

THE IMPLICATIONS OF THE JAPANESE RESOURCE
PROCUREMENT STRATEGY FOR STAPLE RESOURCE REGIONS:
An Examination of Coal Mining in Southeastern B.C.

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ABSTRACT

The study begins by noting the importance of the Pacific Rim as a trading area within the world economy and examines growing economic ties between Japan and B.C. Japan is becoming increasingly significant as a market for B.C.'s raw materials and a source of investment capital for resource development. In consequence we need to examine the strategy followed by Japanese industrial interests in procuring raw materials. It is noted that this strategy differs in significant respects from the American strategy of direct foreign investment which has been so dominant in Canadian resource development and thus may have different implications for a staple region. The Japanese resource procurement strategy is described focusing on Japanese aversion for investing equity capital, long-term contracts, multiple-sourcing of resources, and consortium resource purchasing. A set of hypotheses are developed concerning the implications of this strategy and are tested in the context of the coal industry in southeastern B.C. This involved interviews with spokesmen from the four coal companies in the region and reliance upon a number of primary and secondary sources.

The study concludes that the Japanese strategy gives rise to a set of new problems which increases the costs and risks associated with staple development. For example, their preference for not investing equity shifts the risks of resource development onto the owners of the venture and means that it is easier for the Japanese to wind down contracts or terminate a trading relationship than under the American strategy of direct foreign investment. Consortium resource purchasing inhibits sellers from receiving adequate returns for their resource. The Japanese

attempt to encourage over-supply by letting out contracts for more resources than they require. This results in resource developers bearing the costs of unused capacity when contract cut backs occur. Finally, some policy suggestions are offered regarding the problems posed for staple economies by the Japanese resource procurement strategy.

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Individuals Contacted During Fieldwork Interviews

B.C. Coal Ltd.

- Robert Stanlake, Executive Vice President of Marketing
- Guy Heywood, Marketing Analyst
- Greg McCormick, Purchasing Agent
- Jack Buchanan, Supervisor, Personnel Administration

Byron Creek Collieries Ltd.

- Kent O'Connor, Public Relations Advisor

Canada Employment and Immigration

- Rod Smelser, Economist

Canada Mortgage and Housing Corporation

- George Fessenden, Cranbrook Branch Manager
- A.M. MacMillan, Chief Appraiser
- Helmut Pastrick

Crows Nest Resources Ltd.

- Charles Vermeeren, Manager, Public and Government Affairs
- Roger Goodman, Marketing

Coleman Collieries Ltd.

- Wilfrid Loucks, President

Fording Coal Ltd.

- Ken Carnes, General Manager Marketing
- Wayne St. Amour, Administrator of Public Relations
- Pat Koski, Administrator, Purchasing

Ministry of Industry and Small Business Development, B.C. Government

- Ken Roueche, Research Officer
- John Roucks

Revenue Canada

- Doug Smith

Westshore Terminals Ltd.

- Greg Scott, Manager of Operations

I. INTRODUCTION

According to the staples theory of economic growth, a staples economy is one where resource-intensive exports are the leading sector which sets the pace for economic growth. Scarce factors of production have to be imported and continued economic growth requires the emergence of a new staple sector if external demand declines or the resource base is exhausted.¹ Economic development in such a region will be based on linkages stemming from the staple sector. For example, backward linkages or the domestic manufacture of inputs to the staple sector may develop, and forward linkages may emerge where industries using the staple product as an input develop. The staple sector can also generate final demand linkages as reflected in the growth of a consumer goods industry, and fiscal linkages which refer to the normal and above normal returns to capital earned in the leading sector.

An optimistic version of the staples theory predicts that these linkages will develop and encourage further growth and diversification to the extent that the regional economy is no longer dependent on the staple sector. However, the more common experience is one where the economy becomes caught in a "staples trap" with an over-concentration of resources in the staple sector and a cyclical pattern of economic growth featuring "booms" and "busts" resulting from changes in external demand for the regional staple.

* * * * *

British Columbia has always been a staples economy where economic growth has been initiated by external demand for particular resources. At present, forest and mineral products are B.C.'s two staple exports making up 89 percent of all provincial exports.² These constitute the leading

sector which sets the pace for economic growth in the province. We witnessed the danger of such over-concentration during the recent decline in U.S. demand for B.C. lumber and the resulting downturn in the provincial economy. Historically, Great Britain and the United States have represented the metropolitan economies whose industrial development has been aided by imports from resource-rich B.C. More recently the Pacific Rim, and Japan in particular, has emerged as an important market for B.C. staples. The U.S. now buys 44 percent of B.C.'s exports and Japan is the second major export market consuming 23 percent of total exports.³ Of the province's staple exports, forestry and mineral products, the U.S. took 41 percent and Japan took 24 percent in 1980.⁴

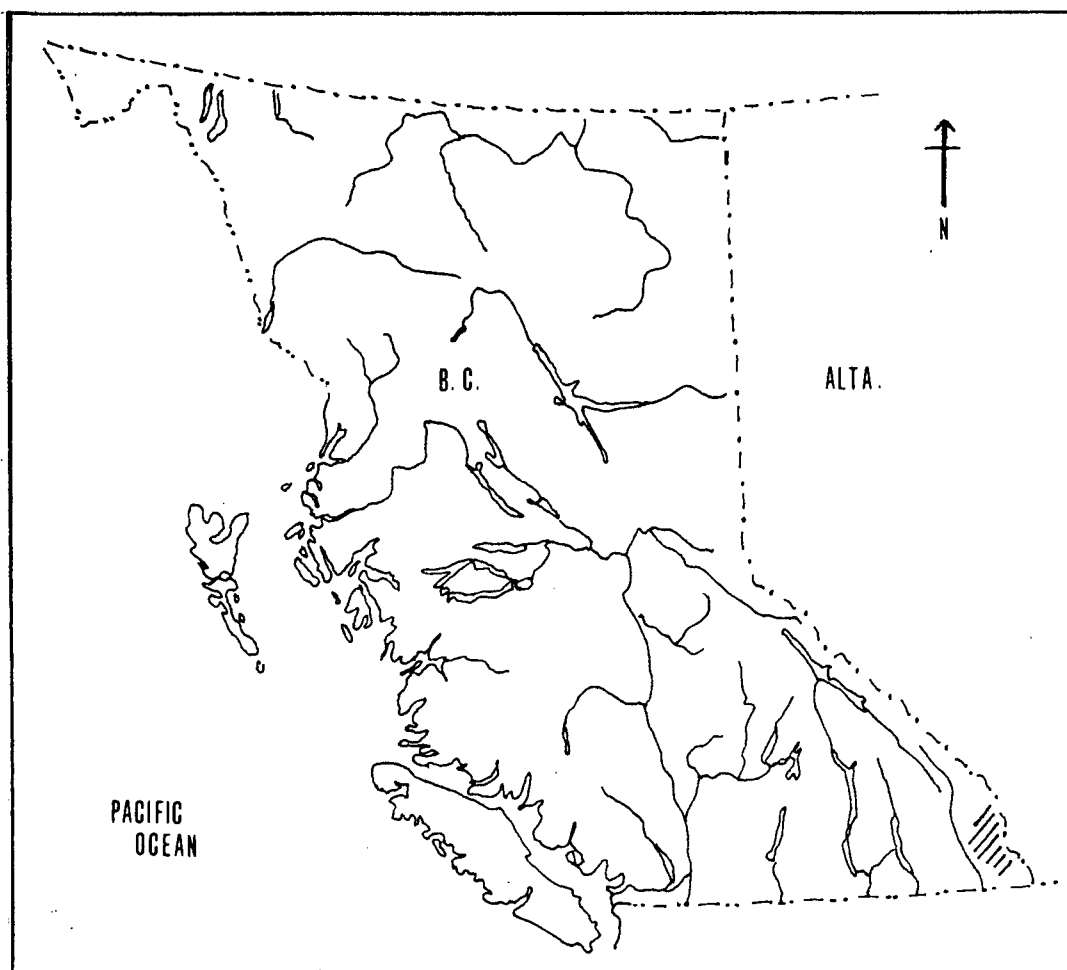
Like the United States and Britain, Japan is interested primarily in obtaining raw materials from B.C. to feed industrial activity at home. The province's three main staple exports to Japan are forest products, coal, and copper; together they earn more than three-quarters of total B.C. earnings from exports to Japan.⁵ Since the 1960's Japanese companies have begun directly investing in British Columbia, particularly in resource mega-projects. Although not presently major investors in the province, the significance of investment from Japan and other Pacific Rim countries such as South Korea is expected to increase due to fast paced industrial growth and the subsequent demand for raw materials.


Much of the staple export activity in B.C. has been carried out by American multinational corporations aiming to secure a supply of raw materials to feed manufacturing activity in the U.S. The implications of heavy levels of American investment in the staple resource and manufacturing sectors of the Canadian economy have been dealt with by writers such as Aitken (1961), Watkins (1968), Levitt (1971), and Gray (1972). Thus we have

some understanding of the workings and effects of the strategy of direct foreign investment followed by the Americans to procure raw materials from abroad. However, the strategy followed by Japanese industrialists to obtain overseas resources is quite different from the American strategy with which we have become familiar. In view of the growing Japanese involvement in B.C. staple industries and our unfamiliarity with the nature of this involvement it is important to understand the Japanese resource procurement strategy and its implications for resource regions. Also, the newly-industrializing countries (N.I.C.'s), Taiwan, Singapore, Hong Kong, and South Korea, appear to be following the Japanese model of overseas investment. South Korea in particular has just completed its first major investment in Canada and based on the rapid growth rate of its economy we can predict that country to become the next big investor in B.C. Such observations add further weight to the argument that we must study and understand the investment strategies of these countries.

This study examines the implications of the Japanese resource procurement strategy by focusing on a case study of a staples region supplying Japan, the coal mining region of the Elk Valley in southeastern B.C. (see Map 1). Coal represents the most important B.C. export to Japan in terms of value, and until the northeast coal project begins shipping in 1984, the southeastern region is the only provincial coal producer. It is an old coal mining region which suffered an economic downturn during the 1940's and 1950's, but experienced a resurgence in growth in the late 1960's as defunct mines were re-opened to supply the Japanese steel industry with metallurgical coal. I conducted interviews with the four coal companies presently operating in the region and consulted a number of primary and secondary sources in an effort to ascertain the implications of the

Map 1. Location of Elk Valley Region in British Columbia.



KEY:  = Elk Valley Region

SCALE: 1 inch = 200 miles

SOURCE: Base map from A.L. Farley, Atlas of British Columbia.
Vancouver: University of British Columbia Press,
1979, p. 11.

Japanese resource procurement strategy for this staples region.

The study begins with a general overview of the increased importance of the Pacific Rim as a trading area and focuses on Japanese involvement in B.C. resources stemming from the 1960's. I then examine the coal region of the Elk Valley beginning with a brief historical description of the regional economy during the 1900-1960 period. Then the contemporary coal mining economy is described including information on the coal companies, markets, contracts, and the changes which have taken place in response to Japanese demand for the staple export. Chapter IV examines the Japanese resource procurement strategy. To highlight how different it is from the American strategy I begin with a brief description of the latter and its ramifications. The four main characteristics of the Japanese strategy are then presented and a set of hypotheses developed concerning the implications of each for a staples region. These hypotheses were tested in the context of coal mining in the Elk Valley region and Chapter V presents the research findings. The study concludes with an analysis of the implications of the Japanese resource procurement strategy and presents some policy suggestions concerning the problems for B.C. which it engenders.

