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PROCEEDINGS

Alberta: Growing for the Future

Forest Industry Outlook Conference

Edmonton, Alberta
October 22, 1993

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Edmonton, Alberta

1993

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DISCLAIMER

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ABSTRACT

Proceedings of "Alberta: Growing for the Future – Forest Industry Outlook Conference" held October 22, 1993 in Edmonton, Alberta. Contents include 12 presentations supplied by the authors and a verbatim report of questions and discussion. The presentations have to do with market, fibre supply, financing and environmental issues, and also with opportunities for suppliers of goods and services to the sector.

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Conference Sponsors:

- Government of Canada
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- Alberta Economic Development and Tourism
- Economic Development Edmonton

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Dale Rokosh, President 1991-92,
Forest Industry Suppliers Association of Alberta

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3:45 p.m.	**Peter Morin**, Sales Team Leader, Johnson Controls Ltd.	• Becoming a successful supplier
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4:25 p.m.	**Al Brennan**, VicePresident, ProForMA (a division of Stanley Industrial Consultants)	Conference wrap-up

Conference Speakers

Moderators

Morning Session:
Dr. Ed Tyrchniewicz is Dean of the merged faculties of Agriculture, Forestry and Home Economics, University of Alberta. He received his B.S.A. (Honors) from the University of Manitoba in 1962 and went on to earn his M.Sc. degree and Ph.D., majoring in agricultural economics, at Purdue University in Indiana. Dean Tyrchniewicz is experienced in public service and consulting work, both in North America and overseas.

Afternoon Session:
Dr. Rodney Schneck is Dean, Faculty of Business, University of Alberta. He was the 1991-92 winner of the Labatt's Award for Distinguished Teaching and was University of Alberta McCalla Research Professor in 1982-83. He is a much sought-after teacher in the areas of organization theory and behavior, business strategy, public policy and the management of business and government organizations.

Morning Panel Chair:
Stu Lang is Chairman of the Board, Alberta-Pacific Forest Industries Ltd., and President of Crestbrook Forest Industries Ltd. His early career was in the manufacture of newsprint, board, tissue and specialty papers. In 1956 he moved to Mexico as resident engineer with the country's first newsprint mill. He later worked in Brazil with Olin-Matheson Chemical Corporation, and also with Jari Forest products.

Speakers

Tom Grabowski
- is one of two founding partners in Silvacom, a forestry and forest products consulting firm based in Edmonton. He is a Registered Professional Forester with both a B.Sc. and an M.Sc. in Forestry, as well as an MBA.

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Richard Haynes
- is Program Manager with the U.S. Forest Service at the Pacific Northwest Research Station in Portland, Oregon and is responsible for the Forest Service's social and economic research in Washington, Oregon and Alaska. Mr. Haynes has been an active participant in the various studies of the economic effects of protecting habitat for the Spotted Owl and the Columbia/Snake Salmon.

Hank Ketcham III
- is President and CEO of West Fraser Timber Co. Ltd. He began his career with West Fraser straight out of university and has held the positions of Mill Hand, Lumber Shipper, Sawmill General Manager, and Vice-President Administration prior to becoming President and CEO in 1985.

•

Hamish Kerr
- is Vice President with Goepel Shields and has been working in the investment industry as a forest products analyst for the past nine years. He has a Bachelor of Science in Forestry from the University of New Brunswick and a Masters of Business Administration from the University of Western Ontario.

David McCaffrey

- is Director, Pulp, Newsprint and Recycling with the Canadian Pulp and Paper Association in Montreal. He obtained his BSc, with concentrations in mathematics and chemistry, and an MBA at McGill University. He became manager of the CPPA pulp section in 1984 and has since worked his way to his current level of responsibility as a director.

•

Gordon Barefoot

- is a Partner with Ernst and Young in Edmonton, responsible for the company's management consulting group. Mr. Barefoot has 20 years' experience in consulting and industry. He is especially knowledgeable about the business policy area and has undertaken a number of studies on resource industries and their economic impact.

•

Wayne Nystrom

- is a 1967 graduate of the UBC in chemical engineering and today is President and CEO of NLK Consultants Inc. Mr Nystrom started his career with BC Forest Products (now Fletcher Challenge), then served with Northwood Pulp and Sandwell before founding NLK in 1975 with two partners. The firm has designed a number of successful greenfield facilities in Alberta, including Alberta Newsprint Company and Millar Western facilities.

•

Joe Rizk

- is Purchasing Manager with Alberta-Pacific Forest Industries. In the mid-1970s Mr. Rizk was involved with the construction of ITT Rayonier Pulp Mill in Northern Quebec. He worked as a material manager with ITT in Seattle Washington on major water treatment and recovery boiler projects, and before joining Alberta-Pacific he was Corporate Purchasing Manager with Canadian Pacific Forest Products, in Montreal.

Peter Morin

- recently retired as Sales Team Leader with Johnson Controls Ltd. in Edmonton. He joined the company as an Installation Electrician, moving through the ranks to become Service Operations Manager in 1979, Sales Manager in 1984 and Sales Team Leader in 1991, earning a Master Electrician Certificate along the way. As Sales Team Leader, Mr. Morin facilitated training programs w hich included time management, strategic planning, and customer satisfaction.

•

Stan Schellenberger

- is Assistant Deputy Minister, Industry, Technology and Research Division of Alberta Economic Development and Tourism. He is a professional agrologist with a B.Sc. in Agriculture from the University of Alberta. In 1990 he was made Assistant Deputy Minister of the Policy Planning Division with Alberta Economic Development and Trade. In February 1993 Mr. Schellenberger was appointed Assistant Deputy Minister of Industry, Technology and Research Division, Alberta Economic Development and Tourism.

•

Al Brennan

- is Vice President of ProForMA (a division of Stanley Industrial Consultants). Mr. Brennan served as Executive Officer of the provincial Forest Industry Development Division since its inception in 1986 until earlier this year. Prior to that he was Assistant Deputy Minister Forestry and Agriculture for Newfoundland and Assistant Deputy Minister of the Alberta Forest Service. Between 1986 and his retirement from government earlier this year, Mr. Brennan was a key player in attracting significant new investment to Alberta's forest products industry.

Stan Schellenberger,
Assistant Deputy Minister,
Industry, Technology & Research,
Alberta Economic Development and Tourism
Ph: (403) 422-2500

Provincial Strategy for Maximizing the Benefits of the Forest Industry

I'm glad to have the opportunity to welcome all of you as registrants and speakers to the 1993 Forestry Outlook Conference. I share your interest, and belief, in the future of Alberta's diverse forest industry.

The Alberta Government certainly recognizes the importance and contribution of forestry in the provincial economy. In fact, forestry today has emerged as Alberta's fourth largest primary economic sector – after energy, agriculture and tourism.

As you probably know, Alberta's forests grow for the most part on Crown-owned land. The government has a responsibility to administer and regulate the way in which these forests are used for a wide range of activities.

The Department of Environmental Protection is the custodian of the resource, responsible for forest management and all regulatory aspects associated with that management – from fire protection to reforestation and ecosystem stewardship.

The role of the Department of Economic Development and Tourism is to work with industry in identifying opportunities for value added processing of wood fibre. It is to promote investment and marketing opportunities, and to work with the forest industry to facilitate its continued growth and success.

Some of the presentations to be made later today will make it clear that forest-related industries are indeed a key engine of growth and generator of wealth for the Alberta economy.

- We currently have 200 sawmills in the province, with about 50 of those ranking as major operations.
- We have three oriented strand board mills, one medium density fibreboard plant and one plywood plant.
- There are six pulp mills, one newsprint mill and two construction paperboard mills.
- In addition, we have about 300 value added wood products operations that generate additional jobs and wealth from the basic fibre before it goes to the consumer.

Shipments worth about $2.1 billion a year represent a huge economic stimulus to everything from remote northern communities to major centres such as Edmonton. This activity represents job opportunities and increased stability for many communities. It carries right on through to not just direct forest industry suppliers, but also to local retail businesses and personal and community services.

Total exports for the industry in 1992 were valued at more than $850 million. These exports are crucial, because they represent new wealth, new money coming into the province.

New investment over the last six years has totalled more than $3.7 billion. The sector now sustains 15,000 full-time direct jobs and another 25,000 indirect or spin-off jobs.

This represents a dramatic increase in employment levels over the past decade. With the opportunities now available, particularly in the value added industries, there is significant potential for even stronger employment growth in the future.

We expect to see another $3 billion invested over the next four to five years. Some of this expansion will occur as a result of new allocations of timber areas. But the majority of it will come from making more use of what is already available. Some existing mills have plans for expansion into further value adding operations. Other companies will take advantage of emerging value adding or fibre utilization opportunities.

What this all means is that the forest industry is not just here to stay, it's here to grow.

There will be major opportunities for the suppliers of goods and services to the sector. There will continue to be opportunities for diversification for companies that can service both the forestry and the oil and gas sectors.

Alberta now has the fourth largest forest industry sector in Canada, and we're looking forward to substantial growth and expansion carried out in an environmentally responsible way. The development of a number of industry associations over the past few years will help maximize the benefits that accrue from this growth.

The Forest Industry Suppliers Association of Alberta now includes about 200 members and provides an excellent vehicle for increasing awareness about business opportunities and trends.

The Alberta Forest Products Association has built up a lengthy track record of effective representation for the forest product manufacturers of the province. And the Alberta Registered Professional Foresters Association provides a foundation of professional standards for the personnel responsible for management of our forests.

The Alberta Forest Products Shippers Association is achieving great results in its efforts to improve the efficiency of transportation and to obtain volume discounts in moving product to market for its members.

The Wood Manufacturing Council of Alberta is a relative newcomer to the scene, but it will be invaluable in providing a voice for the industries that add value to our lumber and panel products.

In short, we are seeing the development of a broadly-based sector that is gaining real definition and recognition.

I am confident that we can look forward to a sustainable and secure industry – within the normal fluctuations of market conditions. We are committed to the preservation of our forest base as an aesthetic and an economic contributor to our quality of life.

Alberta can stand up against anyone when we talk about our integrated resource management, our reforestation regulations and our harvesting and processing standards. Unfortunately, not everyone is aware of this and the forest industry sometimes comes in for some criticism.

Is this anything to do with you as suppliers to the forest industry? Is it your concern when a pulp mill or a sawmill is under attack in the headlines?

I think it is, because you have a stake in the health of the forest industry. Everyone with an interest in the industry should help get out the message that this is a responsible sector and that Alberta has developed some of the best forest management practices in the world.

We have to educate people as to the reality of forest practices and to the essential economic benefits of the sector. It's not unusual for the government to take the brunt of the criticism. The government, of course, can't play a very effective defensive role and perhaps that's why we're seen as an easy target.

This issue has to do with everyone's livelihood and quality of life, both now and in the future. If the private sector doesn't respond to unfair claims and help give a more balanced picture, we are not going to be able to move ahead with the support and understanding we need. I challenge you today to pay attention to the trends and attitudes out there, and to work with us in responding as required.

The government has placed forestry squarely within its economic strategy for the future.

The government values the jobs, the economic and technological activity, the export revenues generated for Alberta by the sector. We believe the industry will continue to have an important place in the province's future.

You may have seen a document called "Seizing Opportunity" – Alberta's new economic development strategy. This strategy says the following:

"The challenge for the forest products industry in Alberta will be to increase value-added activities and apply new technologies and processes to increase productivity."

This goes back to what I said about a shift in focus that's going to occur. Much of the new development in the industry will take place through advances in wood fibre utilization and value added activity.

The scope for opportunity here, and in job creation potential, is fantastic. This potential will be limited only by our collective imagination.

Think of the opportunities in research and education, in computer systems and equipment supply, in marketing, financing, transportation, hardware, environmental technologies - you name it. There will be much more to this sector than just the construction of a few very large mills.

Think of the opportunities to add value to your product or service. There are many ways to add value to a product or service. Success often comes more readily to suppliers who go beyond simply offering a product for sale.

Add value to what you offer by giving the customer the additional benefits of your expertise, your viewpoint, your commitment to complete customer satisfaction. This isn't a matter of giving something away for nothing – it's almost always a way to increase and diversify your business.

There are a number of ways in which the government wants to be involved in your success. Some are mentioned in the economic strategy document "Seizing Opportunity."

First of all, we have to develop and maintain a positive business climate. This goal involves a wide range of priorities, from reviewing tax structures and regulations to seeing how best we can facilitate growth.

We are going to balance the budget, through expenditure reduction rather than higher taxes.

We want to streamline government and make it more responsive to the needs of the people and businesses of Alberta.

We are committed to consultation at every step of the process, as you will see from our reviews of the tax and regulatory structures.

We were very pleased with the number of companies and associations that participated in the regulatory review consultations. We hope that there will be similar involvement in the upcoming public hearings to be held by the Tax Reform Commission.

Overall, our philosophy is that government is a facilitator, not a player, in business. We want to ensure that the necessary infrastructure is in place – in research and development, in education and training, in transportation. Beyond this, when it comes to production, marketing and financing, you surely are the best people to take responsibility.

We do, of course, want to make sure that spin-off benefits from forest industry development are maximized for the greatest possible benefit of everyone in this province. I'll give a few examples of specific opportunities that we have identified:

1: We will be looking for implementation of commitments contained in Forest Management Agreements. Some of these agreements contain undertakings to install paper machines and other facilities that will add value to our wood fibre resources.

2: We will continue with allocation of uncommitted timber resources. The High Prairie Timber Development Area (TDA) request for proposals closes on November 23, 1993, and the Grande Prairie TDA call will be issued in the near future.

3: We want to encourage industrial developments that will increase utilization of our fibre. More attention will be paid to improved fibre recovery, both in the forest and at the mill, as a basis for future development.

4: There is considerable scope for adding value to the existing product mix. We already have many modern, efficient sawmills. The next step is to pursue opportunities for further processing of forest product commodities in Alberta, especially in more specialized products and market niches. One example of this is laminated veneer lumber.

5: In conjunction with industry we are revising fiscal arrangements regarding costs associated with harvesting and forest management. The stumpage fee is under review with the intent of rationalizing its relationship with market conditions. These changes will bring us more into line with practices in other jurisdictions.

6: Much of the benefit from forestry development relates to growth opportunities for suppliers. In recognition of this the government works with project proponents and mill operators to ensure local suppliers have a full and fair opportunity to bid on contracts.

7: The government continues with its support of forest product research and development, because we believe new products and processes are essential for future

development. We recognize that R&D has provided the basis for much of the forest industry development that has occurred to date – in the utilization of aspen, for example.

8: We see increasing opportunities for specialists in environmentally-sustainable forest management. Our forests must be managed responsibly for the long term. In 1993-94, it is forecast that more than 60 million seedlings will be planted in Alberta. We still need to see more research done on silviculture, more intensive management practices and private woodlot operations.

9: The government continues with its multiple-use philosophy for the forests. Alberta introduced the concept of integrated resource management almost 20 years ago, and we have seen its success in bringing all interests to the table when forest planning is undertaken.

The Department of Economic Development and Tourism offers a one-window approach in working with industry. We can connect you with specialists who will provide assistance in marketing, investment promotion and matching, business counselling and in the provision of technical advice.

The role of the Department is to be the advocate of industry, a liaison between you and the resources and policies of the government.

If you come up against industry-related issues and concerns, talk to us. That's what we're here for.

Tom Grabowski
President, Silvacom Ltd.
Ph: (403) 462-3238

Alberta's Forest Industry in the Global Economy

I appreciate the opportunity to be here today to present to you my views on Alberta's forest industry in the global economy. Our company has been a supplier to the Alberta forest industry for 10 years. Like many other forest industry suppliers, we have changed and grown dramatically, fueled by growth in Alberta's primary and secondary forest industry.

Today I would like to briefly review where we've come from over the past 10 years in Alberta as a forestry region, and attempt to present some of the key factors which will determine where we go in the next 10 years in the emerging global economy.

In 1982 the Alberta Forest Products Association reported total lumber sales by its members of 736 million board feet. In 1992 that total reached 1.975 billion board feet (Figure 1). In addition to a number of high efficiency saw mills, the past 10 years have seen the growth of many secondary processing facilities which are producing everything from Japanese lumber components to high quality furniture. Alberta's secondary solid wood industry services both domestic and offshore markets with value added components and finished products.

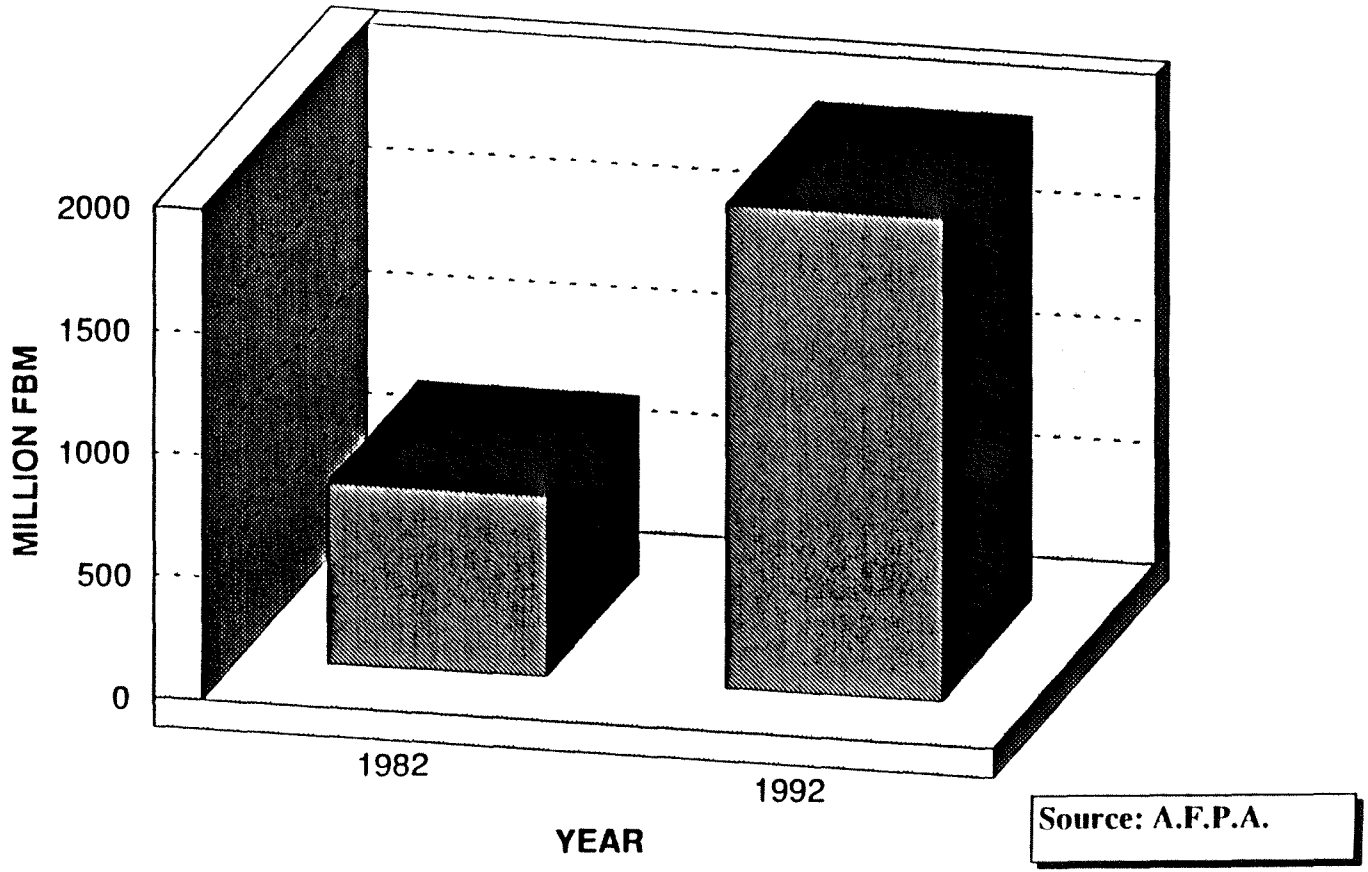
In 1983 Alberta had two pulp mills, one at Hinton and another at Grande Prairie (Figure 2). In 1993 we still have those two mills, with expanded capacity, plus Alberta is the site of new pulp mills at Peace River, Slave Lake, Whitecourt and the recently-started Al-Pac mill at Athabasca (Figure 3). In addition, Alberta's first paper mill, Alberta Newsprint, operates near Whitecourt.

Panel products have grown and changed significantly over the past 10 years. The three plywood mills operating in the early 1980s (Figure 4) have shrunk to a sole survivor, Zeidler Plywood, in 1993. Waferboard and, later, oriented strand board (OSB) have come to dominate the structural panel sector with new mills constructed at Edson and Drayton Valley to join an existing mill at Slave Lake (Figure 5). In addition to OSB, Alberta now has a medium density fibreboard (MDF) mill at Blue Ridge.

Over the past 10 years we have witnessed dramatic growth and many changes in our industry. In the early 1980s there were few takers for the vast supplies of trembling aspen and balsam poplar which thrive in our boreal forest. With the exception of the waferboard mill at Slave Lake and Al Owen's new OSB plant at Edson, aspen was largely viewed as an undesirable and unwanted "weed" tree species. Even the province's significant, unallocated reserves of spruce and pine attracted relatively little attention from forest products companies. High shipping costs, resulting from a long distance to market and the lack of a sea port, was probably the single most often cited reason for the lack of interest in development predicated upon Alberta's forest resources. From a global context, severely depressed pulp and paper markets and a stagnant lumber market resulted in little capital investment anywhere in the forest products industry. But a number of factors changed through the 1980s and into the 1990s to create dramatic growth in our industry, turning the forest products sector into a cornerstone of Alberta's economy. These factors included:

- A strong recovery in pulp prices starting in 1986 and peaking in 1990
- Increasing scarcity of quality wood fibre at economical prices

FIGURE 1
AFPA REPORTED ANNUAL PRODUCTION



Source: A.F.P.A.

FIGURE 2: 1983 PULP MILLS

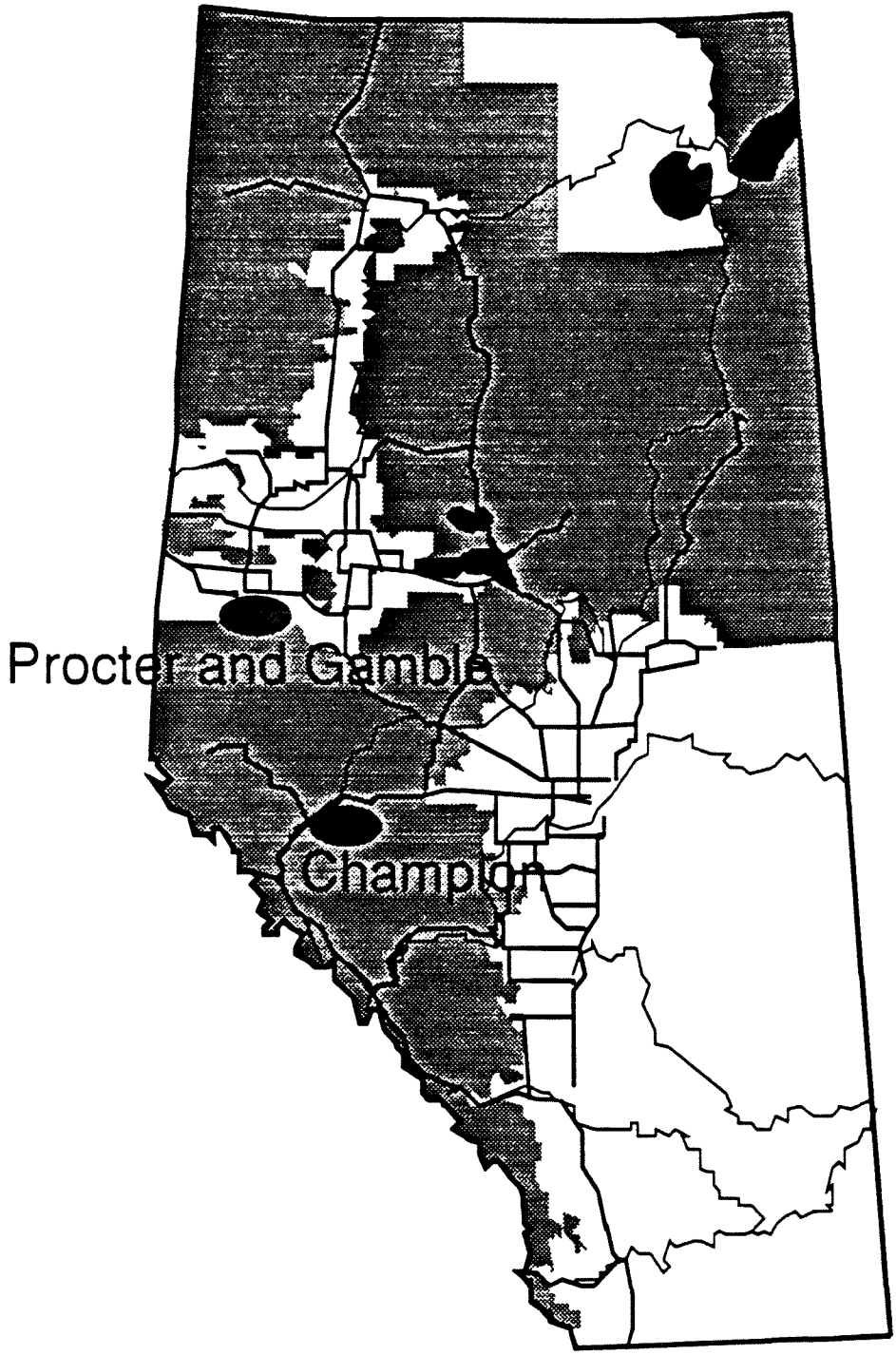


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FIGURE 3: 1993 PULP MILLS

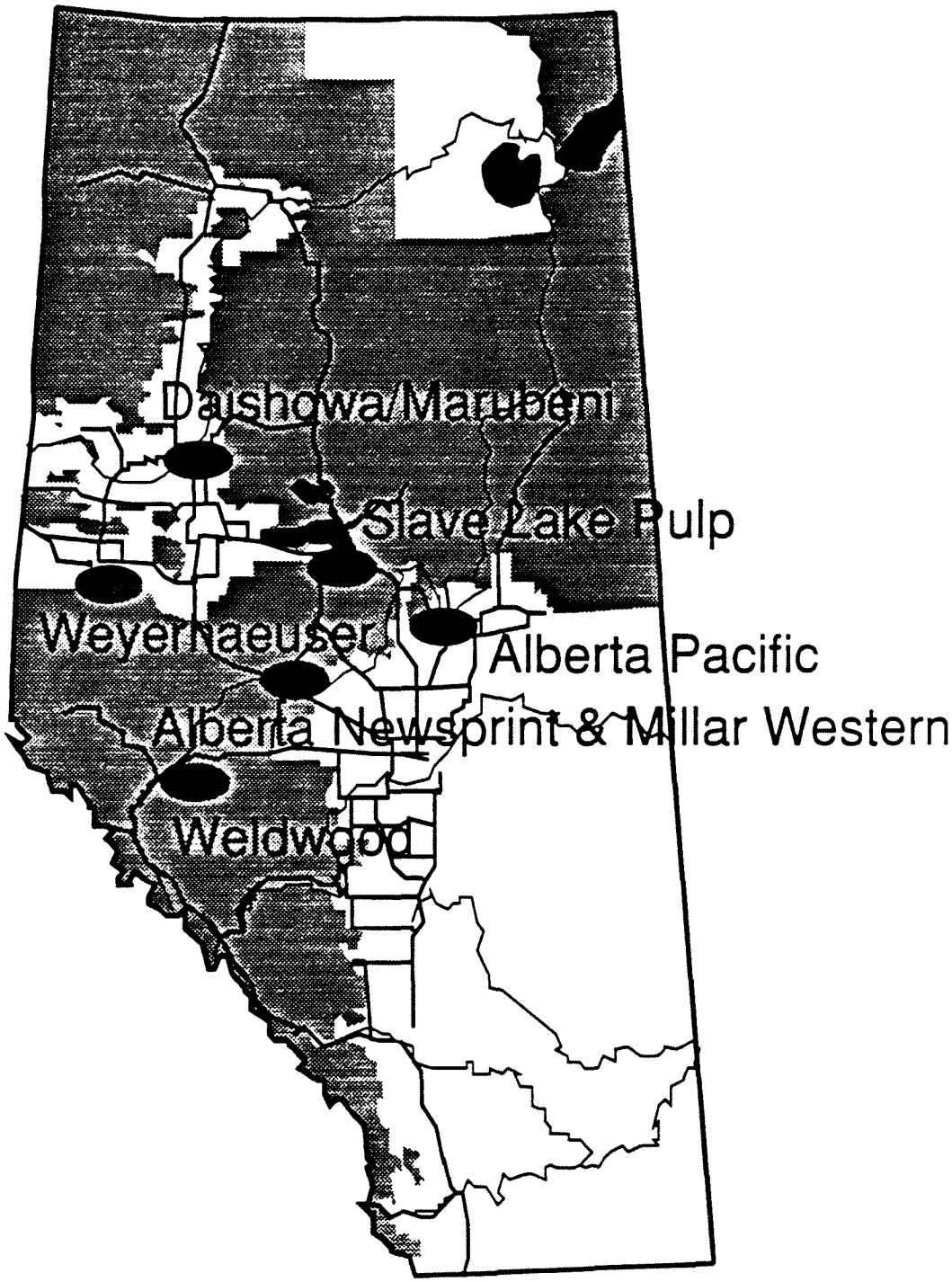

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FIGURE 4: 1983 PANELBOARD MILLS

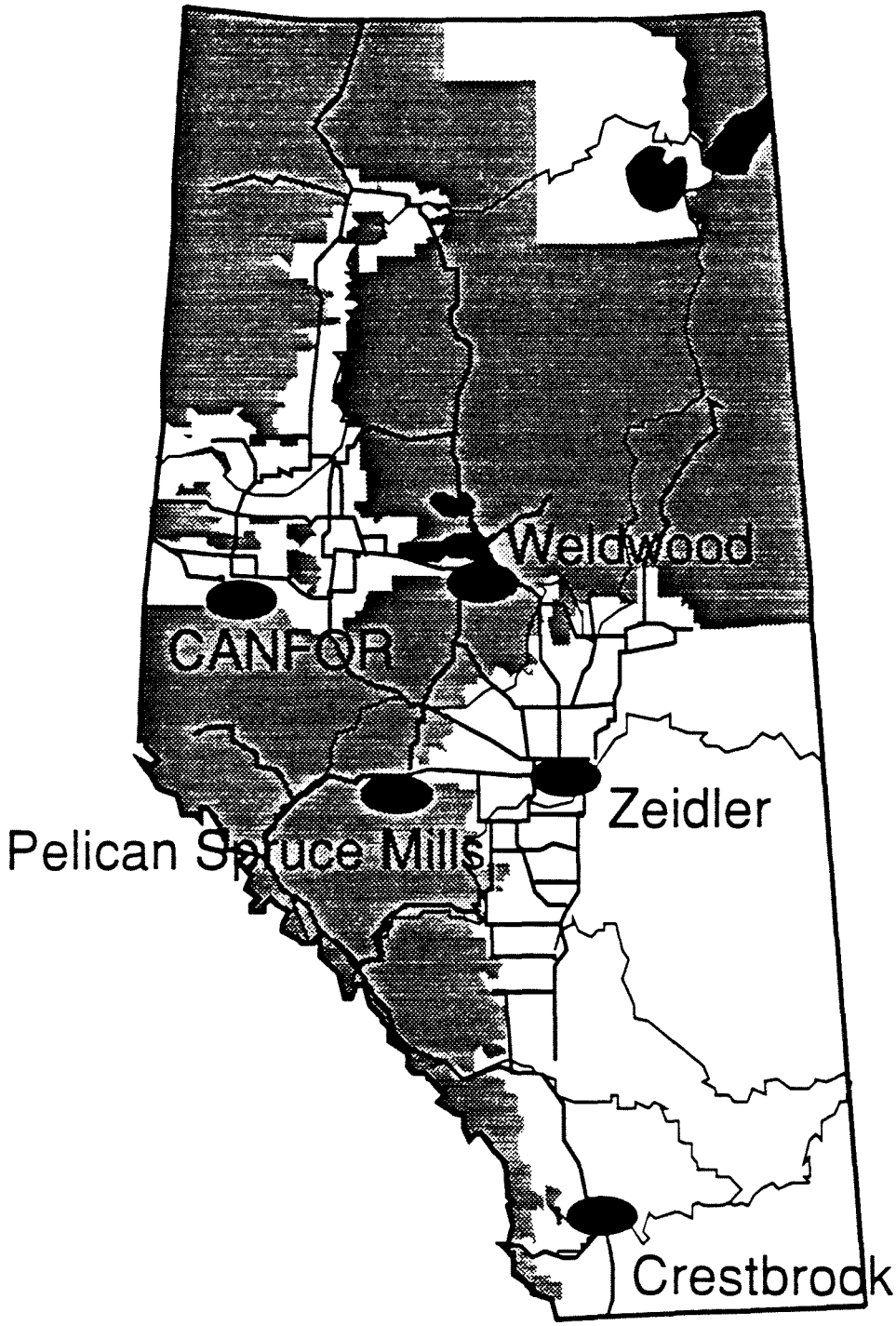

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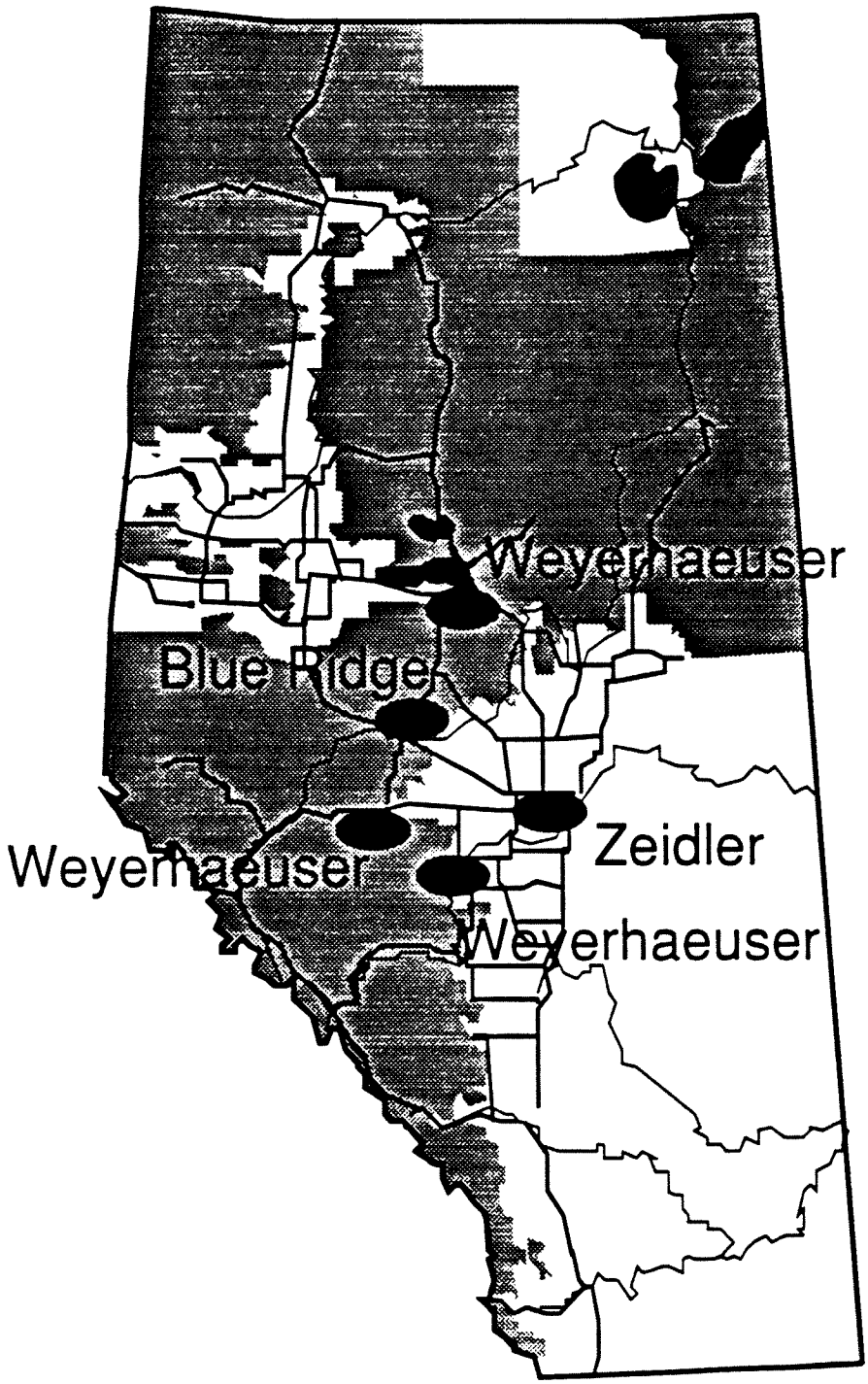
FIGURE 5: 1993 PANELBOARD MILLS



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• Alberta government initiatives; specifically, a decision made, through the government's newly created Forest Industry Development Division, to promote Alberta's advantages to the world's forest products industry with the intention of attracting significant new investment here in Alberta.

Now, as we enter the middle part of this tumultuous decade of the 90s, new factors are coming into play which will determine who survives and who fails in the global economy. We, as forest industry representatives and suppliers, must be aware of the very real dangers which face our industry and which will mean the difference between prosperity, survival or a lingering decline.

In the next part of my presentation I will briefly summarize our market outlook for lumber, panel products and the pulp and paper sectors. Then, I will present my thoughts on the most critical factors which will impact our industry and possibly threaten its continued growth over the next 10 years. Finally, I will wrap up with a "crystal ball" outlook on what I think Alberta's forest industry will look like in 10 years.

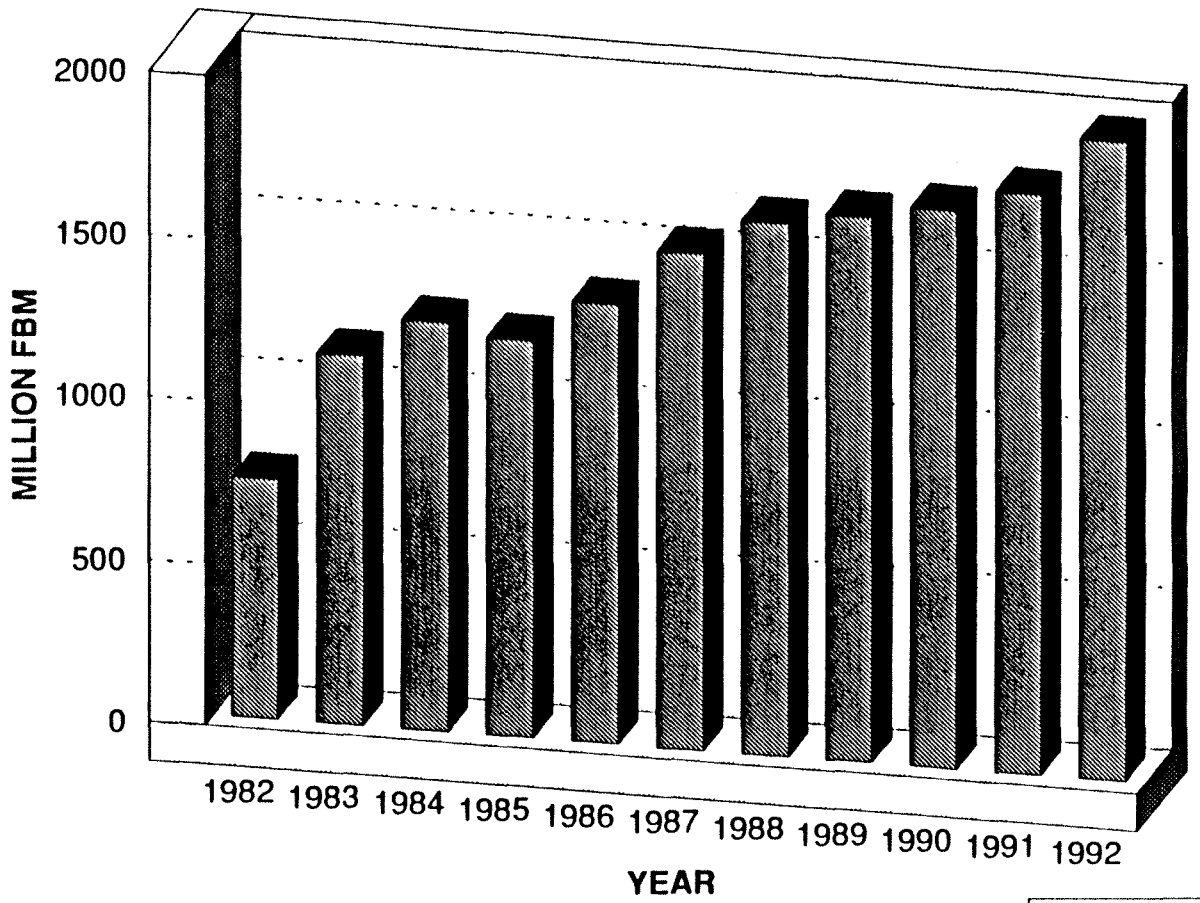
Lumber outlook:
Lumber is a bright spot in Alberta's forest industry scene. In 1993 we appear to be on track to meet or beat last year's record setting production of almost two billion board feet, continuing the steady growth that Alberta has witnessed over the past decade (Figure 6). To put things in perspective, B.C. produces about 16 billion board feet of lumber annually. Total annual North American lumber consumption is about 60 billion board feet.

Prices for the year are the best ever in nominal terms. Real lumber prices (adjusted for inflation) are the best since the late 1970s. Mills with adequate fibre supplies should gain significant financial ground in 1993. Figure 7 illustrates lumber's price history of the past 10 years. As you can see, 1993 has been a tumultuous year. RISI (Resource Information Systems Incorporated) predicts that the future, while not quite as robust as 1993, will certainly see solid gains continuing over the relatively dismal price trend endured in the 1980s (Figure 8). Lumber prices over the three year period 1993-1995 are expected to remain at high levels in both nominal and real terms. Even though North American total lumber demand is expected to drop over the remainder of the 1990s, restrictions on timber supply will curtail supply expansions which would be the normal market response to the present strong pricing situation. Pricing should remain solid as a result.

Our largest market for lumber is the U.S. South of the border, and in Canada, demand is shifting away from industrial and residential use and towards the repair and remodelling market (Figures 9, 10).

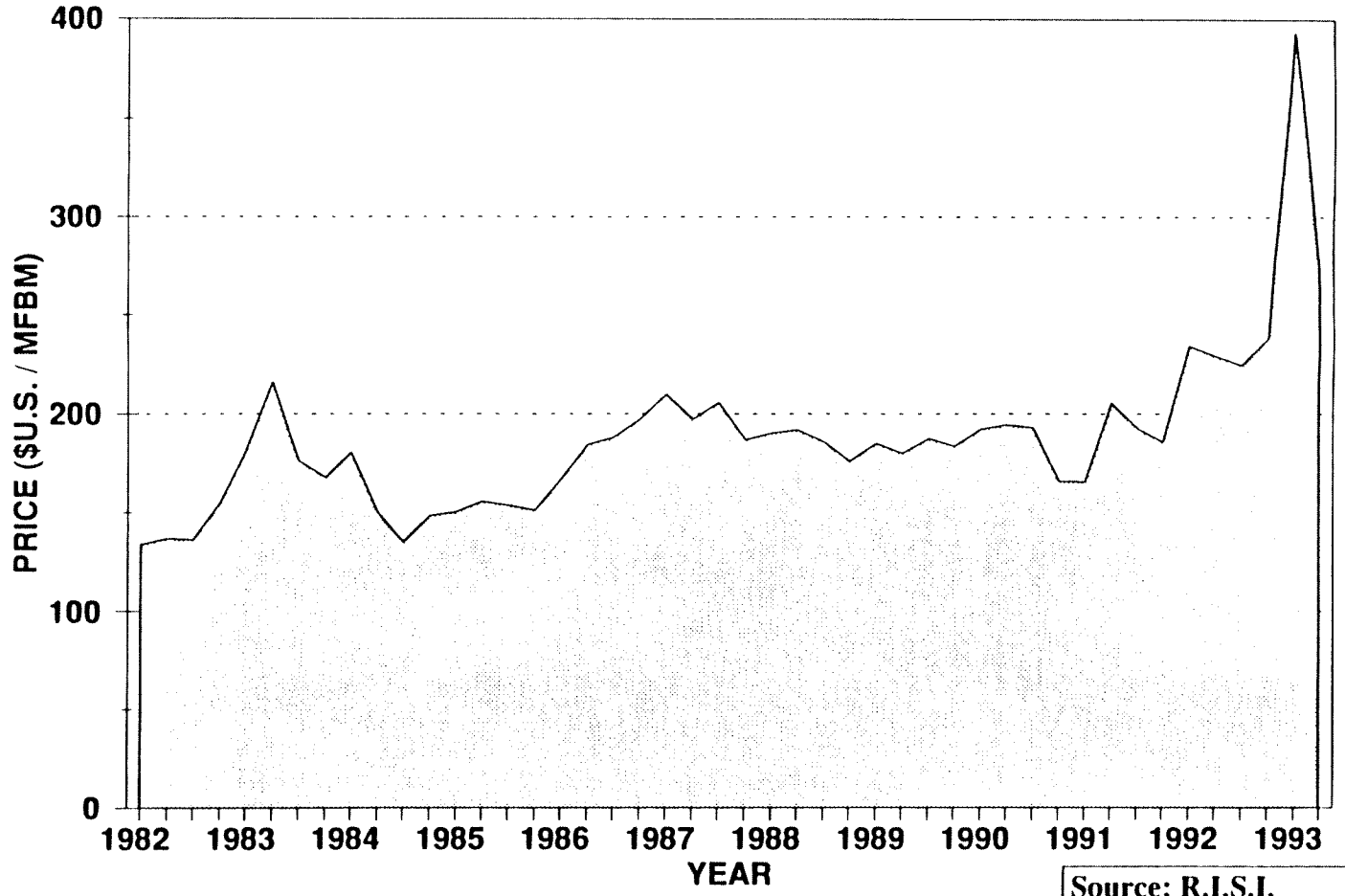
The key factors which will govern long term survival for Alberta sawmillers are timber supply and mill efficiency. Continued production growth in Alberta will be driven primarily by gains in efficiency and not by new primary sawmills.

