterprises. The results of these sessions could be used to inform a province-wide value added sector strategy.
5. We recommend that an updated sector-wide benchmarking study be conducted, similar to that of DeLong et al. (2007), but concentrating on the needs, opportunities, and business challenges for value added wood products firms in BC. This could be a collaborative effort between researchers at UBC, UNBC, FPInnovations, and BC Wood Specialties Group.
6. We recommend that programs dedicated to business skills training and capacity building be continued and expanded. The Centre for Advanced Wood Processing at UBC is an obvious candidate for the delivery of such courses, as one of their mandates is industry extension, and they have developed a suite of courses for improving business skills. These courses are currently offered online, but it would not take a great deal of effort to mobilize this knowledge in the form of workshops and/or in-plant training.
7. With regard to all of the above recommendations it is critical that First Nations in the forest sector be engaged to ensure actions are strategically shaped to support access to capital, business-to-business partnerships and building business and management acumen for such enterprises;
8. To act as an information reference for latent First Nations business-to-business partnership opportunities, we recommend the development of an attribute data base that describes the enterprises of existing players in the value added wood manufacturing sector, First Nations and non-First Nations, and the nature of tenure holdings of First Nations.

6.4 Recommendations Pertaining to Raw Material Supply

We make the following recommendations to begin to improve the raw material supply chain for value added wood manufacturers:

1. We recommend that government revisit the mission, goals and objectives of BC Timber Sales to provide more freedom to that agency to more directly market and sell timber to its value added wood sector customers, or those BC Timber Sales customers that log trees and manufacture sawn raw material for value added wood entrepreneurs, subject to a requirement that BC Timber Sales continue to receive full predicted market value for the timber;
2. Within the greater business freedom afforded by a broadened mission as described above, we recommend that BCTS:
    a. Continue to develop and maintain a high degree of understanding of the raw material supply chain needs of value added wood manufacturers in each BC Timber Sales business area;
    b. Assert itself as a direct, reliable supplier to the value added wood manufacturer supply chain, while receiving full value for Crown timber;
    c. Explore opportunities to establish longer-term supplier relationships or partnerships with value added wood enterprises that go beyond single timber sale transactions;
    d. Explore with First Nations in the forest sector reciprocal management or marketing collaborations;
    e. Explore opportunities to extract, sort, and directly market certain logs suited for value added wood manufacture. For example, logs such as building logs, cedar, poles, etc. may be extracted by road construction contractors in the course of road right-of-way logging, or through selective removal and sale of such logs as may be possible before an entire timber sale is timber cruised and auctioned;
    f. Where a viable private log sort yard exists, or where the exceptional circumstances for a viable new private log sort yard exist, develop partnerships between BC Timber Sales, willing BC Timber Sales registrants, and private sector log sort yards with the objectives of increasing net profits for each member of the partnership, while increasing the supply of logs suited to the value added wood products sector.
3. To ensure a level playing field in the competitive timber market between those that would sell timber or logs to lumber and pulp producers and those that would sell to value added wood producers, or who supply sawn lumber to value added wood producers, we recommend that the provincial government:
    a. Soften the ‘least cost-highest stumpage’ policy tenet in interior timber pricing policy to provide an added timber transportation allowance for timber in BC Timber Sales licenses that must be transported past a current point of appraisal to a place of value added wood manufacturing;
    b. Consider applying the new policy provision to forest license and tree farm license cutting permits to improve the provision of logs not acquired through market competition to value added wood manufacturers;
    c. In practice, the policy could be implemented when a BC Timber Sales license holder or a cutting permit holder provides to the ministry proof of a log supply agreement with a value added wood enterprise, which could trigger a re-appraisal of the timber sale or cutting permit to incorporate the added timber transportation allowance;

    While this policy would reduce initial stumpage revenue from the timber in question, the downstream benefits in the form of increased economic value from wood, job creation, and public revenue from income and sales tax should exceed the initially lower stumpage revenue.

4. The encouragement of a higher degree of log sorting in the woods has potential to increase log supply to the value added wood sector. Such log sorting increases logging cost to a degree. While bidders for timber sales can factor in these costs when deciding how much to bid for timber, holders of tenures such as forest licenses or tree farm licenses do not have that option relative to their cutting permits. For these tenure holders, the opportunity to sell high value logs at a higher price may not be sufficient offset the higher costs involved with doing so.

   We recommend that interior timber pricing policy be amended to include an operating cost adjustment to offset the log sorting costs to enable holders of tree farm licenses and forest licenses to economically direct high value logs to their highest use with value added wood manufacturers.
5. Small- and medium-sized sawmilling companies with replaceable forest tenures, an important part of the supply chain for value added wood manufacturers, have been declining in number for many years due to the forces of industry consolidation. This trend is expected to accelerate in the near term as the timber supply impacts of the mountain pine beetle occur, and companies compete for the diminished supply.

   The *Forest Act* requires the minister to approve the transfer of a tree farm license or forest license if satisfied that the transfer will not have the effect of unduly restricting competition in the standing timber, log or chip markets. This provision defines the extent of discretion provided to the minister. We recommend the following relative to this issue:
   a. Amend the *Forest Act* to provide more broad discretion to the minister to consider the impact of a license transfer on the restriction of the supply chain for the value added wood manufacturing sector. Such discretion would enable the minister to more adequately consider the public interests affected by a license transfer;
   b. Market forces may leave a small or medium-sized forest license or tree farm license holder and mill owner no viable option but to discontinue milling operations and to dispose of their license. In conjunction with (a) above, and in the event the minister exercises discretion to intervene in a proposed license transfer, the Crown should adopt a policy of acquiring the license in question at market value, and re-deploying the timber volumes into the economy in a manner that supports the value added wood manufacturing sector.
6. We recommend that government pilot with timber sellers in an appropriate region of the interior the implementation of enhanced timber market information, described in detail in Appendix D, in the form of detailed stand-level inventories, consolidated inventories, and a virtual log yard. As leadership is required to act on this recommendation, and BC Timber Sales is the most likely collaborator in the concept, it is recommended that BC Timber Sales lead the implementation of this recommendation.
7. We recommend that a formal assessment be undertaken regarding the establishment of a business cluster or clusters of value added wood producers. Specific regions should be targeted, and based on an analysis of member firms, raw materials supplies and issues, product breadth, and the potential to collaborate, a decision should be made to concentrate on certain geographic regions (eg, the Quesnel forest district, the Kootenays). In parallel, it is recommended that an assessment study of existing wood industry clusters (eg, Bluewater Wood Alliance, the Danish furniture cluster) be undertaken and that interested parties be enrolled in the Austrian Clusterland school for training on how to properly establish, organize, govern, and administer a cluster.
8. We recommend that the federal and provincial governments take great care to ensure that value added wood entrepreneurs that acquire their raw material on the open market,

whether in log or lumber form, are appropriately exempted from any future softwood lumber trade agreement with the United States. The positive impact of successful implementation of this recommendation on the future of the value added wood sector must not be underestimated.

6.5 Recommendations Pertaining to Research and Technology

The following recommendations are made pertaining to improving the quality and quantity of research on or about BC's value added wood products sector:

1. We recommend that a large-scale research study be commissioned to inform the development of a subsequent strategic plan to catalyze and foster the value added sector through the creation of innovative and highly demanded value added wood products (this would not be unlike the value added sector strategy in Alberta, or the reports recently produced by the Forest Products Association of Canada on the emerging bio-economy). The size of potential markets for a series of value added wood products will be highlighted, and specific products/markets which seem to make the most sense for BC producers to pursue will be identified, taking into account BC's resource base, proximity to markets, and infrastructure. This could be a collaborative effort between researchers at UBC, UNBC, FPInnovations, and BC Wood Specialties Group.
2. We recommend that a higher priority be applied to increase provincial funding for research in BC's two forestry schools for targeted programs that address the specific needs of BC's value added wood products sector. While a good deal of research is taking place, ranging from new product development to market assessments for value added wood products, faculty are generally under-resourced and must rely on national (tri-council) funds to conduct research, which are becoming increasingly difficult to obtain. In addition, it may be worthwhile to explore means in which value added wood producers can directly contribute to and fund university-level research, perhaps through the formalization and promotion of tax credit programs and improved communications with value added producers on the part of universities.
3. Given FPInnovation's status as Canada's national wood products laboratory, it is recommended that opportunities be explored to create an alternative model that fosters engagement between BC's value-added wood products sector and FPInnovations. Specifically, we recommend that the following actions be considered:
    a. Strike a volunteer BC Board of Directors comprised of representatives from all of the associations/sub-sectors that represent the value added wood sector in BC;
    b. Continue a seat for the Deputy Minister of Forests, Lands and Natural Resource Operations from BC on the FPInnovations Board of Directors and seats for representatives from the Ministry of Jobs, Tourism and Skills Development and Ministry of Forests, Lands and Natural Resource Operations on the National Research Advisory Committee and Program Advisory Committees of FPInnovations;
    c. Engage the above government staff as the link or conduit between the volunteer BC Board of Directors and FPInnovations, and between the volunteer BC Board of Directors and the Deputy Minister of Forests, who sits on the FPInnovations Board of Directors;
    d. Empower the mentioned government staff to convene the volunteer BC Board of Directors between meetings of the FPInnovations committees and Board of Directors meetings, to capture the volunteer BC Board's perspectives on issues

of the day, and to represent those perspectives at the FPInnovations committee tables.

4. We recommend that a dialogue be struck on the feasibility of setting up a research check-off program for value added producers in BC, akin to the one that exists for the BC wine industry. Given that there may be some opposition from value added producers to paying fees to support such a research program, it is recommended that the BC Government lead an engagement process with the range of value added sector associations in play – including BC Wood Specialties Group – in an attempt to foster healthy debate on the subject and develop mutually supported solutions.
5. We recommend that the provincial government, through its funding contract with FPInnovations, prescribe an appropriate funding allocation to and priority on the specific research and technology needs of the value added wood products sector, determined in consultation with the sector or made consistent with a larger research strategy as recommended earlier.

6.6 Recommendations Pertaining to Product Development

The following recommendations are made pertaining to enhancing the culture of new product development in BC's value added wood products sector:

1. We recommend that a comprehensive market assessment be commissioned with the fundamental purpose to provide a strategic plan and direction for BC's value added wood products sector based on an exhaustive and systematic analysis of the markets and products which make the most sense for manufacturers to pursue. This would include a review (possibly a S.W.O.T analysis) of all potential value added products, as well as a consideration of the constraints inherent in BC's fibre basket. The ultimate aim will be to produce a 'silver bullet' list of products and markets that represent the greatest potential upside and likelihood of success.
2. We recommend activities which serve to catalyze debate and dialogue on the creation of a cohesive "made in BC" brand and design aesthetic are encouraged in the forms of informal group meetings, symposia, and conferences, and involving stakeholders from industry, universities, the industrial design community, architecture, and research institutions. We recommend that a thorough case study describing similar movements be undertaken, in the Danish and Finnish furniture sectors, for instance. If successful, we recommend that this design aesthetic be aggressively marketed globally through trade shows, trade missions, and more traditional promotional media.
3. We recommend that formal product development programs and incentives for under-resourced value added wood products manufacturers interested in diversifying their product lines should be continued, if not enhanced. Such programs need to be heavily promoted to the value added wood products sector.

6.7 Recommendations Pertaining to Education and Skills Training

The following recommendations are made to improve education and skills training for current and future employees in the value added wood products sector:

1. Given the multifaceted nature of value added wood products design and manufacturing, we recommend exploring the development and delivery of more holistic wood products

programs which embody this diversity of topical areas. At the post-secondary level, this can potentially be achieved through partnerships with educational institutions (ie, UBC, UNBC, Emily Carr University of Art and Design, BCIT). For instance, the need for a vibrant wood products sector to continually evolve by developing new and innovative wood products requires expertise in product design and development, manufacturing processes, and entrepreneurship. A joint science / arts program (degree and/or diploma) between UBC and Emily Carr University of Art and Design can be imagined, jointly taught and administered by the two institutions. Similarly, the Wood Innovation and Design Centre in Prince George presents ample opportunities for UNBC to partner with UBC, which has a pre-existing and well regarded civil engineering program. In either case, this would need the buy in and support of relevant decision-makers and perhaps the Ministry of Education for the creation of a new degree-granting program.

2. There are a number of service providers (ie, CAWP, FPInnovations, BC Wood Specialties Group, BC Wood WORKS!) that provide (or have provided in the past) a variety of high quality workplace education and skills training programs for the value added sector. Capacity building is much needed in BC's value added wood products sector, both at the managerial and floor-worker levels. We recommend that support for these types of initiatives in a strategic, cohesive, and forward thinking manner, should be continued.
3. BC has a long and proud history and culture of forestry and wood products. However, interest in the sector is waning and enrolment in post-secondary programs remains a challenge. We recommend that funds should be invested in promoting the sector, with the aim of appealing to youth by showcasing elements of the value added wood products industry that are more likely to attract them – high tech machinery, high end design, environmental friendliness, sustainability, carbon sequestration, and so on. Efforts should be made to create and disseminate resonant messaging about the forest sector and wood products to K-12 students in both the rural and urban parts of the province.

