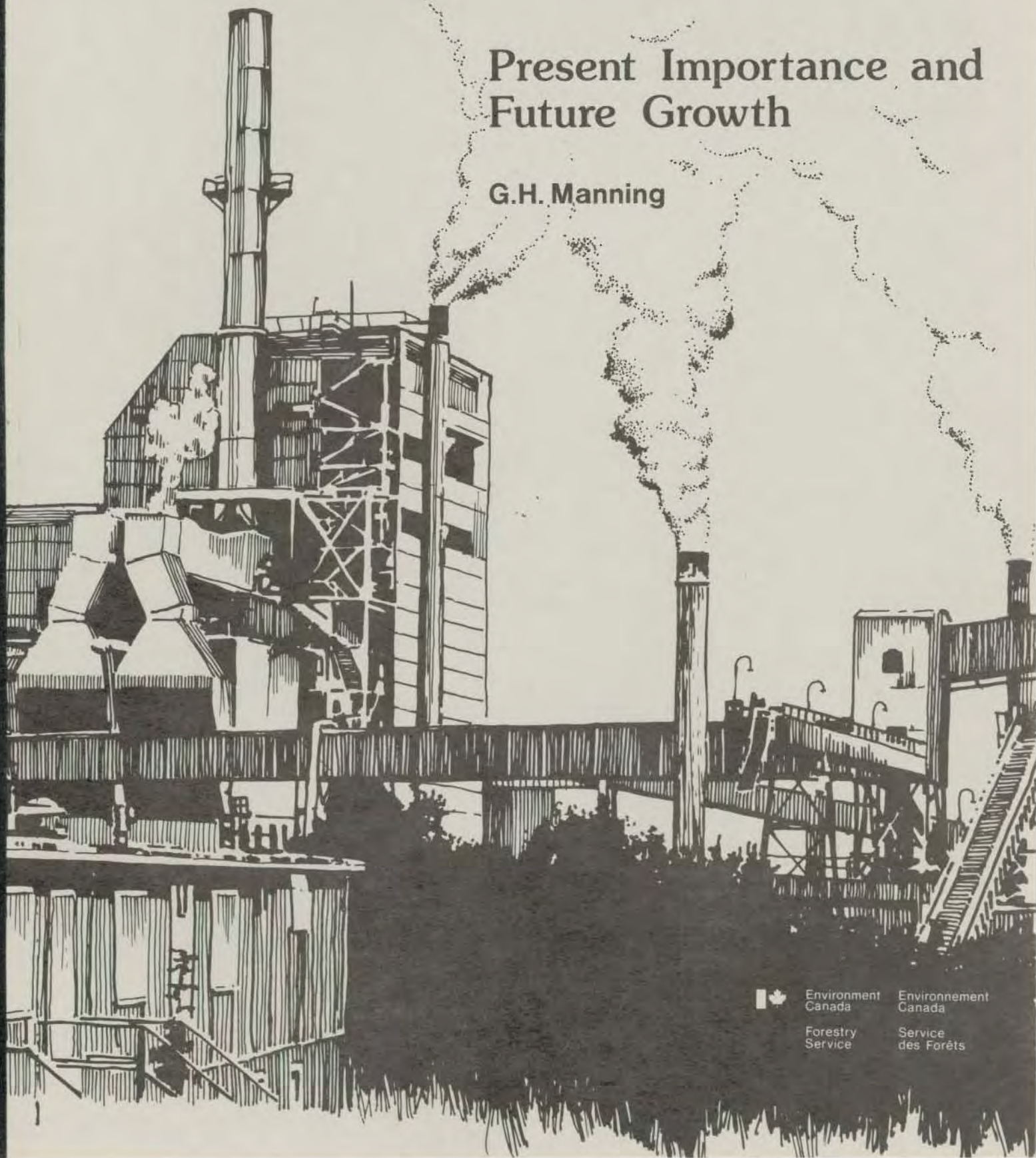


The British Columbia PULP INDUSTRY

Present Importance and
Future Growth

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Abstract

World woodpulp demand has increased about 6% per year over recent years. Forecasts show that this trend will increase well into the future. Analysis of the impact of this forecast demand on British Columbia forest resources indicates that this growth cannot be sustained under present resource utilization standards.

Résumé

La demande mondiale de bois à pâte a augmenté d'environ 6 p. cent depuis les quelques dernières années. Selon les prévisions, cette tendance ira en augmentant, assez loin dans l'avenir. Une analyse de l'influence que ces prévisions de la demande auront sur les ressources forestières de la Colombie-Britannique indique que l'on ne pourra suffire à la demande croissante selon les normes actuelles d'utilisation des ressources.