FIGURE 6
AFPA REPORTED ANNUAL PRODUCTION



Source: A.F.P.A.

FIGURE 7
WESTERN SPF 2x4 HISTORICAL PRICES



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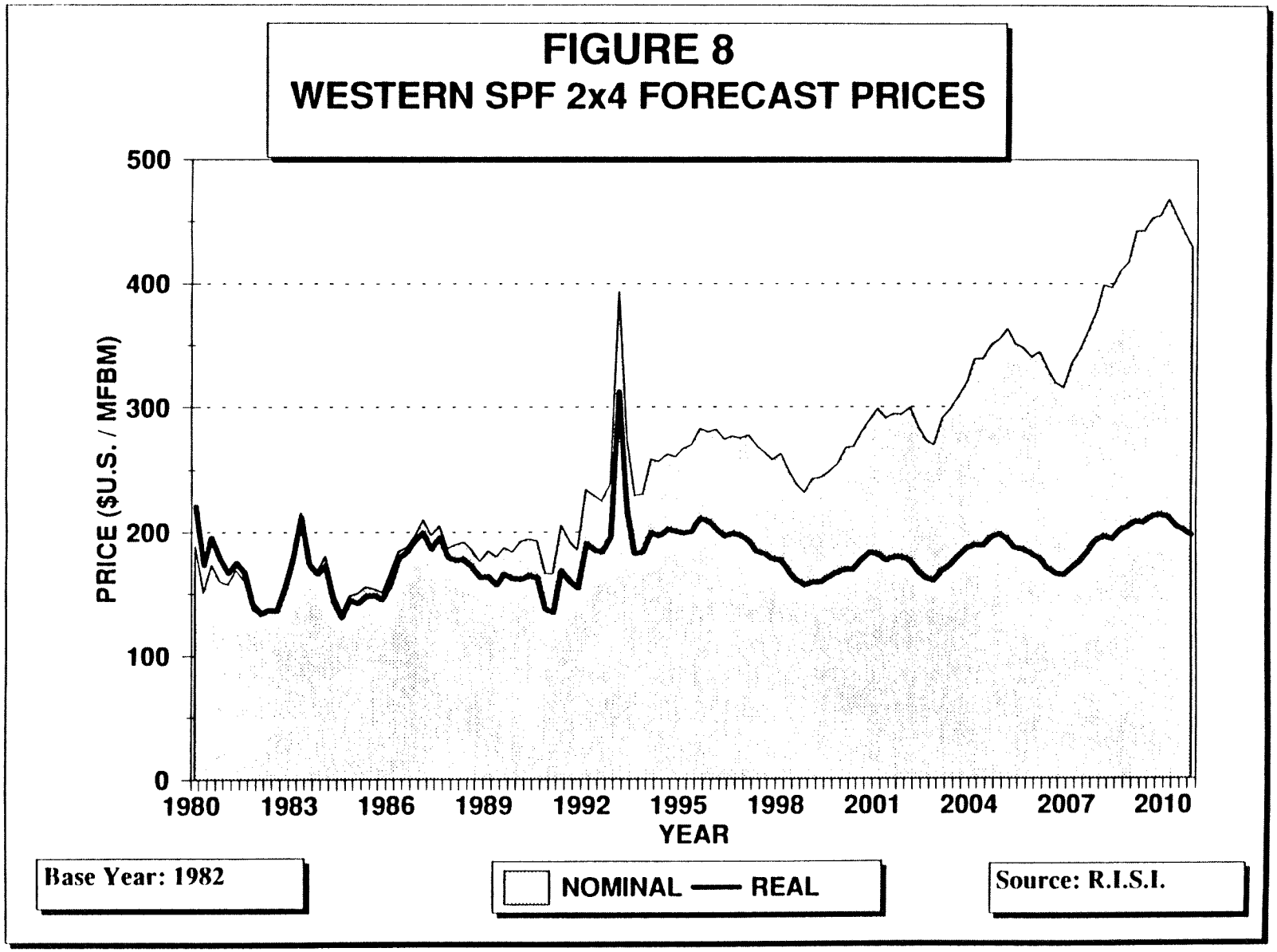

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FIGURE 9
U.S. LUMBER DEMAND SHARES

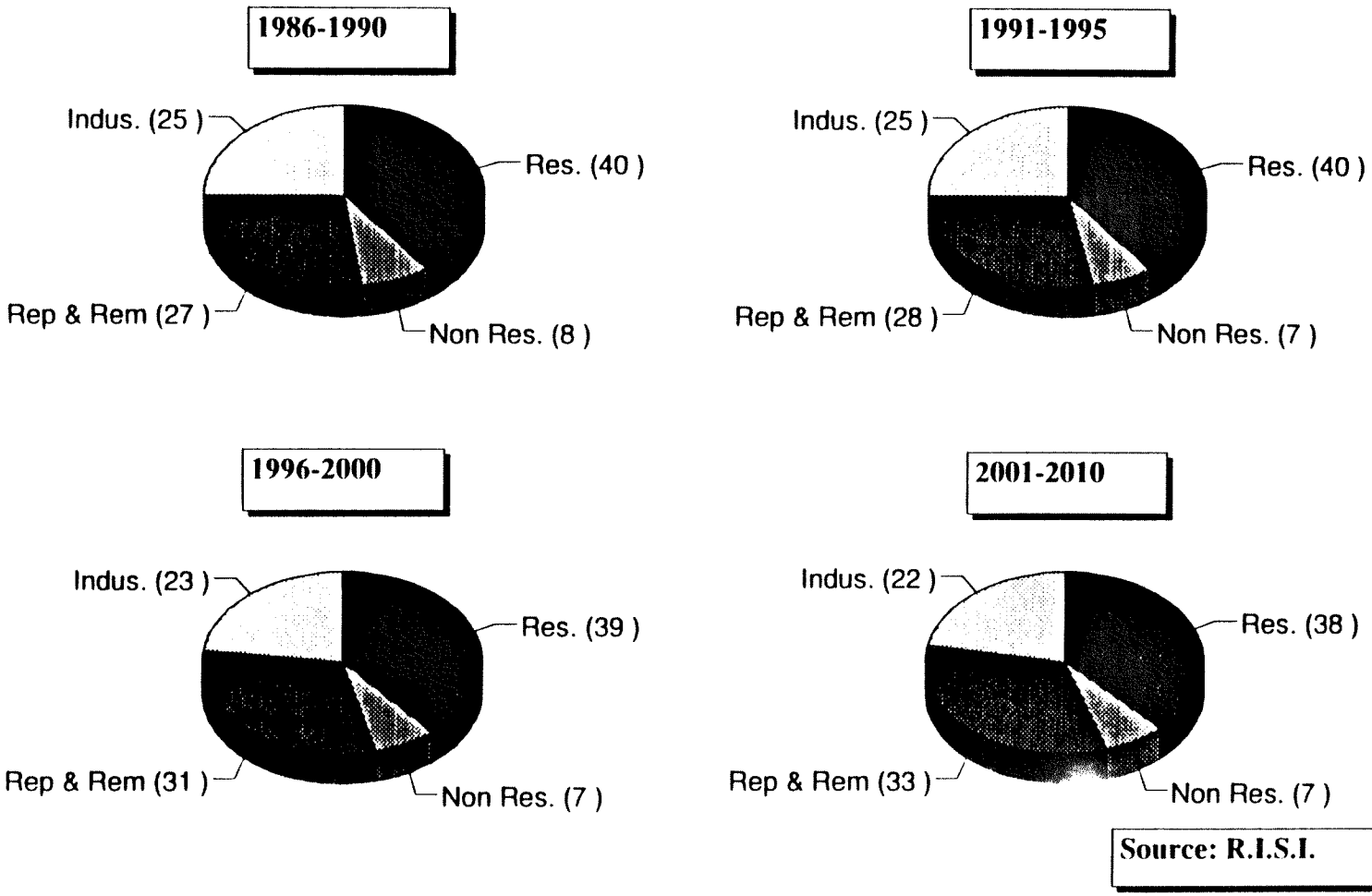
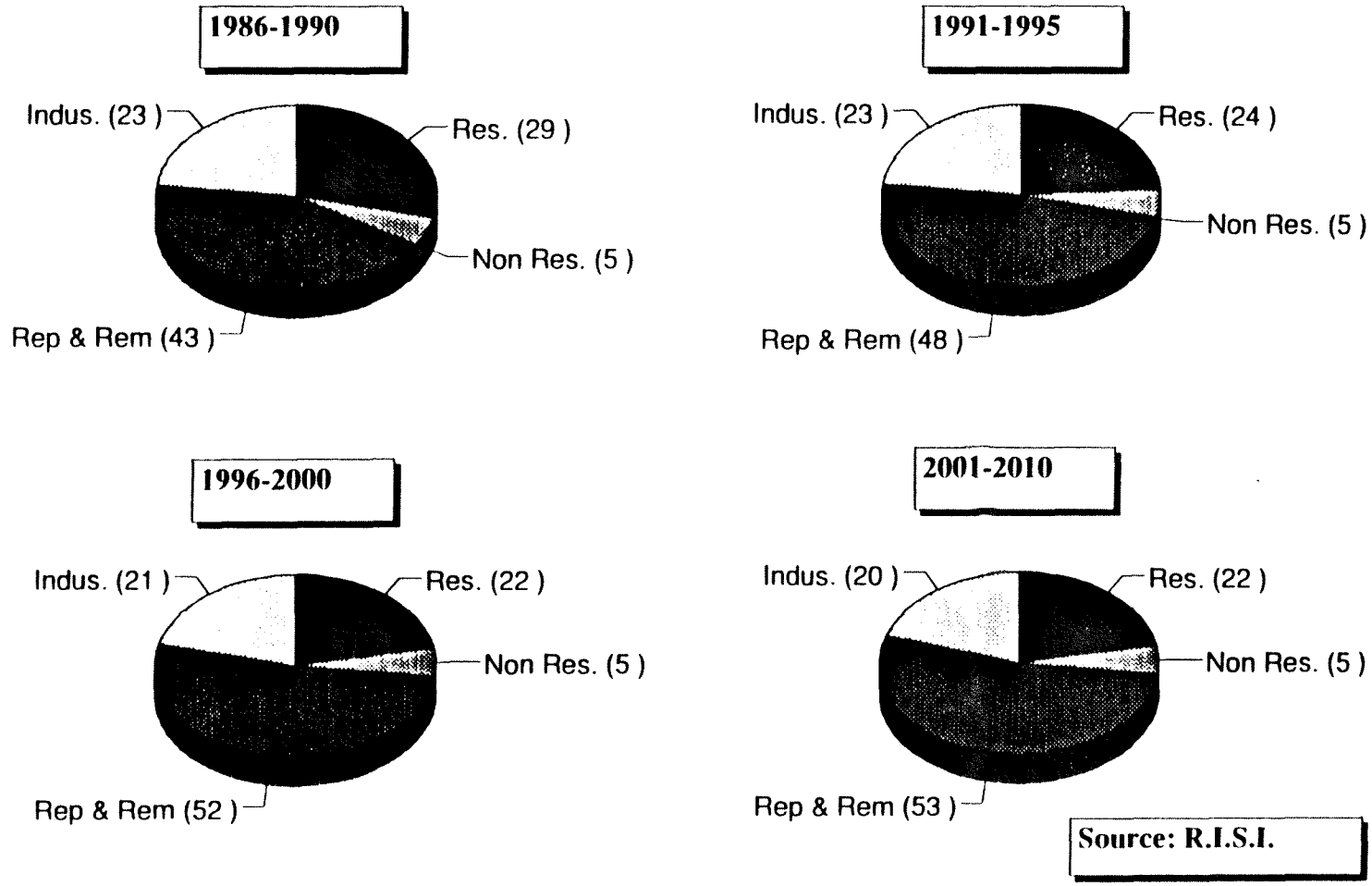


FIGURE 10
CANADIAN LUMBER DEMAND SHARES



The raw timber supply in Alberta will not allow the same dramatic production gains in the next 10 years that we have witnessed over the past 10 years. New production gains will depend largely on increased mill efficiency.

Secondary processing and engineered wood products will become a significant engine for growth of this sector. Value added lumber component manufacture, furniture and its components, pre-fabricated housing components, laminated veneer lumber (both softwood and hardwood), wooden I-beams, glulam beams and other manufactured and engineered products will provide new opportunities for Alberta. While production of dimension lumber will level off, these "new" products will begin to take over and generate substantial growth for the province.

Panel products outlook:
The panel products sector of Alberta's forest industry provides us with a microcosmic example of what has transpired in the North American panel industry over the past 10 years. In Alberta we have seen our plywood capacity shrink from three plants in the early 1980s to a single survivor (Zeidler Plywood) in 1993. At the same time waferboard, and later Oriented Strand Board (OSB), have skyrocketed in importance both here in Alberta and throughout the remainder of North America. The trend, largely driven by available fibre, will continue.

Figures 11 and 12 illustrate these shifts both in the U.S. and Canada. In the first half of the 1980s OSB accounted for only nine per cent (5.6 billion square feet, 3/8" equivalent) of the total American demand for structural panels. By 1992 this figure had risen to 29 per cent (8.1 billion sq. ft. 3/8"), and it is projected to average 64 per cent (almost 22 billion sq. ft. 3/8") in the first decade of the next century (Figures 11, 12). Conversely, plywood in the U.S. has dropped from a market share of 91 per cent (18.4 billion sq. ft 3/8") in the first half of the 1980s to 70 per cent (19.2 billion sq. ft. 3/8") in 1992, and is expected to average only 36 per cent (12.3 billion sq. ft. 3/8") in the period 2001-2010. In Canada the shift to OSB has been even more dramatic. We have gone from a 31 per cent demand share in the early 1980s to 52 per cent in 1992. By the year 2010, OSB will represent over 85 per cent of Canadian structural panel demand (Figures 13, 14).

Alberta has benefited from these shifts in panel demand and has been a key player in blazing new trails in the North American structural panel market. Alberta's principle advantage in the structural panel industry is an excellent OSB fibre supply, namely, the province's abundant aspen resources. Alberta's principle disadvantage is its location and resulting long distance to markets.

Like lumber producers, structural panel demand is becoming less dependent on residential construction and more dependent on the repair and remodelling sector (Figure 15). The Canadian structural panel industry is becoming increasingly dependent on exports. It is significant to note that in Canada, only 32 per cent of our OSB demand is consumed domestically whereas 87 per cent of our plywood demand is consumer locally (Figure 16).

Also like lumber producers, our structural panel producers have endured relatively stagnant prices through the decade of the 1980s and have only recently begun to realize strengthening prices (Figures 17, 18, 19, 20).

FIGURE 11
U.S. OSB/PLYWOOD PANEL DEMAND

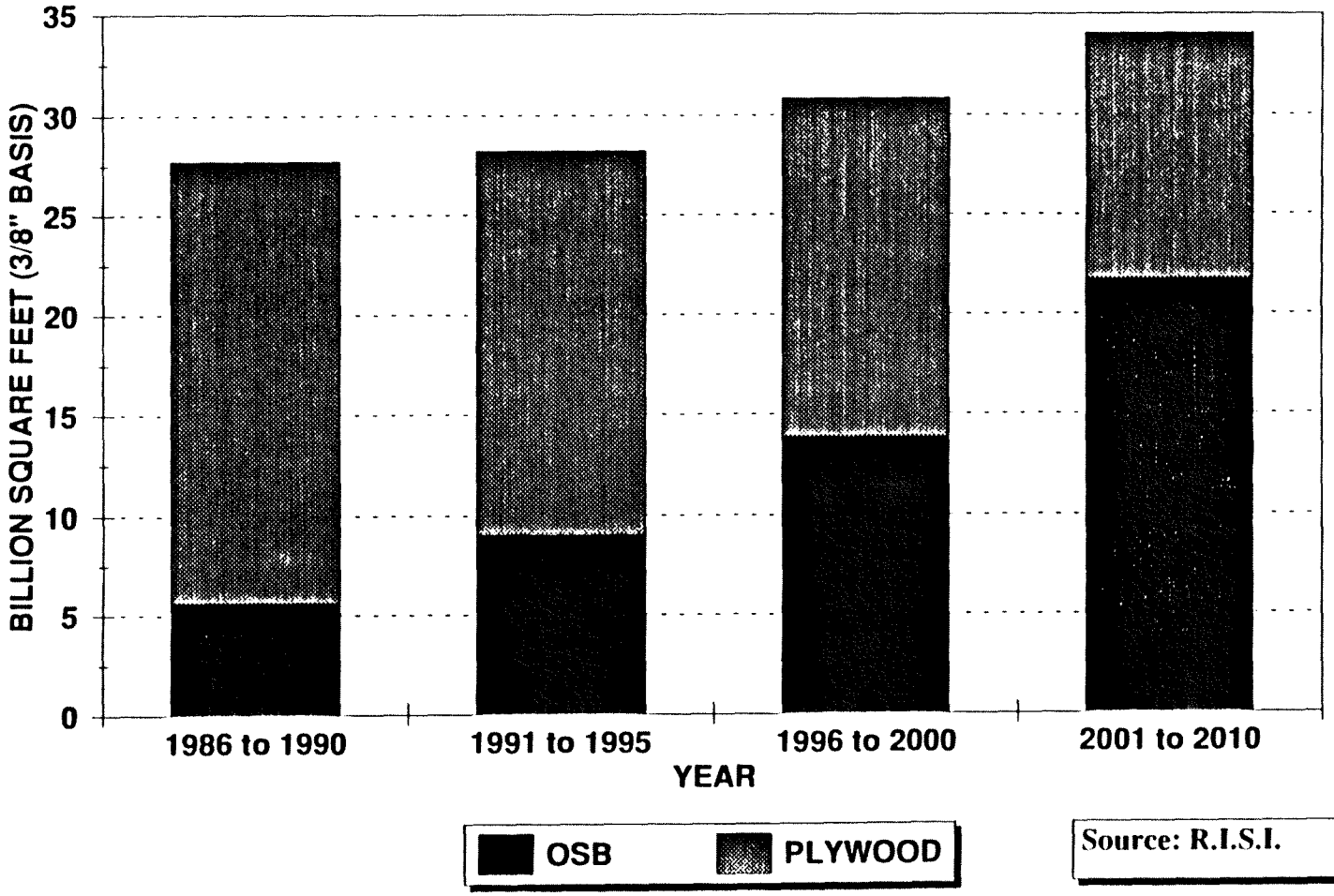


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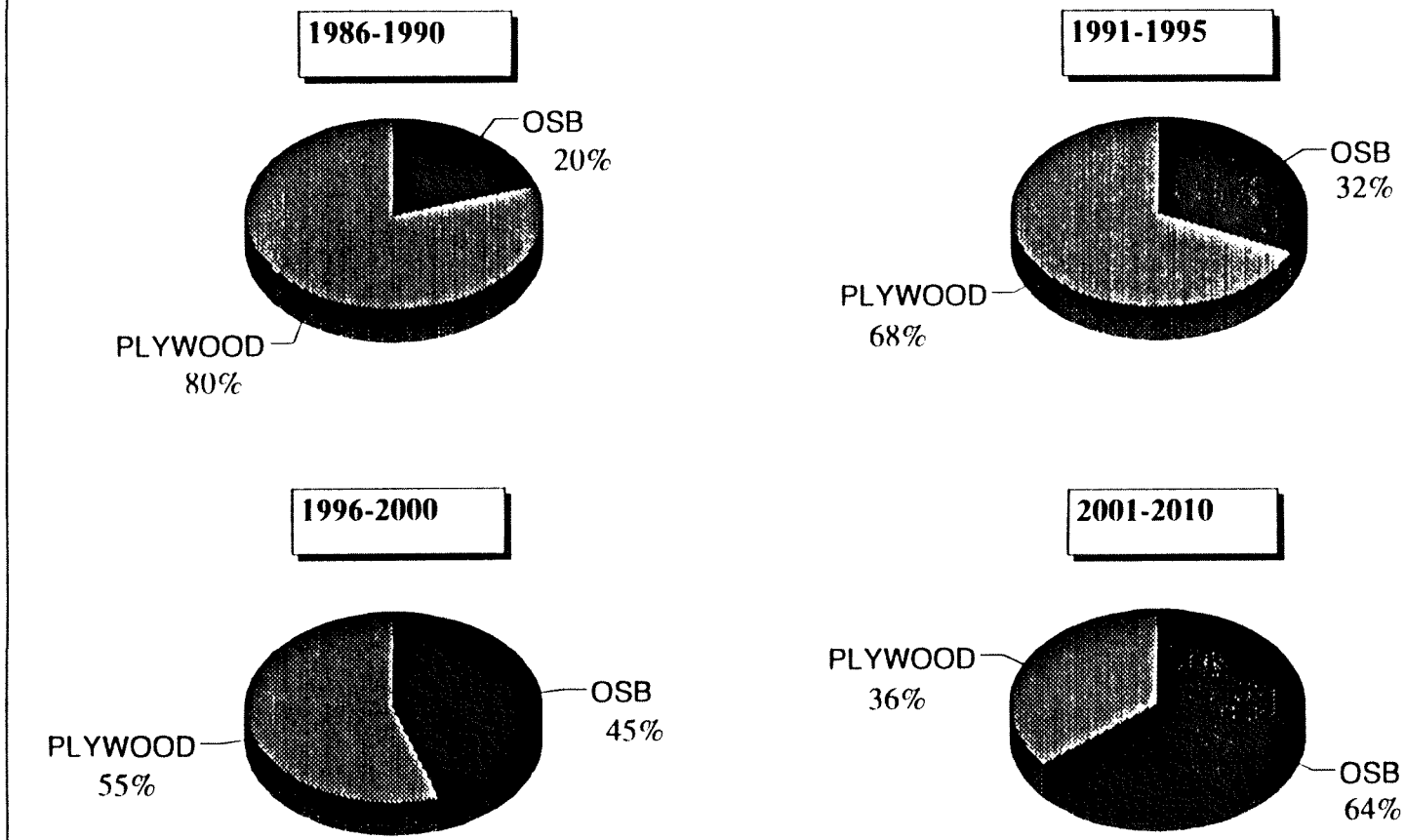
FIGURE 12
U.S. OSB/PLYWOOD PANEL DEMAND



Source: R.I.S.I.

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FIGURE 13
CANADIAN OSB/PLYWOOD PANEL DEMAND

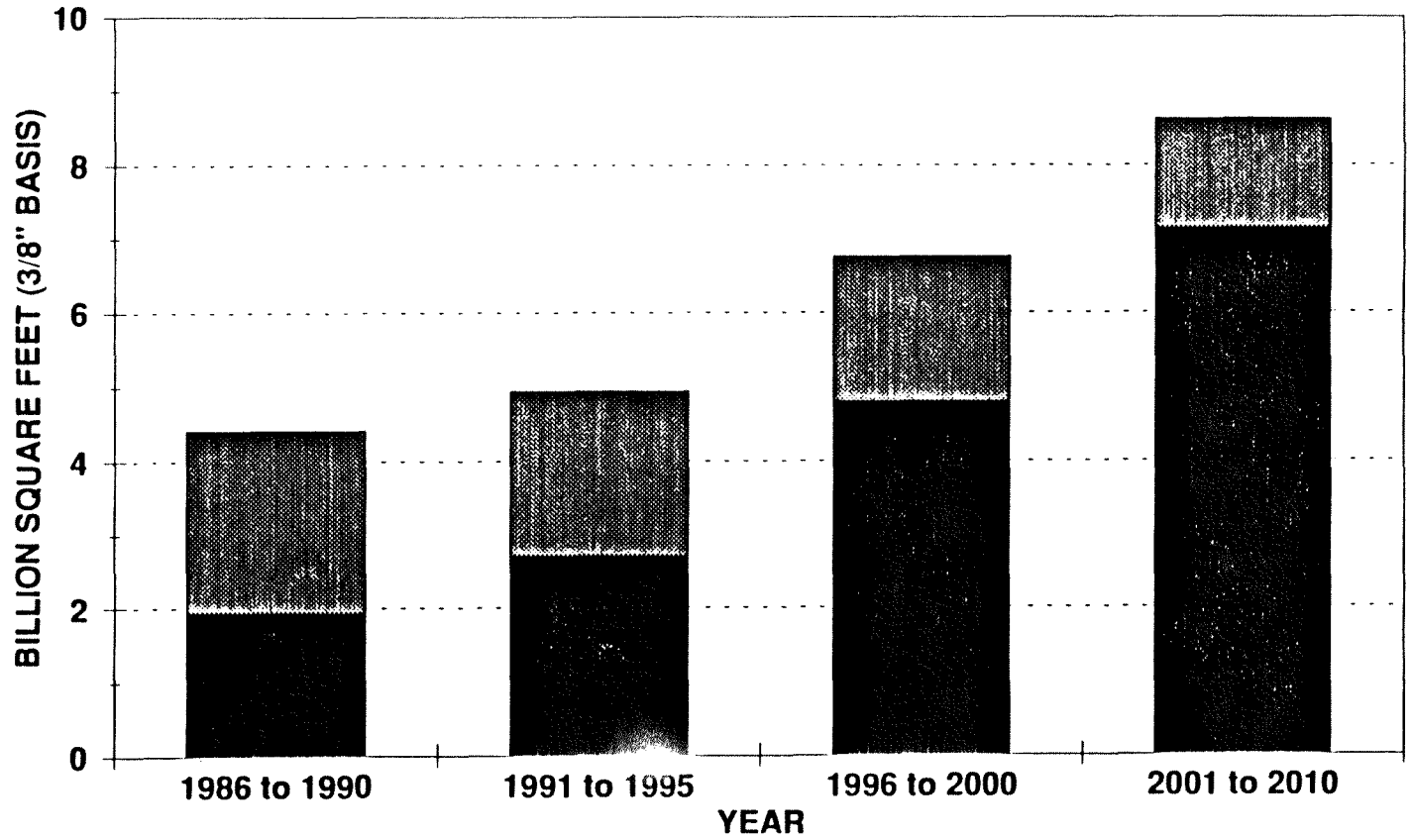

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FIGURE 14
CANADIAN OSB/PLYWOOD PANEL DEMAND

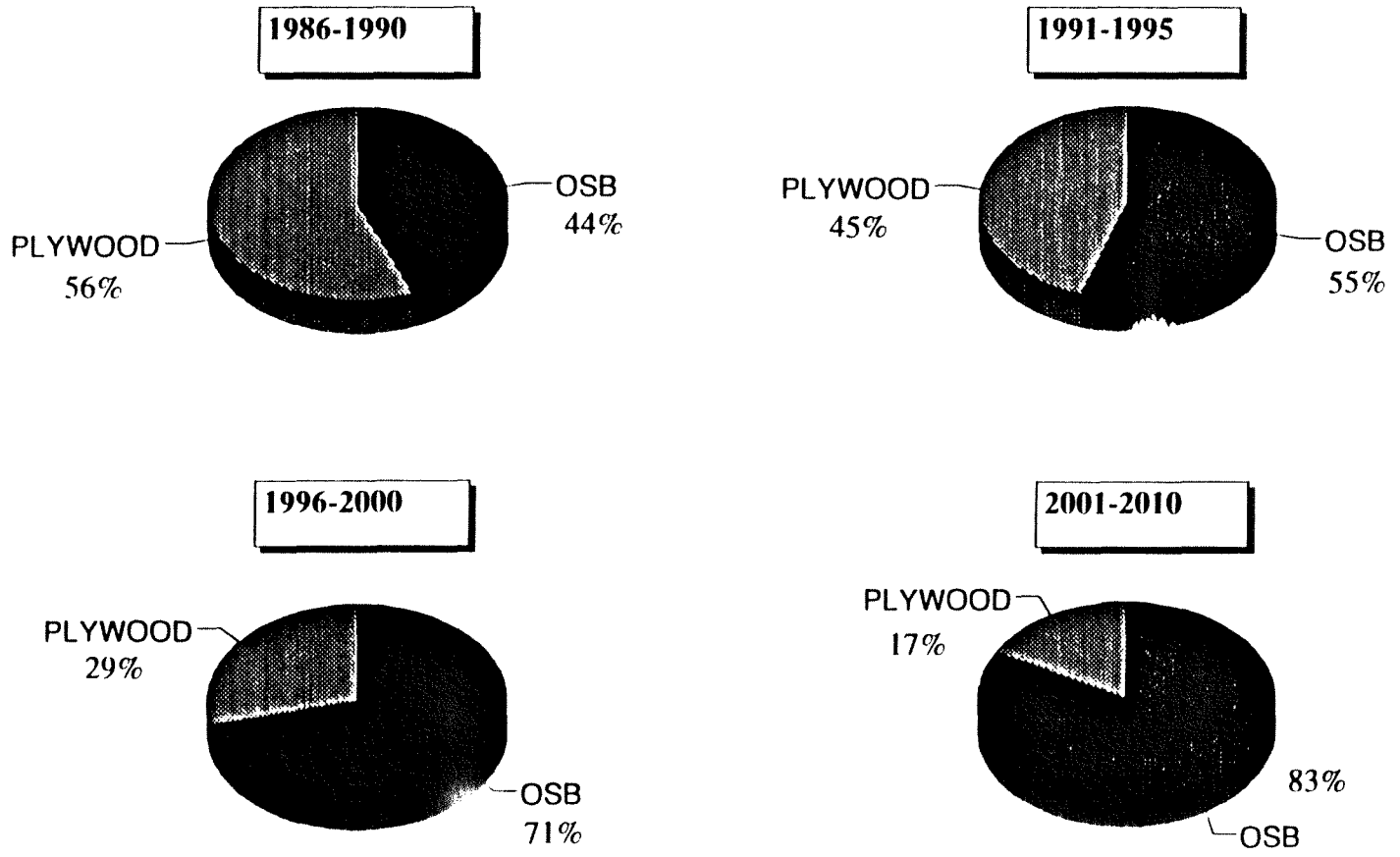

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FIGURE 15
U.S. STRUCTURAL PANEL DEMAND

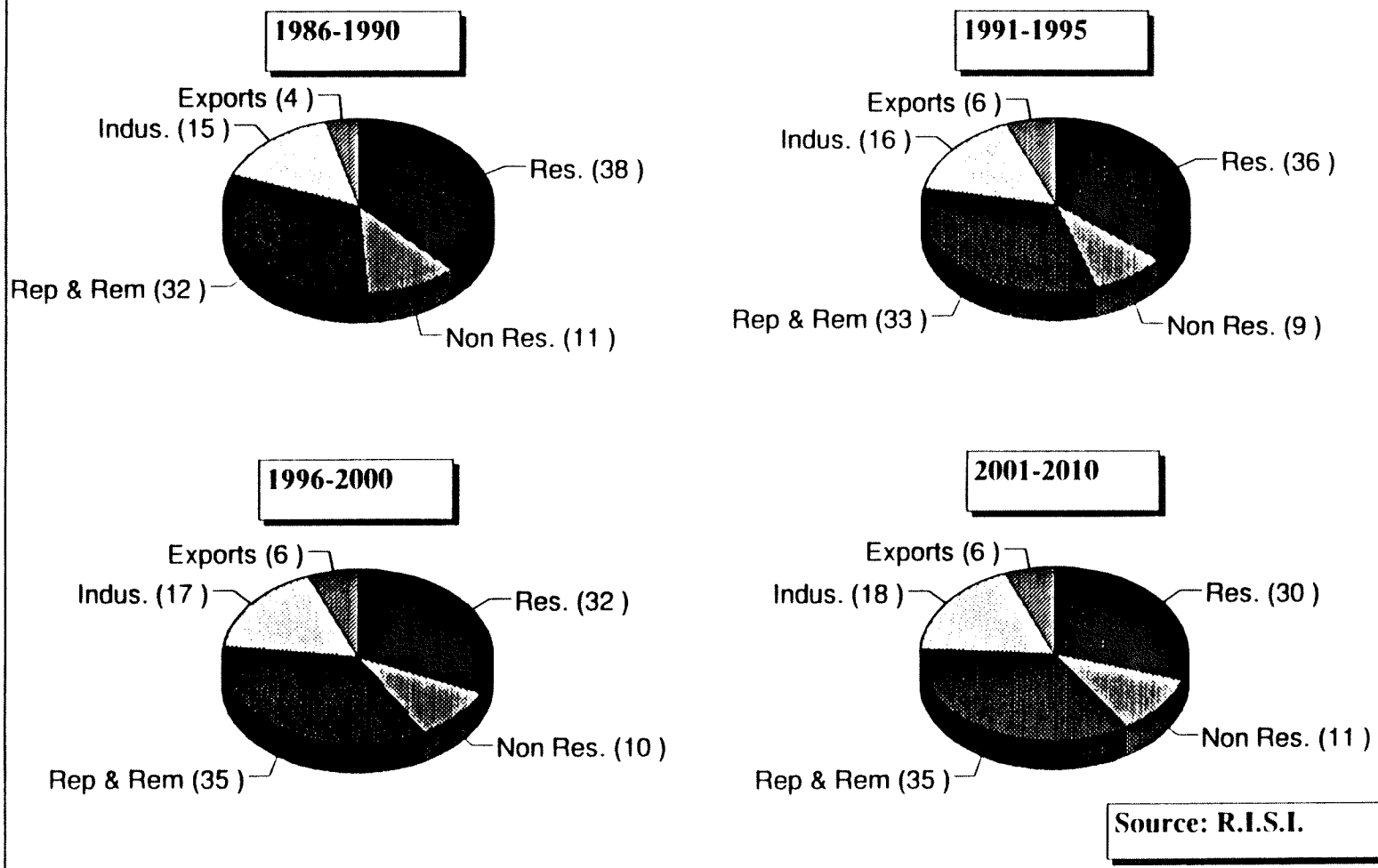

FIGURE 16
CANADIAN STRUCTURAL PANEL DEMAND

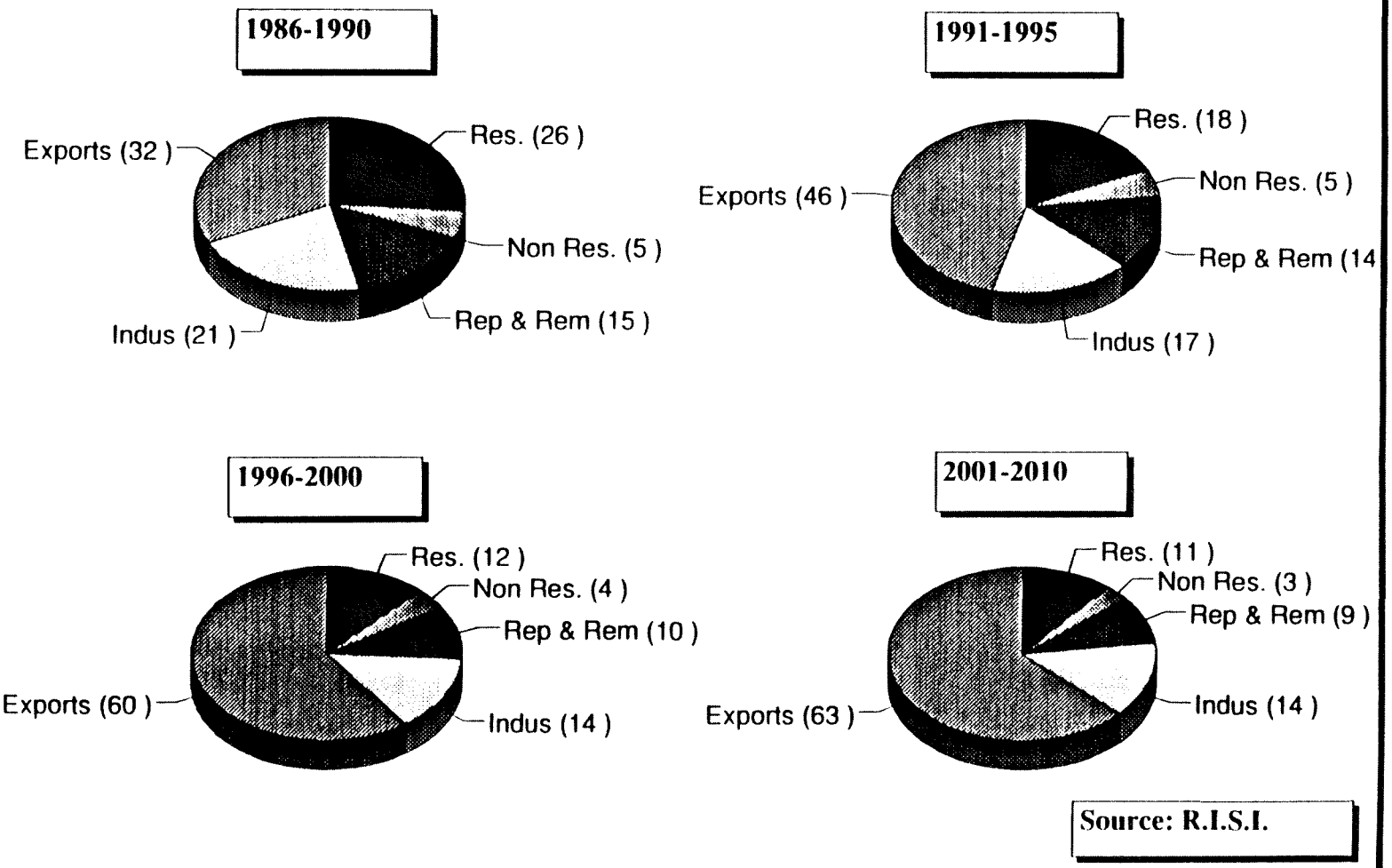

FIGURE 17
OSB HISTORICAL PRICES (7/16")

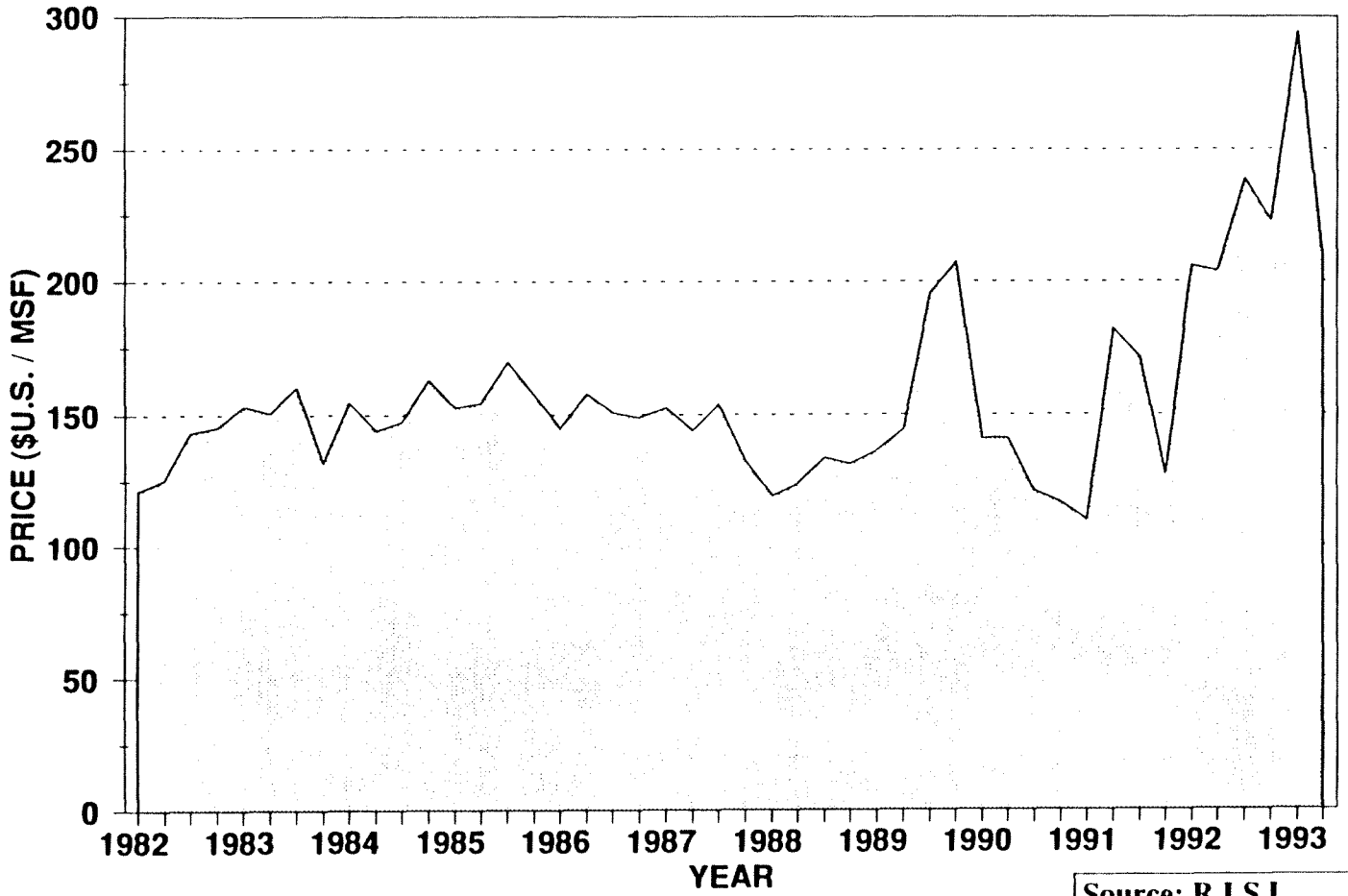

FIGURE 18
OSB FORECAST PRICES (7/16")

