

The Forest Sector in Northern Alberta: An Overview

Prepared for the Northern Labour
Market Information Clearinghouse

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Introduction

Responding to a widespread interest in the forest sector, this report presents a broad introduction to Northern Alberta's Forestry sector, describing the structure of the industry and pointing out the major influences on employment and training that are likely to come into play over the next few years. Research involved several recent reports and presentations on the forest sector in Alberta, various journals, and interviews with individuals involved in the forest sector (see Bibliography).

This report divides the forestry sector into five areas:

- Harvesting; a range of activities from resource management to road building, to cutting and log haul driving.
- Pulp and paper; the production of kraft pulp, chemi-thermomechanical pulp (CTMP) and newsprint in northern mills.
- Panelboard; the production of Oriented Strandboard (OSB), Medium-density Fibreboard (MDF) and plywood.
- Dimensional lumber; sawmills generally producing standard sizes of lumber.
- "Value-Added"; a somewhat vague category indicating the further processing of the products of the primary manufacturing to increase its value. This includes secondary manufacturing as well as what has been called "specialty primary".

Each of these areas is covered in a separate section which examines:

- The structure and size of the industry, including the workforce, within northern Alberta.
- Factors that affect the industry, recent trends and outlook.
- The implications for training and employment.

Overall Forest Sector Structure and Size

Forestry is the fourth largest economic sector in the province of Alberta as a whole, behind petroleum, agriculture and tourism. According to the Forest Industry Development Branch, Forest industries accounted for \$3.5 billion worth of shipments and \$1.9 billion worth of exports in 1994. Procurement for the sector amounted to \$1.5 billion. Province-wide, the forest sector employs 18 - 21,000 people directly and close to 50,000 people indirectly. Price - Waterhouse estimates that the forest sector in Alberta creates 1.3 direct jobs per one thousand m³ of wood harvested.

In northern Alberta (as defined by the Northern Alberta Development Council boundary) the forest sector plays a more important economic role. This region, with ten per cent of the province's population, has some 90% of the productive forest land, 73% of the sawmills and a majority of the pulp and panelboard plants in Alberta. Forest industries provide some 7,400 direct jobs in the North. Secondary manufacturing, however, takes place mainly in the southern part of the province.

Alberta's forest sector is growing. New investment since 1986 has amounted to almost \$4 billion, with current capital projects valued at \$400 million, and much more potential investment on the horizon. Alberta's forestry shipments have risen when national figures fell. From 1989 to 1992, Alberta's forestry shipments grew from \$1.76 billion to \$2.5 billion. At the same time, all Canadian shipments dropped from \$ 50.4 billion to \$44.2 billion. Led by pulp and paper, forest sector shipments for the first half of 1995 are well ahead of last year's figures. Prices for products outside of pulp and paper are soft but volume of production continues to increase in all industries.

Growth in shipment value does not mean growth in employment, though it can slow the decline in employment. While national forest sector employment dropped 20 per cent from 1989 to '92, the Alberta figure only dropped twelve percent.

