

**A STUDY OF THE ECONOMIC  
IMPORTANCE OF THE  
FOREST SECTOR IN ALBERTA**

1994

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## Abstract

The objective of this study was to measure the importance of the Alberta forest sector to local and regional economics as well as the Alberta economy through measures such as employment, payrolls and secondary job creation. The study methodology consisted of primary and secondary research, a survey to a sampling of the industry to determine expenditure patterns, as well as discussions with industry participants. In 1992, the Alberta forest industry's shipments totalled almost \$2.5 billion and the industry had direct employment of approximately 10,250 people earning \$375 million. The Alberta forest industry has annual expenditures of roughly \$1.6 billion for wages and salaries and purchases of goods and services, of which an estimated 90% is being spent in Alberta and an estimated 73% is being spent locally or within the immediate area of the mill. The forest industry is linked to roughly 23,000 jobs in Alberta through direct, indirect and induced impacts and economic multipliers in four communities studied ranged from 2.15 to 2.88.

## Executive Summary

For the purposes of this study, the forest sector is defined as those industries identified to be within Statistics Canada Standard Industrial Classification (SIC) code for the Forest Industry which includes Logging (SIC 04), Wood Industries (SIC 25) and Paper and Allied Industries (SIC 27).

### Industry Size

In 1992, the Alberta forest industry's shipments totalled almost \$2.5 billion and the industry had direct employment of approximately 10,250 people earning \$375 million. By comparison, shipments for the total Canadian forest industry were \$44 billion and the industry had direct employment of 237,000 individuals who earned \$8.9 billion.

Over the past few years, although the Canadian industry has been undergoing a period of consolidation, the Alberta forest industry has experienced meaningful growth. Forest industry shipments in Alberta have increased 40% since 1989.

The Alberta forest industry is an important sector to the provincial economy. In the table below, the Alberta forest industry is compared to other key industries in the Alberta economy in terms of shipments, employment and earnings. Figures provided are for 1992 unless otherwise noted. The percentage change from 1989 figures are provided for comparison.

Comparison to Other Alberta Industries						
	Shipments (\$,000,000)	% Change	Employment (,000)	% Change	Earnings (\$,000,000)	% Change
Forestry	2,476	+40	10.2	-12	375.4	+12
Agriculture	4,632 <sup>(1)</sup>	-.5	89.4	+1	315.0	+9
Oil and Gas	19,455 <sup>(2)</sup>	+17	41.5	-1	2,353.0	+7
Tourism	2,910	+16	52.0 <sup>(3)</sup>	+4 <sup>(4)</sup>	2,139.0 <sup>(5)</sup>	N/A

Source: Statistics Canada

(1) Alberta agriculture shipments are based on 1991 Census of Agriculture data.  
 (2) Includes 1991 shipments of refined petroleum and coal products of \$3,336,000. Statistics Canada Catalogue #31-203.  
 (3) Estimate from Alberta Tourism.  
 (4) Based on comparison of 1990 estimate provided by Alberta Tourism.  
 (5) Tourism earnings are 1989 figures provided by ISTC.

The Alberta forest industry experienced the strongest percentage revenue growth from 1989 compared to agriculture, oil and gas, and tourism. It is the smallest in terms of shipments of these four industries, however, it is approaching a level almost equal to tourism. Oil and gas industry shipments are almost eight times that of the forest industry illustrating the strong influence this industry has on the Alberta economy. Forest industry shipments are currently a little over half the size of Alberta agriculture industry shipments.

Tourism is an extremely difficult industry to define and the majority of industry statistics are estimates. Although the revenues are close to that of the forest industry, the employment and earnings estimates are much higher. The earnings for tourism are most likely overstated as they represent a very broad category classification and include much higher paying occupations such as airline pilots, other unionized airline positions, chefs, etc. The result is an upward skewing of the earnings figure. In addition, the employment numbers could be misleadingly high because of the difficulty in classification and the strong part-time employment component.

The table below compares the shipments per employee for the industries examined.

<b>1992 Shipments Per Employee</b>	
	<u>Shipments Per Employee</u> <u>(\$,000)</u>
Forestry	243
Agriculture	52
Oil and Gas	469
Tourism	56

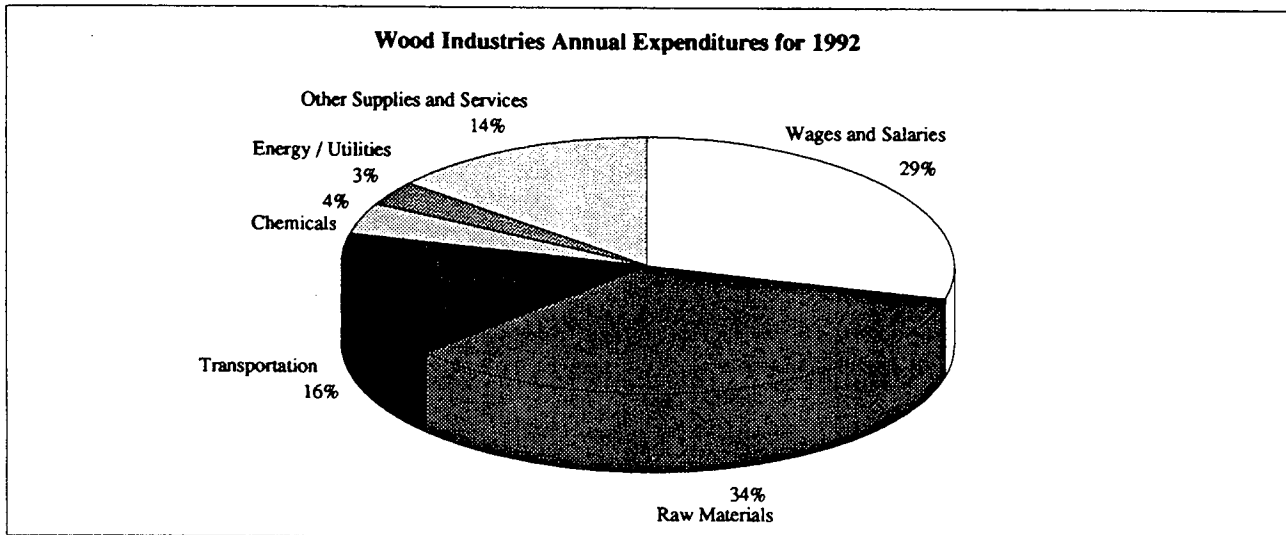
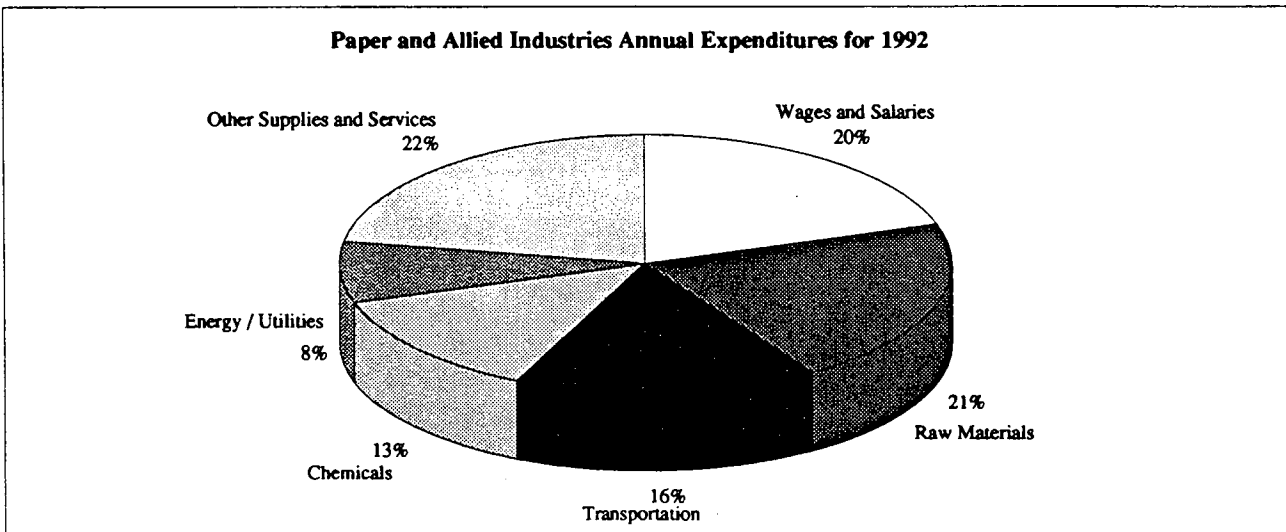
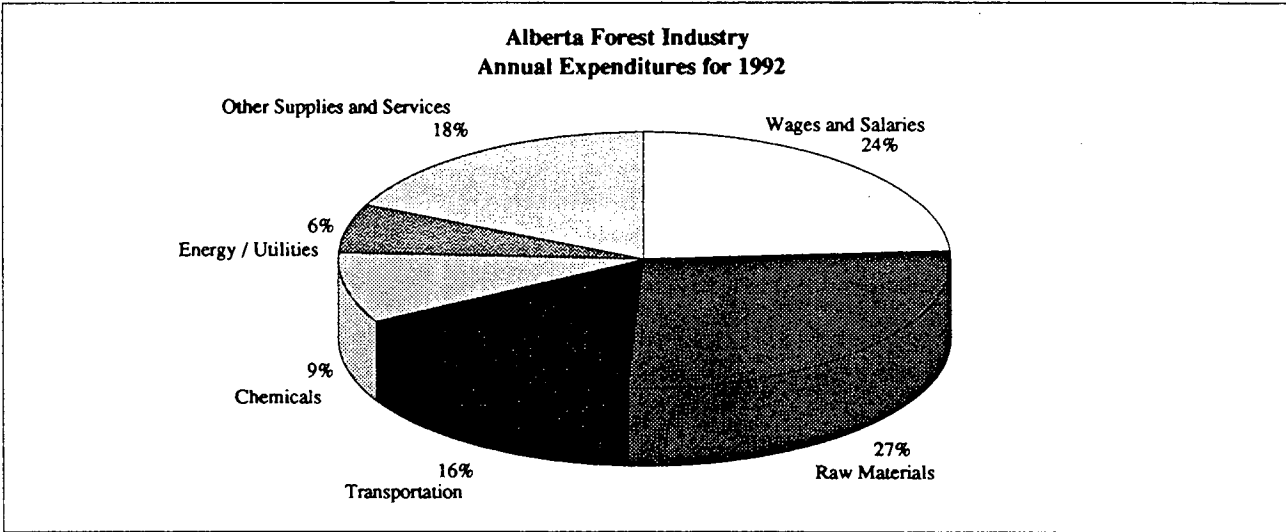
The forest industry has the second highest shipments per employee of these industries. The oil and gas industry's shipments per employee is almost double that of the forest industry, which in turn is approximately 4.5 times that of agriculture and tourism combined.

### **Forest Industry Expenditures**

As shown in the table below, the Alberta forest industry has annual expenditures of roughly \$1.6 billion for wages and salaries and purchases of goods and services, divided nearly equally between sawmills and the pulp and paper sector (with these totals capturing the spending of each of the two secondary sectors on primary logging). Excluding wages and salaries, spending on products and services is approximately \$1.2 billion.