The wood pulp industry is a significant contributor to world economic welfare. In 1974, world pulp capacity was 123.8 million metric tons (FAO 1975b), Canada's capacity being 21.3 million metric tons (FAO 1975a). British Columbia's share in the pulp and paper industry amounts to 5.3 million metric tons of pulp (B.C. Dept. Econ. Dev. 1974) and constitutes 25% of Canada's pulp capacity. There are 141 pulp and paper mills, employing more than 61,000 production workers, producing 6% of all manufacturing value added in Canada. Comparatively, in British Columbia there are 22 pulp and paper mills, employing 12,00 workers, producing 15% of all Provincial manufacturing value added (Stat. Can. 1975).

The aggregate demand for woodpulp in the major free-world economies has increased by an annual average of about 3% over the past 5 years (Table 1), a trend that may continue for the next 5 to 10 years. The future of this important industry to Canada and to British Columbia warrants our attention. Specifically, what are the markets for British Columbia woodpulp, and what are their requirements? Can British Columbia's forest resources provide the required wood fiber inputs to the pulp industry in an economic fashion?

Demand for British Columbia Pulp and Paper

In 1974, the annual pulping capacity for British Columbia's woodpulp industry was 6,341 thousand metric tons (Table 2), and this was little changed in 1975. The major pulp products are bleached and semi-bleached kraft with a mill capacity of 3,742 thousand metric tons. Of this, more than 90% is used to produce market pulp. In the same year (1974), paper capacity stood at 2,146 thousand metric tons, of which 80% was exported to other countries.

Woodpulp represents 22% of British Columbia's total exports, and is the second most important export after softwood lumber, returning \$564 million to British Columbia in 1973. The United States is British Columbia's most important market for woodpulp, receiving 36.5% of British Columbia woodpulp exports in 1973, while the E.E.C. (original 6 members) takes 27.6%. Pulp and paper markets are listed in Appendix Tables II and III.

The woodpulp industry has been substantially affected by the current world economic recession and is presently experiencing a period of depressed demand and low operat-

Table 1. Consumption of Woodpulp, Major Free World Economies

Year	Canada	United States	E.E.C.	Scandinavia	Japan
----- million metric tons -----					
1969	11.6	38.9	13.3	10.3	8.5
1970	11.6	38.6	13.8	11.1	9.7
1971	11.4	40.9	12.1	11.4	9.6
1972	12.0	43.6	13.1	11.8	10.3
1973	12.8	45.4	13.8	12.4	11.2

Source: FAO 1975c

Table 2. Summary of British Columbia Pulp and Paper Capacity, 1974 ('000 Metric Tons)

	Pulp			Paper and Paperboard	
	Internal	Market	Total		
Kraft					
semi and bleached	308	3,434	3,742	Newsprint	1,459
unbleached	669	189	858	Groundwood papers	102
	<u>977</u>	<u>3,623</u>	<u>4,600</u>	Kraft paper & board	553
				Fine papers	<u>32</u>
				Total, all paper	2,146
Sulphite					
bleached	----	321	321		
Groundwood					
stone	----	----	1,186		
refiner	----	----	228		
			<u>1,414</u>		
Other (waste paper)	----	----	<u>6</u>		
Total, all pulp			6,341		

Source: F.L.C. Reed and Associates

ing rates. This is particularly true in the packaging sector, especially demand for corrugated containers, which comprise the single largest end-use market for chemical pulp. However, in contrast to the usual pricing policies under these conditions, manufacturers of chemical pulp have attempted to maintain or increase their posted selling prices which, from January 1973 to January 1975, increased 120% (Weatherall 1975).

In spite of the apparent success of the industry in maintaining its posted selling prices in the face of a substantial decline in demand, such policies could, over the longer

term, have the effect of extending the duration of a buyer's market by restraining the impact of normal market forces. The 1975-1976 period of oversupply may continue in the face of escalating industry costs, prolonged work stoppages, and substantial shortfall in new mill capacities in Canada, the United States and Scandinavia for the next 3 to 5 years (FAO 1975a).