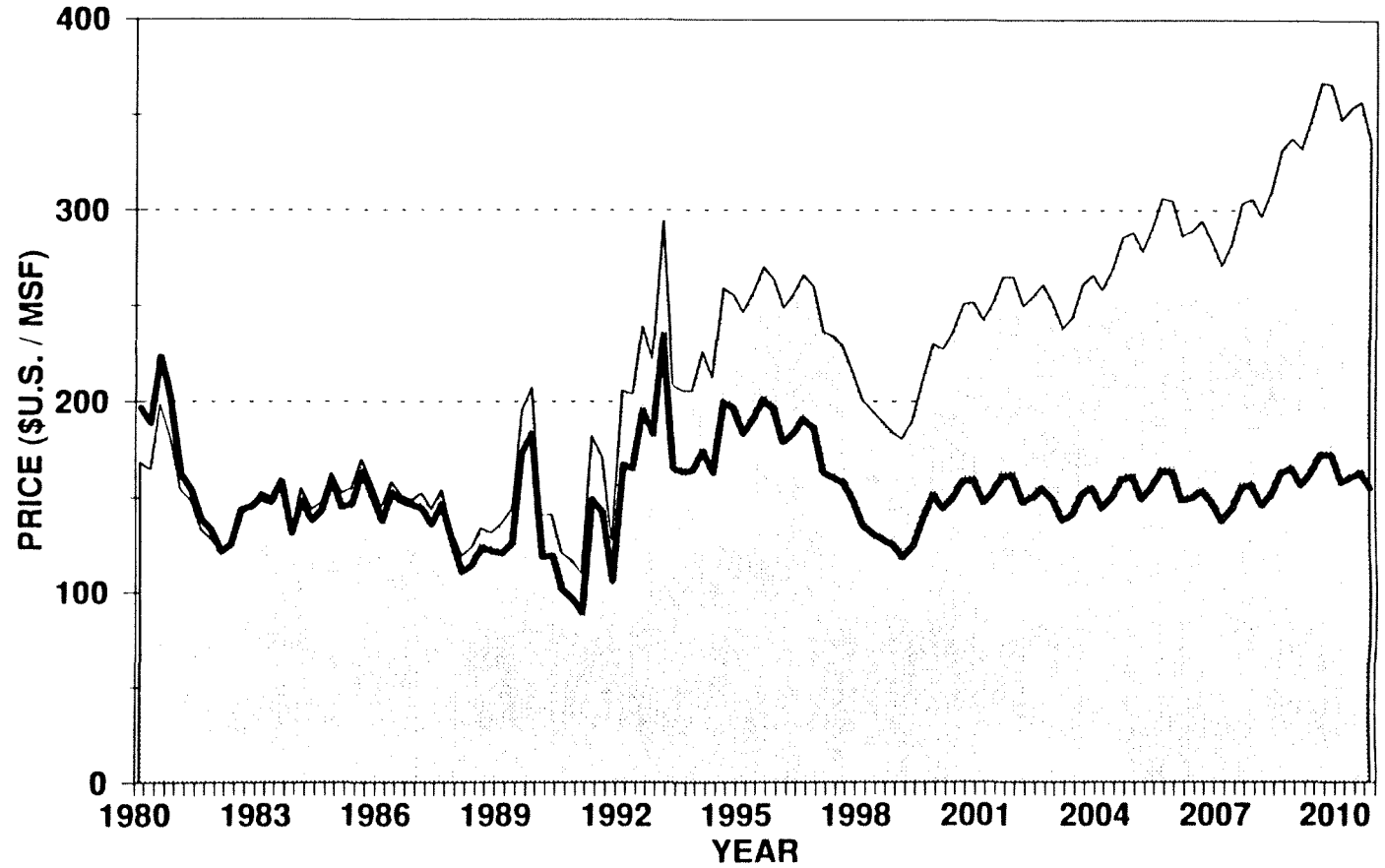

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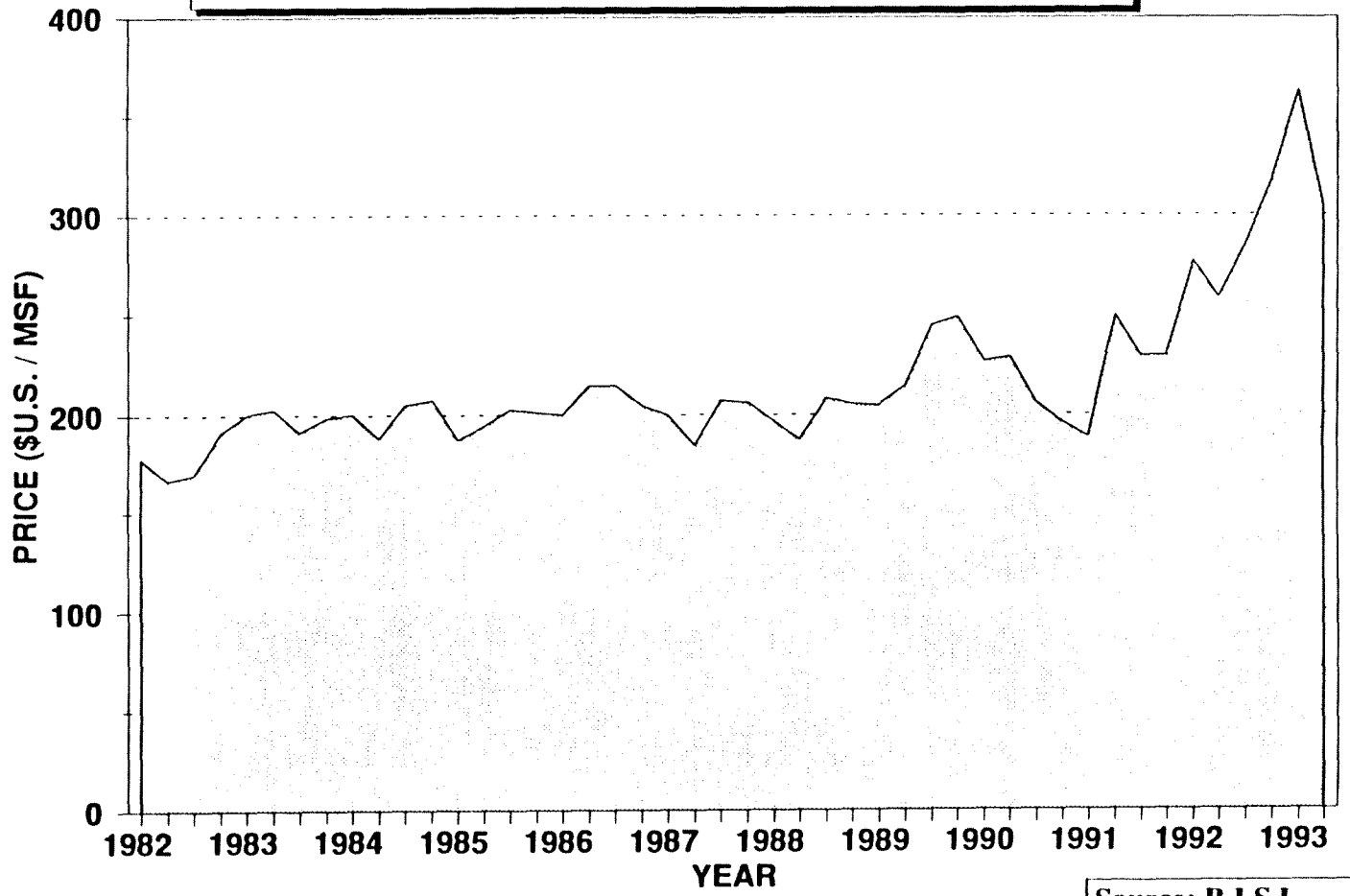
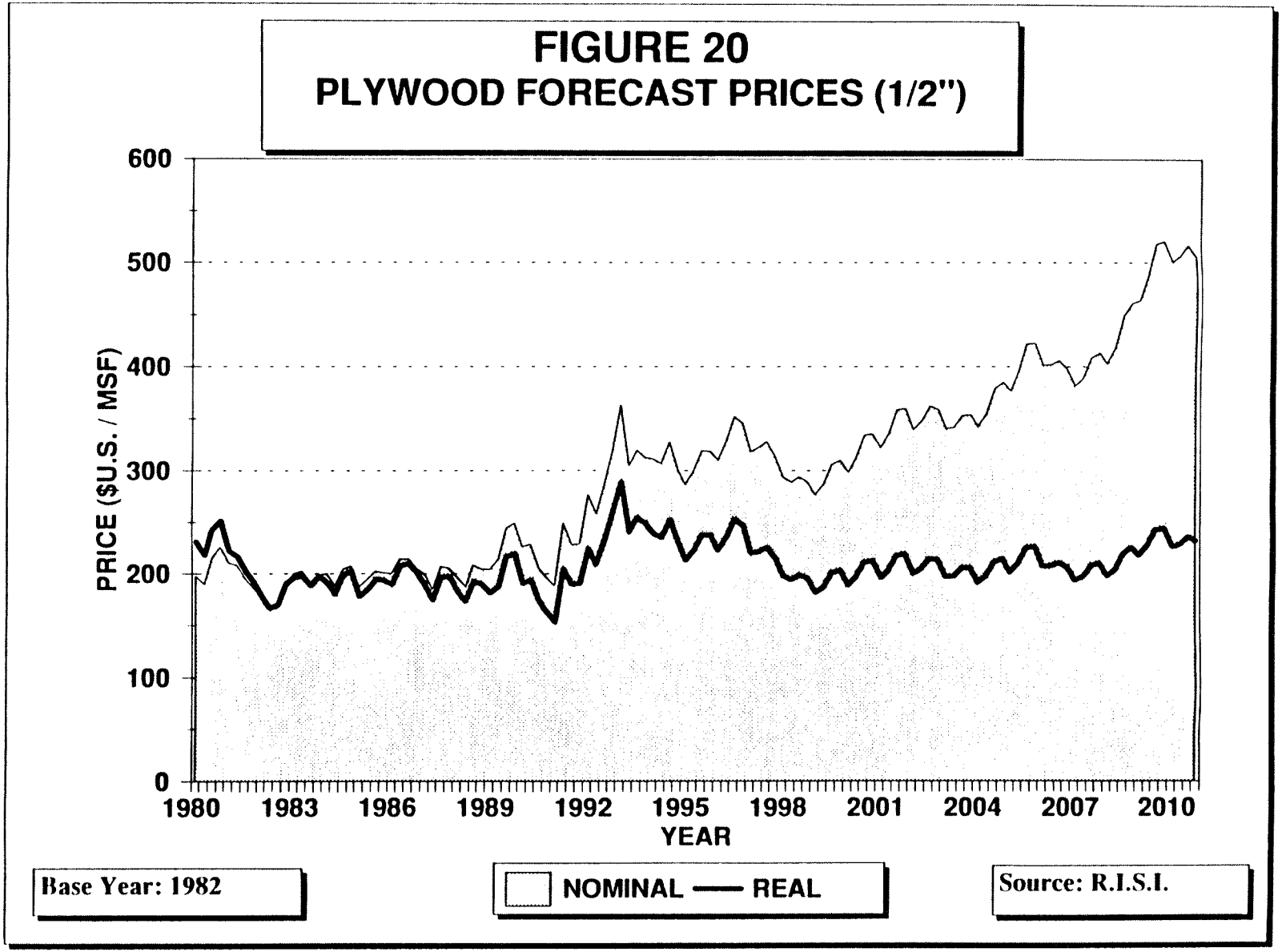
FIGURE 19
PLYWOOD HISTORICAL PRICES (1/2")





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Pulp and paper outlook:
Alberta presently has four bleached kraft pulp mills (Weldwood at Hinton, Weyerhaeuser at Grande Prairie, Daishowa at Peace River and Al-Pac at Athabasca/Boyle), two bleached chemi-thermo-mechanical (BCTMP) mills (Millar Western at Whitecourt and Slave Lake Pulp at Slave Lake), and a single newsprint mill (Alberta Newsprint at Whitecourt).

This sector of Alberta's forest industry has grown dramatically over the past 10 years but in marked contrast to lumber and panel products, the pulp industry has a severe case of the doldrums. The extended slowdown in the world economy and paper market is creating misery for market pulp producers. The euphoria which prevailed in the boom pulp years of the late 1980s has been replaced by a sombre realization that the international market pulp industry is sometimes its own worst enemy. High profits realized during the excellent market conditions of the late 1980s resulted in heavy investment in new capacity. The result is that even though world market pulp demand is expected to be 1.3 million tons higher in 1993 than in the last peak year of 1988, capacity will be 5.0 million tons higher. Chronic under utilization of capacity in the 1990s coupled with currency devaluations in Scandinavia and low wood costs from Southern Hemisphere plantations have resulted in a large drop in the world cost structure for market pulp and dismal market prices (Figure 21). 1993 will see record low prices in real (inflation adjusted) dollars (Figure 22). Despite the fact that production costs are at their lowest levels ever, profitability will set record lows.

Not much can be said about pulp prices except that they are terrible. After a brief rally in the spring, pulp prices have collapsed to their lowest real level in at least 40 years. While market conditions are presently very grim, the situation will not last forever. Once the world economy accelerates, pulp demand will improve and prices will follow - hopefully beginning early in 1994 and continuing through 1997.

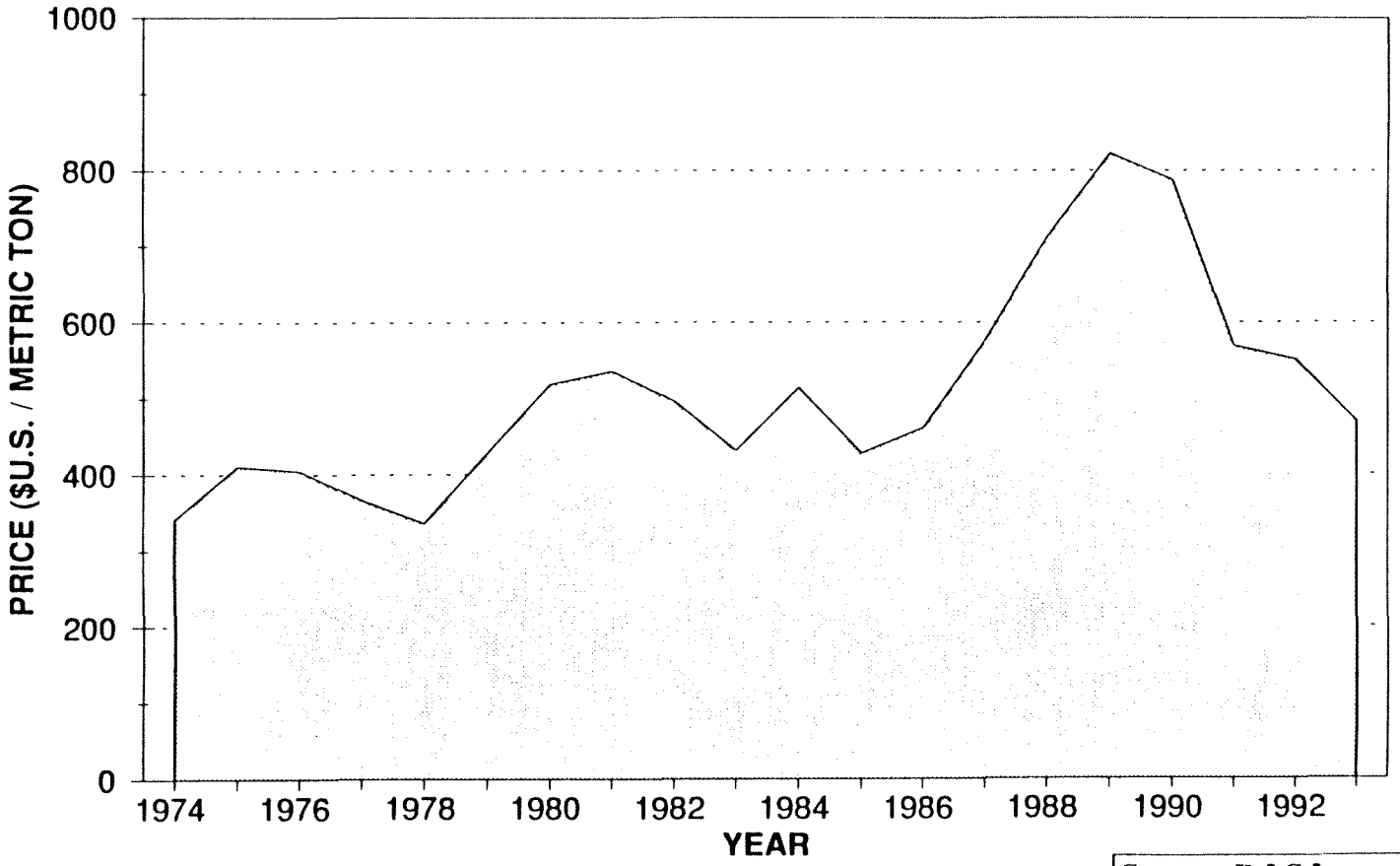
Newsprint is also suffering from weak pricing due to excessive supply in a stagnant market. Price gains won early in the year have been given up as Scandinavian supply to the U.S. doubled. Over the longer term, pricing should start to turn around at the very end of 1993 or the beginning of 1994 (Figures 23, 24). Prices should rebound 35 per cent between 1993 and 1996, but real prices will not climb to historical levels.

Limits to development:
While I am highly optimistic about the future of the forest industry in Alberta, its continued development is, in my opinion, affected by three main issues:

- fibre supply
- environmental restrictions
- loss of competitiveness in the global economy

Fibre supply is the number one problem for the forest industry in Alberta, in Canada and in the United States. So far, Alberta has been relatively well insulated from the negative impacts of fibre shortages. To date, most of our experience in this province has been rather positive - fibre shortages in other jurisdictions result in higher prices and better market opportunities for Alberta products - particularly for lumber in 1993. I do not believe that we will continue to enjoy this status for much longer. Let's take a quick look at what is happening in the U.S. and in British Columbia as a potential foreshadow of what might come in Alberta.

FIGURE 21
BSKP HISTORICAL PRICES



Source: R.I.S.I.

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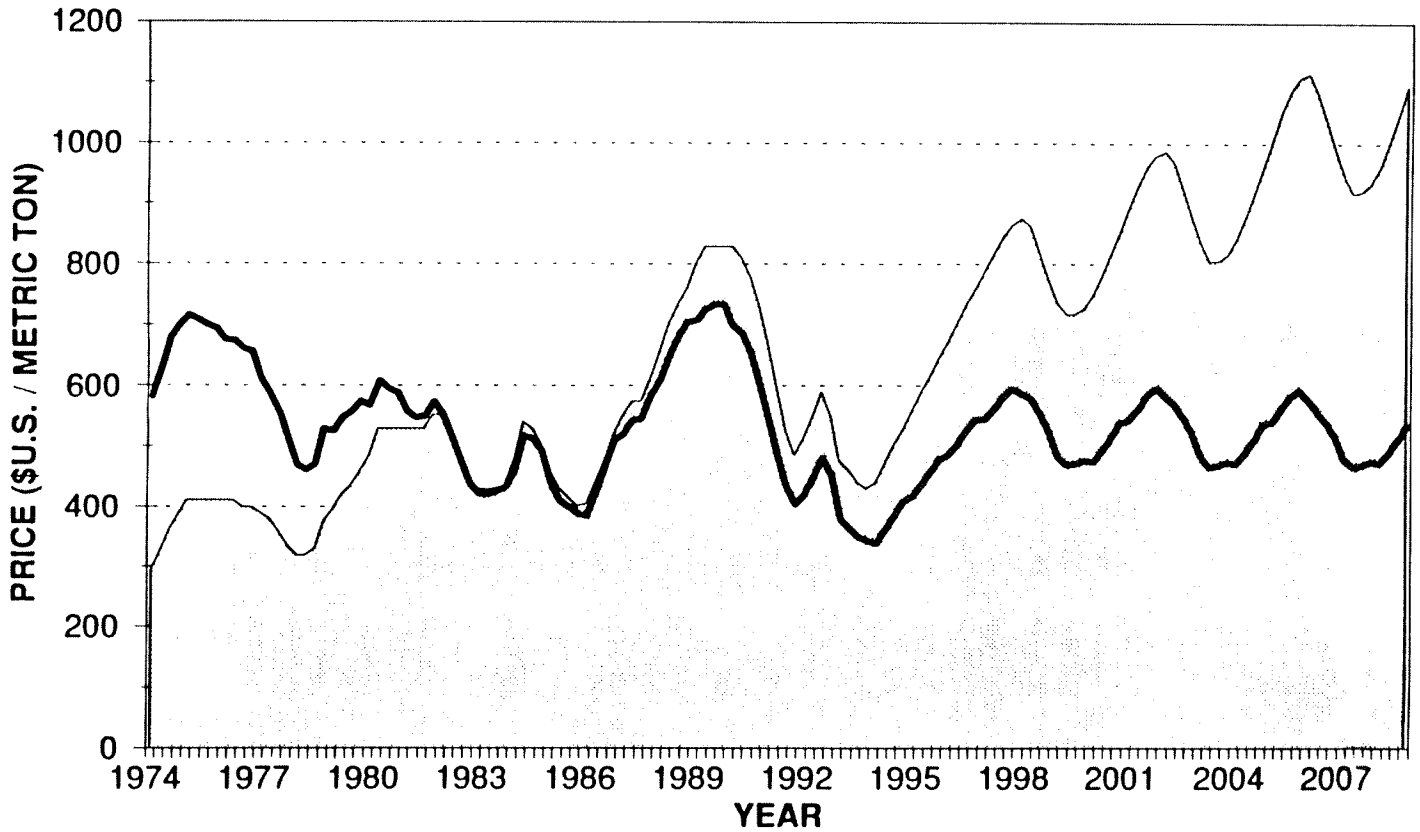
FIGURE 22
BSKP FORECAST PRICES TO 2008



Base Year: 1982

NOMINAL — REAL

Source: R.I.S.I.

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FIGURE 23
NEWSPRINT HISTORICAL PRICES

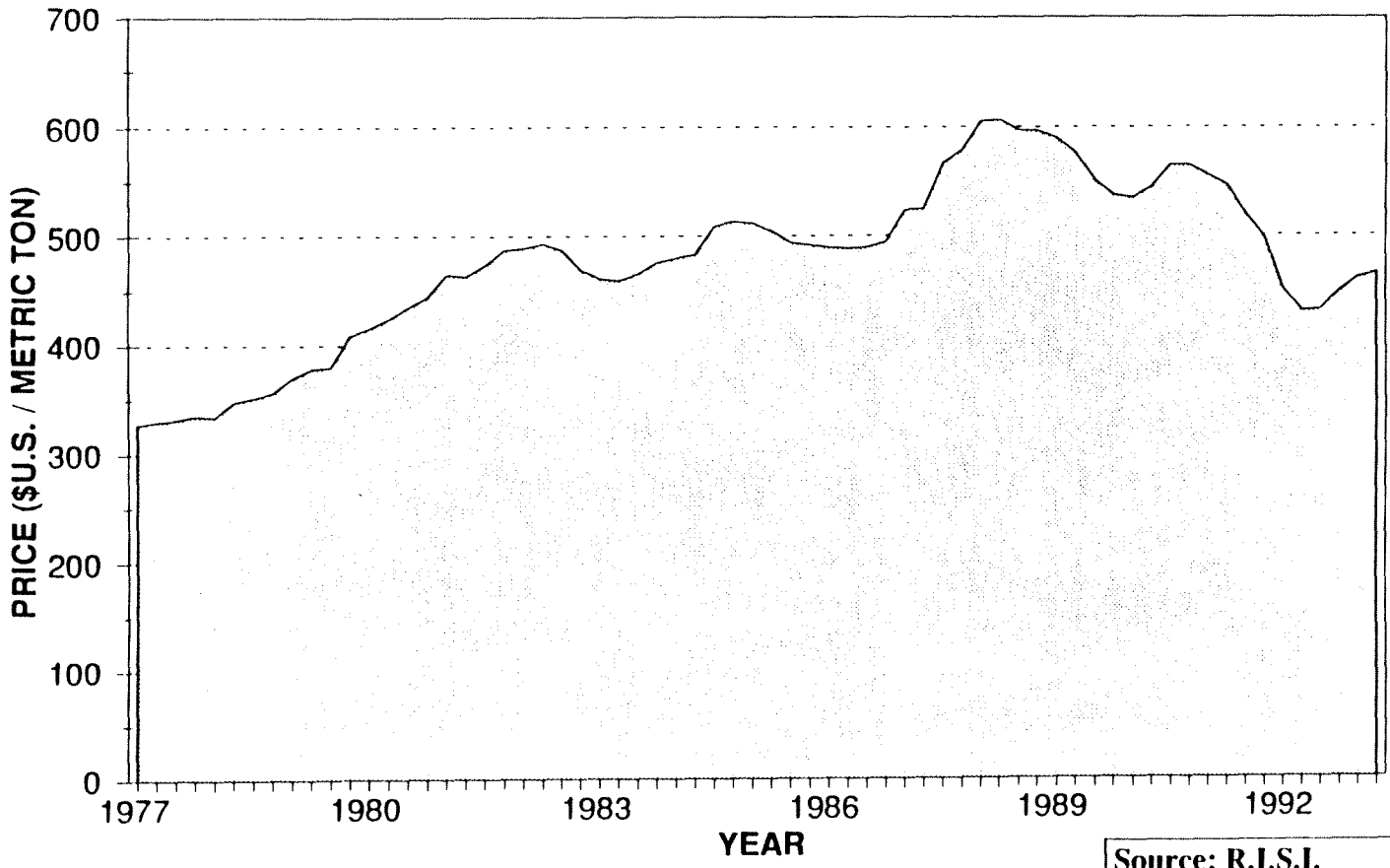

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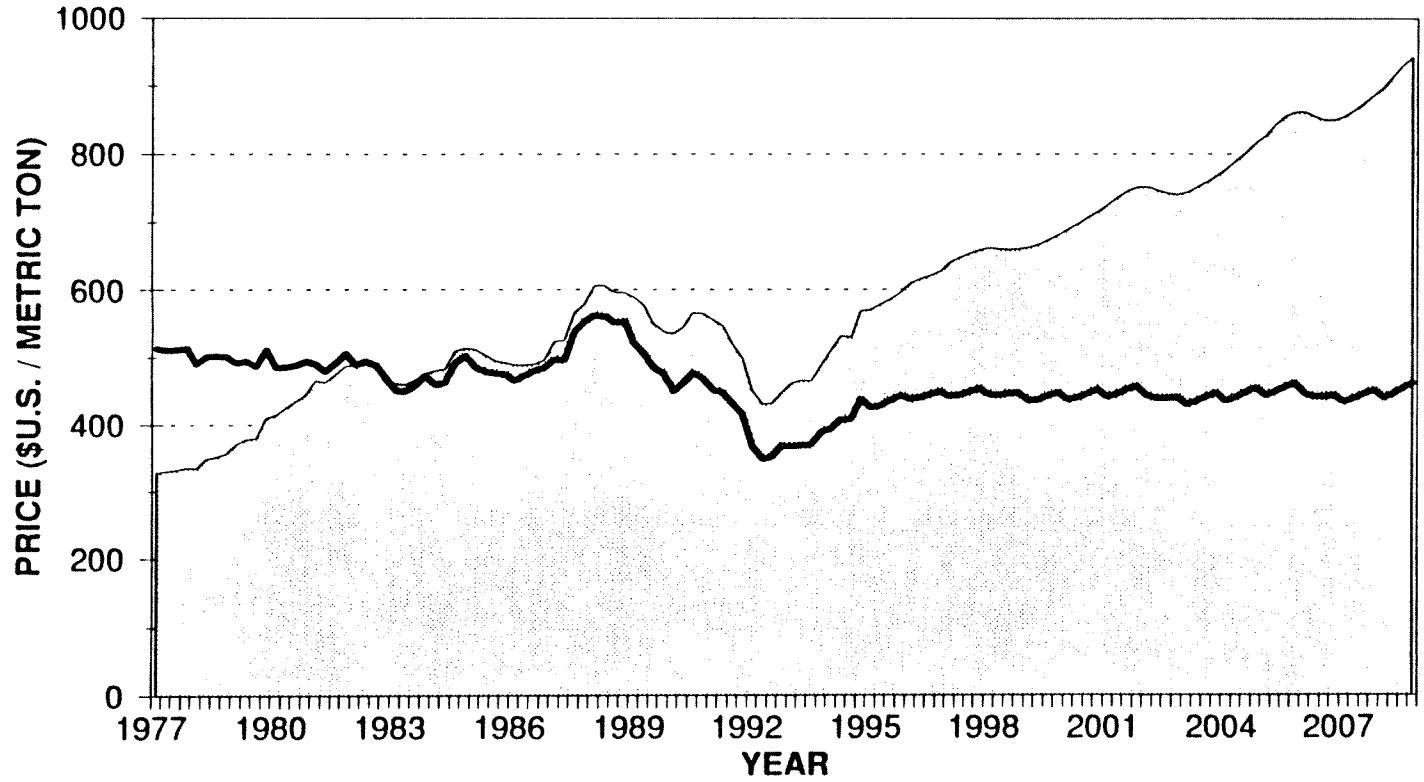
FIGURE 24
NEWSPRINT FORECAST PRICES TO 2008



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The Northern Spotted Owl has become the symbolic focal point in the battle for American federal forests in the Pacific Northwest. Since 1989, court actions by environmental and preservationist groups to protect the habitat of the Northern Spotted Owl, and some other species, have crippled the federal timber sales program in the region. Federal court orders and litigation by preservationist groups have severely hampered the western timber sales program from federal lands. Permanent mill closures and general industry downsizing has been the response to this fibre shortage. Western public timber sales (both Coast and Inland regions) exceeded 10.0 billion board feet per year through most of the 1980s but are expected to drop to about 5.0 billion board feet per year through the mid-1990s. On the coast the drops are particularly dramatic - falling from 5.3 billion board feet in the mid-1980s to just 0.8 billion board feet in 1992. It is estimated that well over 10,000 jobs have been lost in the Pacific Northwest since 1990 due to the government's decision to reduce harvesting of federal lands to protect the Northern Spotted Owl.

I had the opportunity to travel through Washington and Oregon since the Spotted Owl controversy started. Loggers and others who make their living from the forest are now the endangered species. These men and women are now firmly entrenched in a siege mentality - they face a prolonged, agonizing economic death. Companies are going out of business and municipal tax bases are dwindling. The jobs are gone and the money is gone. Loggers that I spoke with in Oregon say that when the Spotted Owl became an endangered species, the number of known breeding pairs seemed to skyrocket - since with every breeding pair more land would be set aside under protection from logging.

The industry problems created by the Spotted Owl are just the beginning. Now, coastal foresters have to look out for the marbled murrelet. Apparently, this is a robin-sized sea bird which hunts in the Pacific Ocean but flies inland as far as 80 km to nest. The U.S. government estimates that 12,000 of the murrelets live in Washington, Oregon and California, and has placed the marbled murrelet on the Endangered Species List. The marbled murrelet is presently the subject of industry-led litigation which seeks to reverse the bird's protection on the basis that between 300,000 and 350,000 more marbled murrelets are estimated to live along the B.C. and Alaska coast in a continuous range from California north.

Endangered species are not restricted to the Pacific Northwest. The U.S. South has its surrogate in the red-cockaded woodpecker. While this species has yet to have a large effect on the South's wood supply, it is the tip of a very large iceberg. Over 600 species are currently listed as endangered in the U.S. and another 1,500 or so are proposed for review. If preservationist groups are as successful with other endangered species as they have been with the Spotted Owl, then the timber industry is in for further traumatic shocks.

The election of Bill Clinton and Al Gore cannot be comforting to the American forest industry either. Changes which were started, sometimes reluctantly, under the Bush Administration are now proceeding full steam ahead with very little chance for repeal. At the so-called "Timber Summit" which Bill Clinton convened earlier this year the posture of the new Administration towards the forest industry was confirmed. The President has stated that: "I can't repeal the laws of change," and that his Administration would not weaken current environmental law. The importance of "Ecosystem Management" was stressed - whether on public or private lands. Job losses in the forest industry were likened to job losses in the defence industry after the end of the Cold War. The probable response from the President will be to increase spending on job re-training but not to take action on the timber supply shortages.

Some people argue that the troubles experienced by the American forest industry have been, and continue to be, good for Alberta's producers. After the bull lumber markets of this year it

is tough to disagree that some short term, though very significant, benefits have been realized by Alberta producers as a direct result of timber shortages south of the border. I have heard some Alberta sawmill operators say that March 1993 was the best year they have ever had. In fact, profits in the first quarter of 1993 for some sawmills are reported to be higher than net profits for the entire decade of the 1980s. The acute shortage of fibre in the U.S. makes the American products less affordable at home and less competitive worldwide. It also serves to increase the pressure on timberlands in other jurisdictions. Demand for wood products still exists - and it will be filled somewhere in the world. If demand is not filled by Pacific Northwest timber, it will be filled by supplies from Canada, Sweden, South America or somewhere else in the world.

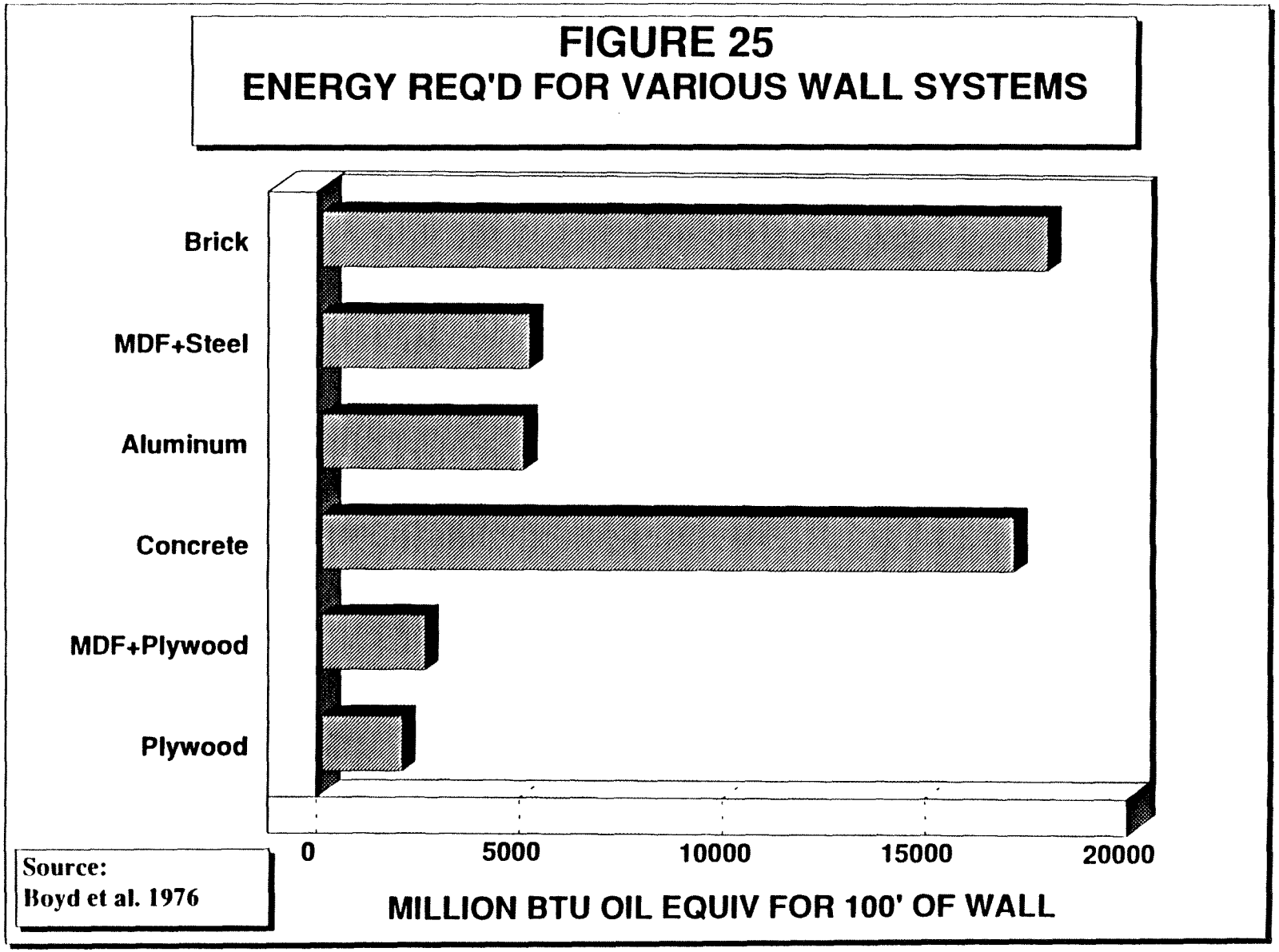
From a global perspective, American environmental policies are probably resulting in job shifts rather than job losses. Harvesting and processing that would have been undertaken in the U.S. to fill American or export demand for wood products will now be filled elsewhere. Jobs are transferred to other regions. In a similar fashion, reduction of harvesting on American lands may unintentionally export environmental damage away from the U.S. and to other jurisdictions.

This paradigm holds true for Canada and Alberta as well. Because we function in a global economy, actions taken here will have repercussions in other countries. If well heeled preservationist groups were able to significantly curtail our industry, then jobs, economic benefits *and environmental problems* would be exported to some other region of the world. Whether the environmental damage would be greater or less from a global perspective depends on the nature of the foreign forest and the harvesting practices common in those areas. I believe that harvesting practices in Canada and Alberta are probably more careful than in most places in the world. I would further argue that we in Alberta are probably better able to develop and implement policies and technologies to mitigate environmental damage than most other places in the world.

Some might contend that we shouldn't be using wood at all - after all, we can build with steel, cement and aluminum and we can recycle paper. You will find this naive opinion expressed often in the editorial pages of our major daily newspapers. In fact, if the global supply of wood products fails to match growth in demand, then the market will see prices rise to the level where competing products such as steel are affordable and market share for timber products will subsequently decline. This may not, however, be beneficial from an environmental perspective. Every product manufactured has some environmental consequence associated with it. There is no "free lunch" - choices must be made.

Figure 25 presents the fossil fuel requirements for the manufacture of various wall systems. Fossil fuels are the major source of human generated atmospheric carbon, believed by many to be linked to the so-called "Greenhouse Effect" and global warming.

FIGURE 25
ENERGY REQ'D FOR VARIOUS WALL SYSTEMS



Source:
Boyd et al. 1976

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Environmental waters typically become muddied when one considers all sides of the issue.

Problems with timber supply have not been restricted to south of the border. Here in Canada our largest lumber producing province, British Columbia, is presently reviewing all annual allowable cuts (AACs). This will be the first time that nonphysical attributes such as wildlife, aesthetics and recreational value will be included in the determination of AACs. Some unofficial estimates peg the impact on present cutting levels at a 15 per cent drop. It has been estimated that as many as 12,000 people will lose their jobs as a direct result of these cuts.

In addition to broad brush reductions to AAC, British Columbia is faced with a valley by valley fight for its remaining old growth forest. Names like Meares Island, South Moresby, Stein Valley, Carmanah Valley and now, Clayoquot Sound, have been prominent in the domestic and international press for the past decade.

In Alberta we have yet to see the spectre of a Spotted Owl. Some might argue that we have Woodland Caribou so we don't need an owl. We are, however, in a vulnerable position as virtually all of our provincial annual allowable cut is derived from Crown lands. The U.S. Pacific Northwest has suffered far more than the U.S. South ever will because the Pacific Northwest was and is far more reliant on public lands for its timber supply. The American courts, with their U.S. tradition of protection for individual property rights, have found it much easier to set aside timber on public lands than on private lands - although the preservationist groups have experienced some success on private lands as well. While the Alberta forest industry does have relatively secure tenure on public land, we have not yet witnessed a prolonged, concentrated, well funded and well targeted battle from either a single preservationist group or some coalition of groups. The protests encountered so far have been relatively small, local and poorly funded. We have not yet experienced a Clayoquot Sound type of protest here. I believe that our turn will come and we should not be too eager to crow about the benefits gained as a result of the Spotted Owl.

The rest of the 1990s will see continued tight fibre supplies to accommodate normal capacity growth, particularly in solid wood markets such as lumber. Weather and politics will combine to create volatile raw material pricing. Natural disasters such as hurricanes and floods will create instant demand for lumber and panel products while at the same time restricting the supply of timber to producing mills. The worldwide demand for timber will only increase, putting further pressure on traditional sources of supply as well as the Southern Hemisphere and the former Communist Bloc.

Here in Alberta I believe that we will experience some regional timber shortages. Our conifer annual allowable cut is somewhere between 80 per cent and 120 per cent committed - depending on whose numbers you use. Our deciduous annual allowable cut has somewhat more slack - with at least 25 per cent of our provincial AAC still unallocated. Alberta forestry centres which have a high concentration of conifer users will experience problems. I do not believe that these problems are insurmountable - but they will require creative solutions from the marketplace. Alberta producers, and in particular sawmillers, will experience volatile markets with dramatic upside profit potential as a result of timber shortages south of the border. There will be tremendous opportunities for sawmills which have a secure and adequate fibre supply. There will also be an increasing push for alternate building materials (wood and non-wood) such as steel, laminated veneer lumber etc, as the price of traditional lumber products is pushed higher.

Environmental restrictions are the second major issue threatening the continued development and prosperity of Alberta's forest industry. Most of the timber supply problems encountered in North America are the direct result of environmental restrictions on the forested land base and thus, the issues are intertwined. In my opinion, Alberta producers face the very real

probability that environmental restrictions will migrate from other jurisdictions to this province. An example of how American environmental righteousness is coming to Canada is provided by the ongoing Clayoquot Sound fiasco where we have our own Canadian preservationist groups joined by rockers from "Down Under" and prominent figures from the States.

Robert Kennedy Jr., environmental lawyer with the Washington, D.C.-based Natural Resources Defense Council, provides us with the following insight from his recent visit to Clayoquot Sound:

"We feel, and I think most Canadians feel, that if there is a major environmental or human rights problem it's an international problem."

Kennedy and his group are embarking on a public relations campaign on Clayoquot Sound which could see hundreds of thousands of postcards mailed from group members to politicians in B.C. and Ottawa. Clearly, the environmental movement is becoming increasingly global in nature. Whether it is a call for a boycott of Mitsubishi in the New York Times, or a speech from the Greens in the European Parliament, Alberta forestry and mill practices will be increasingly in the spotlight. We will be increasingly subject to the environmental restrictions of not only our government, but of other governments and groups who can put pressure on our industry directly (through protests and through the courts) or indirectly (by affecting the opinions of our customers).

Environment and trade issues are, in fact, becoming interwoven in the North American Free Trade Agreement (NAFTA). Recently negotiated side deals to NAFTA will see the establishment of a new international bureaucracy, the North American Commission on the Environment (NACE). Staffed by bureaucrats and environmentalists, the NACE could become a powerful multi-national environmental watchdog. Under NAFTA, if two of the three nations involved in NAFTA (Canada, U.S., Mexico) decide that the third country is in violation of environmental standards, then a tri-national tribunal can impose a penalty of up to $20 million U.S.

Besides restrictive forestry practices, two other significant environmental issues are exerting pressure on our forest industry today. These are recycling and pulp bleaching technologies.

Recycling is one of those issues which has thoroughly captivated the attention of the public. Everyone wants to *"do something"* about the environment. Putting bottles and newspapers in the Blue Box is a tangible, virtually painless thing that everyone can do. Besides, it seems that we are running out of landfill capacity to store our garbage. It's not that we don't have space to put landfills, it's just that nobody wants them in their neighborhood.
When asked about the use of recycled products, most consumers would probably agree with legislation to force recycled content. All across the U.S. laws have been passed to do just that - to force recycled content into the paper products we use every day.

Legislated recycled content laws, however, are a problem for Alberta pulp and paper producers because our province simply does not have a large enough population to generate sufficient quantities of recycled material to achieve economical sizes for many de-inking facilities. The tighter recycled content laws are, the harder it will be for our pulp and paper facilities to sell their production. In fact, I believe that recycled content laws could jeopardize the location of new paper facilities in this province. If a newsprint mill in Alberta were to establish a full scale de-inking plant to process old newspapers, it would probably have to import newspapers from B.C., Saskatchewan, Manitoba and even the northern states. The cost of transporting this material would place our mill at a distinct disadvantage relative to other mills closer to large American cities.

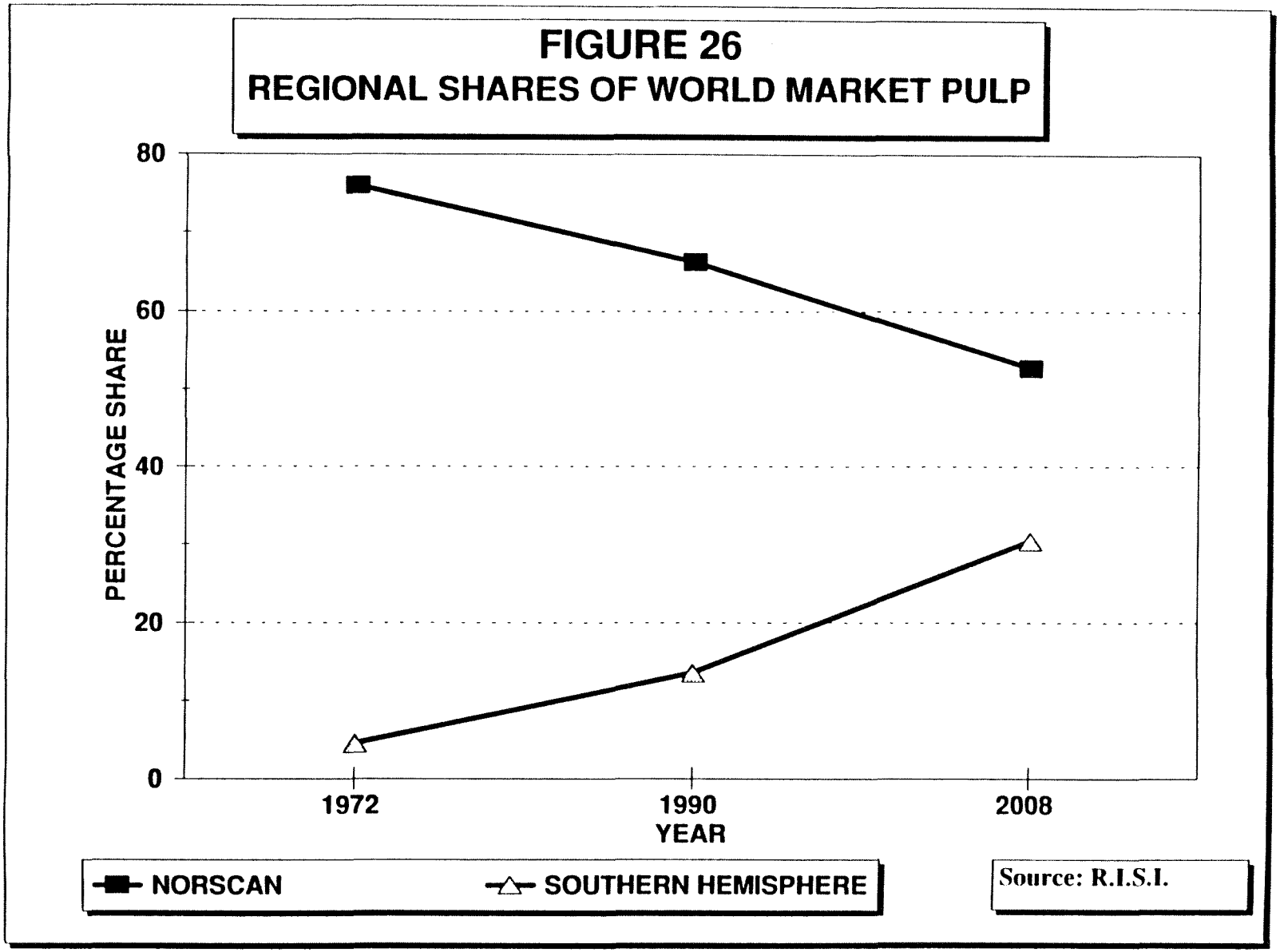
Pulp bleaching technology is the final critical environmental issue impacting our forest industry today. Chlorine and related compounds are the number one target. The North American pulp industry has responded with billions of dollars of investment to dramatically reduce chlorine use and the discharge of organochlorides. While I am not a chemist, I have been told that Alberta's pulp mill pollution standards are some of the strictest in the world. You and I want a clean environment and I firmly believe that our Alberta pulp and paper producers want this too, but it must be realized that the economic costs of changing pulp bleaching processes to both industry and society are very high.

Dollars spent on pollution abatement technology are dollars which are not available for productivity enhancements. This is not to say that we shouldn't invest in environmental improvements, rather, our expenditures should be based on solid scientific research which backs up the cause and effect of the suspect process. We simply cannot afford to spend multi-millions of dollars chasing the environmental "scare of the month" without knowing that our expenditures will actually solve a problem. To do so is a waste of scarce economic resources, and it tips the scales in favor of our competitors who do not have the same restrictions placed upon them.

The last area I would like to touch upon is international competitiveness. Technology is an area where industry has control, and we seem to be doing quite well relative to our competition in the international marketplace. Our pulp mills are very modern and clean, filled with the latest technology, and are among the low cost producers in the world. Our sawmills are becoming more efficient every year with the use of lasers, scanners and computer controls to optimize production and value while minimizing waste. Our woodlands operations are being revolutionized through the use of flail chippers in satellite yards, central tire inflation systems on log and chip hauling trucks, new harvesting and forwarding methodologies, and new computer and monitoring systems utilizing Global Positioning to name just a few. Suppliers play a key role in introducing new technology to the industry.