<b>Annual Expenditures for 1992</b> <b>(\$,000,000)</b>			
	<u>Paper and</u> <u>Allied Industries</u>	<u>Wood</u> <u>Industries</u>	<u>Forest</u> <u>Industry</u>
Wages and Salaries	164	229	393
Raw Materials	175	267	442
Transportation	130	124	254
Chemicals	107	36	143
Energy/Utilities	67	27	94
Other Supplies and Services	<u>180</u>	<u>110</u>	<u>290</u>
Total	823	793	1,616

The expenditures by percentage of total for the forest industry as well as segmented for the paper and allied industries and wood industries are illustrated below.



## Expenditures by Geographic Location

The vast majority of expenditures – 95% for sawmills, 84% for pulp and paper companies – initially flows to workers and suppliers based in Alberta. Workers and suppliers in the areas local to the mills, and to a lesser extent Edmonton suppliers, reap most of these orders.

The table below illustrates the geographical locations of the total expenditures. They have been broken down into local, Edmonton, Calgary, and out-of-province expenditures.

<b>Annual Expenditures for 1992</b>			
<b>Geographic Location</b>			
<b>(\$,000,000)</b>			
	<u>Paper and Allied Industries</u>	<u>Wood Industries</u>	<u>Forest Industry</u>
Local	521	659	1,180
Edmonton	135	86	221
Calgary	35	12	47
Out-of-Province	<u>132</u>	<u>36</u>	<u>168</u>
Total	823	793	1,616

The entire industry is spending 90% of its expenditures in the categories previously identified, in Alberta. The majority, or 73%, is being spent locally or within the immediate area of the mill. Edmonton receives the greatest amount of expenditures from the forest industry outside of the local expenditures. Almost 15% of the expenditures are made to companies in Edmonton.

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

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

<b>Annual Expenses for 1992</b>		
<b>Geographic Location</b>		
<b>(%)</b>		
	<u>Paper and Allied Industries</u>	<u>Wood Industries</u>
Local	63	83
Edmonton	17	11
Calgary	4	2
Out-of-Province	<u>16</u>	<u>4</u>
Total	100	100

Wood industries spend a much greater proportion of their expenditures locally as compared to paper and allied industries, 83% as compared to 63%. 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.

The breakdown of the expenditure categories by geographic location are given below.

	<u>Local</u>	<u>Edmonton</u>	<u>Calgary</u>	<u>Out-of-Province</u>	<u>Total</u>
Wages and Salaries	387,867	4,096	0	857	392,820
Raw Materials	436,834	2,777	0	2,091	441,702
Transportation	158,701	67,441	1,667	26,524	254,333
Chemicals	14,587	74,121	0	37,231	143,590
Energy/Utilities	84,032	1,490	17,651	0	93,962
Other Supplies and Services	<u>97,494</u>	<u>71,199</u>	<u>19,494</u>	<u>101,774</u>	<u>289,961</u>
Total <sup>(1)</sup>	1,179,515	221,124	38,812	168,477	1,616,368

(1) Totals may not be equal due to rounding.

The forest industry spends approximately \$170 million annually out-of-province with almost \$40 million spent on chemicals, over \$25 million spent on transportation and over \$100 million spent on other supplies and services. The majority of the out-of-province expenditures on transportation is on rail service.

## **Total Economic Impacts in Alberta**

### ***Direct and Indirect Economic Impacts***

The forest industry accounts for more than 15,600 jobs (direct and indirect) across the province, two-thirds of which are in the primary and secondary forest industries and one-third in the "tertiary sector" that supplies these industries with products and services. In total, these primary, secondary, and tertiary industries generate more than \$1.4 billion in Gross Domestic Product (GDP) for the province.

The GDP multipliers show that the forest industry has a relatively high in-province content in its output, compared to other industries of the provincial economy. The logging sector multiplier for forestry ranks 16th out of 41 industries measured in terms of the in-province value-added as a share of its shipments. The wood industries have the third highest in-province content in their shipments out of 21 manufacturing industries, while the paper and allied industries ranks fifth.

### ***Total Direct, Indirect and Induced Impacts***

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. In total, the forest industry is linked to roughly 23,000 jobs in Alberta, and \$2 billion in GDP.

The high household incomes generally earned by workers in this industry, particularly relative to the service sector, result in larger overall spin-off effects. Thus, for example, jobs in the tourist sector would not generally be associated with as many indirect and induced jobs as those in the forest industry. According to data provided in Alberta Economic Multipliers, each 100 direct jobs in the Alberta "accommodation and food services industry" results in only an additional 36 jobs when indirect and induced employment is added. One hundred jobs in agriculture would add only a further 88 jobs through indirect and induced impacts. In contrast, our results suggest that each 100 jobs in the forest industry generates a further 126 jobs elsewhere in Alberta due to indirect and induced impacts.

### **Regional Allocation of Provincial Impacts**

We examined the nature of forest industry employment in four regions that are typical of areas where forest sector activity is concentrated (Grande Prairie, Peace River, Edson-Hinton and Whitecourt) in order to arrive at local economic multipliers

The results of this analysis are presented in the table below. Multipliers in the four communities studied ranged from 2.15 to 2.88, implying that each sector job generated 1.15 to 1.88 other jobs in locally-based industries. (We also derived higher multipliers that included employment in tax supported jobs in health, education and government.)

<b>Local Economic Multipliers in Four Alberta Regions</b>	
<u>Region</u>	<u>Implied Private Employment Multiplier</u>
Grande Prairie	2.88
Peace River	2.24
Edson-Hinton	2.18
Whitecourt	2.15

The following table allocates the 1992 direct, indirect and induced impacts of the forest industry by region for the areas examined, in Edmonton, Calgary, and the rest of the province.

<b>Approximate Regional Allocation of Total (Direct, Indirect and Induced) Forest Industry Employment Impacts 1992</b>		
<u>Region</u>	<u>Direct Forest Industry Employment</u>	<u>Total Empl. Impact</u>
Grande Prairie	1,350	3,888
Peace River	400	896
Edson/Hinton	1,300	2,834
Whitecourt	1,450	3,118
Calgary	1,750	3,601
Edmonton	1,950	4,014
Other Alberta	<u>2,050</u>	<u>4,838</u>
<b>Total</b>	<b>10,250</b>	<b>23,189</b>

Source: Ernst & Young, Statistics Canada

As shown in the table, the two major urban areas obtain a slightly smaller share of total employment impacts that they account for in terms of direct employment in the forest industry. These major centres obtain spin-off activity from sales of commodities to businesses and consumers in outlying areas. However, we suspect that more of the employment in the two major cities is administrative employment that is associated with less non-salary spending in the area than the production-related activity in the other regions. This tends to reduce the indirect spin-off effects to local suppliers.

## Table of Contents

	Page
Introduction .....	1
Study Approach .....	1
Alberta's Forest Industry.....	2
Industry Statistics.....	2
Shipments .....	2
Logging.....	4
Wood Industries.....	4
Paper and Allied Industries.....	4
Direct Employment .....	5
Logging.....	6
Wood Industries.....	6
Paper and Allied Industries.....	6
Earnings.....	6
Comparison to Other Industries.....	8
Forest Industry Expenditures in Alberta.....	9
Survey of Expenditures by the Alberta Forest Industry.....	10
Methodology and Sample Size.....	10
Expenditures Breakdown by Category .....	10
Expenditures by Geographic Location.....	13
Total Economic Impacts in Alberta.....	19
Methodology.....	19
Direct and Indirect Economic Impacts .....	20
Total Direct, Indirect, and Induced Impacts.....	21
Local Economic Impacts .....	22
Discussions with Regional Representatives .....	23
Grande Prairie .....	23
Whitecourt.....	24
Peace River.....	24
Edson/Hinton.....	24
Survey Spending Patterns.....	25
Regional Allocation of Provincial Impacts.....	25
Four Region Case Study of Multipliers.....	26
Estimated Allocation of 1992 Total Employment Impacts (Direct, Indirect, and Induced) for the Forest Industry .....	27
Appendix 1. Companies Surveyed.....	29

## List of Tables

	Page
1. Alberta Forest Industry Shipments .....	3
2. Canadian Forest Industry Shipments.....	3
3. Alberta Forest Industry Direct Employment.....	5
4. Canadian Forest Industry Direct Employment .....	5
5. Alberta Forest Industry Earnings .....	7
6. Canadian Forest Industry Earnings.....	7
7. Comparison to Other Alberta Industries .....	8
8. 1992 Shipments Per Employee .....	9
9. Annual Expenditures for 1992 .....	10
10. Annual Expenses for 1992 by Mill Category.....	12
11. Annual Expenditures for 1992, Geographic Location.....	13
12. Annual Expenses for 1992, Geographic Location.....	14
13. Geographic Expenditure by Category, Paper and Allied Industries .....	16
14. Geographic Expenditure by Category, Wood Industries .....	16
15. Geographic Expenditure by Category for Industry.....	17
16. Comparison of Spending Mix from Survey & Statistics Canada Model, Wood Industries .....	20
17. Direct and Indirect Economic Impacts of the Alberta Forest Industry, 1992 .....	21
18. Direct, Indirect and Induced Economic Impacts of the Alberta Forest Industry, 1992.....	22
19. Geographic Expenditure by Region .....	25
20. Local Economic Multipliers in Four Alberta Regions .....	27
21. Approximate Regional Allocation of Total (Direct, Indirect and Induced) Forest Industry Employment Impacts, 1992 .....	28

## List of Figures

	Page
1. Alberta Forest Industry, Annual Expenditures for 1992.....	11
2. Paper and Allied Industries Annual Expenditures for 1992 .....	12
3. Wood Industries Annual Expenditures for 1992.....	13
4. Alberta Forest Industry, Geographic Location of Annual Expenditures for 1992 .....	14
5. Geographic Location of Annual Expenditures for 1992, Paper and Allied Industries.....	15
6. Geographic Location of Annual Expenditures for 1992, Wood Industries.....	15
7. Alberta Forest Industry, Geographic Expenditure by Category.....	17
8. Geographic Expenditure by Category, Paper and Allied Industries .....	18
9. Geographic Expenditure by Category, Wood Industries .....	18

## **Introduction**

Ernst & Young was retained by Forestry Canada to conduct a study of the economic importance of the forest sector in Alberta. The objective of the study was to measure the importance of the Alberta forest sector to local and regional economies as well as the Alberta economy through measures such as employment, payrolls and secondary job creation. In addition, the study provides a comparison of a forest-based economy with a service-based economy such as tourism.

## **Study Approach**

For the purposes of this study, the forest sector is defined as those industries identified to be within Statistics Canada Standard Industrial Classification (SIC) code for the Forest Industry which includes Logging (SIC 04), Wood Industries (SIC 25) and Paper and Allied Industries (SIC 27).

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

Forestry Canada identified four geographic regions within the province which would be the focus of our local/regional examination. These regions were the areas surrounding Grande Prairie, Peace River, Whitecourt, and Edson/Hinton. These regions have very strong forest industry activity within the province.

We undertook a survey of major firms within these regions for broad expenditure information and the geographical areas in which those expenditures were made. Eleven major mills participated in this survey. A list of these mills is attached as Appendix 1.

Discussions were held with numerous companies and individuals representing a broad spectrum of industry stakeholders which included associations, government and economic development officers.