The amount of pulp and paper consumed has traditionally provided a good indication of the affluence of an economy. The principal end-use markets are packaging, publishing (newsprint and other catalog and

book papers) and personal use papers. Packaging is the most significant end use market on a volume basis, as well as being the sector most sensitive to the fluctuations of the business cycle. In developed countries, sanitary and other tissues tend to constitute the most rapidly growing markets, newsprint demand inclining to lag behind consumption growth for other papers. Demand growth in the packaging sector is usually somewhat above that of the industry as a whole, with the bulk of consumption in corrugated containers.

Forecasts of Demand

Numerous forecasts of world demand for woodpulp have been made (Table 3). The most recent is by Keays (1975), in which he synthesized a number of other forecasts and presented a "consensus" forecast.

Canada has historically been one of the world's major producers of woodpulp, producing 11.2 million metric tons in 1963, and increasing this to 19.7 million metric tons in 1974. British Columbia's share of this production increased from 20% to 25% in the interim period.

Forecasting production and demand, even in a world context, is fraught with difficulties, although Keays (1975) and others have estimated future world demand. Jegr and Thompson (1975) have estimated Canada's future production and consumption requirements, and have further indicated the impact on Canada's forest resources. They suggest that by 1980, Canada will produce 24 million metric tons of pulp of which 15.8 million metric tons will be consumed domestically. By 1990, production will be 36 million metric tons and consumption

Table 3. Alternate Forecasts of World^{a/} Woodpulp Consumption

Consumption in Million Metric Tons					
1980	1985	1990	1995	2000	Source of Forecast
149.9	186.5	230.6			Jones 1974
131.161 ^{b/}					FAO 1975c
145.62	178.98				FAO 1972
128.21	152.87				Jaakko Poyry 1975
146.4	175.2	208.8	247.2	288.8	Keays 1975 ^{c/}

^{a/} Market economies only

^{b/} Adjusted from published 1979 forecast

^{c/} Derived from Keays' projections of paper and board demand reduced to free market economies, and assuming 80% of paper and board is made from virgin wood pulp

25.3 million metric tons. Their 1990 estimate of British Columbia's pulp production, based on a Delphi exercise by a panel of experts, is 10.0 million metric tons.

Factors Influencing Industry Growth

Tariffs

The development of the Canadian pulp and paper industry has been affected by the tariff policies of Canada's three major forest product customers, the United States, the European Economic Community (EEC), and Japan. Pulp and newsprint enter the United States and the EEC duty free and, in contrast, other papers and board face tariffs sufficiently high to prevent Canada from developing significant export markets for these goods. As a result, the Canadian industry is heavily biased toward kraft pulp and newsprint.

Capacity and Costs

The principal market-economy wood-pulp producers are the United States, Scandinavia, and Canada. Japan and the EEC are also large producers, but their internal requirements far exceed the capacities of their domestic pulping industries.

The production of kraft pulp requires a plentiful supply of wood fiber. Within the EEC and Japan, availability of wood fiber is already the major physical factor constraining the construction of new pulp mill capacity. And in recent years, fiber availability has become a far more significant influence in determining the industry's growth pattern in the United States and in Scandinavia. Canada, the Soviet Union, and Brazil are the major pulp producing economies which, at present, remain relatively unaffected by problems of fiber scarcity.

Pulping capacity has been forecast by the FAO (1975c) to be some 2.7 million metric tons below demand in the market economies by 1979. Canada's capacity was forecast (FAO 1975a) to increase by only

slightly more than 1 million metric tons between 1975 and 1979, the largest proportion of which is expected to be used internally.

Escalating capital costs of constructing new kraft pulp mills has been a significant deterrent to expansion by Canadian corporations. This has been particularly true in British Columbia. No new kraft pulp mills are currently under construction in British Columbia in contrast to eastern Canada, where some forest products companies have embarked on major expansion programs, even in the face of rising costs and underutilized capacity of present mills.

Poyry and Eklund (1974) have developed a set of capital cost curves for construction of pulp mills. On the basis of a 250 thousand metric ton (unbleached kraft) annual capacity, capital costs (in \$US, for Swedish conditions) would be \$275 per annual ton. Poyry and Eklund suggest a multiplier of 1.15 for British Columbia conditions, bringing this to \$316/annual ton (1972 costs). On the basis of these calculations, British Columbia presents one of the most expensive locations in which to construct a pulp mill.

Another disincentive for a major increase in pulping capacity in British Columbia (coupled with underutilized capacity) seemingly required by world markets is the relatively low return to investment, even in the face of current high posted prices. Bean (1976) cites an average return on capital of 8.3% for forest industry as compared with an average (100 industrials) of 11.1% in the period 1970-74. Boyle (1976) estimates a 1975 return to capital of 6.3%, and a return to shareholder equity of 8.6%. In that year, the respective figures for all industrials were 9.5% and 13.4%.