6.8 Recommendations Pertaining to Marketing

The following recommendations are made to improve marketing efforts on the part of the value added wood products sector:

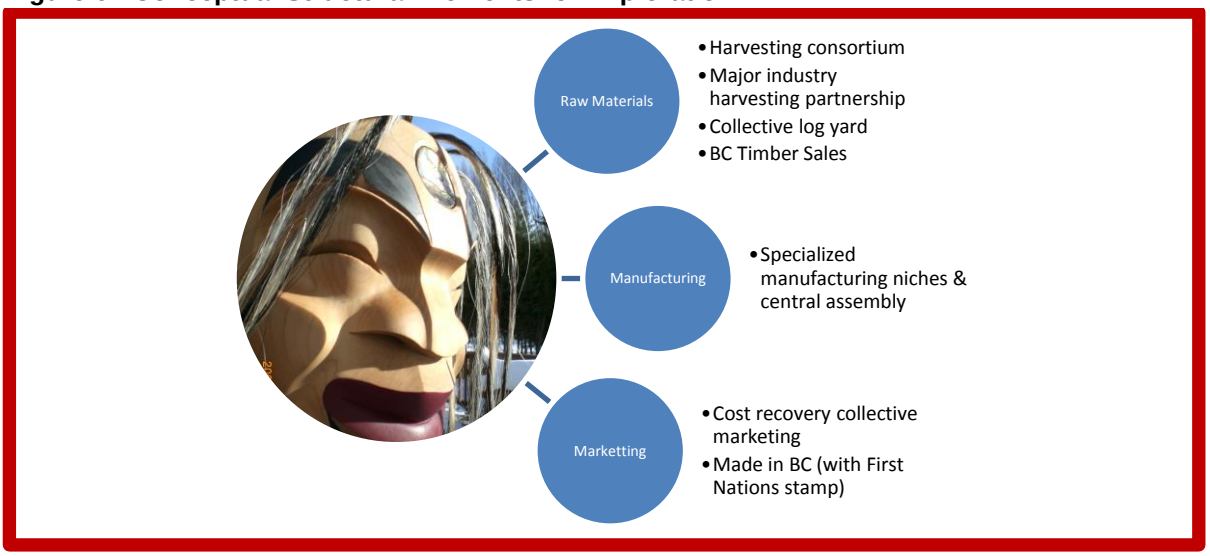
1. We recommend that funding should be made available to create and deliver a province-wide training program in marketing, social media, and market research, perhaps offering in-plant courses to minimize disruptions for management staff. These courses should be offered at incentivized rates for all value added wood products manufacturers interested in acquiring marketing skills.
2. We recommend that the services of a professional advertising firm should be sought to develop an industry-wide generic marketing strategy, in consultation with value added producers and key association actors. One possible avenue would be to promote a 'Made in BC' brand for value added wood products produced locally.
3. We recommend that government should provide direction to FII in the form of priorities expressed, and the content of the *Government's Letter of Expectations*, to increase the emphasis on supporting the varying needs of industrial participants in all parts of the wood value chain with particular attention to the needs of the small- and medium-sized enterprises that typify the value added wood sector. This revised direction should be clearly reflected in offshore trade missions, for which a requirement could be made to include value added wood manufacturers and products.

4. We recommend that government programs which serve to maximize the use of wood in public and private spaces should continue unabated, and perhaps even more aggressively;
5. We recommend that the government and FII should adopt some specific market growth targets for value added wood products, in a fashion similar to the market growth targets currently in place for softwood lumber products;
6. We recommend that government and industry should ensure that, where the best markets for value added wood products differ from those of structural wood products (eg. U.S. Northwest vs. Asia), that the differing need is reflected in the priorities and funding allocations for marketing programs,
7. We recommend that government set the provision of funding to increase the manufacturing and marketing capacity of value added wood sector SME's in all sub-sectors as a priority of the government, to bring the executive prerogative of the FII CEO to bear on the priority if necessary to ensure the capacity is enabled.

6.9 Further Conceptual First Nations Considerations

The question of 'structural' mechanisms to help integrate the First Nations' component into a provincial strategy to invigorate the value added wood sector is a subject area that has to date only been addressed in very general terms. The figure below depicts several conceptual, structural elements that could be explored for development in the value added wood sector that could help First Nations forest sector businesses be a valuable contributor toward the invigoration of the sector. We wish to emphasize that exploration or establishment of any of these structural elements will be subject to all of the limitations/challenges outlined earlier and will require a significant, dedicated effort by a very focused team of experts. This team must be made up of individuals who have the necessary range of skills and abilities plus the established credibility among First Nations, the Sector and government.

Figure 6: Conceptual Structural Elements for Exploration



See the table below for slightly more detail regarding each of these concepts/structural elements.

Table 8: Concept Descriptions

Concept	Description
Harvesting consortium	First Nations create regional harvesting consortia managed by experts in harvesting
Major industry harvesting partnership	Offsets for major industry to harvest regional First Nations' volumes
Collective log yard	Collective First Nations log yard with distribution networks to the Sector
BC Timber Sales	Partnership with BC Timber Sales
Specialized manufacturing niches & central assembly	Individual First Nations manufacture components for larger products with centralized assembly
Made in BC (with First Nations stamp)	Create a marketing niche utilizing a First Nations stamp for FSC type certification
Cost recovery collective marketing	Establish a collective marketing entity that operates on a cost recovery basis.

APPENDIX A: A REVIEW OF FINLAND'S VALUE ADDED WOOD INDUSTRY

A high level review was done of the policies and approaches that have been applied in Finland and that have supported its current degree of success in creating value from forest resources. Finland was chosen due to the similarities that exist between the primary wood product sector in that country and BC, with large components of softwood lumber, pulp and paper, and panel products, and the predominance of coniferous timber that supplies the industry.

1 The Finland Approach

1.1 Comparisons between BC and Finland

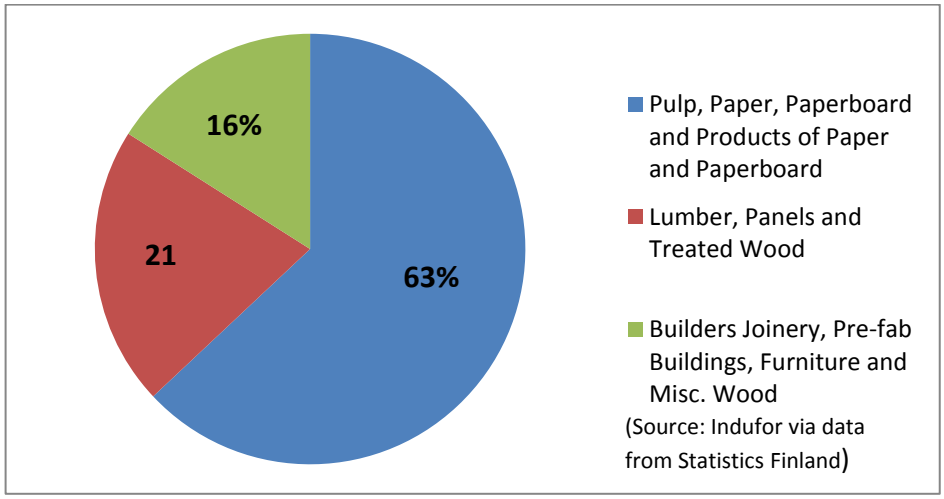
In a number of important ways, Finland and its forest economy are similar to BC, and the interior forest economy of BC, in particular. Finland's achievement of benefits from a forest resource so similar, or of lesser quality, than that of BC points to what could be achieved here.

Table 1: Comparison of Attributes – Finland and BC

Attribute	BC	Finland
Population	4.4 million	5.4 million
Timber Producing Forest Land	22 million hectares	23 million hectares
Forest Composition (Note: The majority of interior BC is more similar to Finland than the entirety of BC, with large proportions of pine and spruce forest present).	Pine: 20% Spruce: 21% Hemlock: 19% True Firs: 14% Douglas Fir: 11% Red Cedar: 6% Other Conifers: 2% **Total Conifer: 93%** Aspen: 5% Other Deciduous: 2% **Total Deciduous: 7%**	Pine: 50% Spruce: 31% **Total Conifer: 81%** Birch: 16% Other Deciduous: 3% **Total Deciduous: 19%**
Sustainable Timber Harvest and Outlook	Approx. 72 million m3/yr (2009), declining soon	100 million m3/year and rising
Timber Harvested Timber Imported & Processed	69 million m3 (2011) Nil	60 million m3 (2010) 10 million m3 (Average)
Direct Sector Employment	50,000 (2011)	69,000 (2010)
Can. $GDP/m3 Processed	$123 (2011)	$180 (2010)

As can be seen from the table above, the commercial forests of Finland are largely comprised of spruce and pine, from which in 2007 a large proportion of 'typical' value added wood products is manufactured (builder's joinery, pre-fabricated buildings, furniture), in addition to commodity products, as shown below:

Figure 1: Finland 2007 Percent Value of Production by Product Grouping



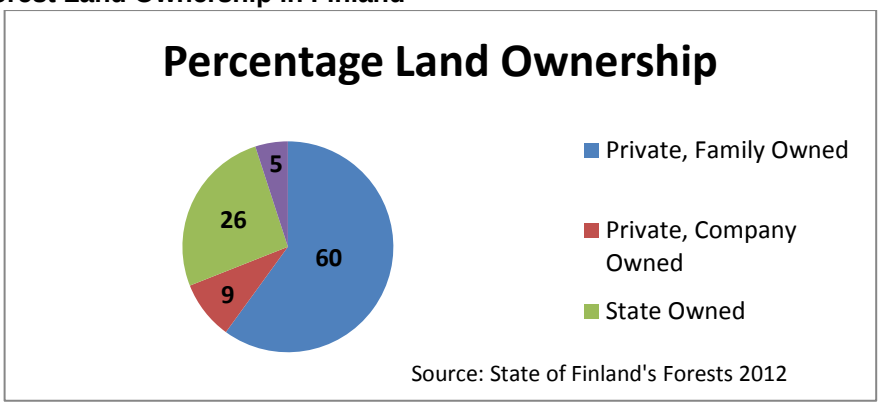
As can be seen above, Finland has found the ways and means to develop a wood value chain from a timber basket similar to that in interior BC that includes a component of value added wood products nearly as large in value terms as the lumber and panel component of the value chain. The 16% of production in value added wood products equates to approximately CDN $5.6 billion. From a similar, slightly broader product grouping, BC in 2006 had a production value of CDN $3.1 billion, in spite of the larger timber harvest and more diverse timber species profile available in BC. The $GDP per cubic metre harvested in Finland is some 46% higher than that achieved in BC.

How has Finland achieved its current success in developing its wood value chain? Some of the most important strategies are described below.

1.2 Recognition that Government is Part of the Wood Value Chain

In Finland, the pattern of ownership of productive forest land is as follows:

Figure 2: Forest Land Ownership in Finland



Although the state owns only a small proportion of the forest, the government of Finland plays a vital role in the wood products value chain. Given the history and scale of the forest sector in the country, Finnish society takes the position that forests, forestry, and industry are all critical to the well-being of citizens, and it is the role of government to foster that well-being.

Under government leadership, Finland has, since 1993, used a 'National Forest Program' approach to realize a strategic collaboration with stakeholders in the wood products value chain, from the forest through to the manufacture of all product streams. The National Forest Program, approved at a political level, identifies the purpose of the strategy, who the strategy serves, and why:

"To increase the welfare of Finnish citizens through the diverse use of forests in compliance with the principles of sustainable development. Welfare here is a broad concept, consisting of many material and immaterial factors, such as health, employment, livelihood, recreation as well as a clean, healthy and vigorous environment."

This choice of orientation of the government toward the forest sector is critically important, as it shapes the nature and scale of government actions as part of the wood value chain. The aspects of the orientation (citizens, health, employment, livelihood, recreation, environment) may be used as touchstones for public policy actions.

1.3 Government Actions in the Wood Value Chain – The National Forest Program

i. Government Leadership and Influence:

In Finland, government takes responsibility to provide leadership and influence at a senior level to create and implement the National Forest Program.

- The program development was managed by a National Forest Council led by government agency staff. The final program was approved at a political level through a 'government resolution';
- The program is broadly resourced within government. Five ministries formally collaborate in the implementation and funding of the program, including:
  - Ministry of Agriculture and Forestry;
  - Ministry of Environment;
  - Ministry of Employment and Economy;
  - Ministry of Education;
  - Ministry of Transport and Communications

ii. Strategic Collaboration of Organizations Toward A Single Vision:

As part of the National Forest Program, Finland developed a single vision for the development of the forest sector supported by all participants in the sector. The vision has evolved as global conditions affecting the sector have changed, but what remains consistent is how Finland adapts the vision – through strategic collaboration with those with a stake in the entire wood value chain.

The current vision for the program, established in 2008, states *"The vision, or target state, of the program is set for 2015, when Finland is a world pioneer in sustainable forest management, the*

competence of the sector has been refined into new competitive products and services, the use of domestic wood has increased significantly and forest biodiversity has improved."