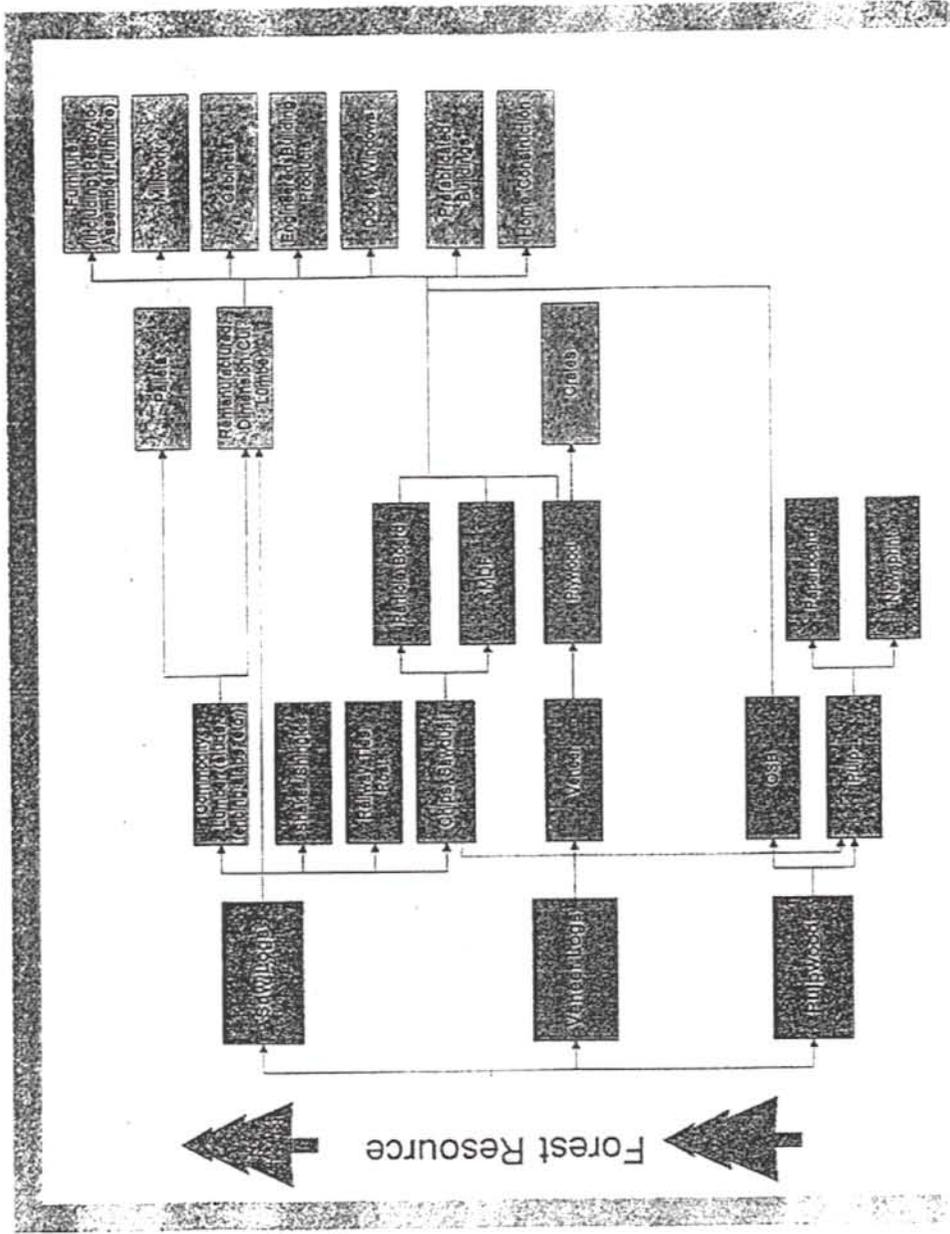
The overall outlook for the forest sector in Alberta is positive. Most industries are looking for moderate growth over the next few years. This growth may well come with a change in outlook, however. Alberta's commercial forest resources are almost completely allocated. Environmental concerns are likely to play increasing roles in both market choices and government regulations. Offshore markets, especially Japan and the rest of the Pacific rim, are likely to present more growth opportunities than is North America. All of this will alter the products produced and the way in which they are produced.

Three broad developments are likely to have significant effects on the forest sector and its training requirements in the next few years:

- The first is the push toward "Ecosystem-based Management of forest resources. This will involve a major shift in the way in which people are trained to think about resource management.
- The second is the sector-wide drive to increase the value of forest products. As one commentator put it, wood is seen as a "semi-public" resource and industry has an obligation to extract the maximum value from each tree harvested. "Value-added" manufacturing is widely seen to be the main opportunity for growth in the forest sector. Once again, this development will require major changes in how people are trained to think about the industry.
- Underlying everything else that is happening in the forest sector is the increased use of technology. Companies are using computer-driven machinery both to improve their product and to lower their labour costs. Entry-level, "grunt work" jobs are disappearing from the forest sector, being replaced by fewer, more technology-oriented jobs.

Figure 1, taken from Price-waterhouse's 1994 Review of the Economic Impact of the Forest Industry in Alberta, shows the flow of fibre through the various industries within the forest sector. Figure 2 shows the breakdown of the sector as it appears in this report.