Resource Availability and Utilization

A factor that appears likely to influence the future course of the pulp and paper industry in British Columbia is resource

availability. The Province has a total mature inventory of 8,082 million m³, of which 5,107 million m³ come under Provincial Sustained Yield Units (P.S.Y.U.'s) and 1.467 million m³ are in Tree Farm Licenses^{1/}. The allowable cut (1975) on P.S.Y.U.'s and T.F.L.'s totals 83 million m³ per year. Annual harvest in 1975 was 37 million m³. This yields an apparent surplus of 46 million m³. This estimate appears to be high. For example, the B.C. Forest Service assumes that all timber of T.F.L.'s is fully committed, and that there is no surplus there.

Jaakko Poyry (1975) shows a surplus of 24.2 million m³ on P.S.Y.U.'s alone. Other estimates are available from F.L.C. Reed and Associates (1973), which show a total Provincial surplus (including proposed P.S.Y.U.'s) of 35 million m³ on all tenures.

More conservative estimates of the Provincial timber surplus may be made. A very conservative estimate may be made by taking the difference between annual allowable cut (A.A.C.) in present T.F.L.'s and P.S.Y.U.'s and committed volume, which results in a figure of about 20 million m³. Probably less than the present proportion of 38% of this wood will enter the pulp industry as roundwood, due to current Provincial regulations. Because of the value of roundwood in lumber, residual chips will be used to manufacture pulp whenever possible. However, allowing a 38% roundwood input, and assuming that 30% of sawmill input emerges as residual chips, about 11.3 million m³ of additional wood will be available to the pulp industry on the basis of allowable cuts and harvesting practices which are presently in force.

Utilization, in 1975, of roundwood and chips in the manufacture of woodpulp was 21 million m³, of which 38% was roundwood (see Appendix Tables IV and V for historical statistics). Jegr and Thompson (1975) forecast

a 250% increase in pulpwood requirements in British Columbia between 1970 and 1990 (Table 6), with a 1990 volume forecast of 50 million m³. The calculations above indicate, even though they are conservative, that such increased requirements are probably not available from Provincial timber resources under present allowable cuts and harvesting practices.

Keays (1975) has suggested that full-forest utilization could increase timber availability by up to 35%. However, such methods would require extensive modification of present harvesting and processing practices. A more readily available source of fiber might be found in logging residues, the use of which might become economic as fiber demand increases.

Conclusion

A review of the previous sections indicates that the pulp industry is vitally important to British Columbia in a direct economic sense, but its growth could be halted by a number of factors, in particular capital costs of construction and resource availability. Under present harvesting techniques, allowable cut levels and manufacturing processes, only another 900 thousand metric tons of woodpulp could be produced annually from present T.F.L.'s and P.S.Y.U.'s. This additional capacity would result in a total provincial capacity of 7.2 million metric tons, far below the 10.1 million metric ton mark forecast by Jegr and Thompson (1975).

The estimate of potential increase in capacity presented here is extremely conservative by design. It does not take into account potential additional resource availability from T.F.L.'s, nor does it recognize potential diversion of roundwood from lumber and veneer to pulp. It is again low in that it does not recognize the potential of several proposed P.S.Y.U.'s in British Columbia, which hold an additional allowable annual cut exceeding 6 million m³, a significant portion of which is eminently suitable for pulping. Other possible sources of pulpable fiber, which could alle-

^{1/} Statistics are reviewed in Tables 4 and 5.

Table 4. Mature Inventory, Annual Allowable Cut, Commitments and Scaled Volume, by Forest District by Approved P.S.Y.U.'s

Forest District	Mature Volume		Annual (C.U.) Allowable Cut		Commitment 1975		Scaled Volume 1975	
	'000 m ³	'000 cunits	'000 m ³	'000 cunits	'000 m ³	'000 cunits	'000 m ³	'000 cunits
Vancouver	823,236	290,896	7,930	2,802	6,478	2,289	4,443	1,570
Prince Rupert	1,576,650	557,120	15,608	5,515	5,974	2,111	3,209	1,134
Coast	825,644	291,747	6,866	2,426	1,709	604	974	344
Interior	751,006	265,373	8,742	3,089	4,265	1,507	2,239	791
Prince George	1,379,730	487,537	18,092	6,393	11,470	4,053	8,606	3,041
Cariboo	521,719	184,353	6,928	2,448	5,261	1,859	4,992	1,764
Kamloops	493,340	174,325	7,579	2,678	6,314	2,231	4,633	1,637
Nelson	312,387	110,384	6,178	2,183	4,225	1,493	2,940	1,039
Total ^{a/}	5,107,061	1,804,615	62,315	22,019	39,719	14,035	28,824	10,185

a/ May not add due to rounding

Source: B.C. Forest Service 1976

Table 5. Annual Allowable Cut and Scaled Volume, by Forest District on Tree Farm Licenses, 1975