For a sense of how broad-based the support for the vision is, consider that the following interests were represented in its development:

- Government ministry engagement from forestry, finance, education, environment, social services, health, trade and industry, and transport and communications;
- Industry association engagement from sawmilling and other forest industries, forestry and engineering contracting interests, and forest land owners;
- Representation from non-timber forest product interests in hunting, tourism, recreation, and botanicals;
- Representatives with a conservation perspective including the World Wildlife Fund, Association for Nature Conservation, and the Finnish Environment Institute;
- Woodworker related unions;
- Professional associations representing professional foresters and other forestry-related professionals;
- Academia;
- Forest-related research institutes.

The supporters of the vision understand how challenging it is to achieve. The program envisions that development of a value chain from the forest to the consumer that incorporates current and new forest-based products requires sustained and seamless cooperation between the private and the public sector, as well as active participation and willingness to change on the part of the forest industry, SMEs, forest owners, interest groups as well as other actors in the sector. All of these actors are able to participate in the steering and monitoring of the program through a National Forest Council at the national level, and through Regional Forest Councils at the regional level.

iii. Multi-sector Agreement on Strategies to Achieve the Vision:

Through the National Forest Program process, Finland mapped out the strategic actions that all agreed were appropriate, achievable, and necessary to realize the outcomes required. Examples of these actions include:

- Agreement on the underlying premise for the program, which is that:
  - It is possible to expand forest-based manufacturing production while continuing to maintain the social acceptability, economic viability and ecological, social, and cultural sustainability of the forest sector.
  - Production in the forest sector must be market-oriented and based on customer needs;
  - The public sector is responsible to create the preconditions under which forests can be managed in a competitive way;
  - It is possible to achieve a balanced integration of the multiple uses of forests so as to benefit from the particular strengths of each region.
- The program covers, in a very comprehensive way, the value chains of different products and services from forests to the consumers;

- Six priorities were selected to focus the strategy:
  - A competitive operating environment for the forest industry;
  - Enhancing the climate and energy-related benefits of forests;
  - Protecting the biological diversity and environmental benefits of forests;
  - Promoting the use of forests as a source of culture and recreation;
  - Strengthening the skills, expertise, and social acceptability of the forest sector;
  - Promoting sustainable forest management in international forest policy.
- The National Forest Program assigns government a particularly important role to play toward small- and medium-sized enterprises. Examples include:
  - Strengthening the timber market by providing forest owners (most of whom are individuals and families) with better information, management advice, and services for forest resources by developing services for forest owners and tax incentives;
  - Promoting the creation of forest-based value chains from the forest to the market by funding research and development programs and investments by small- and medium-sized enterprises;
  - Improving operating conditions for small forest products enterprises in rural areas with development and investment subsidies;
  - Providing support for the development of industrial clusters, both forest clusters and extended clusters. The forest cluster includes the forest sector and closely related branches of mechanical engineering and chemical industries, automation and packaging systems, power production, and related research and consulting services. The extended forest cluster includes the services sector, as well as public services in connection to education and training;
  - Promoting sales of forest industry products in export markets through international cooperation projects and by supporting sales promotion work in Finland and neighbouring regions.

iv. Strategic Targets and Measures:

In keeping with the axiom ‘what gets measured gets done’, Finland applies targets and measures for 2015 toward which to work through the National Forest Program. A few examples of targets and measures used include:

- A target to increase the value of the forest and wood products industries in Finland by 20%;
- Forestry and product manufacturing employment targets of at least 23,000 and 50,000 people;
- A 25% increase in the value of tourism and recreation services in rural areas over 2004 levels;
- Public funding for research and development in the forest sector of 200 million euros per year
- A target to graduate 3000-3500 persons per year for all levels of education in forest management, bioenergy, wood, and paper industry disciplines to fill the recruitment needs of the sector.

v. Proactivity, Patience and a Long-term Focus:

Through its programs and strategies, Finland models an understanding that industrial development in the forest sector requires patience and a long-term focus. The programs are planned with long lifespans, but are open to revision as new things are learned. The program is designed to be revised on the basis of the results of monitoring, evaluation, and development projects, and from the experiences of other countries engaged in similar industrial development efforts.

vi. A Strong Timber and Log Market

The history of private property rights in Finland has resulted in 60% of the productive forest land being held in ownership by families and individuals. Between 2000 and 2009, the source of logs for industry averaged 83% from family-owned forests, 9% from state-owned lands and 8% from company-owned lands. There are some 375,000 separate forest land holdings in Finland greater than 2 hectares in size, and the average size is about 30 hectares. Approximately 1 in 8 Finnish citizens has an ownership stake in forest land.

The demand side of the log / timber market in Finland is similar to that in BC, with a relatively small number of manufacturing companies owning the vast majority of the manufacturing capacity. The logs or timber from the small land holdings mentioned above is supplied to manufacturers through approximately 150,000 timber sale transactions per year. Over time, 103 Regional Forest Management Associations have developed to support small forest land owners in their role in the forest sector. The associations provide support services to land owners in the areas of planning and implementing forest operations and other advisory services to improve profitability for the land owner. Importantly, the associations may also represent the land owner in timber sale transactions with manufacturers. There is legislation which requires landowners to pay a fee to the association, which comprises about 10% of association revenues, with other revenues being earned through the provision of services.

Most timber sales are ‘stumpage sales’, where the timber is sold for a negotiated stumpage price, logging takes place through a contractor, and the timber is delivered to a mill. Some timber sales are ‘delivery sales’, whereby the seller agrees to deliver a certain amount of timber to a mutually-agreed upon location by a certain date specified in the contract. The seller is paid the delivery price mentioned in the contract for the measured amount of timber. Delivery sales enable the seller to sort through their timber supply and direct different logs to different mills, for example, sending certain high value logs to a value added enterprise and ordinary sawlogs to a lumber mill.

The land ownership structure in Finland creates a high degree of separation in the log / timber market between timber owners / managers and wood products manufacturers. The combination of so many log sellers with full discretion as to if and when to harvest and sell their timber creates some key conditions for a functioning timber market. The milling infrastructure in Finland is large enough and competitive enough that Finland is a net importer of logs in most years, for instance, from Russia. This creates a healthy demand for the privately owned timber in Finland in most years, which makes it easier for timber sellers to transact with a relatively small number of very large buyers.

vii. Financial Incentives for Forest Industrial Development

It was mentioned earlier that Finnish society takes the position that forests, forestry, and industry are all critical to the well-being of citizens, and it is the role of government to foster that well-being. Finland has made a number of public policy decisions in the interests of creating and fostering such well-being. The following description of some of these policies is extracted and paraphrased from the *State of Finland's Forests Report 2012.*

Financial supports for silvicultural and environmental operations are available in the form of government subsidies or loans, as well as tax policies. Silviculture is a long-term investment, and many measures that are vital for the production of wood or the safeguarding of biodiversity have poor profitability for private forest owners, and are therefore subsidized. The current enabling legislation was created in early 1997, when the Act on the *Financing of Sustainable Forestry Act* came into force. Under the Act, government subsidies are available for safeguarding sustainable wood production, maintenance of forest biodiversity and improvement of forest health. New funding mechanisms for 'natural values trading' and establishment of cooperation networks were included in the *Financing of Sustainable Forestry Act*.

An *Energy Support for Low-grade Timber Act* was enacted in 2010. The Act enables a subsidy that will be granted for harvesting energy wood from young forest sites ('thinnings'). The purpose of the Act is to bring to market wood from sites where the profitability of harvesting is poor due to circumstances and the size of the trees.

In Finland, forest owners are taxed on the basis of real income and expenses associated with timber sales. Partial tax exemption of income from the sales of timber was applied in 2008–2009 to incentivize secure supply for the forest industry as timber imports were problematic during that period.

Forestry is supported by several measures in regional development policy. Some subsidies and preferential tax policy is available to entrepreneurs starting new businesses in some regions. Regional activities in the forest sector are also supported through funding from the European Union and by the Centres of Expertise Program.

viii. Integration of Primary and Secondary Wood Manufacturing

Under pressure in the commodity lumber market during the 1980's, many sawmills in Finland began to diversify into other products and associated markets. Investments were made in sawmills to enable new sawing programs to feed the wood supply chain for specialty, value added wood products, while continuing to manufacture large volumes of commodity lumber. As a result, the volume of commodity lumber production decreased from 79% in 1987 to 64% in 1991, while the production of specialty and custom-made products respectively increased from 14% and 7% in 1987 to 24% and 13% in 1991 (Kozak and Maness, 2003).

Consider the current production of Stora Enso, a Finland-based company and one of the largest forest product firms in the world. In addition to its mills located in Finland, the company has lumber manufacturing capacity in 10 other countries including Nordic states, Baltic states, and other

countries. The company has a highly diversified product line in solid wood, pulp, paper, paper packaging, and other products. Within its solid wood product line, in addition to commodity lumber, Stora Enso offers:

- Cross-laminated timber panels, and building systems with such panels;
- Pine and spruce door and frame components to supply other manufacturers;
- Window components to supply other manufacturers
- Two and three layer laminated beams;
- Pre-fabricated building components;
- Complete pre-fabricated buildings;
- High quality designer grade pine paneling for interior walls and ceilings;
- Pine and spruce tongue-and-groove paneling;
- Pine and spruce interior and exterior claddings for home renovations;
- 'Thermowood', a specialty product for extreme weather applications, treated without chemicals to improve its thermal characteristics and durability (a 'green building' product).

Stora Enso has achieved a high degree of integration between primary and secondary (value added) solid wood manufacturing based almost entirely on a timber supply comprised of pine and spruce. In 2013, the company will produce 6 million cubic metres of solid wood products, 3 million cubic metres of which will be in the value added wood product types described above.

APPENDIX B: A REVIEW OF QUÉBEC'S VALUE ADDED WOOD INDUSTRY

Québec was chosen for comparison in a Canadian context as a jurisdiction which has a timber supply comprised mostly of softwoods, with an important component of hardwoods, but which enjoys a rather vigorous value added wood products sector compared to most other Canadian provinces.

Table 1 compares a number of attributes of the BC forest and forest economy to that of Québec, a province in Canada that has developed a large and important value added wood sector.

Table 1: Comparison of Attributes, Québec and BC

Attribute	BC	Québec
Population	4.4 million	7.9 million
Timber Producing Forest Land	22 million hectares	35 million hectares
Forest Composition	Pine: 20% Spruce: 21% Hemlock: 19% True Firs: 14% Douglas Fir: 11% Red Cedar: 6% Other Conifers: 2% **Total Conifer: 93%** Aspen ('Poplar'): 5% Other Deciduous: 2% **Total Deciduous: 7%**	Fir, Spruce, Jackpine, Larch: 59% Other Conifer: 4% **Total Conifer: 63%** Poplars: 12% Other Deciduous: 25% **Total Deciduous: 37%**
Sustainable Timber Harvest and Outlook	Approx. 72 million m^3/yr (2009), declining to approx. 55 million m^3/yr soon	44 million m3/year and declining
Timber Harvested Timber Imported & Processed	69 million (2011) Nil	24 million m^3 (2008) 6 million m^3 (2008)
Direct Sector Employment	50,000 (2011)	77,900 (2010)
Can. $GDP/m3 Processed	$123 (2011)	$282 (2008)

Québec's natural wood resource has some disadvantages compared to BC:

- Although the timber-producing land base (Crown land plus private land) of Québec is 59% larger than that of BC, the land is significantly less productive, yielding a substantially smaller annual timber harvest. This adds raw materials costs to processing;
- The softwood timber supply in Québec lacks some high value softwood species, such as red cedar, and does not offer the amount of large diameter logs that can be found in BC's wetter climatic regions and which open opportunities for various value added manufactures.

Québec also has some important advantages compared to BC:

- Québec has a much higher proportion of its timber supply in hardwoods, 37% compared to 7% in BC. Hardwoods such as maple, beech, cherry, and birch are typically more suited to furniture and other value added manufacturing compared to softwoods;
- The larger population of Québec and the proximity of high population densities in eastern Canada and northeastern U.S. place it closer to larger markets for value added wood products compared to BC. Having said that, BC is relatively close to large markets in the northwest U.S.

As of 2012, the value of manufacturing sales of windows, doors, millwork, structural wood components, cabinets, and furniture in Québec was $4.6 billion, or 28% of the total value of wood product manufacturing sales that year (Statistics Canada). As shown in the table above, the $GDP per cubic metre of wood processed in Québec in 2008 was $282, some 220% higher than that experienced in BC in 2008.

