THE DEMAND FOR BRITISH COLUMBIA KRAFT PULP

by

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ABSTRACT

The major objective of this study was to determine the outlook of the British Columbia kraft pulp industry for the period 1969 - 1974.

To attain this objective and develop the necessary perspective, the global economy and particularly world trade developments were studied. An historical analysis of world economic variables was made and then, where possible, projections into the future made. From these studies, specific applications to the British Columbia industry were given.

Consequently, the approach of this study was to begin with general global considerations and then proceed to more specific items pertaining to the British Columbia industry. The global demand trends for kraft pulp were obtained by studying the major kraft pulp consuming areas individually. Other kraft pulp producing areas of the world were analyzed to see what portion of potential demand they would be able to supply on competitive terms with British Columbia.

As the perspective of the study narrowed, it focused on Canada. This country's historic economic and future potential were analyzed in detail. Recent rapid growth trends were noted and their expansionary effect on British Columbia's economy noted.

This study revealed that previous forecasters generally understated future economic growth, particularly in the area
of world trade. Consequently, a more liberal attitude was adopted in this analysis. On the basis of future reductions in tariffs, particularly the Kennedy Round cuts in the projection period, the mood of this forecast is one of optimism. Buoyant economic conditions are projected based on premises that state no abrupt changes in world affairs should be expected in the next five years.

Global kraft pulp demand is expected to grow at least at the same rate as the world GNP growth. The growth rate in economic output has not been too much alike for all countries and consequently the average global GNP growth has given only a rough indication of kraft pulp consumption. Disproportionate GNP growth in the countries is forecast for the next five years. The industrialized countries will continue to grow faster than the less-developed countries.

Most of the growth in kraft pulp demand will occur in the industrialized countries, of which the most promising areas are in Europe and Japan. Because the traditional sources for European markets are approaching their raw material limits, substitution from abroad should occur, consequently the demand for British Columbia kraft pulp should increase at a faster rate than overall global demand.

The overall growth rate for British Columbia kraft pulp is expected to continue close to its historic average annual rate of 16%. The growth in British Columbia however
has characteristically run in cycles and the secondary trend has been accentuated by industry moods of optimism and pessimism. In the last two years pessimism resulting from oversupply has tempered the overall general growth and a trough in the cyclical pattern is forecast for 1970 or 1971. The market is currently firming; consequently construction and expansion of mills is expected to accelerate and a peak in capacity growth should occur in the latter portion of the five-year projection period.
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CHAPTER I

INTRODUCTION

A. Purpose of the Study

The main purpose of this study is to forecast the growth of the British Columbia kraft pulp industry during the years 1969-1974. Within the framework of this purpose, the domestic industry's position and growth potential in the world economy will be analyzed; the historical development of the kraft pulp industry relative to general economic yardsticks reviewed; and a projection of probable supply and demand conditions affecting the industry for the five-year study period made.

B. Background to the Problem

In the last two decades, kraft pulp production has grown at a very rapid rate and has become a major segment of primary industry in British Columbia. Growth from infancy was characterized by shifts in size and location of mills.¹ Some of the changes caused growing pains for the industry.

¹ In 1946, there was only 1 mill producing kraft pulp in British Columbia. At the end of 1968, there were 15 kraft pulp mills in production. During the development period, there has been a marked shift in geographical location; initially the mills were located on tidewater. More recently, construction of mills in the interior has become prominent.
Evidence of this are the soft market conditions and depressed prices in 1967 and 1968.\textsuperscript{2} The kraft pulp industry in British Columbia is comprised of many independent producers making virtually undifferentiated products. As the industry expands, each firm intent on maintaining its competitive position may expand prematurely and as a result there is periodically overall excess capacity.

The kraft pulp industry in the last five years particularly has grown at an exceptional rate.\textsuperscript{3} The expansion has tapered off recently because of soft market conditions but the industry is now poised for further rapid growth in the next five years.\textsuperscript{4}

C. Definition of "kraft" Pulp

The word "kraft" is taken from the German and means strong. The exceptional strength of kraft pulp is obtained by intentionally undercooking chips to produce a dark-coloured pulp.

\textsuperscript{2} For a discussion of discounts off list price for the years 1967 and 1968, see Chapter VI, D.

\textsuperscript{3} Daily production capacity in the last five years has more than doubled, from 4500 tpd in 1964 to 10,800 tpd in 1968. Source: Figure 6, p. 74.

\textsuperscript{4} For a prediction of capacity in British Columbia, 1969-1974, see Chapter VII, Section A.
Synonymous with kraft pulp is the term sulphate pulp. Although used interchangeably in the literature, the pulp in industry is more commonly referred to as kraft pulp than as sulphate pulp.

D. Forecasting Premises

Forecasting is an uncertain business. Many variables in global affairs, international business, economic conditions, and technological developments are involved which affect the demand for a product.

The world economy is constantly changing. Economic theory and fact are dynamic rather than static. The business environment is one of rapidly changing technological and marketing conditions, of vigorous improvements of labour and managerial skills, of swiftly changing products and processes.

Business is becoming increasingly interested in the underlying market forces of demand and supply. Competition and price mechanisms are acquiring larger rather than reduced roles.

There is greater international economic interdependence - of reduced economic insulation and isolation, of more diversified trade, of increasingly internationalized business operations of established and active international economic institutions, and of closer intergovernmental contacts and consultation.
It would obviously be a highly speculative and rather futile exercise to attempt to assess the likely impact in the next five years of each of the following potential sources of disturbances: demographic changes, wars, technological changes, development of new products, changes in taste, resource discoveries, changes in trading arrangements, foreign trade developments, factors affecting international capital and labour flows, exchange rate changes, domestic and international political developments, factors affecting business confidence, the rate of change of the supply of money, and the cost of capital.

However, if certain premises are stated, some indication of possible future events can be given. The premises range from general to specific. There are variables which can cause shifts in general business conditions of the economy. Then there are conditions confronting the kraft pulp industry specifically.

The general premises are listed first:

a. There will be no major economic depression similar to the kind of 1930.

b. There will be no major changes in government policy within the Canadian economy.

c. Foreign capital required for expansion of production facilities will be welcomed by Canada. The exporting countries of this capital will not interfere significantly with
this capital flowing into Canada.

d. Intermediate and consumer demand preferences will continue in their present pattern.

e. The demand in foreign countries will not be altered greatly by payments difficulties.

Some specific premises related directly to the kraft pulp industry are that in the next five years:

a. There will be no unforeseeable changes in pulp supply conditions.

b. There will be no major changes in technology, for instance, a change in source of cellulose such as a petroleum base.

E. Applicability of Previous Studies

Studies of the pulp and paper industry have been published in the literature. A United Nations agency has made several studies of global pulp demand. These demand projections are of consumer areas, based on indices such as population growth, literacy levels, and Gross National Product. However, growth of world demand is not directly correlated to the sources of supply, particularly to the supply of British Columbia produced pulp, and so these studies have

5 The Food and Agriculture Organization (FAO), an agency of the United Nations, has published several helpful studies. For instance, see United Nations, Food and Agriculture Organization, World Demand For Paper to 1975, (Rome, 1960)
limited applicability to this study. However, an indication of their historical accuracy should prove beneficial in ascertaining future trends.

The Canadian and United States governments periodically have predicted possible trends in the forest products industry. The Economic Council of Canada, an agency of the Canadian government, has published interesting studies on future economic trends in Canada. Locally, British Columbia Hydro and Power Authority published a useful study several years ago on the British Columbia pulp industry.

The literature most useful in forecasting the kraft pulp industry's future were the trade journals. The journals surveyed are shown in the bibliography. Study of the industry's historical record was made through government and as-


7 Economic Council of Canada, Annual Review, I-V, (Ottawa, Queen's Printer, 1964-1968)

8 J.R. Downs, Export Projection to 1970, Staff Study, Economic Council of Canada (Ottawa, Queen's Printer, 1964)

9 British Columbia Hydro and Power Authority, The Pulp and Paper Industry of British Columbia (Vancouver, Canada, 1966)
sociation statistics. Additional references are shown in the bibliography. These readings were helpful in making the five-year projection presented here.

F. Limitations of the Study

The five-year projection will be most accurate for the beginning of the period, least accurate for the end of the period. Because of the uncertainties regarding future general economic conditions, government policies, and international conditions, most companies are usually hesitant about planning activities more than two or three years ahead. Even proposed expansion plans are subject to change because companies naturally want to remain flexible under changing conditions. These limitations give an indication of the quality of the predictions. Their interpretation requires that the reader keep the premises on which they were based in mind.

10 British Columbia Bureau of Economics and Statistics, Dept. of Ind. Dev., Trade and Commerce, Summary of Economic Activity (Victoria, Queen's Printer, Published Annually), Canadian Pulp and Paper Association, Reference Tables (Montreal, Published Annually)

11 For the reaction from industry to inquiries by the Economic Council of Canada with respect to future plans, see B.A. Keyes, Special Survey of Longer Range Investment Outlook and Planning in Business, Staff Study, Economic Council of Canada (Ottawa, Queen's Printer, 1964)
G. Introduction to the Text

The succeeding chapters begin with general considerations and then proceed toward specific items. The intent is to relate the world economy to the British Columbia kraft industry in a general manner and then to analyze those factors in depth which have bearing on the industry in British Columbia.

The chapter after this introduction deals with global economic variables and world demand trends. In the succeeding chapter, the major markets to which British Columbia has exported kraft pulp and in addition has future potential is examined.

Then, in the chapter following, the kraft pulp producing areas of the world which compete with British Columbia for world markets are analyzed. Next, as the perspective is narrowed, the growth rates and trade patterns of Canada, the political and economic entity in which British Columbia is intimately bound, are examined. The following chapter is a subjective description of the kraft pulp industry in British Columbia.