## **Alberta's Forest Industry**

The forest industry in Alberta has been an important and growing sector in the province. The first pulp mill began operations in 1957 and was located in Hinton. A second pulp mill was built in Grande Prairie in 1973. The first oriented strandboard (OSB) plant in Canada was built in Edson in 1983. Following construction of this OSB plant, interest in Alberta's timber resources heightened. World demand for forest products was very high and the supply of timber around the world was diminishing rapidly. Major international forest companies began to recognize that Alberta had one of the few unallocated sources of timber in the world. They also appreciated the high quality of that resource. Encouraged by a provincial government eager to diversify its economy from its traditional dependency on agriculture and oil and gas, international and domestic companies competed for Alberta's timber resource. 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 the timber.

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 undergoing start-up at Athabasca, a newsprint mill, an MDF plant, and three OSB plants. The province's sawmills are producing 1.8 billion board feet of lumber annually.

Industry sources indicated that the timber supply in the province within government controlled lands is almost fully committed, although it is not yet being fully harvested. While there is enough to supply the existing mills on a sustained yield basis, it was reported that there is not very much room for new developments or expansion now that Manning Diversified (a sawmill) and Grande Alberta Paper have been given approval to proceed. There is still a supply of timber in the High Prairie area that is reported able to sustain an OSB plant or small pulp mill.

Without a surplus supply of timber for new mills or to expand existing ones, the next four or five years will see the industry begin to produce value-added products instead of the traditional commodity products. One of the pulp mills is already seriously considering adding a paper mill to its operation. Several of the sawmills are now producing specialty products for the Japanese and European markets.

The forest industry in Alberta is very young compared to those in other forest areas in Canada. At present, British Columbia is producing more than 60% of the lumber produced in Canada. Alberta is the fourth largest producer of lumber products. However, B.C. has a timber supply problem, and the government there is drastically reducing the available timber supply. A result of this is the large volume of timber currently reported being shipped to B.C. from private lands in Alberta. Large areas of timber licenses in B.C. are being removed for wildlife, recreation, and other environmental reasons. This shrinking timber land-base is forcing B.C. mills to seriously reduce their production and even to close.

### **Industry Statistics**

#### ***Shipments***

As illustrated in Table 1, the 1992 value of shipments in the forest industry in Alberta was almost \$2.5 billion. For comparison, the value of shipments in 1989 was approximately \$1.8 billion. This represents an increase of approximately 40% during this time period.

Table 1

**Alberta Forest Industry Shipments  
(\$,000)**

	<u>1992</u>	<u>1989</u>
Logging	364,065 <sup>(1)</sup>	184,000
Wood Industries	1,042,000	904,000
Paper and Allied Industries	<u>1,070,000</u>	<u>676,000</u>
Total	2,476,065	1,764,000

Source: Statistics Canada Catalogue #36-250; 35-250; 31-203; 25-202; 25-201

(1) Ernst & Young and industry specialist estimate

The largest component of the forest industry in Alberta is currently the paper and allied industries. This sector within the provincial forest industry experienced the largest absolute dollar increase in shipments, going from being two-thirds the value of the wood industries shipments in 1989 to slightly greater than wood industries shipments in 1992. This growth is primarily a result of the increased activity in new mill development.

The 1992 value of shipments for the Canadian forest industry was approximately \$44.2 billion. This decreased somewhat from the 1989 value of \$50.4 billion. These figures appear in Table 2.

Table 2

**Canadian Forest Industry Shipments  
(\$,000)**

	<u>1992</u>	<u>1989</u>
Logging	8,200,000 <sup>(1)</sup>	8,697,000
Wood Industries	14,951,000	15,843,000
Paper and Allied Industries	<u>21,068,000</u>	<u>25,848,000</u>
Total	44,219,000	50,388,000

Source: Statistics Canada Catalogue #36-250; 35-250; 31-203; 25-202; 25-201

(1) Ernst & Young and industry specialist estimate

According to an economic review by ScotiaBank, forest products firms in Canada reported widespread losses in 1992 primarily as a result of weak North American newsprint prices and soft pulp markets. The newsprint market is showing signs of recovery, however, pulp prices continue to remain under pressure. Currency devaluations by Sweden and Finland have resulted in their ability to sell product at lower United States dollar prices. It is anticipated that the Canadian forest industry will not return to overall profitability until the second half of 1993.



## ***Logging***

Alberta logging shipments in 1992 were approximately \$364 million. It is expected that logging shipments will continue to increase in Alberta. Driving this future increase is the activity in the wood industries as well as the paper and allied industries. For example, the Alberta Pacific Forest Industries Inc. (Al-Pac) mill will become operational in 1993 and other projects such as the Manning Diversified sawmill will be constructed and become operational. In addition, sawmills are currently producing at maximum capacity during this high price period for lumber.

From the Canadian perspective, it is anticipated that logging shipments in Canada will continue to decline as timber supplies are reduced because of environmental concerns as well as economic pressures. There has been a reduction in capacity of pulp mills in eastern Canada, however, because Alberta pulp mills are newer, and are lower production cost mills, they will not be impacted to the same extent as pulp mills in eastern Canada.

## ***Wood Industries***

The Alberta wood industries' shipments in 1992 were estimated to be a little over \$1 billion. The shipment value of the wood industries sector in Alberta and specifically lumber shipments, is anticipated to continue to increase.

Lumber prices are at record highs, and although they are expected to drop, they will most likely remain high for the next year or so. The surge in prices reflect a growing concern over timber supplies. Lumber is in strong demand for construction in the United States (especially after the hurricane in Florida), Europe and the Pacific Rim. Housing starts have been steady as a result of low interest mortgage rates.

In the past two years there have been a number of sawmills in Alberta starting to market in Japan. They are not only producing dimension lumber, but are also sawing lumber to Japanese specifications. As a result of this value-added effort, the prices have been strong.

Overall in Canada, producers have been active in meeting increased demand by increasing output. It was reported that export volumes rose almost 15% in the first eleven months of 1992. However, Canadian producers are also feeling the contraction of their allowable cut levels, as evidenced by B.C.'s reduction last year with further cuts anticipated in the future.

## ***Paper and Allied Industries***

With Alberta shipments in 1992 estimated to be almost \$1.1 billion, the paper and allied industries sector accounted for almost 45% of the total forest industry shipments in Alberta. On a national level, this sector accounts for almost 50% of the total forest industry shipments in Canada.

The increase in shipments in Alberta over the past three years has been the result of new mills starting up, for example, in Whitecourt, Peace River, and Slave Lake. In addition, the mill at Hinton was doubled in capacity during this period.

It is anticipated that the pulp and paper sector shipments will continue to increase in Alberta. The Al-Pac mill will start production in 1993 and shipments will increase over the next two years as it becomes fully operational. The Alberta Newsprint mill at Whitecourt produces newsprint which increases the value of this sector's shipments, because of the higher value-added.

At a time when Alberta shipments from paper and allied industries have been increasing, shipments on a national level have experienced declines. It is anticipated that Canadian pulp shipments will decline as pulp mills in eastern Canada reduce their production to lower inventory levels. In

addition, some eastern Canadian mills are being closed because they are older mills and do not warrant the capital expenditures required to reduce their pollution discharges or to make them more cost efficient on a world scale.

### Direct Employment

Direct employment in the Alberta forest industry in 1992, which appears in Table 3, was over 10,000. This decreased almost 12% from employment levels in 1989 of approximately 11,600. The total decrease would have been greater had it not been for the increase in employment levels in the paper and allied industries sector. New products that are coming on-stream will further strengthen employment prospects.

The wood industries sector is the largest employer with almost 60% of the total employment of the Alberta forest industry, although shipments for this sector account for only 42% of the industry.

<b>Alberta Forest Industry Direct Employment</b>			<b>Table 3</b>
	(#)		
	<u>1992</u>	<u>1989</u>	
Logging	950	1,000	
Wood Industries	6,100	7,700	
Paper and Allied Industries	<u>3,200</u>	<u>2,900</u>	
Total	10,250	11,600	

Source: Statistics Canada Catalogue #72-002; Historical Revisions 1983-1992

As indicated in Table 4, employment in the Canadian forest industry in 1992 was approximately 237,000. Employment at a national level decreased by almost 20% from the 1989 figure of 293,000. All sectors in the Canadian forest industry have experienced an employment decrease.

<b>Canadian Forest Industry Direct Employment</b>			<b>Table 4</b>
	(#)		
	<u>1992</u>	<u>1989</u>	
Logging	37,000	44,500	
Wood Industries	96,000	122,000	
Paper and Allied Industries	<u>104,000</u>	<u>126,500</u>	
Total	237,000	293,000	

Source: Statistics Canada Catalogue #72-002; Historical Revisions 1983-1992

## ***Logging***

Employment in the logging sector in Alberta has been dropping primarily due to logging operations becoming more mechanical and more efficient productivity levels being achieved. The majority of the logging activity in the province is contracted out. Employment within this sector is expected to increase as the Al-Pac mill begins full-scale operations and other production facilities are developed.

At the national level, it is anticipated that employment in logging in Canada will continue to drop as older mills in eastern Canada are closed for market reasons and for environmental concerns. In addition, the reduction in timber supply in B.C. will have an impact on employment levels.

## ***Wood Industries***

This sector has also experienced a decrease in employment levels in Alberta. Closures of facilities such as the plywood plant in Grande Prairie and the OSB plant at Slave Lake have contributed to this decline. In addition, increased efficiencies resulting from improvements made to the mills in recent years has also contributed to this decline. Now that the OSB plant at Slave Lake is in production and with the construction of other new sawmills (e.g., Manning Diversified), there will likely be a gain in employment levels.

Canadian forestry employment levels have dropped as a result of the large number of plywood and sawmills that have closed particularly in B.C. For example, it was reported that in B.C. many plywood plants have been closed over the last few years as the size of the trees continue to get smaller and are therefore not feasible to turn into plywood. However, with the drastic increase in lumber prices, mills that were uneconomic in the past may re-examine their feasibility in light of the higher market prices.

## ***Paper and Allied Industries***

Employment has continued to increase in the pulp and paper sector in Alberta as a result of the increase in production facilities. It is anticipated that this trend will continue over the next year or two. New projects such as the Grande Alberta Paper project could further increase these numbers.

Contrary to the Alberta situation, employment in this sector on a Canada-wide basis has decreased considerably. Market pressures forcing the closure of a large number of mills in eastern Canada, as well as the industry overall becoming more efficient has led to these decreases.

## ***Earnings***

Earnings (defined as wages and salaries) for 1992 within the Alberta forestry industry was approximately \$375 million and has increased from almost \$336 million in 1989. Earnings for 1992 appear in Table 5 along with 1989 figures for comparison.

Table 5

**Alberta Forest Industry Earnings**  
(\$,000)

	<u>1992</u>	<u>1989</u>
Logging	33,338	25,384
Wood Industries	196,246	205,013
Paper and Allied Industries	<u>145,788</u>	<u>105,524</u>
Total	375,373	335,920

Source: Statistics Canada Catalogue #72-002; Historical Revisions 1983-1992

Logging earnings are projected to increase as full allocated volumes of timber are harvested. Past increases have been experienced due to new mills starting up rather than any significant increases in pay rates. The trend within the industry is to contract logging and hauling so that companies can maintain a competitive cost advantage.

It is anticipated that total earnings in wood industries and paper and allied industries in Alberta will increase with the addition of new production facilities.