ALBERTA'S FOREST INDUSTRY



Forest Resource

- 2.7 billion m³ of growing stock on 23 million hectares of productive forest land
- 24.7 million m³ Annual Allowable Cut (AAC)
 - 58% coniferous
 - 42% deciduous
- Approximately 15 million m³ harvested
 - 89% from AAC
 - 7% to 13% private lands
- 4,000 directly employed

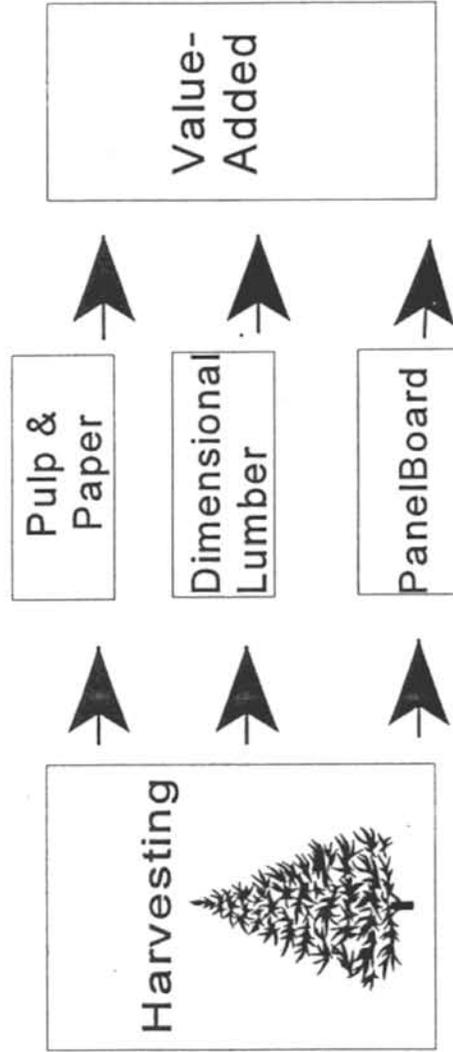
Secondary Sector

- Over 600 small- and medium-sized firms
- Production of a variety of products, many producing cabinets, millwork and furniture
- Consumption:
 - 860 million board feet lumber
 - 75 million square feet panelboard
 - 2 million tonnes paper products
- 7,000 to 8,000 directly employed

Primary Sector

- 600 companies, including large integrated companies and contractors
- Annual Production:
 - 2.0 billion board feet lumber
 - 1.1 billion square feet (2x6" panels)
 - 1.8 million tonnes pulp
 - 275 thousand tonnes newsprint and other paper products
- Annual consumption of 21 million m³ of fibre (including chips, sawdust and residues)
- 7,000 to 8,000 directly employed

Figure 2 Report Structure



Harvesting

Structure, Size and Employment

Harvesting is a wide-ranging industry that includes such elements as:

- forest management
- road building
- cutting, de-limbing
- log hauling
- reforestation

Price-Waterhouse estimates that this industry employs some 4,000 people in Alberta. 1991 census figures list 1,695 people working in "Forestry and Logging" occupations in the NADC area. This latter figure does not include log haul truckers, or seasonal loggers with other "full-time" occupations such as farmers. Seasonality is an important feature of this industry, with the most employment generated during January/February and June to August, as figure 3 shows. This look at Alberta Labour Force Statistics for 1994 and 95 shows that employment in the logging and forestry industry is not stable on a month-to-month basis, but it has increased slightly over time.

Ninety-three per cent of the commercial timber land in Alberta is owned by the Crown. The Annual Allowable Cut, or the amount that can be harvested from Crown land each year on a sustainable basis is 22.1 million m³ of timber. This is divided between coniferous (12.8 million m³) and deciduous (9.3 million m³). The total harvested in 1994 was just over 13 million m³. This is expected to increase to just over 20 million m³ of timber by the year 2000. Harvest from private land last year was about 1.6 million m³. This level of harvesting may or may not continue, as private landowners may not use sustainable forestry practises.