Focusing on the core of the study, the historical capacity, production, and export trends are examined and projected for the next five years. A chapter of conclusions ends the study.
A. Global Economic Trends

a. Past Trends

The four decades prior to 1910 witnessed a phenomenal increase in world economic growth and trade. This trend was reversed by World War I. The dislocations of that war, the protectionist attitude in the ensuing decade and the depression and international financial breakdown during the 1930's caused severe economic dislocations and large-scale cutbacks in world trade, particularly for manufactured goods. Trade in secondary industries recovered in the 1940's but not in the primary industries. In the 1950's, trade activity expanded further, particularly trade among industrial countries which grew at a faster rate than the overall increase in world trade.¹

The dismantling of trade barriers under the General Agreement on Tariffs and Trades (which started in 1947 and

¹ D.W. Slater, World Trade and Economic Growth: Trends and Prospects with Applications to Canada (Toronto, University of Toronto Press, 1968), pp. 3-5.
of which the Kennedy Round is the latest event) and the establishment of the European Free Trade Association (EFTA) in the late 1950's created viable areas of economic growth. As a consequence, there were very high rates of growth in the volume of trade. In the 1960's, trade continued to expand more rapidly than output, not only in Europe, but among the industrialized countries generally.²

The industrial countries accounted for a steadily growing share of world trade. From 1954 to 1963, imports by industrial countries grew at an annual rate of 7.7% and those of other countries by 5.5%. The industrial countries increased their share of world imports from 55% in 1954 to 60% in 1963.³ A striking characteristic of world trade was that the industrial countries tended to export far more to the countries within their own group than they did to less developed countries.

Eleven industrial countries (Japan, Italy, Germany, Austria, Belgium, Netherlands, Sweden, Denmark, Switzerland, Norway, and France) increased exports more rapidly than the

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³ Ibid., pp. 77-79.
world average. In contrast, exports from the United States and Great Britain grew less rapidly than the world average.

The poor countries, because of balance of payments problems, literally could not afford to buy very much finished pulp. While paper and board requirements increased rapidly with educational and economic advancement, their ability to devote foreign exchange to importing additional amounts of kraft pulp was severely restricted.

b. Projected Trends in Economic and Trade Growth

Expectations for free world economic growth in the next five years are generally expansionary in nature. The average Gross National Product is expected to grow at an average rate of between 4.0% and 4.5% in real terms for most of the industrialized countries of the world.\(^4\)

Given these expected growth rates for global output, the general expectations for future world trade growth are for somewhat faster growth. Many forecasters predict rates of between 4% and 5% per annum for the first half of the 1970's.\(^5\)


Trade among the major industrial countries particularly should continue to increase at a faster rate than total output. This prediction reflects a trend towards increased international specialization of production and a growing interdependence between the economies of the world's chief trading nations. The increase in trade will be greatest among the industrially advanced countries and least for the underdeveloped countries of the world. The balance of payments problem will continue to be the chief reason for the lag in trade development of the less-industrialized countries compared to the industrially more advanced countries. There will still be a very large gap between their needs for foreign exchange and the availability to them despite a substantial program of aid and private and public development capital from the developed countries. To limit further their prospects for trade, the less developed countries have erected

6 This prediction is based on the following stimulants to world trade and specialization enumerated by the Economic Council of Canada, First Annual Review (Ottawa, Queen's Printer, 1964) which should lead to overall expansionary growth:

a. Improvements in the quality and cheapness of transportation.
b. Improved communications.
c. A high income elasticity of demand.
d. The rapid development of large-scale international companies through vertical integration.
extremely high barriers to imports of industrial products except for those items where they have very large competitive disadvantages. The Kennedy Round talks within GATT did little to reduce these barriers in underdeveloped countries.  

Within commodity groups, trade increases are expected to be more rapid in manufactured goods than in primary goods. This reflects in part the effect of reduced tariffs in the late 1960's resulting from the Kennedy Round talks. Within manufactured goods, paper and board growth rates are expected to grow at a rate of 5.5% annually.  

Raw material growth rates will be small in many areas, reflecting increasing fractions of rising incomes spent on services and manufactured goods. However, the prospects for the industrialized world reflect considerable growth potential for trade in other industrial raw materials, such as kraft pulp. The expectation of a continued substitution of plastic-chemical-synthetic materials for kraft pulp based materials in the next five years will be more than offset by new end uses of kraft pulp.  

8 Ibid., pp. 62-72.  
9 For trends in conversion and end use, see Chapter III, C.
B. Global Demands for Pulp and Paper

a. Past Trends of Global Kraft Pulp Production

Kraft pulp production is a relative latecomer to other pulping processes such as the mechanical and sulphite pulping processes. However, a spectacular increase in world kraft pulp demand has taken place since the early thirties. From a pre-war level of less than 5 million tons in 1936, world kraft pulp consumption rose to over 35 million tons in 1965. This growth is shown in Figure 1 below.

![World Production of Kraft Pulp, 1950-1965](image)

**FIGURE 1**

**WORLD PRODUCTION OF KRAFT PULP, 1950-1965**

*Source: U.S. Pulp Producers Association*
The post World War II period saw kraft pulp demand rise rapidly, particularly in Europe and Japan. After a temporary slowdown in 1949, there was a sharp rise in world demand as a result of the outbreak of the Korean War. A world-wide shortage of kraft pulp occurred in 1951 and resulted in soaring prices on the international market. After the Korean War, demand subsided and prices stabilized at lower levels. Then in 1955 and 1956, kraft mills again operated at or near their rated capacity in most parts of the world.

In 1957, a recession hit North America and brought with it a sustained levelling off in growth and output. The demand for paper fell off. This coincided with the coming into operation of a considerable amount of new production capacity which had been planned two or three years earlier when the industry was operating at its rated capacity.

In the period of rapid economic growth beginning in 1961, the demand for pulp and paper capacity increased steadily so that a very firm market had developed by 1966. In 1967 and 1968, the demand leveled off as economic activity slowed its pace globally. Unfortunately, previous expansion plans were implemented so that large increments in capacity resulted at a time of soft market conditions. Indications of recovery in early 1969 became evident.
Several projections of global demand for pulp and paper have been made in the last two decades, chiefly under the auspices of the United Nations. The Food and Agriculture Organization (FAO), an agency of the United Nations, periodically makes pulp and paper demand predictions in cooperation with its member nations. The objective of these reports is not to predict the levels of consumption which are likely to be obtained but to give a credible picture of what is likely to happen under normal circumstances. The predicted levels represent levels of consumption which might be obtained before rather than after the period indicated. In predicting global demand, the FAO has made studies of geographical markets and then consolidated the regional demands into a global demand. However, these studies do not consider how the total demand will be satisfied by the producer nations. This is a limitation in applying the FAO's studies to a prediction of demand for British Columbia kraft pulp.

10 The responsibility of the FAO, according to its charter, is to ensure that the output of the world's forests, in quantity and quality, rises commensurately with the increase in the needs of the world's people.

11 The FAO predictions were based on two mathematical models - the linear log relationship and the log-normal distribution. The per-capita income was the main index used to correlate and project per capita paper consumption.
A review of projections made by the FAO indicates that the studies have been too conservative. For instance, the FAO made both a conservative and a liberal estimate of demand in Europe from 1950 to 1960. Even the more conservative estimate was surpassed by 1958. Of its two global demand studies, the 10-year consumption projection was surpassed after only six years. The main reason for this underestimate is attributed to a higher realized rate of global economic growth than had been assumed.

A comprehensive projection of world paper demand, published in 1960, gave the probable consumption levels for 1965 and 1975. Again the actual consumption of pulp and paper in 1965 was 15% greater than the most liberal estimate.

c. Future Global Demand and Trade

Future global demand is a composite of each individual country's needs. A variety of factors influence a coun-

12 United Nations Food and Agriculture Organization, European Timber Trends and Prospects (Geneva, 1953)


14 United Nations Food and Agriculture Organization, World Demand for Paper to 1975 (Rome, 1960)
try's ability to import resources. Some of these factors are considered here.

A country's type and size of indigenous resources are a major factor in determining its demand for kraft pulp imports. If the country does not have large forest resources but has other resources which support its general economy, then a good basis for trade exists. For this reason, the industrialized countries, especially the European countries, are viewed as good potential consumers. A good trade basis is however lacking for many of the underdeveloped countries because they lack products for export as a basis for trade. With a deficiency of goods for exchange, their consumption of world production is therefore minimal.

The competitive position of domestic kraft pulp operations compared with foreign producers at given rates of exchange affects trade potential. A country largely self-sufficient in kraft pulp production, although contributing to overall demand, is unlikely to be active in trade. For instance, the United States has a large indigenous industry which satisfies many of its local demands internally. Conversely, industrialized countries such as West Germany and Italy which have fast growing needs but lack forest resources necessary for domestic production and must import to satisfy their requirements. Their trade potential consequently is a greater portion of their overall demand.
The level of trade barriers between trading countries has an effect on both demand and trade. An hypothesis of economic theory states that higher world production is made possible, and all countries can have higher standards of living under conditions of freer trade. Total output and also trade as a fraction of total output can be increased by lowering tariff barriers. This is expected to happen with the coming into effect of several stages of the Kennedy Round tariff cuts during the projection period. Their effect should generally increase global demand and particularly world trade.

The Kennedy Round tariff cuts will affect the kraft pulp industry in a particular way. Until now, converted pulp products have been subject to relatively high tariffs whereas unconverted kraft pulp has lower and in some cases, no tariffs. With the reduction of tariffs on converted products by many of the importing industrialized countries, changes in the structure of trade patterns will emerge. A readjustment in the geographical areas of conversion will result, with the more efficient areas increasing their share of total production.

A positive factor for increasing global demand should

be the result of more efficient inter-continental shipping. The introduction of larger ships and superport facilities should result in comparative cost advantages for some of the producer areas. If these savings are passed on to consumers, then trade in kraft pulp should be spurred.

Many consuming areas have unfilled needs which could be filled by using kraft pulp products. The extent to which these needs will be filled will depend on the marketing skills and aggressiveness of the producers and their organizations in exploiting these opportunities. The choice of channels of distribution, the use of trade groups and government services, and the introduction of forward integration will determine the use made of opportunities. The degree of development of these marketing skills in the next five years will influence world demand and global trade.

In summary, the future global demand is the composite of prospective demand levels in individual countries. The future demand and trade potential in individual countries is dependent on many variables, of which some were introduced here. These factors will be explored in greater depth in the succeeding chapters for each of the major areas.
A. Introduction

The discussion in this section examines the areas of the world to which British Columbia producers will be exporting kraft pulp in the next five years. In assessing the factors which determine the level of imports of these areas, questions such as 'how fast are kraft pulp needs likely to grow in individual countries?' and concomitantly 'will the pattern of pulp conversion for various paper categories change significantly?' will be answered.

These related questions are important because they determine the present and potential size of national markets. They point to the possibility of the traditional producing and exporting regions maintaining their flow of supplies to other regions while simultaneously satisfying constantly growing demands in their own regions.