Although employment in the paper and allied industries accounted for 31% of the total provincial forest industry employment, it accounted for almost 39% of the total earnings, indicating the higher level of wages and salaries typical in this sector as compared to logging and wood industries. In addition, although total employment in the Alberta forest industry has fallen over the past few years, total earnings have increased as a result of the increase in employment levels within the paper and allied industries sector which typically has higher pay levels.

Total earnings in the Canadian forest industry in 1992 were almost \$8.9 billion and contrary to the Alberta situation, have decreased from 1989 when total earnings were approximately \$9.6 billion. Table 6 highlights total earnings in the Canadian forest industry.

Table 6

**Canadian Forest Industry Earnings**  
(\$,000)

	<u>1992</u>	<u>1989</u>
Logging	1,415,830	1,533,765
Wood Industries	2,973,445	3,361,668
Paper and Allied Industries	<u>4,485,283</u>	<u>4,724,320</u>
Total	8,874,557	9,619,753

Source: Statistics Canada Catalogue #72-002; Historical Revisions 1983-1992

From a Canadian perspective, wages will not increase significantly as companies must maintain a cost-competitive position in a world market. The closure of old, outdated mills will reduce the total earnings in these sectors across Canada.

### Comparison to Other Industries

In Table 7, the Alberta forest industry is compared to other key industries in the Alberta economy in terms of shipments, employment and earnings. Figures provided are for 1992 unless otherwise noted. The other industries examined were agriculture (which included field crops and livestock and products), oil and gas (which included crude oil and natural gas and refined petroleum and coal products), and tourism. The percentage change from 1989 figures are provided for comparison.

Comparison to Other Alberta Industries						
	Shipments (\$,000,000)	% Change	Employment (,000)	% Change	Earnings (\$,000,000)	% Change
Forestry	2,476	+40	10.2	-12	375.4	+12
Agriculture	4,632 <sup>(1)</sup>	-.5	89.4	+1	315.0	+9
Oil and Gas	19,455 <sup>(2)</sup>	+17	41.5	-1	2,353.0	+7
Tourism	2,910	+16	52.0 <sup>(3)</sup>	+4 <sup>(4)</sup>	2,139.0 <sup>(5)</sup>	N/A

Source: Statistics Canada

(1) Alberta agriculture shipments are based on 1991 Census of Agriculture data.  
 (2) Includes 1991 shipments of refined petroleum and coal products of \$3,336,000.  
 Statistics Canada Catalogue #31-203.  
 (3) Estimate from Alberta Tourism.  
 (4) Based on comparison of 1990 estimate provided by Alberta Tourism.  
 (5) Tourism earnings are 1989 figures provided by ISTC.

The Alberta forest industry experienced the strongest percentage revenue growth from 1989 compared to agriculture, oil and gas, and tourism. It is the smallest in terms of shipments of these four industries, however, it is approaching a level almost equal to tourism. Oil and gas industry shipments are almost eight times that of the forest industry illustrating the strong influence this industry has on the Alberta economy. Forest industry shipments are currently a little over half the size of Alberta agriculture industry shipments.

Of these four industries, agriculture is the largest employer, although it has the lowest total earnings. The majority of agricultural employees are family members or part-time workers.

The oil and gas industry has the highest level of earnings, but the second highest level of employment. Recent reductions to Alberta's oil and gas royalties should stimulate exploration and development causing increased activity in the oil patch with the resultant increase in employment levels.

Tourism is an extremely difficult industry to define and the majority of industry statistics are estimates. Although the revenues are close to that of the forestry industry, the employment and earnings estimates are much higher. The earnings for tourism are most likely overstated as they

represent a very broad category classification and include much higher paying occupations such as airline pilots, other unionized airline positions, chefs, etc. The result is an upward skewing of the earnings figure. In addition, the employment numbers could be misleadingly high because of the difficulty in classification and the strong part-time employment component.

Table 8 compares the shipments per employee for the industries examined.

<b>1992 Shipments Per Employee</b>		<b>Table 8</b>
	Shipments Per Employee <u>(\$,000)</u>	
Forestry	243	
Agriculture	52	
Oil and Gas	469	
Tourism	56	

The forest industry has the second highest shipments per employee of these industries. The oil and gas industry's shipments per employee is almost double that of the forest industry, which in turn is approximately 4.5 times that of agriculture and tourism combined.

### **Forest Industry Expenditures in Alberta**

In addition to the direct employment and shipments contributions discussed earlier in this report, the Alberta forest industry supports a wide range of other sectors in the province through its purchases of goods and services. These expenditures have impacts both in the regions in which the industry has direct operations, as well as in major Alberta centers where financial and professional services firms and other suppliers are located.

There are two approaches to measuring these indirect impacts. First, we can capture the total annual level of expenditures made in each region in Alberta by the industry. Using a survey approach, this can provide a very up-to-date profile of the shipments made by Alberta suppliers to the forest industry. We report on the results of this analysis in this section.

Alternatively, one can seek to identify the total value-added (GDP) and employment retained in Alberta by suppliers to the forest sector, and by all of the suppliers to these firms. The GDP retained in the province will be less than the shipments of forest industry suppliers, since these shipments include a mix of Alberta and out-of-province content. The results of this indirect GDP analysis are reported in the next section (Total Economic Impacts in Alberta).

Both methods of analysis cover only the annual operating spending by the forest sector. The industry also generates substantial impacts in the construction and related industries as a result of its capital spending programs. However, the focus of this report was on the operating expenditures and not on capital expenditures.

## Survey of Expenditures by the Alberta Forest Industry

### *Methodology and Sample Size*

Statistics Canada data on industrial expenditures by province date from 1984. In order to obtain a more recent picture of the spending pattern of the Alberta forest sector, we conducted a survey of the industry to obtain expenditure input. Eleven companies responded to our survey. Cumulatively, the respondents had annual revenues of almost \$1.1 billion and represented over 50%<sup>1</sup> 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 and allied industries sector and 30% of the wood industries sector.

### *Expenditures Breakdown by Category*

The companies provided annual expenditure information in the following categories: wages and salaries, raw materials, transportation, chemicals, energy/utilities, and other supplies and services. Expenditures from our survey were then grossed up (based on our estimated coverage of shipments) to represent total spending by the provincial industry. The extrapolated results were broken down into the paper and allied industries and the wood industries and then combined to reflect the entire forest industry.

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.

As shown in Table 9, the Alberta forest industry has annual expenditures of roughly \$1.6 billion for wages and salaries and purchases of goods and services, divided nearly equally between sawmills and the pulp and paper sector (with these totals capturing the spending of each of the two secondary sectors on primary logging). Excluding wages and salaries, spending on products and services is approximately \$1.2 billion.

	Annual Expenditures for 1992 (\$,000,000)		
	<u>Paper and Allied Industries</u>	<u>Wood Industries</u>	<u>Forest Industry</u>
Wages and Salaries	164	229	393
Raw Materials	175	267	442
Transportation	130	124	254
Chemicals	107	36	143
Energy/Utilities	67	27	94
Other Supplies and Services	<u>180</u>	<u>110</u>	<u>290</u>
Total	823	793	1,616

<sup>1</sup>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, this results in total external shipments of \$2.1 billion.

The largest categories of industry expenditures are wages and salaries, which are over \$390 million per year, and raw material costs (which includes contract logging), which are almost \$450 million per year. Each of these expenditure categories is largely directed at local workers and wood suppliers, and therefore has little direct leakage outside of the regions in which the industry operates. This will be discussed further in the section.

Expenditures on other supplies and services is the next most important expenditure category and accounts for almost \$300 million of annual industry expenditures. The most important items in this total include process equipment, maintenance and repair services, shipping and packaging supplies, and material handling products.

Figure 1 illustrates the expenditures by percentage of total.

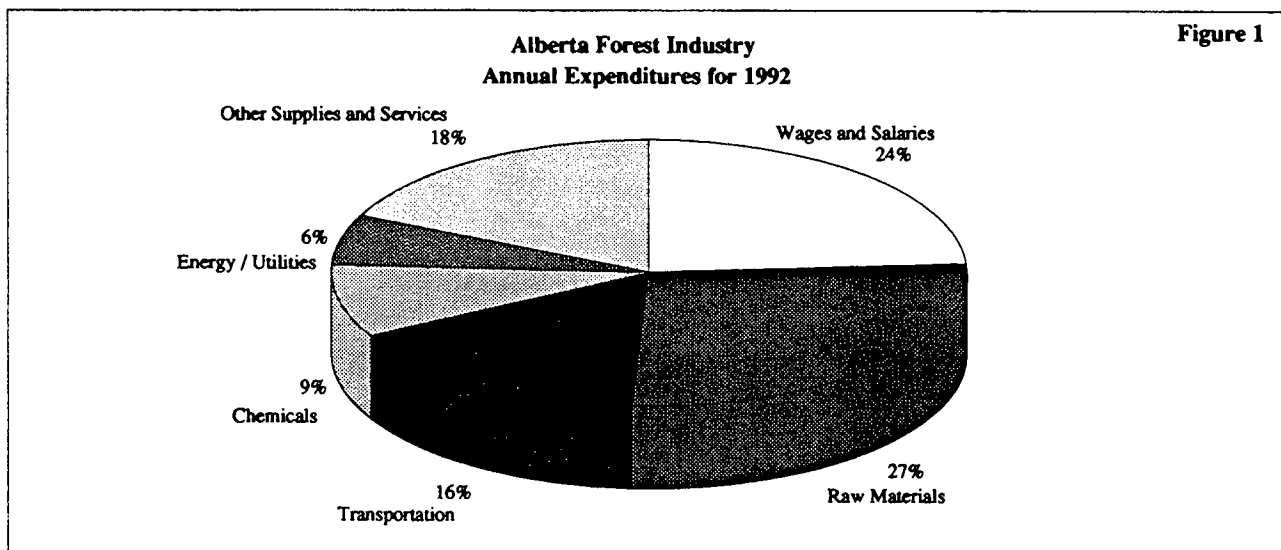


Figure 1

As indicated in Figure 1, raw material and wage expenditures account for 27% and 24%, respectively, of total expenditures. Expenditures on other supplies and services represent 18% of total expenditures. Transportation (which includes contract hauling) pertaining to the movement of both raw materials and finished products represents 16%, while expenditures on chemicals and energy/utilities represent 9% and 6%, respectively.

These expenditure categories vary according to the type of operation examined. The above categories are further segmented in Table 10 between paper and allied industries and wood industries.