FOOTNOTES

1. M.H. Watkins, "A Staple Theory of Economic Growth," in Approaches to Canadian Economic History, ed. W.T. Easterbrook and M.H. Watkins (Toronto: Macmillan Company of Canada Ltd., 1978), p. 141-58. The following description of staples theory is based on this article.
2. B.C., Ministry of Finance, B.C. Financial and Economic Review, 1981, p. 97, 3.
3. B.C., Ministry of Finance, B.C. Financial and Economic Review, 1982, p. 1.
4. B.C., Ministry of Finance, B.C. Financial and Economic Review, 1981, p. 96.
5. Keith A.J. Hay and S.R. Hill, Canada-Japan Trade and Investment (Ottawa: Economix International, 1979), p. 68.

II. THE IMPORTANCE OF JAPAN AS A MARKET AND INVESTMENT

SOURCE FOR B.C.'S RESOURCES

Recent decades have seen a gradual decline in the hegemonic position occupied by the North Atlantic region in the world economy. The very impressive performance of the Japanese economy in the post-war period and the fast rate of economic growth in the newly industrializing countries of Hong Kong, Taiwan, Singapore, and South Korea have aided a shift in economic power westward toward the Pacific Rim. Trade between North America and Europe as a percentage of total world trade is declining, while trade within the Pacific Rim is growing at a rate faster than the world average.¹

The British Columbia economy has been drawn into this pattern of increased trading and economic integration within the Pacific Rim. The province's exports to Pacific Rim economies have grown from a value of \$400 million in 1969 to 3.1 billion in 1980.² In 1970, 24 percent of all B.C. exports were destined for Pacific Rim countries whereas in 1980, this figure had risen to 32 percent.³ These exports are overwhelmingly composed of unprocessed and semi-processed goods; only about 2 percent of B.C.'s exports to Pacific Rim countries are fully manufactured goods and end products.⁴

Within the Pacific Rim, Japan has consistently been the most important market for B.C. products. British Columbia, meanwhile, is the major source of Canadian imports for Japan since 50 percent of Canada's exports to Japan are from B.C.⁵ However, trade between the Japanese and British Columbian economies only began to achieve real significance during the late 1950's and early 1960's. A number of events marked the commencement of this relationship. In 1954, for example, a trade mission representing the

Vancouver Board of Trade visited five major Japanese cities to discuss trade prospects between B.C. and Japan.⁶ In 1957, a major contract with Japan for the sale of B.C. copper concentrate helped stimulate the lagging mining industry in the province.⁷ Western Canadian coal producers visited Japan in 1958 thus beginning the coal export trade between B.C. and Alberta and the Japanese steel industry.⁸ In 1961 Japan became the major new market for the B.C. lumber industry with sales of hemlock, fir, and cedar.⁹

The decade of the 1960's witnessed a new era of rapid expansion in trade between Canada and Japan and this was particularly evident in British Columbia. Table 1 shows the value and percentage of B.C. exports going to the three major markets (the U.S., Japan, and the United Kingdom) for selected years from 1965 to 1981. One can clearly see the increasing importance of the Japanese market. In 1965, 10.4 percent of B.C.'s exports went to Japan and by 1975, this amount had increased to 22.3 percent. In 1981, 23.1 percent of total provincial exports were destined for Japan.

Examination of Table 2 shows the composition of these exports. It may be seen that Japanese importers are primarily interested in the raw materials of B.C. In the 1960's and early 1970's, copper, woodpulp, and lumber were B.C.'s strongest exports to the country but this changed between 1973 and 1975 with a dramatic increase in the export of coal to Japan. From 1965 to 1981, coal exports increased from a value of \$4.2 million (or 3.3 percent of the total value of B.C. exports to Japan) to \$491.1 million, 23 percent of the total value and the major B.C. export to Japan. In 1981 the province's major exports to Japan were coal, lumber, woodpulp, copper concentrates, and aluminum ingots.

TABLE 1. Exports of B.C. products to principal countries, 1965-1981.
(in millions of dollars)

	<u>1965</u>		<u>1967</u>		<u>1968</u>		<u>1970</u>	
	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>
U.S.A.	697.8	57.3	852.4	54.1	1,046.4	56.8	1,041.4	51.2
Japan	126.6	10.4	266.2	16.9	297.7	16.2	387.5	19.1
U.K.	190.9	15.7	200.7	12.7	189.4	10.3	207.5	10.2
Others	<u>203.6</u>	<u>16.6</u>	<u>259.3</u>	<u>16.3</u>	<u>307.2</u>	<u>16.7</u>	<u>395.7</u>	<u>19.5</u>
Total	1,218.9	100%	1,578.6	100%	1,840.7	100%	2,032.1	100%

	<u>1972</u>		<u>1973</u>		<u>1975</u>		<u>1976</u>	
	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>
U.S.A.	1,615.2	58.5	2,009.4	52.6	1,886.3	48.7	2,670.2	50.7
Japan	465.8	16.9	924.5	24.2	863.0	22.3	1,040.4	19.7
U.K.	201.3	7.3	325.8	8.5	264.3	6.8	351.4	6.7
Others	<u>476.2</u>	<u>17.3</u>	<u>561.2</u>	<u>14.7</u>	<u>858.7</u>	<u>22.2</u>	<u>1,207.6</u>	<u>22.9</u>
Total	2,758.5	100%	3,820.9	100%	3,872.3	100%	5,269.6	100%

	<u>1977</u>		<u>1978</u>		<u>1979</u>		<u>1980</u>		<u>1981</u>	
	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>	<u>Value</u>	<u>%</u>
U.S.A.	3,423.4	54.3	4,202.1	55.6	4,914.0	51.6	4,152.6	43.0	4,054.6	44.3
Japan	1,225.4	19.4	1,559.2	20.6	2,043.7	21.4	2,181.9	22.6	2,112.3	23.1
U.K.	359.8	5.7	352.0	4.7	499.9	5.4	625.9	6.5	554.0	6.0
Others	<u>1,298.8</u>	<u>20.6</u>	<u>1,444.7</u>	<u>19.1</u>	<u>2,055.3</u>	<u>21.6</u>	<u>2,693.4</u>	<u>27.9</u>	<u>2,431.8</u>	<u>26.6</u>
Total	6,307.7	100%	7,558.0	100%	9,512.9	100%	9,653.8	100%	9,152.7	100%

SOURCE: Adapted from B.C., Ministry of Finance, B.C. Financial and Economic Review, 1977-1982 editions.

TABLE 2. Exports of B.C. products to Japan, 1965-1981
(in millions of dollars)

	<u>1965</u>	<u>1967</u>	<u>1968</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
Lumber	14.6	35.4	45.2	65.2	36.2	44.3	116.6	88.3	145.4	180.1	203.4	458.8	501.6	364.1
Shingles and shakes	-	-	-	-	-	0.1	0.1	-	-	0.1	0.1	0.1	0.1	0.1
Woodpulp	26.3	39.0	49.1	69.8	53.5	56.9	95.9	126.1	152.8	130.0	184.1	302.3	384.8	323.2
Newsprint paper	-	1.0	3.9	3.3	2.6	4.7	3.3	0.2	1.9	1.0	3.3	2.2	2.7	3.5
Other paper + paperboards	-	0.1	0.3	-	0.4	1.6	8.9	7.9	15.0	19.4	30.8	20.9	32.6	24.8
Aluminum ingots	11.9	47.9	43.9	35.8	41.4	31.0	40.6	26.0	8.0	42.5	133.0	99.8	171.6	208.8
Zinc ingots	-	2.1	0.8	1.7	0.4	-	-	-	-	0.4	0.2	-	0.2	-
Lead ingots	1.1	0.7	0.8	0.1	-	-	0.2	-	0.8	-	.3	1.5	1.7	1.2
Copper concentrates	28.5	70.9	84.1	118.9	120.8	170.7	424.5	173.4	253.7	214.2	207.3	268.3	283.5	257.7
Iron ore concentrates	19.7	17.3	19.0	15.3	16.8	10.7	12.2	11.0	10.6	5.8	4.8	6.0	8.0	10.3
Molybdenum concentrates	2.0	7.7	6.8	10.8	8.6	8.0	11.7	14.7	30.6	41.7	53.4	71.8	94.9	57.7
Coal	4.2	4.7	4.3	11.5	26.5	71.1	99.9	325.8	266.8	350.4	363.1	419.1	393.2	491.1
Fish products	1.0	2.6	4.3	4.0	7.1	23.8	56.1	36.9	73.5	122.7	205.3	223.8	72.1	131.8
Others	<u>17.3</u>	<u>36.8</u>	<u>35.2</u>	<u>51.1</u>	<u>45.5</u>	<u>42.9</u>	<u>54.5</u>	<u>52.7</u>	<u>81.3</u>	<u>117.1</u>	<u>143.1</u>	<u>169.1</u>	<u>234.9</u>	<u>238.0</u>
Total	126.6	266.2	297.7	387.5	359.8	465.8	924.5	863.0	1,040.4	1,225.4	1,559.2	2,043.7	2,181.9	2,112.3

SOURCE: Adapted from B.C., Ministry of Finance, B.C. Financial and Economic Review, 1977-1982 editions.

Turning now to Japan's role as a source of investment capital, the Japanese began directly investing in B.C. and in a number of resource ventures around the world in the early 1960's. My attempts to discover the exact amount of such investment and the proportion it represents of total foreign investment in the B.C. economy proved unsuccessful. Information sources are limited and it appears that such data does not exist in an accurate and up-to-date form (although Hay and Hill (1979), give a useful listing of B.C. projects featuring Japanese direct investment as of 1976). One can say, however, that most of the Japanese direct investment in Canada is concentrated in the B.C. economy.¹⁰ In total it would not represent a large sum in comparison to other foreign investors for the Japanese do not often practise equity financing and in the cases where they do, they become only minority equity partners in a venture.

It is possible to give some idea of the sectors of the B.C. economy penetrated by Japanese direct investment. The first instance occurred in 1961 when Sumitomo and Granges A.B. established the Bethlehem Copper Corporation to explore for and develop copper in B.C.¹¹ Further Japanese investment in companies such as Lornex and Valley in 1964 and Brenda Mines Ltd. in 1968 helped stimulate an un-precedented boom in B.C. mining.¹² These moves were accompanied by investment in the forestry industry and companies such as Crestbrook (1967), Finlay (1969), C.I.P.A. (1970), Mayo and Q.C. Timber Ltd. (1972), and Cinderella Daiei (1973) were established.¹³ Other sectors penetrated by some degree of Japanese direct investment include the following: trading, automobile distribution, transportation facilities, marine products, steel wire and ferrous products, fish processing, coal and molybdenum mining, and mineral exploration.¹⁴

Table 3 lists some of the new B.C. mega-projects which have been developed to supply resources to Japan and which in some cases feature Japanese equity investment. Such projects reinforce the conclusion that B.C. is becoming firmly integrated into the Pacific Rim economy and is playing the specific role of raw material supplier with relation to Japan. It is thus important that we examine the terms of this integration and how they are affecting resource industries and resource regions in B.C. dependent on the export of staples to the Japanese market.

TABLE 3. New B.C. mega-projects developed to supply the Pacific Rim.