North America, Europe, and Japan are expected to be British Columbia's major markets in the next five years. North America and Europe consume 85% of the world's paper and board. Together with Japan, which in the 1960's be-

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came the fastest growing economic area in the world, Europe and North America are expected to be the dominant consumers of kraft pulp produced in the free world in the next five years.

B. United States

a. Historical Trends

Studies of paper and paperboard requirements made in the 1950's seriously underestimated the needs of the American economy. The Paley Commission expected converted products of kraft pulp to grow at a rate commensurate with the increase in GNP, which it projected to double during the 1950-1975 period. Actually consumption outpaced the GNP growth and the GNP itself doubled before 1963. However, even if only the more conservative projected levels of demand were reached, the Paley Commission states that the United States will become increasingly dependent on foreign sources of natural resources.

Since 1960, total United States imports have increased by 1.1 million tons or 47%, which is in marked contrast to the static trend that prevailed prior to 1960.

Most of this gain can be attributed to imports from Canada. (See Chapter V for a discussion of Canadian exports to the United States.) The United States will continue to look for imports from Canada not only because of its geographic proximity but also because of the substantial equity position that American companies hold in Canadian operations. About one-third of pulp imported from Canada is captive pulp. 3

The unbleached kraft pulp sector increased at a particularly high rate in 1968. The overall increase in demand was 4.1% over 1967, led by an 8.3% increase in shipping sack. In early 1969, the stocks in unbleached kraft for converting use were low and in some cases critical. 4 This indicates a definite firming of the United States market which had been soft for several years.

b. Future Trends

The United States Gross National Product (GNP) is expected to increase from $916 billion in 1969 to $1230 billion


in 1974, an annual increase of 6% in current dollars. The consumption of kraft pulp products in the United States has historically paralleled GNP growth and is expected to do so in the next five years.

The United States Forest Service in 1968 predicted that the annual demand for paper and board in the United States will grow at 3.3% annually and reach 70 million tons in 1974. This estimate may be too conservative because historically the demand for wood pulp has increased at a compound rate of 5.2% per year. Two-thirds of this growth has come from increases in paper and paperboard production. The substitution of wood pulp for other types of fibre accounts for the other third.

Most components of pulp and paper follow trends in the general economy. After being level during the first part of 1969, the general economy of the United States should experience a general resurgence in the third quarter of 1969.

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This resurgence is based on the high employment level in early 1969. Inflationary tendencies caused by the strong upward pushes on costs caused by labour increases in excess of productivity gains temper the growth potential. Kraft pulp will therefore tend to strengthen and general market prices will be affected upwards.

In the next five years there should be an increasing trend towards product conversion. Because of increased competitive pressures, companies are trying to get closer to end use and get a higher product value. There are a number of areas of particular promise. Large refuse bags, mainly for use in industrial situations and in municipalities for garbage collection are expected to grow fairly rapidly. There is a large potential in using kraft pulp as mulch in the agriculture industry. Paper shipping sacks for relief programs are taking over from cartons and burlap bags. In the agriculture industry wire-bound wooden boxes are being replaced with corrugated paper boxes. There is also a persistent trend towards packaging consumer items previously sold unpackaged. The greater emphasis on self-service retailing has accelerated a trend towards the use of converted products such as bags, printed wraps, and combination structures.\(^8\)

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Another large increase in product demand will result from large increases in book publishing. The expansion of enrollment in schools coupled with a large number of school and university graduates will increase the demand for paper. Northern kraft pulp is regarded as an essential ingredient in the manufacture of paper grade materials. Furthermore, there will be rapid growth in the demand for fine paper used as computer printouts.

C. United Kingdom

The market potential in the United Kingdom is highly dependent on a return to a stable and viable economy. The United Kingdom has been subject to a number of rigorous deflationary measures over the past three years. These measures will continue into the projection period as most policies are aimed at economic retrenchment and consequently a number of British imports will be subject to austerity measures. However, pulp and paper imports are expected to grow at fairly healthy rates in the next five years compared to other imports.

Great Britain has very limited pulp production facilities and must import over 90% of the pulp requirements. In 1965, Canada supplied Great Britain with 14% of the required bleached sulphate, 16% of semibleached sulphate, and 5% of unbleached sulphate imports. These figures represent upward
trends in the proportion imported from Canada. These percentages are expected to rise as raw materials become scarcer in Scandinavia, which until now has been the leading source of raw pulp for Great Britain.

C. Japan

After a period of self-sufficiency in the post-war recovery period, 1962 marked a turning point for Japan when it started importing pulp in large quantities. As per capita income doubled since that year, there has been a very rapid increase in demand for kraft pulp. In ascertaining demand potentials from GNP growth, the predictor should bear in mind that Japan has a much higher paper and board consumption per capita than would be expected from its income level. Japan has an exceptionally low rate of illiteracy in relation to its per capita income. Japan ranks third in the world in the production of paper. The balance of payments, long a thorny issue in Japan's highly trade dependent economy, is expected to reach equilibrium in the first quarter of 1969.10

The Japanese government is actively involved in eco-


nomics planning. In the next five years, it expects the demand for paper and paperboard to grow at 7.6% annually, the same rate as its GNP.\(^{11}\) Japanese authorities say by 1974 2.05 million tons of pulp could come from Canada, if Canada can come up with the right terms in price, quality, and timing.

The Japanese authorities are anxious to buy their material requirements in the rawest state possible. British Columbia exporters, of course, would like to sell pulp in the most finished state. For example, Japan has embarked on a chip-buying program, entering into an agreement to purchase substantial quantities of chips from Malaysia, Australia, and the United States for the next several years.\(^{12}\)

To ensure long-term supplies of raw materials, Japanese companies are integrating and merging with raw material producers. Japanese capital is providing considerable backing in the current expansion of production facilities in British Columbia.\(^{13}\) Japanese importers are not

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11 The Financial Post, loc. cit.


13 Three mill projects, one completed at Skookumchuck in early 1969 (with tentative plans for expansion), one committed for construction at Ashcroft in 1971-1972 and one tentatively considered at Bella Coola exhibit the recent interest by Japanese investors in British Columbia's kraft pulp industry.
interested in one-time purchases. Long-term contracts of ten years or more and equity positions in the production facilities are the terms they are pressing toward to ensure a continuous supply of kraft pulp in the future.

E. Common Market

In the 1950's, as the Common Market countries recovered from the ravages of the war and entered a period of sustained economic growth, production of kraft paper and paperboard rose from 365,000 tons in 1950 to almost 600,000 tons in 1960. Net imports increased more than thirteen times, from 40,000 tons to over 600,000 tons, as the Common Market countries became more dependent on outside markets. The per capita consumption, still much lower than in North America, rose 120%. These growth rates have continued through the 1960's and are expected to continue into the early 1970's in parallel with the rapid growth rates projected for the economies of these countries.

Besides the general increase in the consumption of paper and paperboard, demand for kraft pulp will grow because of the substitution effect of using sulphate (kraft) pulp instead of sulphite pulp. In the 1950's, there was a

marked increase in the consumption of sulphate pulp per ton of paper and board and a somewhat smaller decline in the use of sulphite pulp. The small, old sulphite mills in the Common Market countries are steadily being shut down as they can no longer compete with the newer, larger sulphate mills. The consumption of bleached sulphate pulp per capita is estimated to have been 70 kilograms in 1960, 110 kilograms in 1965, and should rise to 170 kilograms in 1974 in the Common Market countries. 15

Between 1969 and 1974, GNP growth is expected to be 4.0 to 4.5% for the Common Market countries. The requirements for paper and board are expected to rise by 5.0%. 16 Most of the increasing needs will have to be imported and as its historical source, the Scandinavian countries, reach their raw material limits, the Common Market countries will be looking increasingly to North America, especially British Columbia, as a new raw material supply base.


16 Loc. cit.
F. Other Areas

Areas other than the United States, the Common Market, and Japan have never imported more than 20% of Canada's kraft exports. They are not expected to increase their imports too much in the next five years. These areas are typically the underdeveloped countries and beset by balance of payments problems, these countries will not be able to afford very much finished pulp. Some very modest aggregate increases are expected because some northern bleached kraft is essential to make high quality printing, writing, and fine paper. Predictions of imports into Asia and Africa are difficult to make; but, despite their large populations, exports to these areas are not expected to increase noticeably. Australia and New Zealand have tariff protected indigenous industries although Australia imports pulp from Canada for certain grades of paper and board. The demand in Latin America is growing but is not expected to surpass greatly its domestic production capacities.

CHAPTER IV

MAJOR WORLD KRAFT EXPORTING AREAS

A. **Introduction**

There are presently four countries that are the chief exporters of kraft pulp. They are in order Canada, Sweden, Finland, and the United States. A fifth, the U.S.S.R., may at some future date become a major competitor on the world export scene. An analysis of the industries in these countries and their export potential is given in the next two chapters.

Figure 2 on the following page lists the relative importance of the major exporting countries. Canada's rise as the major exporting country is dramatically shown. Sweden, which in the post-war decade was the major exporter, follows after Canada. Finland ranks third. The United States, the major kraft pulp producer in the world, is only fourth in exports.

B. **Canada**

The industry in Canada is discussed in greater detail than the other countries in the following chapter. This was considered necessary because British Columbia is so intimately bound within the Canadian economy.
KRAFT EXPORTS BY MAJOR PRODUCING AREAS, 1950-1968

Sources: Canadian Pulp and Paper Association
U.S. Pulp Producers Association
C. United States

The United States historically has been a major kraft pulp producer in the world (see Figure 3, below).

**FIGURE 3**

UNITED STATES PRODUCTION OF KRAFT PULP, 1946 - 1967

Source: U.S. Pulp Producers Association
Since 1945, kraft pulp production in the United States has increased five-fold, reaching 22,750,000 tons in 1967. For several years after the war, there were several spurts in increases of supply, followed by steady growth from 1952 to 1956. The economic recession in 1957 and 1958, the most severe in the United States since the depression, resulted in a sharp curtailment of production growth. Since 1959 however, growth has increased steadily at 6.9% annually.

Coinciding with the large expansions in the southern United States, exports recently have become significant. The United States exports of kraft linerboard have shown an impressive growth of 100,000 tons annually in recent years, rising from 525,000 tons in 1963 to 1,175,000 tons in 1967.¹ Linerboard exports now comprise 56% of the total United States exports of paper and paperboard. If this rate continues, linerboard exports should reach 1.88 million tons in 1974, a 6.85% compound annual growth rate.