While some of Québec's success can be traced directly to the presence of a significant proportion of hardwoods in its forests, Québec has also pursued a number of other strategies over time that have added to its success in value added wood manufacturing, as described below.

i. The Québec Timber / Log Market

The current timber supply in Québec is approximately 44 million cubic metres per year, comprised of 63% softwood timber and 37% hardwood timber. Importantly for the log/timber market, approximately 12 million cubic metres, or 27%, originates from private forest lands. In addition, the wood product manufacturing sector in Québec is sufficiently competitive that it is able to import from other jurisdictions large timber volumes for processing in Québec. In 2008, the province achieved net imports of logs totalling approximately 6 million cubic metres. Sixty-two percent of the timber was imported from the U.S. and other countries, 30% from Ontario, and 8% from the Maritime Provinces. Fifty-four percent of the imported timber was softwoods and 46% was hardwoods (Quebec's Forest Resources and Industry, A Statistical Report, 2010)

Another important aspect of the log / timber market is the demand-side of the market constituted by the primary timber processing entities, such as lumber and pulp manufacturers. The structure of the demand-side of the log / timber market remains relatively unconsolidated, for example, compared to BC, in spite of the high degree of consolidation that has occurred in Québec. The provincial government reported that, in 2008, 69% of round logs were consumed in 'independent mills', with the remainder consumed in mills owned by integrated firms like Bowater Canadian Forest Products, Abitibi Consolidated, Kruger Inc., or Domtar. Although some mills have now closed since 2008/09, the table below compares the number of timber processing facilities in the two provinces.

Table 2: Numbers of Timber Processing Facilities Québec and BC

Mill Type	Québec (2008)	BC (2009)
Veneer/OSB Mills	12	15
Pulp Mills	30	19
Sawmills	321	72 med/large, 62 small

The presence of significantly more buyers in Québec, implied by the much larger number of mills there, combined with the fact that the province is a net importer of logs, tends to support a functioning log market for those that must sell logs / timber on the market. Such a market greatly assists value added wood product manufacturers to secure raw material.

ii. Value Added Wood Research, Development and Education

Québec has an old wood culture in a Canadian context, with craftsmanship dating back some 400 years. Industrial scale value added wood manufacture has been underway for more than 100 years, for example, in the furniture sub-sector. Over this long history, the province has created well developed institutions for wood-related research, product development, wood design, and wood education. This infrastructure is critical to feed the wood products manufacturing supply chain with knowledge, innovation, new products, and skilled labour. This infrastructure, described below, is a cornerstone of Québec's success in the value added wood industry.

1. The École Québécoise du Meuble et du Bois Ouvré (EQMBO, the National School of Furniture and Cabinet Making) offers diplomas and professional degrees in technical furniture and cabinet making;
2. EQMBO Enterprises, a non-profit company affiliated with the National School, is a college technology transfer center in wood processing providing services to the Québec wood and furniture industry. Services focus on productivity increases, workforce development, implementation of new technologies, management, process improvement, design, drying of wood, and finishing products. Companies that purchase EQMBO Enterprise services may receive a provincial tax credit up to 40% of total costs incurred.
3. Laval University has a long-established Industrial Chair on Engineered Wood Products for Structural and Appearance Applications (CIBISA). The mission of the CIBISA is to develop and transfer products, processes, and business models to the wood products industry and to develop value added strategies to improve the competitive position of the members of the organization. The Chair pursues 4 objectives:
    a. Develop innovative products for wood building systems and for appearance products such as furniture and flooring;
    b. Develop new and improved processes for the production of engineered wood products;
    c. Develop innovative business models;
    d. Train highly qualified personnel in the field of secondary wood processing.
4. Laval University also houses The Centre for the Transformation of Milled Wood, the Gene H. Kruger Pavilion, a secondary wood processing research network comprised of Laval University, University of BC, University of Toronto, University of New Brunswick, and FPInnovations. Laval is also home to FOR@C, a research consortium dealing with supply chain issues in the forest products industry and the NSERC Value Chain Optimization Strategic Network;
5. The Partnership of Furniture Industries (acronym PARIM) is an academic and FPInnovations partnership to serve as the driving force for technological progress in the furniture industry by structuring efforts in R & D, technology transfer, and training of its partners. The partnership creates synergies that benefit the furniture industry by providing a structure knowledge exchanges between the furniture industry and research partners.

iii. Government Investment Policy Actions Relevant to the Value Added Wood Sector

1. Investment Québec Corporation:

Investment Québec (IQ) is a Crown corporation whose mission is to stimulate investment and employment in every region of the province. The Corporation supports the creation and development of businesses of all sizes through customized financial solutions and investments complementary to those offered by partner institutions. The province has empowered IQ to act as a combined financial institution and economic development agency. IQ provides development capital in the form of share capital, preferred shares, or debt, with a view to building partnerships tailored to the nature of a company's growth plan.

2. Forest Products Investment Group:

IQ has established a specific investment unit focused on the forest products sector. IQ works with partners and clients to develop the wood value chain, promoting cooperation in the forest products industry in manufacturing and product development. With regards to value added solid wood products, IQ places a high priority on the development of:

- Structural components and engineered wood;
- Non-structural and appearance wood products;
- Partnerships to optimize product design, production, commercialization, and distribution;
- Furniture products;
- Business alliances to enhance U.S. marketing potential and consolidate the supply chain.

The IQ forest products unit chooses to work with wood product companies that:

- Have sustainable projects that will spur industrial growth in the province;
- Possess competitive advantages in their fields of specialty;
- Combine their strengths and expertise to develop new or complementary activities;
- Pursue their growth in the province and international markets;
- Need financing (loan and/or share capital) of $5 million to $100 million.

IQ administers a number of investment programs of broad application, including to the value added wood products manufacturing sector.

3. Immigrant Investor Program Funding Investment:

IQ owns a subsidiary that invests funds received by the province through the Immigrant Investor Program (the Canada-wide program of the federal government). Through the subsidiary and a network of due-diligence advisors, IQ provides worthy businesses engaged in manufacturing with a non-repayable contribution toward business development projects, generally equal to 10% of the project cost, or 15% in the case of business start-ups. Eligible projects include business start-up, growth, modernization, or production improvement, obtaining standards-related certification, technological or design innovation, market development or commercial

development of products. To be eligible, the business must be competitive and the project must be profitable.

4. The UNIQ Investment Program:

The UNIQ program offers businesses loans, loan guarantees, or quasi-equity financing. Loans are offered at competitive market rates and loan guarantees extend to the net loss incurred by a financial institution that grants a loan, line of credit, letter of credit, or other short-term financial commitment to the business in question. Quasi-equity financing may be offered in the form of debentures. Project eligibility is broad, with examples that include:

- Purchase of machinery, office equipment, or transportation equipment;
- Expansion, construction, or modernization of a building;
- Business start-up;
- Entering a new market;
- Refinancing;
- Succession or business transfer via share acquisition.

To qualify, a business must have a sound financial structure, adequate management, qualified staff, and a solid organization. Attributes of the program include:

- The minimum amount of financing $50,000;
- The financing may cover up to 100% of the project costs;
- The loan guarantee may cover up to 85% of the net loss;
- The maximum duration of the financial assistance is 20 years;
- Repayment of the capital amount may be deferred up to 24 months;
- Securities may be required.

5. The ESSOR Investment Program for Non-Profits and Cooperatives:

This program is designed to provide to not-for-profit companies and cooperatives programs somewhat parallel to those provided to for-profit companies. Eligible projects include:

- Capital asset projects with eligible expenditures of $250,000 and over, including investment projects aiming to create a new business or expand or modernize an existing business, projects involving provision of a service, or the establishment of a manufacturing facility leveraging a proven green technology developed in Québec;
- Projects to construct, adapt, expand or acquire a building in order to create new research and development facilities for active research businesses that do not own research facilities and for those that carry out research in Québec in facilities that they own;
- Projects that do not involve capital asset expenditures but for which the cumulative increase in payroll over the first three years following the project start date is $2 million or more;
- For prescribed regions of Québec and First Nations reserves in specified regions, business projects with eligible expenditures of less than $250,000 may be considered.

Projects must be completed within three years and must not have a negative impact on existing businesses. Projects must also contribute to maintaining or creating jobs and the IQ assistance must complement private financing sources and other regular government programs. Assistance takes the form of a loan or loan guarantee:

- The loan guarantee may cover up to 70% of the net loss;
- The maximum term of the financial assistance is 10 years;
- Financial assistance granted by governments may not exceed 50% of the total project cost.

6. IMPLIQ Financing Program for Cooperatives:

Under this program, cooperatives may obtain a loan or loan guarantee for a wide range of projects, for example, working capital, acquisition of trademarks or patents, product or market development, financing for new or existing worker-shareholder cooperatives; capital asset acquisitions, acquisition of cooperatives shares, and other activities. Qualifying businesses must have adequate management, qualified personnel and a sound organization. They must also be financially viable and have a social aim. Moreover, they must have solid community roots that help ensure the success of their undertakings. Program attributes include:

- The minimum financing provided is $25,000;
- Financing may cover up to 100% of project costs;
- A loan guarantee may cover up to 85% of the net loss;
- The maximum duration of assistance is 10 years for projects involving working capital and 20 years for projects involving the acquisition of capital assets;
- Securities may be required.

7. The Regional Economic Intervention Fund (FIER):

The FIER has three program components, including 'support funds' for business, regional investment funds, and the FIER Partners Limited Partnership component.

Support Funds are set up under the control of regional conferences of elected officials that select their management or business entity for the fund. The maximum government contribution is $2 million per regional conference (a total of $36 million was deployed in this fashion) with a requirement that the regional conferences contribute a further $18 million (a 2-1 cost share). For each dollar invested by the community, the government injects $2 (the total envelope of the funds can reach $54 million). As an incentive, the provincial government waives its right to the earnings on its share of capital invested during a period of five years. From such funds, the maximum eligible investment is $250 000 per business, in the form of an equity or quasi-equity investment by the fund.

FIER-Regional Investment Funds are designed to help capitalize of businesses in the start-up, development, succession and turnaround phases. These funds are managed by limited partnerships in which the regional conference holds a majority interest. The maximum government contribution is $10 million per fund ($192 million has been deployed in this fashion). The private sector invests $1 in the limited partnership for each $2 invested by the government

(the total envelope of the funds can reach $288 million). As an incentive, the government waives its right to the earnings on its share of capital invested during a period of five years. For funds with a maximum subscribed capital of $15 million or less, the maximum assistance for an eligible company is $750,000, in the form of equity or quasi-equity investment by the limited partnership. For funds with a maximum subscribed capital of $15 million and more, the maximum investment in a single company is $1 million.

8. FIER Partners Limited Partnership

The FIER Partners Limited Partnership is designed for the creation of sector development funds and seed investment funds, in addition to financing development projects. Sector development funds consist of large venture capital designed to support a traditional, technology, or emerging sector in certain fields of excellence in the regions. The capital outlay of the limited partnership is limited to $85 million. The capital outlay of FIER Limited Partners in a single sector development fund must not exceed $10 million. For every $2 invested by the private sector, FIER Partners injects $1. The fund can invest in every region of Québec.

Seed Investment funding is designed to satisfy the financing needs of seeding-stage technology companies and, therefore, does not have application to the solid wood value added sector.

Regional Development Project funds are designed to support developmental, strategic, and catalyst projects in the regions. The maximum capital outlay of the limited partnership to a regional development project is $30 million. The contribution of FIER Partners ranges from $5 million to $20 million per project. The total participation of the limited partnership in a developmental project must correspond to roughly 30%, but never exceed 50%, of the project's total non-secured financing. The fund is intended chiefly for projects in the regions of the province, as the name implies.

iv. Government Tax Policy of Relevance to the Value Added Wood Sector

The province of Québec has used a number of tax policy instruments that have application for the value added wood sector.

1. Tax Credit for the Diversification of Markets of Québec Manufacturing Companies:

This tax measure provides assistance for manufacturers that wish to extend the marketing of their products to locations outside Québec. Eligible companies receive a refundable tax credit on eligible certification expenses incurred up to December 31, 2015. These expenses include fees paid to an external consultant that are directly related to product certification for export. In the value added wood sector, businesses that generate 75% of their revenue from the sale of engineered wood, window, door, or millwork products may apply for the tax credit. The tax credit is equal to 30% of the eligible certification expenses to a maximum of $45,000 for the credit application period.

2. Tax Credit for Processing Operations in Resource Regions:

For many years, Québec has offered a tax credit program applicable to certain regions of the province designated as 'resource regions' and companies engaged in specified business activities. While new registrants are not permitted to enter the program, businesses previously registered continue to be eligible for certain tax credits related to their ongoing business. For the wood products industry, companies engaged in value added manufacturing of finished or semi-finished products from wood are eligible for the program. Manufacturers of primary wood products, such as lumber, pulp, or paper, are not eligible.

The initial tax credit granted is generally calculated as 20% of the increase in payroll achieved by the business in excess of that set for the 'base year' when the company registered for the credit. The 20% rate applied until 2010 and declined to 10% for 2011 and thereafter. The tax credit rewards job creation in designated sectors.