I believe that our industry will continue to respond to the technological challenges of the international marketplace very well. Other factors over which our industry has less control will play major roles in determining the future competitiveness of Alberta's industry. Governments and regulatory agencies have more control over things such as fibre supply and cost, environmental regulations, and currency exchange rates. These factors can have immediate, and potentially drastic, effects on our competitive ranking. In some cases, the forest industry has absolutely no control over events. For instance, only months ago, the Scandinavian countries were considered high cost producers in the world. Market forecasters predicted that the Scandinavian pulp producers would take large amounts of downtime as prices dropped below their variable costs of production. Prices would shore up and the absolutely terrible conditions that we are presently experiencing would be unimaginable. Quick, yet dramatic, currency devaluations rapidly changed the relative ranking of our competitors - almost overnight they went from being high cost producers to being near the lower end of the world's cost spectrum. The anticipated mill shutdowns never occurred and the pulp market sank to even more dismal levels.

Alberta's forest industry, and particularly our pulp and paper industry, faces stiff competition from across the globe. Canadian and Alberta pulp producers will not be obliterated by competition from the Southern Hemisphere - new world demand, however, will be increasingly dominated by non-traditional suppliers such as Brazil, Chile and Argentina (Figure 26). On the flip side, much of the growth in world demand will come from some of these same countries, as well as the emerging Asian countries. Cost structures (which ultimately dictate pricing) will be increasingly affected by these producers and less by Canadian or Scandinavian producers. Low cost fibre from Southern Hemisphere plantations will continue to lower the inherent cost structure for the global market pulp industry. Real



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pulp prices will probably not return to previous levels and our producers will have to continue to press for efficiency gains in order to compete. Some producers may have to integrate or shift production to higher value products in order to survive but, we will still have a viable pulp and paper sector (Figure 27).

Suppliers can assist our industry by introducing new, more efficient technology and by lowering the cost of process inputs. Governments can also assist our international competitiveness by considering the consequences of their policy decisions - in particular, short-sighted and ill-conceived environmental regulations will hamstring our industry while exporting not only jobs, but also the very environmental problems which they are trying to reduce. Industry can help itself by leading in technological improvements and by addressing environmental issues in a pro-active, genuine fashion. Public perception must also be addressed - the industry must not only do what is right, it must be seen to be doing what is right.

Future development opportunities:
A number of new forest industry developments are presently in the planning stages. Grande Alberta Paper has proposed a $1.6 billion fine paper development for the Manning area. Weyerhaeuser and Louisiana-Pacific are both vying for timber rights in the Grande Prairie area to build a large OSB facility. A number of existing mills, including Alberta Newsprint, Slave Lake Pulp, Daishowa and Alberta-Pacific have options or commitments in their Forest Management Agreements to either increase pulp capacity or develop papermaking facilities. A Request for Proposals has been issued by the Alberta government for developments based on the High Prairie deciduous fibre supply area.

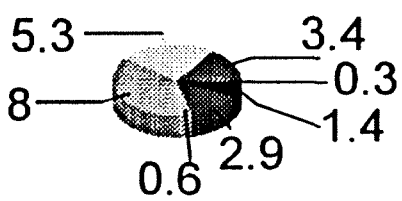
The commercial timber supply in Alberta is largely allocated. With a few exceptions, we have seen the end of the big, new developments. Future growth will depend on incremental capacity expansion and the development of secondary processing facilities. Lumber remanufacturing, component manufacturing and assembly, engineered wood products and paper manufacture will lead the way.

Finally, spin-off technologies are potentially the real "sleeper" which could give Alberta a tremendous economic boost and which offer big opportunities for suppliers. Alberta is the home of a dynamic, modern wood processing industry. Relative to other provinces in Canada, Alberta is a "bastion of free enterprise" and a place where entrepreneurial skills are prized and developed. Alberta now has a sufficiently large forest industry to support a large base of local supply companies. Suppliers with good ideas can develop products and services for Alberta mills, many of which have very high worldwide profile due to their recent construction, magnitude, high efficiency and high technology, and use this experience to market services and products outside the province and outside the country to other forest products mills. For instance, our own firm has created a new business entity called Truckbase Corporation which is developing and marketing a log truck management system predicated on the Global Positioning System and modern computer and data radio technologies. We are developing and testing the technology here in Alberta in cooperation with Alberta forest products companies, and we are looking outside the province for future growth. Already our work here in the province has spawned business leads from other parts of Canada and from the U.S. We have begun field trials outside Alberta and we have certainly benefited from the cooperation of Alberta mills in our development and testing efforts. In return, these Alberta mills benefit from early access to new technology and the support of a local, high-tech firm.

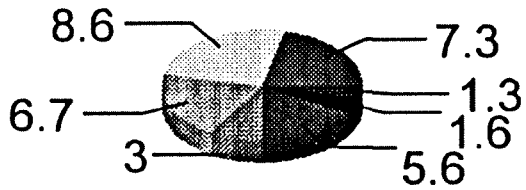
Figure 27

WORLD MARKET PULP CAPACITY

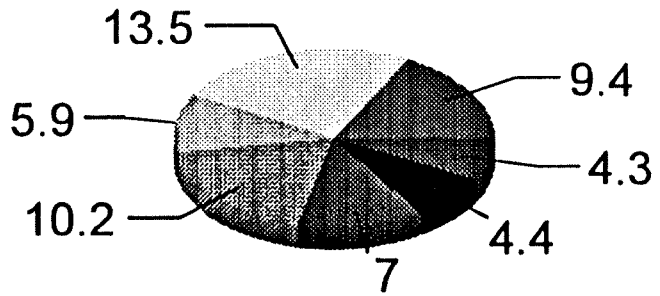
1972 vs 1990 vs 2008



1972



1990



2008

- U.S.
- CANADA
- NORDIC
- BRAZIL & LAT. AMERICA
- EUROPE
- JAPAN & FAR EAST
- AFRICA & OCEANIA

Units In Million Metric Tons

Source: R.I.S.I.

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Conclusion:
In conclusion, while our industry faces some problems, I am nonetheless convinced that Alberta's forest industry will thrive and expand - growing in importance to our provincial economy. We as suppliers can, should and will play a role in ensuring our industry's continued success - it makes good business sense for everyone!

If we had a crystal ball and could look 10 years into the future to the year 2003, I think that we would see a vibrant, matured forest industry in Alberta. I believe that we will probably see one more totally new pulp and paper complex constructed - likely the Grande Alberta Paper project near Manning. At least one other paper machine will be built - most likely at Al-Pac, but possibly at Daishowa or one of our BCTMP mills. At least one, but probably two or three new OSB plants will be built. Our sole MDF plant will have doubled in capacity, but our sole plywood plant may not be producing plywood any more. Our sawmills will be holding their own, but the remanufacturing and manufactured wood products sector will have grown dramatically in importance. Laminated veneer lumber will be manufactured in at least one or two locations. We will still be talking about fibre supply, environmental restrictions and competition from offshore. Our service and supply sector will have matured and will be receiving attention from governments as the biggest future engine of growth for our forest sector.

Alberta's forest industry is a progressive industry which is currently competitive with respect to other producing regions of the world. This situation could change rapidly if we look to past successes instead of future challenges. I am confident, however, that our industry and government leaders will not let this happen. I certainly look forward to what the next 10 years bring us in Alberta's forest industry.

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Economic Prospects for the Forest Sector, Pacific Coast States

The controversy surrounding habitat protection for the northern spotted owl is fueled by the economic consequences of increasing constraints on timber production on the National Forests in the three Pacific Coast states and particularly in the Douglas fir sub region. The Pacific Coast states are one of the two major timber producing regions in the United States. Prior to 1990 the prospects for these states could be summarized as follows (This view taken from the 1989 RPA Timber Assessment - Haynes 1990)[1]:

Little change is expected in the mix of industry in these States. Lumber production is expected to remain roughly constant while plywood production is expected to drop 13 per cent by 2000. The drop in plywood production is the consequence more of competition from OSB-waferboard than from timber supply problems. Total harvests in the Douglas fir region were expected to fall 12 per cent in the 1990s as a consequence of declines on forest industry lands and public timber harvests. This decline was no longer expected to be as severe as it was in the late 1970s. After 2000, total harvest was expected to stabilize at around 2.7 to 2.8 billion cubic feet per year. In the perspective of the past several decades, we expect future harvest levels to be not unlike those that we have seen in the past decade. These projections assumed that National Forest harvest levels will remain at the levels observed over the past 15 years. While the Douglas fir sub region and the other western regions were expected to maintain recent harvest levels, they collectively lose market share to the eastern regions in the next two decades. In the longer term the market share of western regions stabilizes at roughly 40 per cent. Much of the loss in market share has already taken place. The most rapid time of change was during the period 1976-84 when the western market share decreased on the average of 2 per cent per year.

The purpose of this paper is to discuss the current (Fall, 1993) view of the economic prospects for the forest sector in the three Pacific Coast states. This view is taken from the 1993 RPA Timber Assessment Update (Haynes 1993). Like any view of the future, it is dependent on assumptions such as the continuation of the trends in economic growth experienced during the last several decades. The projections from the Assessment show continued growth in consumption of both solid wood and fibre products, limited growth in domestic forest inventories, and continued real growth in forest products prices for the next several decades.

These projections are made in an economic context where production and consumption decisions are sensitive to product prices and production costs. They recognize that different owners have different propensities for harvesting and managing their timberlands.

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[1]The Forest and Rangeland Renewable Planning Act of 1974 (RPA) calls for periodic long-range assessments of timber supply and demand to provide information for stewardship and management decisions in both the public and private sectors.

One of the key underlying assumptions for these projections are those about National Forest harvest levels. In the 1993 RPA Timber Assessment, we assume that National Forest harvests fall by 46 per cent between the late 1980s and 2000. This decrease results from a number of policy changes including habitat protection for the Spotted Owl and the Red Cockaded Woodpecker, no development of current roadless areas and reductions in below-cost timber sales. Projections of total National Forest harvest are 1.17 billion cubic feet for 2000 and 1.28 billion cubic feet for 2040. Most of this decrease is in five states: Montana, Idaho, Washington, Oregon and California.

I will start with a brief summary of U.S. timber harvest, consumption and trade. Then I will discuss the economic impacts of reductions in National Forest harvest in the three regions that comprise the forest sector of Washington, Oregon and California.

Timber Harvest, Exports, Imports and Demand on U.S. Timberlands

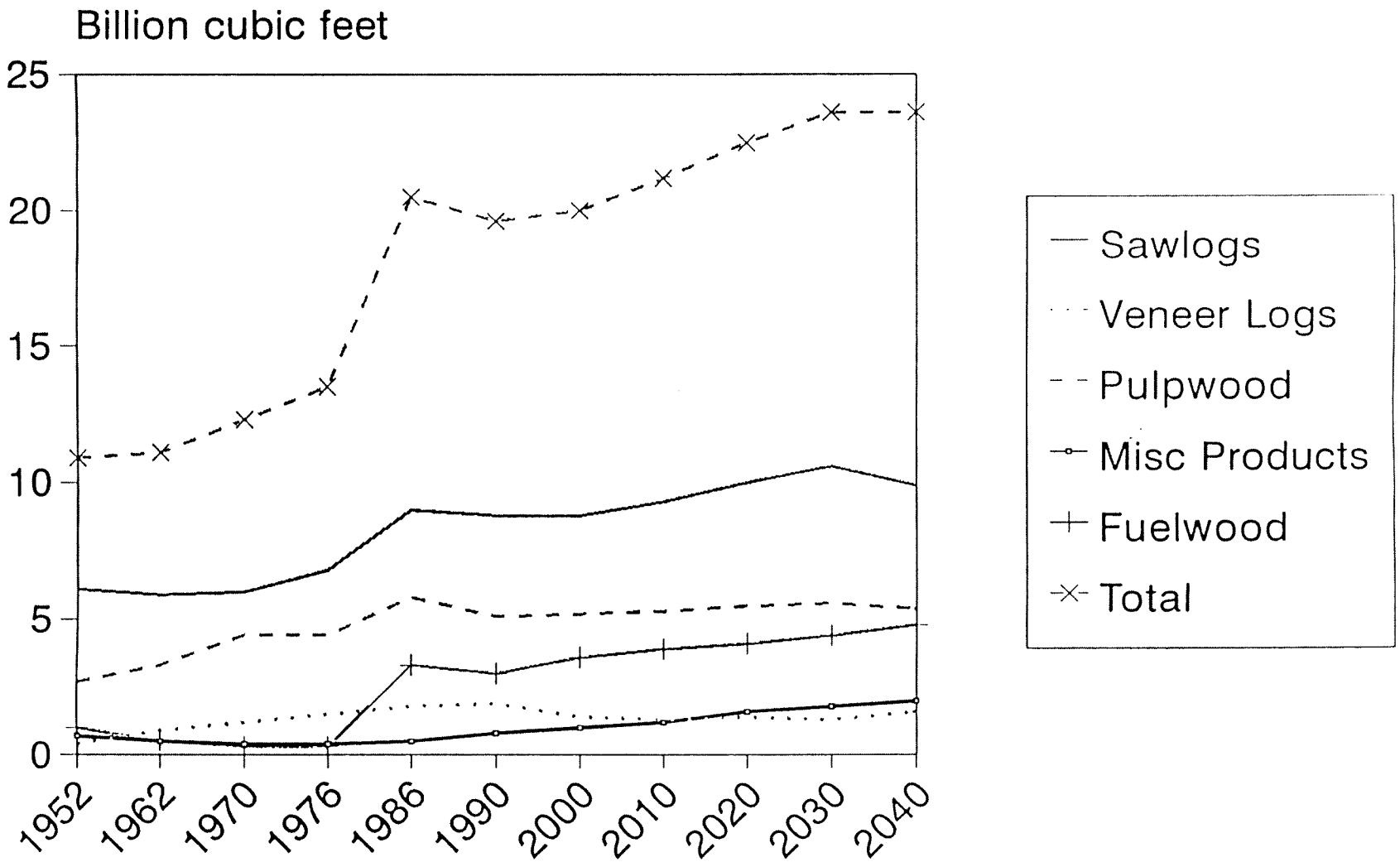
In 1990, total U.S. consumption of softwood timber products in terms of roundwood volume from growing stock was 12.9 billion cubic feet (Figure 1). This was roughly 60 per cent above the average consumption in the early 1950s but down from the highs experienced in the late 1980s. From the early 1950s to 1990, there was a 33 per cent rise in the volume of sawlogs consumed, while pulpwood consumption increased 50 per cent and veneer log consumption increased 8 times. The use of growing stock for fuelwood doubled over this period although fuelwood consumption declined in the 1950s and 1960s. Harvest of roundwood for miscellaneous products stabilized in the 1970s after declining for two decades. From a world perspective, U.S. production in 1990 was roughly 28 per cent of total industrial roundwood production.

Softwood consumption is expected to increase to 14.3 billion cubic feet by 2040 with the largest increase in sawlogs (Figure 1). Increases in recycling essentially keep pulpwood consumption constant in spite of an expected 75 per cent increase in paper and board consumption over the same period. We expect that the United States will continue to be a net importer of softwood forest products. The largest forest products trade flow for the United States is imports of softwood lumber, over 95 per cent of which comes from Canada. Canadian softwood lumber producers, however, are expected to experience gradually rising delivered wood costs as haul distances increase and stand densities fall. United States exports of lumber and plywood grow very little over the projection period. Log exports (exclusive of Alaska) fall, from the 1984-1988 average level of 3.1 billion board feet per year (1988 peak level of 3.6 billion feet) to an average of 2.2 billion board feet by 1995. Limitations on product and declining log export volumes derive from the assumption of increased competition from Canadian, southern hemisphere and Soviet Union sources, particularly in the "low end" of the quality spectrum, and projections of continued decline in the average size and quality of exportable logs produced, especially in the Douglas fir region.

Growth in demand for solidwood products is limited over the course of the simulation. As the population ages, growth in real GNP slows and new housing construction is stable to declining. Consumption increments come almost entirely from increased wood use in residential upkeep and alteration, nonresidential construction and manufacturing.

U.S. softwood lumber consumption rises to 61.8 billion board feet by 2040 (the 1987 peak was 50.6 billion feet). Plywood consumption falls slowly to 17.5 billion square feet by 2040 (the current level is 18.1 billion square feet) as a result of a modest substitution-induced decline over the next 20 years. In the fibre products sector, consumption more than doubles by 2040 in line with GNP but growth in pulpwood consumption slows because of assumed increases in the use of recycled fibres.

Figure 1--Softwood roundwood consumption in the United States
Historical 1952-1990, projected 2000 - 2040



Softwood timber harvest has increased by more than 50 per cent over the last four decades. It is projected to increase by an additional 40 per cent, to 14.4 billion cubic feet, by the year 2040. Slowing domestic demand, increased us of recycled fibre and increasing use of hardwoods account for this slower projected growth in demand for softwood timber. Figure 2 shows softwood harvest by major U.S. region. There are two trends to note. First, the Pacific Northwest and the South are expected to remain the two most important timber producing regions in the United States. Second, the South overtook the Pacific Coast in the mid-1970s. The switch in importance is not as recent as many would have thought.

The Pacific Coast States

During the past decade, the background context for timber supply issues has been changing away from the timber shortage context that framed such issues for the past century. Recent long-term assessments of timber supply-demand (United States Forest Service 1988, Haynes 1990, and Haynes et al 1993) show a future where slowing domestic demands and increasing timber supplies after 2010 lead to a future of relatively stable timber markets. Timber supply prospects for the Pacific Coast states generally share this long-term outlook except for the transition issues raised by Forest Service planning decisions and federal actions to protect the Northern Spotted Owl.

Three regions in general forestry nomenclature make up the Pacific Coast states: the Douglas fir (western Washington and Oregon), the Ponderosa pine (eastern Washington and Oregon) and the Pacific Southwest regions.

The Douglas fir region: Lumber and plywood production is expected to fall (from 1991 levels) 41 and 36 per cent respectively by 2010 (Tables 1 and 2). The drop in plywood production continues a trend starting in the mid 1980s and is the consequence more of competition from OSB-waferboard than from timber supply problems. The drop in projections of lumber and to a lesser extent plywood production is influenced by changes in costs and in product recovery factors. As public harvest adjusts downward during the early 1990s, stumpage price growth accelerates from roughly 1.6 per cent per year in the 1980s to 4.9 per cent per year between 1990 and 1995. In the face of rising wood costs, the competitive position of the region deteriorates, profits fall and solidwood output and capacity drop. During the decades 2000-2020, lumber output is fairly consistently 4.5 billion board feet below what was projected in the late 1980s (see Haynes 1990). Plywood production is more variable, averaging about 0.5 billion square feet lower. Stumpage prices stabilize after 2020 at about the same level as projected in the late 1980s.

These reductions in public harvest, relative to recent past expectations raise projected stumpage prices and stimulate some partially compensating response in private harvest. By 1995, stumpage prices increase from 1989 by 36 per cent in the Douglas fir sub region. These higher stumpage prices lead to higher harvest on private timberlands.

The extent and duration of this private substitution will depend on the price sensitivity of private supply and the availability of inventory above minimum harvest age. In one estimate, total private harvest increases by 115 million cubic feet offsetting 44.6 per cent of the reduction in National Forest harvest. Much of this increase in private harvest is nonsawtimber material that is used to replace wood residues lost because of reductions in lumber and plywood production. Increases in private harvest cannot be sustained beyond 1995.

Total harvests in this region are expected to fall 37 per cent by 2010 as a consequence of declines on forest industry lands and in public harvests (Table 3). After 2010, harvests start to increase as the impacts of current and expected levels of forest management lead to expanded private timber inventories.

Figure 2--Softwood timber harvests (roundwood supplies) Historical 1952 - 1991, projected 2000 - 2040

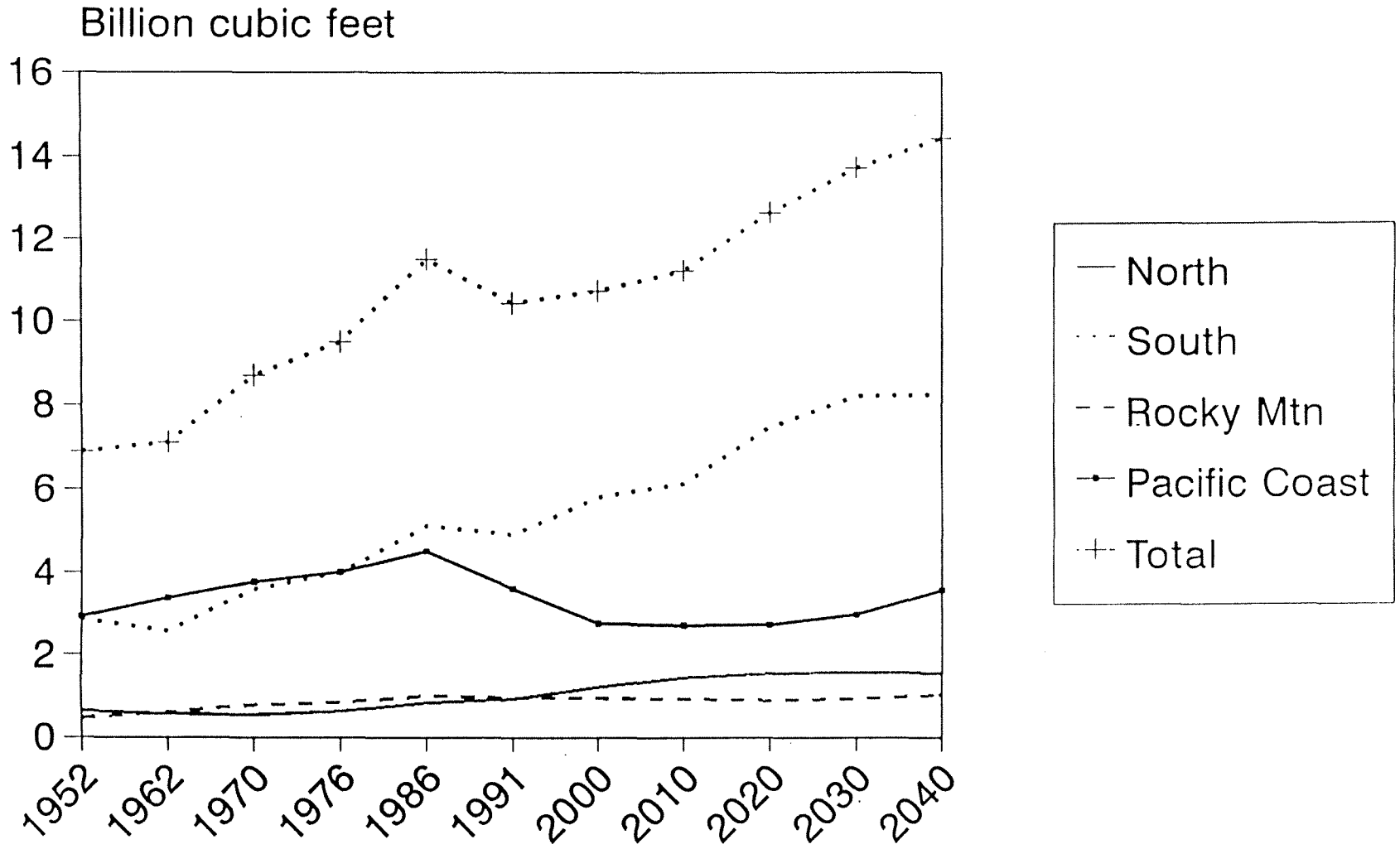


Table 1--Lumber production in the contiguous States, by softwoods, hardwoods and region, 1952-1991 with projections to 2040

Species group & region	1952	1962	1970	1976	1986	1991	Projections 2000	2010	2020	2030	2040
					Billion board feet, lumber tally						
Softwoods											
Northeast	1.3	0.8	0.6	0.8	1.4	1.6	1.8	2.0	2.0	2.0	2.0
Northcentral[1]	.4	.3	.3	.4	.3	.3	.6	.8	.8	.8	.8
Southeast	5.2	2.7	2.8	3.4	5.3	5.8	8.4	9.9	13.6	12.2	11.2
Southcentral	3.6	3.2	4.2	4.6	6.3	6.9	9.3	9.7	13.3	17.5	17.6
Rocky Mtn.	2.5	3.6	4.2	4.5	4.5	4.8	4.5	4.2	4.0	4.4	4.9
Northern Rockies					3.3	3.4	2.9	2.5	2.2	2.5	2.9
Southern Rockies					1.2	1.4	1.6	1.7	1.8	1.8	2.0
Pacific NW[1]											
Douglas-fir subregion (Western Oregon & Western Washington)	10.3	8.6	7.4	8.4	8.9	8.6	6.6	5.1	5.8	6.6	10.2
Ponderosa Pine subregion (Eastern Oregon & Eastern Washington)	2.3	2.4	2.3	2.7	2.6	2.8	2.3	2.8	2.9	2.9	3.0
Pacific SW[2]	4.6	5.0	5.1	4.8	4.8	4.9	2.5	2.5	1.7	2.0	2.8
Total U.S.											
Softwoods	30.2	26.6	26.9	29.5	34.2	35.6	36.2	37.2	44.2	48.3	52.4

[1] Excludes Alaska
[2] Excludes Hawaii.
NOTE.--Data may not add to totals because of rounding.

Table 2--Structural panel production in the contiguous States by region, 1952-1991 with projections to 2040

Species group & region	1952	1962	1970	1976	1986	1991	Projections 2000	2010	2020	2030	2040
					Billion square feet, 3/8-inch basis						
SOFTWOODS											
Northeast	0	0	0.1	0.1	0.6	0.5	1.3	2.6	3.9	4.7	5.5
Northcentral[1]	0	0	0	.1	1.5	2.2	3.0	3.9	5.0	5.5	6.1
Southeast	0	0	.9	1.7	3.8	4.1	5.0	6.6	7.6	8.0	8.5
Southcentral	0	0	2.4	5.1	8.2	8.8	10.2	8.2	8.5	8.9	9.2
Rocky Mtn.	0	.2	.9	1.2	1.5						
Northern Rockies						1.2	1.3	1.4	1.5	1.5	1.5
Southern Rockies						.2	.3	.4	.5	.5	.5
Pacific NW[2]											
Douglas-fir subregion (Western Oregon & Western Washington)	2.7	7.9	8.5	8.9	8.2	6.1	4.3	3.9	4.1	4.2	4.3
Ponderosa Pine subregion (Eastern Oregon & Eastern Washington)	0	.2	.8	.9	.8	.9	1.4	2.2	3.3	4.3	5.1
Pacific SW[3]	.3	1.2	.8	.6	.3	.1	.1	.2	.2	.2	.2
Total											
United States	3.0	9.5	14.4	18.6	24.9	24.2	26.8	29.4	34.5	37.8	40.9

[1]The Great Plains are included in the Northcentral region.
[2]Excludes Alaska.
[3]Excludes Hawaii.
NOTE.--Data may not add to totals because of rounding.

Table 3--Pacific Coast states softwood harvest by owner group.

Item	1952	1962	1970	1976	1986	1991	Projections 2000	2010	2020	2030	2040
					Million cubic feet						
Douglas-fir region (PNWW)											
National Forest	361	586	489	511	659	297	170	170	170	170	170
Other Public	158	290	343	428	418	370	284	284	284	284	284
Forest Industry	1,244	976	1,234	1,268	1,244	1,475	934	756	863	1,033	1,367
Other Private	317	207	245	195	232	429	384	413	357	291	369
Ponderosa pine regions (PNWE)											
National Forest	100	232	286	292	378	348	165	165	164	165	165
Other Public	48	61	97	89	77	87	92	112	114	116	120
Forest Industry	100	94	117	151	166	112	169	198	213	214	219
Other Private	100	67	48	60	65	61	62	120	160	197	243
Pacific southwest											
National Forest	89	216	346	286	347	326	175	172	175	182	179
Other Public	3	16	26	22	12	20	20	21	22	22	22
Forest Industry	393	385	294	321	452	441	161	208	104	136	282
Other Private	468	230	163	136	35	53	140	106	117	144	111
Pacific Coast total											
National Forest	550	1,034	1,121	1,089	1,384	971	511	508	509	517	513
Other Public	209	367	466	539	507	477	395	416	420	422	426
Forest Industry	1,737	1,455	1,645	1,740	1,862	2,028	1,264	1,162	1,181	1,383	1,868
Other Private	885	504	456	391	333	543	586	638	633	633	722

The Ponderosa Pine Region: Lumber production is expected to remain roughly constant while structural panel (both plywood and OSB-waferboard) production continues to expand. These projections are dependent on federal harvests staying roughly at recent levels (although that seems unlikely now) because this region is the most dependent region in the west on public timber. As public harvest adjusts downward in the Douglas fir region, stumpage price growth in the Ponderosa pine region accelerates from roughly constant prices in the 1980s to 9.4 per cent per year between 1990 and 1995. In the face of rising wood costs, the competitive position of the region deteriorates with respect to lower grades of lumber. Production of higher grades of pine lumber continues. In the longer term, the grade mix shifts back to include lower grades as private inventories expand.
Total harvests in this region are expected to fall about 20 per cent this decade and then rise as a function of increased harvests from private timberlands. By 2040 harvest levels are back to those observed in the late 1980s.

The Pacific Southwest: Lumber and especially plywood production has fallen in this region since the 1970s. Changes in public harvests only compound a number of changes that have had adverse impacts. For example, the drop in plywood production followed the rapid liquidation of privately owned Douglas fir stands in the north coast area in the late 1950s and early 1960s. Much of this harvesting, especially on nonindustrial timberlands, was done with little effort to ensure adequate regeneration. By 2000, harvest on this land expands, reflecting increased available inventories. Harvests from industrial timberlands decline, reflecting both the legacy of poorly stocked and mixed species stands, increasing forest regulations and liquidation of mature stands.

Like the Douglas fir region, downward adjustments of public harvests during the early 1990s accelerate stumpage price growth from roughly 1.1 per cent in the 1980s to 8.3 per cent per year between 1990 and 1995. In the face of rising wood costs, the competitive position of the region deteriorates and solidwood output and capacity drop. Unlike the Douglas fir subregion, there is almost no opportunity to offset some of these declines with increased harvests from private timberlands. Total harvests in this region are expected to fall 41 per cent by 2000 and essentially remain at that level for the next several decades.

Projections of Canadian Harvest

The models used to support U.S. timber assessments are essentially models of the North American forest sector. As such they include specific treatment of production and harvest levels in both Canada and the United States. Harvest projections by groups of provinces are given in Table 4 for softwood sawtimber and pulpwood. These projections show total Canadian softwood harvest rising slowly for the next several decades with most of the increase coming as sawtimber in the eastern provinces. Harvest for pulpwood is expected to decline in the near term as higher levels of recycling in the United States reduce the competitiveness of Canadian newsprint producers in the next two decades. Sawtimber harvest levels for the British Columbia coast region are essentially stable (although there are near-term declines) reflecting the liquidation of timber inventories that have taken place in that region.

Table 4—Projections of Canandian softwood harvest

	Sawtimber Harvest Quantities			Pulpwood Harvest Quantities		Total Softwood Harvest
	BC Coast	Interior Provinces[1]	East[2]	West[3]	East	Total
			Million cubic feet			
1986	614	2,019	1,361	302	1,020	5,316
1990	517	2,157	1,360	233	920	5,187
2000	618	2,269	1,559	233	903	5,583
2010	665	2,296	1,801	265	941	5,967
2020	629	2,248	1,907	316	1,097	6,196
2030	634	2,126	1,785	385	1,291	6,221
2040	628	2,015	1,690	475	1,519	6,327

[1] BC Interior; Alberta, Saskatchewan, Manitoba.
[2] Provinces from Ontario, Quebec, New Brunswick, Nova Soctia, Prince Edward Island, and Newfoundland.
[3] BC Coast + Interior Provinces

There has been a lot of discussion recently about the ability of Canadian producers to respond to higher prices in the United States markets (due to reductions in public timber harvests). Much of the discussion revolves around anecdotal evidence based on what is perceived to be happening in British Columbia. Recent estimates (based on summaries by province) of the annual allowable cut[2] in Canada are 6.2 billion cubic feet (Runyon 1991). Since Runyon completed his work, surveys in British Columbia have suggested possible harvest declines in that province. Except in British Columbia, Canadian producers seem able to sustain recent levels of production. Like the United States, Canada also faces a number of issues (owls, parks, native land claims etc) that could reduce harvests in some unknown way.

General Conclusions

Six key conclusions emerge from the projections and analysis presented above:

1: Industrial lands in the Douglas fir region cannot sustain current (1984-88 average) levels of harvest. By 2010, reductions range from 8 per cent in the base run to 14 per cent in the spotted owl case. After 2010, inventory accumulation may be sufficient to support a return of harvest to current levels. More than three-quarters of these future harvests, however, will come from stands 50 years of age or younger.

2: Nonindustrial lands can sustain current harvest levels for at least the next 50 years with no reduction in aggregate inventory volumes. The projections assume, however, that the increased willingness to harvest by this owner group observed during the past five years will continue in the future.

3: More intensive management on private lands may provide the basis for harvest expansion in the long-term but would have little or no effect on harvestable volumes in the next two decades.

4: Real stumpage price inflation over the next two decades would, at a minimum, follow long-term trend growth (2.5 per cent per year). In the period 1990-2000, growth is driven by timber supply limitations within the region. Between 2000 and 2010, supply limitations in the U.S. South protract the period of price increase. Following 2010, prices may stabilize. In our analysis this latter result depends primarily on the realization of projected increments in softwood supplies in the U.S. South and to a lesser extent on expanding inventories and harvest in the Douglas fir region itself.

5: Reductions in public harvest (of the general extent and timing examined here) influence the rate of stumpage price growth over the next two decades and the level at which prices stabilize after 2010. Given the magnitude of projected expansion in Southern supplies, however, they do not influence the ultimate attainment of price stability in the long term.

6: With highly constrained private inventories, there is only limited opportunity for expansion of private harvest in response to reductions in public cut. By the end of the first decade following the initiation of a reduction in public harvest, total regional harvest would be lower by at least the amount of the public cut reduction.

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[2]The annual allowable cut (AAC) is used in Canada to specify the amount of timber that is permitted to be cut annually from an area over a specified period of time. The AAC is used to regulate the harvest level to ensure a long-term supply of timber.

These results present a dilemma for regional forest policy makers. Given prospective merchantability standards for timber, the biology of the region's forests and the apparent political realities of public land management, future timber supply options are essentially limited to the rate and timing of reductions. If public supply is to fall, is there any way to maintain aggregate output in the near term? Feasible policy options appear to offer little promise. Traditional forest policy tools aimed at the private sector - timber and land taxation, forest practice regulation, timber investment subsidies and landowner information/technical assistance programs - are almost all concerned with the regeneration decision. And while the impacts of these measures may be large, their effects are one rotation away. Actions of this sort may still be valuable, particularly as a means of maintaining the region's competitiveness in the post-2010 period when Southern supplies expand sharply. But they are of little value as offsets to declining public cut in the next one to two decades.

One option, raised at times in the current debate, would involve the expansion of volumes available for domestic processing through the restriction of log exports. In its most exacting form, such a policy might link or "couple" reductions in public harvest directly to quotas reducing log export volumes by equivalent amounts. Lower supply and higher prices in the domestic market resulting from limitations in public harvest would be offset by reductions in the export component of stumpage demand. While in theory such a proposal would have the desired effects, there is ample reason to think that it would not in practice. Most discussion of the "coupling" option ignores quality and geographic differences between the log export and domestic log markets.

Finally, I want to close with two lessons that I have learned as a warrior in the "owl wars" in the Pacific Northwest. First, the traditional appeal of jobs and community stability associated with the sustained yield model of forestry is losing its political power. It is being replaced with concerns for conservation of biological options for the future. In this case commodity production is just one output among many. Second, we in the forest sector too often offer biological or physical solutions to what are really social issues. We need to offer solutions to today's issues that balance biological, social and economic considerations. If not, the lesson from the "owl wars" is that the public will ignore our suggestions.

REFERENCES

Adams, Darius M. and Haynes, Richard W. 1980. The 1980 timber assessment market model: structure, projections and policy simulations. Forest Science 26(3): Monograph 22. 64 p.

Haynes, Richard W. and Adams, Darius M. 1985. Simulations of the effects of alternative assumptions on demand-supply determinants on the timber situation in the United States. U.S. Forest Service, Forest Resources Economics Research. Washington, D.C. 113 p.

Haynes, Richard W. 1990. An analysis of the timber situation in the United States: 1989-2040. Gen. Tech. Rep. RM-199. Ft Collins, CO. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 286 p.

Haynes, Richard W., Adams, Darius M., Mills, John R. 1993. The 1993 RPA Timber Assessment Update. Review Draft. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR. 62 p.

Runyon, K.L. 1991. Canada's Timber Supply: Current Status and Outlook. Information Report E-X-45. Forestry Canada. Ottawa. 132 p.

USDA Forest Service. 1988. The South's fourth forest: Alternatives for the future. Forest Resource Report No. 24. Washington, D.C. 512 p.

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Market Outlook Issues

I want to point out to you at the start that I have no real marketing experience. My only qualification for speaking on this subject today is that my company is involved in the production and marketing of some of the basic commodity products that British Columbia and Alberta are famous for – lumber, pulp and newsprint. And having been directly involved in this business for 20 years now, it is obvious to me that marketing and capital expenditure decisions we made in the past were easy compared with the decisions we must make for the future. In the past we could generally rely on an ever-increasing demand for our products and an ever-increasing supply of the raw material we needed to make them - but no longer.

The world is changing so rapidly, the consumer's needs and preferences are evolving so quickly and the competition from other products and regions is so intense that companies must be able to anticipate and respond to fundamental changes in the marketplace as they never have had to before.

A case in point is our company's decision to participate in the development of the Alberta Newsprint Company in 1988. In the 12 months leading up to our final commitment to participate as a 50-per-cent joint partner in this $400 million project we did the requisite market research.

The result of this research seemed to point to a continuation of the past trend of newsprint consumption tracking GDP. Not much thought was given by us or many of the experts to two emerging factors. The first was recycling and the second was a possible change in how consumers want to get their information in the future.

This is just one example of the fundamental changes our forest products markets are undergoing and the resulting uncertainty that we will face in the future. And given the fact that the investment to create world-scale facilities today is so large, it is imperative that we do a better job of anticipating and, in fact, actively molding future consumer demands. The companies that are successful in the next 10 years will be those that correctly anticipate and respond to the changing marketplace for our Western Canadian forest products.

In discussing the topic assigned to me today, I will talk about some factors that I think may affects both the demand for our products and our ability to supply what the customer wants.

The demand side of the equation:
On a global basis, wood consumption has historically tracked population growth. The world's population is expected to increase by over two billion people over the next 20 years, meaning that the demand for wood products will continue to grow. Unfortunately, most of this growth will occur in areas that have not been our traditional market areas. As the population increases so too will the standard of living in many of today's Third World countries. The result will be an increasing demand in these countries for housing, packaging material, printing and writing papers and other wood-based products.

But at the same time, changing demographics and consumer preferences in two of our main markets - North America and Europe - will result in a reduced demand for some of the products we presently supply.

For example, in 1986 two million new houses were built in North America, requiring 20 billion board feet of lumber. In the 1980s, housing starts averaged 1.7 million units per year. In contrast to this, there were 1.2 million housing starts in 1992 and it is anticipated that, on average, 1.4 million new housing units will be built each year in the 1990s. This means a drop in lumber consumption for new houses of three billion board feet which is equivalent to eliminating the three largest lumber producers in Canada.

On the other hand, lumber consumed by the repair and renovation (R & R) sector will continue to increase as renovations and Do It Yourself jobs become an increasingly significant factor for our lumber markets.

In other words, as the new house building market matures in the U.S., some of the slack will be taken up by an increasingly vigorous R & R sector. But for the remainder of this decade, lumber demand in North America will be lower than during the last decade. And while North American lumber demand may decline from previous levels the consumer may, at the same time, demand different things from us than he did in the past.

For example, I think the consumer - both the DIYs and the contractor - will demand higher quality and performance standards in the future. The Do It Yourselfer will demand a high visual grade of lumber for his projects and the new breed of retailers such as the big warehouse stores will make sure he gets what he wants.

Likewise, builders will demand more and more uniformity and consistency in the raw materials they use partially because of competition from competing materials and partly because better uniformity and consistency will allow the architects and contractors of the future to find new and more cost effective methods of supplying housing and light industrial and commercial buildings.

The consumer will be less likely to accept the violent price swings that are common in our solid wood business as a result will look for more stable alternatives.

The challenge for our industry will be to provide this future lumber demand from a more expensive and lower-quality forest resource. I think this will be one of the greatest value added opportunities for our industry.

I should mention, before I leave the issue of solid wood demand, that in the next couple of years w should see very strong demand for our products in the North American market as pent up demand for housing is released due to sharply declining mortgage rates.

A fact of life in our business has been that as mortgage rates fall, housing starts increase. This cycle will be no different although, as mentioned earlier, we won't reach the peak levels of the 70s and 80s. We should, however, have robust markets for at east the next couple of years.

And what about the demand for pulp and newsprint products in the future? Will paper consumption continue to grow in our traditional markets the way it has in the past? The revolution in information technology will, I believe, result in the partial displacement of paper as an information medium sometime in the future. The question is - when and by how much? Fortunately, probably not soon enough for me to be directly affected but I believe that longer term electronic communications will capture a significant portion of our traditional paper markets.

At the same time, though, demand for paper products in more non traditional areas will increase dramatically, creating new market opportunities for our Western Canadian producers.

Concurrent with a gradual shift in consumption patterns will be the continuation of the present consumer trend of demanding more recycled paper and packaging products. Belgium, for example, is on the verge of enacting legislation that will impose a prohibitive duty on paper products that don't met a minimum recycled content. Belgium has been a traditional market for our company's linerboard produced in Kitimat, British Columbia.

We cannot economically access old corrugated containers for our Kitimat operation and so will be shut out of this market. In fact, the entire European market for linerboard is moving more and more to recycled linerboard.

In the 1990s demand for recycled linerboard will increase by 1.7 million metric tonnes while the demand for virgin brown linerboard will increase by only 350,000 metric tonnes, and it is anticipated that this entire increase can be supplied from domestic mills. This is not good news for North American producers.

This, of course, will happen to newsprint too and may have negative consequences for market pulp as well.

A more relevant example of the dynamics of this recycling issue can be found here in Alberta. Let me use ANC again as an example. Edmonton, which is two hours down the road from our newsprint mill in Whitecourt, collects approximately 30,000 tonnes per year of newspaper and magazine stock. In 1988, a portion of this was being sold in Edmonton and the rest was exported to Japan. Today, companies from the Midwest, the Pacific Northwest, Vancouver, Whitecourt and Japan are trying to buy this old newsprint stock and the result is that n five years it has gone from the lowest cost to the highest cost fibre for our mill. Cost for the end product will continue to be a key consumer demand and this will eventually help put an upper limit on the amount of recycled content available.

Obviously, this means that pulp and paper producers in Canada must be on the lookout for new market opportunities.

To sum up the demand side of the equation, I believe that as we gradually emerge from this recession, pent up demand for our wood and paper products will propel the industry to solid gains. Demand for solid wood will be up sharply in the next two to three years and newsprint and pulp consumption will follow.

Over the longer term, though, I believe that there will be fundamental changes in the marketplace. The consumer will be demanding better value from the forest products we supply. In addition, our customers will be increasingly concerned about how our products affect the environment compared to alternative products. It is vitally important that we satisfy the consumer that our products offer the next overall environmental performance of any of the alternatives. In the end, this can be one of the greatest marketing advantages we have.

The supply side of the equation:
As we all know, fundamental changes are occurring here as well. Harvest levels in British Columbia have peaked and are beginning to fall. Forest companies there are finally feeling the pinch of the reduced availability of timber. In the last upcycle, our company was able to go from two shifts to three at all six of our mills to take advantage of high prices. Today, that's not possible for us or our competitors and, in fact, we will face sporadic curtailments even in high lumber markets as timber supply gets tighter and private wood prices skyrocket.

Harvest levels in Alberta continue to increase, but we are approaching the maximum harvest levels for conifers here too.

Assuming that demand for our wood and paper products at least remains constant, we must find alternate sources of supply. What will they be?

To start with, both B.C. and Alberta still have large stands of hardwood species - mostly aspen - available for processing, as well as low grade conifer stands. Commercial exploitation of these stands has proven challenging but a great deal of work is being done to unlock the value of these stands. Just remember, who would have thought 30 years ago we could be profitably processing the small SPF stands in B.C. and Alberta that are part of our raw material mix today? So there is no doubt that this previously under-utilized fibre will contribute to the growth of the B.C. and Alberta industry in the future in products that will include pulp, newsprint and various engineered and value added wood and paper products and, quite possibly, even dimension lumber.

Non traditional suppliers will also have an impact on our markets - indeed they are even now. An interesting case in point relates to softwood lumber where Finland has just completed its first shipment of framing lumber to Japan. A combination of volatile North American lumber prices and a sharp drop in the value of the Finnish mark versus the U.S. dollar has made Scandinavian lumber prices competitive for the first time in the Japanese market. In fact, at the height of the North American lumber market last spring our company's wholesale lumber division in New York looked seriously as bringing Swedish lumber into the U.S. for the first time. The point here is that new suppliers can come out of the woodwork as never before as a result of currency fluctuations, supply constraints and increased costs.

South America, New Zealand and Australia are rapidly building a solid wood business built around plantation forestry. Alberta and British Columbia will increasingly run up against competing products from these countries in the markets we serve.

A vivid example of this new competition occurred last year when our Revelstoke retail building supply division put laminated pine furniture from Chile into our stores. This product was competitive on price and quality to products our own company is trying to develop in British Columbia.

South America, New Zealand and Southeast Asia are already impacting our pulp and paper operations in Western Canada. To maintain our customer base, we must meet the formidable cost, quality and reliability standards that these new supplying regions are establishing. Again, several years ago, Eucalyptus pulp was dismissed as non competitive from a quality point of view. Let's not use the same reasoning to under estimate the potential impact we might feel from their solid wood industry.