There is a marked reduction in new capacity scheduled to come into operation during 1969, relative to the trend of the preceding year (See Appendix I). About 90% of the total wood pulp capacity coming into operation in the United States during the 1966-1969 period will be on stream by the end of 1968.² In unbleached kraft paperboard, 97% of the total ex-

² Loc. cit.
pansion in capacity scheduled for the 1966-1969 period was installed by the end of 1968.

Data available on new capacity scheduled for 1970 indicate that the slowdown will continue in that year, although new kraft pulp equipment added in 1970 will be greater than in 1969. The rates for both 1969 and 1970 are well below those of the two previous years and well below the growth rate needed to keep production along its long-term growth trend. The cutback in capacity expansion plans resulted from pessimism generated by the fact that operating ratios were in the mid-80's for 1967 and 1968. Another factor that probably had some impact upon the slowdown in the rate of growth of capacity during 1969 and 1970 was the behaviour of profits in the industry relative to investment. After 1957, following a decade of fairly high returns on investment, there was a sharp drop in profits and a relatively low rate of return prevailed until 1965. The higher rates of return in 1965 and 1966 coincided with higher production ratios but there were lower returns on investment in 1967 and 1968.4


There has been a marked shift in geographical areas for kraft pulp production in the post-war period. In 1946, the New England, Middle Atlantic, and North-Central States accounted for 64% of the output, the South 28%, Pacific States 8%. By 1963, the New England, Middle Atlantic, and North-Central States had dropped to 44%, while the South and Pacific States had risen to 43% and 12% respectively. The half-decade since 1963 has been a period of major growth for the kraft pulp industry in the twelve southern states, with production expected to reach 23.6 million tons in 1969.

Unbleached sulphate wood pulp accounts for the major part of the wood pulp capacity in the southern United States (61% as of the end of 1966). The bulk of the expansion to 1971 is also scheduled for this grade (2.4 million tons, or roughly two-thirds of the total). The South accounted for 70% of the 7 million tons of new kraft pulp capacity from 1967 to 1969 in the United States.\(^5\) The strong growth shown in exports of kraft linerboard in 1967 and 1968 would not have been possible without the new capacity that has been installed in the South.

The Southern mills, designed to use the latest technological techniques, are located in a region of fast-growing timber. Southern Pine is the main species pulped although

\(^5\) Locke, loc. cit.
over half of the forested lands are held by small owners and
on these lands virtually no satisfactory forestry is being
practised. The southern states have ample fresh water and
cheap hydro-electric power. Its warm year-round climate al­
 lows plant equipment to be more exposed relative to northern
climates and therefore capital costs per unit are less al­
 though maintenance costs may be higher. Based on 1964 data,
it was established that the United States South had a mill­
cost advantage over eastern Canada in linerboard and bond
paper.

Furthermore, a DBS study of productivity trends be­
tween 1947 and 1961 revealed that productivity in the United
States industry increased more than twice as fast as in
Canada.

Continuing an historical trend, there should be more
substitution of kraft pulp for sulphite pulp. In 1968,
there were 29 sulphite mills in the United States, each under

6 United States National Research Council, Renewable
pp. 42-43.

7 W.E. Haviland et al, Trade Liberalization and the
Canadian Pulp and Paper Industry (Toronto, University of

8 Loc. cit.
50,000 tons capacity and these are prime candidates for early closure. Their closure means that their markets to a degree can be taken over by kraft pulp producers.

A factor which could have a retarding effect on future expansion has been the relative low rate of return of the American pulp and paper industry (approximately 9% in the last few years which is considerably below a number of other major industries). The low profits resulted from the desire of many companies to maintain competitive status in tonnage output and their resolve to tie down the few remaining prime sites for integrated paper mills. This policy has resulted in lower pulp prices; consequently investment interest from the money markets has also been reduced. In order not to discourage capital investors further, pulp company managers are becoming more profit conscious. The trend in the next five years should be for more conservative expansion plans as management tries to increase the return on investment. Announced plans for expansion are shown in Appendix I. These announced plans illustrate the slowdown in expansion expected in the next five years.

D. Scandinavia

Sweden and Finland are the major kraft pulp producers in Scandinavia. Norway, which produces mainly mechanical and sulphite pulp, produces and exports very little kraft pulp. Sweden is the leading producer in Europe and is highly dependent on export markets. Between 1950 and 1960, Sweden exported approximately the same volume of kraft pulp as Canada. However, in recent years, it has fallen behind as Canada accelerated her export volume (see Figure 2, p. 33).

There is a trend underway in Sweden and Finland towards integrated operations with a greater proportion of the pulp converted domestically. Growth in Sweden is expected to increase steadily in the next five years but at a slower pace than in Canada.10

Finland's rise to prominence in world paper and board markets began in 1938. In the post-war period, Finland's production and exports consistently have been slightly less than two-thirds of the Swedish figures. The balance of payments deficit since the mid-sixties has been Finland's most serious problem—it had to devalue its currency 23.8% in

10 A 250,000 tpy bleached kraft mill is scheduled for 1972. Additions to seven other existing mills are planned in the next five years. Source O. Andersson, "Sweden: Moves toward more integrated mills," Pulp and Paper, XLII (July 15, 1968), p. 102.
October, 1967. The announced expansion plans in Finland are not very extensive for the next five years.  

Both Finland and Sweden have centralized industry associations. In the face of tightening competition, the Finnish industry has the advantages of centralized export sales which enable it to offer a wide range of produce mixes and technical services. Sweden's cellulose, papermill, and wood pulp associations merged recently. These associations have also integrated their research groups into one co-ordinated research effort.

Both Finland and Sweden regard the United Kingdom as their most important export market. They both currently ship 25% of their total exports there. After the United Kingdom, the individual countries of the Common Market follow as the major export markets for Finnish and Swedish kraft pulp. The European Economic Community markets are vital to the Scandinavians and they tend to regard them as primarily theirs. This attitude is reinforced by the product up-grading and forward integration into the market.

12 Ibid., p. 102.
However, as these Scandinavian countries, particularly Finland, reach the limit of their raw material resources, future expansions in demand in the European markets will have to be satisfied from abroad, particularly from the American South and from British Columbia.

E. Union of Soviet Socialist Republic (U.S.S.R.)

The Soviet pulp industry has one great advantage over everyone else. Its reserves of wood represent about 30% of the world's forest lands which is four times Canada's reserve.\textsuperscript{14} The industry in Russia is now growing rapidly: production in the pulp and paper sector is expected to jump from 3,230,000 tons in 1965 to 8,000,000 tons in 1970.\textsuperscript{15}

Russia's ultimate aim apparently is to become a major exporter of kraft pulp. However, it is unlikely to happen during the next five years. Russia lacks trained labour; moreover, it has a large domestic market whose demand is likely to consume most of its production. Per capita consumption now is only 50 lbs. annually but western marketing influences in terms of distribution and packaging, education,


and technology will force domestic demand higher in the next five years. Taking the above factors into consideration, it is unlikely that the Soviet Union will be able to provide competition for Canada in the export markets.

A. General Economy

a. Historical Economic Growth

Canada's economic experiences have reflected many of the world trends. At the same time, they have shown considerable divergences from these trends.

Canada's GNP has grown at 3.5% annually in real terms in the past thirty years. During this time, its economy has been growing at a faster rate than the United States economy. If Canada continues to grow at a faster rate than the United States, and there is reason to believe that it will continue to do so, the average income and standard of living in the two countries should approach each other closely.

The growth in the later 1950's was quite slow, following in the wake of the recession in the United States. However, Canada's growth rate from 1962 to 1966 was very rapid, mainly because it absorbed substantial economic slack present at the beginning of the decade. The growth has slackened somewhat in the late 1960's but is still at a high level. Growth in 1968 was 4.7% in real terms.
b. Trade Patterns

Canada's trade trends also have been influenced by world developments in trade but again have shown divergences which make Canada's trade trends unique.

In the 1950's, Canada experienced very slow trade growth compared with the trading and growth experience of many other countries. This continued into the early 1960's. One important qualification, especially applicable to our study, is that in contrast with general world trends, the proportion of Canada's exports represented by raw materials did not decline during this period. However, in the mid-1960's Canada's trade growth surpassed that of many industrial countries.

The exports from Canada historically have been predominantly food, raw material, and processed materials. These categories have become a smaller part of world trade. In the face of this trend, Canada however, has been able to pick up an increased share of world trade in raw and processed materials.

In the past decade, about 85% of Canada's exports have gone to the industrialized countries. Exports to these

markets increased from slightly more than $3.5 billion in 1954 to $5.8 billion in 1963.

c. Future Trends

The Economic Council of Canada predicts a 4 3/4 % growth rate for GNP annually between 1970 and 1975 in real terms. This high growth rate is based on a high growth rate of the labour force and potential employment during this period.²

A significant part of Canada's international comparative advantage will continue to lie in the output of primary and processed industrial materials. Therefore, despite these categories' shrinking portion of overall world trade, Canada's share should increase at a fairly high rate. The absolute value of the primary and processed industrial materials should grow substantially on the basis of the high rates of growth projected for the industrial countries. Growth in wood products particularly should be substantial because raw materials are becoming scarce in most other industrial countries.³


B. Government Studies -- The Gordon Report

In common with other forecasters of the 1950's, the Gordon Royal Commission significantly underestimated prospective growth in foreign trade. The forecasts of the Commission concerning the world economy and Canada's foreign trade have thus far significantly underestimated the actual trend. Furthermore, it forecast slower growth generally in foreign trade than in output for the Canadian economy.

Actually, so far in the forecast period, both exports and imports have actually grown more rapidly than output. The Commission's pessimistic outlook was based on the belief that world trade and payment barriers would remain substantially unchanged and that there would be limited flows in private international capital (on which the development of production facilities for British Columbia kraft pulp heavily depends). The Commission's Report pointed out the great reduction that had taken place in private international capital flows and doubted that these flows would regain their older role. However, this last decade has seen large sums


5 D.W. Slater, World Trade and Economic Growth: Trends and Prospects, with Applications to Canada (Toronto, University of Toronto Press, 1968), pp. 77-83.
of international capital for development flow into Canada. The Commission underestimated overall growth in world output and trade, rather than just for particular export categories. Within this context, the projected compound annual growth rates of wood pulp for 1955 to 1980 were 3.1%. The actual annual growth rate from 1955 to 1965 was 5.4%.