Forest District	Annual Allowable Cut		Scaled Volume	
	'000 m ³	'000 cunits	'000 m ³	'000 cunits
Vancouver	13,162	4,651	3,741	1,322
Prince Rupert	5,032	1,778	2,117	748
Prince George	422	149	232	82
Cariboo	136	48	158	56
Kamloops	739	261	792	280
Nelson	1,602	566	1,115	394
Total	21,092	7,453	8,156	2,882

Source: B.C. Forest Service 1976

Table 6. Production and Utilization of Pulpwood in British Columbia, by Source, 1970-1990

Type of	1970 (actual)		1980		1990	
	'000 m ³	'000 cunits	'000 m ³	'000 cunits	'000 m ³	'000 cunits
Primary pulpwood						
roundwood	8,835	3,122	8,858	3,130	9,339	3,300
chipped wood ^{a/}	—	—	1,557	550	3,113	1,100
total	8,835	3,122	10,415	3,680	12,452	4,400
Secondary pulpwood ^{b/}	11,224	3,966	24,281	8,850	37,356	13,200
Total requirements	20,059	7,088	34,696	12,260	49,808	17,600

^{a/} Chipped in woods

^{b/} Sawmill chips, sawdust, etc.

Source: Jegr and Thompson 1975

viate the hypothesized deficit, are more efficient harvesting techniques, reduced logging waste and higher standards of resource utilization.

Allowable cut figures are not cut in stone, nor is technology static. Nor, for that matter, should forecasts be viewed as targets, but rather as a broad indication of potential growth, if various impediments to this growth can be overcome. This report has attempted to review the economic importance of the pulp and paper industry to British Columbia, to show potential for growth, and to review obstacles that stand in the way. It is not attempted to forecast what will happen, but rather to indicate what can happen.

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APPENDIX

Table I. Pulp and Paper Production in British Columbia

	Pulp			Paper		
	Sulphate	Other	Total	Newsprint	Other	Total
	Thousand Metric Tons					
1952	183.6	646.2	829.8	385.9	104.1	490.0
1953	247.4	724.1	971.5	452.2	121.6	573.8
1954	356.2	802.3	1,158.5	487.1	132.9	620.0
1955	391.5	845.6	1,237.1	503.6	154.2	657.8
1956	441.5	850.2	1,291.7	513.3	167.5	680.8
1957	523.3	724.9	1,248.2	492.8	180.1	672.9
1958	565.2	753.7	1,318.9	535.0	216.9	751.9
1959	771.0	976.8	1,747.8	712.2	238.9	951.1
1960	861.1	1,066.3	1,927.4	777.3	266.0	1,043.3
1961	977.6	1,049.4	2,047.0	787.3	243.0	1,030.3
1962	1,098.7	1,088.3	2,187.0	827.2	262.3	1,089.5
1963	1,170.7	1,090.4	2,261.1	840.8	284.1	1,124.9
1964	1,358.6	1,206.3	2,564.9	956.3	269.8	1,226.1
1965	1,632.0	1,338.9	2,970.9	1,100.8	295.8	1,396.6
1966	1,952.2	1,354.8	3,307.0	1,196.6	310.8	1,507.4
1967	2,216.2	1,269.0	3,485.2	1,105.4	392.0	1,497.4
1968	2,710.9	1,271.0	3,981.9	1,111.0	436.4	1,547.4
1969	3,024.3	1,375.4	4,399.7	1,275.4	455.7	1,731.1
1970	2,813.4	1,288.2	4,101.6	1,233.4	449.6	1,683.0
1971	2,972.4	1,352.5	4,324.9	1,264.2	474.0	1,738.2
1972	3,136.7	1,316.2	4,452.9	1,219.6	461.7	1,671.3
1973	3,788.0	1,378.6	5,166.6	1,360.6	657.8	2,018.4
1974	3,953.7	1,341.8	5,295.5	1,297.8	649.1	1,946.9

Sources: Canadian Pulp and Paper Association,
 Dept. of Economic Development,
 Victoria, B.C.