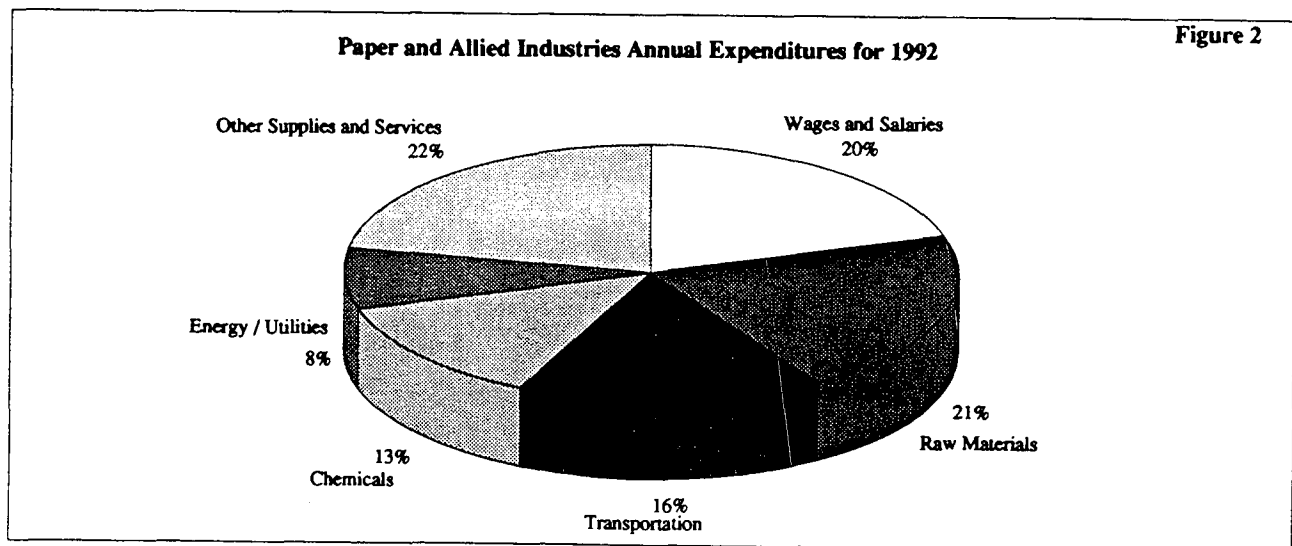
**Table 10**

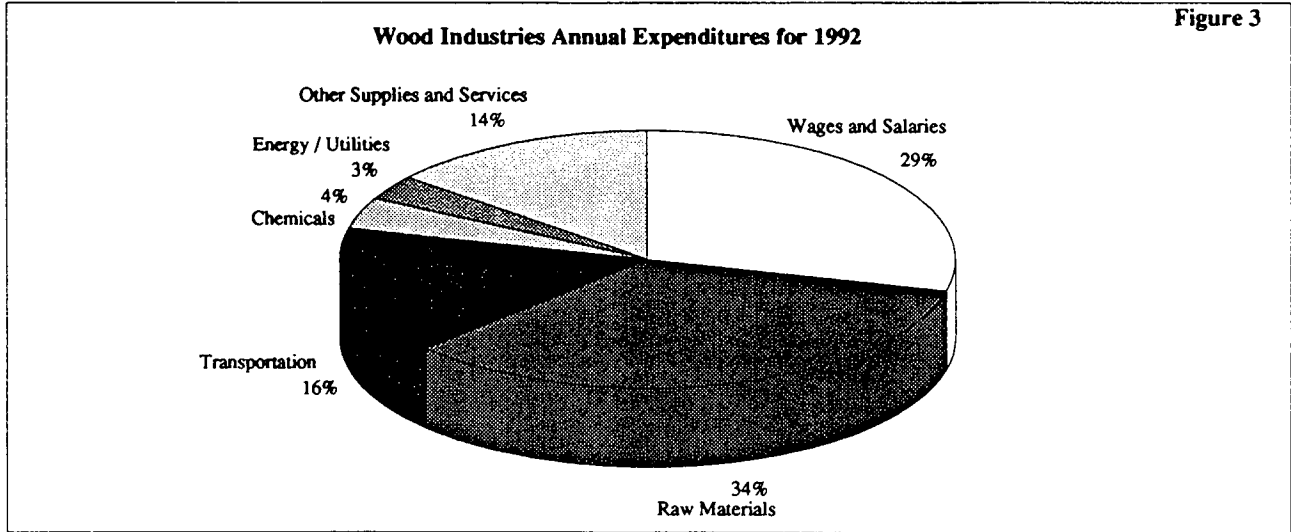
**Annual Expenses for 1992  
By Mill Category  
(%)**

	<u>Paper and Allied Industries</u>	<u>Wood Industries</u>
Wages and Salaries	20	29
Raw Materials	21	34
Transportation	16	16
Chemicals	13	4
Energy/Utilities	8	3
Other Supplies and Services	<u>22</u>	<u>14</u>
Total	100	100

Paper and allied industries spend a higher portion of total expenditures on other supplies and services than does the wood industries sector, 22% compared to 14%. As expected, because of their process, they also spend higher amounts on chemicals, 13% compared to 4%, and on energy, 8% compared to 3%. The wood industries sector spends higher amounts on wages and salaries and raw materials. The wood industries sector is more labour intensive whereas the paper and 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 and allied industries sector indicate a higher level of value-added processing.

The percentage comparisons of these expenditures for the two sectors are presented in Figures 2 and 3.





***Expenditures by Geographic Location***

The vast majority of expenditures – 95% for sawmills, 84% for pulp and paper companies – initially flows to workers and suppliers based in Alberta. Workers and suppliers in the areas local to the mills, and to a lesser extent Edmonton suppliers, reap most of these orders.

Table 11 illustrates the geographical locations of the total expenditures. They have been broken down into local, Edmonton, Calgary, and out-of-province expenditures.

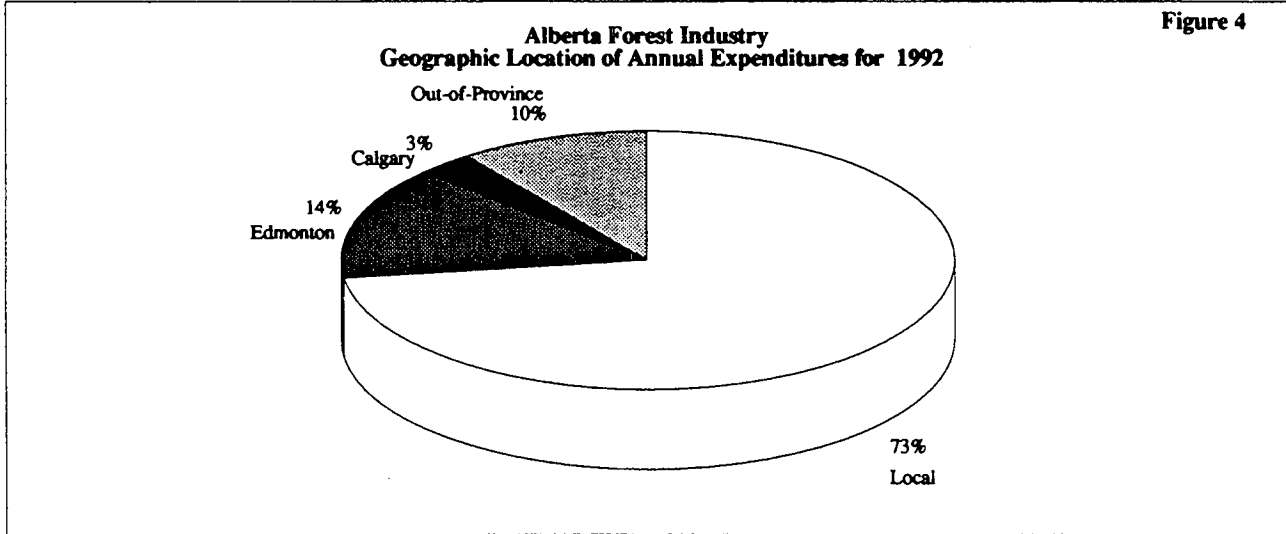
**Table 11**

**Annual Expenditures for 1992  
Geographic Location  
(\$,000,000)**

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

The geographic breakdown of expenditures for the total Alberta forest industry on a percentage basis is illustrated in Figure 4.

Figure 4



The entire industry is spending 90% of its expenditures in the categories previously identified, in Alberta. The majority, or 73%, is being spent locally or within the immediate area of the mill. Edmonton receives the greatest amount of expenditures from the forest industry outside of the local expenditures. Almost 15% of the expenditures are made to companies in Edmonton.

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

The geographic breakdown of expenditures by percent according to the industry sector is given in Table 12.

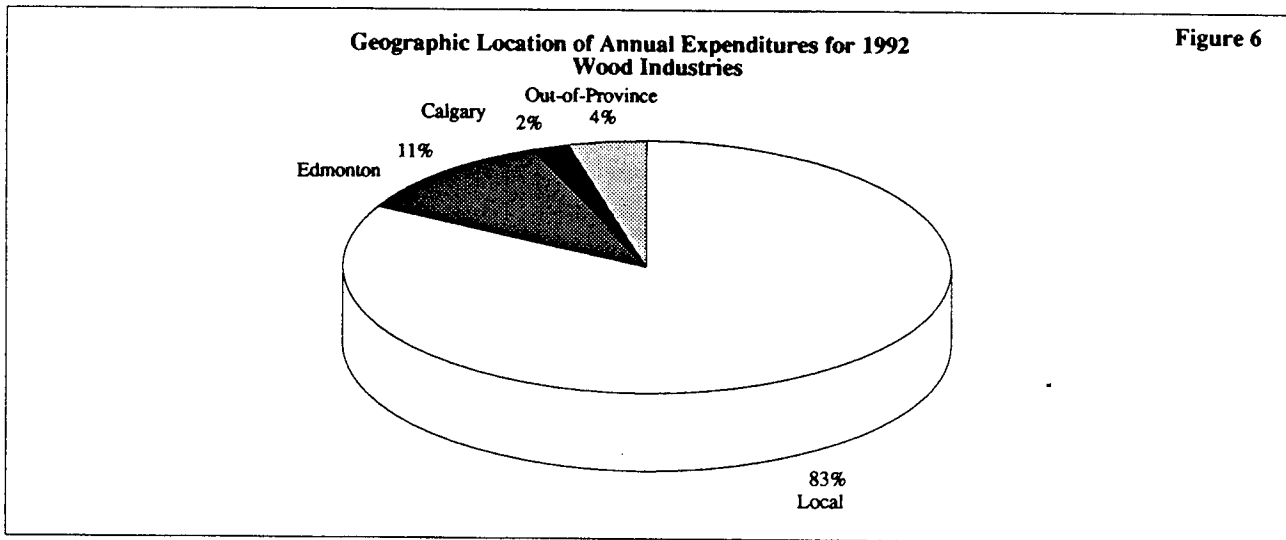
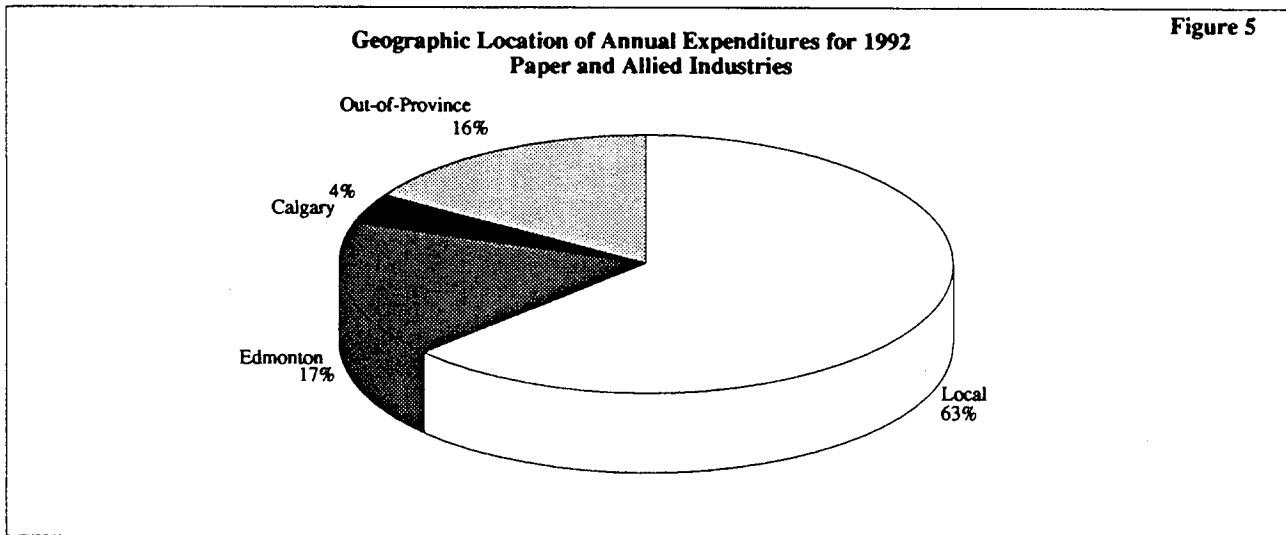
Table 12

Annual Expenses for 1992 Geographic Location (%)		
	<u>Paper and Allied Industries</u>	<u>Wood Industries</u>
Local	63	83
Edmonton	17	11
Calgary	4	2
Out-of-Province	<u>16</u>	<u>4</u>
Total	100	100

Wood industries spend a much greater proportion of their expenditures locally as compared to paper and allied industries, 83% as compared to 63%. 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. However, the paper and allied industries' expenditures in Edmonton are greater than the wood industries', 17% as compared to 11%.