The rights to harvest stands of timber on Crown land are held through several different types of agreement. Most of the land is governed by long-term Forest Management Agreements (FMAs) or Timber Quota Certificates. These are usually held by large companies such as Alberta-Pacific Forest Industries (Al-Pac), or Weyerhaeuser Canada Ltd. Both of these systems require the holders to manage the forest resource, including carrying out reforestation on the land in question.

Factors, Trends and Outlook

Most of the companies doing the harvesting are small operations, working on contract for the large saw- and pulpmills who retain responsibility for the overall forest management. The

predicted increase in timber harvesting through the year 2000 suggests that logging contractors' services will be in high demand for the next few years at least. Beyond that point, a reduction in demand is likely. The implementation of Ecosystem-based Management may also reduce the amount of wood that can be harvested, reducing the demand for logging services.

Ecological concerns are playing an ever-increasing role in the forest sector. Not only is the general public putting pressure on governments to enact protective forestry policies, but the wood product market is also beginning to encourage environmentally sound practices. European buyers are starting to insist on "Sustainable Forestry Certification" on the products they buy. While the standards for this certification have yet to be defined, the message is clear; environmentally damaging forestry practices will put producers at a disadvantage in the marketplace.

- The forest industries have responded to environmental concerns through the "ForestCare" program of the Alberta Forest Products Association (AFPA). This program encourages the development and use of environmentally sound forestry practices. Mills and woodland operations that pass an extensive independent audit can become "ForestCare certified".
- The Alberta government is responding to environmental concerns by developing a new forest conservation strategy based on the principles of "Ecosystem-based Management".
- Ecosystem-based Management (EM) is an approach to forestry from the eco-system in, rather than from the tree, out. Using this approach, a forest company would assess the entire ecosystem of the area that they plan to harvest, recording the mix of tree, plant and animal species, and the mix of soil types, drainage systems and so on. They would then develop a management plan in which the effects of harvesting would emulate those of natural disturbances such as forest fires.

Technology has a large role to play in the harvesting industry as in other parts of the forest sector.

- Computers are being used in logging trucks by Al-Pac in the northeastern part of the province. With the "Truckbase" software, the company can keep track of their trucks, where they are, how fast they are travelling, and so on. This may be of use to larger companies who can afford the technology, but smaller outfits have not shown the same level of interest. Software designed to help with silviculture and reforestation will be of greater interest to many companies

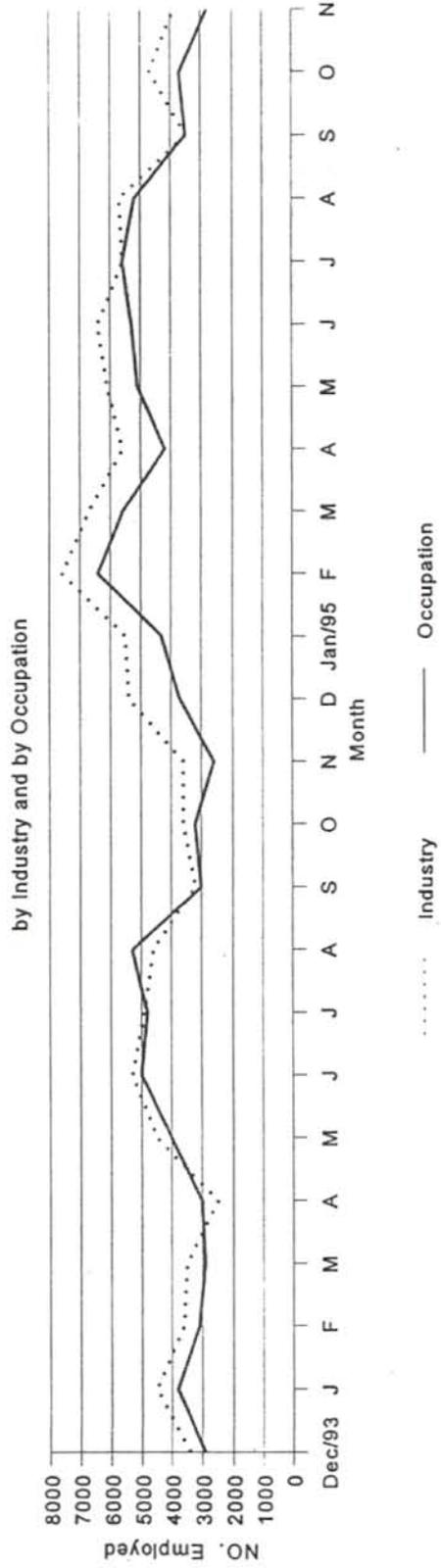
- Technology is helping companies to improve the efficiency of their operations in many ways, including a reduction in the number of employees needed to cut and haul lumber.
- Satellite imagery may also prove useful in forestry planning and reforestation. This will create a need for very specialized skills, and a possible market for consultants.