Table II. Exports of B.C. Pulp and Paper, by Destination, Through All Ports of Exit, 1973

Commodity	Destination					Total
	U.S.	U.K.	Japan	E.E.C.a/	Other	
Woodpulp						
Volume ('000 metric tons)	1,154.5	249.5	544.4	873.2	342.0	3,163.6
% B.C. exports	36.49	7.89	17.21	27.60	10.81	
Value (\$'000)	214,668.3	44,256.5	95,921.4	151,466.0	57,616.1	563,928.3
% B.C. exports	38.07	7.85	17.01	28.86	10.22	
Newsprint						
Volume ('000 metric tons)	939.9	3.0	21.8	0.9	240.4	1,206.0
% B.C. exports	77.95	0.25	1.80	0.08	19.93	
Value (\$'000)	156,941.7	489.0	3,276.9	112.8	38,038.9	198,853.3
% B.C. exports	78.92	0.25	1.64	0.06	19.13	
Misc. Paper						
Volume ('000 metric tons)	22.9	149.7	45.1	97.6	64.4	379.7
% B.C. Exports	6.02	39.43	11.87	25.71	16.97	
Value	4,429.6	28,199.8	8,926.4	19,381.5	12,511.3	73,448.6
% B.C. exports	6.03	38.89	12.15	26.39	17.04	

a/ Original 6 members

Source: Dept. Econ. Dev., Victoria

Table III. Export of British Columbia Pulp and Paper by Region of Clearance

Year and Product	Atlantic	Quebec	Ontario	Prairies	Pacific	Total
	----- metric tons -----					
1965						
Woodpulp	39,859	60,693	223,630	184,413	952,439	1,470,034
Paper for Printing*	—	19	1,478	3,652	1,034,766	1,039,915
Fine Paper	—	—	—	—	2	2
Tissue and Sanitary Paper	—	—	631	46	5,614	6,291
Wrapping Paper	—	—	—	—	1,802	1,802
Special Industrial Paper	—	—	—	—	48	48
Paperboard	—	—	—	—	58,858	58,858
1966						
Woodpulp	—	82,555	268,020	172,901	1,116,647	1,640,123
Paper for Printing*	—	24	130	400	1,136,956	1,137,510
Fine Paper	—	—	—	—	5	5
Tissue and Sanitary Paper	—	6	—	—	5,094	5,100
Wrapping Paper	—	20	272	—	10,618	10,910
Special Industrial Paper	—	—	—	—	1	1
Paperboard	—	—	—	—	57,252	57,252
1967						
Woodpulp	147	103,448	351,811	133,990	1,318,445	1,907,841
Paper for Printing*	—	4,146	946	494	1,936,063	1,041,649
Fine Paper	—	—	—	—	2	2
Tissue and Sanitary Paper	—	—	—	—	7,371	7,371
Wrapping Paper	—	—	343	71	66,676	67,090
Special Industrial Paper	—	—	—	—	—	—
Paperboard	—	—	—	—	57,454	57,454

* Includes newsprint

** Less than one (1)

Table III. (Continued)

Year and Product	Atlantic	Quebec	Ontario	Prairies	Pacific	Total
	----- metric tons -----					
1968						
Woodpulp	—	85,158	346,229	177,652	1,600,573	2,209,612
Paper for Printing*	—	1,280	2,100	308	1,029,948	1,033,636
Fine Paper	—	—	—	—	**	**
Tissue and Sanitary Paper	—	217	169	—	7,994	8,380
Wrapping Paper	—	—	66	—	80,318	80,384
Special Industrial Paper	—	—	—	—	—	—
Paperboard	—	—	—	—	54,191	54,191
1969						
Woodpulp	—	139,073	340,190	214,561	1,865,702	2,559,526
Paper for Printing*	—	110	487	—	1,205,345	1,205,942
Fine Paper	—	—	—	—	200	200
Tissue and Sanitary Paper	—	78	58	—	4,634	4,770
Wrapping Paper	—	—	70	—	68,886	68,956
Special Industrial Paper	—	—	—	—	20	20
Paperboard	—	—	—	—	56,453	56,453
1970						
Woodpulp	—	11,673	288,891	169,875	1,748,348	2,318,787
Paper for Printing*	873	313	1,124	1,223	1,230,950	1,234,483
Fine Paper	—	—	—	—	71	71
Tissue and Sanitary Paper	—	—	13	—	7,003	7,016
Wrapping Paper	—	—	—	—	86,142	86,142
Special Industrial Paper	—	—	—	—	—	—
Paperboard	—	15	—	—	55,729	55,744