The out-of-province expenditures of paper and allied industries, representing 16% of the expenditure categories, are considerably higher than the other types of operations. 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.

These percentage expenditures are illustrated in Figures 5 and 6.



The breakdown of the expenditure categories by geographic location are given in Table 13 for the paper and allied industries, Table 14 for the wood industries and Table 15 for the entire forest industry.

**Geographic Expenditure By Category  
Paper and Allied Industries  
(\$,000)**

**Table 13**

	<u>Local</u>	<u>Edmonton</u>	<u>Calgary</u>	<u>Out-of-Province</u>	<u>Total</u>
Wages and Salaries	159,554	3,429	0	857	163,840
Raw Materials	172,747	0	0	2,091	174,839
Transportation	66,614	42,694	0	20,857	130,166
Chemicals	14,254	48,904	17,651	26,684	107,494
Energy/Utilities	58,339	1,340	7,590	0	67,269
Other Supplies and Services	<u>48,987</u>	<u>38,759</u>	<u>9,894</u>	<u>81,961</u>	<u>179,601</u>
Total <sup>(1)</sup>	520,495	135,126	35,135	132,450	823,209

(1) Totals may not be equal due to rounding.

**Geographic Expenditure By Category  
Wood Industries  
(\$,000)**

**Table 14**

	<u>Local</u>	<u>Edmonton</u>	<u>Calgary</u>	<u>Out-of-Province</u>	<u>Total</u>
Wages and Salaries	228,313	667	0	0	228,980
Raw Materials	264,087	2,777	0	0	266,863
Transportation	92,087	24,747	1,667	5,667	124,167
Chemicals	333	25,217	0	10,547	36,097
Energy/Utilities	25,693	150	850	0	26,693
Other Supplies and Services	<u>48,507</u>	<u>32,440</u>	<u>9,600</u>	<u>19,813</u>	<u>110,360</u>
Total <sup>(1)</sup>	659,020	85,998	12,117	36,027	793,160

(1) Totals may not be equal due to rounding.

**Geographic Expenditure By Category  
For Industry  
(\$,000)**

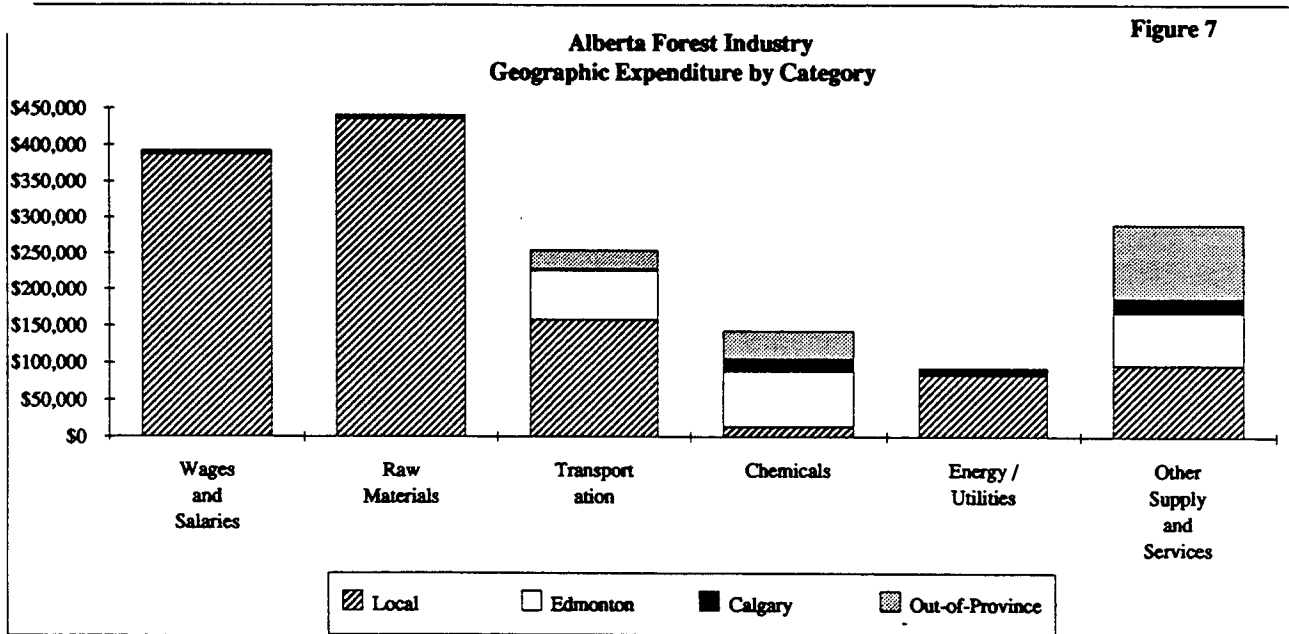
**Table 15**

	<u>Local</u>	<u>Edmonton</u>	<u>Calgary</u>	<u>Out-of-Province</u>	<u>Total</u>
Wages and Salaries	387,867	4,096	0	857	392,820
Raw Materials	436,834	2,777	0	2,091	441,702
Transportation	158,701	67,441	1,667	26,524	254,333
Chemicals	14,587	74,121	0	37,231	143,590
Energy/Utilities	84,032	1,490	17,651	0	93,962
Other Supplies and Services	<u>97,494</u>	<u>71,199</u>	<u>19,494</u>	<u>101,774</u>	<u>289,961</u>
Total <sup>(1)</sup>	1,179,515	221,124	38,812	168,477	1,616,368

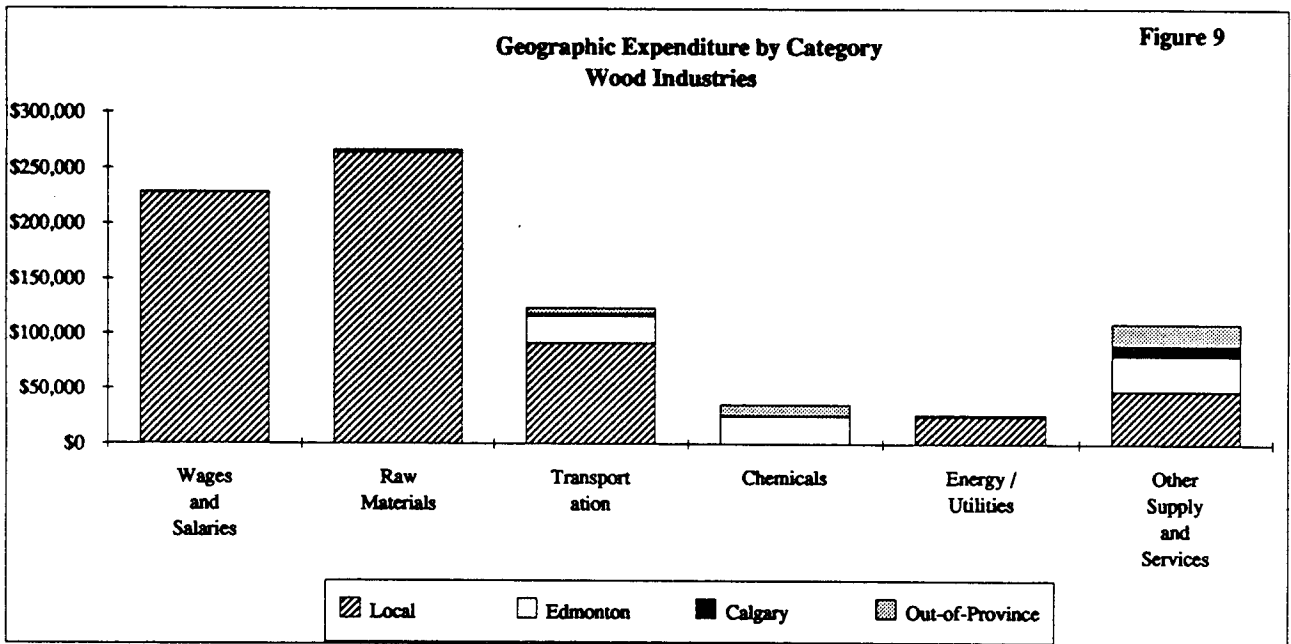
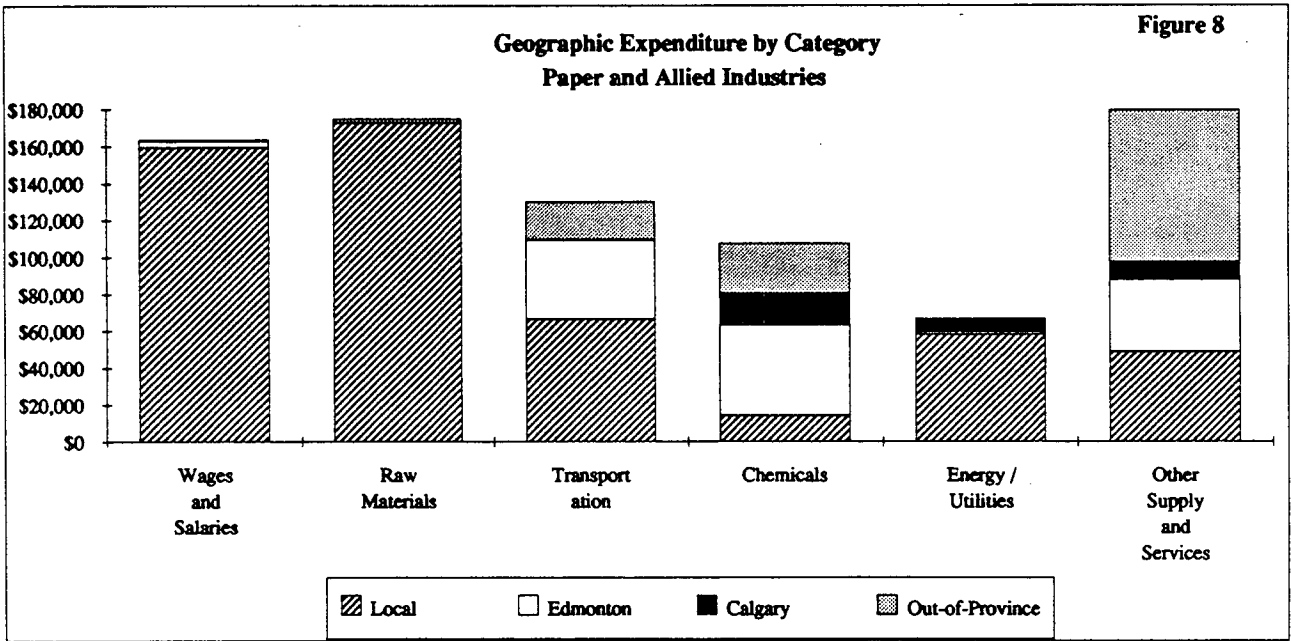
(1) Totals may not be equal due to rounding.