Implications for Employment and Training

Overall, employment numbers are likely to increase slightly in the next few years. As the amount of timber harvested increases toward the AAC, technology will reduce the number of people needed to harvest each tree. Numbers will likely decrease once the annual harvest reaches its maximum level.

- The short-term increase in employment, combined with the increased mechanization of the industry suggests a possible demand for heavy machinery operators as well as for maintenance people.
- If endorsed by government and industry, the move to ecosystem-based Management will not likely lead to a greater number of college-trained foresters being hired. What will be needed is a new way of training them. Many of the same skills will be required as in the past, but they will have to be used within a different framework. As a result, it may be more useful for colleges to redesign existing courses rather than creating additional ones.
- A major opportunity coming out of both Ecosystem-based Management and increased technology is in the area of retraining programs. Everyone in the industry will have to learn about the new tools of the trade and the new approach to forestry. Forest companies will look to colleges to provide short training modules, largely on-site, to their employees. Companies would rather invest in their current employees than hire all-new staffs. The seasonal nature of the industry provides convenient opportunities to provide training programs for some workers during the off-season.
- One large company reported a gap in the middle age range of workers, with many older workers and younger workers. Increased mechanization means that as the older workers retire the young ones will move up but they will not be replaced by as many entry-level workers. Most of these young workers are "street smart" (informant's words), but have not had much formal training. They may benefit from some basic management training as they move up into soon-to-be vacated positions.
- As mentioned above, changes in the industry will not happen overnight. Colleges will have to work closely with industry to determine not only the content, but also the timing of new courses.

Fig. 3 Employment in Logging and Forestry in Alberta



Pulp and Paper

Structure, Size and Employment

- Northern Alberta is home to the province's only newsprint mill and to five of seven Alberta pulp and other paper products mills, with one more large mill planned for Grande Prairie, and another paper mill being considered in Boyle.
- The northern mills employ some 1500 workers currently. With plant expansion, this number should grow over the next couple of years. Those operations that are not expanding will probably continue to take advantage of technology to reduce their payrolls while increasing the quality and volume of their products.
- As with most forest industries, the pulp and paper industry does not insist on particular levels of education beyond grade 10 for job applicants, although high school diplomas are preferred. General skills such as literacy and the ability to work with others are most important for entry-level positions.
- The pulp and paper industry spends 20 per cent of its outlay on labour, compared to harvesting, which spends 24 per cent, and other wood product manufacturing, which pays 29 per cent of its expenditures on labour.

Factors, Trends and Outlook

The pulp and paper industry dominates the forestry sector at present. Across Canada the industry is moving away from newsprint and into higher value products such as coated papers, fine writing paper and so on. This trend does not seem to have hit northern Alberta yet, though it may.

- Pulp prices are climbing. Opinions are mixed on how much higher they will go, but further moderate increases are likely.
- In spite of high prices, the demand for pulp and paper remains high. The outlook for demand is good.
- For the first half of 1995, pulp and paper production in Alberta increased eight per cent over the same time in 1994, and shipment value increased 90 per cent.
- The labour pool is mimicking the baby boom in terms of demographics, and the turnover rate is fairly low.