<u>Project</u>	<u>Phase</u>	<u>Participants</u>	<u>Description</u>
Northeast Coal	5	- Quintette Coal (owned 50% by Denison, 12.5% by Mitsui, 10.5% by Tokyo Boeki, 5% by Sumitomo Shoji, 10% by Japanese steel mills, 12% by Charbonnages de France)	- Operates metallurgical coal mine near Chetwynd producing about 6.3 mill. tonnes/year when in full production for sale to Japan
		- Teck Bullmoose (owned 51% by Teck, 39% by Lornex, 10% by Nissho Iwai)	- Operates thermal and metallurgical coal mine near Chetwynd producing about 1.7 mill. tonnes/year when in full production for sale to Japan
Methanol Plant	5	- Ocelot Industries	- Operates near Kitimat; sells about 1/3 of product to Japan
L.N.G. Plant	2	- Dome, TransCanada Pipelines, Nova, Nissho Iwai	- Planned for 1987 near Prince Rupert; will sell natural gas to 5 Japanese utility companies
Petrochemical Complex	1	- Dome, Westcoast Transmission, Canadian Occidental Petroleum, Mitsubishi	- Planned plants at Prince George and Prince Rupert
Ferrosilicon Plant	1	- Cominco, Mitsui	- Planned plant at Kimberly; decision depends on economy
Monkman Coal Project	2	- PetroCanada, Canadian Superior Oil, McIntyre Mines, Sumitomo	- Metallurgical and thermal coal mine planned near Chetwynd; aiming for Japanese market
Willow Creek Coal Project	3	- David Minerals, Ssangyong of South Korea	- Planned thermal coal mine near Chetwynd; aiming for South Korean market
Cinnabar	1	- Cinnabar Peak Mines	- Planned metallurgical coal mine near Chetwynd; aiming for Pacific Rim and European markets
Sage Creek	2	- Sage Creek Coal (owned by Rio Algom and Pan Ocean Oil)	- Planned thermal coal mine near Fernie; aiming for Pacific Rim market
Elk River	1	- Elco Mining (owned by Stelco, Home Oil, and consortium of European Steel mills)	- Planned metallurgical coal mine near Elkford; aiming for Pacific Rim markets but postponed at present.

NOTES: Phase 1 = Preliminary project proposal.
Phase 2 = Preliminary project design.
Phase 3 = Project design.
Phase 4 = Final engineering and construction.
Phase 5 = Operational.

SOURCE: Compiled from B.C., Ministry of Industry and Small Business Development, "North East Coal Development" folder (1983); B.C., Ministry of Industry and Small Business Development, Office of Procurement and Industrial Benefits, "Major Project Inventory", Aug. 1983; Coal Association of Canada, "Coal Focus", Oct. 1983; Don Whiteley, "Methanol plant opens to a rough future", Vancouver Sun, Sept. 16, 1982, p. D1.

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III. HISTORICAL BACKGROUND TO COAL MINING IN SOUTHEASTERN B.C.

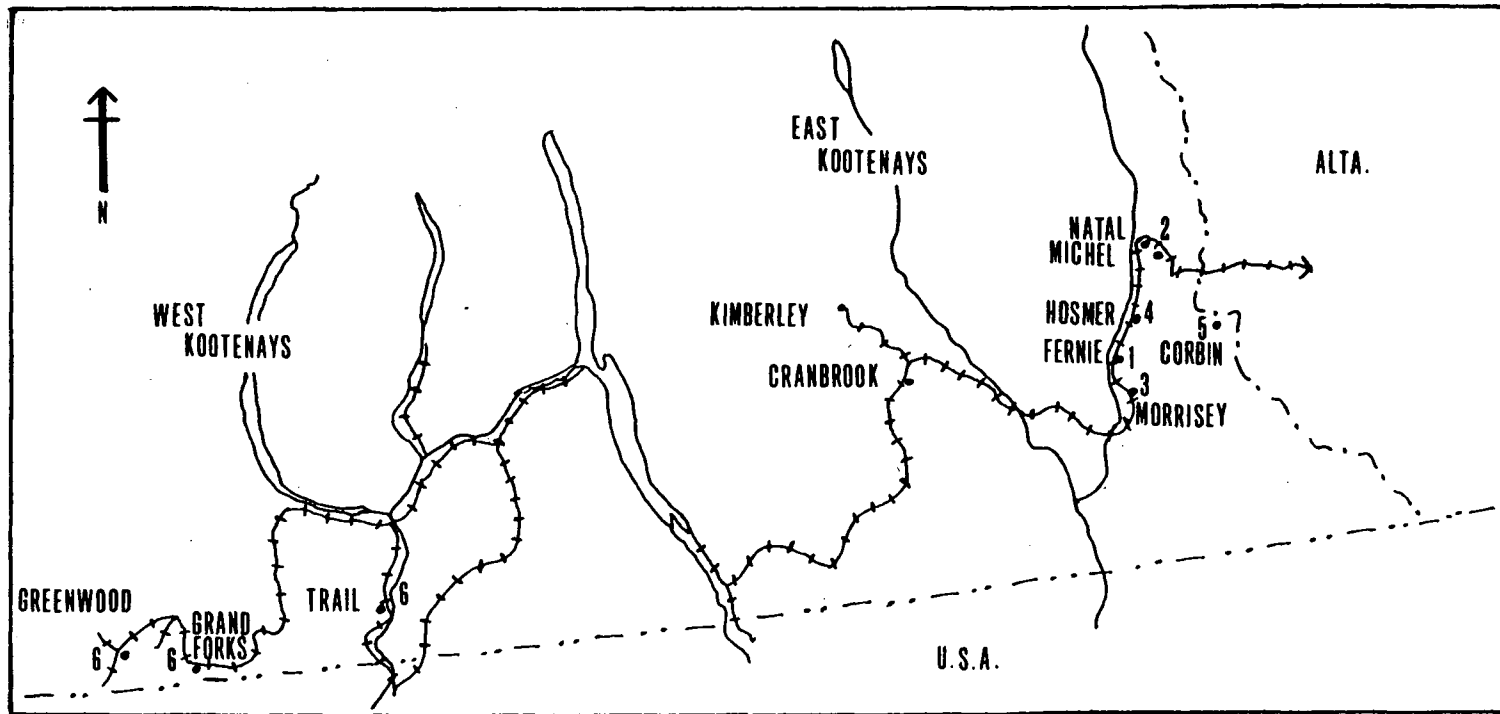
One such region whose economy is dependent on the export of a staple product to Japan is the Elk Valley in southeastern B.C. This section gives a brief historical background to the region and then focuses on the changes which have occurred in the area following the stimulus of Japanese demand for metallurgical coal from B.C.

A. Coal Mining in the Elk Valley, 1900-1960

Coal deposits in the area had been noted by early explorers in the 1870's but it was not until the construction of a railroad through the Crows Nest Pass that they could be exploited.¹ In 1898 the Canadian Pacific Railroad (C.P.R.) built the Crows Nest Pass Railroad to connect with the B.C. Southern route thus providing a market (since coal fuelled the trains) and access to a major market area, the burgeoning smelters of the West Kootenays (see Map 2). In 1897 the Crows Nest Pass Coal Company began mining at Coal Creek near the present day site of Fernie and in the following year they began producing coke at Fernie.² Coal mining further up the valley at the site of Michel began in 1899 and coke production began there in 1902.³ The Crows Nest Pass Coal Company was the major coal company in the region and the only one whose operations would survive throughout this first period of mining from 1900 to 1960. The company's head office was in Toronto (although it was later moved to Fernie) and all the original officers were from eastern Canada thus it is presumed that it was eastern Canadian capital which developed the mines.⁴

Since the turn of the century coal mining has been the dominant economic activity of the Elk Valley region. Following the construction of

Map 2. Historical Coal Mining in the Elk Valley.



- KEY:
- 1 - Coal Creek Mine (1897-1944) and coke ovens (1898-1932)
 - 2 - Michel Mine (1899-1968) and coke ovens (1902-1981)
 - 3 - Morrisey Mine (1905-1909)
 - 4 - Hosmer Mine (1906-1914)
 - 5 - Corbin Mine (1908-1935)
 - 6 - Smelters fuelled by Elk Valley coal
 - + - Railway routes as of 1900

SCALE: 1:2,000,000

SOURCE: Base map: Canada, Energy, Mines and Resources, Surveys and Mapping Branch, "B.C." Railroad routes adapted from R.H. Meyer, "Evolution of Railways in the Kootenays," unpublished M.A. Thesis, Dept. of Geography, U.B.C., 1970, p. 19.

the railway there occurred a mushrooming of small mines, towns, hamlets, and villages.⁵ The main communities were Fernie and Michel-Natal; Fernie was the historical coal centre of the region and Michel was built as a company town by the Crows Nest Pass Coal Company to house the workers of its Michel mines.⁶ By 1928, Michel's population had expanded up the narrow valley so that the adjacent small community of Natal was incorporated into the town limits.⁷ Other coal communities in this early period included Morrissey, Corbin, and Hosmer (see Map 2). The Crows Nest Pass Coal Company mined near Morrissey and the operation was run intermittently between 1905 and 1909.⁸ The second major coal company of the region, Corbin Coal and Coke Company, began mining in 1908 at Corbin. This American company with head offices at Spokane, Washington supplied coal for the railway system owned by Daniel Corbin, the great American railway magnate.⁹ Hosmer developed due to the mining activities of Hosmer Mines Ltd. which lasted from 1906 to 1914. This company was a subsidiary of the C.P.R. and all production was consumed domestically by the Canadian railway.¹⁰ In addition to coal mining, forestry was an important economic activity in the region leading to the growth of small communities such as Elko, Galloway, Jaffray, and Waldo.

As to markets for the regional staple, the domestic market for Elk Valley coke production was strong in the pre-W.W.I. period for much of the coke was used to fuel the smelters of the West Kootenays, particularly the Consolidated Mining and Smelting Company smelter at Trail.¹¹ The importance of domestic as opposed to American markets fluctuated during this period but the volume of Elk Valley coal exported to the U.S. outweighed domestic sales until the mid-1920's. After that point, Canadian markets were more important for both coal and coke (see Appendix A). Coal

production levels and the general economic prosperity of the region also began to change in the 1920's; this was the first period for which a lack of demand for coal and coke is mentioned in the annual reports of the B.C. Minister of Mines. Examination of Appendix A shows that 1913 was the year of peak production when 1,331,725 gross tonnes of coal were mined. After that the gradual annual increases in production of the early years were not evident - the first "boom" period of the Elk Valley coal economy had ended, although coal production continued and the regional population remained fairly stable.

The region was severely hit by the depression of the 1930's and coal production and employment levels were adversely affected (see Appendix A). In 1932 the coke ovens at Fernie operated by the Crows Nest Pass Coal Company were closed and in 1935, the Corbin mines were closed.¹² From 1936 to 1944 the Crows Nest Pass Coal Company was the only company operating in the area with mines at Coal Creek and Michel, and coke ovens at Michel. In 1939 the company started a coke oven by-products plant at Michel to recover tar and gas from the coal treatment.¹³

During the 1940's the regional economy experienced a temporary resurgence in growth due to the stimulus of W.W.2 and consequent increase in the demand for coal and coke.¹⁴ Examination of Appendix A shows the increased production levels between 1941 and 1951. In 1944 the Crows Nest Pass Coal Company opened a new mine called Elk River Collieries near Fernie, but the company's mining operations at Coal Creek were closed permanently meaning that Fernie was no longer the centre of regional coal operations.¹⁵ In the same year the old Corbin mine was re-opened and operated intermittently between 1944 and 1968 by a number of different companies (this partially explains the annual fluctuations in production levels during this period).

Technological changes had made possible a new type of coal mining and in 1948 surface mining in addition to underground mining began in the operations of the Crows Nest Pass Coal Company (see Appendix B for a description of the processes involved in surface and underground mining).¹⁶ Canadian markets were still the predominant consumers of the region's staple; in 1950, 91 percent of the coal and 53 percent of the coke was consumed domestically with the remainder exported to the U.S.A.¹⁷

The period of the 1950's to the late 1960's was one of economic stagnation for the Elk Valley region. Because of the depressed state of coal markets the mines were not operated at full capacity and the miners practised "work-sharing" where they would not always work a full week.¹⁸ In 1959, for example, the Michel Colliery operated for only 165 days out of a possible 236.¹⁹ Changes in fuel markets and the introduction of diesel locomotives on the Canadian railway system had resulted in a decline in the demand for coal and coke. In 1958 the Elk River Colliery of the Crows Nest Pass Coal Company closed leaving only the company's mining and coke oven operations at Michel, and the intermittent coal production at Corbin.²⁰ The year 1959 witnessed the first shipment of Elk Valley coal to Japan and by 1960, although total production was only 743,979 gross tons, 38 percent of this amount was consumed domestically, 4 percent consumed in the U.S.A., and 58 percent exported to Japan.²¹

The economic downturn experienced by the staple industry during the 1950's had repercussions throughout the region. Table 4 shows population figures for the region and its major communities and one may note the general declines witnessed from 1951 to 1961. For example, taking Fernie as the major population, service, and retail centre of the Elk Valley, the town's population increased by only 4 percent and retail sales dropped by

TABLE 4. Historical Elk Valley population figures.