The forest industry spends approximately \$170 million annually out-of-province with over \$100 million spent on other supplies and services, almost \$40 million spent on chemicals, and over \$25 million spent on transportation. The majority of the out-of-province expenditures on transportation is on rail service.

Figure 7 illustrates the relative proportions of the expenditure categories according to the location of expenditure.



The category expenditures by each sector is illustrated in Figures 8 and 9. The paper and allied industries have a higher portion of out-of-province expenditures than the wood industries.



## Total Economic Impacts in Alberta

The production activity of the Alberta forest industry generates employment and GDP across the province in a wide range of industries. These impacts include direct, indirect, and induced economic activity.

Direct economic activity encompasses the employment and GDP of the logging, sawmill, and pulp and paper sectors themselves. As discussed earlier in the report, Statistics Canada data show that the industry directly employs 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 forest industry and their suppliers, covering all of the value-added that remains in the province. This activity is driven by the \$1.2 billion in annual expenditures of the industry that was identified in the preceding section of this report.

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. This would include local goods and services providers in the towns where the forest industry operates, as well as firms elsewhere in the province that supply these local firms with products or services.

In this section we provide estimates of these impacts for the province of Alberta as a whole. The subsequent section of the report provides a rough allocation of these province-wide impacts at the regional level.

### *Methodology*

To estimate the indirect impacts of the forest industry 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 forest industry. 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 forest sector or its employees.

Statistics Canada's input-output tables, incorporated in their *Interprovincial Input-Output Model*, 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.)

Table 16 provides a comparison of the mix of spending (by commodity) found in our survey, and the mix assumed in the Statistics Canada model. Although we obtained the mix of spending through our survey for both the pulp and paper sector and the wood products sector, due to confidentiality requirements, fully one-quarter of the Statistics Canada data for the pulp and paper



sector inputs are suppressed in the publicly available tables. Comparison of the survey results to this data would be meaningless. Thus, we are only able to compare the ratios of expenditures for the wood products (sawmill) sector.

<b>Comparison of Spending Mix From Survey &amp; Statistics Canada Model Wood Industries</b>		
	<u>Survey<sup>(1)</sup></u>	<u>Input Table</u>
Wages and Salaries	.22	.29
Raw Materials	.26	.33
Transportation	.12	.03
Chemicals	.03	.03
Energy/Utilities	.03	.03
Other Supplies and Services	.11	.09

(1)The industry input coefficients from the model were summarized into the six major categories which were included in the survey. Net indirect taxes, net income and other operating surplus was not included.

As shown in the table, the wood industries data in our survey show only modest changes from the assumptions built into the Statistics Canada model. The exception is for transportation; this may be due to a difference in the extent to which the industry pays for contracted transportation as opposed to directly employing drivers. A shift from direct employment to contracting out transportation should not affect the overall sum of direct and indirect impacts (but would shift some of the direct impacts to indirect impacts). Thus, changes in the input mix since 1984 suggest that the 1984 multipliers may still be reasonable approximations for the impacts of the wood industries segment.

Although we cannot demonstrate any major shifts in the mix of inputs since 1984, 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 forest industry, 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 and Indirect Economic Impacts***

Table 17 shows how the direct contributions of the forest industry in Alberta translate into total direct and indirect impacts on the provincial economy. As shown in the table, the industry accounts for more than 15,600 jobs across the province in the forest industries and their in-province suppliers, two-thirds of which are in the primary and secondary forest industries and one-third in the "tertiary sector" that supplies these industries with products and services. In total,

these primary, secondary, and tertiary industries generate more than \$1.4 billion in GDP for the province.

Table 17

**Direct and Indirect Economic Impacts of the Alberta Forest Industry, 1992**

<u>Industry</u>	<u>Direct</u>	Employment <u>Indirect</u>	<u>Total</u>	GDP Direct+Indirect <u>(\$,000,000)</u>
Logging	950	770	1,720	273
Wood Industries	6,100	3,678	9,778	715
Paper and Allied Industries	3,200	2,682	5,882	702
Logging Adjustment	<u>950</u>	<u>-950</u>	<u>0</u>	<u>0</u>
Total <sup>(1)</sup>	10,250	5,410	15,660	1,417

(1) Total impacts exclude the logging industry line, since it is fully captured within the indirect impacts of the wood and paper and allied sectors. The indirect impacts are the sum of the paper and wood industry indirect impacts, less the 950 direct jobs of the logging industry, which we have already included in the direct jobs of the forest industries.

Source: Statistics Canada, Ernst & Young  
Multipliers based on data provided by Alberta Treasury<sup>2</sup>

As can be seen in the above table, the paper and allied industries sector account for a higher ratio of indirect employment impact to direct employment than the wood industries. This supports our survey results which found the wood industries to be more labour intensive and results in less operating expenditures per employee than the paper and allied industries.

The GDP multipliers show that the forest industry has a relatively high in-province content in its output, compared to other industries of the provincial economy. The logging sector multiplier for forestry ranks 16th out of 41 industries measured in terms of the in-province value-added as a share of its shipments. The wood industries have the third highest in-province content in their shipments out of 21 manufacturing industries, while the paper and allied industries ranks fifth.

#### ***Total Direct, Indirect, and Induced Impacts***

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. Table 18 shows the total employment and GDP impacts of the forest industries 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.

<sup>2</sup>Multipliers in "ratio form, with leakages" were used to translate direct employment into the sum of direct and indirect employment. Multipliers in "absolute form, with leakages" were used to translate industry shipments into GDP.

Table 18

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

<u>Industry</u>	<i>Direct + Indirect</i>	Employment <i>Induced</i> <sup>(2)</sup>	<u>Total</u>	GDP Direct+Indirect + Induced (\$,000,000)
Logging	1,720	1,105	2,825	370
Wood Industries	9,778	4,429	14,207	1,048
Paper and Allied Industries	<u>5,882</u>	<u>3,100</u>	<u>8,982</u>	<u>920</u>
Total <sup>(1)</sup>	15,660	7,529	23,189	1,968

(1) Total impacts exclude logging, since the impacts of logging are fully captured in the indirect and induced impacts of the wood products and paper and allied industries.

(2) Excludes most of government, education and health which are largely funded by the government sector and thus not generally captured in induced impacts.

Source: Statistics Canada, Ernst & Young

Multipliers based on Alberta Economic Multipliers, Alberta Treasury

The high household incomes generally earned by workers in this industry, particularly relative to the service sector, result in larger overall spin-off effects. Thus, for example, jobs in the tourist sector would not generally be associated with as many indirect and induced jobs as those in the forest industry. According to data provided in Alberta Economic Multipliers, each 100 direct jobs in the Alberta "accommodation and food services industry" results in only an additional 36 jobs when indirect and induced employment is added. One hundred jobs in agriculture would add only a further 88 jobs through indirect and induced impacts. In contrast, our results suggest that each 100 jobs in the forest industry generates a further 126 jobs elsewhere in Alberta due to indirect and induced impacts.

### Local Economic Impacts

The 23,000 direct, indirect, and induced jobs provided by the Alberta forest industry are found in both the local communities in which the industry and its local suppliers operate, as well as in major cities where other suppliers to the industry and its employees are found. Employers in the forestry and forest products area are particularly important in a number of more remote communities in the province, where natural resources are responsible for the ability of these towns to exist and prosper. In this section, we explore the nature of the regional distribution of forest industry economic impacts in Alberta.

We undertook this analysis using two approaches. First, we discussed the importance of the forest industries with community economic development officials in a sample of four regions where the industry operates (Grande Prairie, Peace River, Edson-Hinton, and Whitecourt). These interviews provide us with a qualitative look at how the industry has affected the development of these towns. The results of these interviews are presented in the next section (Discussions with Regional Representatives).

We then used an analysis of the local employment distribution in each of the four forest-based

communities as well as the Edmonton and Calgary Census Metropolitan Areas (CMAs), together with our estimates for overall provincial direct, indirect, and induced impacts, to estimate the regional allocation of the provincial impacts. These are presented following the interview results.

### **Discussions with Regional Representatives**

We undertook a series of interviews with representatives from the various regions examined, in order to obtain their views and comments as to the regional impact of the forest industry. We have summarized their comments below.

#### ***Grande Prairie***

Grande Prairie had been primarily an agricultural service center and expanded as a result of the oil and gas industry in the 1960's and 1970's. It expanded further when Proctor and Gamble established a major presence over 20 years ago. As of 1991, the city had a population of over 28,000 people. It was felt that 7,000 to 8,000 people were added to the population as a result of the forest industry.

Of the regions examined, Grande Prairie has the most established infrastructure in support of the forest industry within the region. The city serves as a regional center for a significant portion of the northern part of the province and its influence extends into British Columbia as well.

It was reported that Weyerhaeuser Canada Ltd.'s mills (which have been located in Grande Prairie since 1977) is the second largest employer in the city. The company employs approximately 800 people. The largest employer in the city is the Queen Elizabeth II Hospital which employs approximately 1,000 people. Canadian Forest Products Ltd. also accounts for a substantial amount of employment.

The forest industry was felt to play a very significant role to the economy of the region. As an extreme, it was indicated by one civic administrator that if they lost the forest industry "it would devastate the city". Along with agriculture and the oil and gas industry, the forest industry is one of the region's main economic drivers. It was reported that all three industries are felt to have about the same impact on the city.

Because of its greater distance from Edmonton, Grande Prairie has developed a strong infrastructure to support the forest industry. The city has two forest equipment manufacturers that are selling in international markets. A major chemical facility was built there in order to serve the industry. It was reported that companies in Grande Prairie supply mills in Peace River, Hinton, and Athabasca. The local college is active in the forest industry and is working with industry to do research in the drying and processing of wood.

A large number of the service businesses to the forest industry were started by individuals who initially started working at the mills. A substantial amount of the service of the day-to-day operations of the mills occurs from the city. The forest industry has also spawned numerous manufacturing and fabrication businesses. There are also a number of transportation companies that have converted from doing oil and gas work to hauling for the forest industry.

The city is well poised to take advantage of other mill developments being planned in the area. The industry has been relatively stable and constant within the region and local forest industry operations have experienced minimal staff layoffs.

#### ***Whitecourt***

The forest industry has had a very positive impact on Whitecourt. The growth of the industry in the region started about seven years ago, but the biggest impact was five years ago with the

construction of the Millar Western Pulp Ltd. facility. The region received an additional boost three years ago with the construction of the Alberta Newsprint Company facility. This growth was occurring about the same time as the downturn within the oil and gas industry. Whitecourt had a population of slightly over 6,900 in 1991. Seven years previously, the population was 5,000.