- In 1992, less than five per cent of all employees in the Alberta pulp and paper industry had any post-secondary education.
- Many companies are looking at further computerization of their operations. DMI, for example, is working with the Intelligence Engineering Laboratory at the university of Alberta to enhance their systems

Most of the new capacity to come on stream in the next few years will represent the completion of companies' original development plans, such as the second phase of the Daishawa Marubeni International (DMI) plant at Peace River. Rather than put money into new capacity, most companies in Canada are using their profits to reduce their debt load. A major exception to this is the planned \$1.6 billion Grande Alberta Paper mill in Grande Prairie. This project is in some doubt however, due to concerns over the availability of the necessary fibre supply.

Environmental concerns are creating some interest in the use of recycled, de-inked fibre, and the development of agri-pulp (pulp made from agricultural products such as flax or straw). Distance from major sources creates a problem for those in the North who would like to use recycled fibre, and agri-pulp is still being developed. As a result, neither of these developments will have an immediate effect on the industry in Northern Alberta.

Implications for Training and Employment

In pulp and paper as in other industries, upgrading is a constant need, and an opportunity for colleges to work with industry.

Companies are willing to sponsor a certain amount of training, but colleges would do well to market some technological or management courses directly to employees or potential employees.

Dimensional Lumber

Industry Structure and Size

There are approximately 250 sawmills in Alberta, 30 of which produce 10 million board feet or more of lumber per year. This production is in the form of standard cuts of lumber such as 1 x 2 inch, 2 x 4, studs, etcetera, primarily for the North American housing market. A few, usually smaller, sawmills do prepare specialty cuts of lumber for secondary manufacturers and for overseas markets.

Northern Alberta is home to 47 (or 73 per cent) of the mills listed in the Directory of Primary Wood Products Manufacturing in Alberta for 1995/96. The actual number of people employed in the industry is difficult to gauge, as the directory only lists 63 dimensional sawmills (or about 25 per cent of the province's mills) in total. Those listed for the North provide approximately 2800 person/years of employment. Many sawmills are small, family operations, some of which are not run year-round. All but one of the mills producing over 10 million board/feet per year are listed in the directory. Assuming that most of those not listed are smaller operations (providing five person/years of work or less), a rough estimate would put the total employment in Northern Alberta sawmills as approximately 3600 person/years.

Factors, Trends and Outlook

- Medium and large operations are becoming increasingly automated. As a result, one medium-sized family outfit was recently able to cut its workforce almost in half while putting on an extra shift in their sawmill. What was once manual labour for many workers has been replaced by fewer people operating machines that do the work. This trend is likely to continue.
- Government regulations force companies to take many trees that are smaller than ideal, meaning that sawmills have to obtain more lumber from smaller logs. This increases the need for high-tech equipment in sawmills.
- There is a sense within the industry that, as one operator put it, "as long as people are building houses, there will be a demand for the product". While this is probably true, the housing market in North America is expected to plateau or even fall a bit in the next couple of years. In the first half of 1995, lumber production in Alberta increased seven per cent over the same time last year, but slumping housing markets caused the value of shipments to drop 25 per cent
- While sawmills are not going out of business, standard dimensional lumber as it is

produced now is not listed among opportunities for growth in any of several reports on Alberta's forest sector. Most industry commentators, seeing both the state of the dimensional lumber market, and the increasing overseas opportunities, suggest that the future of the wood products industry lies in "value-added" production.

Implications for Employment and Training

- Heavy Equipment Operators are in some demand in the industry, as are millwrights and maintenance people. This would also be true of "value-added" operations.
- The increasing level of technical expertise required in the industry may lead to an increase in demand for upgrading and computer-related skills courses.

Panelboard

Structure, Size and Employment

Alberta is the leader in the panelboard industry in Canada. The panelboard industry in Alberta consists of seven plants producing three types of products.

- Plywood, long a staple in construction, is produced at one plant outside of the NADC area.
- Medium Density Fibreboard (MDF) is a common component in furniture manufacturing. Northern Alberta is home to one MDF plant, producing 110 million square feet ($\frac{3}{4}$ inch basis) per year, and employing 75 people.
- Oriented Strandboard (OSB) is a structural panelboard made from hardwood chips. OSB is the current "mover and shaker" within the panelboard industry. It is less expensive to produce than plywood and is gradually taking over much of the structural panel market. With the opening of the Tolko Industries plant this year in High Prairie and the Ainsworth Lumber Co. plant in Grande Prairie early in 1996, Alberta will account for over 30 per cent of Canada's OSB production and over 10 per cent of North American production. Three of the five OSB mills operating (or soon to be so) in Alberta are within the NADC area. Together they (will) employ about 420 people to produce 2 billion square feet ($\frac{3}{8}$ inch basis) of OSB per year.