(i) Elk Valley Regional Population, 1921-1976

<u>1921</u>	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1956</u>	<u>1961</u>	<u>1971</u>	<u>1976</u>
8,941*	7,624*	6,820	7,332	7,284	6,739	10,725	14,150

(ii) Fernie Population, 1911-1981

<u>1911</u>	<u>1921</u>	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1956</u>	<u>1961</u>	<u>1966</u>	<u>1971</u>	<u>1976</u>	<u>1981</u>
3,146	2,802	2,732	2,545	2,551	2,808	2,661	2,715	4,422	4,608	5,444

(iii) Michel-Natal Population, 1906-1976

<u>1906</u>	<u>1941</u>	<u>1951</u>	<u>1956</u>	<u>1961</u>	<u>1971</u>	<u>1976</u>
1,200*	2,183	1,895	1,430	1,246	158*	25*

NOTES: *Approximate figures.

SOURCE: Compiled from B.C., East Kootenay Regional Statistics, 1954. Fernie and District: An Economic Survey, 1963. Regional Index of East and West Kootenays, 1963; Regional Index of B.C., 1966; B.C. Regional Index, 1978. Fernie Historical Association, Backtracking with the Fernie Historical Association, 1967; Canada, 1976 Census of Canada, Cat. 92-830 and Cat. 92-805; 1981 Census of Canada, Cat. 93-910.

10.6 percent between 1951 and 1961. This may be compared to figures for B.C. as a whole where population increased by 16.5 percent and retail sales rose by 45.5 percent in the same period.²² A report done for the Fernie Chamber of Commerce in 1958 stated that Fernie was experiencing a reduction in economic activity, a decline in community prosperity, substantial increases in the numbers of unemployed local people, and a general falling-off of local business.²³ Lay-offs at the mines led to out-migration and the regional population declined by 9 percent between 1951 and 1961; such figures indicate the decline in regional economic growth stemming from inactivity in the lead sector.

B. Contemporary Coal Mining Under the Stimulus of Japanese Demand

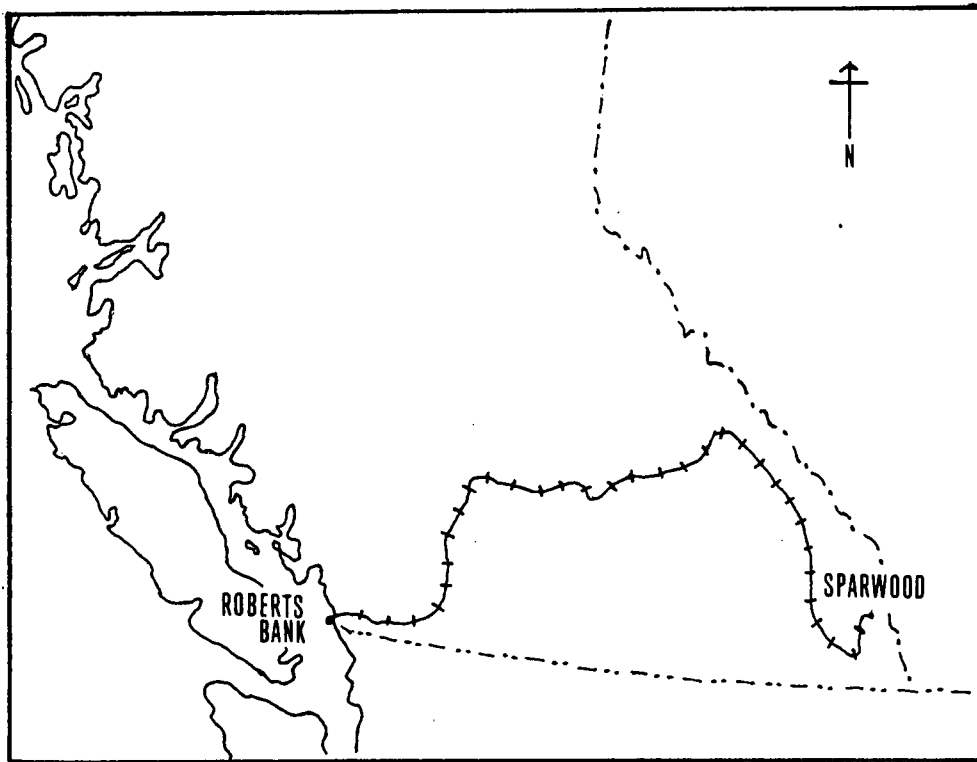
Conditions in the region began to change in the late 1960's. Interest in coal exploration in the region had been experienced throughout the decade but increased sharply in 1967.²⁴ Then in 1968 an event took place which heralded the beginnings of a new era of intensive coal mining in the Elk Valley. Kaiser Steel Corporation of California purchased Crows Nest Industries (as the Crows Nest Pass Coal Company had become known) and all but its Line Creek coal resources to set up Kaiser Coal Ltd. Capital sources for the venture included Canadian banks which provided \$35 million, an equity stock issue on the Canadian stock exchange for \$30 million, and the parent company which provided \$20 million.²⁵ An additional \$45 million was supplied by Japanese and Canadian banks when errors in initial plant design and other start-up problems necessitated further investment.²⁶ Kaiser announced the signing of a fifteen-year contract with Mitsubishi of Japan for the delivery of a total of 45 million tonnes of metallurgical coal beginning in 1970.²⁷ Mitsubishi would then resell the coal to the

nine Japanese steel mills. This was followed by a major expansion of the existing mining operations and transportation infrastructure (see Appendix A and note production increases between 1969 and 1970). The National Harbours Board constructed an island and causeway just south of Vancouver and Kaiser hired the Vancouver-based consulting firm of Swan Wooster to design and build the huge coal-handling port known as Roberts Bank.²⁸ This was opened in 1970 as the first shipment of Kaiser coal left the port for Japan (see Map 3).

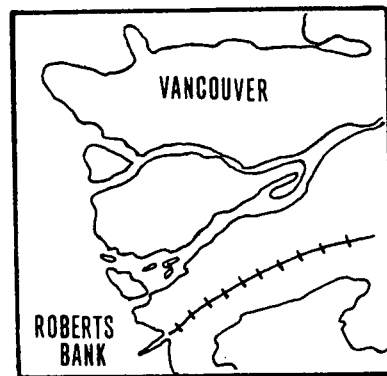
In 1969 Fording Coal Ltd., a subsidiary of Canadian Pacific Ltd., signed contracts with Mitsui (acting as the trading company for the nine Japanese steel mills) and became the second major company to begin operations during this second "boom" phase in Elk Valley coal mining. These contracts called for the delivery of 45 million tonnes of metallurgical coal over a fifteen year period beginning in 1972.²⁹ In 1971 Fording began mining operations at their site near the Fording River and in the following year their first shipment left Roberts Bank (see Map 4).

In 1973 a major re-financing scheme took place at Kaiser Coal Ltd. which helped stabilize the company's financial position. Japanese interests converted their debt holdings to equity giving Mitsubishi and the nine Japanese steel mills 33 percent control over Kaiser operations.³⁰ It should be noted that it is unusual for Japanese interests to hold such a high degree of equity in a foreign venture. The reason behind the conversion was that Kaiser was experiencing serious financial problems at that time and needed capital. Meanwhile, the Japanese steel industry needed a secure supply of metallurgical coal and Kaiser was the only B.C. coal producer at the time. The Japanese decided to invest equity in order to keep the venture operating.³¹

Map 3. Location of Roberts Bank Coal Handling Port.



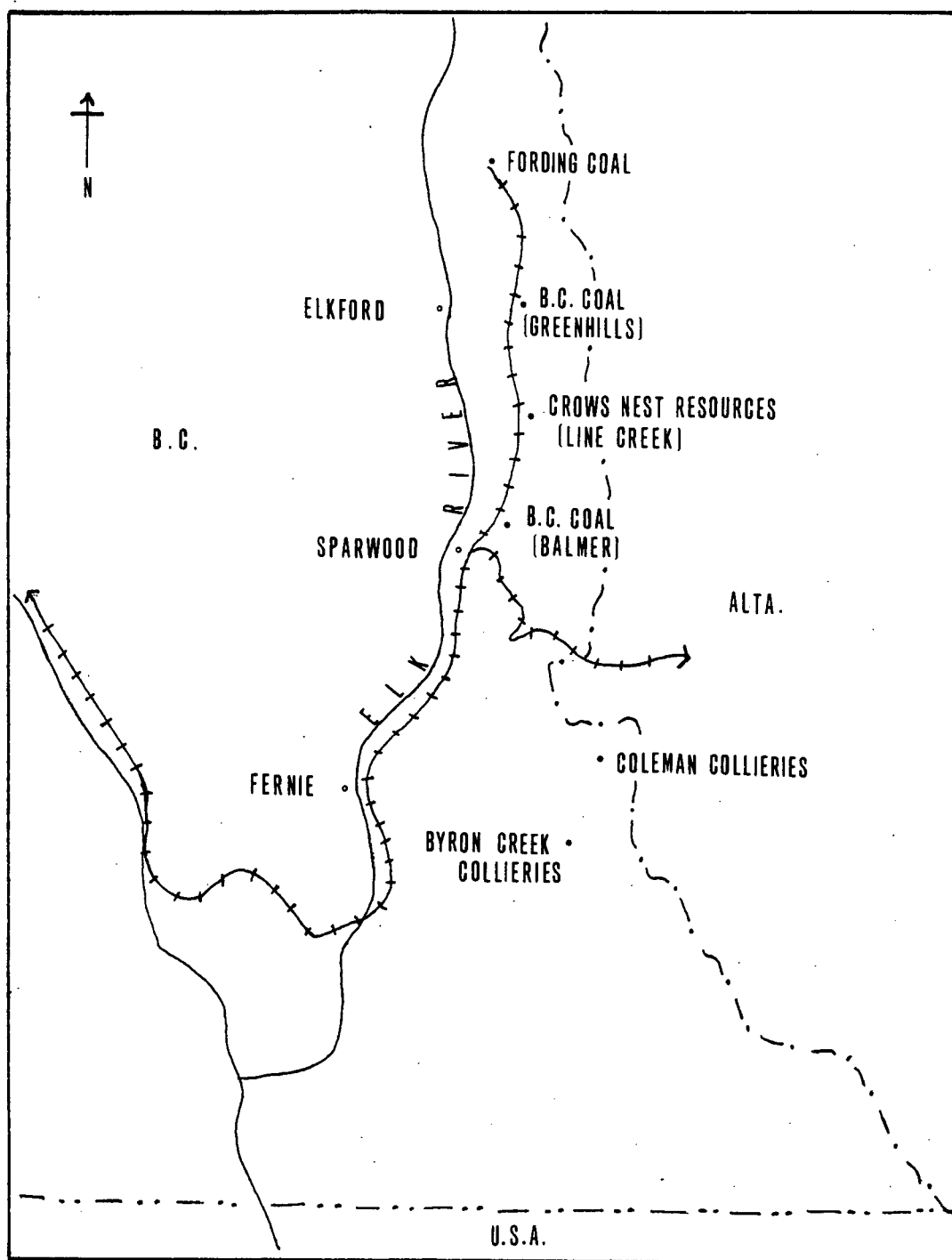
SCALE: 1 inch = 150 miles



SCALE: 1 inch = 12 miles

SOURCE: Adapted from Westshore Terminals, "Westshore Terminals Ltd.", n.d.