* Includes newsprint

** Less than one (1)

Table III (Continued)

Year and Product	Atlantic	Quebec	Ontario	Prairies	Pacific	Total
	----- metric tons -----					
1971						
Woodpulp	—	106,565	288,891	203,805	1,848,601	2,447,859
Paper for Printing*	—	1,410	4,040	1,108	1,244,400	1,250,958
Fine Paper	—	—	—	—	629	629
Tissue and Sanitary Paper	—	—	—	—	8,583	8,583
Wrapping Paper	—	51	5,262	—	97,369	102,682
Special Industrial Paper	—	—	—	—	—	—
Paperboard	4,831	—	43	—	90,063	94,937
1972						
Woodpulp	769	120,252	360,186	248,997	2,072,575	2,802,779
Paper for Printing*	54	1,556	1,738	1,098	1,242,713	1,247,259
Fine Paper	—	52	162	—	122	336
Tissue and Sanitary Paper	96	52	—	—	10,731	10,879
Wrapping Paper	—	—	301	—	130,133	130,434
Special Industrial Paper	—	—	—	—	—	—
Paperboard	—	—	—	50	129,636	129,686
1973						
Woodpulp	—	165,154	411,942	225,032	2,361,474	3,163,602
Paper for Printing*	45	1,890	4,394	1,078	1,225,983	1,233,390
Fine Paper	10	—	—	—	396	406
Tissue and Sanitary Paper	—	—	24	—	9,625	9,649
Wrapping Paper	—	—	1,416	46	160,055	161,517
Special Industrial Paper	—	—	—	—	—	—
Paperboard	—	—	355	—	182,760	183,115

* Includes newsprint

** Less than one (1)

Table III (Continued)

Year and Product	Atlantic	Quebec	Ontario	Prairies	Pacific	Total
metric tons						
1974						
Woodpulp	5,815	163,247	356,752	240,660	2,567,340	3,333,814
Paper for Printing*	146	931	4,441	415	1,218,386	1,224,319
Fine Paper	—	—	15	—	166	181
Tissue and Sanitary Paper	—	188	—	—	3,063	3,251
Wrapping Paper	—	65	1,429	228	143,107	144,829
Special Industrial Paper	—	—	—	—	—	—
Paperboard	—	61	—	—	171,601	171,662

* Includes newsprint

** Less than one (1)

Table IV. Pulpwood Utilization in British Columbia

Year and Species	Utilization by Process						Total Volume		Total Value
	Mechanical		Sulphite		Sulphate		m ³	cunits	\$,000
	m ³	cunits	m ³	cunits	m ³	cunits			
1964									
Softwoods	3,037,436	1,073,299	3,358,234	1,186,655	2,978,787	1,052,575	9,374,457	3,312,529	46,389
Hardwoods	90,659	32,035	62,181	21,972			152,840	54,007	
Total	3,128,095	1,105,334	3,420,415	1,208,627	2,978,787	1,052,575	9,527,297	3,366,536	
1965									
Softwoods	3,273,979	1,156,883	3,246,253	1,147,086	1,200,918	9,918,830	9,918,830	3,504,887	49,913
Hardwoods	80,208	28,342	71,274	25,185			151,481	53,527	
Total	3,354,187	1,185,225	3,317,527	1,172,271	3,398,598	1,200,918	10,070,311	3,558,414	
1966									
Softwoods	3,399,976	1,201,405	3,024,806	1,068,836	4,085,111	1,443,502	10,509,893	3,713,743	57,405
Hardwoods	85,112	30,075	17,727	6,264			102,839	36,339	
Total	3,485,088	1,231,480	3,042,533	1,075,100	4,085,111	1,443,502	10,612,732	3,750,082	
1967									
Softwoods	3,108,107	1,098,271	3,038,478	1,073,667	4,534,011	1,602,124	10,680,595	3,774,062	63,114
Hardwoods	108,095	38,196	16,666	5,889	65,376	23,101	190,136	67,186	
Total	3,216,202	1,136,467	3,055,144	1,079,556	4,599,387	1,625,225	10,870,731	3,841,248	
1968									
Softwoods	3,112,191	1,099,714	2,843,499	1,044,770	6,379,547	2,254,257	12,335,237	4,358,741	76,714
Hardwoods	117,287	41,444	18,619	6,579	95,394	33,708	231,299	81,731	
Total	3,229,478	1,141,158	2,862,118	1,001,349	6,474,941	2,287,965	12,566,536	4,440,472	
1969									
Softwoods	3,256,857	1,150,833	2,816,376	995,186	8,028,829	2,837,042	14,102,063	4,983,061	94,270
Hardwoods	314,277	111,052	20,065	7,090	104,036	36,762	438,378	154,904	
Total	371,134	1,261,885	2,836,441	1,002,276	8,132,865	2,873,804	14,540,441	5,137,965	