3. Tax Holiday for Manufacturing in Remote Resource Regions:

From 2001 to 2010, Québec offered a tax holiday program for small- and medium-sized enterprises with manufacturing operations in certain regions of Québec. The objective of the program was to create new employment in such regions. Eligible businesses were SME's with invested capital of less than $20 million operating in one of the regions, and were eligible to claim a 75% exemption with respect to:

- Income tax;
- Tax on capital;
- Employer contributions to the Health Services Fund.

v. Inferences from a Comparison of BC and Québec

The degree of diversification in the wood products industry in Québec appears to confer a number of benefits on the province when compared to BC. From a consideration of Figures 1, 2 and 3 below, the most prominent among these are:

1. Wood product manufacturing sales revenue/cubic metre of wood processed is far higher in Quebec. Exclusive of the furniture industry in Québec, which can be substantially credited to a hardwood resource not native to BC, wood product manufacturing sales in all other forest product groupings was approximately $13 billion compared to BC's less than $11 billion. This was achieved with a smaller timber basket than that of BC;
2. The terrible recession in the wood products markets after 2005/06 was less severe for the Québec industry than the BC industry. Between 2006 and 2012, the value of wood products sales in Québec declined by $5.7 billion, or 26% for the product grouping depicted. In BC, the decline was $6.1 billion, or 35%;
3. The percentage decline in sales of windows, doors, millwork, furniture and cabinets was significantly more severe in BC than in Québec after the recession. This disparity can likely only be attributed to an overall less competitive business environment for these sub-sectors in BC compared to Québec.

Figure 1: Québec Manufacturing Sales (S Billions) by Product Grouping

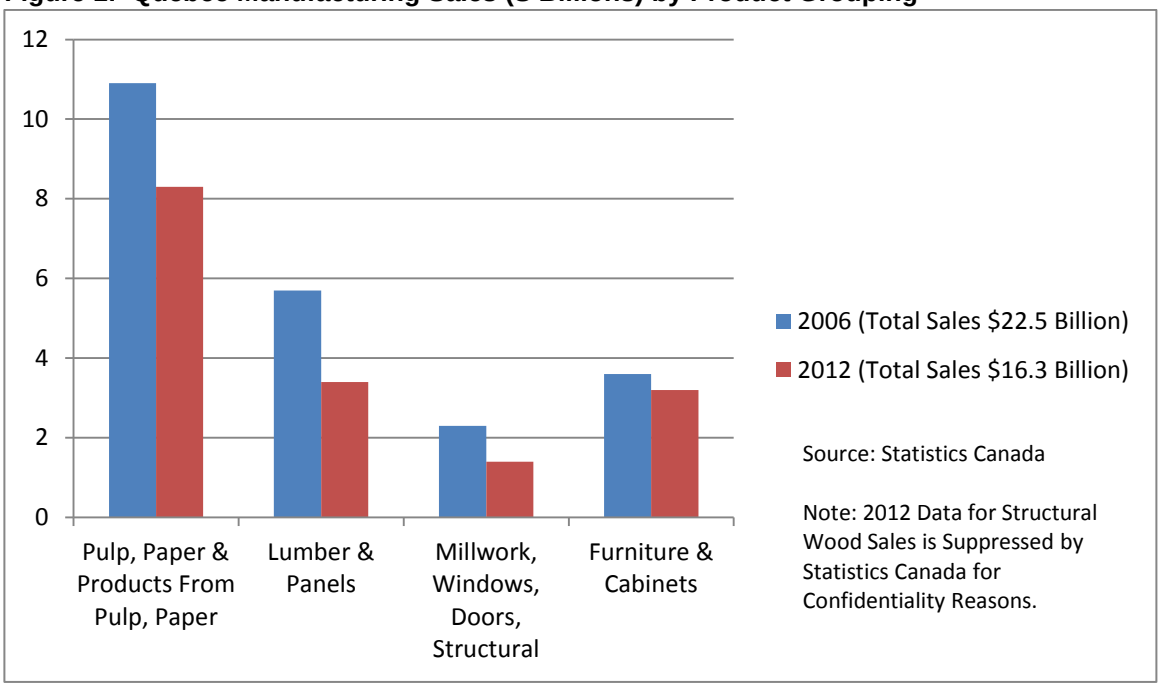


Figure 2: BC Manufacturing Sales (S Billions) by Product Grouping

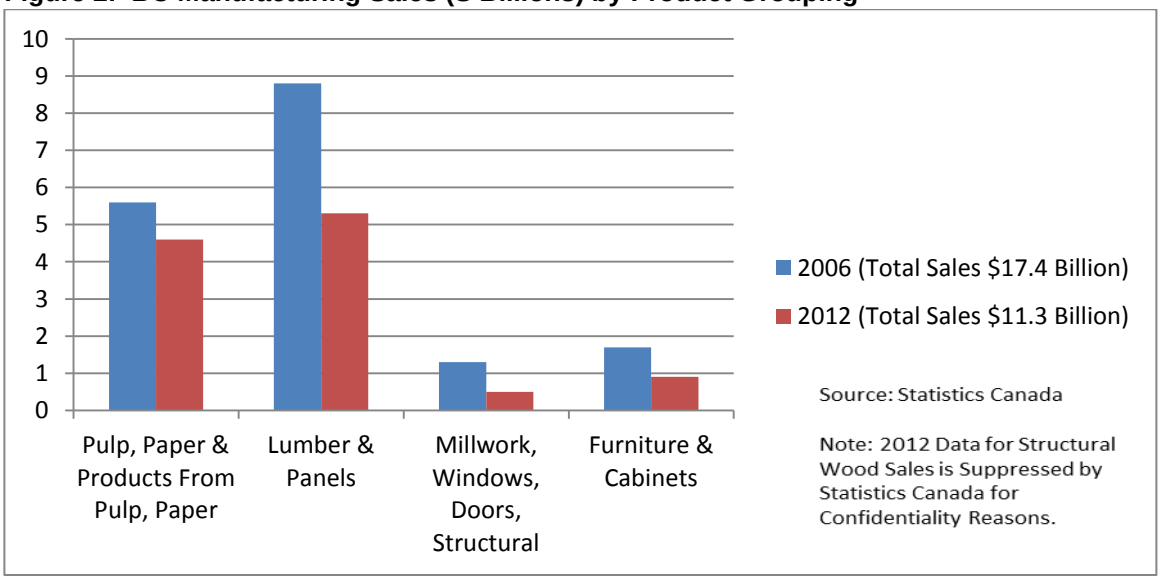
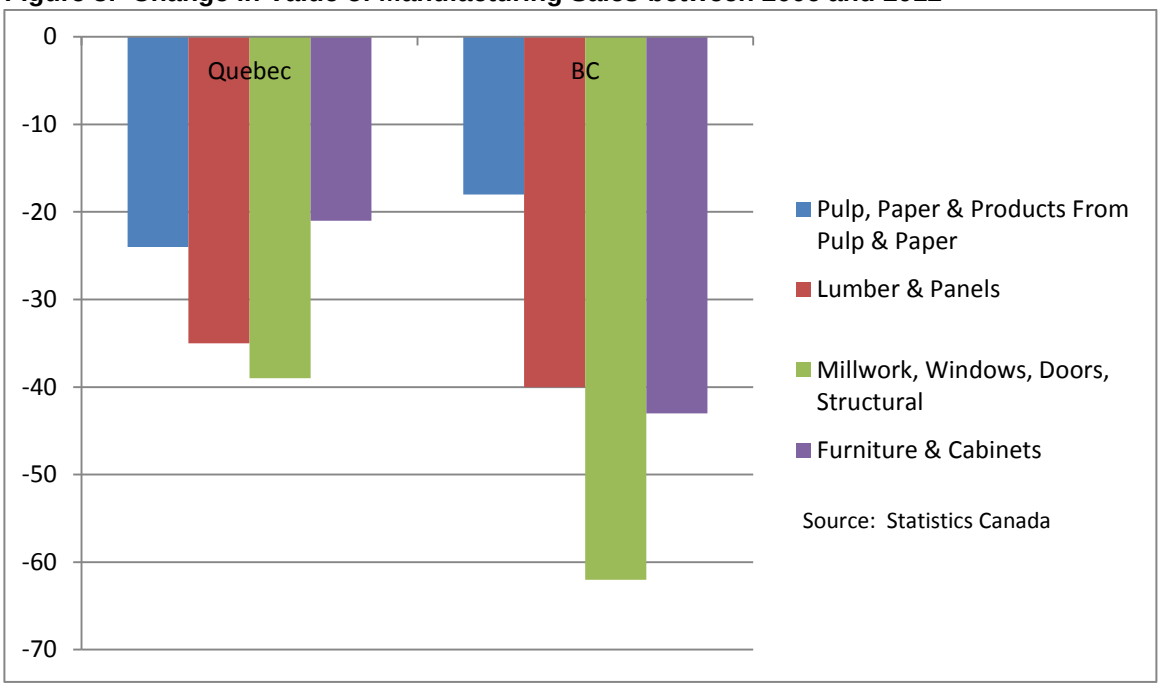


Figure 3: Change in Value of Manufacturing Sales between 2006 and 2012



APPENDIX C: CASE STUDIES OF THE BC WINE INDUSTRY AND BLUEWATER WOOD ALLIANCE

What does the future hold for BC's value added wood products sector? Exactly what is possible? In this section, we attempt to answer these questions by offering up two case studies illustrating successful ventures and potentially plausible futures for the value added wood products sector in BC. The first case study is not a wood products example, but rather describes the trajectory of success that the BC wine industry has experienced in the past few decades. Several lessons can be drawn where BC's value added wood products sector is concerned, most notably in the way that the Okanagan has transformed itself from a low value producer of commodity wines to a world-class wine producing region. The second case study looks at the Bluewater Wood Alliance, a formal business cluster that has been set up in Southeastern Ontario to promote the interests of and increase the probability of success for its member wood products firms. Again, value added wood producers in different regions of BC should be interested in learning about the successes that the creation of a formal, geographically-based business cluster can afford them.

Case Study #1: The Silk Purse – Reinventing BC's Wine Industry

The vibrant BC wine sector represents the second largest grape-producing province in Canada (after Ontario), punching above their compact weight with five official Designated Viticultural Areas (DVAs) in the emerging Coastal Region (Vancouver Island, Gulf Islands and Fraser Valley) and the dominant Interior Region (Similkameen Valley and Okanagan Valley), home to about 95% of BC wine production (BC MAFF, 2004). Now approaching 10,000 total acres of vines, the BC wine industry produced 17,778 tons of harvest (or 11,555,700 litres) in 2010. Perhaps the biggest part of this success story is the distinctive economic value created by BC Vintner's Quality Assurance (VQA) wines which generate $4.16 per litre for every $0.51 per litre generated by the sale of imported wine (BCVQA, 2012). VQA wines now hold 19.81% of sales in the 2011 provincial market share. Moreover, BC VQA provincial sales have tripled over the last decade from $57,638,000 in 2000/2001 to $194,733,422 in 2010/2011.

The Okanagan is the largest and oldest grape growing region in BC, dating back to the 1880s. Prior to the *North American Free Trade Agreement* (NAFTA), however, Canadian wine production on the whole was a bulk industry supplying low cost, volume-based wines (produced primarily from imported juice) with a deserved bad reputation. The BC Liquor Control Board (LCB) held a lot of influence over production, and tariff protection allowed the BC wine industry to compete with other 'jug' wines. The foundation of this industry was laid in the 1950s with disease resistant/winter-hardy hybrids imported from France.

In 1978, the *Cottage Winery Guidelines* enabled small grape growers (less than 30,000 litres per year) to become winemakers and BC wineries began expressing interest in high quality wine production (including experimental plantings of *Vitis vinifera* varieties). In the 1970s, however, the differential tax structure (against imports) acted as a disincentive to uptake. In 1988, therefore, the introduction of NAFTA shook BC's generic wine industry; without a competitive edge, the future of the BC grape industry was in doubt.

If necessity is the mother of (re)invention, the biggest consequence of NAFTA was a dramatic paradigm shift – BC's grape growers and estate wineries opted to restructure and focus on quality. Supported by the government's vine 'pull-out program' – whereby growers were funded ($1,800 per

acre) to replace their lower quality vines – 2,400 acres of vineyards were upgraded to premium viniferous varieties. In 1989, the *FarmGate Winery Policy* licenced small vineyards (less than 20 acres), and allowed vineyards of less than five acres to make direct wine sales on site. The provincial wine industry continued to work together with government to support this evolution, eliminating the Grape Marketing Board to allow free market pricing, and creating the BC Wine Institute (BCWI) under the BC Wine Act in 1990 to set quality standards for wines made from BC grapes and supply generic marketing. The BCWI established the innovative 'check-off' funding system whereby grape growers contribute $10 for every ton of their grape harvest, which is then matched in-kind by Agriculture Canada, creating a pool of resources to fund ongoing research, development to improve product quality, and other efforts (eg, UBC Wine Research Centre, Pacific Agri-Food Research Centre, Canadian Agri-Food Research Council). Notably, Agriculture Canada also began to engage in a program of proprietary research for grape growers on a fee-contract basis. The following year, BC adopted the VQA program, establishing the first quality benchmark for the industry.