Map 4. Contemporary Coal Mining in the Elk Valley.



SCALE: 1 inch = 28 kilometres

SOURCE: Adapted from District Office, Elkford, "District of Elkford", (1981).

The third company to commence mining during this period was Byron Creek Collieries which purchased the old Corbin mine in 1972.³² Byron Creek Collieries is different from the other two companies' mining operations in that it mines only thermal coal and supplies primarily a domestic, eastern Canadian market.* For example, Ontario Hydro was initially the major market for the company's product when it began shipping in 1974.³³

Thus the first few years of the 1970's witnessed major developments in the staple industry of the region and huge increases in coal production. Coal output in 1971 was 5,602,000 gross tonnes and almost doubled to 9,053,357 gross tonnes in 1972 (see Appendix A for more details of production changes). By that year both Kaiser and Fording were in operation and a small mine at Tent Mountain straddling the B.C.-Alberta border was being run by the Alberta-based Coleman Collieries (see Map 4).³⁴ Production in the B.C. side of this mine was minimal and thus Coleman's operations are not discussed in detail in this study; their B.C. operations ceased in 1980.³⁵ Between 1969 and 1974 coal production in the region increased tenfold with the greatest portion of this output being exported as metallurgical coal to feed the Japanese steel industry.³⁶

In 1978 Shell Canada Ltd. purchased the remaining Line Creek coal resources held by Crows Nest Industries and established the company, Crows Nest Resources Ltd. to operate the Line Creek mine.³⁷ This is the fourth

*It should be noted that there are two types of coal mined in the region; metallurgical (or coking coal) used to produce coke and ultimately steel is the major type mined, but thermal (or steaming) coal which is a lower grade coal used in thermal power generation is also mined.

and newest company to begin mining in the region (see Map 4). The mine produces thermal and metallurgical coal on long-term contract for Korean and Japanese markets; construction began in 1980 and the first coal shipment was made in 1982.

The years from 1979 to 1981 have seen a second peak in the boom period of regional economic growth lasting from 1970 to 1982. Shell's purchase in 1978 was followed in 1979 by an announcement that Fording would be increasing the capacity of its mines from an output of 3 million tonnes annually to 5 million tonnes a year.³⁸ In 1980 the British Columbia Resources Investment Corporation (B.C.R.I.C.), a B.C.-based public company owned by approximately 2 million Canadian shareholders, acquired 67 percent ownership of Kaiser Coal Ltd. at a cost of \$665 million. The remaining 33 percent equity was retained by the Japanese steel interests.³⁹ In 1981, the name of "Kaiser Coal Ltd." was replaced by "B.C. Coal Ltd." and the construction of a new mine known as "Greenhills" was announced.* Located near Elkford, this mine is a joint-venture between the Pohang Iron and Steel Co. Ltd. (P.O.S.C.O.) of South Korea which owns 20 percent, and B.C. Coal which owns 80 percent (see Map 4). It represents the first major Korean investment in Canada and will be producing metallurgical and thermal coal for Pacific Rim markets when operating in mid-1983.⁴⁰ An additional event of note relating to B.C. Coal's operations occurred in 1981 when the company's coke-making operations (the last in western Canada) closed due to the termination of their last customer, a smelter in Idaho.⁴¹ Further ownership and mine

*In 1983 the name "B.C. Coal Ltd." was changed to "Westar Mining Ltd." (but with no change in the ownership of the company). For the sake of simplicity, the old name of "B.C. Coal Ltd." will be used throughout this study.

capacity changes took place in 1981 when Byron Creek Collieries was purchased by Esso Resources Canada Ltd. and plans to increase the mine's capacity from 1.1 million tonnes to 2.0 million tonnes a year were announced.⁴² Table 5 summarizes pertinent information for each of the four coal companies currently operating in the region.

Thus the period from 1970 to 1982 constitutes the second "boom" phase in the history of Elk Valley coal mining, but the size, technology, and markets of the coal ventures are much changed. Examination of Appendix A shows the steady increases in production for this period (except for years when strikes interrupted output) and also the increasing size of the coal industry's labour force. Between 1971 and 1975, for example, there was a 45 percent increase in the number employed in the regional industry. The table also shows the increasing importance of the Japanese market up until 1977 when coal shipments to other foreign destinations began to become significant.⁴³ In 1959, 17 percent of regional coal sales went to Japan, in 1965, 58 percent, in 1970, 76 percent, in 1973, 99 percent, and for 1977, 83 percent.

These major expansions in the main economic activity of the region were accompanied by changes in the settlement pattern and population of the Elk Valley. In 1964 the Ministry of Municipal Affairs of B.C. proposed the abandonment of the old coal towns of Michel-Natal and the re-location of the population to an "instant town" to be built further up the valley (see Map 4).⁴⁴ This was a slow and very controversial process of urban renewal whereby the houses at Michel-Natal were gradually torn down as residents moved to Sparwood or left the region altogether.⁴⁵ The year 1970 marked the opening of the new Sparwood townsite to house the

TABLE 5. Coal companies operating in southeastern B.C., 1981*.

<u>Company name</u>	<u>B.C. Coal Ltd.</u>	<u>Fording Coal Ltd.</u>	<u>Byron Creek Collieries</u>	<u>Crows Nest Resources Ltd.</u>
<u>Ownership of company</u>	67% by B.C.R.I.C. 33% by Mitsubishi & 9 Japanese steel mills	100% Canadian Pacific Ltd. (C.P.)	100% by Esso (i.e. Imperial Oil)	100% by Shell
<u>Major mines and locations</u>	Balmer Mine at Sparwood	Greenhills Mine near Elkford - owned 80% by B.C. Coal + 20% by P.O.S.C.O. of Korea	Fording Mine near Elkford	Coal Mt. Mine at Corbin
<u>Type of coal mined</u>	- 90% met. + 10% thermal - 90% surface + 10% underground	- 70% met. + 30% thermal (1983) - all surface mining	- 99% met. + 1% thermal - all surface mining	- 100% thermal - all surface mining
<u>Total 1981 production</u>	7.1 mill. tonnes clean met. 0.4 mill. tonnes thermal	Planned '83 production: 1.8 mill. tonnes clean met. 0.75 mill. tonnes thermal	3.7 mill. tonnes clean coal	0.96 mill tonnes 1983 capacity of 2.7 mill. tonnes
<u>Expansion plans</u>	-	-	1982 capacity increased to 5.0 mill. tonnes	Planned 1983 capacity of 2.0 mill. tonnes
<u>Markets</u>	Japan (63%), Korea (21%), Brazil (6%) Mexico (3%), Taiwan (1%), Chile (2%), Pakistan (2%), Other (2%)	Japan (40% of met.) Korea (28% of met.) Taiwan (17% of met.) Denmark & Hong Kong (thermal)	Japan (82%), Taiwan (8%), Korea (8%), Chile, Europe (2%)	Canada (75%) Japan (25%) Korea (77% of thermal), Japan (77% of met.)
<u>Major contracts</u>	- Mitsubishi of Japan 45.0 mill. tonnes total over 15 yrs. 1970-1985 - POSCO of S. Korea 1.2 mill. tonnes met. annually from 1976-1985	- POSCO of S. Korea 0.5 mill. tonnes met. annually from 1983-2003 - China Steel of Taiwan 2.8 mill. tonnes met. total over 10 yrs. 1982-1992 - Mitsubishi of Japan 1.93 mill. tonnes met. total over 3 yrs 1983-1986 - Kowloon Electricity of Hong Kong 1.57 mill. tonnes thermal total over 6 yrs 1982-1988 - Elkraft Power of Denmark 3.8 mill. tonnes thermal total over 10 yrs. 1982-1992	- Mitsui of Japan 45.0 mill. tonnes met. total over 15 yrs. 1972-1987 - China Steel of Taiwan 3.5 mill. tonnes met. total over 10 yrs. 1981-1991 - POSCO of S. Korea 1.0 mill. tonnes met. total 1982-85, 0.5 mill. met. annually 1985-1992 - POSCO for 0.1 mill. tonnes met. 1982, 0.2 mill. tonnes met. annually 1983-1992 - Korea Electric Co. 0.15 mill. tonnes thermal 1982, 0.2 mill. tonnes thermal annually 1983-1987	- Ontario Hydro 0.5 mill. tonnes thermal annually from 1978-1993 - Sumitomo + JCDC + EPDC of Japan (utility consortia) for 0.25 mill. tonnes thermal annually from 1981-? - China Cement of Hong Kong 0.5 mill. tonnes thermal total over 6 yrs. 1982-1988 - Korea Electric Power Corp. 0.75 mill. tonnes thermal annual- ly for 15-20 yrs. starting 1982 - Ssangyong Corp. of S. Korea 0.35 mill. tonnes thermal annual- ly from 1982-1992 - Mitsui of Japan 1.0 mill. tonnes met. annually from 1983-1998

NOTES: *This information is based on 1981 data. Production levels and percentage contributions to different markets have changed since then due to contract cut backs.

SOURCE: Compiled from 1981 company reports from B.C.R.I.C., Byron Creek Collieries, Crows Nest Resources, and Fording Coal Ltd.; Maclean Hunter Ltd., The Financial Post Survey of Mines and Energy Resources, (Toronto: Maclean Hunter Ltd., 1981); Alexandra Worobec (ed.), Canadian Mines Handbook, 1982-83 (Toronto: Northern Miner Press Ltd., 1982); and interviews with company spokesmen.

Kaiser workers and by 1982, all that remained of Michel-Natal was the old Michel Hotel and some abandoned coke ovens and buildings of Crows Nest Industries.⁴⁶ In 1971 a second "instant town", Elkford, was built about thirty kilometres north of Sparwood and incorporated as a village. The settlement was built by Fording Coal Ltd. to house its employees.⁴⁷

* * * * *

This historical background to conditions in the Elk Valley illustrates the booms and busts in economic fortune which the regional economy has undergone as a result of changes in demand for its staple, coal. It may also be seen that markets for the regional staple have changed during the different phases of Elk Valley coal mining. During the first period domestic markets were very important; the Elk Valley coal industry was an integral part of the entire Kootenay mining economy as coal from the East Kootenays fuelled the smelters of the West Kootenays. In contrast, the contemporary coal industry of the Elk Valley functions more as an enclave economy dependent on the fortunes of the Japanese steel industry. It is clear that the contemporary "boom" was the result of strong Japanese demand for the region's metallurgical coal. This demand was accompanied by a particular strategy which the Japanese have developed to procure raw materials from overseas. The following section describes this strategy and begins to suggest some of its implications for a staples region such as the Elk Valley.

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IV. THEORETICAL BACKGROUND

Having described the growing Japanese involvement in B.C. staples and presented some background material concerning the coal mining region which will be examined as a case study, I will now describe in some detail the strategy followed by Japanese industrialists to procure raw materials from overseas. In order to highlight the unique aspects of this strategy I begin with a description of the American resource procurement strategy and its implications for a staples region. I then describe the historical context which produced the Japanese strategy, the strategy itself, and a set of hypotheses regarding its possible implications. The chapter concludes with a section concerning the methodology followed in order to test these hypotheses.

A. The American Resource Procurement Strategy

To acquire raw materials from abroad American corporations practise a strategy of direct foreign investment whereby a wholly-owned and controlled subsidiary of the parent company will be established in the foreign resource region.¹ The parent company provides equity capital and incurs the risk of the investment but earns total ownership and control of the venture. In many cases the corporate head office will also supply top-level management, production technology, and build the appropriate transportation infrastructure. As Aitken writes, the American strategy represents

... a geographical extension of the operations of established organizations. Entrepreneurship, skilled labour, organizational methods, advanced technology - all have been transferred.²

Such direct foreign investment inhibits the domestic development of linkages from the resource sector. A recent study by Statistics Canada concluded that externally-controlled firms have a five times higher propensity to procure inputs from foreign suppliers than that of domestically-controlled firms.³ American subsidiaries tend to purchase inputs and services from within the vertically-linked operations of the multi-national corporation thereby stifling possibilities for backward linkages to develop within the region.⁴ Further local processing is unlikely since the subsidiary has been established to extract resources to supply manufacturing activities elsewhere within the parent company's operations. The underdevelopment of backward and forward linkages means the loss of the value-added component of production, employment opportunities, and the multiplier effect engendered by such linkages. In addition, under foreign control the fiscal linkage or income created through resource extraction flows out of the region and accrues to foreign shareholders.⁵ Thus the resource region loses that capital which could be invested in further regional development and diversification.