C. Kraft Pulp Production

Kraft pulp was first produced in Canada in 1908. Production between 1908 and 1912 was 5 thousand tons annually. It ranged between 200 and 250 thousand tons annually in the 1920's. Production dropped during the depression.

6 This extremely conservative view of world trade prospects was based on the following premises:
   a. "The deliberate pursuit of full-employment policies (by foreign countries) and the fact that the highest level at which they can be implemented is at the level of national policy, mitigates against a reduction in trade restrictions."
   b. "Underdeveloped countries would be unwilling to dispense entirely with protective devices to encourage the new industries that they wish to establish."
   c. "The net effect of defence arguments has been to make trade more difficult."

7 D.W. Slater, World Trade and Economic Growth: Trends and Prospects with Applications to Canada (Toronto, University of Toronto Press, 1968), p. 82.

8 W.H. Sherriff, Wayagamack, a Romance of Canada (Privately published at Three Rivers, Canada, 1924)
then built up slowly in the late 1930's. War spurred a production increase from 300 thousand tons in 1939 to 500 thousand tons in 1945.  

Production volume in the post-war period is shown in Figure 4, next page, on a semi-log scale. The post-war production growth has been very healthy. There was a sharp increase in demand caused by the outbreak of the Korean War. Then between 1952 and 1964, the annual increase was a very consistent 10%. This growth is twice the 4.5% growth experienced by the rest of the pulp industry. From 1964 to 1968 (reflecting particularly the rapid growth in the British Columbia industry), growth accelerated at an even faster rate -- 15.2% annually. A large percentage of this new production has been sold as market pulp. In 1960, only one-third of the white paper grade pulp was sold as market pulp. By 1968, market pulp accounted for half of the total production of these grades. However this statement has to be qualified because some of the pulp now classified as market pulp is actually moving to offshore affiliated companies and so the shift has not been as dramatic as the figures suggest.

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9 Canadian Pulp and Paper Association, Reference Tables (Montreal, 1947)

10 Ian B. Chenoweth in a talk "Canada's Place in the World Fibre Economy" to the American Paper Institute (New York, February 18, 1969)
CANADIAN KRAFT PULP PRODUCTION 1952-1974

ANNUAL PRODUCTION, tons (000's)

YEAR


Source: Canadian Pulp and Paper Association

FIGURE 4
In the initial post-war period, two-thirds of all Canadian kraft production was unbleached kraft pulp. Its growth, however, has been the least spectacular of the three pulp categories. Unbleached kraft has increased at an average annual rate of only 5.3%. Moreover, growth through 1967 and 1968 became negligible. This reflects the increasing competition from the United States South which in recent years has increased its unbleached kraft production at a very high rate (See Chapter IV, c). The United States appears to have a comparative advantage in unbleached kraft pulp which it has exploited in the 1960's. The United States industry now satisfies much of its domestic market which earlier depended on Canadian imports. This development has been reflected in the Canadian production of unbleached kraft pulp.

The main production growth has been in the bleached and semi-bleached sulphate sectors which have increased rapidly. From 1952 to 1966, bleached sulphate production increased steadily at 11.6%. Then, after virtually no growth in 1967, production soared 44% from 1967 to 1968.

Although in absolute amount semi-bleached kraft production still is less than 20% of the total sulphate output, its growth rate has been the most spectacular of the three categories. Before 1957, less than 100,000 tons of
semi-bleached pulp was produced annually in Canada. Growth since then has averaged 22% annually. This increase stems from product up-grading, where previously the converted product was manufactured from unbleached kraft, it now is made from semi-bleached kraft.

D. Domestic Market

a. Domestic Consumption

Canadian consumption of paper and paperboard has increased from 280 lbs. per capita in 1960 to 348 lbs. per capita in 1967, a 24% overall increase. Considering that Canada's population has grown at a fairly substantial rate in this period, it is apparent that the domestic market, although small compared to the United States market has a good future potential. The tariff-protected grades of paper, concentrated mainly in eastern Canada now comprise 26% of total national production versus 23% of production after World War II. However, imports of paperboard, wrapping paper, and special industrial papers have been expanding faster than exports since 1945.

More recently, the total Canadian demand for all grades of kraft paper increased by only 1% between 1967 and 1968. With the GNP growth at 4.7% in real terms for 1968, the domestic growth was well below the economy average. Semi-bleached kraft demand was up but both bleached and un-bleached kraft demand were down.

Within the converted products, recent trends show multiwall-sack kraft down 8.9% and paperboard at 1,603,000 tons in 1968 increased 3% over 1967. Containerboard showed a 3.6% increase while boxboard at 589,000 tons gained only 1.9%.

The production of bleached and semi-bleached sulphate, including bleached hardwood, amounted to more than 4.5 million tons in 1968, representing an overall increase of 27% or 980,000 tons from 1967. This substantial increase reflected the upsurge in North American demand for most grades of paper and board in the kraft packaging fields. The strong overseas markets accounted for nearly one-half of the increase. Semi-bleached and bleached hardwood kraft pulp particularly are taking over from sulphite pulp as a newsprint additive in eastern Canada. In 1968, bleached hardwood accounted for 12% of the total bleached sulphate production.
b. Paper and Board Industry

Until now, the domestic paper and board industry has supplied Canadian consumers with the same variety of products and qualities as demanded by consumers in the United States. This has necessitated short production runs and in many instances high costs. Industry survival depended on fairly high tariff rates.

The industry's profit picture has not been too bright. Producers who have had a large stake in the protected grades generally experienced a poor profit record. Their return on equity has fluctuated between 3 and 9% in the last decade. This compares unfavourably with firms which are both integrated and concentrated on newsprint and pulp. These companies have been able to maintain, with few exceptions, rates of return on equity at 10% or above.12

The next five years should see a large-scale restructuring of the tariff-protected segments of the industry, concentrated mainly in eastern Canada. Some phases of the tariff cuts from the Kennedy Round will come into effect during this period.

12 Haviland et al, Trade Liberalization, pp. 18-27.
Given a greater low-tariff market, and conversely having to compete with producers in these potential markets, the domestic converting industry will be forced to specialize in order to achieve competitive costs under free trade conditions. The result may be that production of some grades of paper may have to be discontinued in Canada. Some mills will have to be relocated, others consolidated, some even closed. The major re-adjustment will be in Quebec and Ontario.\footnote{Haviland et al, \textit{Trade Liberalization}, pp. 77-79.}

The economies of adjusting to a freer trade situation will have to be analyzed from each mill's point of view, and the conclusions for each may differ significantly. These changes will come hard, and they will be expensive. However, by 1974, Canada should be able to compete in certain grades of writing paper, reproduction papers, linerboard, corrugating medium, and unbleached kraft paper.\footnote{Ian B. Chenoweth in a talk "Canada's Place in the World Fibre Economy" to the American Paper Institute (New York, February 18, 1969)}

Specialization alone in response to the Kennedy Round tariff cuts will not be enough. Marketing also will have to be re-organized and formidable obstacles overcome. Because of the importance of tied sales, converting facili-
ties and marketing outlets will have to be acquired in the export markets of the United States and Europe. There are now five Canadian pulp and paper companies which have invested overseas, mainly in the United Kingdom and Western Europe as a means of diversification, and of obtaining tied markets for their products.

E. Canadian Kraft Pulp Exports

Canada has exported over half of her kraft pulp production. (See Appendix II) Since the mid-fifties, about 60% of her total production has been exported.

Within the three categories, a larger percentage of bleached kraft is exported, whereas a smaller proportion of semi-bleached and unbleached kraft pulp production are exported. Only one-third of the unbleached kraft pulp produced has been exported directly. The rest is converted domestically or used as newsprint furnish.

Overall exports of kraft pulp grew at a steady rate of 10.8% between 1952 and 1967 (see Figure 2, p. 33). From 1967 to 1968, exports jumped 31% which is considered unusual, and lower rates are expected for 1969 and 1970. Projecting the growth at the historical rate of 11%, Canadian kraft pulp exports should reach 6.0 million tons in 1974. The major portion of the increase will be in the bleached kraft pulp sector.
The major export markets were analyzed subjectively in Chapter III. Here a brief statistical review of Canada's exports to her major markets is presented.

There are five main export areas to which Canada has exported kraft pulp. In order of size for 1968, they were the United States, Western Europe (mainly the Common Market countries), Japan, Great Britain, and South America (see Figure 5 on the following page).

Exports to the United States have increased at a very steady rate. Except for the sharp increase caused by the Korean War in 1951 and the curtailment of imports caused by the economic recession in 1958, export growth has been a consistent 8.2% yearly.

Western Europe has imported kraft pulp from Canada at a very rapid rate, increasing 30% on the average each year since 1958. Exports to Japan have increased even more spectacularly, at an average of 40% annually since 1962. Within the total overall increase, the growth rates of exports to these two areas has not been very smooth; growth has been more rapid in some years than others.

Great Britain's relative importance as a Canadian market has diminished in the last decade. In the 1950's, Great Britain was the second most important kraft pulp market. However by 1962, exports to Western Europe, and by 1963, exports to Japan surpassed exports to Great Britain.
CANADIAN EXPORTS OF KRAFT PULP TO MAJOR WORLD MARKETS, 1949-1968

YEAR

UNITED STATES

WESTERN EUROPE

JAPAN

GREAT BRITAIN

SOUTH AMERICA

ANNUAL EXPORTS, tons (000's)

1000

100

10

Source: Canadian Pulp and Paper Association
U.S. Pulp Producers Association

FIGURE 5
Although overall growth of exports to Great Britain has been trending upward in the post-war period, there have been numerous periods of reversals. Some recovery from its current doldrums is expected in the next few years.

The South American market has been the most erratic. In the 1950's exports of Canadian pulp ranged between 10 and 20 thousand tons per year. Then in the 1960's exports ranged between 30 and 80 thousand tons per year. Except for this shift in ranges at the turn of the decade, no clear growth pattern is discernible.
CHAPTER VI

THE KRAFT PULP INDUSTRY OF BRITISH COLUMBIA

A. Historical Development

Kraft pulp is a relative latecomer to the British Columbia pulp and paper industry, as was the case for other historical producing areas. Sulphite pulp and newsprint were produced in large volumes long before kraft pulp began to play a significant role. The first sulphate mill in British Columbia started up during World War I at Ocean Falls. The mill produced captive pulp for internal use in an integrated pulp-newsprint complex. For thirty years, this mill was the only kraft pulp producer in the province.