Finally, we must be aware of the threat and opportunity posed by non traditional products.

On the pulp and paper side I will reiterate what I see as two areas of concern for B.C. and Alberta. First is the potentially large supply of recycled paper that can be exploited in the future in direct competition to virgin fibre from British Columbia and Alberta. There is no doubt that the recovery ate for used paper products will increase and the pulp and paper industry will continue to replace higher cost virgin fibre with this material.

And the second and more disturbing concern relates to the revolution in communications that is going on right now. Will the office of the future be paperless? Will the newspaper of the future serve the same markets and functions as it does today?

Billions of dollars are being spent today to deliver communication and information services to the consumer that do not require the traditional use of paper.

More and more, alternatives to paper will be available that may be more environmentally and user friendly and, at the same time, more cost effective.

In solid wood, I believe the housing market will be assaulted by the steel producers. Their stated aim is to have 25 per cent of this market in five years. They presently have less than five per cent of the market. To preserve our dominance of this market and grab some of the commercial and industrial market we have lost, we must anticipate and respond to our customers' needs.

Engineered wood will become an increasingly desirable alternative to traditional solid wood products. The supply of these alternative products will increase and become more reliable and these products will increasingly take market share from solid wood products.

In my view the cash and carry market will become increasingly important in the future meaning, as I've mentioned before, that appearance of our product will become more important. In addition, our customers will want a product that has more consistent and uniform characteristics than we provide today. Finally, our products must not only be cost competitive, but they must also give the builder the opportunity to offer higher quality, lower cost building systems in the future.

Consumers will be looking to the industry to satisfy them that our products are the best environmental alternatives for the use they are put to. I believe this is our biggest area of opportunity and the one in which we have displayed the greatest ineptitude to date. I we are able to continue to improve our forestry and milling processes at the same pace we have for the past few years and, at the same time, clearly and concisely identify the environmental pros and cons of our products versus the competitors' there is no doubt our industry will recapture the public's good will and support and ensure the continuing acceptance of our products in the marketplace

I believe our solid wood industry is well suited to repel the challenges of competitive products through the development of new technology, products and standards. In fact, when our customers come to understand the environmental benefits of our wood products, our industry will be even stronger and more vital than it is today.

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Financial Issues in the Forest Industry

I am an equity analyst, and one of the prerequisites for my job is to be very opinionated and also to be an optimist. None of us could survive the downturns in this industry without strong natural optimism. It is a pleasure to be here today because I have what I think is an optimistic message and I will also get a chance to air some of my opinions.

Today I want to talk about the influence the stock market is having on the forest industry. My comments are not intended to be specific to Alberta. The capital markets do not look at the industry on a provincial or even national basis for that matter. The stock market is bullish on the forest industry but at the same time it is driving the rationalization of the industry and encouraging more product focus. To wrap up I have a comment on what I think it will require to be successful in this industry. (That is the controversial part.)

Alberta's reputation among providers of capital:
Convincing someone to look at lending or investing in an Alberta project is not difficult because it is widely known that Alberta is home to some of the lowest cost, most productive facilities in North America. For example just about every cost curve for the North American newsprint industry shows Alberta Newsprint with the lowest mill level costs in North America. Weldwood's Hinton pulp mill, which was just expanded and modernized, is well down on industry cost curves and Stuart Lang tells me that Al-Pac will have production costs similar to those found in Brazil. Word about these low costs gets around and attracts providers of capital as well as competitors! When I ask myself about why Alberta facilities are low cost I believe it is due to:

- A pro-business provincial government
- A non-union workforce that can be well paid because productivity is excellent
- A high quality wood resource with very low harvesting costs due to the nature of the terrain.

The only negative associated with Alberta facilities is the distance to end markets and thus low productions costs are partially offset by higher transport costs. As an aside though, Alberta has been a major beneficiary of transportation deregulation in North America.

Equity markets bullish on forest products:
The equity markets have become very bullish on the prospects for the forest industry. If you have any doubt about this look at the following table on stock price appreciation. Lumber producers have done exceptionally well and this is understandable given the profitability in this sector. However, companies with a greater orientation to pulp and paper have also done well.

Stock Price Performance
TSE 300 Forest Products Index and Related Stocks
October 19, 1993

		Year to Date	Dec. 1991	July 1982
Abitibi Price	A	-22.4%	-23.1%	103.1%
Cascades	CAS	-13.3%	-4.2%	-
Crestbrook	CFI	10.4%	-3.6%	-9.7%
Canfor	CFP	27.3%	35.5%	-
Donohue	DHC.B	50.0%	75.0%	366.7%
Doman Industries	DOM.A	79.4%	159.6%	1009.1%
Domtar	DTC	26.3%	-14.5%	62.1%
Fletcher Challenge Cda	FCC.A	16.1%	6.7%	146.0%
Interfor	IFP.A	62.8%	105.9%	316.7%
MacMillan Bloedel	MB	22.9%	12.2%	332.5%
Noranda Forest	NF	38.7%	22.9%	-
Cdn. Pacific Forest Prdts	PFP	-30.0%	-35.7%	15.6%
Repap	RPP	59.5%	-36.2%	-
Slocan Forest Products	SFF	99.9%	304.3%	-
Tembec	TBC.A	-26.1%	-9.7%	-
West Fraser Timber	WFT	34.1%	108.6%	-
Weldwood	WLW	30.7%	108.0%	415.3%
QUNO*	QNO	20.0%	-	-
Riverside	RFP	59.5%	-	-
Scott Paper	SPL	7.9%	-46.1%	241.7%
TSE Paper & Forest Index		23.0%	18.3%	213.4%
TSE 300 Index		24.6%	18.9%	195.7%

* YTD performance from Feb 17/93

To indicate just how bullish the stock market is we now have the interesting phenomenon of the stock market putting a higher value on pulp, paper and lumber assets than companies involved in the sector. For example the stock price of lumber companies in B.C. implies a value of approximately $115/M^3$ of annual allowable cut, while private transactions have been taking place at closer to $100/M^3$. In other words the best price for asset sellers is in the public markets. If you need more proof, Noranda Forest and Canadian Pacific Ltd. both sold large share blocks in MacMillan Bloedel and C.P. Forest Products respectively to the stock market. These blocks represented control of the companies and would normally command a control premium (i.e. a higher than share market price). You can rest assured that these blocks were sold into the market because there was no industrial buyer willing to pay the same price as the stock market.

I am sure that many of you are wondering why the market is paying more for assets than any private or industrial buyer would pay. I can only observe that this isn't the first time that there has been a divergence of opinion between the market and senior industry management. In 1988 many senior managers couldn't understand why share prices were well below the highs established in 1987 (especially when many other sectors went back to 1987 levels) when the industry was heading toward all time record earnings. With the benefit of hindsight the market was right to be worried. The market was also right in 1985 when it started to bid

up forest products stocks to what seemed very unreasonable levels given the prospects for pulp and newsprint.

In my 10 years of following the market I have found that while it has its ups and downs over the short term the general direction is usually right. In other words, we are probably getting close to a period of pretty good profitability.

Financing is shifting away from the banks
Publicly traded companies have a competitive advantage over private companies in the pulp and paper industry. The forest industry has become increasingly capital intensive and those with access to capital should have a better chance to grow and prosper.

In the last cycle most of the large capital expenditures were financed primarily with bank debt, called project financing, that typically involved very little equity and the debt was non-recourse to the project sponsors. Many of these projects are now on the ropes. The banks are busy trying to manage these problem loans and don't seem to have an appetite for increased exposure to the forest industry (as with all generalizations there are exceptions). On the other hand the equity markets have just committed over $4 billion to the Canadian forest industry. Appendix One provides a list of equity issues involving Canadian forest products stocks since 1991.

Equity markets are promoting industry rationalization
The equity market, through its investments, is having an impact on the structure of the Canadian forest industry. The largest impact that I see is the rationalization of the industry. I have found that the story the stock market likes best these days is acquisitions where it can be demonstrated that profits will increase due to the combination. The next table provides a list of equity issues done to finance acquisitions:

Issuer	Acquisition	Equity Raised (in $ millions)
Fletcher Challenge Canada	Crown Forest Industries	627.3
Interfor	Hammond and Fraser sawmills	56.0
Slocan	Plateau sawmill	32.2
Riverside Forest Products	Armstrong and Kelowna plywood and sawmills	33.7
West Fraser Timber	Eurocan Pulp and Timber *(Purchase 50% not owned)*	70.0
Green Forest Lumber	Lafreniere Lumber	11.0

The competitive advantage from being public is the ability to finance growth. We all know that it is during a downturn that you can buy assets at less than replacement value, and yet that is when financing can be most difficult to arrange. In the current environment however public companies can arrange financing and add value for shareholders by purchasing assets before profits and asset values go up. In fact you don't have to issue equity directly to the public to raise cash. Sometimes the stock itself can be used as the acquisition currency as was the case with West Fraser which issued the stock directly to Enso Gutzeit as partial payment for the Eurocan purchase.

Equity markets are creating more industry focus
The equity markets are encouraging increased focus within the forest industry. For example the Noranda Forest sale of its control position in MacMillan Bloedel, and the C.P. Ltd. sale of its control position in C.P. Forest Products are part of what I term the deconglomeratization of Canada. A non-Canadian example is the Tribune sale of its control

position in Quno. (The Tribune still has a significant equity stake in Quno). The market wants more focused companies and tends to build in a share price discount for holding companies. The move to more focus also extends to diversification within the forest industry. For example C.P. Forest Products has sold an equity stake in Pacific Forest Products. While C.P. Forest retains control of Pacific Forest it must be run as an independent company with all of its transactions with its parent done on an arm's length basis. The trend to more focus has not yet run its course and I believe we will eventually see control of Abitibi Price and Noranda Forest back in the market. As for the spin out of lumber operations from diversified companies, there is a lot of potential there as well. The next table lists the aforementioned transactions:

Equity seller	Company sold	Value ($ millions)
Noranda Forest	MacMillan Bloedel	971.5
Tribune	QUNO	135.0
CP Ltd	CP Forest	697.8
CP Forest	Pacific Forest	130.0

Equity markets are discriminating

The equity markets are not throwing money at the industry indiscriminately. For example I doubt you could raise money for a new newsprint machine, pulp mill or coated paper mill for that matter given low product prices. Where product prices are high and new capacity can be justified then the markets will finance expansion. Ainsworth Lumber for example had no difficulty in raising money for a new oriented strand board mill because the profit potential is excellent.

Successful companies will be those managing capital wisely

While the stock market appears to be making a general bet that the forest industry is getting close to good profitability, I can assure you that individual company share price performance will vary widely. Thank heavens for this or I might be out of a job. In other words it does matter how a company is managed. When I first looked at this industry 10 years ago I wondered how it was able to attract capital. As an industry it had a hard time earning its cost of capital and share returns as a result were well below the average for the market. However when I looked closer I noticed that the poor performance came mostly from the large companies and the best performance came from the small companies growing larger. The smaller companies were the ones building new facilities in the B.C. Interior and moving into northern Quebec. These companies ended up in regions with very low wood costs and new facilities that were efficient users of labor, energy and wood. Success seemed to hinge on having access to low input costs and modern plant and equipment. I am not so sure that having the lowest input costs will lead to success in the future.

I believe that capital has become the single biggest cost in producing forest products. It is easy to show this. A kraft pulp mill now has an installed capital cost of about $2,400 per annual tonne. If you assume a 15% pre-tax return is required on capital, then the cost of "renting" that capital is $360 per tonne, or about the same as all of the physical inputs together. The successful firm will be the one to use less capital to get the job done than its competition. One of the few ways to get a lower capital cost is to purchase assets below replacement costs. That can only happen in a recession and as I mentioned previously, public companies have an advantage in financing acquisitions during recessions. Acquisition strategies are easy to follow but they require the discipline to stop when asset values are reaching depreciated replacement cost.

As with any generalization there are always exceptions to the rule, and Alberta newsprint and Al-Pac may be the greenfield investments that work, but I would look long and hard before I built greenfield rather than buying.

Conclusion

I don't think my comments this morning have any unique relevance for Alberta companies. As I mentioned at the outset, Alberta has an excellent reputation among providers of capital but after all that, funds requirements are assessed on an individual company basis. It is my belief that the most successful companies will be those with the ability to access public equity markets, those that provide the market with clearly focused operations and those that can utilize capital more effectively than the competition.

APPENDIX ONE
Forest Products Companies
Equity & Equity Equivalent Issues Since 1991

		(Millions Shares)		($ Millions)			
Company	Date	Treasury	Secondary	Price	Total Size	Size to Public	% Dilution Y/E 1990
Abitibi Price	Feb 93	9.0	(7.85% Cv.Deb)	$15.00	$135.0	$135.0	
	Aug 93	8.0		$12.75	$102.0	$102.0	24.5
Ainsworth Lumber	May 93	5.55		$10.00	$55.5	$55.5	--
Canfor	Jul 91	3.0		$26.13	$78.4	$78.4	
	Mar 92	2.0		$27.00	$54.0	$54.0	21.9
Cascades	May 91	6.0		$5.13	$30.8	$30.8	
	Aug 93	11.53	(7.25% Cv.Deb)	$6.50	$75.0	$75.0	36.28
Cascades-Paperboard	Jul 92	16.97		$8.25	$140.0	$140.0	--
Crestbrook	Oct 91	3.92		$14.00	$54.9	$37.1	51.6
CP Forest	Feb 92	8.5		$26.50	$225.3	$180.2	
	Mar 93	8.0		$20.00	$160.0	$160.0	
	Aug 93		36.7	$19.00	$697.8	$697.8	19.3
Donohue	Dec 92	3.0	3.0	$13.88	$83.3	$83.3	9.3
Doman	Mar 92	4.0		$6.63	$26.5	$26.5	
	Feb 93	4.0	2.5	$10.50	$68.3	$68.3	41.8
Domtar	Jun 91	11.1		$9.00	$100.0	$84.9	
	Mar 93	25.0	(8% Cv.Deb)	$6.00	$150.0	$86.6	41.5
Fletcher Chall. Cda.	May 92	16.87		$14.75	$248.9	$70.8	
	Jan 93	44.0		$14.25	$627.3	$177.0	
	Apr 93		10.6	$18.00	$190.8	$190.8	
	Jul 93		15.0	$19.25	$288.8	$288.8	101.0
Green Forest	Aug 92	2.5		$4.35	$11.0	$11.0	
	Jan 93	1.9	1.0	$7.38	$21.4	$21.4	52.8
Interfor	Apr 91	2.3	1.0	$7.30	$24.1	$24.1	
	Aug 91	8.0		$7.00	$56.0	$56.0	
	Jan 92	2.5		$10.00	$25.0	$25.0	67.4
MacMillan Bloedel	Jun 91	7.20		$21.00	$151.2	$100.8	
	Feb 93		55.5	$17.00	$971.5	$971.5	
	Sep 93	9.0		$21.63	$194.6	$194.6	15.8
Malette	Nov 91	4.79	(8.75% Cv.Deb)	$6.26	$30.0	$30.0	
	May 93	2.33		$11.00	$25.6	$25.6	116.07
Noranda Forest	Jul 91	20.75		$8.00	$166.0	$29.9	
	Sep 92	23.53	(7.25% Cv.Deb)	$8.50	$200.0	$150.0	20.4
Pacific Forest Products	July 93	10.0		$13.00	$130.0	$130.0	--
QUNO	Feb 93	9.00		$15.00	$135.0	$135.0	--
Riverside	Sep 92	3.17		$7.25	$23.0	$23.0	
	Dec 92	1.36		$7.88	$10.7	$10.7	--
Slocan	Apr 91	2.50		$5.12	$12.8	$12.8	
	Dec 92	3.25		$9.90	$32.2	$32.2	65.3

APPENDIX ONE
Forest Products Companies
Equity & Equity Equivalent Issues Since 1991

Company	Date	(Millions Shares) Treasury	Secondary	Price	($ Millions) Total Size	Size to Public	% Dilution Y/E 1990*
Tembec	May 91		2.8	$9.75	$27.5	$27.5	
	Feb 92	5.50		$9.00	$49.5	$49.5	
	Sep 92	4.30		$11.00	$47.3	$44.0	
	Jul 93	6.5	(7.5% Cv. Deb)	$10.00	$65.0	$65.0	92.7
West Fraser	Aug 91	1.50		$20.75	$31.1	$31.1	
	May 93	2.0		$35.00	$70.0	$0.0	21.7
Total					**$6,103.1**	**$5,023.5**	

* % increase in total shares outstanding since year end 1990.

Comments - Equity and Equity Equivalent Issues Since 1991

Ainsworth Lumber		Initial public offering.
CP Forest		CP Ltd. took up 1.7 mm shares.
	Aug 93	Instalment receipt. (Sale of CP's interest in CP Forest on installment.)
Cascades	May 91	QSSP units issue which included 1/2 warrant.
	Jul 92	QSSP units issue which included 1 Cl. A pfd. share and 1 1/2 common share warrant.
Cascades-Paperboard	Dec 92	Initial public offering.
Crestbrook		Honshu Paper Co. & Mitsubishi Corporation bought 1.270 mm shares.
Doman	Mar 92	Purchase of minority interest in Western Pulp from the TD Bank and Royal Bank resulted in additional 2.9 million shares issued at a price of $6.81/share.
Domtar	Jun 91	1.667 mm private placement with Caisse.
	Mar 92	10.575 mm private placement with Caisse.
Donohue		Issue consisted of 6 million shares and 6 million warrants sold as a unit for $13.88.
Fletcher Chall. Cda		Fletcher Challenge Limited of New Zealand purchased 12.072 mm shares.
	Aug 93	(Sale of 15 mm shares held by Fletcher Challenge Limited.)
Interfor		TD Bank provided shares for secondary distribution.
MacMillan Bloedel	Jun 91	Noranda Forest purchased 2.4 mm shares.
	Feb 93	Instalment receipt. Initial instalment price of $6 with second instalment of $5.75 due Aug.25, 1994 and the final instalment of $5.75 due Feb. 24, 1995. (Sale of Noranda Forest's 49% interest.)
Malette	Nov 91	Private placement.
	May 93	Private placement.
Noranda Forest	Jul 91	Rights offering. Noranda Inc. exercised all rights (82%).
	Sep 92	Instalment receipt. The first half was payable on issue with the balance to be paid Oct. 29, 1993.
Pacific Forest Products		Initial public offering.
Tembec	May 91	Sale of Balaclava block which represented 16.5% of outstanding shares.
	Sep 92	Includes 300,000 Cl. A share private placement to QSSP Fund.
West Fraser	May 93	Private placement to Enso Gutzeit of Finland. Deal announced in May, but closed in September.

David McCaffrey,
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Environmental Issues and the Forest Products Industry

Environmental and the Forest Products Industry – had I been invited to address this conference 10 years ago, it is highly unlikely that the organizers would have dreamed of assigning me such a topic.

But much has changed over the course of the last decade. During that time, many people have begun to question the meaning of progress; they have come to realize that our planet's natural blessings and resources must be protected and preserved, because they are not endless. The long lived belief that "more is better" is being replaced by the realization that "more today means less for tomorrow."

The prospect of global warming and the increasing evidence of air and water pollution have raised the public's general level of environmental awareness. By exploiting this new consciousness, activists have become much more successful in persuading citizens that they can make an important contribution: that, as individuals, *they* can reduce or reverse environmental damage by changing their behavior – especially what they purchase and consume.

Today's consumers continue to demand that products perform well, and that they are competitively priced: in addition, however, more and more of them are becoming believers in, and practitioners of, environmental purchasing. They no longer take for granted that the products we manufacture are benign; instead they now question their environmental cost – often without considering the many benefits that accrue to each of us as a result of their ready availability.

Today I would like to speak to you about several environmental issues that, I believe, should be of concern to those of us who owe our livelihood to this industry. They relate to: forest management, pulp bleaching, paper recycling and eco-labelling.

Forest management:
No presentation which hopes to paint an accurate picture of the current environmental landscape could be considered complete unless it was colored by a few comments relating to forest management.

We have already heard quite a lot this morning about the reductions in annual allowable cut which have been made in the name of preserving the habitat of endangered wildlife: spotted owls, marbled murrelets and red-cockaded woodpeckers. And, I believe that Mr. Grabowski was quite justified in warning you that it is only a matter of time before some Albertans species is singled out for protection as well.

But protecting birds and animals is only one of several refrains that are being sung by members of the "green movement," as they attempt to orchestrate changes in our forestry practices. Moreover, some of them seem willing to go to virtually any lengths to achieve their objectives.

Consider, for a moment, the monomania which drives someone to spike a tree; witness the recent events in Clayoquot Sound, which resulted in sentences for the "environmental outlaws" that were involved.

In addition to the blows it has suffered at the hands of North American attackers, our industry has also been under siege in Europe for several years – the subject of campaigns both in the print media and on television. Early in 1991, as an example, a Vancouver-based German film maker prepared what was purported to be a documentary dealing with the Canadian forest industry. This 30-minute program – entitled *A Paradise Despoiled* – was subsequently aired in prime time on one of his nation's major television networks: ARD. The pictures, commentary and carefully edited video footage skilfully raised and intertwined a series of issues, including native rights and land claims, water and air pollution, and B.C.'s forest management practices – with emphasis on clearcutting.

Our critics now like to refer to Canada as the "Brazil of the North" and they openly suggest that consumers boycott our products until we stop decimating our woodlands, particularly our stands of old growth timber.

Pulp bleaching:
Early in 1985, our industry was shaken by another environmental bombshell, when researchers employed by the U.S. Environmental Protection Agency found traces of a suspected human carcinogen – dioxin – in fish located downstream from a pulp mill in Maine.

In the months which followed the original discovery, the effluents of other North American pulp mills were tested, and the products manufactured in those facilities were analyzed. Meanwhile, the press published articles which sensationalized the problem and, in some cases, distorted the facts. Before long, the public – both here and abroad – were demanding that the government implement environmental regulations; as well, they were threatening to curtail drastically their use of bleached paper products – a move that would have had serious ramifications for Canada's eight-million-tonne a year market pulp business.

Our industry's research arm – the PPRIC – acted quickly to develop alternative technology to aid in the elimination of these contaminants. Since 1988, this has resulted in a 97 per cent reduction in bleaching-related dioxin emissions. Today, more than 60 per cent of Canadian mills can boast of non-measurable levels of dioxins in their effluent; the rest are expected to achieve this goal by 1994.

Much of this progress was accomplished through the substitution of chlorine dioxide (ClO_2) for chlorine gas (Cl_2) in the bleaching process (pulps produced in this manner are now commonly referred to by the acronym "ECF" for elementally chlorine free). Sounds simple, you might say, but the costs involved – in terms of both time and money – were substantial. New equipment needed to generate the ClO_2 carried a price tag of $15 million to $20 million per unit, and engineering, planning and construction efforts could require up to two years to complete.

Despite the costs involved, most Canadian kraft pulp producers realized that they had little choice than to join the parade – even though it was apparent, early in the game, that their customers did not expect to pay a premium for the resulting product.

By 1990, the dioxin problem appeared well on its way to being resolved. Sadly, various environmental groups – led by Greenpeace – then shifted their focus to a broader group of

chemicals in mill effluents – the adsorbable organic halides, referred to as AOX; they also began calling for an outright ban on all chlorine compounds in the bleaching process.

Anxious to appear that they were responding to this so-called "threat" to their populations, a number of governments throughout the world entered into a mad race to reduce AOX limits, modifying the standards before sound research had demonstrated any environmental benefits.

Here in Canada, both British Columbia and Ontario have now introduced regulations that call for gradual reductions of AOX in mill effluents, according to specific timetables. The B.C. forest industry estimates that it will need to spend over $1 billion to meet a 1996 AOX limit of 1.5 kg per tonne of pulp; an additional $1 billion will be required to satisfy the provincial government's demand that all AOX be eliminated by the year 2002. For Ontario, the goals are as follows: 1991 – 2.5 kg; 1995 – 1.5 kg; 1999 – 0.8 kg; 2002 – no use of chlorine.

This, in spite of the fact that scientists at the National Water Research Institute in Ontario recently reported that they have established, beyond any doubt, that **no link exists between chlorinated organic compounds in bleached kraft mill effluent and chronic biological changes in fish**.

Still, the hysteria surrounding AOX has already affected the marketplace, particularly in Western Europe – a region of the world which accounts for roughly 30 per cent of Canadian sales of market pulp.

Because AOX formation depends on the presence of chlorine based compounds, environmentalists were able to mount a media campaign in which they demanded an outright ban on all such substances in the bleaching process. They insisted that producers further modify their mills to allow the manufacture of "TCF" (that is, totally chlorine free) pulps. Quite a number did so; and according to a report by NLK Consultants, TCF chemical market pulp consumption by European mills is expected to surpass 2.2 million tonnes during 1993.

The Greenpeace initiative achieved only limited success, however, as most of the TCF demand, to date, has been confined to papermakers in Germany, Austria, Switzerland and the Nordic countries. In any event, they now appear to be distancing themselves from the bleaching controversy and are currently directing most of their efforts towards forest management issues.

Paper recycling:
This topic may seem a bit pedantic, given the current makeup of your forest products industry here in Alberta – there is, after all, but a single paper maker in this province at the present time.

However, events which are currently unfolding in this area could place serious constraints on your options for expansion in the future.

Paper recycling is certainly not a new phenomenon: this activity has been pursued in North America, to some extent, for over 75 years. More than 50 of our mills in Canada use waste paper for all or part of their fibre furnish; one has been doing so since 1914.

During the last few years, however, paper recycling has experienced a renaissance, and I think it would be useful to examine some of the environmental realities which have contributed to this phenomenon.

It became apparent during the 1980s that North America was facing a shortage of sanitary landfills. As existing sites reached capacity and were closed, efforts to establish new facilities met with resistance from the public. As a consequence of this demand/supply squeeze, tipping fees were pushed sharply higher – to more than $100 per tonne in some cases. As a result, many cities were motivated to establish programs aimed at separating recyclable material from the waste stream at source – "blue box" systems were but one example of this.

Unfortunately, their success created some new problems. Few of these programs' planners gave enough thought to the question of what to do with the waste paper after it was amassed. Because the use of recycled fibre in paper production requires processing by relatively complex equipment – equipment which can take up to 18 months to install – waste paper supply, particularly that of old newspapers (ONP) skyrocketed well above existing demand and prices collapsed. As well, the mountains of unused waste paper which had been collected fuelled the public's perception that industry was not doing its part to promote recycling.

This in turn led a number of American states – 12 of them so far – to enact laws which mandate that newspaper publishers use recycled-content newsprint to satisfy significant portions of their overall requirements. Fourteen other states have signed voluntary agreements, aimed at achieving similar objectives. Unfortunately, there is very little consistency among the various pieces of legislation and this makes planning to recycle unnecessarily difficult.

More recently, the focus in the U.S. has shifted to the printing and writing paper sector. On April 22 – Earth Day – President Clinton pledged to issue an executive order that would increase the federal government's purchases of recycled paper. In July, a draft of the proposal was "leaked" out: it suggested that federal agencies would be required to purchase paper containing at least 15 per cent **post consumer** waste; the figure was to increase to 20 per cent by 1995 and to 25 per cent by 2000. Since then, a considerable amount of lobbying by special interest groups on both sides of the issue has ensued. While the outcome is as yet unclear, it is expected that the final document will be released in a matter of weeks.

Let me continue with a brief overview of some of the challenges that recycling poses for companies in our industry.

For mills located in remote regions – and we in Canada have many of those – it can be much more expensive to purchase and transport recycled fibre to the production site, than to harvest the surrounding forest. One of the advantages that enabled our industry to attain its current stature in world markets – an abundant, high quality wood resource – will be, to some extent, neutralized.

Moreover, it is quite conceivable that in the future, Canadian manufacturers will find it difficult to obtain sufficient quantities of secondary fibre to feed their paper machines. One reason for this is our nation's low level of paper consumption relative to our production.

On a global basis, Canada stands third in terms of paper and paperboard capacity: our total output last year reached 16.6 million tonnes. But approximately 75 per cent of our products were exported to customers in some 70 countries around the world; for some grades, the ratio is even higher: as an example, 91 per cent of our newsprint ended up on the presses of foreign printers during 1992.

Already, we rely on imports from the U.S. for more than 35 per cent of the waste paper we consume. Last year, our total consumption of recyclable fibre for the manufacture of paper

and paperboard amounted to slightly more than 2.7 million tonnes; of that, close to one million tonnes was collected in the United States.

As time goes on, we will have to outbid not only other users in North America, but also other competitors from fibre-poor nations around the globe.

But perhaps the problem of most concern to our industry is the enormous volume of recycling residue (sludge) that is generated by the recycling process. Current technology results in a yield loss of eight to 15 per cent in the form of ink and waste fibre, and in the case of old magazines (OMG), clay coating.

For most mills the only available disposal alternative is landfilling, and this option offsets to some extent one of the primary reasons for recycling in the first place. Moreover, landfilling costs change the economics of recycling dramatically.

Eco-labelling:
Eco-labelling is a generic term that refers to schemes which purport to measure the relative impact of various products and manufacturing processes on the environment. Those which conform to a specified set of criteria earn the right to use a proprietory symbol which identifies them as being "environmentally friendly."

Generally speaking, the standards upon which such programs are based are developed and administered by government agencies; thus, they are perceived by consumers to provide authoritative and technically sound guidelines which can be used in the process of arriving at "green" purchasing decisions.

Some of the logos already in use are the green seal in the U.S., the green dot and the blue angel in Germany, the World Wildlife Foundation's Giant Panda, the Nordic Swan in Scandinavia, the EcoMark in Japan, and most recently, the Ecolabel in Holland. Work is also progressing on a plan which, if implemented, would encompass all of the nations in the European Community.

The threat posed to Canadian producers by the continuing spread of these programs is that the criteria which govern the eligibility to use these labels can (and do) favor one country's products over another.

Virtually all of today's environmental labels revolve, to some extent, around the use of recycled content – perhaps because this is something that most individuals can easily comprehend, and with which they can easily identify. Unfortunately, as we have already seen, this tends to place suppliers in our country at a disadvantage.

Worse still, these programs are simply not, in most cases, achieving their intended goal. Since the underlying purpose of eco-labels is to reward and promote improved environmental performance, it is essential that the eligibility criteria employed be specific, relevant and all-encompassing. They must address all major environmental effects of pulp and paper – production, use and disposal – not just recycling.

The solution lies in the application of so-called life cycle analysis (LCA), a cradle-to-grave approach in which recycled content is but one of a number of parameters that would be measured.

Here in Canada, our government launched the Environmental Choice Program in 1988 as part of its Green Plan. Standards governing two sectors of our industry – newsprint and fine

papers – have already been adopted and, to date, 23 North American suppliers have become qualified to display the Ecologo.

It is interesting to note that, in spite of the strong protests by our association, the specification in the case of these two commodities was based entirely on a minimum recycled content. As work progressed across other areas of the pulp and paper spectrum, however, we were ultimately successful in convincing government officials that a life-cycle approach should be considered. As a consequence a new set of guidelines encompassing all paper products is now being drafted by a multi-stakeholder group which includes a representative from CPPA.

Where do we go from here?
Environmentalism is not just a passing fad! In fact, it is now a growing part of the school curriculum throughout much of the industrialized world. Moreover, if you glance over the top of your Saturday paper, and peek at the cartoons your children are watching, you will quickly learn that concern for the planet is becoming the new battle cry of our young – polluters are perceived to be the master criminals, the new public enemy.

Ours is certainly not the only industry that is under attack by the "greens;" nor is Canada the only member of the global forest products community that is being hounded by them. Unfortunately, as the world's foremost exporter of pulp, paper and lumber – accounting for one quarter of all international trade in these products – we make a pretty convenient, even enticing, target.

Subjected by the press to a continual barrage of disparaging commentary regarding our environmental performance, it is sometimes difficult to hold one's head high. Yet I believe that we should be proud of our accomplishments. Canadian products – particularly lumber, newsprint and bleached kraft pulp – are in demand the world over, and they are recognized leaders in terms of quality. Furthermore, the facts suggest that our industry has already posted substantial improvements in its environmental score card.

Long before it became fashionable to do so, Canadian pulp and paper companies were devoting considerable time and money to pollution abatement. Ongoing efforts aimed at reducing biological oxygen demand (BOD) and total suspended solids (TSS) in our mill effluents have resulted in measurements which, today, are but a fraction of what they were 30 years ago.

Our success in dealing with dioxins, furans and the broader group of chlorinated organics, has been even more dramatic – particularly when you realize that it was only eight years ago that we were first made aware that some of these compounds were being generated in conjunction with the bleaching of pulp.

Annual Canadian expenditures on forest management have increased fivefold since 1977; expressed another way, the amount spent on this activity has grown at an average annual rate of 11 per cent during each of the dozen years prior to 1990. It surpassed $2.6 billion during the most recent period for which we have data. The number of trees planted in Canada has risen from a yearly total of slightly less than 200 million in 1977 to a figure approaching 800 million in 1990.

The number of mills which are utilizing recovered paper or paperboard as a portion of their fibre furnish is steadily increasing. During 1992, operations in our country consumed more than 2.7 million tonnes of waste, and we expect that usage will expand by an additional 700,000 tonnes this year.

The truth is, our industry's track record has improved significantly over time – even during periods when we were suffering, as we are now, from the severe financial pressures of a prolonged recession. Unfortunately, however, environmental reality, like beauty, is in the eye of the beholder. Because we have been slow to tell our side of the story to the public, we are still being judged on our past performance.

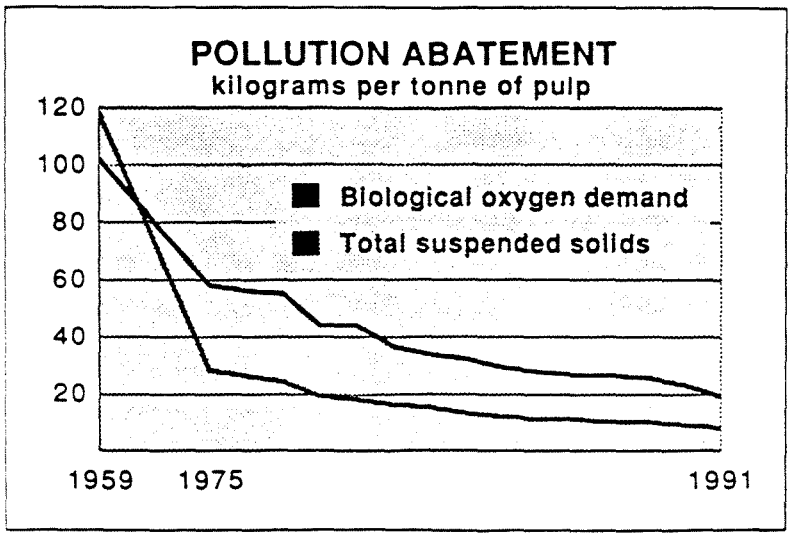
Recognizing this problem, CPPA's Board of Directors has now allocated additional resources to deal with the task of improving our media relations program and expanding our advertising campaign. Our communications area now includes three full time professional staff; their annual budget is approximately 30 percent of the organization's total. Two educational tools which CPPA developed for use by gradeschool children – *People of the Forest* and *Discovering the Treasure* – have now been introduced in more than 2,000 institutions of learning. Work on *A Forest for All*, a simulation and role playing game targeted for high school students, is nearing completion.

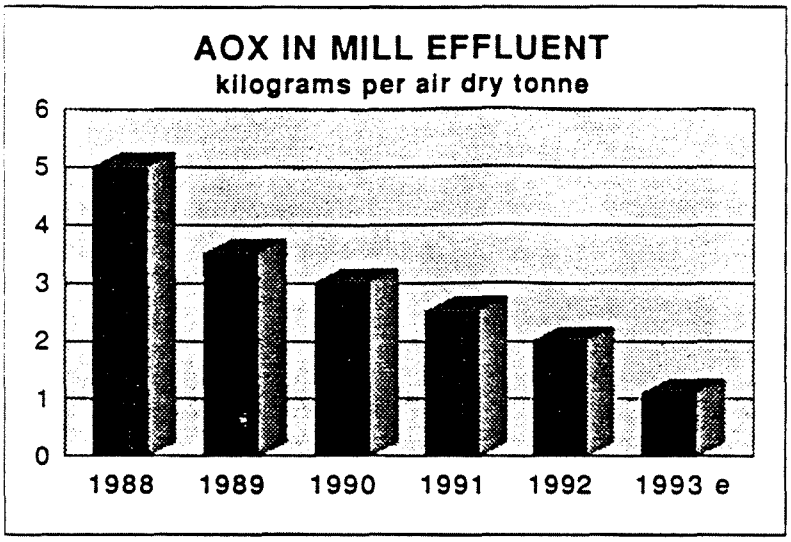
Moreover, several of our product groups have begun to take a much more active role in promoting the industry's achievements. The CPPA Woodpulp Section, as an example, has initiated the publication of a quarterly newsletter which addresses issues it feels are of concern to both its customers and the public at large.

In an effort to increase our influence in overseas markets, we have recently opened an office in Brussels with a staff of three. Between them, they can converse in seven different languages.

Environmental Issues and the Forest Products Industry: at the outset, I suggested that 10 years ago, it would probably not have occurred to the organizers of this conference to place such a topic on the agenda. I trust that we will all work towards ensuring that those responsible for the planning, a decade hence, will have no reason to do so either.

ECP
(The Environmental Choice Program)




AOX IN MILL EFFLUENT
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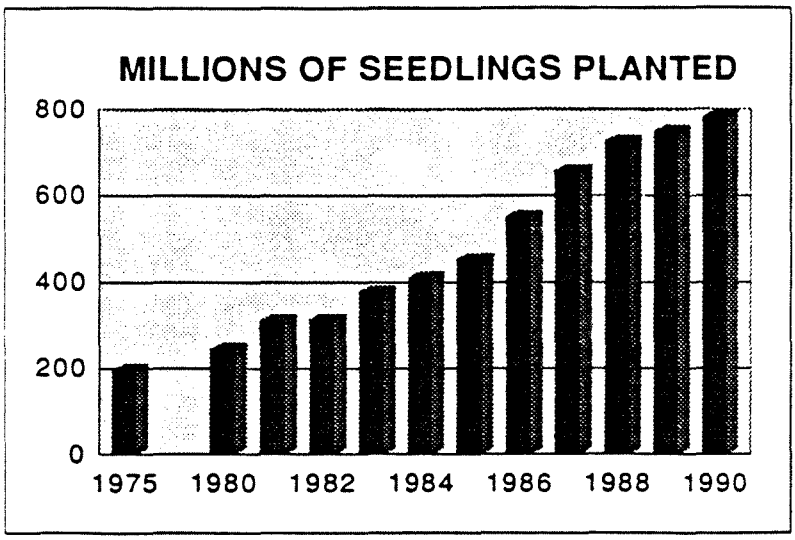
MILLIONS OF SEEDLINGS PLANTED
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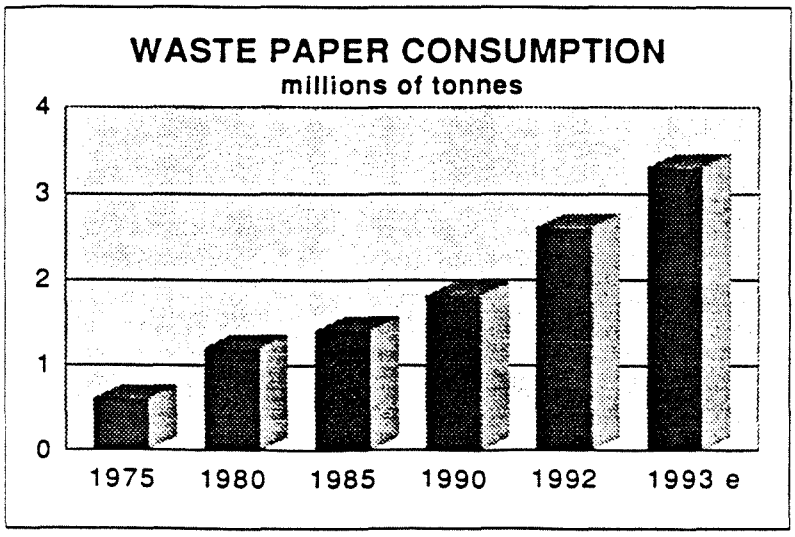
WASTE PAPER CONSUMPTION
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Question and Answer/Discussion session

Q - One of the comments made was that all Alberta mills are relatively new and are thus performing quite well from an environmental perspective. One is down to 1 kg/tonne of BOD and 0.5 kg/tonne of AOX. Can this be put in a Canadian context?

A - (David McCaffrey) - Yes, Alberta mills are mostly newer than those in the rest of the country, and steps have been taken to put in place equipment that will allow them to be environmentally sound. Other mills are around 2.5 kg/tonne of AOX, so Alberta is well ahead of many other companies in Canada.
(Stuart Lang) - I have seen the numbers, and Alberta has built the cleanest mills.
(David McCaffrey) - Scientific studies have shown that anything below 2.5 kg/tonne AOX is a waste of money; calls for total elimination of AOX are crazy - it's just throwing money against the wall.
(Stuart Lang) - When you are building a new mill, it's better to have the lowest numbers you can. There's no reason in the world today to not be totally cost competitive with the numbers we have in Alberta. It is different, of course, if you are retro-fitting.
(David McCaffrey) - Yes, but to force companies to retro-fit, to spend money that's not going to reduce environmental impacts significantly, is not sensible.

Q - Where are we on the world markets, say in relation to China. China uses 14 kg per capita of paper a year, versus 300 kg per capita in North America. If China increases consumption by just one kg per capita, that's a demand for two more pulp mills.

A - (Stuart Lang) - I think the marketplace out there is one of the better opportunities this country and this province has. The freight rates from Al-Pac are equal to or better than what we (Crestbrook) have from the B.C. Interior. The U.S. is still the biggest consumer of our pulp and paper. That gives us a freight advantage - and to the Far East too - over eastern mills. Far Eastern markets are the fastest growing area that there is.
(David McCaffrey) - There are also the countries in Eastern Europe, that will become much larger users of pulp and paper products. They are not much higher than China at present. They just don't have the hard currency today to spend on paper products. Once they overcome this, there will be a large increase in consumption.
(Stuart Lang) - If Eastern Europe brings consumption up to Western Europe levels, that's an extra 40 million tonnes a year. They say one national election in Canada uses the production of two world-class pulp mills . . .

Q - What are the opportunities for our forest companies to go to the equity markets. What kind of capitalization would make sense?

A - (Hamish Kerr) - There have been a number of initial public offerings from B.C., usually because companies are expanding. Generally speaking, you can do an equity issue of any size, but we say don't look to the public equity market for less than $10 or $15 million. We just raised $10 million in the private market for a sawmill company in B.C., so it could make a purchase. Often, however, you need to go for close to $20 million or you are considered an orphan - too small. The institutions that are generating most of the trading these days have a liquidity concern. They might want $10 million in stock, but they don't want to own the company. They don't want to be the major shareholder. If you are too small your stock price may fall too low and they can't get their money out easily. You can access these institutions through the private placement market, if they see a company that's growing they might put private money in - but they have to be confident they can get their money back again when the company goes public and shares go on sale.

Q - We hear about value-added as a generic term. What specific opportunities are out there in paper and wood products?

A - (Hank Ketcham III) - We have added value to our wood for the last 30 years. We are competing now for wood with people trying to develop businesses that are job-creating projects. They don' pay a decent wage and they are losing money. We are producing wood for windows, laminated shelving and furniture, and we are losing money on all of them. The forestry entrepreneur's job is to get better mill nets over time. Value added isn't just about making furniture, it's about making money.
(Hamish Kerr) - I am concerned about return on capital. If you can achieve this with value added, what's wrong with that? The government's role is to stand aside and be a facilitator, let the industry go after whatever makes money. We need an environment where industry is left to its own devices.
(Stuart Lang) - We are adding a lot of value to wood chips, through the pulp and paper process. But there's a lot of potential. Al-Pac uses 60% Canadian material in its supplies of goods and services. The rest we have to buy from elsewhere. Canada uses paper machines made in Brazil. We trade 25 per cent of the world's product, but we can't make our own paper machines!

Q - This province is unique because of the very good attitude between government and industry. But the general public doesn't understand this industry, and can disrupt it as has happened in B.C. We are all here to make money, but don't underestimate the attitude of the average person. We have to make sure we employ Albertans at every level, do our research here, create more jobs here, otherwise you are going to lose the willingness of the government and the people of the province to be involved in forestry. You must keep business in the province, work with the Universities that are here, and so on.

A - (Stuart Lang) - I just went to Brazil. Five per cent of the Amazon has had the forest removed. Cutting is being reduced by 50 per cent each year. Sixty per cent of the land that's being burned is being burned for the second, third or fourth time. The industry there is the eighth biggest in the world. Their paper is made from plantation trees. Brazil grows as much as all of Canada on 4 million hectares. Half of that goes goes for fuel in the steel industry, and a quarter for the pulp industry. Their forest base is really only 100 km by 100 km. Brazil started the plantation business 25 years ago to create work. It's all on private land.

Q - Can there be a problem when too much recycled paper product is in the marketplace. What happens to the quality of the product going to the end client?

A - (David McCaffrey) - It's true that if you keep recycling, you can end up with just dust.

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Alberta Forest Products Industry Tertiary Sector Analysis

Terms of Reference

Ernst & Young was retained to undertake an analysis of the supply sector which supports the forest products industry in Alberta. This study was funded under the Canada-Alberta Partnership Agreement in Forestry and by Economic Development Edmonton.

Specifically, the objective of the study was to examine the potential economic importance of the forest products sector on the suppliers of goods and services and identify development opportunities for the Alberta tertiary sector to the expanding Alberta forest industry. Secondary objectives of this process were:

a) to define the tertiary sector describing the major aspects of businesses in the sector;

b) to assess the current economic impact of the tertiary sector of the Alberta products industry in terms of jobs, and other economic benefits derived from the investment and operation of the Alberta forest products industry;

c) to identify the growth potential of the sector.