Since the resource venture has been established to feed parent company manufacturing activity any fluctuation in demand for the final product would affect demand for the subsidiary's resource and lead to economic instability in the resource region. A certain degree of market security stems from the fact that the venture has been specifically developed to supply the parent company and may well be the only or main supplier of the raw material. However, if that raw material becomes available on a more competitive basis elsewhere in the global economy, the American parent company may wind down operations and re-locate.⁶ One factor inhibiting this would be the initial heavy investment in the first resource region and the cost of abandoning or

dismantling infrastructure.

A final feature of the American resource procurement strategy to be noted relates to the purchasing and pricing of the resource. Since the resource venture is wholly-owned by the parent company and that company usually represents the major market for the operation's output, the buyer of the resource is the same entity as the seller. This allows the parent company to set the price at which the resource will be sold and practise transfer pricing.^{7*}

These implications of the American resource procurement strategy may be briefly illustrated with an empirical example of the Schefferville region in northern Quebec, an iron mining area operated by the Iron Ore Company of Canada (I.O.C.). This company is a wholly-owned subsidiary of six American steel companies, one American and one Canadian mining company. The Schefferville region has a narrow economic base dependent on iron ore extraction which provides a minimal number of jobs locally. Processing and related services are carried out by subsidiaries within the vertically-integrated operation in southern Ontario and the USA.⁹ Parent company decision-making is not always in the best interests of the region; the international management class controlling I.O.C. place the interests of Quebec in a subordinate position to those of the corporation.¹⁰ Since the American steel companies own the resource venture and represent the major market, the owners are essentially purchasing iron ore from themselves and are thus in a position to practise transfer pricing. Finally this staples

* Transfer pricing has been described as the discretionary pricing of inter-corporate transfers of goods and services at a higher or lower amount than for value received.⁸

region has been vulnerable to fluctuations in parent company demand for its iron ore. For example, prior to 1962 the region experienced a great deal of instability due to price and demand changes as I.O.C. and its parent companies debated the future of the town.¹¹ In November of 1982 I.O.C. announced that it would be winding down its Schefferville operations for they were no longer competitive; since this time the staple economy of the region has basically collapsed.

B. The Japanese Resource Procurement Strategy

(a) Historical Background

The Japanese economy in the post-war period has shown remarkable success. Japan has become the fastest growing industrial country in the world during the last decade or so and has achieved a level of industrial production second only to the USA.¹² This was accomplished through a high degree of government economic planning which included the encouragement of key heavy industries such as iron and steel, metal refining, petrochemicals, and oil refining.¹³ The post-war period also saw the re-emergence of the old "zaibatsu" such as Mitsui, Mitsubishi, Sumitomo, and Yasuda, but re-organized into industrial groupings centred on a bank and trading company and including a host of vertically and horizontally-linked corporations.¹⁴

Such a heavy industrial base is both resource-intensive and energy consuming. Yet Japan is essentially without natural resources; it is almost 100 percent dependent on overseas supplies of bauxite, nickel ore and uranium, 90 percent dependent on overseas iron ore, 83 percent dependent on overseas copper, 73 percent dependent on overseas natural gas, and 74 percent dependent on foreign coal supplies.¹⁵ Thus economic growth and development in Japan has been and continues to be dependent upon imports of

raw materials and energy sources.¹⁶ This encouraged a policy of export promotion to pay for the importation of raw materials. As Duus writes:

Japan simply lacked domestic sources of oil, iron ore, cotton, soybeans, and other basic resources essential to economic expansion. The result was an "export or die" psychology that led Japan to expand their exports at double the world rate.¹⁷

Such dependence has meant that Japanese industries are very sensitive to any changes in the supply and price of the needed raw materials.¹⁸ This in turn has led to the development of a resource procurement strategy which ensures a stable and secure inflow of resources. The strategy took on a new characteristic in the late 1960's when an increased demand for raw materials and an improved balance of payments position led to the beginning of direct investment by the Japanese in overseas resource projects.¹⁹ Prior to this, Japanese industrialists had simply imported raw materials by purchasing them on the open market or via long-term contractual arrangements.²⁰ Since the "oil shock" of 1973 there has been increased Japanese interest in overseas investment to secure natural resource supplies.²¹

(b) Description of the Strategy

There are four main characteristics of the Japanese resource procurement strategy. First, despite the comments made above it should be noted that the Japanese do not generally practise direct foreign investment. Japanese industrial interests prefer to import raw materials via long-term contracts, or provide aid to overseas resource supplies through debt financing. As Galway notes in his study of Japanese involvement in the B.C. copper industry, they are primarily interested in securing stable sources of supply rather than acquiring equity ownership.²² Wright corroborates this comment stating that the Japanese are not interested in

earning profits through direct ownership and control for long-term resource supplies are more important than the generation of dividends.²³ However, the Japanese will take an equity position in overseas resource ventures if their equity financing is crucial to the operation's success.

Evidence of this is provided by the Elk Valley example where only one of the four coal companies features Japanese equity participation. This occurred under exceptional circumstances where their capital was required in order for Kaiser to continue operating. B.C.'s northeast coal project provides another example where the Japanese steel industry was persuaded to take an equity position and to contribute debt financing thereby allowing the venture to proceed.²⁴ It should also be noted that in these instances of direct investment the Japanese will hold only a minority equity position.²⁵

Thus there are major differences between the American and the Japanese strategies of resource procurement. The Japanese allow other investors to provide the equity capital and incur the associated risk. They do not have full ownership and control of the resource venture and do not reap all the profits, but then neither do the Japanese experience the loss if the project becomes unfeasible or if demand declines. Finally, when the Japanese do take a minority equity position they invest as a group composed of all the major companies involved in the industry which uses that resource as an input.²⁶ This may be seen in southeastern B.C. where a consortium composed of Mitsubishi and the nine Japanese steel mills own 33 percent of B.C. Coal.

The second major characteristic of the Japanese strategy further reflects their interest in obtaining secure supplies of raw materials on good terms rather than in generating high profits from resource extraction.

The Japanese purchase resources on the basis of long-term contracts with resource sellers, supplemented by spot market purchases. These contracts indicate the quantity of the resource to be purchased and the price at which it will be bought. Such long-term contractual arrangements are presumably designed to cope with Japan's vulnerability to any changes in the conditions of supply and price of resources. Examination of Table 5 shows that all of the four coal companies in southeastern B.C. hold major long-term contracts with either the Japanese steel industry or a Japanese utility consortium ranging in duration from three to twenty years.

Third, the Japanese attempt to ensure security of resource supply through a strategy known as "multiple-sourcing". Instead of relying upon one main resource supplier, Japanese industrialists spread their dependence over three or four main supplying regions around the world.²⁷ In the case of the Japanese steel industry, for example, 44 percent of the imported metallurgical coal was supplied by Australian mines, 33 percent by American mines, and 15 percent by Canadian mines in 1981.²⁸ Thus no resource region functions as the only or main supplier and each must remain competitive to retain its market share.

A final feature to be noted about the Japanese strategy is that the resource is purchased by a consortium representing all the companies using that resource as a major input. For example, the coordination and negotiation of all metallurgical coal purchases from the four companies in southeastern B.C. is conducted by Nippon Kokan and Kobe (N.K.K.), two of the nine Japanese steel mills.

(c) Possible Implications of the Japanese Strategy

Thus the Japanese strategy of overseas resource procurement differs in significant respects from the American strategy. It may be suggested

that in consequence the Japanese strategy has a different impact on staple regions. The following discussion examines each characteristic of the Japanese strategy and suggests its implications for a resource region.

The Japanese preference for not investing equity in a resource venture provides an opportunity for domestic or foreign entrepreneurs to respond to Japanese market demand and invest in resource development. According to much of the economic nationalist writing of the 1960's and 1970's domestic ownership and control has a positive effect in generating linkages from the staple sector. Therefore, one may argue that to the extent that domestic entrepreneurs respond to Japanese market opportunities there will be a greater likelihood that backward linkages from the staple sector will develop. Domestic enterprises would not be part of a vertically-integrated foreign multinational which may even prohibit local suppliers from bidding for contracts since inputs and services are supplied from internal operations located outside the country. In addition to the greater opportunities for domestic manufacturers to offer their services it may be argued that domestic entrepreneurs would be more likely to buy from such manufacturers than would foreign controllers of a resource venture. Domestic entrepreneurs, due to reasons such as proximity, prior experience, and personal knowledge, would be more familiar with Canadian manufacturers of inputs and suppliers of services. Holder argues that domestic entrepreneurs, committed to long-term residence in the country of operations, show a "community of interests and can be motivated to demonstrate a greater sense of commitment than a foreign operator who is foreign-based".²⁹ This sense of commitment may include purchasing from domestic over foreign suppliers due to nationalist sentiment and loyalty to the domestic manufacturing industry. The existence of this market may in turn lead to

increased activity by domestic manufacturers and encourage such enterprises to locate close to the staple industry whenever such a location is viable with regard to other, non-market locational criteria.

Using the same reasoning one can argue that forward linkages from the staple sector will be better developed if that sector is domestically controlled as is possible under the Japanese resource procurement strategy. Domestic entrepreneurs with their greater commitment to the resource region would be concerned about capturing all of the economic opportunities offered by the resource. Domestic enterprises would not be simply branch plants of foreign multinationals with a strict mandate to carry out only resource extraction and feed manufacturing activity elsewhere within the corporate organization. They may engage in further processing of the staple themselves, or sell the staple within the domestic economy for processing.

Domestic as opposed to foreign ownership of the staple sector would not affect final demand linkages (investment in the domestic consumer goods industry to supply the demand fuelled by income from the staple sector accruing to labour). It is assumed that the multiplier effect generated by the expenditure of payments to labour in the staple industry would be the same whether that industry is domestically or foreign controlled.

However, this would not be the case for the fourth type of linkage which might develop from the staple sector. The fiscal linkage relates to income from the staple sector accruing to capital in the form of normal returns to capital, and resource rent. The concept of "resource rent" as a component of the fiscal linkage should be clarified. Resource rents are specific to staple industries and stem from the unique and finite nature of the resource itself.³⁰ Resource rent may be defined as that portion of

the income generated by the staple industry which is above a normal return on capital invested.* If the resource venture is controlled by foreign interests as under the American strategy the fiscal linkage leaks out of the country and may be used to pursue corporate objectives elsewhere in the global economy. However, if domestic entrepreneurs respond to Japanese demand and establish the resource venture, normal profits and resource rents will be retained by those entrepreneurs and could be invested in the region to develop backward and forward linkages and promote economic diversification.

Turning now to the second characteristic of the Japanese strategy, it is suggested that the existence of long-term contracts between buyer and seller should alleviate some of the "booms" and "busts" in growth associated with staple economies. Unlike the American strategy where there is the possibility of fluctuating demand, long-term contracts indicate the presence of an established market for the regional staple for the duration of the contract. This in turn should engender stable production levels of the staple and steady employment in the staple sector. The implications of stability in the staple sector for the resource region as a whole include: stable regional employment levels with no sudden increase in unemployment due to fluctuations in the staple sector, stable regional incomes, a stable regional population with no sudden out-migration due to lay-offs in the staple industry, and stability in the regional housing market.