The generally buoyant conditions in the world economy following World War II spurred the first period of expansion in British Columbia during the late 1940's and early 1950's. In this expansion, mills were built at Port Alberni, Harmac, Crofton, and at Elk Falls. These mills were all on tidewater and relatively close to sources of wood, being within thirty miles from a sizeable proportion of their pulp-wood supply.\(^1\) Except for the Elk Falls mill, these

mills were built by Canadian companies who characteristically were rich in resources and technology but lacked development capital and world market connections. Most overseas sales during this time were negotiated through foreign agents.

In the following period, characterized by slower growth, two existing sulphite mills at Woodfibre and Port Mellon were converted to kraft pulp production. The first kraft mill in the interior of British Columbia was completed at Castlegar in 1961.

A major wave of kraft pulp expansion occurred between 1965 and 1968 with the opening of seven new mills. In 1965, a mill was opened at Kamloops and in 1966, two mills were opened at Prince George. A mill at Prince Rupert, a mill at Tahsis in 1967, and mills at Powell River and Prince George in 1968 complete this period of expansion.

This spurt in expansion initiated a new era in the financing and marketing operations of kraft pulp producers in British Columbia, and was characterized by the formation of joint ventures. These joint ventures were between local companies rich in resources and technology with foreign partners having world market connections. The foreign partner characteristically came from the more industrialized countries who had capital available for investment abroad. Partners came from Great Britain, continental Europe, Japan, and the United States to seek profitable investment oppor-
tunities as well as assured sources of raw material.

The formation of joint ventures has coincided with the widespread trend of mergers and acquisitions in the Western economy. These mergers were designed to form both vertically and horizontally integrated operations. Basically, the kraft pulp producer wants to integrate forward as closely as possible to the consumer. Because of the possible conflict of interest in dealing with middlemen such as pulp agents, the pulp producer would rather deal directly with export markets. But lacking expertise in many of the foreign markets, as well as capital for expansion, the British Columbia producer finds a joint venture a more palatable alternative. Similarly, the foreign partner, anticipating a future need for raw materials, enters into a partnership agreement in order to integrate backwards as far as possible to the source of raw materials.²

A trend well developed in the United States but less so in Canada, particularly in British Columbia, has been merger activity to produce horizontal integration. Wider business operations increase sales opportunities by broadening the product line. The reduction in the variability of sales and lower marketing costs and efforts through horizontal integration generally results in increased profits.

B. The Cyclical Expansion of the Industry

The kraft pulp industry in British Columbia is highly capital intensive. Its ratio of property, plant, and equipment to total assets is one of the highest in manufacturing. Because of unit cost reasons, new capacity in a capital intensive industry must be added in large increments. The large size of the increments requires long lead times for the planning and addition of new capacity. The ability to predict economic conditions several years in advance is necessary to plan future expansions wisely.

The industry is comprised of relatively few producers whose kraft pulp is mostly undifferentiated. Whenever the picture brightens appreciably, considerations for expansion are made industry wide because each firm wishes to preserve its market. Were each firm to expand, then the overall effect would be to produce substantial excess capacity lasting for a number of years.

The decision by a company to build a pulp mill usually is made independently on the basis of present or past economic conditions. These conditions may themselves be quite misleading as indicators of future conditions. But more to the point, the independent decision of each producer to proceed with expansion leads to the cumulative
result of excess capacity.\textsuperscript{3}

The problem may be compounded by provincial government policies. The government is anxious to develop its natural resources and in its enthusiasm may force premature expansion. Similarly, foreign investors, anxious to secure future supply, have been looking to British Columbia's forest resources to supply this need.\textsuperscript{4}

Expansion in production capacity therefore tends to run in cycles. The long swings in contraction and expansion are reinforced by the general climate of business confidence and optimism. Overoptimism, lack of caution, and speculation during long periods of expansion and the subsequent collapse of confidence and excessive conservatism during major contractions increase the amplitude of oscillation of cyclic supply swings.

The causes of the long cyclic swings are not yet fully understood. However, when account is taken of the connections via both export trade and investment, it will be apparent that disturbances originating in the principal export markets are transmitted to British Columbia.

\textsuperscript{3} D.A. White, \textit{Business Cycles in Canada}, Staff Study, Economic Council of Canada (Ottawa, Queen's Printer, 1967), pp. 16-17.

Examination of the historical trend line of British Columbia kraft pulp production capacity reveals that the secondary trend line since World War II has experienced marked peaks and valleys. (See Figure 6 in the following Chapter.) The peaks of these oscillations came in 1948, 1952, 1956, 1961, and 1967. There were four years between the first three peaks, five years between the third and fourth peaks, and six years before the last peak in 1967. The trend line since then has tapered off and announced expansion plans indicate that there will be a bottoming out in 1971.

The period for each expansion cycle appears to be lengthening. Furthermore, it appears that the capacity increases lagged slightly behind the economic conditions of the United States, its major market until now.

On the basis of these cyclic trends, (see Figure 6 page 74) it is expected that after the minimum of 1971 substantial increases in production may be expected and that the peak of the expansion should come in 1973 or 1974.

C. Ownership Trends

The early development of the kraft pulp industry in British Columbia was dependent to a large extent on United States capital. American capital was applied in two ways. In one way, an American company would establish a subsidiary
in British Columbia and keep a controlling interest through its equity investment. Mills at Elk Falls, Woodfibre, and Castlegar were established this way. Alternatively, a Canadian company, by issuing bonds and debentures on the American money market, raised the necessary development capital but retained ownership of the mill. Mills at Port Mellon, Port Alberni, and Nanaimo were financed this way.

In the recently constructed and proposed mills, European and Japanese capital have become more significant. As pointed out in Section A of this chapter, the new capital sources have also introduced a new ownership idea. Joint-ventures between the foreign capital source and an indigenous operation have made partnership popular. Mills at Skeena, Kamloops, and Prince George (three) are owned on a joint venture basis.

Until recently, enterprises in developed countries have exhibited considerable reluctance in engaging in joint ventures. This reluctance has been overcome in increasing degrees as the result of joint ventures between entrepreneurs of two different nations having proven themselves. Somewhat greater initial difficulties for joint ventures than might be the case for wholly foreign-owned investments may occur. (Skeena Kraft experienced production and management problems in its initial start-up period.)
The entrepreneurs in the joint venture characteristically have come from countries having comparable business methods and experiences. The Finnish partners in the current construction of the mill at Kitimat are anxious to establish a mill in a new raw material area because the raw materials in their own country are being harvested close to their maximum production limit. Furthermore, they want to broaden their product line to complement their domestic product line. Finally, they want to establish a beachhead from which to penetrate the large North American market.

The Japanese authorities want their capital investment to compensate adequately for the outflow of initial capital. The Japanese economy long has experienced a negative balance of payments. A favourable return on overseas investment is one method of generating a more favourable balance of payments position.

The West German investors, to provide adequate overseas management, participate in joint ventures as a matter of policy so that they can associate with local capital in the country of the investment. The British investors, by investing in British Columbia, are seeking more profitable opportunities than they can find at home.
D. Sales Contracts

Some mills produce pulp for sale on the open market only, while others produce both "market" pulp and pulp for conversion into newsprint and other papers. This latter category of captive pulp will be converted into paper either in the same mills in British Columbia or abroad.

In the case of pulp agencies, marketing policy and practise varies considerably from company to company. The trend is to replace the use of independent agencies with the companies' own representatives as the volume of business grows.

Established producers often utilize the technique of long-term contracts to reduce the variability of sales as well as to lower marketing costs and efforts. The long-term contracts are often for periods of ten years or more. The logical extension of these long-term contracts is captive sales to an integrated partner. Pressures to reduce the variability of sales during the recent soft market conditions and to reduce marketing costs generally are causing a trend toward longer-term and captive-sales. A continued trend of longer-term contracts should result in more stable production runs in the next five years for the kraft mills in this province.

E. **Government Services and Regulations**

Virtually 93% of the 136,700,000 acres of forest land in British Columbia are owned or administered by the provincial government. Management of these resources is guided by the principle of sustained yield. This principle dictates that timber depletion shall not exceed the forest's ability to reproduce sound wood. The British Columbia government, in administering the public forests has set up several management entities to allow use of these resources by private enterprise.

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7 The primary management entities are public sustained-yield units (publicly owned and administered by the Forest Service) and tree-farm licences (privately administered under Forest Service supervision).

Superimposed upon certain Interior public sustained-yield units are pulpwood harvesting areas granted to pulp companies for the removal of small or decadent timber not suitable for lumber production. However, the experience with the pulpwood harvesting area concept has not proved too encouraging. Legislation introduced in the 1968 legislature has replaced the pulpwood harvesting areas concept with a licensing system. This system stresses performance and allocates timber on the basis of annual cutting rights solely on the basis of demonstrated need. Theoretically, a pulp mill must be under construction before it receives an assured supply of timber.

Certified tree-farms and farm-wood-lot licences make up the balance of managed forest lands.
F. Competitive Position of British Columbia Mills

The kraft pulp industry in British Columbia has several unique characteristics. These characteristics give it advantages as well as disadvantages over some other pulp-producing areas.

Both the coastal species and the interior species are superlative for pulping operations. The coast area, reflecting the effect of a wet, fast-growing environment has four predominant species: Douglas fir, western hemlock, western red cedar, and balsam fir. The interior, together with a relative minor concentration of the coastal species, has spruce, pine, and larch. The coastal species have a long, fast-growing fibre whose pulp has exceptional strength. The pulp from interior species is noted for its even fibre lengths capable of producing very bright pulps.

The kraft pulp mills in British Columbia are relatively new and efficient. Pulp mills are expected to operate between forty and fifty years. The kraft mills in British Columbia are therefore in an excellent competitive position relative to other producers in the world.

British Columbia has an immense supply of raw materials. Its 136,700,000 acres of forest land represent approximately one-quarter of the North American inventory. 8

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Whereas competitive areas are rapidly approaching maximum utilization, British Columbia still has large tracts of underutilized forests.

British Columbia mills enjoy a substantial advantage in their wood costs. The wood costs in British Columbia are 10 to 25% less than wood costs in eastern Canada. In addition, logging operations can take place year round in British Columbia whereas they are seasonal in eastern Canada.

On the negative side, relatively little research and development is done by British Columbia kraft pulp producers. The effort in British Columbia compares unfavourably with the record of Sweden or the United States. The research effort in recent times has been reduced by the closing of the Rayonier Research Centre and the curtailment of activities by Columbia Cellulose.