Factors, Trends and Outlook

- The main market areas for OSB are Western Canada, the Mid-western United States, Texas, and the U.S. West Coast. Japan and the rest of the Pacific Rim are likely to account for ten- to fifteen- per cent of sales within a few years. The latter market will be difficult to establish a foothold in due to Japan's strict building codes, but once those are satisfied, the rest of Asia is expected to accept the product readily. In North America, even with the lower cost of OSB, there remains something of a market preference for the more familiar plywood.
- The market for MDF is solid within Canada and worldwide. With only three other producers in Canada, the market for the local product appears secure.
- The weak U.S. housing market likely played a role in the drop in shipment value for panelboard in Alberta in the first half of 1995. Despite a four per cent increase in production over the same period last year, shipment value was down six per cent. This, combined with the new capacity coming onstream for OSB suggests that further capital

investment is not likely in Northern Alberta over the next few years. The current industry focus is on finding and developing new markets.

- There is a high demand for jobs in this industry. Ainsworth received some 5,000 applications for the 210 full-time jobs available at their Grande Prairie OSB plant. When Tolko recently hired staff for their High Prairie plant, they did not insist on high school completion, emphasizing intelligence and skills over diplomas. Once hired, new employees at Tolko were given extensive in-house training. Much of this training was carried out by the suppliers of the equipment in the plant as part of their sales contracts.

The general trend away from unskilled labour toward more technical, computer-oriented work is evident in this industry and will continue. As elsewhere, machinery operators will continue to be in demand.

Implications for Training and Employment

- While there may be some demand for machinery operators, the two plants that have recently hired entire workforces will not likely have a very high turnover rate in the next few years.
- The strongest training opportunity in this industry appears to be for colleges to arrange with mills to fill in the training and upgrading gap created when contracts with suppliers run out. The courses needed will have to be broad-based, as employers want workers to be aware of the working of the entire plant, not just one particular part of the process.

Value-Added

Structure, Size and Employment

The "value added" area of the forest sector is both the hardest area to define, and the area with the greatest potential for growth. Industry journals, government-sponsored reports, and many people in forest industries point toward value-added production as the future of the forest sector. Different people have different ideas about what constitutes "value-added" however. Some equate it with secondary manufacturing, while others include higher-value primary products such as fine writing paper or pressure-treated lumber. Whatever the definition, the forest sector is looking at "value-added" manufacturing very seriously. As one industry commentator put it, many businesses are beginning to change their thinking from , "how to get the biggest pile of logs", to, " how to get the most value from the available pile of logs".

For the purposes of this report, value-added industries are those that add value, through technology and labour, to primary wood products. This can include secondary manufacture of products such as windows or furniture, as well as what has been called "specialty primary" manufacture of raw materials for specific secondary uses or overseas markets. Examples of specialty primary products include:

- cut-to-size lumber
- remanufactured lumber
- finger-joint stock
- engineered wood products (wooden I-beams, etc.)
- appearance grade lumber
- Laminated Veneer Lumber (LVL)

and many others. This specialty primary area is particularly important for northern Alberta, which is home to only seven per cent of the province's secondary wood manufacturing. Many secondary manufacturers are small companies producing custom cabinetry and other woodwork for local markets, and the North does not have the population to support as many such businesses as can the larger centres to the south.

Because of the fluid definition of "value-added", it is difficult to estimate the number of people employed in this part of the industry, though the number probably lies between 600 and 1,000 people in northern Alberta.

Factors, Trends and Outlook

The North American lumber market fluctuates considerably. At the same time, Japanese and other Pacific Rim markets are opening up to Canadian wood products. These markets, as well as

Europe, are not as interested in standard, North American construction-grade lumber as in high quality, finished products. Even construction lumber must meet higher standards and be cut to different specifications than that destined for Canadian or U.S. buildings. The Japanese market is particularly difficult to enter, but likely to be lucrative.