However, the stability engendered by long-term contracts may well be threatened by some of the implications of the Japanese multiple-sourcing

*A "normal return" may be defined in a number of ways. Gunton defines "normal profit allowances" as a 15 percent return on shareholders equity after corporate income tax.³¹

strategy. Under the American strategy the foreign resource region is usually the only or main supplier of the resource to the parent company whereas under the Japanese strategy, the foreign resource region is one of three or four main suppliers. Thus each resource supplier would be competing for a larger share of the Japanese market thereby enabling the Japanese buyers to pit one supplier against another. Secondly, under the American strategy a resource region would only be directly affected by a change in demand from the parent company buyer. Under the Japanese multiple-sourcing strategy it is suggested that a resource region's operations could be affected not only by a change in demand from the buyer, but also by a change in the competitive position of the other suppliers which might render their operations more or less attractive in comparison. Also, any change in the global supply picture of that particular resource might affect the comparative position of an existing supply region.

Finally, there would be less likelihood of transfer pricing occurring under the Japanese strategy for the instances of Japanese equity participation are few and always limited to minority equity positions. However, the Japanese consortium purchasing resources represents all the major companies in the industry using that resource and would thus be negotiating from a strong united position with a number of fragmented resource sellers around the world. It is suggested that this negotiating position would allow the consortium a great deal of power in obtaining the price and quantity conditions desired from each seller. This in turn may result in less than equitable returns for each region's resource.

This discussion may be summarized in the following four hypotheses:

- (1) The Japanese resource procurement strategy offers greater opportunities for domestic ownership and control of resource industries than does the American strategy. To the extent that domestic entrepreneurs respond to these opportunities it is hypothesized that (a) the purchase of inputs from domestic manufacturers and suppliers will be greater in a resource industry operating under the Japanese than under the American strategy, (b) the development of backward and forward linkages from a resource industry will be greater if it is operating under the Japanese strategy rather than the American, and (c) fiscal linkages from resource extraction are more likely to be retained and invested in regional economic development under the Japanese strategy than under the American.
- (2) Resource industries and staple regions involved in long-term contracts with Japanese buyers will experience greater stability than those operating under the American resource procurement strategy.
- (3) A resource region supplying the Japanese market as part of the multiple-sourcing strategy will be more sensitive to changing conditions of its competitors than a region functioning under the American strategy.
- (4) Japanese consortium resource purchasing results in less than equitable returns for the regional resource as is the case under the American strategy permitting transfer pricing.

Before describing the methodology used to test these hypotheses some of the concepts presented need to be defined. 'Domestic manufacturers and suppliers of inputs' in the case of coal mining include all Canadian producers and suppliers of the items listed in Appendix D, pp. 159-166. In looking at 'the development of backward linkages' relating to coal mining I am interested in the extent to which manufacturers and suppliers of these inputs have developed in the local Elk Valley economy, the provincial economy, and the broader national economy. Forward linkages from metallurgical coal mining include the manufacture of coke (ultimately used to produce steel) and from thermal coal mining, thermal power generation. Again the study seeks to document whether these activities have developed in the local, provincial, and national economies. Fiscal linkages refer to the profits generated from coal mining. I am interested in whether or not they have been used to promote regional economic development; that is, have they been re-invested in the resource region to promote diversification of the economic base. The concept of 'stability' for the staple industry will be defined as constant annual output with no sudden upswings or downturns. This would engender stability in the region as witnessed in constant employment levels, constant regional incomes, a constant regional population, and a constant vacancy rate. 'Sensitivity to changing conditions of competitors' refers to a resource industry in one location being directly affected by changes in the competitive position of another supplier; it is assumed that the number of instances of a Japanese resource supplier being directly affected by changing conditions of competitors will be far greater than for a region operating under the American resource procurement strategy. The concept of 'less than equitable returns' is difficult to define precisely. One can assume that an equitable resource

price is most likely to be achieved in a competitive situation where there are a number of resource buyers and sellers. Any aberration of that situation may well result in an unfair resource price.

C. Methodology

Within the time and monetary limitations of an M.A. thesis it was not possible to obtain comparative data concerning resource regions operating under the American strategy. Thus the hypotheses were modified to focus on the implications of the Japanese resource procurement strategy and were tested in the following ways:

(1)(a) The industry chosen as a case study includes both domestically-controlled companies and the foreign-controlled companies typical of the American strategy so this hypothesis could be tested by comparing the purchasing patterns of each. A questionnaire was administered to each coal company requesting that it indicate from where it purchased inputs and services (see Appendix D, questions # 1 and 2). General discussions were held with company purchasing agents based on the following sorts of questions:

- What are the criteria on which you base your decision as to who to buy from?
- Do you make a particular effort to purchase from Canadian over foreign manufacturers?

In addition, other more comprehensive studies comparing the purchasing patterns of foreign and domestically-controlled companies were consulted.

- (b) An attempt was made to document the backward and forward linkages which have developed from the Elk Valley coal industry. The completed forms regarding input sources and the discussions with purchasing agents served to indicate which inputs were available from the local, provincial, or national economy. Secondary sources listing locations of some of the manufacturers and suppliers to the coal industry were consulted. These findings were then compared with larger studies which have examined the domestic development of backward linkages to the Canadian mining industry as a whole. The discussion of forward linkages was based on interviews with company representatives (see Appendix D, question #3) supplemented by the findings of a secondary source examining forward linkages from the B.C. coal industry.
- (c) Due to data constraints it was not possible to calculate the fiscal linkage and examine how and where it is being invested for each coal company. However, two surrogate examples are presented. The results of a study documenting use of the fiscal linkage by a foreign-controlled company are compared with the way in which the domestically-controlled parent of one of the Elk Valley coal companies is using profits generated from staple extraction.
- (2) The question of how stable the Elk Valley coal industry has been since producing for the Japanese on long-term contracts was examined by first looking at the nature of these contracts and whether they really do offer a constant demand and price for the regional staple. This was done through

interviews with company representatives (see Appendix D, question #4). Second, information on changing levels of output and employment in the staple industry was collected from interviews and company reports (see Appendix D, questions # 5 and 6). These findings were supplemented with data from the following sources: newspaper articles, secondary sources dealing with long-term contracts and the experiences of Japanese resource suppliers elsewhere, and discussions with the president of the United Mineworkers of America (largest union in the region) about the implications of long-term contracts for labour.. Finally, information on regional employment, income, population, and vacancy rate levels was collected from a variety of sources to examine stability in the regional economy. These sources included: reports on the region published by government agencies, Canada Employment and Immigration reports, Revenue Canada income information, census data, Canada Mortgage and Housing Corporation data, and files from the planning offices of the three main communities in the region.

- (3) This hypothesis was examined by looking at the extent of competition among coal suppliers to Japan as indicated in interviews with company representatives (see Appendix D, question #7) and secondary sources. This information was backed up with empirical examples from newspapers and secondary sources where the operations of Japanese resource suppliers have been directly affected by changes in the competitive position of alternate suppliers.

- (4) The implications of consortium purchasing for resource price were examined through interviews with company representatives (see Appendix D, question #8). Further evidence was provided by newspaper articles and secondary sources dealing with the experiences of other resource regions supplying Japan.

FOOTNOTES

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V. PRESENTATION OF FINDINGS

This chapter is divided into four sections each dealing with one of the hypotheses regarding the implications of the Japanese resource procurement strategy and the research findings for the staples economy of the Elk Valley. The discussion begins with an examination of the Japanese preference for not investing equity in a resource venture and the implications of domestic ownership for the development of backward, forward, and fiscal linkages. The second section presents the research findings with regard to long-term contracts and regional stability. Then Japanese multiple sourcing and its ramifications for the coal industry of southeastern B.C. are discussed, and fourth, the findings with regard to the effects of consortium resource purchasing are presented.

A. The Implications of Japanese Preference for not Investing Equity

(a) The Development of Backward Linkages

(i) Foreign and Domestic Purchasing Patterns

The hypothesis being tested here is that domestically-controlled resource companies (which can develop under the Japanese strategy) are more likely to purchase inputs from domestic suppliers than are the foreign-controlled companies found under the American strategy of resource procurement. Planned comparison of the purchasing patterns of the domestic and foreign controlled coal companies in the Elk Valley was impeded because only one company, B.C. Coal Ltd., actually completed the detailed questionnaire regarding sourcing of inputs and services (see Appendix E). However, the completion of this questionnaire and general discussions with the purchasing agents from B.C. Coal, Fording Coal, and Byron Creek Collieries helped illuminate the decision-making process with regard to the purchase of inputs (the purchasing agent from Crows Nest Resources was not willing to discuss the topic).

On the basis of this information one detects no difference between the purchasing patterns of the domestically and foreign controlled companies. Discussions with the purchasing agent of the Canadian controlled company, B.C. Coal, revealed that when deciding from whom to buy inputs and services, attention is not paid to the "nationality" of the supplier and factors such as nationalist sentiment and loyalty to Canadian manufacturing do not come into play. The company would not decide to buy from certain suppliers simply because they are Canadian. In fact when it had the opportunity of buying all of its requirements of a particular input from Canadian manufacturers, B.C. Coal did not necessarily do so. As an

example, about 60 percent of B.C. Coal's purchase of toothed and blade buckets (that is, wear parts for shovels, bulldozers, and front end loaders) came from American manufacturers and 40 percent from Canadian.¹ Furthermore, B.C. Coal will not buy from Canadian suppliers if they are not competitive in terms of price and quality. For example, inputs such as bins, hoppers, and chutes (ancillary equipment used in the preparation plant) are available through local Elk Valley suppliers but B.C. Coal does not buy from them due to problems with workmanship.²

In fact each of the company representatives interviewed stated that inputs and services are chosen according to criteria of price, quality, and delivery date. Even if the companies decided to make a special effort to patronize Canadian over foreign manufacturers their attempts would be constrained by the fact that few of the inputs to coal mining are manufactured domestically. They are interested in seeing greater Canadian manufacturing of inputs and say they would prefer to purchase all of their requirements from the local region since this would be more practical in terms of repair work and access to replacement parts. However, the purchasing agents stressed that as businesses they could not afford to patronize domestic over foreign manufacturers if the domestic firms were not competitive in price, quality, and delivery schedule.

There are further ways to examine the relationship between domestic control of the resource industry and patronization of domestic manufacturers. For example, if one could show that there are greater opportunities for Canadian suppliers to bid for contracts with the Canadian coal companies than with the foreign ones this would indicate that Canadian control of a resource industry does stimulate the development of backward linkages. Furthermore, the assertion that suppliers are chosen purely on the basis

of their competitive position assumes that the purchasing agent has perfect knowledge of all possible domestic and foreign suppliers. I did not examine whether the Canadian coal companies are more familiar with domestic suppliers than the foreign controlled companies, both of which are subsidiaries of large, well-integrated multinational corporations. This further research was not undertaken since it would be quite complicated and time-consuming and I had initially anticipated that comparison of all the completed questionnaires would be sufficient indication of the implications of domestic control of the resource industry for patronization of domestic inputs and services.

(ii) Domestic Development of Inputs to the Coal Industry

In this section I am testing the hypothesis that backward linkages will be better developed from a staple sector under domestic control as is possible with the Japanese strategy of resource procurement. Before documenting the backward linkages which have developed from the coal industry we must differentiate between linkages representing inputs to staple production, and those which have been developed to collect and transport the staple.³ Within these two types of linkages we can identify four categories:

1. The design or research and development of inputs to the staple industry,
2. Actual manufacture of inputs including, (i) the manufacture of low-level technology parts and components and (ii) the manufacture of more sophisticated, specialized, and high technology inputs,
3. Supplying of inputs via retail outlets,

4. Provision of services to the staple industry.⁴

Backward Linkages for Staple Production

The development of backward linkages in the local Elk Valley region is extremely limited. There is one establishment in Sparwood and one in Fernie which manufacture ancillary equipment and wear parts; that is, low level technology parts and components.⁵ However, retail outlets supplying inputs manufactured elsewhere are numerous, and commercial and retail services related to coal mining are highly developed in the local economy (see Appendix E pp. 167 to 74) which shows that B.C. Coal is able to purchase about 100 percent of its open pit, road, and wear part equipment requirements from local suppliers as well as all needed services).