10 Operations may be curtailed however in dry summers because of the fire hazard. Similarly snow and ice in severe winters may cause some curtailment of operations. Operations in British Columbia's interior were drastically curtailed by severe winter conditions in January, 1969. This production curtailment may have spurred the firming of the kraft pulp market.

11 Ian B. Chenoweth in a talk "Canada's Place in the World Fibre Economy" to the American Paper Institute (New York, February 18, 1969)
Costs of labour, transportation, and supplies have been rising rapidly. These are matters of some concern since the ability of British Columbia to compete on world markets and retain a major place in the world fibre economy rests on the ability to develop her resources and offer them to world markets competitively. 

12 Ian B. Chenoweth in a talk "Canada's Place in the World Fibre Economy" to the American Paper Institute (New York, February 18, 1969)
CHAPTER VII

PROJECTION OF BRITISH COLUMBIA KRAFT PULP INDUSTRY, 1969-1974

A. Capacity

a. Historical Capacity

Kraft pulp production facilities were practically non-existent before World War II. The growth since then had been spectacular, with the highest rate in the world. The compound annual growth rate of kraft pulp capacity between 1956 and 1968 was 16% in British Columbia compared to 9% for the rest of Canada.

From 1965 to 1968, British Columbia's capacity almost doubled, which is illustrated in Figure 6 on the following page. The daily production figures given here are the sums of all kraft mills in British Columbia, calculated from individual mill capacities for each year and shown in Appendix III.

The geographic location of the kraft pulp mills are given in Figure 7 on page 75. The companies, their parents or partners, and notes on each are given in Appendix III.

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1 Production at Ocean Falls, the only kraft pulp mill before 1946 in British Columbia, was only 150 tpd.
KRAFT PULP MILLS IN BRITISH COLUMBIA

Existing, Under Construction and Proposed

as of March, 1969
There were sixteen mills in production and one mill was under construction in March, 1969. Eleven mills were at various stages of consideration at this date. The brief history of these mills is given in Appendix III.

b. **Future Capacity**

The British Columbia total capacity in 1970 and 1971 can be predicted with reasonable certainty. A mill would have to be under construction by this time to be in production in 1971.

The capacity of British Columbia mills for 1972 to 1974 is more difficult to predict. The proposed mills are at various stages of planning. Six mills have posted performance bonds for construction to be undertaken by a certain date and their construction is therefore more certain. Forfeiture of these bonds means the loss of an assured source of timber.

Announcements concerning five new mills have been made but so far no definite schedule for construction is given. The decision to proceed with the plans in time to come on stream before 1974 will depend largely on general economic and market conditions in the next two years. Developers are exercising considerable caution at this time after the industry experienced overcapacity and depressed
prices in the last two years. Should the current firming of the market continue, more commitments for expansion will be made.

Based on the mills presently producing, those under construction, and those definitely committed, capacity in British Columbia should rise to 12,400 tpd in 1971 and 14,900 tpd in 1972. These figures probably indicate fairly accurately the capacity for those years because mills require approximately thirty months time from the completion of the feasibility study to the startup of the mill.

For 1973 and 1974, the projection is more difficult. The uncommitted companies may or may not go ahead with their expansion plans. However, indications are that the world market is firming, prices are rising and potential profitability increasing. On this basis, it is expected that in the next two years, several proposed expansions will definitely be committed. Moreover, some of the existing mills will probably expand their facilities. Based on these guidelines, it is suggested that 18,000 tpd is not unreasonable as a projection of British Columbia's production capacity in 1974.

2 Announced expansions for the mills at Kamloops and Skookumchuck have been made with completion set for 1972. The [Vancouver] Sun, 1968-69.
B. Production

The production of kraft pulp has paralleled the growth in capacity. Divergences between the capacity and production are reflected in the operating ratio which has ranged from the low 80's to the mid-90's for the industry. Production increases have been less cyclic than capacity increases in British Columbia.

Actual kraft pulp production is plotted in Figure 8 on page 80. This Figure is based on Table 1 following. The kraft pulp production between 1950 and 1968 increased nineteen-fold, reaching 2,988,000 tons in 1968 which represents a 16% compound annual growth rate.

British Columbia's share of Canadian production increased steadily from 30% in 1955 to 50% in 1968. Similarly British Columbia's share of the world market increased from 2.7% in 1955 to 5.0% in 1965. Compared with the production in the United States, British Columbia's output was only 6.5% of the United States figure but by 1965 it had climbed to 8.7% of the United States total.

The production of kraft pulp is expected to rise appreciably in the projection period. If production follows the predicted capacity levels of the previous section, annual production should reach 4,800,000 tons in 1974.
### TABLE I

**BRITISH COLUMBIA PRODUCTION OF KRAFT PULP, 1950-1968**

<table>
<thead>
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<th>Year</th>
<th>Tons (000's)</th>
<th>Percentage of Canada</th>
<th>Percentage of World</th>
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</thead>
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<tr>
<td>1950</td>
<td>159</td>
<td>14.9</td>
<td>1.4</td>
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<td>51</td>
<td>242</td>
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**Sources:**
- B.C. Bureau of Economics and Statistics
- Canada: Dominion Bureau of Statistics
- Canadian Pulp and Paper Association
FIGURE 8

BRITISH COLUMBIA KRAFT PULP PRODUCTION, 1950-1974

YEAR
Source: B.C. Bureau of Economics and Statistics
A more conservative prediction made by the British Columbia Government states that annual production should reach 4,300,000 tons in 1974 in British Columbia.³

C. Prices

Kraft pulp prices are determined by the equilibrium of supply and demand. Supply in turn is determined by capacity, and such contingencies as strikes and unavoidable shutdowns. Demand is determined by general economic activity, inventory levels, and secondary demand for converted products.

The average post-war prices are shown in Figure 9 (see page following). These are not official list prices. Official list prices are meaningless because discounts are often given during periods of oversupply. The prices are averages per ton from total exports.

In the post-war period, bleached kraft pulp prices ranged between $125 and $150 per ton except for a brief period of high prices at the outbreak of the Korean War. Because of increased competition and improved technology, downward price trends have been just as common as upward price trends in the post-war period. Prices slumped in the mid-1950's and early 1960's when large capacity increases in North America created an oversupply. The market was firm in 1966 when prices were near the list price of $145 to $150 per ton.

³ British Columbia Government Study for the Economic Outlook Conference (Vernon, 1968)
CANADIAN AVERAGE MARKET KRAFT PULP PRICES
1948-1969

AVERAGE VALUE PER TON, dollars

175
150
125
100
75
50
25
0

YEAR


Bleached   Unbleached and Semibleached

Sources: Canadian Pulp and Paper Association.
U.S. Pulp Producers Association

FIGURE 9
As soft market conditions re-appeared in 1967, prices fell $15 to $25 off list to $120-$135 per ton. After remaining at these levels in early 1968, prices in late 1968 started climbing to $125 and $135 per ton. Further increases in early 1969 have raised prices to the $140-$142 range. As the prices have returned close to list prices, industry officials are predicting a general rise in list prices for the end of 1969.4

Future trends in pricing should see a greater emphasis by management on maintaining stable prices. Lower operating ratios to support price levels should become more widespread. Management is becoming increasingly market oriented and relatively less production oriented.

In the past year, the major producers in British Columbia have followed a policy of production curtailment whenever the opportunity arose in order to provide a firm basis for price improvements. Continuing this policy should preclude the need for overly aggressive marketing in the future.

In the face of higher costs and lower productivity, the major producers will find it difficult to hold the line on prices. In the next five years, there should be cost-

push price increases in addition to any demand-pull increases.

Demand-pull price increases are foreseen as global demand increases are anticipated. Their exact level cannot be predicted accurately but a steady rise is anticipated.

D. Exports

The majority of kraft pulp produced in British Columbia is exported to foreign countries. The increases in exports have paralleled the growth in production.

The United States has been British Columbia's largest export market but British Columbia's dependence on the United States market is not as great as that of the industry in eastern Canada. The United States has taken approximately 40% of British Columbia's kraft pulp exports in the last decade, representing 70% of total Canadian exports to the United States. Although in absolute amounts, exports to the United States are increasing, its growth rate has been less than overseas markets, particularly in the past two years.

The Common Market countries have become major importers of British Columbia kraft pulp in the last two years. Exports to the Common Market in 1967 were 300% greater than to the United Kingdom and 75% greater than to
Japan. This reflects the tremendous economic expansion in the Common Market countries and the inability of its traditional raw material sources to supply its increasing needs.

Exports to Western Europe should continue to increase at a substantial rate in the next five years. The large exports will be spurred in part by future partnership in the construction of kraft mills in British Columbia of the two areas. These mills are planned on the basis of integrated vertical sales.

For the last five years, Japan has been a major British Columbia export market. Its imports represented between 15 and 20% of British Columbia's kraft pulp exports. The exports until now have been market pulp sales through agents in Japan. There should be an upswing in exports of kraft pulp to Japan. The mill at Skookumchuck, which opened in early 1969, was the first mill in which Japanese interests have had an equity position. Two more mills on a joint venture basis are proposed. From this, the near term growth should be rapid.

The United Kingdom takes approximately 10% of British Columbia's total exports. Its economy has under-
gone serious re-adjustments in the mid-1960's and in this period her import rate levelled off. However, the market recovered in 1968 and some moderate increases can be expected in the United Kingdom market for the next five years.

After taking more than 17% of British Columbia's kraft pulp exports in 1961, South America has decreased in importance to where it took only 3% of British Columbia's total exports in 1967. This reflects the increase in production facilities locally in South America.

Australia has imported approximately 4% of British Columbia's exports in the last decade. British Columbia's portion of this market is not expected to grow appreciably. New Zealand, through preferential trade agreements, stands to gain any increasing demand in Australia.

In summary, British Columbia's chief markets are overseas. The overseas markets have the greatest export potential. The United States will continue to supply a large percentage of her needs internally. However, the major overseas markets are becoming increasingly dependent on outside sources for their raw material needs.

British Columbia stands to gain from this trend. Over 90% of Canadian kraft pulp exports to overseas markets come from British Columbia. British Columbia's increasing dependence on the more buoyant overseas export markets should stand it in good stead in the next five years.
CHAPTER VIII

CONCLUSIONS

The forecasts for the five-year projection period are based on premises which state that present economic trends generally will continue in their present patterns. Extrapolation of growth rates and trends are valid on this basis. Consequently, projections pertinent to the British Columbia kraft pulp industry were based to some degree on historical data.