These efforts paid off in both quantity and quality. For the next decade, BC VQA sales grew by double digits, and in 1994, Mission Hill's Okanagan Chardonnay surprised the wine world with a top place finish in London, UK. By 2001/2002, the BC wine industry had replanted more than 5500 acres with premium viniferous varieties and invested more than $800 million in capital. The BC wine market – once dominated by white wines – emerged with a more balanced and diverse portfolio of products and producers (Merlot and Chardonnay are the 'bread and butter' of the BC wine industry; these varietals, together with Pinot Gris, Pinot Blanc, Cabernet Sauvignon, Gewurztraminer, Sauvignon Blanc, Riesling, Cabernet Franc, Gamay Noir and Syrah, comprise almost 90% of the BC grape crop). Commercial grape growers now support a *mise en place* approach to vineyard establishment, providing grafted/non-vines grown in BC and even local propagation wood (prunings). The higher prices paid for these premium varieties has led to industry expansion, and both production and crop value have increased with the maturation of these (re)planted vineyard acreages. The significance of these trends was recognized by the Canada-BC Framework Agreement on Agricultural Risk Management in 2001, when it launched the joint federal/provincial Agri-Food Futures Fund ($22.8 million) initiative designed to accelerate innovation, encourage adoption of new technologies, develop new market opportunities and promote a strategic approach in the burgeoning BC wine industry.

The new premium varieties and growing conditions have dramatically improved the quality of BC wines, and the industry has enjoyed rapid growth. Total provincial grape land use increased more than five-fold to more than 5,000 acres, and the number of independent vineyards more than doubled from 105 to 299 in the 5 year period between 1999 and 2004. Today's BC wine industry – a conglomerate of vineyard-owning families, small groups of investors, and grape-growing entrepreneurs – is a complete reinvention of the landscape dominated by a handful of large companies (13 in 1984) a few decades ago.

The BC VQA has recognized the vital importance of branding these new BC wines and the nascent provincial wine industry. Administered through the BCWI, the VQA label sets the minimum standard for industry and guarantees consumers that they are purchasing 100% BC Wine (as opposed to Wines of Distinction, or Blended and Bottled in BC), tasted by a qualified panel for quality characteristics. It has also undertaken responsibility for developing the official DVA system – similar to appellation – and internationally accepted protocols for BC wine production. Even more directly, it has established 21 BC VQA Wine Stores province-wide founded on the Three Brand Pillars of the BC wine industry: Product, People and Place. Aspects of their marketing strategy include: dominating the western Canada wine calendar with events and programs to increase sales,

awareness, and loyalty; qualitative and quantitative (social sciences) research to evaluate/improve marketing program effectiveness and better understand consumers; and supporting wineries in development of their individual brands (BCWI, 2012). This approach has taken queues from contemporary agricultural policy with respect to farmers broadening their brand association and engaging customers, the use of quality- (vs. cost-) based standards, promoting producers and processors brands, and developing new industry practices.

Intense global competition in the wine market – particularly due to a corporate focus on economies of scale by the major wine-producing companies – poses an ever-growing threat to small, often specialized production wineries. An early response of the BC wine industry was to capitalize on their famous ice wine products, which, though only 1.5% of the crop harvest, distinguishes BC from most other wine growing areas in the world.

Nonetheless, Canada's grape and wine industry success clearly lies in niche production of top quality wines, and the greatest opportunity lies in selling more wine within domestic markets. There is no central marketing board or quota system for BC grape industry, and 90% of the retail liquor market is controlled by BC Liquor Distribution Branch (LDB). To this end, premiumization, educating domestic consumers, developing a 'Wine Country' brand, and seeking niche premium export markets are all favoured marketing/branding approaches. Market emphasis currently targets the various provincial wine festivals, although some wineries do have their own major promotion/selling programs and several small wineries also work directly with restaurants featuring BC products on their wine lists. Although the average size of a BC winery is decreasing due to land value and availability (of large grape acreages), issues, and the growth of smaller operating wineries, the recent (if controversial) emergence of 'virtual wineries' suggests yet another point of departure (Klassen (2012) defines these as shared facilities where those with the right skills, access to fruit, and other resources, can still produce excellent wines without the necessity of growing grapes or owning vineyards through collaboration). Comprised of voting members from small to large-scale wineries and an independent grapegrower (appointed by the BC Grapegrowers Association), the BCWI continues to work with governments and other stakeholders to implement policies for improving the BC wine industry business climate.

At home, the BC wine industry – and its offspring, wine tourism – is a significant new force in the provincial economy, a self-proclaimed 'lean, clean, and green' machine evolved from an outmoded yield-driven model to a higher value product and industry (BCWI, 2012). Its hand originally forced by NAFTA, the BC wine industry's resilience will remain linked to a continued focus on producing premium quality wines for defined markets, educating and responding to a more sophisticated consumer base, and arming itself with research, development, and innovation to make informed and strategic decisions about its ensured future success.

Case Study #2: 'Win-Wins' through Working Collaboratively – The Bluewater Wood Alliance

The Bluewater Wood Alliance (BWA) is a member-driven, not-for-profit, organization that coordinates and facilitates the strategies of a wood products manufacturing business cluster located in the Bluewater area of southeast Ontario. Based-closely on the successful Austrian Clusterland model, the 45 alliance members work together "to improve the competitive position of the advanced wood products manufacturing industry in the Bluewater area" (Bluewater Wood Alliance, 2013).

The Bluewater region is home to over 60 companies in the value added wood products manufacturing sector, including solid wood flooring, home, office, and institutional furniture, kitchen

and bath cabinetry, veneer, and millwork. Value added production in the area employs approximately 700 people and accounts for over $72 million in sales. However, the regional economy suffered greatly after the economic setbacks in 2008, the rising Canadian dollar, and increasing wood product imports from offshore producers. In response to these challenges, the alliance was incorporated in March 2011 as part of a regional economic development strategy outlined in the Grey-Bruce Economic Development Partnership Study.

The organization serves as a liaison between government and their members, articulating the cluster's needs and seeking funds to drive those needs forward. The alliance also tries to be a catalyst among the member firms, seeking consensus and organizing the means to have those needs satisfied. The BWA is run by a Board of Directors and employs a manager. The alliance is funded through membership fees and federal, provincial, and regional/municipal contributions. They have received research funding from FPInnovations, the Wood Manufacturing Council, the Wood Promotions Program of the Ontario Ministry of Northern Development, Mines and Forestry, and the Canadian Government's Scientific Research and Experimental Development program.

In addition to maintaining a comprehensive website, the BWA hosts regular plant tours, peer-to-peer networking and experience exchange opportunities, and numerous skills and capacity development programs in areas ranging from highly specific technology applications to more general concepts such as lean manufacturing, value stream mapping, management skills training, green marketing, and miscellaneous business practices. The alliance also supports its members in identifying and applying for tax credits and federal and provincial funding opportunities.

Alliance offerings are based directly on member ship needs. Recently, the BWA initiated a study to benchmark members' current information technology (IT) baselines and needs. The project will identify organizations' use of IT, ranging from enterprise resource planning systems to engineering software. The results of this study will create solutions that can help the members become more proficient in relevant technologies and provide them with information on other cluster members that are able to help them implement specific IT systems. In 2011, the BWA collaborated with Wilfrid Laurier University's MBA program to identify emerging export markets for Ontario wood products. The project identified the Middle East, and specifically Dubai, as a new market with significant potential. Based on the outcomes of this project, the BWA has represented a number of member organizations at two trade shows in Dubai in the United Arab Emirates.

Arguably, however, the most important outcome for many of the value added producers in the BWA comes from the synergies between companies that a geographic cluster affords. There are many documented instances of competing companies within the cluster working together on 'win-win' initiatives, including companies utilizing other companies' waste streams, firms working together to achieve scale in supply procurement, co-marketing ventures, knowledge and information exchange, and improved networking.

APPENDIX D FIBRE SUPPLY DESCRIPTION & INFORMATION MANAGEMENT

Improvements to Support Value Added Wood Manufacturers in BC

Background

Value added wood manufacturers (VAMs) in BC that use roundwood (logs) as raw material often raise concerns about the lack of appropriate access to fibre as one of the main difficulties in the sector.[2] Some identify this as detracting from business success and others as a barrier to entry. Concerns generally relate to not being able to access the right fibre, at the right time, in the right quantity, and at a price to support a profitable VAM business. This discussion presents some ideas to improve fibre supply management and information systems in BC that might help alleviate some of those concerns – both for buyers and sellers of fibre to support the VAM industry.

Fibre Sources

The majority of the timber harvested in BC is done by large logging contractors for large forest companies (major licensees). That volume is generally not available to VAMs because licensees need the volume for their processing facilities - and the incentive to identify, sort, and handle small volumes of wood for VAMs is generally not sufficient to attract their attention. This situation will likely worsen in the interior over the next few years as demand for fibre increases and supply decreases. However, given the relatively small size of the VAM sector - at least at this time - there is still considerable volume that is potentially available from other entities and smaller licensees including:

1. Woodlots
2. Community forests
3. FN licensees
4. BCTS sales
5. Private lands
6. Log brokers
7. Log yards

Currently woodlots and community forests are the most likely sources of fibre for VAMs. BCTS could be a large potential source of fibre but currently focuses on auctioning timber in large volumes that are beyond the financial reach and risk tolerance of most VAMs. FN licenses, at present, are similar as many of their operations are managed by the major licensees or sell their wood directly to major licensees. Fibre can often be obtained from private land but it is a relatively small source and often does not provide constant supply over time.

Log brokers and log yards can be excellent sources of special fibre; however, few exist in the interior. Most log brokers have left the business as the fibre supply has been consolidated by the major licensees. Log yards are theoretically an excellent source of special fibre; however, there are few operating in the interior.

[2] This discussion focuses on fibre in log form although many VAMs use lumber or veneer as raw material.

Although these small entities are often more able and willing to sell smaller volumes, they all have important concerns related to supplying VAMs such as:

1. They often need only small amounts of fibre that is not practical and economical to identify, sort, and extract.
2. They often require specialized fibre that is difficult to identify in bush sorting.
3. They may only need periodic deliveries of small volumes.
4. They often cannot pay the extra cost needed to identify, sort, and transport small volumes.
5. They are often in direct competition for the fibre desired by major licensees – who can and often do pay more.

Buyer & Seller Concerns

From the seller's perspective, these concerns can be captured by some key questions:

1. What special fibre do I have that might be of interest to VAMs (species, sizes, sorts, etc).
2. How much volume of that special fibre do I have in my inventory.
3. Who might want this volume, now and in the future.
4. What might this volume be worth if I could identify, sort, and sell it.
5. When could I make this volume available, and would that be in sufficient quality and timing to be of interest to VAMs.
6. Will removing this volume reduce or eliminate my ability to sell logs to large buyers (major licensees).
7. Can I cooperate with other sellers or buyers for mutual advantage.

From the buyer's (VAM) perspective, those concerns are captured in similar questions:

1. What fibre do I need (quality).
2. How much do I need (quantity).
3. Who has it and where is it.
4. What does it cost and can I pay the price.
5. When do I need it.
6. Can I cooperate with other sellers or buyers for mutual advantage.

Many of these concerns may be addressed, at least partially, by collecting better information about the fibre supply, and making that information available to buyers and sellers. The market can then determine if the information is useful and what of level further (if any) improvements are warranted. This better information could include more detailed stand-level inventories, a consolidated inventory of fibre available to VAMs, and an information management system (web based) that allows buyers and sellers to connect. These ideas are discussed in the following sections.

Stand-Level Inventory

Call-Grading – an Old System that Might Help

The use of call-grading, as part of the standard timber cruising process, could greatly improve the level of detail about wood fibre available to VAMs. This might help determine who has fibre of interest, where it is, and how much of it might be obtainable. The process has been used in the US Pacific Northwest and by forest companies (for internal use) on the BC coast for decades. In 2007, the BC Government prepared a draft report[3] on call-grading in the interior in anticipation of a need for standards. The Government is now in the final stages of testing call-grading for application in timber pricing on the coast. BCTS is also currently pilot testing a similar system in the Kootenays to provide more detail for internal use and for prospective bidders.

The call-grading process is simple, well developed, and could have real value in some areas of the BC interior. Some interior forest companies have experimented with and are using the process, but it is certainly not widely used or accepted. The system has, however, been used as a basis of compensation by the Supreme Court of BC and BC Hydro. The primary reason for the lack of more wide-spread use is that there has not been adequate reason (i.e., cost advantage) for the major buyers of wood (major licensees) to differentiate among what they consider to be a relatively homogeneous fibre basket. However, this might change (although slowly) if momentum increases for improved characterization of the fibre basket - and if it shows real benefit to both buyers and sellers.

Three Steps in Call-Grading

The main steps in the process are:

1. Log quality descriptors (grades) are assigned to trees (standing and fallen) in the timber cruising process. This can be done by assigning these *grades* to one or more different standard log lengths (e.g., 5.0 m). At the same time the timber cruiser also estimates the net volume in each log. This is considered by all industrial practitioners to be more accurate than the current system of using region-wide estimates of average decay from a computer algorithm.
2. Tree measurement and grade data from the cruise are compiled in a computer program. This reports the amount of volume in each quality class (grade) for the cruised area. Statistics and confidence intervals can be estimated for each grade.
3. The grade estimates are further refined to report volume by different *end-use sorts* (EUSs). This divides the volume in the generic quality grades called by the cruiser into more detailed descriptions. The value of the process is that EUSs can and should vary by end user. For example, four grades may be adequate to describe the general variation in timber available in a given area; however, a buyer of wood for manufacturing musical instrument stock may recover only 10% from wood of that highest grade. Thus only areas with a sufficiently high proportion of high grade volume would be of potential interest. Another VAM may not require that level of detail because it does not impact their process, and their needs may be adequately served with estimates of volume for grade level only. The EUS process can also deal with different utilization standards.