Many secondary manufacturers have trouble obtaining the cuts and quality of wood that they need as raw materials. Large lumber operations are reluctant to interrupt high-volume sawmill runs to produce a comparatively small amount of a particular size of lumber. Secondary manufacturers find it helpful (or often necessary) to make arrangements with smaller mills to provide the particular product that they need. Just as most secondary producers have to find their own market niche, many small- to medium-sized primary manufacturers find theirs in supplying other companies with their specific raw material.

- Comparatively small capital investments make value-added production an attractive investment for many entrepreneurs.
- The government of Alberta under Premier Klein is very supportive of value-added production. Encouraging higher value production is a major part of the Alberta International Export Strategy for 1995/96.
- In British Columbia, the provincial government uses direct pressure to push companies into value-added wood production. The result of this is that many companies pay only "lip-service" to the idea, producing token products in ill-equipped facilities. By contrast, Alberta's Forest Industry Development Branch is offering assistance to any companies that wish to pursue value-added opportunities, but the government will not coerce companies into this area. Representatives of both industry and government agree that value-added development must be driven by economics, not politics.

While the opportunities in value-added manufacture are plentiful, the industry has not been quick to act on them. There are several reasons for this.

- The move to value-added production is not easy. Quality control becomes more important as the value of the product increases. The workforce needed is more highly trained and paid.
- Markets have to be cultivated, whereas the market for dimensional lumber is long-established.
- A large percentage of the demand from secondary manufacturers is for hardwood. While hardwood is plentiful in northern Alberta, most sawmills specialize in softwood and have little experience with deciduous timber.
- Much of the difficulty in developing the value-added wood industry lies in the attitudes

of those in forestry already. As long as there remains a market for standard dimensional lumber many people are reluctant to enter the unknown territory of value-added production. People are trained to think in terms of producing large volumes of familiar products, rather than in terms of creating new products for new markets.

Implications for Training and Employment

As with Ecosystem-based management, the value-added wood products industry will require a change in the way in which people are trained. Rather than look for better ways to make the products that have always existed, people will have to begin to look at the wood in terms of what else can be done with it, what other products can this wood be made into?

Short courses on hardwood processing may be useful for sawmill workers and owners.

Opportunities do not always result in investments. This part of the forest sector is not growing rapidly as yet. As a result, the growth in employment that may accompany its development will not happen for a few years at least.

Colleges and companies have an opportunity do work together to develop the educational programs that will help this industry to grow in the region.

Overall Training Implications

In the next couple of years, the forest sector can look forward to moderate growth in shipment value, with a moderate decline in the number of people employed and a higher level of technical expertise required in order to do the jobs that remain. As a result, a smaller number of people will require greater levels of training.

As the general public becomes more involved in the decision-making process regarding forest sector policy, the need for public education grows. Decisions must be made by an informed public. People are more likely to give credence to information coming from colleges than to that coming directly industry.

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Presentations

Shane Pospisil, "An Overview of Alberta's Forest and Building Products Sector". A Presentation to Korean Forestry Buyers Mission, June 29, 1995

The following several presentations were made to the conference, "Alberta's Forest Industry: Competing in a Global Economy", September 21, 1995 in Edmonton.

Craig Adair, "Trends and Forecasts for the Panelboard Sector"

Steve Kaufmann, "Trends and Opportunities for Alberta"

Neil Miller, "Dealing with Change"

Patricia Mohr, "Canadian Pulp & Paper Industry - Climbs the Value-Added Ladder"

Jerry Orpe, "Key Issues and Trends and How they Affect Nose Creek Forest Products Ltd."

John Powles, "The Outlook and Future Trends for Global/Offshore Lumber Markets"

Roger Wright, "The Outlook for Pulp and Paper in Global Markets"

Newspapers and Journals

The Edmonton Sun

The Edmonton Journal

The Edge, journal published by the Forest Industry Development Branch.

Forestline. Journal of the Alberta Forest Products Association.

The Grande Prairie Herald Tribune

The Lakeside Leader, Slave Lake.

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