The forest industry is now felt to be the biggest employer. The importance of the energy sector has been decreasing over the past six years as the importance of the forest industry has been increasing. There has been a considerable shift amongst the population in employment within the industries. The new mills were active in providing training to their employees and many shifted from the oil and gas industry.

Town officials feel that local suppliers are not supplying a strong share of goods and services to the industry because much of it is being sourced in Edmonton. The proximity to Edmonton enables Edmonton-based suppliers to effectively compete. The local impact has been strongly felt within the woodlands operations and the transportation operations, both in the hauling of timber as well as truck maintenance and repair. It is felt that the mills have complicated processing systems that require specific expertise which is not resident in the local companies. Town officials feel that the indirect impact of the industry is not as great as the induced impact.

There has been a strong impact to the region from increased construction activity. In 1985, 11 houses were built and building permits totalled \$1.9 million. Building permits in 1989 totalled \$19.7 million and 110 new houses were constructed.

### ***Peace River***

The forest industry has had a substantial impact on Peace River. It was reported that 60% of the employees at the Daishowa-Marubeni International Ltd. plant live in Peace River. The 1991 population of Peace River was slightly over 6,700 people.

The forest industry in Peace River is able to source goods and services from Grande Prairie because of its close proximity. It is felt though that a high level of local supplies and services are being sourced in the region.

Prices of homes were reported to have gone up 20% when the Daishowa mill was built in 1988/1989. The region experienced a major increase in construction activity during that period, however, this activity has returned to more normal levels.

The forest industry is of major importance to the region and has had a significant positive impact to the local economy.

### ***Edson/Hinton***

It is reported that without the forest industry, Edson would be a third smaller and Hinton would be half the size. Of the two towns, Edson has a more diversified economy with a strong oil and gas component. In 1991, the population of Edson was slightly over 7,300 people and the population of Hinton was just over 9,000 people, for a combined population of 16,300 people.

Weldwood of Canada Limited has been located in Hinton for over 30 years and has had a significant impact on the region.

It is felt that most of the industrial supplies for the industry located in Edson are being bought in Edmonton. Hinton, however, has developed a stronger infrastructure base because it is only a one-hour drive to Edmonton. There are more service and fabrication companies located in Hinton than in Edson. A number of Edson-based companies can draw off the infrastructure base in Hinton. Because of its proximity to Edmonton, a strong component of goods and services purchased are sourced in Edmonton.

Town officials view the forest industry as offering the best opportunity for long-term sustainable employment and growth for the region. They view the forest sector as leading the economic growth in the area, particularly through value-added processing.

### ***Survey Spending Patterns***

The geographical expenditure patterns from the survey for the four regions examined is provided in Table 19.

<b>Geographic Expenditure By Region</b>					<b>Table 19</b>
(%)					
	<u>Local</u>	<u>Edmonton</u>	<u>Calgary</u>	<u>Out-of-Province</u>	<u>Total</u>
Grande Prairie	77	15	6	2	100
Peace River	70	13	2	15	100
Whitecourt	63	17	1	19	100
Edson/Hinton	68	12	5	15	100

Companies within each region spend different proportions geographically of their total expenditures.

As the survey results indicate, Grande Prairie receives the greatest local benefit from the forest industry of the four regions examined. This is primarily due to that region's greater development of a stronger supply and service base to the industry. The greater distance from Edmonton serves to further strengthen that base. This is further illustrated by the relatively low levels of out-of-province purchases by firms in that region.

The greater distance from Peace River to Edmonton also encourages a higher level of local purchasing for firms in that region.

The firms around Whitecourt have a lower level of local purchasing and rely more heavily on Edmonton. This is due to the closer proximity to Edmonton.

Calgary receives minimal levels of purchases from the regions examined. This is expected, given the fact that these regions are all in the northern part of the province.

### **Regional Allocation of Provincial Impacts**

We examined the nature of forest industry employment in four regions that are typical of areas where forest sector activity is concentrated: Grande Prairie, Peace River, Edson/Hinton, and Whitecourt. We also examined Edmonton and Calgary.

We utilized a capture area based on roughly a 75 km radius around the towns of Peace River and Whitecourt. Because Grande Prairie is a regional center, a radius of 125 km around the city was used. An oval capture area of approximately 75 km radius around each town was used for Edson and Hinton. Adjustments were made so that the capture areas for each region did not overlap. CMAs were used for Edmonton and Calgary.

Our six sample areas account for just over 70% of the province's total forest industry employment. These communities demonstrate the sizable importance of forest products to the communities in which major mills are located. Local employment data were based on the 1991 census and adjusted for overall changes in Alberta employment from 1992 to 1991. We also adjusted the forest industry employment totals for the four smaller communities based on the results of our survey.

#### ***Four Region Case Study of Multipliers***

As shown in the expenditure data from our survey, a substantial share of forest industry spending flows initially to suppliers in the regions in which the companies have operations. In addition, the household spending of well-paid forest sector workers is an important driver of local retail and personal service industries in these communities.

To identify the scale of indirect and induced impacts by community, we adopted the following methodology. We first allocated employment in each of the four smaller communities examined into those sectors that bring revenue into the community (i.e., sectors which "export" their products to other areas of the province or out of the province), and into those sectors which depend on local spending by community residents. The first group of industries are defined as comprising agriculture, fishing/trapping, logging/forestry, mining, and some manufacturing sectors. Other industries, including construction, transportation/storage, wholesale trade, communications/utilities, finance/insurance, real estate, business services, government, health, and other service industries, would primarily (in communities the size of the four smaller centers examined) derive revenues from the sale of products to the "export" industries or to households. Their existence and employment, therefore, largely rests on indirect and induced demand linked to the "export" industries.

Our second step involved segmenting the output of three other sectors – retail trade, accommodation and food service, and "other (i.e., non-forest product) manufacturing" – into an "export" share and a local share. Data from Alberta Tourism on tourist spending by region of the province were used to estimate the share of retail and hospitality sector demand that is devoted to tourism. Expenditures were translated into jobs at a ratio of \$70,000 in spending per full-time and part-time job, based on typical ratios found in other studies by Ernst & Young. We applied judgments to the detailed data on manufacturing employment to allocate individual subsectors into local market (e.g., local machining and metal fabricating serving mining or forestry sectors) and "export" (e.g., some food processing) sectors, and concluded that roughly 40% of this employment was devoted to markets outside the local region.

Finally, we took the total employment in the locally-based industries (excluding government, education and health which are largely funded by the government sector and thus not generally captured in induced impacts) and divided it by the employment in the "export" industries to derive a local multiplier for the four regions. This multiplier measures the number of local-market jobs that can be supported in the community as a result of the income generated by each "export" job. This multiplier is based on the logic that, in the absence of the "export" oriented jobs, the communities themselves would not exist as viable economic entities for other private sector businesses.

The results of this analysis are presented in Table 20. Based on total private employment (excluding government, education, and health), multipliers in the four communities studied ranged

from 2.15 to 2.88, implying that each "export" sector job generated 1.15 to 1.88 other jobs in locally-based industries serving households or "exporting" industries. The multiplier was then applied to the number of forest industry jobs to measure the local spin-offs from the forest sector.

<b>Local Economic Multipliers in Four Alberta Regions</b>					<b>Table 20</b>
<u>Region</u>	<u>"Export" Industries Employment</u>	<u>Total Private Employment</u> <sup>(1)</sup>	<u>Implied Private Multiplier</u> <sup>(2)</sup>	<u>Total Employment</u> <sup>(3)</sup>	<u>Implied Total Multiplier</u> <sup>(4)</sup>
Grande Prairie	8,271	23,840	2.88	30,044	3.63
Peace River	2,929	6,559	2.24	8,962	3.06
Edson/Hinton	5,055	11,020	2.18	13,128	2.60
Whitecourt	6,476	13,910	2.15	16,743	2.59

(1) Excludes government, education, and health.  
(2) Ratio of total jobs (excluding education, health and public administration) to jobs in "exporting" (i.e., non-local market) industries.  
(3) Includes government, education, and health.  
(4) Ratio of total jobs (including education, health, and public administration) to jobs in "exporting" (i.e., non-local market) industries.

Source: Statistics Canada Census, Ernst & Young

If public sector employment is included (since these public jobs serve local area residents whose presence is attributable to the "export" sectors), multipliers in the four communities ranged from 2.59 to 3.63. This implies that each "export" sector job generated 1.59 to 2.63 other jobs in locally-based industries serving households or "exporting" industries.

***Estimated Allocation of 1992 Total Employment Impacts (Direct, Indirect, and Induced) for the Forest Industry***

In this section, we apply the results of the four case studies presented above, together with the province-wide economic impacts explored in the previous section, to allocate the 1992 total employment impacts (direct, indirect, and induced) by region. As noted above, the 1992 allocation of the direct employment is based on a combination of census data for 1991 and our survey results for the four smaller regions for 1992.

For each of the four smaller communities examined in our case study, we then used the local private employment multiplier estimated above to derive total local employment impacts for that community in 1992. For the "other Alberta" area (i.e., all other communities *except* the Edmonton and Calgary CMAs), we applied the average multiplier found in the case studies (i.e., 2.36), on the assumption that the economic structure of other areas with forest industries activity is similar to that of the four case study regions.

The economic impacts in Edmonton and Calgary were then derived from the difference between the total direct, indirect, and induced provincial impacts calculated previously, and the sum of the impacts found in the four case study areas plus "other Alberta". This remaining impact is then shared between the two major urban areas based on their relative shares of direct forest industries employment.



We caution that this region allocation is a very broad approximation, since the local multipliers are by necessity derived from quite limited data.

As shown in Table 21, the two major urban areas obtain a slightly smaller share of total employment impacts that they account for in terms of direct employment in the forest industry. These major centers obtain spin-off activity from sales of commodities to businesses and consumers in outlying areas. However, we suspect that more of the employment in the two major cities is administrative employment that is associated with less non-salary spending in the area than the production-related activity in the other regions. This tends to reduce the indirect spin-off effects to local suppliers.

<b>Approximate Regional Allocation of Total (Direct, Indirect and Induced) Forest Industry Employment Impacts 1992</b>			<b>Table 21</b>
<u>Region</u>	<u>Direct Forest Industry Employment</u>	<u>Total Empl. Impact</u>	
Grande Prairie	1,350	3,888	
Peace River	400	896	
Edson/Hinton	1,300	2,834	
Whitecourt	1,450	3,118	
Calgary	1,750	3,601	
Edmonton	1,950	4,014	
Other Alberta	<u>2,050</u>	<u>4,838</u>	
Total	10,250	23,189	

Source: Ernst & Young, Statistics Canada

## **Appendix 1. Companies Surveyed**

- Millar Western Industries Ltd.
- Millar Western Pulp Ltd.
- Daishowa-Marubeni International Ltd.
- Weyerhaeuser Canada Ltd. (Pulp)
- Weyerhaeuser Canada Ltd. (Sawmill)
- Weyerhaeuser Canada Ltd. (OSB Mill)
- Weldwood of Canada Limited (Pulp)
- Alberta Newsprint Company
- Canadian Forest Products Ltd.
- Weldwood of Canada Limited (Studmill)
- Blue Ridge Lumber (1981) Ltd.