[3] Revenue Branch. 2007. Interior Call Grade Net Factor Manual. Draft 2. Feb. 12, 2007. Victoria, BC.

Pros & Cons of Call-Grading

The main pros of the call-grading, net-factoring, and EUS system of cruising are that it:

1. Provides a more detailed description of logs for sale, especially in timber types that have a wide range of species and fibre qualities.
2. Provides a consistent language to communicate among buyers and sellers. Many of the log sorts are generic in nature and apply to different applications and end users.
3. May allow sellers to identify and sell fibre of higher value.
4. May allow buyers to identify and source harder-to-find fibre.
5. May allow sellers and buyers to better plan delivery of special fibre.
6. Data compilation is easy. Most major service providers that compile cruise data in BC can compile and summarize information by call-grades and EUSs.

The main cons of the call-grading, net-factoring, and EUS system of cruising are that it:

1. Increases cost to cruise timber and compile the data. This cost may be small (e.g., ($0.10-0.15/$m^3$) after the systems are developed and implemented).
2. Requires log grades to be developed. The grades must be as simple as possible but sufficiently detailed to differentiate the fibre supply into groups that are meaningful to buyers and sellers. Some work has been done on this by BCTS in the Kootenay area and by other third parties.
3. Requires training timber cruisers to recognize grades in standing trees. This is a critical element that must be done consistently well. Some work has also been done on this.
4. Will require developing EUSs that reflect the timber types and product use in the southern interior. This can take time and is greatly enhanced by empirical evidence of actual volumes from EUSs recovered from the generic grades.
5. May have less utility in low value timber types and those with little variation in fibre quality.
6. May not have additional value in some areas over what can be developed by highly experienced log brokers and log buyers that walk each area to be harvested and estimate the sort volumes based on their local knowledge, experience, and current market conditions.

An Example of Call-Grading and End-Use Sorts

Timber Type

The cruise data in this example is for a typical southern interior stand leading in lodgepole pine, with lesser amounts of Douglas-fir and larch, and minor amounts of spruce and balsam. The area of interest is about 300 ha. The stand was in the early stages of attack by the mountain pine beetle when it was cruised. This example is based on real data that was modified for this example.

Cruising Method – The Old Way & the New (Old) Way

The area was cruised using standard procedures and the call-grading and net-factoring (CGNF) process. Each 5-m log in each tree was assigned one of five different quality classes (grades) and the net volume estimated. This was done by experienced cruisers trained in this process using visual indicators on each log. The volume in each quality class was then apportioned among

different EUSs. This was done in the computer compilation stage based on the size and quality class of each log, and the proportion of volume expected to fall into each different sort.

Section A - The Standard Cruise Summary

Section A in the table below shows the estimated total merchantable volume by tree species. Standard cruise compilation procedures give summaries by tree diameter size class, and other criteria, but quality is not considered.

Section B - Summary by Grade – The Intermediate Step

Section B shows volume by species and quality classes (grades). A volume summary by these grades is generally not used in this form, but is shown here as it is the basis to estimate the amount of volume in the EUSs – which is of direct use. Note that estimated volume is about 12% less in the grade summary (Section B) than in the standard process summary (Section A). This is because the CGNF system uses a different method to estimate rot and decay in standing trees – and most practitioners believe it is more accurate than the regional-level averages used in the standard compilation process.

Section C – Summary by End-Use Sort – What we Really Want

Section C shows a very different summary of volume for the five tree species. Instead of a generic summary that shows no differentiation among quality classes or log types, the EUS summary show what is expected from this stand of trees – for the specific EUSs that were developed for this (hypothetical) tenure holder to supply specific (hypothetical) VAMs.

We developed these EUSs to illustrate what a seller of wood might want to know about their timber profile to provide information to potential buyers (VAMs) in their area. In this example, the seller wanted to know how much volume of high value Douglas-fir and spruce logs might be in the profile for local VAMs that need large, relatively high quality logs for timber frame and log house construction - and also very high quality and value spruce logs for tone wood (a very small market to manufacture sounding boards for musical instruments). The EUSs used here were based on what might be recovered from this type of stand – for this seller, this stand type, and the potential buyers of that wood. Other EUSs would be more appropriate for other stand types, other sellers, and buyers – however, the cruising process and the grades used would still be the same.

Table 1: Example Information from Call Grading and End Use Sort Compilation

A. Standard Compilation	Doug-fir	Balsam	Spruce	Larch	Pine (all)		Total	
Total Merch. Vol. (m^3)	10,078	2,258	5,456	10,991	40,734		69,517	100%
Total Merch. Vol. (m^3/ha)	31	7	17	33	130		218	
	14%	3%	8%	15%	60%		100%	
B. CGNF (Generic Quality Grades)	Doug-fir	Balsam	Spruce	Larch	Pine	Pine (MPB)	All	
High Quality	1,428	311	1,103	3,540	3,041	426	9,849	16%
Medium Quality	4,379	1,199	2,890	3,433	14,444	3,791	30,136	49%
Low Quality	2,380	689	998	1,931	5,575	2,121	13,694	22%
Very Low Quality	857	22	263	1,180	1,774	1,229	5,325	9%
Pulp	476			644	507	860	2,486	4%
Total Merch. Vol. (m^3)	9,519	2,221	5,254	10,728	25,341	8,427	61,490	100%
Total Merch. Vol. (m^3/ha)	29	7	16	32	76	25	185	
	15%	4%	9%	17%	41%	14%	100%	
C. Grades Converted to End-Use-Sorts	Doug-fir	Balsam	Spruce	Larch	Pine	Pine (MPB)	All	
Recoverable Volume								
Tone Wood	-	-	4	-	-	-	4	0.0%
Timber Frame	177	-	-	-	-	-	177	0.3%
House Logs	229	-	83	-	-	-	312	0.6%
Peeler	1,369	-	1,232	1,847	166	53	4,667	8%
Sawlog	6,403	649	3,661	7,037	22,981	4,120	44,851	81%
Pulp	1,049	345	220	461	1,754	1,504	5,333	10%
Total Merch. Vol. (m^3)	9,227	994	5,200	9,345	24,901	5,677	55,344	100%
Total Merch. Vol. (m^3/ha)	28	3	16	28	75	17	167	
	17%	2%	9%	17%	45%	10%	100%	
Non-Recoverable Volume								
Total Merch. Vol. (m^3)	293	1,227	54	1,382	440	2,751	6,147	
Total Merch. Vol. (m^3/ha)	1	4	0	4	1	8	19	
	5%	20%	1%	22%	7%	45%	100%	
Total Volume								
Total Merch. Vol. (m^3)	9,520	2,221	5,254	10,727	25,341	8,428	61,491	
Total Merch. Vol. (m^3/ha)	15%	4%	9%	17%	41%	14%	100%	

Interpretation of the EUS Summary

Two primary components of interpreting this or any cruise summary is:

1. The summary is an estimate of what is there – which includes sampling error. The actual amount of wood that is there or that is recovered may be somewhat different.
2. It is common for buyers, and sometimes sellers, to walk the stand area and modify cruise estimates using ocular estimates of timber volume quality. Of course this must be done by very experienced practitioners.

Given that, some conclusions from the EUS summary that could be drawn for the higher valued component of the wood profile include:

1. Tone wood (spruce). There is probably too little volume for a seller to market this wood, or for a buyer to work with the logging contractor to identify and sort this small volume from the other 61,000 m^3.

2. Timber frame logs (Douglas-fir and spruce). The EUS summary estimates 177 m^3 of timber frame logs in the area. This could be marketed and sold, it the trees meeting these specifications were clustered enough that they could be sorted economically into increments of truck loads. If the trees were distributed uniformly throughout the area (i.e., the approximately four truck loads of logs distributed uniformly over 300 ha), that is about one tree on each one hectare of land, which is likely too sparse to economically handle.
3. House logs (Douglas-fir and spruce). The EUS summary estimates about 493 m^3 of logs that would meet house log specifications (including the tone wood and timber frame volume). This is likely enough that a seller could market that volume, and that a buyer could be reasonably confident that some or most could be economically sorted and delivered.

BCTS Could Pilot Test the System

Ideally, the call-grading system (and the components described in the following sections of this document) would be pilot tested by Community Forests and Woodlots. They are most likely candidates to supply small amounts of special fibre to VAMs; however, they generally do not cruise timber prior to harvest because they use tabular rates to set stumpage (which does not require cruising to set the stumpage rate). BCTS is currently piloting a version of the call-grading system in the Kootenay area. That test could be expanded to Community forests and Woodlots and monitored for its value to the VAM industry. Although most bidders of BCTS sales walk the area prior to bidding to estimate the proportion of different products that might be harvested, the increased detail from call grading may help with initial screening of sales and in stand-level assessments made prior to bidding. This increased detail may also result in some bidders paying more attention to the minor components of high value products for which they might market separately.

Consolidated Inventory

Start on the Supply Side

One of the challenges in developing a source and market for special fibre to support VAMs is that there must be buyers of that fibre to incent suppliers to make it available. Many smaller licensees and entities that might source fibre to VAMs would likely be happy to make it available - if they could get more money for their wood. And many would likely be willing to expend more effort (and money) to provide the information if it was met with increased demand and higher prices. The most probable way to initiate the process is likely on the supply side. A consolidated inventory of potential fibre may encourage existing VAMs to refocus or improve their supply chain, and may also provide critical information for entrepreneurs considering entering the sector.

Individual & Aggregate Fibre Sources

A consolidated inventory could be a summary of the timber types, grades, and possibly sorts for several fibre sources in aggregate. Individual sources should be identified as geographic location is an important consideration in the cost of assessing fibre. This type of inventory would help VAMs assess the total supply - from individual sources and in aggregate - which could be of great value where a fibre supply of interest may only occur in small volumes distributed across many possible sources.

Creating the System

Some of the main aspects of creating a consolidated inventory would include:

1. Identify participants (fibre sources) willing to have their inventory profile made public and willing to pilot test the concept. This could be Community Forests, Woodlot owners, and BCTS. Initially, however, some entities likely will not see value in this approach and will not want to participate.
2. Prepare GIS maps layers showing the geographic location of participating fibre sources.
3. Assemble the forest-level inventory into one database.
4. Build a grade and EUS matrix to help predict where special fibre may be located. This is in essence an extension and enhancement of the existing forest cover inventory maintained by the BC Government.
5. Make the information available in an interactive web-based mapping and database system that would allow users to summarize data and information according to their needs. This could be add-on to the existing WoodSourceBC website that was developed under the Bridges Project.

Strategic Inventory at One Level – But More Detail at Another

This type of consolidated inventory would largely be of value for strategic planning. The summary of forest-level polygon information would inform prospective buyers of approximately what fibre may be available, where it is located, and possibly with some predictions of more detailed information about grades and sorts; however, more detailed information of higher reliability would be required to ascertain supply. A virtual log yard could provide that detail to better understand what is available, where, from whom, and when it might be available.

Log Yards

Physical Log Yards – Hard to Make Profitable

Log yards are always noted as a good way to extract special fibre and make it available to VAMs. This concept of sorting and merchandizing logs at a central location is used extensively in dry-land sorts on the BC coast. However, it is very difficult to make log yards economically profitable in the interior, and the establishment of log yards is probably not a lasting option to make special fibre available to VAMs for most areas.

A more cost effective method to make special fibre available is to sort logs in the bush. Modern harvesting equipment (processors and loaders) efficiently identify and sort many of the high value products during harvesting (at roadside) at low cost, such as $\$2/m^3$. This is compared to $\$8\text{-}12/m^3$ (and sometimes more) that is typical in log yards. Furthermore, the higher cost in the yard applies to every log in the yard, not just those of higher value. Sorting at roadside commonly includes separating logs of different species and often products such as peeler logs, power poles, house logs, and sometimes large and small sawlogs. Therefore, any additional increase in overall value from a log yard must be beyond what is already done in the bush and must be enough to cover all costs of operating the yard.

There are some exceptional cases, however, where log yards may be profitable and be a source of special fibre to VAMs. This is in timber types that have a relatively high proportion of high value logs – and in areas where there are enough buyers to warrant the cost of a yard to make that fibre available. The Revelstoke Community Forest Corporation (RCFC) log yard is an example of where these circumstances occur. The timber they harvest has enough high value logs that they can recover the additional yard costs in the selling of those logs. These products include cedar for poles and other products, Douglas-fir house logs, and large clear spruce logs that are sold for tone wood.

Virtual Log Yard – A New, Old Idea

Given the limitations discussed above, a physical log yard cannot be a lasting solution for most areas of the interior. However, a virtual log yard may provide some of the benefits of physical yard at much lower cost. The information would also be of much lower reliability, but it may provide potential users of special fibre with enough information to focus on certain suppliers and areas.

A virtual log yard would be an on-line website that described and summarized logs available from different sources. This could be a refinement of the consolidated inventory idea presented above that contained much more detail, possibly from call-graded cruise summaries or other information available from specific supplies. This is not new idea and is at least somewhat the basis behind the WoodSourceBC website.