Economic growth in the free world in the next five years should be expansionary in nature. The Gross National Product should increase between 4.0% and 4.5% in real terms for most of the industrialized countries. The growth in these countries is expected to be greater than that of the less developed countries.

World trade will grow at a faster rate than total output in the projection period. This reflects greater economic interdependence among the more industrialized countries, and an increasing awareness of the mutual gains possible from more liberal trade attitudes.

Global kraft pulp consumption is expected to increase at least as fast as the world GNP growth rate. North America, Europe, and Japan are expected to be the dominant areas of kraft pulp consumption in the free world in the next five years.
Kraft pulp consumption in the United States should experience a general increase but this market will become more self-sufficient as greater domestic production capacity builds up. Consequently its growth potential as a British Columbia export market will not be as great as the industrialized markets overseas. Exports to the United Kingdom market should strengthen as Great Britain continues its economic recovery effort and simultaneously imports less from its historic European sources.

Japan's kraft pulp requirements are booming in line with its economy. British Columbia's exports should increase as Japanese investors build mills in British Columbia. The outlook is tempered by the fact that Japan is importing chips in increasing amounts from the United States and Australia.

The Common Market has been British Columbia's fastest growing market in the last two years and its importance should continue to increase in the projection period. Captive sales from joint ventures and the decreasing importance of its traditional European sources should spur sales.

The less developed industrial areas historically have not imported significant amounts of British Columbia pulp and are not expected to do so in the next five years. A lack of a viable balance of payments position in these countries is the main reason for their prospective low consumption of kraft pulp.
Production in Sweden and Finland, the largest kraft pulp exporters in the world after Canada, is expected to grow more slowly as raw material supply limits are reached. Consequently, their traditional European markets will be looking increasingly to North America for kraft pulp supply.

Although the United States is the largest kraft pulp producer in the world, it trails Canada, Sweden, and Finland in exports. Major expansions in the southern United States will give it greater self-sufficiency, particularly in unbleached kraft pulp. Exports of unbleached kraft pulp to European markets should become significant.

The Soviet Union, despite its huge forest reserves, will not become a significant pulp exporter in the next five years, although it may make some inroads in the Japanese market. Other areas of the world occupy a minor role in kraft pulp exports. Although they may satisfy their relatively low domestic market internally, they participate minimally in global kraft pulp trade.

Production of kraft pulp in areas of Canada other than British Columbia will grow less rapidly than in British Columbia in the next five years. The tariff-protected segments in eastern Canada face a severe readjustment period as protective trade barriers as a result of the Kennedy Round talks are reduced.
British Columbia has been a relative latecomer to global kraft pulp production but its growth in volume and exports has been more than 15% annually since 1952. The industry development since that year has occurred in a cyclical manner. Extrapolation of this trend indicates that 1971 may be a trough and 1974 a peak in the expansionary cycle.

The large expansion in the mid-1960's was characterized by the introduction of joint ventures between foreign and domestic entrepreneurs. This ownership trend has resulted in more vertically integrated marketing channels. British Columbia's forest reserves, forest management, and climate give it comparative advantages over other kraft pulp producing areas in the world.

Kraft pulp prices are expected to increase in the projection period; this inflationary trend will come from two sources. Higher manufacturing costs and lower productivity will result in cost-push price increases. Increased global demand will force demand-pull price increases.

Projections based on assumptions made in this study indicate that British Columbia could have a production capacity of 18,000 tpd by 1974 and may produce 4,800,000 tons of kraft pulp during that year. British Columbia's kraft pulp exports will be most rapid in the fast expanding overseas industrialized economies. The United States will con-
continue to be the province's largest market but its percentage share of total exports will decrease.
SELECTED BIBLIOGRAPHY

A. BOOKS


B. PUBLICATIONS OF THE GOVERNMENT, LEARNED SOCIETIES, AND OTHER ORGANIZATIONS


C. PERIODICALS


"United States Apparent Consumption of Paper and Paperboard and Basic Economic Indicators," Southern Pulp and Paper Manufacturer, 31:8, August 10, 1968, p. 84.


D. MAGAZINES, NEWSPAPERS

"Busier than ever, but less to show for it - that's B.C.," The Financial Post, September 21, 1968, p. P-3.


"Kamloops Pulp $80-million mill one of Canada's largest," The Financial Post, February 1, 1969.


## APPENDIX I

**UNITED STATES KRAFT PULP EXPANSION**

<table>
<thead>
<tr>
<th>Year</th>
<th>Company</th>
<th>Location</th>
<th>Capacity (tpd)</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968</td>
<td>Consolidated Papers, Inc.</td>
<td>Wisconsin Rapids, Wis.</td>
<td>325</td>
<td>Bleached Kraft</td>
</tr>
<tr>
<td>1968</td>
<td>Georgia-Pacific Corp.</td>
<td>Crossett, Arkansas</td>
<td>415</td>
<td>Bleached Kraft</td>
</tr>
<tr>
<td>1968</td>
<td>Louisiana Forest Prod.</td>
<td>Port Hudson, La.</td>
<td>510</td>
<td>Bleached Kraft</td>
</tr>
<tr>
<td>1968</td>
<td>MacMillan Bloedel-United Corp.</td>
<td>Pine Hill, Ala.</td>
<td>800</td>
<td>Kraft Linerboard</td>
</tr>
<tr>
<td>1968</td>
<td>Nekoosa-Edwards</td>
<td>Ashdown, Ark.</td>
<td>400</td>
<td>Bleached Kraft</td>
</tr>
<tr>
<td>1968</td>
<td>Owens-Illinois Inc.</td>
<td>Orange, Texas</td>
<td>900</td>
<td>Kraft Pulp</td>
</tr>
<tr>
<td>1968</td>
<td>Pineville Kraft Corp.</td>
<td>Pineville, La.</td>
<td>750</td>
<td>Kraft Pulp</td>
</tr>
<tr>
<td>1968</td>
<td>St. Regis Paper Co.</td>
<td>Monticello, Miss.</td>
<td>1130</td>
<td>Kraft Linerboard</td>
</tr>
<tr>
<td>1969</td>
<td>American Can Co.</td>
<td>Halsey, Oregon</td>
<td>300</td>
<td>Bleached Kraft</td>
</tr>
<tr>
<td>1969</td>
<td>Western Kraft Corp.</td>
<td>Hawesville, Ky.</td>
<td>200</td>
<td>Bleached Hardwood</td>
</tr>
<tr>
<td>1969</td>
<td>Weyerhaeuser Corp.</td>
<td>New Bern, N.C.</td>
<td>600</td>
<td>Bleached Kraft</td>
</tr>
<tr>
<td>1970</td>
<td>Boise Cascade Corp.</td>
<td>DeRidder, La.</td>
<td>1000</td>
<td>Kraft Pulp</td>
</tr>
<tr>
<td>1970</td>
<td>International Paper Co.</td>
<td>Ticonderoga, N.Y.</td>
<td>600</td>
<td>Kraft Pulp</td>
</tr>
<tr>
<td>1970</td>
<td>U.S. Plywood Champion Papers</td>
<td>Courtland, Ala.</td>
<td>500</td>
<td>Bleached Kraft</td>
</tr>
<tr>
<td>1970</td>
<td>W. Virginia P. and P. Co.</td>
<td>Wickliffe, Ky.</td>
<td>600</td>
<td>Kraft Pulp</td>
</tr>
<tr>
<td>1971</td>
<td>Container Corp. of America</td>
<td>Fernandina Beach, Fla.</td>
<td>850</td>
<td>Linerboard Cor. Medium</td>
</tr>
<tr>
<td>1971</td>
<td>International Paper Co.</td>
<td>Texarkana, Tex.</td>
<td>650</td>
<td>Bleached Board, Paper</td>
</tr>
</tbody>
</table>

## APPENDIX II

### CANADIAN KRAFT PULP PRODUCTION AND EXPORTS

**PRODUCTION (000's) tons**

<table>
<thead>
<tr>
<th>Year</th>
<th>Bleached</th>
<th>Semi-bleached</th>
<th>Unbleached</th>
<th>Total</th>
<th>Exports Total</th>
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<tr>
<td>1947</td>
<td>194</td>
<td>21</td>
<td>474</td>
<td>689</td>
<td>305</td>
</tr>
<tr>
<td>48</td>
<td>255</td>
<td>17</td>
<td>543</td>
<td>815</td>
<td>385</td>
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<tr>
<td>49</td>
<td>362</td>
<td>10</td>
<td>483</td>
<td>855</td>
<td>454</td>
</tr>
<tr>
<td>1950</td>
<td>437</td>
<td>13</td>
<td>604</td>
<td>1054</td>
<td>592</td>
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<tr>
<td>51</td>
<td>525</td>
<td>11</td>
<td>681</td>
<td>1217</td>
<td>716</td>
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<td>52</td>
<td>525</td>
<td>13</td>
<td>601</td>
<td>1092</td>
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<td>53</td>
<td>580</td>
<td>15</td>
<td>614</td>
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<td>54</td>
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<td>799</td>
<td>1597</td>
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<td>56</td>
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<td>1705</td>
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<td>1061</td>
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<td>2442</td>
<td>1466</td>
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<td>1960</td>
<td>1171</td>
<td>323</td>
<td>420</td>
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<td>63</td>
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<td>3420</td>
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<tr>
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*Source: Canadian Pulp and Paper Association*
<table>
<thead>
<tr>
<th>Notes</th>
<th>Owner and/or Partner</th>
<th>Company</th>
<th>Location</th>
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<tbody>
<tr>
<td>Started 1948, capacitor pulp</td>
<td>-</td>
<td>Crown pencil</td>
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<tr>
<td>Started 1950</td>
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<td>Started 1950, to be expanded 1952</td>
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<tr>
<td>Started mid-1950s</td>
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<td>Started early 1958, capacitor pulp</td>
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<td>Started early 1959, capacitor pulp</td>
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<td>First Japanese venture, early 1959</td>
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<td>Under construction, May 1960</td>
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<td>Mill capacity and date completion</td>
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<td>Mill capacity, total, as of December 1970, as final</td>
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<tr>
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<td>Equipment upgrades, 1972-1975</td>
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<tr>
<td>Plans presently under construction</td>
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</tr>
<tr>
<td>Not under immediate consideration</td>
<td>-</td>
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</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>-</td>
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