Study Approach

Our study approach was based on a review of existing studies and literature (summarized in Appendix 1), primary and secondary research, surveys to a sampling of the industry to determine expenditure patterns, as well as discussions with industry participants.

Two industry surveys were undertaken. The first survey, in which 11 major mills participated, canvassed input for broad expenditure information and the geographical areas in which those expenditures were made. A second survey requested a more detailed breakdown of goods and services purchased as well as the geographical areas of those expenditures. Of the 11 firms surveyed initially, 7 companies provided more detailed information for the second survey.

Discussions were held with companies and individuals representing a broad spectrum of industry stakeholders which included academia, associations, government, loggers, mills, equipment manufacturers and suppliers. In total, 30 individuals were interviewed for input. A complete list of those individuals interviewed appears as Appendix 2.

For the purposes of this study, the forest industry is defined consistent with Statistics Canada Standard Industrial Classification code for the forest industry which includes logging (SIC 04), wood industries (SIC 25) and paper & allied industries (SIC 27).

Alberta's Forest Industry

The forest industry in Alberta is an important and growing sector to the provincial economy. In 1983, the province had only two pulp mills. Alberta sawmills achieved an annual production of one billion board feet of lumber for the first time. Today, there are five pulp mills plus one being commissioned at Athabasca, a newsprint mill, an MDF plant, three oriented strandboard plants, one veneer mill, one plywood plant and the province's 200 plus sawmills, which are producing 1.8 billion feet of lumber annually.

This strong growth within the forest industry has been encouraged by a provincial government eager to diversify its economy from its traditional dependency on agriculture and oil and gas as well as a growing appreciation by international and domestic companies of the high quality of Alberta's timber resources. In order to secure long term timber supplies in the province, the successful companies committed to make large investments in Alberta to construct pulp mills, paper mills, and sawmills to utilize that timber. These commitments provide benefits to the Alberta economy not only through the initial construction phases, but from the ongoing operating expenditures of these companies. A listing of the investment activity in the pulp & paper sector appears in the following chart.

Pulp & Paper Sector - Project Overview

Company	Location	Project Cost
Alberta Newsprint Co. Ltd.	Whitecourt	$370 million
Alberta-Pacific Forest Industries Inc.	Athabasca	$1.3 billion
Daishowa-Marubeni International Ltd.	Peace River	$580 million
Grande Alberta Paper Ltd.	Grande Prairie	$1.6 billion
Millar Western Pulp Ltd.	Whitecourt	$200 million
Slave Lake Pulp Corporation	Slave Lake	$174 million
Weldwood of Canada Ltd.	Hinton	$416 million
Weyerhaeuser Canada Ltd.	Grande Prairie	N/A

Source: Economic Development Edmonton

The value of shipments in the Alberta forest industry in 1992 was almost $2.5 billion and the industry directly employed a little over 10,000 people earning approximately $375 million. A comparison of the Alberta forest industry from 1986 to 1992 appears in Table 1 below.

Table I
Alberta Forest Industry

	1992	1986
Value of Shipments	$2,476,065,000	$1,207,650,000
Direct Employment	10,250	9,300
Earnings (Salaries & Wages) (1)	$375,373,000	$248,707,000

(1)"Salaries & Wages" includes benefits paid by employees and excludes benefits paid by the employer.

Source: Statistics Canada Catalogue #36-250; #35-250; #31-203;#25-202; #25-201; #72-002; Historical Revisions 1983-1992; and Ernst & Young estimates.
The value of forest industry shipments of almost $2.5 billion includes approximately $364 million of logging shipments which are typically made to other sectors within the industry. Excluding these inter-industry sales results in total external shipments of $2.1 billion.

Within the period from 1986 to 1992 the forest industry in Alberta experienced a doubling of its value of shipments. In fact, in the three year period from 1986 to 1992, the forest industry experienced an increase of approximately 40% in its value of shipments. This compares to a decrease in the value of shipments of over 12% for the Canadian forest industry which was the result of a general softness in the industry.

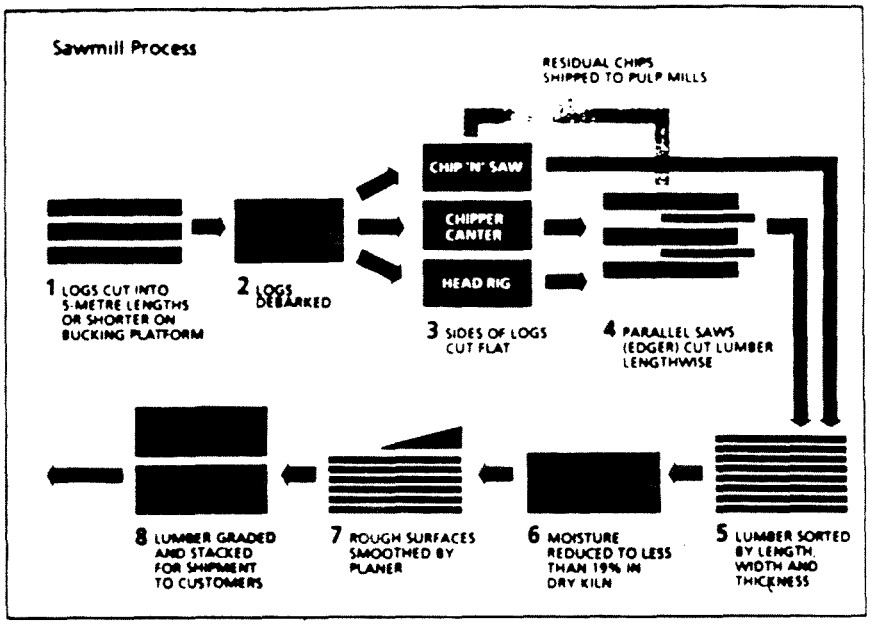
A large component of the increase in the value of shipments in Alberta is from the paper & allied industries segment of the industry. This growth is primarily a result of the increased activity in new mill development within this period. Industry shipments should experience further increases as mills being commissioned and proposed developments, such as the Grande Alberta Paper mill and Manning Diversified sawmill, become operational.

Employment levels increased over 10% in the forest industry in Alberta from 1986 to 1992. National employment levels, however, have decreased over prior years as a result of consolidation and weakness within the industry as well as the drive towards increased productivity and efficiency levels. Alberta employment levels would have suffered decreases similar to the national industry had new mill development not occurred.

Industry earnings within the province experienced a 50% gain between the period 1986 to 1992 compared to decreases on the national level. This provincial gain was again a result of new mill development. Total earnings have increased at a higher rate than total employment levels as a result of the increase in employment levels within the paper and allied industries sector which typically have higher pay levels.

Processes of the Forest Products Industry
The various segments of the forest industry are characterized by different processes which are used to transform the raw materials into their final product. This section provides a general description of the process for the following segments of the industry: lumber; panelboard; oriented strandboard; medium-density fibreboard (MDF); bleached kraft pulp; and bleached chemithermomechanical pulp (BCTMP). The process descriptions were obtained from the Alberta Forest Products Association's publication titled "Our Growing Resource."

Lumber



Logs typically enter the mill at a bucking platform – also called a slashing deck or in-feed deck – where they are cut into lengths of about five metres or smaller. This is usually done by automated machinery, although small mills may use hand-operated chain saws.

A debarker then removes the bark, and the debarked logs are sorted according to size and quality. At large, integrated mills, poor quality logs not suitable for lumber are sent directly to the chipper. These chips are then sent to a pulp mill.

Some mills use a head-rig saw for the initial cutting of large logs more than 25 centimetres in diameter. This is an automated version of the carriage-type saws used for more than a century. Otherwise, the initial cut is done by a chip-and-saw machine that cuts four sides at the same time or by a scragg saw that cuts two sides simultaneously.

After four sides of the log are cut flat, the log is called a cant. The cant next goes through an edger in which a row of parallel saws cuts square-edged lumber, typically about five centimetres thick. Discarded half-round slabs may be fed through a resaw and edger to recover lumber from them as well.

Any pieces of wood not suitable for lumber are chipped and generally sold to nearby pulp mills.

From the saws, the lumber moves along a conveyor where workers trim the ends to length and discard poor-quality boards, which also go to the chipper. The acceptable boards are then sorted according to length, width and thickness. This may be done manually or by electronic scanners in a machine called a J-bar sorter, named after the J-shaped bars that carry the boards until they are sorted into the appropriate bin.

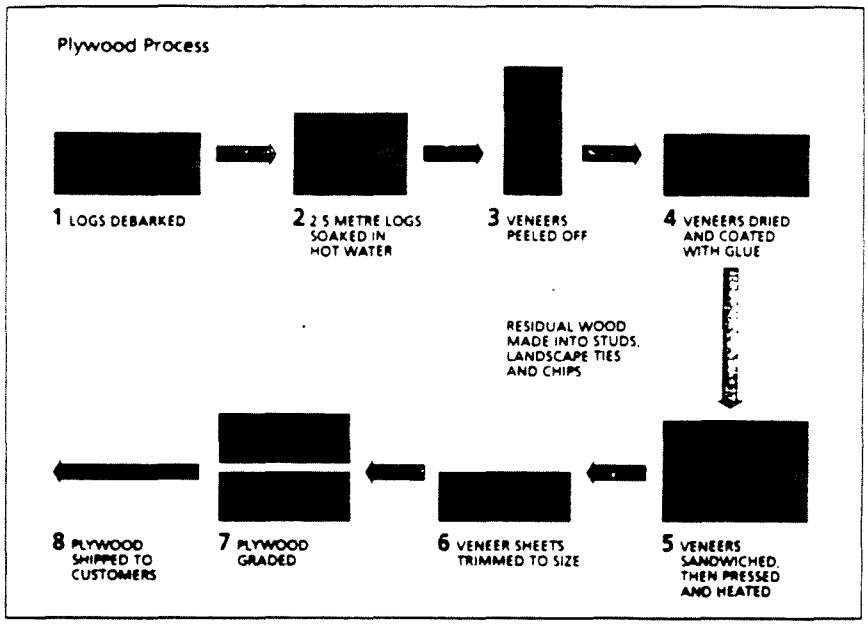
Small mills may air-dry the green lumber or sell it for drying and planing by others. Larger mills use natural gas-fired kilns that blow air through lumber at about 90 degrees Celsius. Drying reduces the moisture content from about 50% to less than 19%. For specialized markets such as millwork, furniture and stressed beams, wood may be dried until its moisture content is as low as 6%.

The dry lumber is then fed through a planer to smooth the rough surfaces. The nominal dimensions of Canadian lumber, such as "one-by-six" or "two-by-four" refer to measurements in inches before planing; the actual finished dimensions are smaller.

As lumber emerges from the planer, it is visually graded and stamped based on standards established by the Canadian Lumber Standards Accreditation Board. To determine the appropriate grade category, a grader considers the lumber's characteristics that affect strength such as knots, slope of grain, splits and holes, and characteristics that affect size, shape and nailing faces. Individual grade categories carry with them specific strength values. A few Alberta mills measure lumber strength and elasticity by machine.

After grading, the lumber is tacked, bundled and stored for shipment. Lumber can be shipped by either rail or truck to the final destination or through transfer yards.

Plywood



Plywood is made by gluing together three or more thin sheets of wood, called veneers, so that the grains of each sheet are perpendicular to the next one. There is only one current producer of plywood in the province.

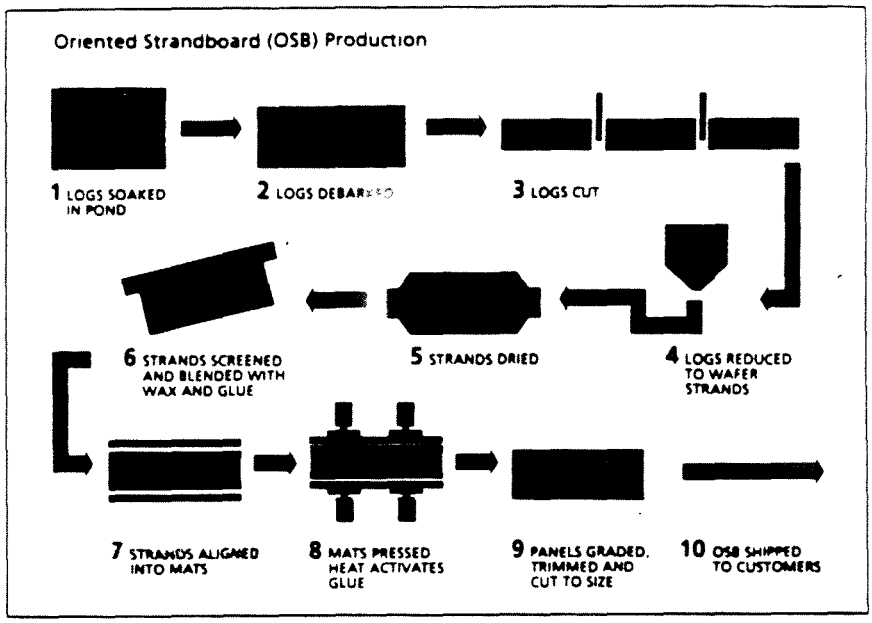
Before delivery to the veneer plant, logs are bucked into lengths of about 2.5 metres. At the plant, the logs are soaked in hot water for a number of hours, which depends on the thickness of the logs. They are then heated to about 70 degrees Celsius. Automated lathes, controlled by electronic scanners, then peel off veneers about three millimetres thick.

Unused portions of the logs are made into studs, landscape ties and chips. About half the harvested wood becomes veneer or lumber, while much of the rest is sold as chips.

The veneer is dried to about 10% moisture content and coated with a phenol-based glue. "Sandwiches" of three to six plys of veneer are fed into huge presses with 30 openings.

After pressing, the sheets go to a sizing saw for trimming and finally to a grading line. The grade – select, standard or "D" grade – depends on the size and number of knots and gaps in the veneers.

Oriented Strandboard



Oriented strandboard (OSB) is composed of layers of wood wafers pressed and glued together to form a material that equals the strength of plywood. OSB should not be confused with earlier chipboard and waferboard products, which have little structural strength.

Although OSB can be made from either softwoods or hardwoods, aspen poplar is used for all the current Alberta production. The aspen logs are typically delivered to the mill in 2.5 metre lengths.

The logs are first fed into a log pond to remove dirt and debris and to warm the wood to about 25 degrees Celsius. Machines then remove the bark and saw the logs into 80-centimetre lengths.

The wood is turned into flakes or wafers by a machine that works somewhat like a kitchen food processor, except the waferizer's cutting disk is 2.8 metres in diameter. The resulting flakes are about 10 centimetres long and less than one millimetre thick.

The flakes are dried at temperatures up to 700 degrees Celsius in a three-stage rotary dryer that reduces the moisture content from about 50% to less than 6%.

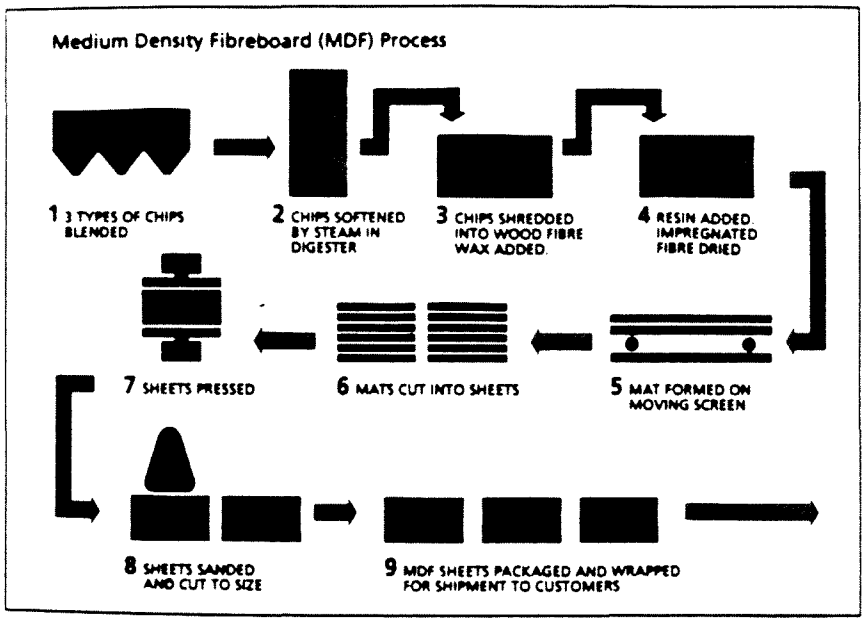
Undersize wafers are screened out and ground up for use as fuel to heat the dryer. Including this fuel use, 99.7% of the harvested wood is used in making OSB.

The dry wafers are then mixed with wax and powdered glue, called resin, and pass through a series of machines to align the grain of the strands. The streams of wafers are then deposited in four layers on a moving wire screen. The top and bottom (face) layers are aligned in one direction, while the two centre (core) layers are aligned in a perpendicular direction.

The mat of layered wafers is sliced into sheets that are fed into openings of a huge press. During about two to five minutes of 200-degree heat and high pressure, the glue is activated and the wafers are welded into OSB. A 20-centimetre-thick mat is compressed into a 2.5-centimetre-thick board.

The panels are then inspected, graded, trimmed, and cut into the desired size for shipping.

Medium-Density Fibreboard



Medium-density fibreboard (MDF) is a recently developed material made by pressing together wood residues and synthetic resin. It is particularly well suited for machining into products such as moldings and furniture.

The raw materials for MDF are softwood residues from sawmills. Spruce and pine are the main species used.

Chips are hammermilled to reduce their size, and the three raw materials are blended and screened before they enter the mill. Then they are softened by steam in a pressure-cooker for about four minutes.

In the next step, the materials are fed through the sharp-edged openings of a 115-centimetre refiner plate to shred the wood into fibre.

Emulsion wax and urea-formaldehyde resin are added to the fibre, so that the resulting blend is 8% resin and 0.5% wax.

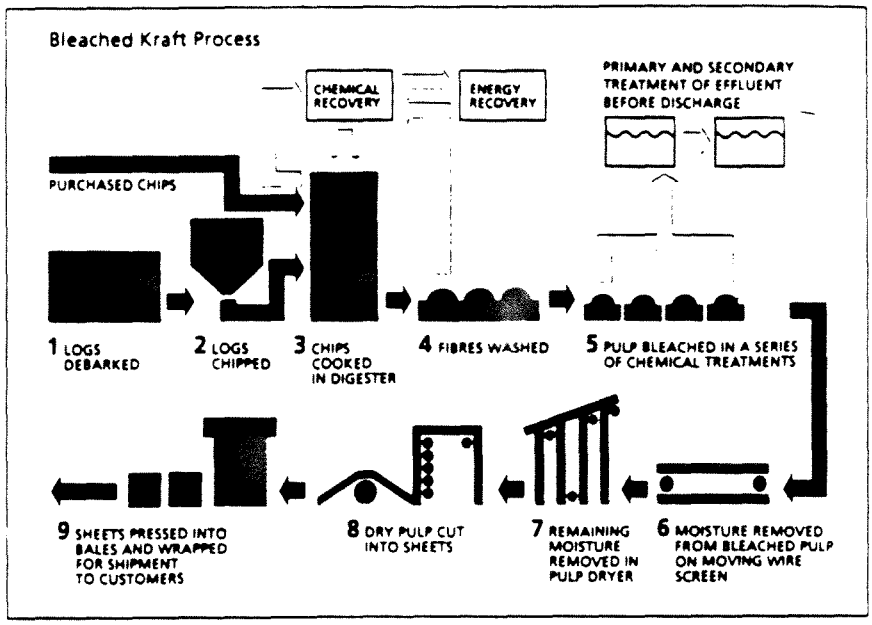
The impregnated fibre is dried at about 80 degrees Celsius, reducing the moisture content from about 45% to about 10%.

From a large storage bin, three "formers" feed the dry fibre onto a moving wire screen. Suction from under the screen helps to form a fibre mat, which is then flattened by a roller called the "pre-compressor."

Depending on the intended thickness of the final board, one or more pre-compressed mats are stacked and pre-heated before the mats are fed into the main press. The boards are formed by three to 14 minutes of pressing, at temperatures up to 180 degrees Celsius. They are then cooled to about 65 degrees.

The product is tested for density, consistency, internal bonding and face hardness. After testing and inspection, the boards are sanded, stacked, strapped and stored for shipping.

Bleached Kraft Pulp



The pulp companies harvest a large proportion of their wood supply, especially the hardwoods, but they also buy substantial amounts of softwood chips from sawmills. In the case of softwoods, only logs too small for lumber manufacture are chipped for pulp production. After debarking, logs are fed through chippers and the chips are placed in stockpiles along with purchased chips.

As the chips enter the mill, they are softened by steam and fed into a vessel called a digester. There, they are pressure-cooked in a solution of sodium hydroxide (caustic soda) and sodium sulphide, known as "white liquor." The chemicals dissolve most of the lignin, the glue that holds the wood fibres together.

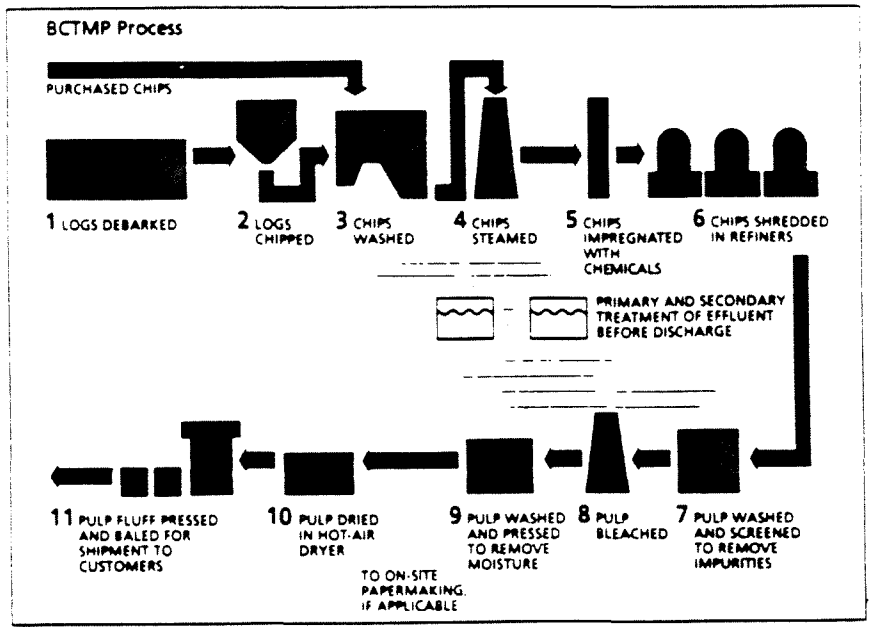
The lignin-and-chemical solution, known as "black liquor," is drained from the digester and concentrated by evaporation to remove most of the water. The thickened liquid becomes the main fuel for the plant's boiler. The lignin is burned, while the spent chemicals flow out the bottom of the combustion chamber. These spent chemicals are dissolved in water again to form "green liquor." Through a series of chemical reactions with calcium carbonate (lime), the green liquor is reconstituted into a new supply of white liquor.
After the liquor is washed off, the pulp fibres are still brown due to residual lignin and chemical changes in the cellulose. This is the sort of fibre – not produced in Alberta – used to make products such as brown paper bags.

To whiten the pulp, the fibres go through a series of chemical treatments. Chlorine dioxide, hydrogen peroxide and oxygen are among the chemicals used as bleaching agents.

After bleaching, the pulp has a brightness or whiteness rating of about 90 on a scale of 100. By comparison, newsprint has a brightness rating of about 60.

The water is removed from the bleached pulp by spreading the pulp on a moving wire screen in the pulp machine. Further water is squeezed out when the pulp is put through a series of rolls. A hot air dryer uses a combination of heat and forced air to remove the moisture. The final product, which resembles white cardboard, is pressed into bales and wrapped for shipment.

Bleached Chemithermomechanical Pulp



Aspen is well suited for bleached chemithermomechanical pulp (BCTMP) production because it is naturally white and has a low amount of lignin.

As in kraft pulp production, logs are debarked and chipped into storage piles outside the BCTMP mills.

The first stage of the process involves washing, steaming and draining the chips, which are then impregnated with chemicals to soften them and break down the lignin.

The softened chips are then rubbed together and the fibres pulled apart in a machine called a refiner. After running through two or three refining stages, the pulp has the consistency of wet tissues.

The resulting pulp slurry is washed and screened to remove impurities before it is bleached with hydrogen peroxide. After further washing, some of the moisture is squeezed out by pressure.

A hot-air dryer turns the pulp into a cottony fluff which is pressed into bales for shipping.

Softwood BCTMP is used mainly to make tissues and towels, while aspen BCTMP is blended with other pulps to make a wide variety of paper products.

Newsprint

Alberta Newsprint Co. became the province's first paper manufacturer when it began producing newsprint in August 1990 from its mill near Whitecourt. The plant combines a thermomechanical pulp process and a papermaking machine.

Unlike other Alberta mills, Alberta Newsprint does not have a woodyard. Sawlogs harvested from the area within its forest management agreement go to nearby sawmills to produce lumber before the residue is chipped. In the harvest area, the company also has two mobile "flail debarkers" and portable chippers to chip aspen and any softwood not suitable for sawmill use.

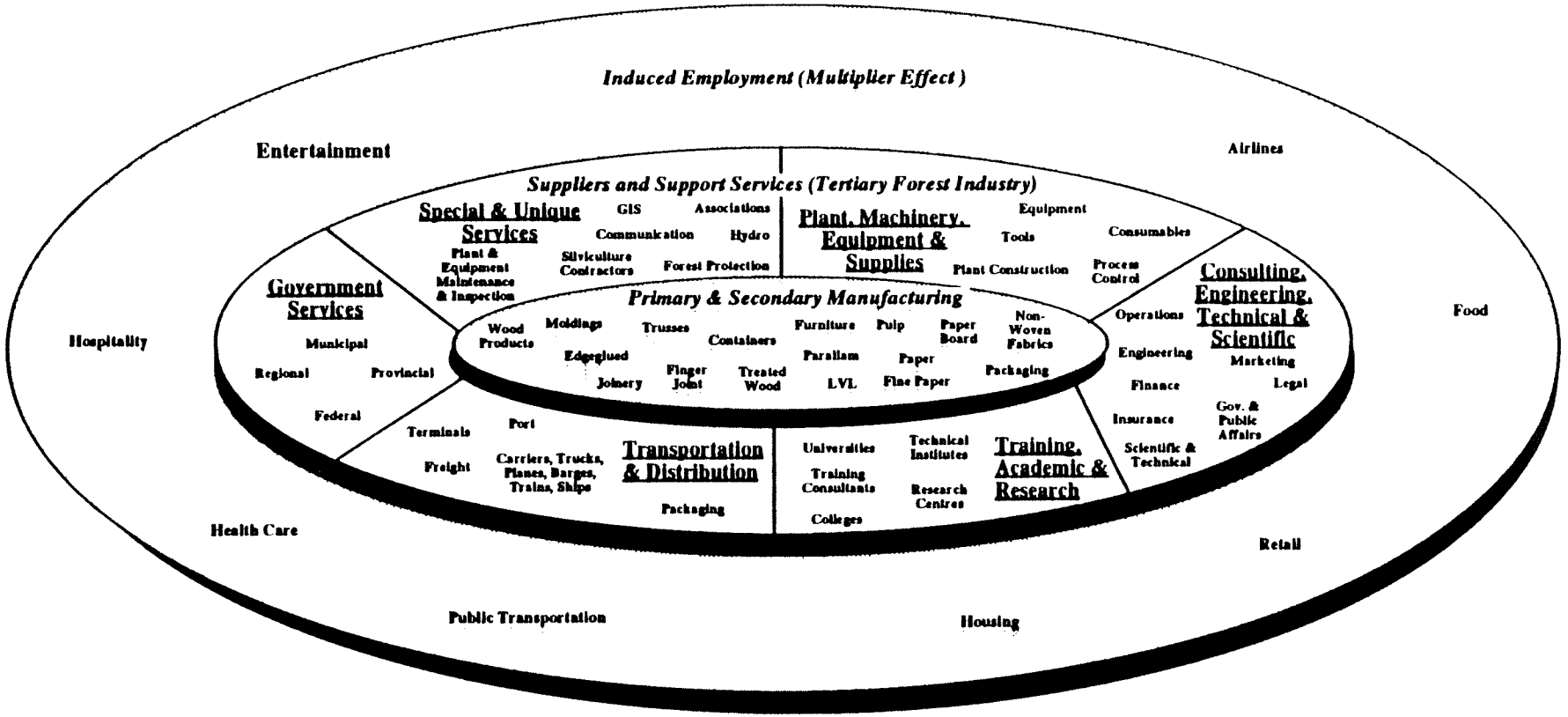
The mill is designed to process either softwood or hardwood, although traditionally only softwood has been used for making newsprint. About 20% of the timber within the company's harvest area is hardwood, and Alberta Newsprint hopes eventually to develop markets for aspen newsprint. In the meantime, only softwood is being processed.

Chips from the stockpile are washed, screened and impregnated with water before being fed into the three refiner lines. If necessary, the pulp can be bleached to the required brightness with sodium hydrosulphite. The pulp also can be blended with bleached kraft pulp if extra strength is needed.

As it enters the paper machine, the pulp slurry is 99% water. This mixture is injected between two moving fabric belts, called wires. A combination of gravity, suction and pressure reduces the moisture content to 58% before the moving sheet enters the dryer section. Heat then reduces the moisture content to about 8%. About half the heat energy is obtained from steam produced by the refining process.

The paper is spooled onto 25-tonne rolls at a rate of up to 2500 metres per minute. Each roll is tested for moisture, color, brightness, opacity, holes, thickness, bursting and stretching strength, stretch, resistance to tearing, porosity and smoothness.

Forest Industry Model - Figure 1



Tertiary Forest Industry
A model of the forest industry, shown on the preceding page, provides a graphic illustration of the economic activity generated by the industry. The forest industry has a broad and extensive impact to the economy of Alberta.

The primary and secondary sectors of the forest industry represent those individuals and organizations which extract the timber resource and perform value-added manufacturing or processing activities to that resource. This group harvests the timber and uses that timber to create products.

Expenditures from these sectors result in substantial spin-off benefits to the economy. These benefits create the indirect and induced impacts of the industry to the provincial economy.

In order to support the primary and secondary sectors of the forest industry, a broad range of goods and services must be provided. These would include: the supply and maintenance of equipment; the transportation and distribution of raw materials and products; technical services; government services; and a variety of other products and services which are required to support the inner core of the model. The organizations that provide those goods and services which are consumed by the primary and secondary forest sectors make up the tertiary sector.

The induced economic activity incorporates the jobs and incomes earned by those who sell consumer products and services to those employed directly or indirectly by the forest industry. These expenditures generate demand for goods and services such as food, housing, retail goods, personal services, transportation, entertainment, etc. This induced demand is a result of the existence of the forest industry and the providers of the various goods and services which are used by that industry.

The tertiary sector (made up of forest industry suppliers) is an important component of the forest industry as a whole. Through a strong tertiary sector, an industry begins to form a "competitive cluster" in which it is better able to compete in world markets. A strong base of forest industry suppliers enhances the development of the primary and secondary sectors just as these sectors enhance the development of the base of the suppliers.

As the Alberta forest industry experiences further growth, the opportunity exists for Alberta forest industry suppliers to also grow. This sector of the forest industry has been largely undefined and generally overlooked as a component of the industry. Ernst & Young has developed a categorization of some of the key components which represent the tertiary sector. The suppliers of goods and services to the forest industry were grouped into six major categories. Within each category are examples of the types of companies or organizations representative of the category.

Forest Industry Model

1. Plant, Machinery, Equipment and Supplies

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

2. Training, Academic Education and Research

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

3. Transportation and Distribution

- Freight forwarding
- Packaging and protection
- Terminal services
- Carriers
- Port Authorities

4. Consulting, Engineering, Technical and Scientific Support Services

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

5. Government Services

- Regional governments
- Provincial governments
- Federal governments

6. Special and Unique Services

- Repair/maintenance and inspection
- Silviculture and forest management contractors (eg. planting and pruning)
- Forest industry associations
- Specialized services (eg. Geographic Information Systems, fire fighting, camps support, communications, etc.)

Economic Impact on Suppliers of Goods & Services

In order to determine the economic impact of forest industry spending to the Alberta economy, one must identify the total value-added (GDP) and employment retained in Alberta by suppliers to the forest industry, and by all of the suppliers to these firms. The GDP retained in the province will be less than the shipments of the forest industry suppliers, since these shipments include a mix of Alberta and out-of-province content. In addition, the economic impact is also influenced by the respending of wages earned by employees in these companies.

The direct economic activity is based on the industry directly employing 10,250 workers in the province, who earn wages and salaries of about $375 million. Indirect economic activity is defined as the employment and GDP of suppliers to the Alberta forestry sector and their suppliers, covering all of the value-added that remains in the province. This is driven by the annual expenditures of the industry. Induced economic activity incorporates the jobs and incomes earned by those who sell consumer products and services to those employed directly or indirectly by the forest industry.

Methodology

To estimate the indirect impacts of the forest sector on the Alberta economy one requires a knowledge of the mix of spending by the industry, the locations of its suppliers, and the locations of all products and services that are in turn components of these directly supplied commodities. Similarly, the induced impacts require a complete set of estimates for the sources of all inputs to consumer goods and services in Alberta.

Our survey of expenditures provides only the initial mix of spending by commodity, and the location of the final supplier to the Alberta forestry sector. Thus, while these data are very up-to-date, they cannot trace back to the original suppliers of each commodity used in the production of goods and services supplied to the forestry sector or its employees.

Statistics Canada's input-output tables, incorporated in their *Interprovincial Input-Output Model* (based on data collected in 1984), are the only source for such comprehensive input data. We, therefore, have relied on this model as the primary source for our indirect and induced impact assessment. (The resulting multipliers from this model are printed in *Alberta Economic Multipliers*, a publication of the Alberta Treasury.)

We have, however, examined some of the assumptions used in this model for the mix of expenditures in the industry, in order to consider potential adjustments to the results that might reflect changes in the nature of the industry's suppliers since 1984. (The estimates already incorporate the impacts of the changes in the size of the industry since that date.)

Although, based on our comparisons of the available data, we could not demonstrate any major shifts in the mix of inputs since 1984. However, it is possible that the sources of these inputs have shifted, changing the degree to which expenditures leak out of the province. There are two opposing forces that are likely to have affected such leakages since 1984. First, the Canadian economy has generally become more open since that date, resulting in a greater sourcing of inputs from outside of the country. This would tend to reduce the size of in-province multipliers in all industries relative to those incorporated in the 1984 model.

However, in the case of the forestry sector, this may have been offset by the promotion of growth in forest sector supply industries that is likely to have been encouraged by the increasing prominence of forestry in the province since that time. We would expect that the opening of new facilities in recent years may have induced an expansion of Alberta capabilities in some of the specialized industries that supply forest products firms. There does not appear to be any direct way to measure these changes at this time; an update of the interprovincial input-output model, which we understand is now underway at Statistics Canada, could confirm this assumption.

Direct, Indirect and Induced Economic Impacts

As shown in the following table, the industry accounts for more than 15,600 jobs across the province in the forest industries and their in-province suppliers. In total, these primary, secondary and tertiary industries generate more than $1.4 billion in GDP in the province.

Table 2
Direct And Indirect Economic Impacts of the Alberta Forest Industry, 1992

Employment			GDP
Direct	Indirect	Total	Direct & Indirect ($ Millions)
10,250	5,410	15,660	$1,417

The total economic impacts of the forest industry include the induced impact arising from the supply of household products and services to those working in the primary and secondary forest industries and their suppliers. The table below shows the total employment and GDP impacts of the forest industry on Alberta, including these induced effects. As shown in the table, in total, the forest industry is linked to roughly 23,000 jobs in Alberta, and $2 billion in GDP.

Table 3
Direct, Indirect and Induced Economic Impacts of the Alberta Forest Industry, 1992

			GDP
Direct & Indirect	Induced	Total	Direct & Indirect & Induced ($ Millions)
15,660	7,529	23,189	$1,968

The results suggest that each 100 jobs in the forest sector generates a further 126 jobs in Alberta due to indirect and induced impacts.

Industry Purchasing Policies
The purchasing policies of companies in the forest industry vary according to each specific company. A number of the companies have documented purchasing policy guidelines which they follow. A summary of the purchasing policies which are commonly followed appears below:

- Purchasing from local firms is encouraged when similar goods of equal quality can be obtained at competitive prices.
- In general, there is a strong focus to establish long term supply agreements wherever possible. Purchases of some large commodities have long term contracts whereas other supplies or maintenance service requirements are filled by annual contracts.
- Typically, a bidding system is used in the selection of suppliers. This allows the analysis of costs, products and markets on a regular basis. Usually a minimum of three bids are obtained. These bids are evaluated on the basis of cost, quality and service. Some companies, however, indicated that on certain items which are needed immediately, they are sourced without bids.
- Generally, buyers resident at the mills deal directly with suppliers. Suppliers are encouraged to approach the purchasing personnel. This is especially true for suppliers who are promoting products based on technological advances.

- Many firms utilize a "minimum-maximum" system of inventory control. Suppliers are encouraged to carry inventory.

- Some firms are pursuing the concept of computer link-ups with suppliers.

- Policies varied for purchasing replacement parts for equipment. Some firms only dealt with the original equipment manufacturers (OEMs) for parts whereas others sourced these parts from a variety of sources.

Industry Purchasing Patterns

We conducted two surveys of the industry to obtain expenditure input. The first survey was to obtain broad annual expenditure information. Eleven companies responded to the first survey. Cumulatively, the respondents had annual revenues of almost $1.1 billion and represented over 50% of the forest industry's external revenues. They employed almost 4,200 employees which was 45% of the total employment level within the industry. Our sample represented 70% of the paper & allied industries sector and 30% of the wood industries sector.

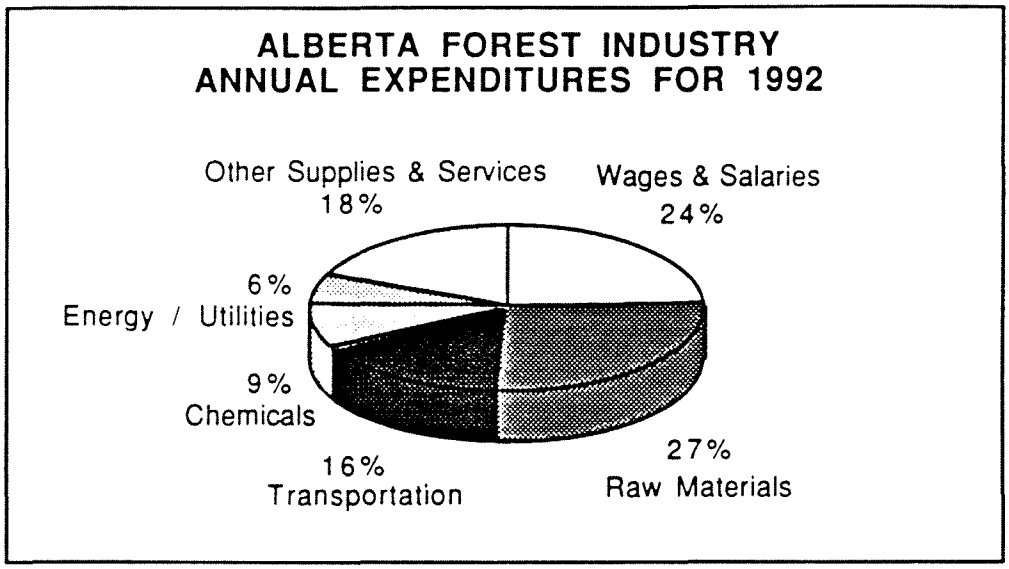
The companies provided annual expenditure information in the following categories: wages & salaries; raw materials; transportation; chemicals; energy/utilities; and other supplies & services. The results of the survey appear in the table below and were extrapolated to reflect the total industry sector. These were combined to reflect the entire forest industry.

Table 4
Annual Expenditures for 1992
($,000,000)

	Paper & Allied Industries	Wood Industries	Total Forest Industry
Wages & Salaries	164	229	393
Raw Materials	175	267	442
Transportation	130	124	254
Chemicals	107	36	143
Energy/Utility	67	27	94
Other Supplies & Services	180	110	290
Total	**823**	**793**	**1,616**

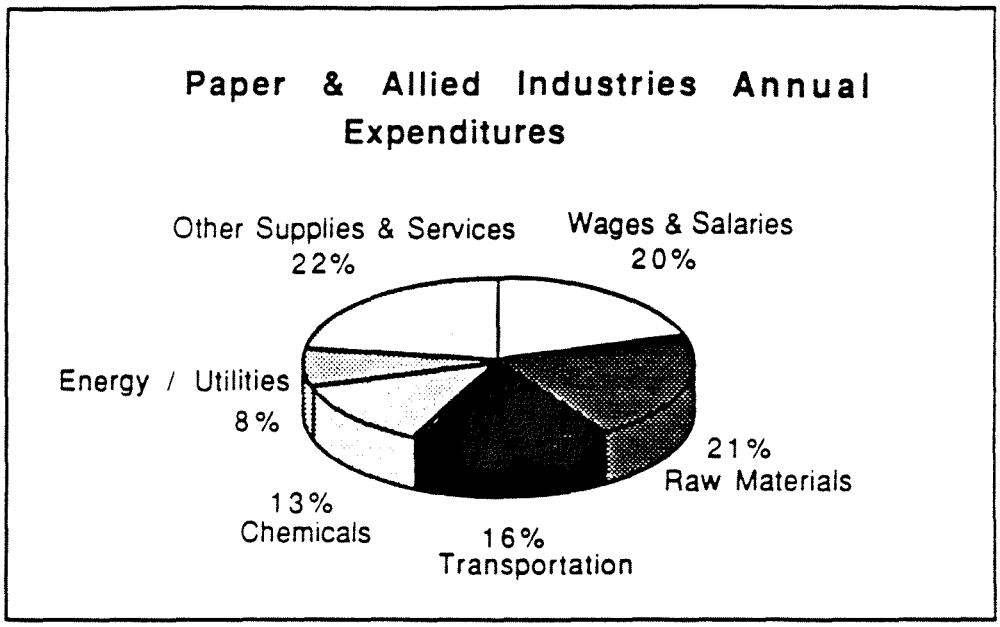
It should be noted that the survey did not request the information from respondents in an operating statement format. The expenditures cover major broad categories and are not inclusive of total industry expenditures. The difference between the expenditure estimates and the industry sales is not a reflection of operating surplus. Within this difference is a variety of other categories such as interest, amortization, taxes, etc. as well as operating surplus.

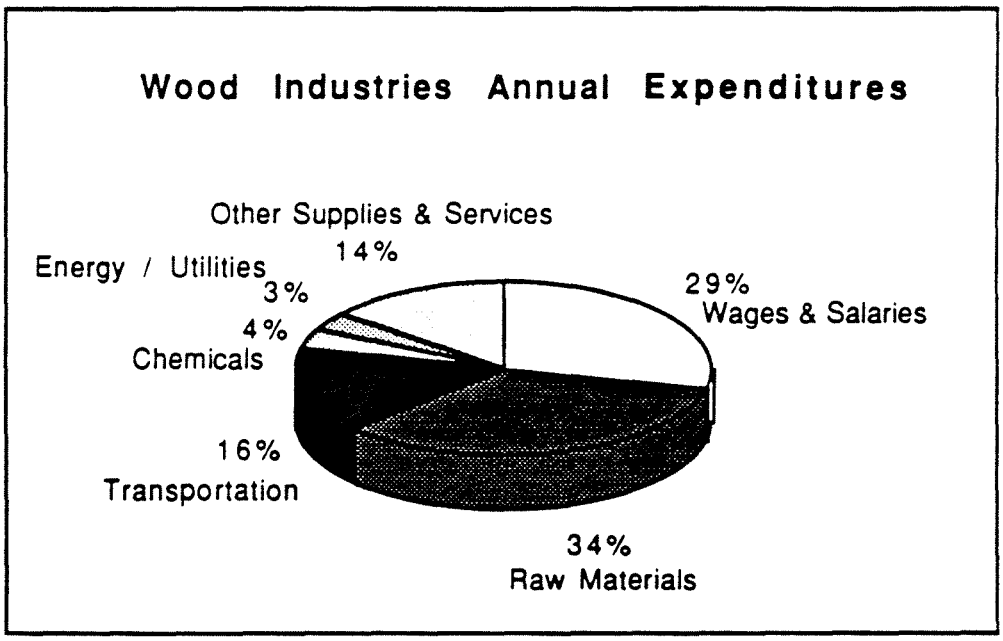
The forest industry is spending an estimated $1.6 billion per year in the categories identified. The largest categories of industry expenditures are raw material costs (which includes contract logging) which are almost $450 million per year and wages & salaries which are over $390 million. Expenditures on other supplies and services account for almost $300 million of annual industry expenditures. A chart illustrating the expenditures by percentage of total is given on the following page.



As indicated in the chart, raw material and wage expenditures account for over 50% of total expenditures. Expenditures on other supplies and services is the next largest category and represents a significant category of expenditures. Transportation (which includes contract hauling) pertains to the movement of both raw material and finished products, and represents 16% of the total expenditures.

These expenditure categories vary according to the type of operation examined. These are further segregated between paper & allied industries and wood industries in the following two charts.