APPENDIX E: STRATEGIC CONSIDERATIONS FOR FIRST NATIONS IN THE VALUE ADDED WOOD SECTOR

This section of the report describes how to integrate the First Nations' component into a provincial strategy to invigorate BC's solid wood value added sector (the "Sector"). It is important to be clear about the scope of this component.

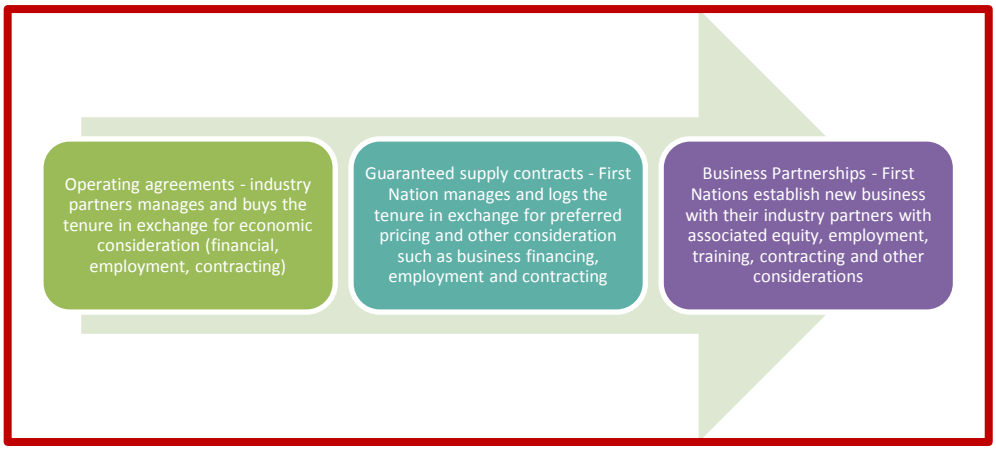
c. This is confined to structural business elements for First Nations to successfully integrate and contribute to the larger strategy. It has a business focus and does not extend to other important but more politically related components such as consultation and accommodation of aboriginal rights, increased First Nations access to tenures and other First Nations' specific socio-economic factors.
d. The views are derived from those First Nations entities that currently or historically have direct experience in the Sector.

First Nations are increasingly becoming a significant economic player in BC's forest sector. British Columbia's Ministry of Forest Lands & Natural Resources First Nations Division web page states that, "At the end of April 2012, First Nations held 12.7 million cubic meters/year of Allowable Annual Cut (AAC) within competitive and direct award forest tenures. This represents 15.5% of the provincial AAC. Of the 12.7 million, 4.9 million (or 6.0% of the provincial AAC) is within competitively held forest tenures and 7.8 million (9.5% of the provincial AAC) is within direct award forest tenures." The web page further states that "An additional 395,000 more AAC was awarded to First Nations since the previous quarter."

There are two major trends with respect to this volume. The first is that the amount of volume under First Nations control is steadily increasing over time, especially when you incorporate the additional volume that is held by non-First Nations that is combined with First Nations tenures into business partnerships. The second is that many of First Nations' tenures are currently volume-based but these are steadily moving to area based tenures, mostly in the form of Community Forest Agreements or First Nations Woodland Licenses. First Nations Woodland Licenses are area based tenures that also include harvest rights to non-timber forest products.

Many First Nations do not have the capital, experience or capacity (administrative, financial or professional) to manage their own forest company therefore many harvest their volume under some type of operating agreement with existing forest companies. While these arrangements provide stable returns and operating certainty, many First Nations have expressed interest in creating more value and employment from volume under their control.

Figure 1: First Nations Forestry Business Arrangements



These factors, i.e., significant volumes under First Nations control, movement towards longer term more secure area-based tenures and a desire to increase value and employment among many First Nations who hold these tenures, all point towards an opportunity for integrating First Nations into a solid-wood value-added strategy for British Columbia.

There have been a number of studies that have looked at how to increase First Nations participation in all aspects of the forest sector. However, these have primarily focused on socio-economic factors specific to First Nations such as increasing access to timber volume, creating cost advantages, increasing employment, gaining access to capital, developing capacity through business partnerships and increasing First Nations influence over land and resource decision making through co-management arrangements. The question of structural mechanisms to integrate the First Nations' component into a provincial strategy to invigorate the "Sector" is a subject area that has only been addressed in very general terms. There is surprisingly little focused work that provides a practical roadmap as contemplated in this project.

The table below contains some of the general observations that shape the author's views on achieving First Nations collaboration in the Sector based on the author's long-term experience in this area, plus preliminary scoping with First Nations and industry.

Table 1: General Factors/Observations

Factor or Observations	Implication for the Sector
The AAC of First Nations controlled tenures are relatively well-known (except those tenures where First Nations and industry have combined their tenures under a business relationship). However, the quality and usefulness of those tenures for the Sector is not well described.	It is difficult to determine how First Nations AAC can fit into the required wood profile required to support the development of the Sector.
First Nations are generally interested in establishing value-added wood-based business opportunities. There are a wide variety of concepts being explored including solid-wood manufacturing, pellets, bio-fuel, chemical extraction and co-generation.	First Nations are interested in value-added but they are not necessarily interested in the solid wood value added sector.
Many First Nations, including First Nations tenure holders, do not have capital, experience or infrastructure to be successful players in the business aspects of forestry. The most common method that First Nations are using to address this deficit is through business partnerships with established industry partners (largely major companies with well-established infrastructure) as illustrated in Figure 1.	Smaller value-added operators (characteristic of the Sector) have a difficult time accessing First Nation's volumes because they rarely have the forest planning and logging components in their companies.
First Nations tend to be very independent, often preferring to adopt their own individual approaches. While there have been attempts at creating consortia or collaborative marketing strategies among First Nations, they are generally weakly developed if they exist at all.	It will be difficult to capitalize on the First Nation's advantages that require collaboration, e.g., marketing, to assist the Sector
The number of forestry related business partnerships between FNs and industry has steadily increased over the last decade. However there continues to be a general lack of understanding of each other between these two potential partners. This lack of understanding and associated relationship development also extends to higher level strategic structural linkages or collaborations. This is primarily a reflection of the generally short time that First Nations have been involved in this sector.	The general lack of understanding between the forest sector and First Nations limits their ability to collaborate in a way that effectively deals with each of their concerns.
First Nations' social license and unique culture provide significant international marketing opportunities. While some First Nations have attempted to capitalize on this niche the general area is under-developed. There is a delicate balance between capitalizing on this niche and being culturally insensitive. First Nations partnerships with external entities that have attempted to capitalize on this niche have often resulted in that type of real or perceived insensitivity which has disastrous consequences for the associated business and fosters an overall lack of trust in the First Nations to attempt trying this approach again.	Realizing the First Nations marketing niche is likely going to take some time and will be based on having built a broad level of trust through various other successful sector and business level collaborations.
Over the last decade there have been numerous attempts by First Nations to establish various types of ventures in the Sector. However there are a very limited number of longer-term success stories (not unlike the experience in the overall Sector). The few that have lasted are almost all in a business partnership where a major forest company supplies raw materials, limited management support and in some cases capital and the First Nation is a niche manufacturer often taking advantage of its partner's marketing and distribution systems.	Many participants in this Sector do not have the necessary raw material, marketing or excess capacity to enter into these types of partnerships.

The table below summarizes the opportunities that First Nations could bring to the Sector and the corresponding limitations in realizing that opportunity.

Table 2: Opportunities and Limitations

Potential First Nations Opportunities	Limitations to Realizing that Opportunity
First Nations' collectively hold a significant portion of the provincial AAC.	• Individual holdings tend to be relatively small and unpredictable in terms of their contribution to the needs of the Sector. • Difficult to create a vertically integrated company (forest management, logging, value-added manufacturing, marketing) with smaller tenures.
Cultural marketing niche may have international appeal.	• Difficult to develop and implement a collective First Nations marketing strategy.
First Nations are generally very interested in value-added around wood.	• First Nations have: ○ Limited experience in this area, ○ Many other community priorities that take away from their ability to dedicate capacity and focus on these opportunities, and ○ A general lack of access to capital (although this is improving with revenue sharing).
There are many potential business partnerships**.**	• There is no known compilation of potential First Nations partners. • The relationship between potential First Nations partners and the Sector is not well developed. • Many players in the Sector are small and face similar limitations as First Nations.

Recommendations

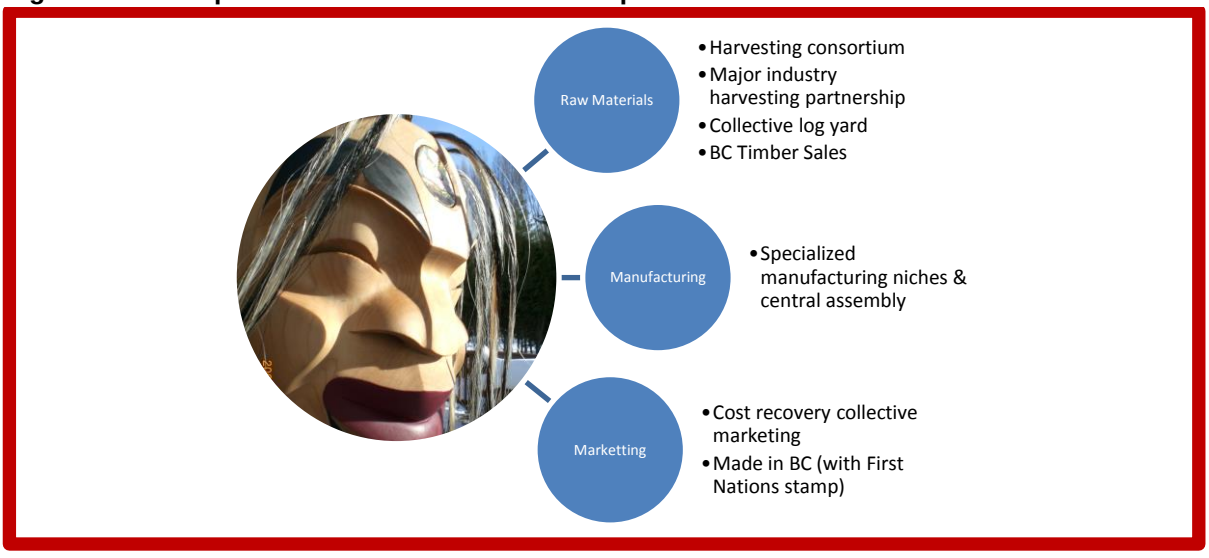
These recommendations are intended to address the limitations outlined earlier by introducing 'structural elements' that could help First Nations forest sector businesses be a valuable contributor toward the invigoration of the Sector.

Table 3: Recommendations

	Recommendation	Notes
1	Develop general agreement among First Nations towards this strategy	Would require provincial level commitment by and involvement from government and the Sector
2	Foster increased business and management acumen among First Nations in the Sector	The overall Sector has this need Likely done through targeted and highly strategic education and work experience
3	Develop a data base of First Nations tenures and wood profiles	Would require agreement by individual First Nations (to share information)
4	Develop a data base of First Nations involved in the Sector	Requires a similar data base for the Sector as a whole
5	Create incentives for major industry to partner with individuals in the Sector with an emphasis on those involving First Nations	The goal is to raise the sector and First Nations involvement – this will help the Sector realize the First Nations' strengths
6	Explore opportunities for First Nations and the BC Timber Sales Program	Benefits may accrue to First Nations, BCTS and the Sector through reciprocal management or marketing collaborations.

Figure 2 presents some structural components that may be worth exploring in terms of realizing the potential opportunities that First Nations could bring to the sector.

Figure 2: Conceptual Structural Elements for Exploration



See the table below for slightly more detail regarding each of these concepts/structural elements.

Table 3: Concept Descriptions

Concept	Description
Harvesting consortium	First Nations create regional harvesting consortia managed by experts in harvesting
Major industry harvesting partnership	Offsets for major industry to harvest regional First Nations' volumes
Collective log yard	Collective First Nations log yard with distribution networks to the Sector
BC Timber Sales	Partnership with BC Timber Sales
Specialized manufacturing niches & central assembly	Individual First Nations manufacture components for larger products with centralized assembly
Made in BC (with First Nations stamp)	Create a marketing niche utilizing a First Nations stamp for FSC type certification
Cost recovery collective marketing	Establish a collective marketing entity that operates on a cost recovery basis.

It is important to realize that establishing any of these structural elements will be subject to all of the limitations outlined earlier and will require a significant dedicated effort by a very focused team of experts. This team must be made up of individuals who have the necessary range of skills and abilities plus the established credibility among First Nations, the Sector and government.

CONCLUSIONS

Developing the First Nations component of an invigorated value added wood sector has many challenges. Individual First Nations tend to hold relatively small tenures and do not have the experience or capacity to develop a vertically integrated company (forest management through marketing). Collectively the First Nations portion of the Sector is very poorly documented and there is little to no collaboration in any aspect of operations (forest management through marketing).
Overcoming these limitations will require a significant dedicated effort by a focused team of experts. This team must be made up of individuals who have the necessary range of skills and abilities plus the established credibility among First Nations, the Sector and government.

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