Table IV. Pulpwood Utilization in British Columbia (Continued)

Year and Species	Utilization by Process						Total Volume		Total Value
	Mechanical		Sulphite		Sulphate		m ³	cunits	\$,000
	m ³	cunits	m ³	cunits	m ³	cunits			
1970									
Softwoods	2,127,823	751,881	1,665,113	588,379	4,801,885	1,696,779	8,594,820	3,037,039	
Hardwoods	170,052	60,089	10,414	3,680	60,970	21,544	241,436	85,313	
Total	2,297,875	811,970	1,675,527	592,059	4,862,855	1,718,323	8,836,356	3,122,352	78,527
1971									
Softwoods	2,243,567	792,780	1,778,712	628,520	4,583,063	1,619,457	8,605,342	3,040,757	
Hardwoods	143,863	50,835	11,555	4,083	76,452	27,015	231,870	81,933	
Total	2,387,530	843,615	1,790,267	632,603	4,659,515	1,646,472	8,837,212	3,122,690	81,900
1972									
Softwoods	2,073,108	732,547	1,903,045	672,454	4,493,853	1,587,934	8,470,006	2,992,935	
Hardwoods	189,188	66,851	14,388	5,084	90,461	31,965	294,037	103,900	
Total	2,262,296	799,398	1,917,433	677,538	4,584,314	1,619,899	8,764,043	3,096,835	89,180
1973									
Softwoods	2,215,055	782,705	1,817,352	642,174	5,373,386	1,898,723	9,405,794	3,323,602	
Hardwoods	218,162	77,089	26,531	9,375	156,157	55,179	400,850	141,643	
Total	2,433,217	859,794	1,843,883	651,549	5,529,543	1,953,902	9,806,644	3,465,245	114,007
10 yr totals									
Softwoods	27,848,100	9,840,318	25,491,867	9,007,727	48,657,070	17,193,311	101,997,037	36,041,356	
Hardwoods	1,516,903	536,008	269,419	95,201	648,845	229,274	2,435,167	860,483	
Total	29,365,003	10,376,326	25,761,286	9,102,928	49,305,915	17,422,585	104,432,204	36,901,839	751,419

Source: Stat. Can. Cat. No. 36-204

Table V. Secondary Chips Utilized in British Columbia

Year	Utilization by Process								Total Value \$,000
	Mechanical and Semi-chemical		Sulphite		Sulphate and Soda		Total Volume		
	m ³	cunits	m ³	cunits	m ³	cunits	m ³	cunits	
1964	—	—	273,353	96,591	7,870,703	2,781,167	8,144,055	2,877,758	39,888
1965	—	—	505,019	178,452	9,749,673	3,445,114	10,254,692	3,623,566	58,562
1966	—	—	545,979	153,703	11,524,108	4,072,123	11,959,088	4,225,826	67,944
1967	—	—	329,573	116,457	14,239,193	5,031,517	14,568,766	5,147,974	69,199
1968	—	—	242,058	85,533	15,999,145	5,653,408	16,241,203	5,738,941	82,422
1969	—	—	260,903	92,192	16,665,644	5,888,920	16,926,547	5,981,112	89,725
1970	—	—	138,223	48,842	10,248,104	3,621,238	10,386,326	3,670,080	80,423
1971	—	—	150,214	53,079	12,113,127	4,280,257	12,263,341	4,333,336	91,503
1972	—	—	153,977	54,409	13,421,354	4,742,528	13,575,332	4,796,937	106,972
1973	110,721	39,124	—	—	16,164,943	5,711,984	16,275,664	5,751,118	128,519
10 yr total	110,721	2,488,300	2,488,300	879,258	127,995,993	45,228,266	128,914,37546,	46,146,648	815,157

Source: Stat. Can. Cat. No. 36-204 annual