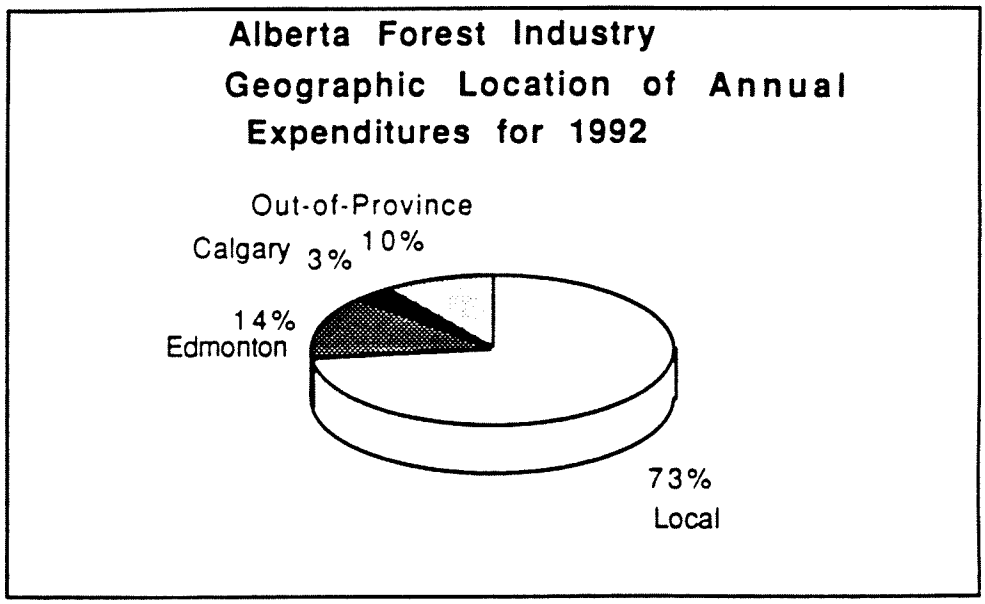
The wood industries spend a greater percentage of annual expenditures on raw materials and wages and salaries than the paper & allied industries. When comparing these two sectors, the wood industries sector is more labor intensive, whereas the paper & allied industries have a higher level of automation. Because the two sectors have approximately the same shipment levels, the lower raw material costs for the paper & allied industries sector indicate a higher level of value-added processing. This sector also spends a higher portion of total expenditures on other supplies and services than does the wood industries sector. As expected, because of the processes employed, the paper & allied industries also spends higher levels on chemicals and energy.

The table below illustrated the geographical locations of the total expenditures. They have been broken down into local expenditures (defined as expenditures to sources within a 75 km radius of the mill site), Edmonton expenditures, Calgary expenditures and out-of-province expenditures.

Table 5
Annual Expenditures for 1992
Geographic Location
($,000,000)

	Paper & Allied Industries	Wood Industries	Total Forest Industry
Local	521	659	1,180
Edmonton	135	86	221
Calgary	35	12	47
Out-of-Province	132	36	168
Total	**823**	**793**	**1,616**

The geographic breakdown on a percentage basis is illustrated in the chart below.



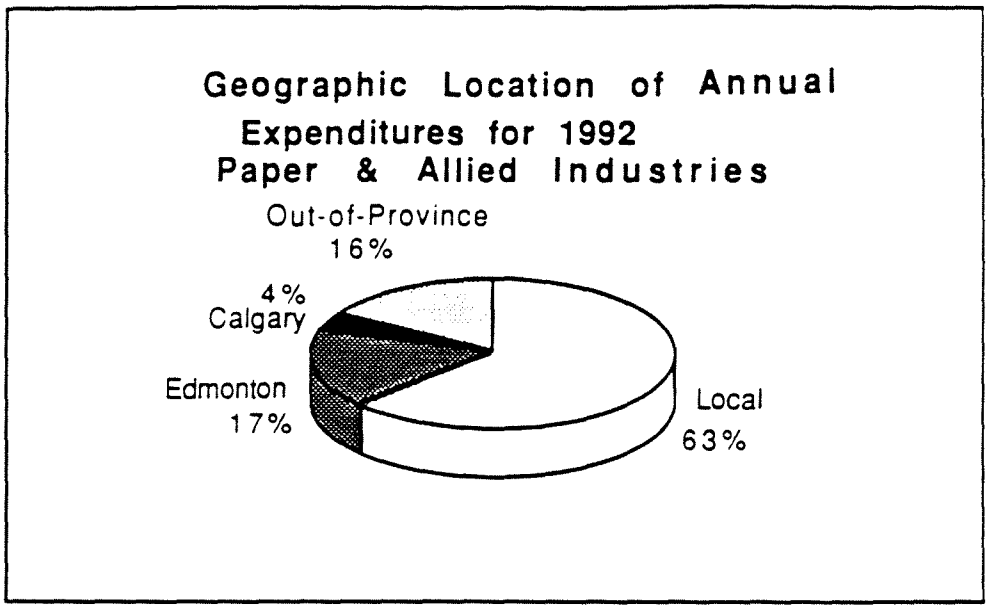
The industry is spending 90% of its expenditures in the above categories in Alberta. The majority, or 73%, is being spent locally or within the immediate area of the mill. Edmonton receives the greatest level of expenditures from the forest industry outside of the local expenditures.

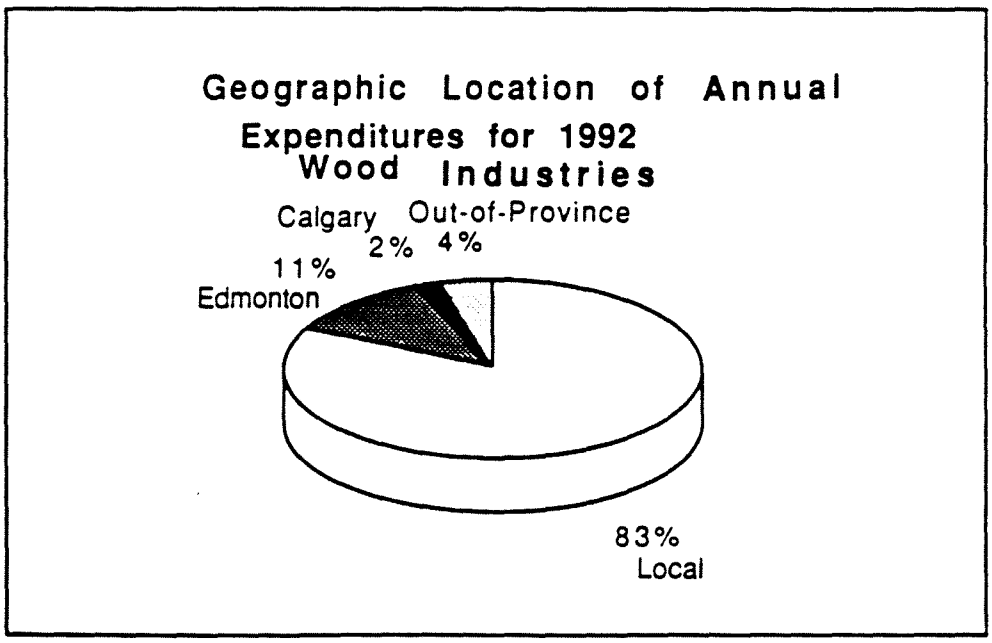
These figures indicate a high level of support to Alberta based companies by the forest industry. Only 10% of total final annual expenditures are being spent outside of Alberta.

It should be noted that expenditures classified as local includes those expenditures made to local distributors of products. These types of expenditures would typically not have high levels of local value-added content although there are definite benefits through job creation

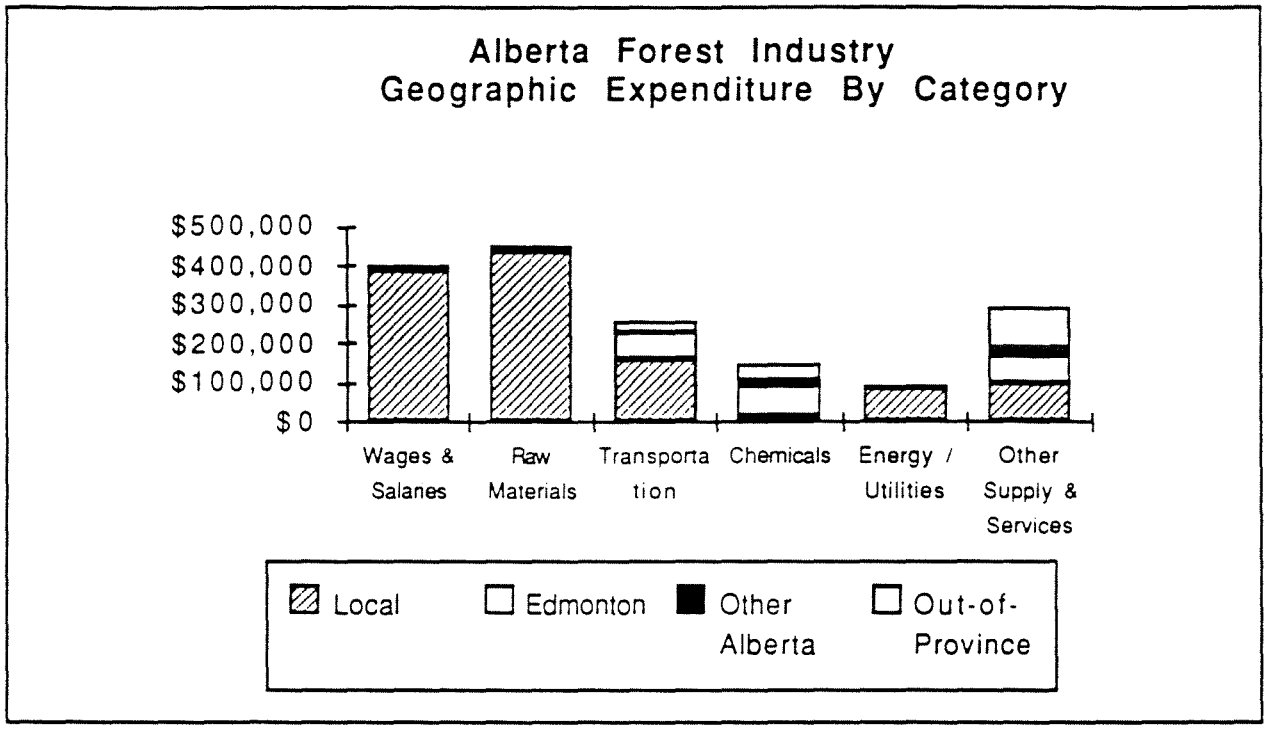
and other spin-off benefits. Local expenditures for wages & salaries and raw materials would have strong impacts on the local economies.

The geographic breakdown of expenditures by percent according to the industry sector is illustrated in the charts below.





Wood industries spend a much greater proportion of their expenditures locally as compared to paper & allied industries. This is due to their higher levels of expenditures on wages and raw materials for these types of operations. The wages are spent on local employment and the raw material costs are typically with local contract loggers.


Alberta Forest Industry
Geographic Expenditure By Category
$500,000
$400,000
$300,000
$200,000
$100,000
$0
Wages & Salanes
Raw Materials
Transporta tion
Chemicals
Energy / Utilities
Other Supply & Services
Local
Edmonton
Other Alberta
Out-of-Province

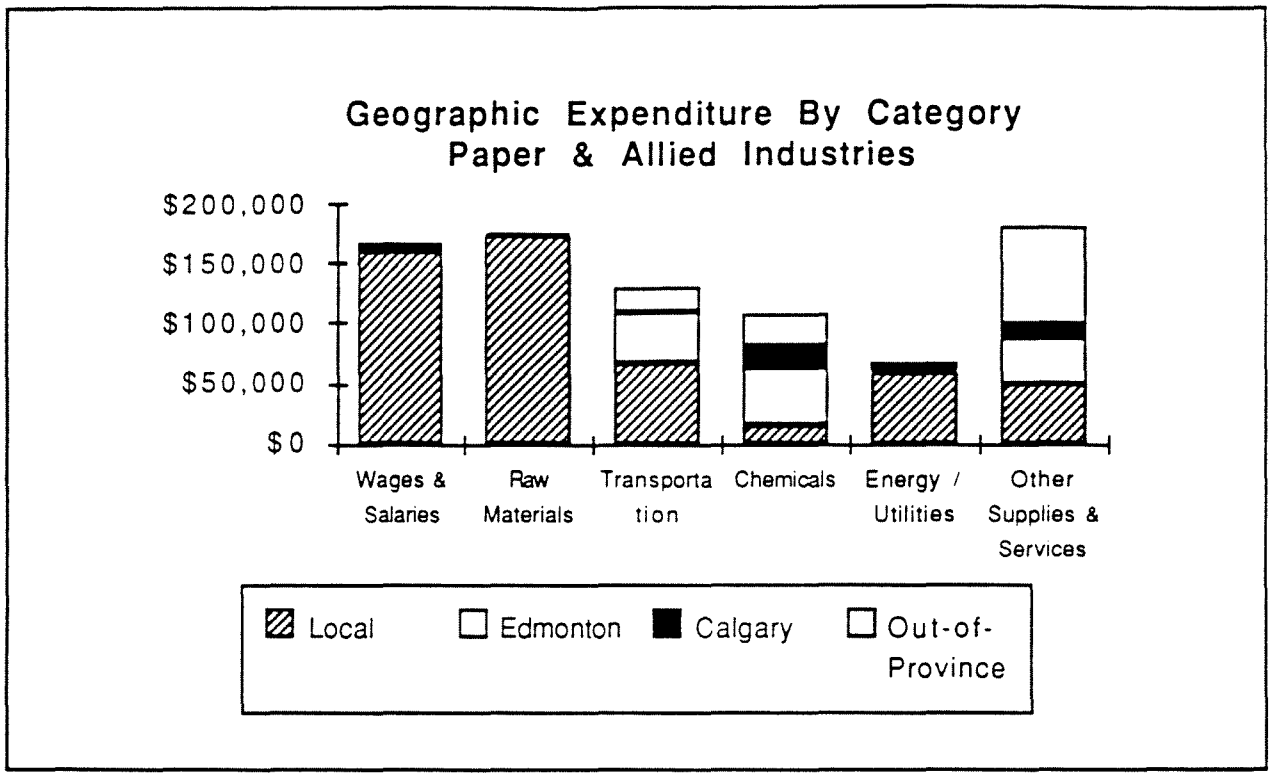
The paper & allied industries' expenditures in Edmonton are greater than the wood industries' and the out-of-province expenditures of paper & allied industries are four times as high in percentage terms as those from the wood industries. This is primarily due to the specialization and higher technological level of equipment in that sector. In fact, out-of-province expenditures of wood industries are quite low at 4% of the total. The nature of expenditures within this sector are more conducive to being met within Alberta.

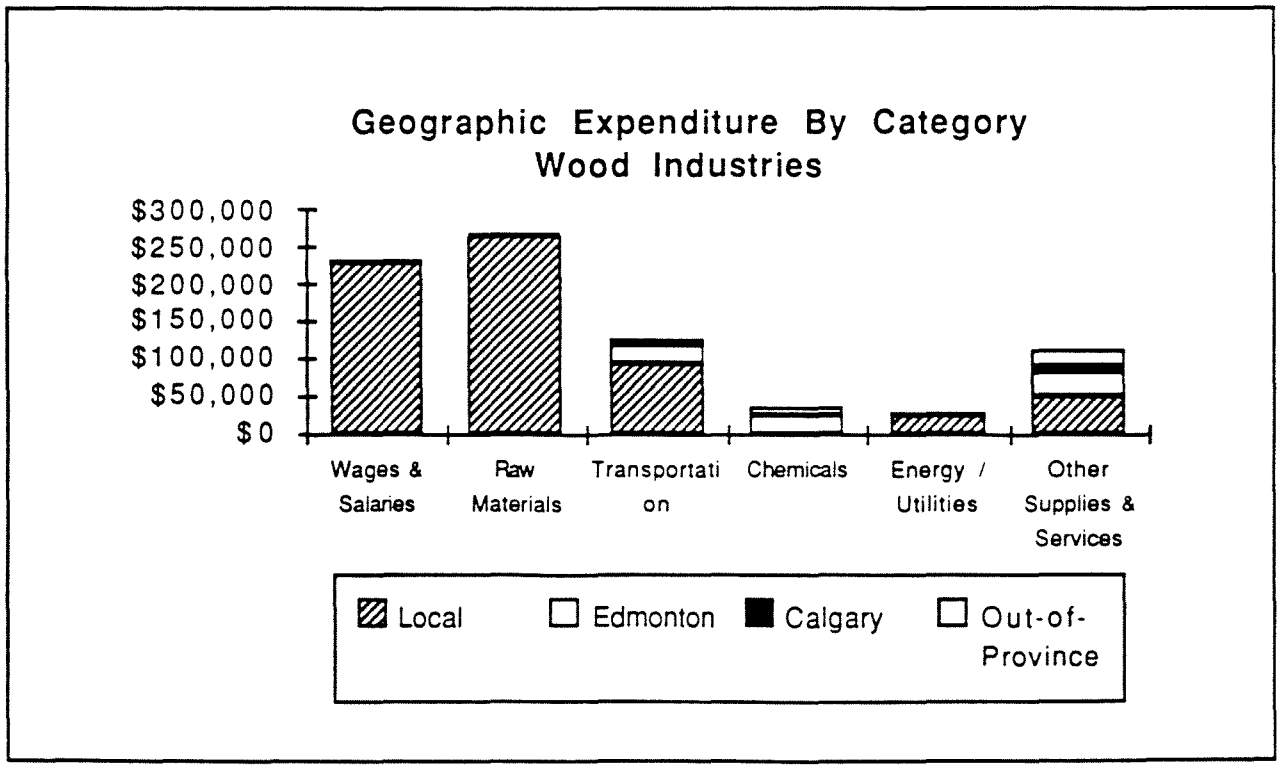
The entire forest industry spends approximately $170 million in direct expenditures annually out-of-province. Over $100 million annually is spent out-of-province on other goods and services, almost $40 million annually is spent out-of-province on chemicals, and over $25 million annually is spent out-of-province on transportation.

The majority of the out-of-province transportation expenditures is on rail service. Although the railways operate nationally, the provincial economy does benefit from these rail service expenditures through the need for Alberta-based operations and infrastructure support and maintenance.

The chart on the facing page illustrates the relative proportions of the expenditure categories according to the location of expenditure.

The paper & allied industries have a higher portion of out-of-province expenditures than the wood industries. As indicated before, this is due to the higher specialization and technological requirements of that industry. In addition, the wood industry is an older sector in Alberta and there is a more established supplier network resident in the province. The relative proportions of expenditure categories segmented for the paper & allied industries and the wood industries are illustrated in the two charts on the following page.


Geographic Expenditure By Category
Paper & Allied Industries
$200,000
$150,000
$100,000
$50,000
$0
Wages & Salaries
Raw Materials
Transportation
Chemicals
Energy / Utilities
Other Supplies & Services
Local
Edmonton
Calgary
Out-of-Province


Geographic Expenditure By Category
Wood Industries
$300,000
$250,000
$200,000
$150,000
$100,000
$50,000
$0
Wages & Salaries
Raw Materials
Transportation
Chemicals
Energy / Utilities
Other Supplies & Services
Local
Edmonton
Calgary
Out-of-Province

Categories of Forest Industry Suppliers
We investigated the various processes within the forest industry and developed a more detailed definition of the goods and services which the industry purchases. These goods and services which are purchased by the forest industry and identified below (not including government services), further stratifies our initial definition of the tertiary sector of forest industry suppliers.

Products/Supplies

1. Plant, Machinery, Equipment and Supplies

Building/Structures (incl. heating, ventilating & air conditioning)

Structural Steel

Material & Equipment Handling

eg. Belt conveyors
Screw conveyors
Log handling equipment
Chemical feed systems
Scales
Lifts
Elevators
Cranes
Hoists
Other

Specialized process equipment

eg. Debarkers
Chippers
Edgers
Sorters
Stackers
Digesters
Refiners
Cyclones
Presses
Defibrator
Trimmer scanners
Etc.

Other process equipment

eg. Vessels
Tanks & bins
Piping
Valves & fittings
Insulation
Coatings & linings
Motor pumps
Compressors

Power & transmission
Heat exchangers
Furnaces
Fired heaters & boilers
Electrical
Instrumentation & controls
Lubricants
Saws & knives
Other

Environmental

eg. Waste & water treatment
Pollution control
Other

Fire, Health & Safety

eg. Fire protection systems
Fire extinguishers
First aid equipment
Safety equipment
Other

Mobile equipment

eg. Ambulances
Fire trucks
Trucks
Cars
Delimbers
Feller Bunchers
Skidders
Snowmobiles
Boats
All terrain vehicles
Other

Support

eg. Tools
Office furnishings & supplies
Janitorial supplies
Other

Shipping & Packaging

Chemicals

Energy/Utilities

Other Products & Supplies

Services

2. Training & Education

3. Transportation & Distribution

4. Consulting, Engineering, Technical and Scientific Support Services/Special and Unique Services

Construction and Installation Services

Repair/Maintenance & Inspection

eg. Instrumentation and control services
Mechanical services
Electrical services
Fabrication service
Welding services
Millwright services
Machine shop services
Mobile equipment services
Hydraulic services
Electric motor rewinding
Other

Technical Services

eg. Design, drafting and project management services
Environmental services
Surveying, mapping and charting services
Forestry & Silviculture consultants
Other

Support Services

eg. Accounting & bookkeeping
Advertising
Airplanes and helicopters
Appraisers
Banks & financial institutions
Couriers
Human resources
Insurance agents and brokers
Lawyers and notaries
Management consulting
Printing and publishing
Public relations
Other

Other Services

Industry Purchases of Goods and Services

In order to identify opportunities for the supply of goods and services to Alberta's forest industry, we required more detailed information on the spending patterns for goods and services of the industry.

We obtained information from companies with cumulative annual sales of $710 million, which represents one-third of total external forest industry sales. These companies employ almost 2,900 people, which represents almost one-third of the total employment in the forest industry. Our sample represented 45% of the paper & allied industries sector and 22% of the wood industries.

The companies which provided the more detailed information were able to provide expenditure information on the major categories identified in the previous section. The total extrapolated expenditure information closely compared to the initial global figures provided in the first survey. There were some differences in the geographic distribution of the detailed sample to the first sample, however, these could be the result of the extrapolation of a smaller sample.

Based on the survey results representing 22% of the wood industries and 45% of the paper & allied industries, the entire sector and industry expenditures were calculated by grossing up the survey result to reflect 100% of the sector and industry. The annual expenditures for the paper & allied industries, the wood industries and the total forest industry are provided in the table on the following page.

Table 6
Annual Expenditures for 1992
($,000,000)

	Paper & Allied Industries	%	Wood Industries	%	Total Forest Industry	%
Products/Supplies						
Building/Structures	1.1	0.2	0	-	1.1	0.1
Structural Steel	0.6	0.1	0	-	0.6	-
Material & Equip. Handling	1.9	0.4	16.0	5.0	17.9	2.3
Specialized process equip.	57.6	12.1	9.5	3.0	67.1	8.5
Other process equip.	20.3	4.2	32.1	10.1	52.4	6.6
Environmental	6.3	1.3	0	-	6.3	0.8
Fire, Health & Safety	1.4	0.3	5.9	1.9	7.3	0.9
Mobile Equipment	3.9	0.8	0.8	0.3	4.7	0.6
Support	2.8	0.6	1.5	0.5	4.3	0.5
Shipping & Packaging	10.9	2.3	10.7	3.4	21.6	2.7
Chemicals	77.8	16.3	20.5	6.5	98.3	12.4
Energy/Utilities	61.0	12.9	29.3	9.3	90.3	11.4
Other Products & Supplies	6.9	1.4	15.9	5.0	22.8	2.9
Services						
Construction/Installation	9.3	1.9	0.4	-	9.7	1.2
Repair & Maintenance	27.1	5.7	19.3	6.1	46.4	5.8
Technical	1.9	0.4	0.7	0.2	2.6	0.3
Support	5.3	1.1	7.2	2.3	12.5	1.6
Training & Education	0.2	-	3.2	1.0	3.4	0.4
Transportation & Distribution	166.9	34.9	143.7	45.4	310.6	39.1
Other*	14.8	3.1	0	-	14.8	1.9
Total	**478.0**	**100.0**	**316.7**	**100.0**	**794.7**	**100.0**

*The majority of the other services category represents property taxes.

The Alberta forest industry spends almost $800 million per year with forest industry suppliers. This accounts for almost 50% of industry spending, with the remaining expenditures being in wages & salaries and raw materials. The paper & allied industries account for greater expenditures to suppliers than wood industries. The wood industries are more labor intensive with a greater share of expenditures on wages and raw material costs than on goods and services.

The largest categories of annual expenditures to forest industry suppliers (excluding any major expansion projects) are transportation, chemicals and energy/utilities. The next largest expenditure category is specialized process equipment with annual expenditures of almost $67 million per year. This is followed by other processing equipment expenditures estimated at over $52 million and maintenance & repair expenditures estimated at over $46 million annually. Shipping and packaging supplies represent significant expenditures of over $21 million per year.

The geographic distribution of these expenditures is provided in the following table.

Table 7
Annual Expenditures for 1992
Geographic Location
($,000,000)

	Paper & Allied Industries	Wood Industries	Total Forest Industry*
Local	202.4	168.1	370.6
Edmonton	110.7	109.9	220.6
Other Alberta	33.3	10.1	43.4
Out-of-Province	131.9	28.4	160.3
Total	**478.3**	**316.5**	**794.9**

* Varies from previous industry survey because of extrapolation of a smaller sample.

Out-of-province expenditures to forest industry suppliers total almost $161 million or 20% of the total supplier expenditures. Over $370 million, or 47%, of annual expenditures are made to local suppliers and $220 million, or 28%, are being made to suppliers in Edmonton. Almost $45 million of expenditures, or 6% are being made in areas within Alberta, but outside of either Edmonton or the areas in immediate proximity to the mill.

Transportation and energy/utilities account for a large segment of the local purchases. Chemicals represent a large segment of Edmonton, other Alberta, and out-of-Alberta purchases. These three categories represent over $490 million, or over 60%, of the expenditures from forest industry suppliers. These categories have a major influence on the geographical breakdowns of expenditures. If these categories are eliminated, the geographical breakdown of expenditures on the remaining goods and services purchased is given in the following table.

Table 8
Annual Expenditures for 1992
Geographic Location
(excluding transportation, chemicals, & energy/utilities)
($,000,000)

	Paper & Allied Industries	Wood Industries	Total Forest Industry
Local	53.3	54.9	108.2
Edmonton	34.3	39.8	74.1
Other Alberta	5.9	7.8	13.7
Out-of-Province	79.3	20.7	100.0
Total	**172.8**	**123.2**	**296.0**

Total supplier expenditures, excluding transportation, chemicals and energy/utilities totals almost $300 million. Out-of-province expenditures total $100 million or one-third of the total supplier expenditures. It is these expenditures which provide the most likely opportunities for Alberta companies to further penetrate the forest industry in the province.

The paper & allied industries are buying considerably more of their goods and services out of the province compared to the wood industries. This relates to 46% of goods and service purchases compared to 17%. The wood industries are able to source more of their requirements in Alberta. This is likely due to a more established supplier base in the province for this sector and also because of the higher level of equipment specialization in the pulp & paper sector which is only available out-of-province.

The following table provides the percentages of total expenditures to forest industry suppliers for each category, excluding transportation, chemicals and energy/utilities for both the total industry and for the paper & allied industries and the wood industries. The reason for excluding these categories is that the majority of transportation and energy/utilities is being sourced in the province. Also, a large component of chemical expenditures are being sourced in the province and it is viewed that the chemicals which are not being sourced in Alberta most likely do not provide a likely opportunity for displacement. Elimination of these categories allows for a more meaningful segmentation of the remaining goods and service expenditures.

Table 9
Annual Expenditures for 1992
(as a percentage of tertiary expenditures excluding transportation, chemicals and energy/utilities)

	Total Forest Industry	Paper & Allied Industries	Wood Industries
Products/Supplies			
Building/Structures	0.4	0.5	-
Structural Steel	0.2	0.5	-
Material & Equip. Handling	6.0	1.0	13.0
Specialized process equip.	22.7	33.5	8.0
Other process equip.	17.7	12.0	26.0
Environmental	2.2	3.5	-
Fire, Health & Safety	2.5	1.0	5.0
Mobile Equipment	1.6	2.5	0.5
Support	1.5	1.5	1.0
Shipping & Packaging	7.3	6.5	8.5
Other Products & Supplies	7.7	4.0	13.0
Services			
Construction/Installation	3.3	5.5	0.5
Repair & Maintenance	15.7	15.5	15.5
Technical	0.9	1.0	0.5
Support	4.2	3.0	6.0
Training & Education	1.1	-	2.5
Other*	5.0	8.5	-
Total	**100.0%**	**100.0%**	**100.0%**

*The majority of the other services category represents property taxes.

The largest categories for the industry expenditures are specialized process equipment, maintenance & repair services, other process equipment, shipping & packaging products, and material & equipment handling products.

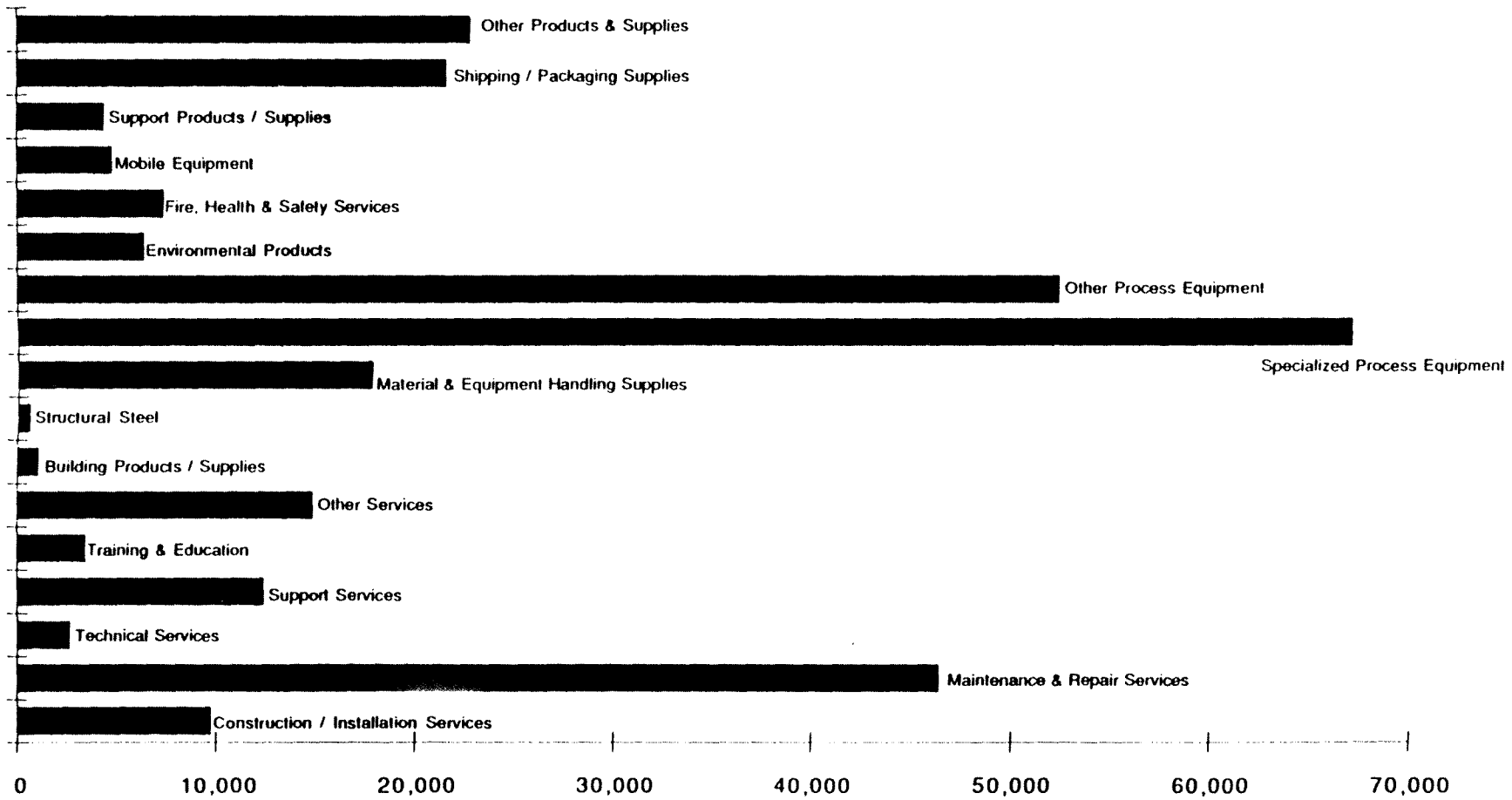
There is a considerable difference between the spending patterns of the sectors within the forest industry. Wood industries spend a higher portion of total expenditures for materials and equipment handling products, other process equipment, support services and fire, health & safety products than do the paper & allied industries.

The paper & allied industries spend a higher portion of total expenditures for specialized process equipment, installation services and environmental products than the wood industry. This has an impact on the marketing strategies of companies wishing to sell to the forest industry. Each sector has different buying patterns.

The expenditures in the various supplier categories for the total forest industry is illustrated in the chart on the following page.

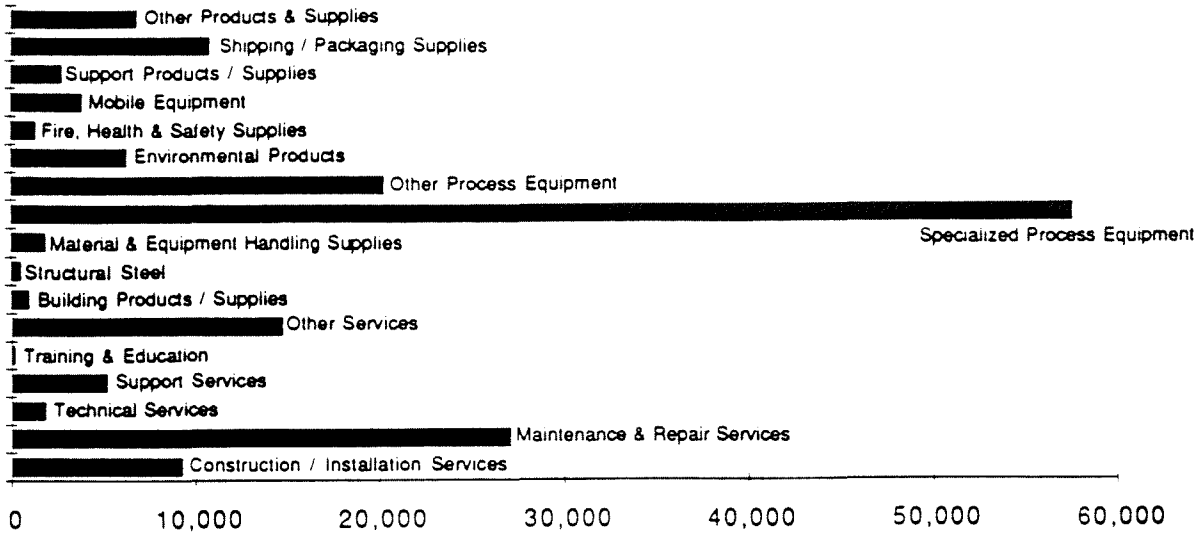
Alberta Forest Industry

Annual Tertiary Expenditures for 1992 ($000's)



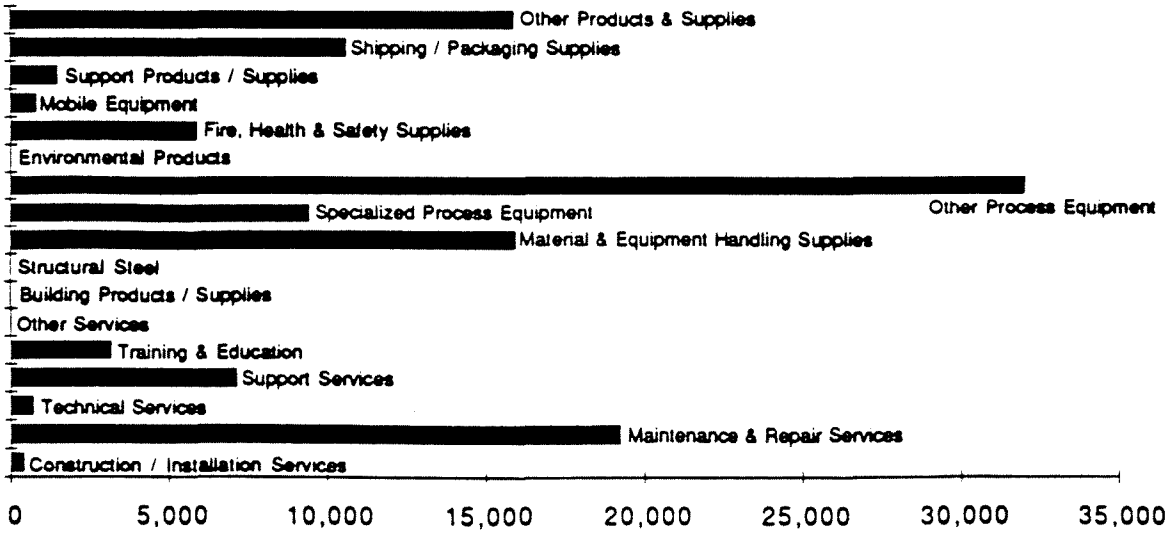
Note: The majority of the "Other Services" category represents property taxes.

Paper & Allied Industries
Annual Tertiary Expenditures for 1992 ($000's)



Note: The majority of the "Other Services" category represents property taxes.

Wood Industries
Annual Tertiary Expenditures for 1992 ($000's)



The charts on the preceding page illustrate the category expenditures for the paper & allied industries and the wood industries.

In order to further identify opportunities for suppliers of goods and services to the Alberta forest industry, we profiled the out-of-province expenses of the industry. This information was obtained from a detailed breakdown of expenditures from our industry survey. We have provided the information separately for both the paper & allied industries sector and the wood industries sector because of their different buying patterns.

Total out-of-province purchases for the wood industries sector total $20 million, while total out-of-province expenditures for the pulp & allied industries sector total almost $79 million. The categories provided in the chart on the following page are presented in descending order of the percent of out-of-province purchases. The total dollar value of those out-of-province expenditures is also given.

Table 10
Wood Industries
Out-of-Province Goods and Services Purchases

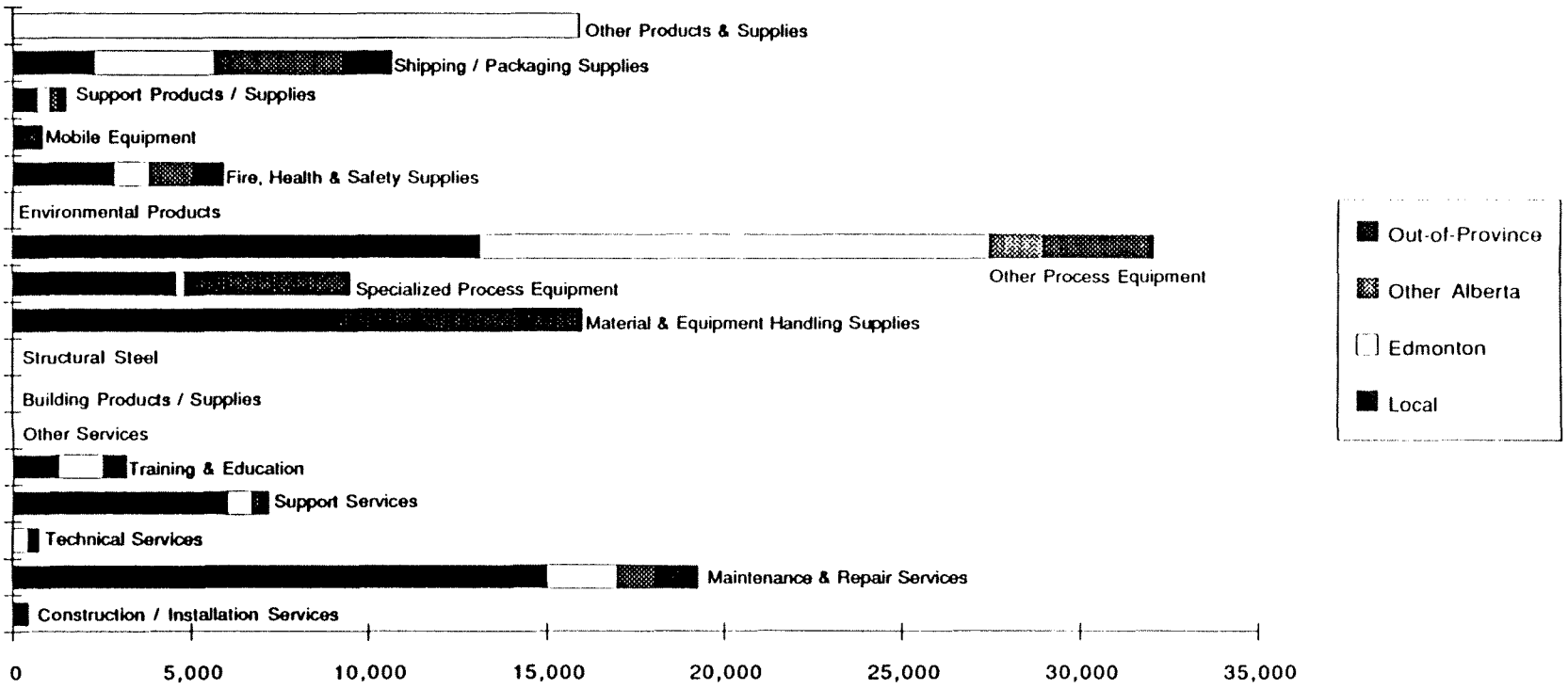
	Out-of-Province Purchases (%)	Sector Out-of-Province Purchases ($,000)
Mobile Equipment (eg. delimbers, feller bunchers, skidders, etc.)	100	840
Specialized Processing Equipment (eg. debarkers, chippers, edgers, sorters, stackers, trimmer scanners, etc.)	49	4,670
Material & Equipment Handling (eg. belt conveyer, screw conveyors, log handling equipment, scales, lifts elevators, cranes, hoists, other)	43	6,920
Technical Services (eg. design, drafting, project management, environmental services, surveying, mapping, charting, silviculture, other)	39	290
Training & Education	20	640
Fire, Safety & Health Supplies (eg. fire protection systems, first aid, safety, other)	15	865
Shipping & Packaging Supplies	13	1,360
Support Products & Supplies (eg. tools, office furnishings and supplies, janitorial suppliers, other)	16	245
Other Process Equipment (eg. vessels, tanks & bins, piping, valves & fittings, insulation, coatings & linings, motor pumps, compressors, power & transmission, heat exchangers, furnaces, fired heaters & boilers, electrical, instrumentation & controls, lubricants, saws & knives, other)	10	3,110
Repair & Maintenance Services (eg. instrumentation & control, mechanical, electrical, fabrication, welding, millwright, machine shop, mobile equipment, hydraulic, electric motor rewinding, other)	6	1,220
Total		**20,160**

Mobile equipment, specialized processing equipment and material handling equipment, represents the highest percentages of out-of-province purchases. These purchases are typically for specially developed forestry equipment that is being sold to national and international markets. The largest dollar categories of out-of-province expenditures are in material handling equipment and specialized process equipment. Other process equipment, shipping & packaging materials and repair & maintenance services also represent significant out-of-province dollar amounts, however, they account for relatively small percentages of the category. This would indicate specific specialized products are being sourced out-of-province. In order to penetrate those markets, specific expertise must be developed in Alberta or technology transfer may provide the ability to develop the required capabilities.

A breakdown of expenditures by geographical region is illustrated in the chart on the following page.

Wood Industries

Geographic Tertiary Expenditure By Category ($000's)



Typically, if less than 30% of a category is being bought out-of-province, the category is generally accessible in Alberta. The out-of-province purchases would be principally because of better pricing or service or for a specialized product or service.

The paper & allied industries sector is purchasing out-of-province the categories outlined in Table 11.

Table 11 - Paper & Allied Products
Out-of-Province Goods and Services Purchases

	%	Industry Out-of-Prov. Purchase ($,000)
Specialized Processing Equipment (eg. digesters, refiners, cyclones, presses, defibrators, etc.)	93	53,600
Other products & supplies	50	3,460
Structural Steel or Other	34	210
Mobile Equipment	26	1,030
Material & Equipment Handling (eg. belt conveyors, screw conveyors, log handling equipment, scales, lifts, elevators, cranes, hoists, other)	26	520
Other Process Equipment (eg. vessels, tanks & bins, piping, valves & fittings, insulation, coatings & linings, motor pumps, compressors, power & transmission, heat exchangers, furnaces, fired heaters & boilers, electrical, instrumentation & controls, lubricants, saws & knives, other)	26	5,200
Environmental Products (eg. waste & water treatment, pollution, control, other)	25	1,600
Repair & Maintenance Services (eg. instrumentation & control, mechanical, electrical, fabrication, welding, millwright, machine shop, mobile equipment, hydraulic, electric motor rewinding, other)	25	6,700
Support Services (eg. accounting & bookkeeping, advertising, airplanes & helicopters, appraisers, banks & financial institutions, couriers, human resources, insurance agents, lawyers, management consultants, printing & publishing, public relations, other)	24	1,270

Table 11 (Cont'd)

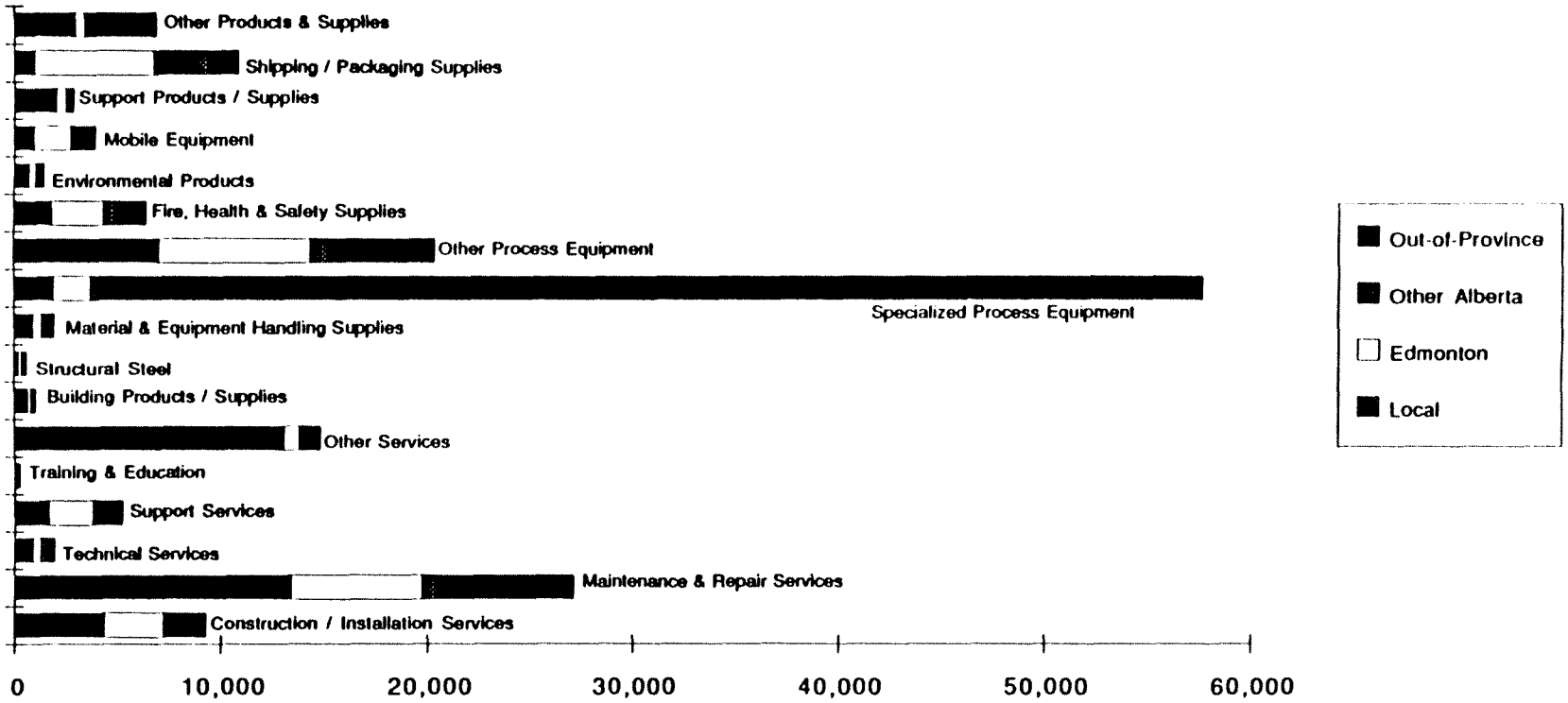
Technical Services (eg. design, drafting, project management, environmental services, surveying, mapping, charting, silviculture, other)	24	470
Fire, Safety & Health Supplies (eg. fire protection systems, first aid, safety, other)	22	310
Construction/Installation Services	21	1,940
Building/Structures Products & Supplies	20	210
Training & Education	18	45
Shipping & Packaging Supplies	12	1,550
Support Products & Supplies (eg. tools, office furnishings and supplies, janitorial suppliers, other)	11	310
Total		**78,425**

There are more categories in the paper & allied industries sector in which 25% of more of the products and services are being purchased out-of-province. The greatest category, both as a percent and in absolute dollars, is specialized processing equipment. In fact, almost all of the purchases in this category are out-of-province. These represent almost 70% of the total out-of-province expenditures. Other categories with higher out-of-province percent purchases are: other products & supplies; steel; mobile equipment; material & equipment handling; other process equipment; environmental products; and repair & maintenance services. These expenditures would also be for specialized products & services particular to the sector. The largest dollar categories of out-of-province expenditures are in specialized processing equipment, repair & maintenance services, other process equipment, other products & supplies, construction & installation services and environmental products. Most of the out-of-province expenditures in these categories represent approximately one-quarter of the purchases. Again, the more specialized goods and services are being sourced out-of-province. This could be a function of expertise, price or service.

A breakdown of expenditures by geographical region is illustrated in the chart on the following page.

Paper & Allied Industries

Geographic Tertiary Expenditure By Category ($000's)



Note: The majority of the "Other Services" category represents property taxes.

Overview of the Supplier Infrastructure

Background

Companies within the forest industry must operate in a very competitive and financially lean environment. The forest industry operates within an international market and the international competition within their markets shapes their relationships with suppliers. The long transportation distances and the fact that Alberta is landlocked, without immediate access to water ports, puts the industry at a competitive disadvantage on the international market. Alberta forest industry companies must be especially conscious of input costs in order to produce at lower costs to make up for this difference.

Companies within the forest industry are seeking continuous improvement in technology and operations in order to remain state-of-the-art so as to control and minimize input costs. The result of this is that the industry has a strong multi-national influence. The industry has a world-wide perspective.

There is some parallel to Alberta based suppliers to the oil & gas industry. Successful manufacturers of oil & gas equipment based in Alberta, make some of the best equipment in the world. Suppliers to the oil & gas industry are successful because they know the language, they know the people and they know the industry's needs.

The oil & gas industry in Alberta has been and continues to be one of the main drivers of our provincial economy. Suppliers to the oil & gas industry have enjoyed in the past healthy sales activity to the large and buoyant oil & gas industry. With the substantial increase in forest industry activity in the province, as well as the cyclical nature of the oil & gas industry, these suppliers are now looking at the forest industry for opportunities.

There is a view within the forest industry that suppliers to the oil and gas industry sometimes experience a difficult transition to become suppliers to the forest industry. Many have difficulty adjusting to the smaller margins allowed by the forest industry. In addition, it was reported that forest industry companies are reluctant to depend on oil & gas suppliers because of a fear that if the oil & gas sector heats up again, these suppliers will lose interest in the forest industry.

There is a strong trend within the forest industry, specifically with the large companies to obtain ISO 9000 certification. This is being driven by their customers' demand in the international marketplace. This will cause pressure on suppliers to obtain ISO certification or at least to ensure that suitable quality systems are in place.

Forest companies are interested in building long-term strategic relationships with suppliers. They are interested in developing "partnerships" with their suppliers. In keeping with this, there is a trend to reduce the number of suppliers that companies are dealing with in favour of these long term relationships. This could potentially create a barrier for entry to new suppliers, however, buyers indicated a willingness to always be receptive to new vendors. The key issue is that new suppliers must provide a benefit to the purchasers.

Suppliers to the relatively young Alberta forest industry must compete with the larger and older industry of British Columbia. Many of the forest companies operating in Alberta also have operations in British Columbia, are headquartered in British Columbia or have key personnel in the company who come from the British Columbia forest industry. There is a natural tendency to use suppliers/expertise with whom they are familiar. It is, therefore, important for Alberta-based companies supplying products and services to the Alberta forest industry to expand and develop relationships with British Columbia forest companies.

Opportunities could exist in providing engineering and other technical services as well as certain product supply.

Characteristics of Successful Suppliers
The Alberta based suppliers to the forest industry are a strong and growing segment of the entire forest industry. The Independent Directories 1992/1993 Alberta Forestry Directory which is compiled as a buyers guide lists 2,324 companies with representation in Alberta of which 2,034 are located in Alberta and 137 are located in British Columbia. By comparison, the B.C. Forestry Directory lists 5,985 companies of which 5,874 are located in British Columbia and 74 are located in Alberta. The B.C. sector has a much larger base of suppliers to the forest sector which are active in competing in the Alberta market. Alberta suppliers must be aggressive in pursuing opportunities within Alberta as well as in B.C.

Through our interviews, we identified with numerous buyers in the forest industry, the characteristics of successful suppliers to the industry. We spoke to end users, buyers, as well as companies who are successfully doing business with the industry. We have highlighted below the input received.

Knowledge of Industry Needs
It was often reported that the biggest hole in the Alberta forest industry infrastructure is not in capabilities, but in understanding. In order to sell to the forest industry, the needs of the forest industry must be understood.

Speaking the Same Language
Most successful suppliers to the forest industry have come from the industry. They are able to speak the same language as the buyers and understand the needs and particularities of the industry. In fact, there is a high degree of mobility of people across different forest industry companies. Mill start-ups are seen as good career opportunities. As a result of this inter-company movement, there is a high level of knowledge sharing within the industry. The best individuals to identify opportunities to supply the forest industry are those with the "inside" industry knowledge.

Trained Sales Staff
In order to learn the language of the industry, the supplier either comes from the industry or has learned a considerable amount about the industry. It is important that sales staff of suppliers have the proper training and background to be able to know the needs of the industry. They must be experts in the products they are selling. Buyers often indicated that the approach from sales people should not be asking buyers what they need, but rather addressing how their products meet the company's needs. Often, it was reported that the sales people calling on the buyers are generally "order takers" and do not sell the benefits of their products.

Quality Product & Competitive Pricing
Competitive pricing, quality and service are all key criteria to successfully penetrate the forest industry. Competitive pricing must be according to forest industry standards as opposed to oil & gas industry standards. A good example is an incident reported by one of the major forest companies interviewed. They required some emergency service work and were quoted a rate from a oil & gas industry supplier of $175 per hour including travel time from Edmonton. The company also obtained a quote from a forest industry supplier based in British Columbia of $60 per hour for the service work and $40 per hour for travel which included the cost of the company's plane. Pricing must be according to the forest industry's standards.

Customer Service & Support
The above example also illustrates the industry's need for service. There must be a constant commitment to service the customer. Suppliers should always be looking for new practices, new systems and new technologies in order to meet the buyers' needs.

Along with service, goes support. Suppliers must be in a position to support their customers through adequate stocking of products, ensuring proper use and ease of use of products and also the ability to provide technical support to their products. Suppliers must work with the operations people and end users in order to fully understand their needs and to ensure the product is meeting those needs.

Establishing an Ongoing Relationship
Buyers must be actively pursued and provided the impression that their business is wanted. One newly appointed buyer informed us he had been in the position for one month and was surprised that only one supplier made a point of introducing himself to the "new guy." Marketing efforts were often felt to be lacking with Alberta suppliers and there was a perceived reluctance to visit the mills.

The forming of partnerships and alliances is viewed to be a characteristic of a successful supplier. The concept of partnering the supplier and buyer creates the realization that the success of both parties is interdependent. Alliances amongst suppliers is also important in providing compatible products and services.

A Track Record
The past history and stability of suppliers is also an important issue to purchasers. Companies want to be assured that the suppliers that they deal with will be suitable in forming long term relationships.

Other characteristics which buyers indicated are important include, flexibility, imagination and adaptability. They want their suppliers to practice quality assurance rather than quality control. Some forest companies indicated that they will be implementing electronic data interchange (EDI) which would require suppliers to be on line.

One Alberta based company manufacturing equipment for the forest industry is an ideal example of a company which has many of the key characteristics of being a successful supplier. This company started off being a supplier and repair shop to the forest industry. They developed a solid understanding of the industry and the needs of the industry. They invested heavily in R&D efforts to develop a piece of equipment which they perceived the industry had a need for. They worked extensively with the end users to develop and perfect the equipment because the dealers would not work with them. Now the end users are demanding their product as an attachment to the dealer's equipment and partnerships were struck with dealers.

Supplier Opportunities
In general, there is a high level of "Alberta purchases" from forest industry suppliers. Of annual purchases of goods and services by the industry (excluding transportation, chemicals and energy/utilities), of almost $300 million per year, over 65% or almost $200 million is being spent in Alberta. Edmonton accounts for almost $75 million per year of this total. It has been estimated that approximately $100 million per year is being spent out-of-province on goods and services.

It was generally acknowledged that most forest industry companies had a preference for dealing with Alberta suppliers (especially local), however, all companies stressed that price, quality and service must be competitive.

A number of forest companies have been quite active in encouraging development of local and Alberta suppliers by participating in seminars and presentations outlining their requirements to suppliers.

Process Equipment Opportunities
The largest opportunity for additional penetration by Alberta companies is in process equipment (including material handling) which represents almost 75% of the out-of-province purchases. These opportunities could include manufacturing of equipment, distribution of equipment or manufacturing of parts.

Companies that consider these opportunities must make a careful assessment of the market. In order to achieve the economies of scale necessary to become competitive, companies must have access to a large market. Many of the companies that local manufacturers would have to compete with have multi-national distribution.

Companies considering entering the specialized equipment market should expect to expend substantial resources on R&D activities required to bring a product to market. In addition, the costs to effectively market a new product are high.

There are various levels of opportunities with process equipment. One is to establish distributor or agent relationships with original equipment manufacturers (OEMs). This could be facilitated with the increasing importance of the Alberta forest industry relative to the industry in eastern Canada. The forest industry in Ontario and Quebec is downsizing and Alberta may be attractive for companies wishing to establish representation in the west.

Another opportunity is for Alberta companies to concentrate on alliances with out-of-province OEMs, becoming agents and setting up representation in western Canada to obtain service work affiliation. This would be of benefit to the OEMs by providing representation which is closer to the customer, allowing speedier repair work, repair support and technical support.

Another opportunity lies in the manufacturing of equipment. Alberta manufacturers would do best to develop niche markets and enter slowly perhaps by building repair facilities for OEM equipment, then progressing into re-engineering and modifications, and finally taking over some manufacture of components or equipment.

Engineering and Design Opportunities
A large component of mill design and project management is being done out-of-province, however, a number of Alberta engineering companies are beginning to benefit by forming joint ventures and alliances with these firms. *There is a strong core of technical expertise developing that is resident in Alberta.* This will further strengthen as the industry develops.

Training and Education Opportunities
Alberta has strong capabilities in the training, education and research sectors of the industry. The province's post secondary education is very capable in degree and diploma programs. There is a need for access to customized process-specific training that is being addressed by the forestry companies through facilities like the Northern Alberta Institute of Technology and other provincial education consortiums. *It is felt though that an industry wide approach would be more effective than the current efforts of individual companies.*

Research Opportunities
The province's research capabilities, through the Alberta Research Council and others, provide excellent support for research and development initiatives. *Utilizing these resources will help with the development process in order to commercialize new products.*

Supplier Infrastructure Opportunities
Aside from the manufacturing of equipment, another area of opportunity might be in improving the supplier infrastructure in areas of the province where new mills have or are being built. The City of Grande Prairie offers a good example of regional development specific to the forest industry. The forest industry has been present in the Grande Prairie region for a long time and the city has a well-developed infrastructure. Grande Prairie has major manufacturers with international sales of forestry equipment. The region has developed a critical mass required to drive R&D and manufacturing entrepreneurism. A large component of those active in the infrastructure of the forest industry have their roots in that industry. Because of proximity, forest companies in Grande Prairie are also faced with the opportunity of sourcing goods and services from Prince George in B.C., a region which has also developed a substantial forest industry infrastructure.

Regions where the industry is rather new are not as well developed. These areas do not have the same level of infrastructure as regions with a longer established forest industry. An example of this differentiation is that mills and logging contractors in the new areas are forced to inventory critical parts because of longer delivery times from the major centres.

Suppliers to the oil & gas industry are making major in-roads in the supply of goods and services to the forestry industry. It was generally acknowledged that the greater opportunity lies in the cross-over to the paper & allied industries sector than the wood industries. *The important criteria will be to develop as strong an understanding of the forest industry as they have of the oil and gas industry.*

Industry Growth Opportunities
It is anticipated that the Alberta forest industry will continue to see growth as a result of enhanced competitiveness and through new development and expansion initiatives. In fact, a condition of a number of forest management agreements between the province and forest companies have specific expansion requirements as part of the agreements. Some industry specialists anticipate that Alberta's new mills with resultant lower production costs will effectively compete in world markets. In addition, it is felt that increased market demand for Alberta forest industry products will continue to generate increasing output levels from producers.

The growth of the primary and secondary forest sector will continue to have a major influence and be a strong generator of growth and opportunities for those who supply goods and services.

Edmonton Supply Centre Opportunities

Edmonton is continuing to emerge as a major centre in Alberta for the supply of goods and services to the forest industry. Almost 30% or over $220 million of industry activity in the buying of all goods and services for the industry goes to companies in Edmonton. The City's main focus is in the provision of transportation services and chemicals to the industry. In addition, the city serves as a primary regional supply centre. *Further strengthening of this position as well as the further development of fabrication and manufacturing capabilities offers the City the best opportunities for an expanded role in the industry.*

Specific Opportunities

In addition to the opportunities examined in the section above, our interviews with forest companies as well as logging companies identified specific opportunities for the supply of goods and services to the industry which typically have high replacement incidents. In certain instances the opportunity was a result of non-availability in Alberta. Other times the goods or service are available in Alberta, but the company is making their purchases outside of Alberta.

These specific opportunities are identified below:

Log Handling

- parts and support for gantry cranes
- grapples for gantry cranes

Woodroom

- saws/knives
  - 10" bandsaws
  - circular saws
  - waferizer knives

Sawmills

- stock parts for planers
- lumber wrap
- metal strapping
- log decks, conveyors, chutes, chippers, debarkers
- sawmill design
- American Plywood Association specified black ink, stamps and logos
- conveyor chain, other specialty chain
- laser scanner repairs

- chroming
- re-building de-barker arms and tips
- parts for debarkers, edgers, trimmer scanners, sorters, stackers
- step feeders
- belt feeders

Harvesting

- woodlands equipment
- dealer and support for shortwood harvesting equipment
- improved insurance coverage on smaller logging contractors' equipment
- debarking (flail) chain for bush chipping

Pulp/Paper Mills

- washer rolls, refiners, shafting
- coated wire
- stainless steel fittings and valves
- stainless steel gauge fittings and pipe
- centrifugal cleaners
- wafer knife gate valve
- foil blades, supporting blades, deflector blades, forming blades
- interchange frames for electric motors
- manufacture of hoses - general purpose, steam, wash down
- replacement parts for pumps
- pump impellers
- hydraulic systems & repairs
- refiner plates
- doctor blades
- parts for refiners, presses, defibrators

Panelboard Mills

- powder phenolics resin
- press parts

- screen cauls (stainless steel)
- edge seal

Reforestation/Silviculture

- seedlings
- silviculture supplies - compasses, bags, markers, log paint

Other

- Grecon fire and spark detection system - peripherals, hardware and software
- distributors for process equipment from overseas or the U.S.
- technical programs for hydraulics specialists
- specialized hydraulic pumps and motors
- geographic information systems

Forestry Bibliography

Alberta Bureau of Statistics, Alberta Treasury, Economic Multipliers for Alberta Industries and Commodities (Based on 1984 Input - Output Tables), May 1991.

Alberta Career Development and Employment, Labor Market Information And Economic Profile For Service Delivery Areas, July 1992

Alberta Economic Development and Trade, Forest Industry Supplier Development Study

Alberta Forestry, Lands & Wildlife, Presentation to Alberta Forest Industry Suppliers Association, December 12, 1991

Alberta Forest Products Association, Our Growing Resource

Alberta Forest Service, Canada Alberta Forest Resource Development Agreement, Directory of Primary Wood-Using Industries in Alberta - 1986, 1988, and 1992

Alberta Forest Service, Canada Alberta Forest Resource Development Agreement, Directory of Secondary Wood-Using Industries in Alberta - 1986, and 1989

Alberta Forest Service, Canada Alberta Forest Resource Development Agreement, Forest Sector Secondary Industry Development Study, D.G. Bell & Associates Inc., 1986

Alberta Forest Service, Canada Alberta Forest Resource Development Agreement, Outlook for the Treated Lumber Market, DG. Bell & Associates Inc., 1986

Alberta Forest Service, Canada Alberta Forest Resource Development Agreement, The Continuing Challenge: Competition and New Products in the World Forest Products Market, 1986

Alberta Forest Service, Canada Alberta Forest Resource Development Agreement, Value Added Opportunities for Alberta Lodgepole Pine Solid Wood Products, Woodland Resource Services, 1985

Alberta Report, various articles, August 5, 1991, October 7, 1991, January 20, 1992, February 3, 1992, August 3, 1992, August 17, 1992, November 30, 1992

Calgary Economic Development Authority, Calgary Labor Force Overview 1982 - 91

Canadian Forest Industries, April/May 1993

Canadian Pulp and Paper Association, The Role of Canadian Wood Pulp in World Markets, 1992

Canadian Wood Products, Spring 1993

CCH Canadian Limited, Canadian Small Business Performance: A Financial Survey, 1992

CCH Canadian Limited, Financial Survey of Canadian Business Performance, 1990

CMA Alberta, Manufacturing Matters, March 1992

Daishowa Canada Co. Ltd., Luncheon Speech to the Forest Industry Suppliers Association of Alberta, "Daishowa's Alberta Operations: Meeting Economic Challenges and Public Expectations," March 12, 1992

Economic Development Edmonton Authority, Edmonton Report on Economic Development, Winter 1991

Economic Development Edmonton Authority, Edmonton Report on Economic Development, Special Forestry Supplement, Second Quarter, 1989 and Third Quarter, 1992

Economic Development Edmonton Authority, Major Project Profile - Forestry, June 1990

Economic Development Edmonton Authority, Selected Major Industrial Projects in the Edmonton Market Area, February 1991

Ernst & Young, The Tertiary Component of the Forest Sector in British Columbia. The Next Twenty Years, Forest Summit Conference, 1992

Forest Engineering Research Institute of Canada, Future Harvesting - Equipment Needs in Northern Alberta (1989 - 1998)

Forest Resources Commission, Background Papers - Volume 4

Forestry Canada, Selected Forestry Statistics Canada, 1990 and 1991

Forest Industry Suppliers Association of Alberta, Supply and Services Directory, 1992

Forestry Canada, The State of Canada's Forests 1991

FRDA Opportunity Identification Program, "Rising To the Challenge!" A Discussion Paper Towards a Forest Sector Strategy for British Columbia, Forest Summit Conference, 1992

Hallmark Engineering Ltd., A Study of Alberta's Secondary Forest Products Manufacturing Industry, 1983

Independent Directories, 1992/93 Alberta Forestry Directory

Independent Directories, 1993 B.C. Forestry Directory

Logging & Sawmilling Journal, April 1993

NAIT, Student Orientation Guide Pulp & Paper Technician Program, 1992

Northern Forest Research Centre, The Forest Industry in the Economy of Alberta, 1978 - 79

Price Waterhouse, The Forest Industry in Ontario, 1991

Price Waterhouse, Forest Products Survey 1991, North America

Pulp & Paper, November 15, 1992

Quality Council of Alberta, Quality Focus, April 1993

Scotiabank, Energy Price Outlook 1993 - A Recovery in Canadian Natural Gas

Scotiabank, Global Economic Outlook 1993

Scotiabank, Lumber Leads Cyclical Recovery in Forest Products, February 1993

Scotiabank, Scotiabank Commodity Price Indices, January 1993

U.S. Department of Commerce, U.S. Industrial Outlook '92 Business Forecasts for 350 Industries

Vancouver Board of Trade, The Forest Industry's Role in Vancouver's Economy. A Study of the Economic Impact of B.C.'s Forest Industry on the People of Metropolitan Vancouver, 1991

Woodbridge, Reed and Associates, Offshore Market Opportunities for Alberta Sawmills, 1988

Appendix 2

Interviews Conducted

Contact	Company	Position
Richard Clark	Millar Western Industries Ltd.	VP and General Manager
Gordon Clarke	Millar Western Industries Ltd.	Sawmill and Maintenance Manager
Bob Fabick	Millar Western Industries Ltd.	MTL Coordinator
Jack Joys	Millar Western Industries Ltd.	Director, Purchasing
Harry Melnyk	Millar Western Pulp Ltd.	Purchasing and Materials Superintendent
Carol Sack	Canadian Forest Products Ltd.	Buyer/Expediter
Dwayne Buchholtz	Daishowa-Marubeni International Ltd.	Purchasing Manager
Jim Morrison	Daishowa-Marubeni International Ltd.	General Manager
John Saluk	Rucker Fluid Power	Manager, Technical Services
Jamie Soule	Alberta and B.C. Forest Directories	Publisher
Wes Meyn	Western Materials Handling & Equipment Ltd.	
Bob Saari	Canadian Manufacturers' Association	
Thor Knapp	Northern Alberta Institute of Technology	Program Head, Forest Technology
Harold Hayter	Northern Alberta Institute of Technology	Manager, Engineering Technologies Programming
Terry Tissington	Weyerhauser Canada Ltd.	Purchasing Supervisor
Karl (Mel) deWinter	Weyerhauser Canada Ltd.	Systems and Purchasing Manager
Robert Butler	Simons-Stanley Joint Venture	
Thor Gaul	Forest Industry Suppliers Association of Alberta	President
Jim Shaw	University of Alberta	Administrative Professional Officer, Department of Forest Science

Doug Couterier	Woodland Heavy Equipment Parts Ltd.	Owner
Lester Oilund	Ultimate Forest Products Ltd.	Owner
Dave Fenton	Ultimate Forest Products Ltd.	Owner
Lamont Anderson	Leyman Distributors Ltd.	General Manager
Dean Isley	Risley Equipment Ltd.	Operations Manager
Roy Isley	D & J Isley and Sons Contracting Ltd.	Logging Manager
Robert McKeen	Sundance Forest Industries Ltd.	Purchaser, Materials Supervisor
David Godfrey	Weldwood of Canada Limited	Divisional Purchasing Agent
Tom Brewer	Alberta Logging Association	General Manager
Bill White	Blue Ridge Lumber (1981) Ltd.	Purchasing Manager
Larry Robinson	Alberta Newsprint Company	Manager, Purchasing/Stores

Wayne Nystrom,
President and CEO, NLK Consultants Inc.
Ph: (604) 689 - 0344

The Process Engineer's Perspective

My presentation focuses on three pulp and paper products with which our company is involved in Alberta – Bleached Chemi-Thermo-Mechanical Pulp (BCTMP), Newsprint and Light Weight Coated Paper (LWC).

The main advantages of producing these products in Alberta are
- Alberta mills can be low-cost producers
- Alberta wood species produce high-quality products
- Alberta is a hospitable place to build pulp and paper mills.

Alberta production costs:
In the area of fibre costs Alberta offers – comparatively flat terrain, the use of pre-existing roads such as those built for oil and gas exploration, the requirement of a minimum number of bridges, competitive stumpage and royalties, efficient contract logging/hauling, a sawmill industry that generates wastewood chips, and a log-chip exchange.

In manufacturing operations, Alberta offers the benefits of low electrical power and low natural gas costs. The labor force is productive and positive in attitude. There is good availability of well-trained maintenance personnel and wages and benefits are competitive. The workforce in this sector is 100 per cent salaried.

Property taxes are reasonable and there is no provincial sales tax.

In comparing eight Canadian BCTMP mills with a delivered cost ranging from $345 US/ADMT to $400 US/ADMT, an Alberta mill was the lowest-cost producer.

In comparing 61 newsprint mills in North America, with a delivered cost ranging from $330 US/FMT to $520 US/FMT, an Alberta mill was the second-lowest cost producer.

In comparing 21 LWC mills in North America, with a delivered cost ranging from $545 US/ST to $850 US/ST, a planned Alberta mill is the second-lowest cost producer.

Alberta wood species:
Alberta's predominant wood species are white and black spruce, and lodgepole pine in the softwoods, as well as hardwood aspen. These species have relatively slender and thin-walled fibres which make them ideal for making top-quality pulp and paper products (See figures on following two pages). The superior fibre morphology gives a strong, flexible pulp resulting in pulp and paper products with good strength, brightness, smoothness and opacity when production is carried out with state-of-the-art process technology in well-designed plants.

Softwood Morphology Comparison

		Fibre Length (mm)	Fibre Diameter (μm)	Wall Thickness (μm)
Alberta Species	Spruce	3.4	27	2.2
	Pine	3.1	40	3.0
Other Area Species	Fir	3.9	40	3.6
	Pine	4.0	40	3.4

NLK

Hardwood Morphology Comparison

		Fibre Length (mm)	Fibre Diameter (μm)	Wall Thickness (μm)
Alberta Species	Aspen	1.0	18	2.5
Other Area Species	Birch	1.8	17	3.3
	Eucalyptus	1.0	16	3.4

A hospitable location:
Alberta has enjoyed the benefits of a cooperative and supportive government. The recent government diversification program resulted in investments worth in excess of $3.5 billion and created approximately 3,500 direct and 6,500 indirect new jobs in the forestry sector.

Raw materials are available on a sustainable and low-cost basis. The infrastructure providing natural gas, power, rail and roads in well developed. There is good availability of well-educated and trained personnel with a strong work ethic. There is no provincial sales tax and high quality support services are available in the areas of research, technical schools and universities. Alberta has also developed a strong base of suppliers in the areas of chemicals, contract maintenance, operating supplies, fabrication facilities and construction.

Joe Rizk,
Purchasing Manager, Alberta-Pacific Forest Industries
Ph: (403) 493 - 0800

The Procurement Process

I would like to share with you the procurement process for the Alberta-Pacific project, focusing on the purchasing process used during the construction phase, and on purchasing for on-going operations.

Alberta-Pacific's is the largest single-line pulp mill ever built. It involved 28 months of design procurement/construction activity. Plant start-up in September 1993 was on schedule and on budget.

Annual expenditures amount to $30 million a year for operating supplies and $15 million for capital projects. The company maintains an inventory of 16,000 line items worth $21 million.

Our commitment from the start of this project was two-fold:
1: Ensure the development of an Alberta infrastructure to service a growing industry;
2: Ensure that Albertans receive the maximum benefits in terms of direct involvement during construction and more important, the technology transfer for future projects.

To achieve these goals, Al-Pac selected H.A. Simons from Vancouver and Stanley Industrial from Edmonton, two internationally known companies, as consulting engineers.

Procurement followed a process of finalizing a bidders' list, calling for bids, evaluating and making recommendations on the bids and then following up with final negotiations and the awarding of contracts.

We look for qualifications that include the following:
- Company location
- Company background and history as a supplier
- Ability to provide total requirements in specific field
- Financial strength.

Successful bidders were those with a product that meets our specifications, with an acceptable price, with a knowledgable sales staff and with a commitment to Alberta content expectations.

With project completion we are currently conducting an audit review of the total project to find out where and why we encountered difficulties and to assess vendor performance. The most successful suppliers are those who -
- Let us know exactly who they are
- Understand their customer's need
- Focus on their expertise
- Provide solid follow-up with their customer
- Provide strong support and service

Alberta-Pacific's purchasing philosophy is as follows: To seek, develop and maintain reliable sources of supply for goods and services in a competitive environment; total coordinated effort and practice shall be applied in pursuit of procuring materials, equipment and services consistent with the best combination of price, quality, service, health and safety, and to work

with our vendors fairly and honestly, within ethical business conduct guidelines, to develop and maintain long-term relationships.

The industry is committed to our local economy and together we can achieve our mutual objectives.

Ron Triffo, President
Stanley Technology Group Inc.
Ph: (403) 423 - 4777
(Presentation made by Al Brennan)

The Simons-Stanley Joint Venture

Background:
The Alberta government devised a policy of enhancing the provincial industrial base in the early 1980s. One of the industries wisely noted for such encouragement was the forestry sector, and notably the potential production of pulp and paper. This was seen as not only bringing a higher value added component to the products stemming from the province's rich forest resources, but also as creating investment in modern plants, a potential for the supply of services, materials and equipment for them, and finally an ongoing support market for their maintenance and improvement. This wise policy is today taken for granted as we meet in conferences such as this.

The consulting engineering sector was relatively unprepared here in Alberta to take on the challenge of these major capital investments. This too was realized by the province, and firms were actively encouraged to develop these strengths. Stanley had already targeted this sector working essentially from its strength in the environmental and water treatment and effluent treatment areas. Work had already been done in a number of mills in Saskatchewan and Alberta, as well as studies for some eastern mills when the Peace River project was announced. Work on that project also brought us in contact with the Simons organization.

When the Al-Pac project was in the planning stages, the environmental group of Stanley was involved in the early location studies and in the evaluation of aquatic issues. It became an extension of our interest to seek some major engineering portion of the actual mill, having just proven our capability to handle major projects on the Peace River mill of Daishowa Marubeni (as it is now referred to) as well as on the rail spur project management put in place for that mill.

The owners of the Al-Pac project had the feasibility and preliminary studies done by H.A. Simons of Vancouver and were interested to keep continuity with this firm of experts. It was natural that, in order to meet desired content of Alberta goods and services, our two firms commenced discussions and were encouraged by the owners to do so.

Organization:
The Simons-Stanley Joint Venture was officially formed in the summer of 1989, in anticipation of support for the permitting process and continuing with the challenging task of design of this very large 1500 tpd pulp mill.

This is not the time to review what actually happened during that permitting process. Suffice to say that there was in effect an 18-month delay, as evolving environmental requirements were discussed and integrated into the design. It is generally agreed that the plant is better for it. What should be pointed out is the fact that the owners had the wisdom and the foresight to keep the joint venture design team going during these long delays, albeit in a skeleton fashion, which allowed for many of the strategic and logistics problems to be studied in some detail and gained invaluable time when the green light finally came.

There were essentially two offices active on the project - Simons' Vancouver office and Stanley's Edmonton office. Two further project specific offices were established in Edmonton and at the site.

These were in effect joint offices with all staff project specific, furnished in part by the joint venture partners and in part additional hire mostly from Alberta. Thus there were some 250 technical staff here in Alberta at the peak, which was in effect more than half the total project technical force. This permitted the training and technology transfer to a number of key people in the Edmonton offices, which is now available for further similar work, be it in the maintenance domain or in expansions or new construction.

The project tasks were roughly divided as follows, with this breakdown used in establishing principal activities for the various offices:

Edmonton:
- Permits, project development, planning and scheduling, procurements and contracts, progress reports, water systems, environmental systems, site preparation, camp, administration buildings, subsystem design, design standards, roads and railways, pulp machine, finishing process and buildings, stores and shops, woodroom, storage and conveyors, recausticizing, chemical preparation area, vendor drawing control, CAD coordination and field coordination.

Site:
- Coordination of contractors, contract administration, construction management, cost control, material control, progress and inspection coordination, field engineers, management of temporary services.

Vancouver:
- Project management, conceptual design, design control, cost control, reporting systems, power group and process, piping.

The legacy:
Lessons learned in this type of organization point to some major strengths. First it was possible to organize and staff major design teams right here in Edmonton, for a project that needed a fair amount of specialized technology and knowhow. This was achieved with the fine collaboration we received from our joint venture partners and through the aggressive personnel searches we undertook during the project's formative stages. Alberta has a rich educational environment and its professional and technical human resources have well-honed capabilities.

The management system used on other similar mills was adopted and proved to be adaptable. We arranged for computer links between the offices here and in B.C. both for the use of information networking and on-line CAD capability. As the project is now in full operation, the various project teams have been dissolved. What must be said, however, is the fact that throughout the project, Stanley continued to market the pulp and paper sector both in Canada and abroad. This has resulted in a number of assignments. Projects have either been completed or are ongoing in China, the U.S.A. and Canada.

Joint venture continuity
The joint venture partners have had time to appreciate each other's strengths these past five years. As projects were marketed and complementary expertise was needed there was a tendency to work together. It was thus decided to continue offering the Simons Stanley combination, based out of Edmonton, for projects in Alberta and Saskatchewan. In addition, Stanley Industrial Consultants now also offers the strategic analysis of forestry resources through the services of ProForMA Forest Management Consultants. Work with Simons' complementary Dempster Associates will lead to further collaboration in that area.

Thus Alberta's strength in the forestry consulting sector is now enhanced as was expected by visionary provincial policies, and is certainly much stronger than it was only a few years ago.

In summary:

- The provincial government's supportive policy of encouraging the use of local (Alberta) goods and services where they are competitively priced was important to our company entering the forestry sector as consulting engineers.
- The legacy of the joint venture with H.A. Simons is that the Simons-Stanley joint venture continues and is available for other pulp and paper projects in Alberta and Saskatchewan.
- The Simons-Stanley joint venture has encouraged further professional collaboration with the commitment by H.A. Simons and Stanley and Associates to support a new joint venture in forestry consulting.
- The competitiveness of business in the 1990s and beyond suggests further strategic alliances will occur both in forest manufacturing and in the consulting services.
- Diversification of the Alberta economy with emphasis on forest development has been important to our companies and other companies in Alberta. The Alberta government must continue to encourage the growth of this sector.

Peter Morin,
(Formerly) Sales Team Leader,
Johnson Controls Ltd.
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Becoming a successful supplier

In the words of a leading economist, the future belongs to organizations that can assess their opportunities, organize to take advantage of those opportunities, and successfully deliver customer satisfaction.

To be successful you must develop a marketing and business plan that will allow you to take advantage of the opportunities that will provide your organization with the framework from which to gain the most significant competitive advantage, deliver customer satisfaction and increase both your market share and your profitability.

You must have a stated mission that provides the commitment to your visions, goals and objectives. You must be prepared to develop a strategic business plan which becomes part of your vision process.

You begin with the vision process, learning how to conceive more powerful business strategies - that is, matching your strengths to your customer's needs and positively differentiating your organization from your competition.

A vision without commitment is like flat beer - while some of the original taste may be present, the fizz is gone. The strategic vision process involves the following steps:
- Mission
- Objectives
- Strategies
- Action plan
- Implementation
- Goals
- Performance evaluation

The mission statement is a definition of the basic business or businesses in which an enterprise will engage, the types of products or services it will provide, and the markets it will serve. A mission statement serves as a motivational force and guides decision-making. It should be focused, concise and easy to communicate.

Objectives are developed to provide superior market strategies and motivate superior execution of these strategies and to feed back accurate and timely market intelligence to your organization. The objective is a statement of what the operating unit wants to be in the long term. It is measurable, quantitative, and has "stretch." For example, it might be to secure X% market share in a specified marketplace by a defined date.

Strategy is an integrated set of actions aimed at securing a sustainable, competitive advantage. In other words, it is how you fulfill your mission and achieve your objectives by bringing about conditions most favorable to your side. Strategies leverage the current strengths of your organization, develop a market-oriented vision extending deep into the organization and energize your people to achieve by tapping into powerful human motivations.

The action plan is a brief outline of the key steps or actions necessary to implement a strategy. An action plan should include a start and completion date for each major step, an assignment of responsibility for implementation, and an identification of any approvals and other resources that may be required.

An action plan might include the following:
- Assign planning responsibilities which are consistent with organizational responsibilities
- Adapt strategic planning process to your organization's unique environment
- Develop training package
- Conduct training
- Develop first-pass market strategies
- Review first-pass market strategies
- Finalize market strategies and begin implementation

The goal is a one-year or interim target consistent with an objective. For example - an 18% market share for 1993.

Implementation is putting your action plan to work to realize the goals and ensuring customer satisfaction. A customer survey will identify how you are meeting or exceeding the customer's needs and identify areas that require further improvement.

Reference materials:

The Mind of the Strategist, Kenichi Ohmae
Thriving on Chaos, Tom Peters
Video - Now That's Service
Video - We're on the Same Team, Remember!

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Conference Summary

There's a lesson to be learned for all of us at this conference and in the forest products manufacturing industry: We have to be innovative and strategic in our thinking. The challenges of tightening wood supply and environmental pressures make it essential to be innovative. There are some future shocks waiting out there.

The supply and service industry must study manufacturing needs, it has to be competitve, and it has to develop relationships and a track record of service. A key strategy for the future will be to develop alliances with relevant manufacturers and distributors.

The government must resist the temptation to kill the goose that laid the golden egg. Support for education and training will be very important for future success. Policy decisions regarding industry practice and expansion must be based on science, not emotion. Government policy must continue to nurture this growing industry.

Attendance List

Alexander B, Town of Fox Creek
Amlani R, Western Diversification Canada
Amos B, Grande Alberta Paper
Anielski M, Alberta Environmental Protection

Barefoot G, Ernst and Young
Beishuizen B, Bank of Montreal
Bennett G, Bank of Montreal
Bhardwaj V, Canadian Utilities Limited
Bohning R, Canadian Forest Service - Natural Resources Canada
Boisvert K, Dupont Canada
Brennan A, ProForMA
Brewer G, Spartan Controls
Brisbois J, Western Diversification Canada
Brooks S, Town of Hay River
Brown D, Amethyst Technologies Inc.
Bussard J, EXH Engineering Services Ltd.

Calliou A, Calpark Construction
Carwithen C, Canadian Stevedoring Co Ltd.
Chung T, Hokkaido Takushoku Bank
Conger L, Forest Industry Suppliers Association of Alberta
Conrad R, AGT Limited
Conroy C, Alberta Opportunity Company
Crawford C, Student
Crawford F, Calling Lake Lumber Company Ltd.

Dangerfield J, Forintek Canada Corp.
Darbyshire P, Continental Lime Ltd.
Demulder B, Forest Industry Development Branch, Alberta Economic Development and Tourism
Dermott D, Forest Protection Division, Alberta Environmental Protection
Dika M, Dika Industries
Dowell D, Price Waterhouse
Drake J, Public Affairs, Alberta Economic Development and Tourism
Dunleavy D, BC Hydro

Fischer K, Chinook Lumber
Fleming J.S, NLK Consultants Inc
Flores E, Brown and Root
Ford D, Edmonton 1994 Forestry Capital Society
Frederiksen, Delta Catalytic Constructors Ltd.

Gaul T, Empire Iron Works Ltd.
Ginder S, AGT Limited
Grabowski T, Silvacom Ltd.
Griffiths M, Liberal Official Opposition

Hammond D, Economic Development Edmonton
Harris P, Alberta Research Council
Hathaway S, Alberta Association of Municipal Districts and Counties

Haynes R, USDA
Henderson C, Forest Management, Alberta Environmental Protection
Henderson R, Henderson & Associates Inc.
Herman E, Albchem Industries Ltd.
Heydari M, Alberta Treasury
Holden J, Kodiak Forest Products Ltd
Hole J, Grande Alberta Paper
Hopp J, Dupont Canada
Howie P, Empire Iron Works Ltd.

Irwin A, Stanley Industrial Consultants Ltd.
Jones A, Continental Lime Ltd.

Karaim B, Forest Industry Development Branch, Alberta Economic Development and Tourism
Kennedy J, Alberta Opportunity Company
Kerr H, VP Goepel Shields
Ketcham H III, West Fraser Timber Co
Kulak L, Delta Catalytic Constructors Ltd.
Kuprys L, Forest Industry Development Branch, Alberta Economic Development and Tourism

Lagroix W, Alberta-Pacific Forest Industries
Lam K, Northwestern Utilities Ltd
Lang S, Crestbrook Forest Industries
Langevin P, MLA, Lac la Biche, Liberal Official Opposition
LaPerle N, Motorola Canada
Lehto G, Associated Engineering Alberta Ltd.
Leithead G, Alberta Forest Products Association
Ley T, Imperial Oil - Chemicals Division

Mackenzie-Brown P, Forestry Oil and Gas Review
Mak K, Forest Industry Development Branch, Alberta Economic Development and Tourism
Martin J, Economic Development Edmonton
McAllister S,Wajax Industries Ltd.
McCaffrey D, , CPPA
McDougall F, Weyerhaeuser Canada Ltd.
McGarrell T, Jaakko Poyry Fluor Daniel Inc.
McNish J, Prince Rupert Port Corporation
Middleton G, Forintek Canada Corp.
Moon W, Town of Fox Creek
Morris B, Stentor Resource Centre Inc.
Morrison J, Daishowa -Marubeni International Ltd.

Neeland D, Field and Field Perraton, Barristers and Solicitors
Neiles D, CN North America
Nelson R, UMA Engineering Ltd.
Nystrom W, NLK Consultants

Penney G, Harcourt & Associates
Pilip K, Edmonton 1994 Forestry Capital Society
Pohler R, City of Thunder Bay

Pospisil S, Forest Industry Development Branch, Alberta Economic Development and Tourism
Powell B, Student
Powell R, K&C Silviculture Farms Ltd.
Promislow J, Student

Rabik B, Ian Murray and Associates
Rizk J, Alberta Pacific Forest Industries
Rokosh D, UMA Engineering Ltd
Rosen R, City Lumber Corporation

Salmon R, Peat Marwick
Sandmoen J, Alberta Power Limited
Schmeeckle D, Cantech Corporation
Schneck R, Dean of Business, University of Alberta
Schuster L, SNC Lavalin Inc.
Scott R, Peaceland Mills Inc.
Sheck J, Canadian Energy Service
Sheen C, Village of Boyle
Sheets B, Athabasca Regional Economic Development Association
Shewchuk S, PCL Industrial Constructors Inc.
Short, Paul, Director, Forest Industry Development, Alberta Economic Development and Tourism
Simpson R, Peat Marwick
Smith C, Forestry Consultant
Smith D, Alberta Economic Development and Tourism
Smith K, Natural Resources Conservation Board
Soifer R, Ernst and Young
Stanhope R, Logging and Sawmilling Journal
Stasiewich N, Kanport Enterprises Inc.
Steeves B, Alberta Intermodal Services Ltd.
Steeves L, Weyerhaeuser Canada Ltd.
Stewart G, Sullivan Strong Scott

Taylor C, Toronto Dominion Bank
Thompson W, Dow Chemical
Tyrchniewicz E, Dean, Agriculture, Forestry and Home Economics, University of Alberta

Walker D, Forest Industry Development Branch, Alberta Economic Development and Tourism
Walker D, Pearson Timberline Forestry Consultants
Ward A, Alberta-Pacific Forest Industries
Wattling D, EDM Management Systems Inc.
Webb D, Webb Zemrau & Associates Inc.
Weber P, Albchem Industries Ltd.
Wellwood R, Alberta Research Council
Whiteley T, Alberta-Pacific Forest Industries
Wicentovich M, Manager, Price Waterhouse
Wirtanen E, Wirtanen Electric Ltd.

Yerex D, Steeplejack Services Group
Yoshihara T, Coneco Equipment
Zemrau A, Webb Zemrau & Associates Inc.