In the larger B.C. economy there are a number of companies manufacturing ancillary equipment and wear parts, but there is no manufacturing of the more specialized high technology inputs such as open pit, underground, or preparation plant equipment.⁶ Higher level professional and technical services relating to coal mining are present in Vancouver where a number of consulting firms are located.⁷

With respect to backward linkages developed at the next geographical scale, the Canadian economy, there is some domestic manufacturing of ancillary equipment and wear parts for the coal industry. Examination of Appendix E (pp.170-71) shows that about half of B.C. Coal's purchases of ancillary equipment and about 25 percent of their wear parts are from Canadian manufacturers. All of their needs for these inputs can be supplied through domestic retail outlets. These findings are supported by the conclusions of a major Energy, Mines, and Resources (E.M.R.) study on the Canadian mining industry as a whole which states that about 52 percent of

"Class C" items (custom-made low-level technology components or parts) used by the industry are manufactured in Canada.⁸

The more sophisticated, specialized and high technology inputs for coal mining would include open pit and road equipment, underground mining equipment, and preparation plant equipment. There is some domestic production of open pit equipment (which consists primarily of large vehicles). For example, about 50 percent of B.C. Coal's needs have been assembled in Canada (usually in southern Ontario) but many of the parts and components are from the U.S.⁹ Other sources support this general statement. A study entitled, Economic Impacts and Linkages of the Canadian Mining Industry, found that in 1974 about 83 percent of the Canadian mining industry's purchase of front-end loaders (a major piece of open pit equipment) were imported vehicles, overwhelmingly from the US.¹⁰ The E.M.R. study concludes that Canadian industry provides less than 30 percent of the equipment required by open pit mining.¹¹ A similar pattern emerges for the equipment used to construct and maintain roads around the minesite: about 50 percent of B.C. Coal's purchase of road equipment are vehicles which have been assembled in Canada and the remainder is imported. All of the company's needs for open pit and road equipment can be supplied by Canadian outlets (see Appendix E pp. 167, 172).

It appears that very little underground coal mining equipment is actually manufactured in Canada.¹² The United Kingdom, where much of the early underground coal mining occurred and much of the equipment was developed, appears to have retained its initial hold and remains the major location for most manufacturing of underground coal mining needs. Some low technology parts and components are manufactured in Canada but the major pieces of equipment used by B.C. Coal are purchased from British and

Japanese manufacturers (see Appendix E, p. 168).

With respect to coal preparation plant equipment, examination of Appendix E (p. 169) indicates that the U.S. is the major location where B.C. Coal's needs are manufactured. This in turn might suggest that domestic capacity is quite weak. However, the E.M.R. study found that Canadian content of beneficiation plant equipment is about 65 percent.¹³ Perhaps the treatment process for coal is different from the treatment for the mining industry as a whole and Canadian capability is lower in this case. Alternatively, it is possible that Canadian manufacturing of coal preparation plant equipment is as high as the E.M.R. study suggests but B.C. Coal is simply not buying from those Canadian manufacturers.

Backward Linkages for Staple Collection*

The two major backward linkages developed to transport and collect the coal include the Canadian Pacific Railway route and the coal handling port at Roberts Bank. The latter is operated by Westshore Terminals (a wholly-owned subsidiary of B.C. Coal) and represents a major backward linkage in the contemporary phase of regional coal mining.

With respect to research and development related to the staple industry it should be noted that Roberts Bank was designed and built by a Vancouver-based engineering firm, Swan Wooster. Kaiser Coal Ltd. hired the firm in the late 1960's and the opportunity proved invaluable. The experience and expertise gained has led Swan Wooster to become "the world's premier designer of coal ports and a major force in harbour and marine-

* See Appendix C for a description of the process involved in coal handling and loading onto ships, and the major pieces of equipment used at the different stages of that process.

related engineering".¹⁴ Thus an important backward linkage was developed through the decision of the foreign company controlling staple production to patronize a local engineering firm.

Examination of Appendix F shows that there is some local manufacturing of the ancillary equipment and wear parts used as inputs to the operation of the port. All of these needs are available through local suppliers as are the vast majority of commercial and retail services used by the port. However, the manufacture of the more sophisticated and specialized pieces of equipment does not occur in Canada. Two of the stacker-reclaimers were assembled in southern Ontario by the Canadian subsidiary of an American company and the third is being manufactured by Mitsubishi in Japan. Both of the present shiploaders were designed by Swan Wooster and manufactured in Canada but with many of the parts coming from the United States.¹⁵ Thus the pattern is similar to that found for the manufacture of the more specialized equipment used in coal mining; that is, the backward linkage is underdeveloped with Canadian branch plants carrying out only the assembly of parts manufactured outside the country.

Summary

The evidence presented above supports the comments of the purchasing agents regarding the difficulties in purchasing Canadian inputs for backward linkages from coal mining do not appear to be strongly developed. To summarize those that have been developed domestically, each category is examined in turn:

1.- The design, or research and development, of inputs.

This sector is underdeveloped but some important capability does exist with regard to the design of infrastructure to collect and

handle the staple at trans-shipment points.

2(i) - The manufacture of low-level technology parts and components. This is the most strongly developed sector but yet not all ancillary equipment and wear parts for the coal industry are manufactured in Canada. As one coal company representative summarized the situation, Canadian industry is fitting into the niche of supplying accessories and components to Canadian coal mining.¹⁶ The E.M.R. study reaches similar conclusions stating "... the Canadian branch plant industry expertise is biased toward the production of low-level technology equipment and components, a specialization that leaves it vulnerable to price competition".¹⁷ It should also be noted that this category of backward linkage although very limited in the immediate local economy, has developed at the scale of the provincial economy.

2(ii) - The manufacture of more sophisticated, specialized, and high technology inputs.

The development of this sector is very weak. It is only at the national level that one sees some activity related to the production of heavy equipment for coal mining, but this is largely directed toward branch plant assembly of pieces manufactured in the U.S. by the American parent company. This comment is again corroborated by the E.M.R. study:

The Canadian machinery industry does better providing parts and attachments than supplying new capital equipment; the Canadian branch plant industry has evolved toward an assembly type of operation....¹⁸

3 - The supply of inputs via retail outlets.

The majority of inputs to coal mining whether they have been manufactured within or outside Canada can be purchased from domestic supply outlets. These have been developed in the local economy as well as at the provincial and national level.

4 - The provision of services.

These linkages have been developed domestically and are generally found close to the resource industry. The lower level commercial and retail services related to coal mining are developed within the local economy and the higher level professional and technical services are generally available within the provincial economy.

(b) The Development of Forward Linkages

This section presents the research findings in testing the hypothesis that forward linkages will be better developed from a resource industry which is domestically controlled as is possible under the Japanese resource procurement strategy. The interviews revealed that each of the four coal companies in the Elk Valley ship their product out of the region as clean raw coal.¹⁹ Three of the companies export to foreign markets (primarily Japan and other Pacific Rim countries) where further processing of the staple occurs, and one company ships to eastern Canadian markets where the coal is used as an input to thermal power generation. The three companies which export the raw coal are producing primarily metallurgical coal. These are B.C. Coal and Fording (the two Canadian companies) and Crows Nest Resources (a foreign-controlled company). The company which sells its coal as an input to further production within the domestic economy is the foreign-

owned Byron Creek Collieries which produces thermal coal. Thus forward linkages from metallurgical coal mining are underdeveloped but there is some forwardly-linked activity which uses thermal coal.

These findings suggest that in this case it is market factors and not the nature of domestic or foreign ownership which affect the degree to which the staple undergoes further processing within the national economy. There is a Canadian market which uses thermal coal as an input, but there is no real domestic demand for metallurgical coal. The steel industry in eastern Canada imports coal from the U.S. for distance from the metallurgical coal mines of western Canada means that transport costs are high and Canadian coal is not competitive.²⁰

Foreign demand for metallurgical coal in further processed form is also extremely limited. When questioned as to why they did not practise further processing of their coal, the company spokesmen explained that their Japanese customers would only buy raw coal, not coke. According to one spokesman, the Japanese steel industry buys about one hundred different types of coal from around the world and blends thirty to make coke in their own ovens and produce their own particular type of steel.²¹ Thus even if the domestic owners of the coal companies wanted to process their product further, their attempts would be constrained by the nature of market demand.

A study by Halvorson in 1976 examined the potential for metallurgical coke production in B.C. and reached similar conclusions concerning market constraints.²² Halvorson contacted major steel makers to determine their reaction to the possibility of purchasing coke from B.C. His study found that they prefer to buy raw coal because each steel mill (particularly the Japanese) uses its own recipe for a blending of coals to produce the coke which best suits the size of its blast furnace and the type of steel being

made. The steel mills expressed doubt about the quality of coke which could be produced in B.C. since a blending of B.C. coals alone would not result in a high quality product. Strategic considerations also mitigated against the purchase of coke from external sources; if problems interrupted supply, alternate producers could be found more easily for coal requirements than for coke. In addition, tariff duties inhibited the export of coke (for example, in 1976 there was a 4 percent duty rate on the import of coke into Japan and a 5 percent rate in Korea). Thus the study concluded that the construction of a major coking operation in B.C. in the near future could not be recommended.

As a final point it is interesting to note that forward linkages from the regional staple were better developed in earlier phases of Elk Valley coal mining and have gradually weakened. As mentioned earlier, in the 1940's the Crows Nest Pass Coal Company produced coke, operated a by-products plant, and shipped their coke to fuel West Kootenay smelters. Technological change which saw oil and gas replace coal as a fuel meant a loss of markets and contributed to the decline of these forwardly-linked activities. When Japanese industrialists began buying coal from the region in 1959 they were interested only in obtaining a secure supply of raw materials, not semi-processed goods. B.C. Coal did continue producing a small amount of coke up until 1982 when coke operations were stopped because their final customer, a smelter in Idaho, ceased operation.²³

(c) The Development of Fiscal Linkages

The hypothesis being tested here is that fiscal linkages are more likely to be retained and invested in regional economic development when the staple industry is domestically-controlled as is possible under the

Japanese strategy of resource procurement. However, an attempt to calculate the fiscal linkage currently being generated in the Elk Valley was not successful due to a number of data constraints. Estimation of a company's profit position and generation of resource rents should be done over a prolonged period of time in order to even out annual fluctuations. Crows Nest Resources has only been in operation for one year and thus it is too early to analyze its profit position. In the case of Byron Creek Collieries and B.C. Coal, their financial data is not disaggregated from that of their parent companies, Imperial Oil and B.C.R.I.C. respectively. This makes it very difficult to quantify their individual profit positions. Thus it was not possible to show the extent of normal profits and resource rents earned by the current four companies in the Elk Valley or any differences in the way this income is being used by the domestic and foreign controlled operations. However, two surrogate examples relevant to the region are presented.

An examination of Kaiser Coal Ltd., the American company which dominated the Elk Valley coal industry throughout the 1970's, has shown that foreign control of a resource venture can result in a substantial leakage of income from the region. Gunton examined financial data for Kaiser's operations and was able to calculate the extent of the fiscal linkage stemming from the regional staple.²⁴ Examination of Table 6 shows that Kaiser's average annual total revenue for the period from 1975 to 1977 amounted to \$283 million. After deducting all costs of production, the sum of \$131 million remains, representing the average annual amount of the fiscal linkage generated by Kaiser's coal operations. This amount can then be divided into a "normal return on capital invested", and an "above normal return" or "resource rent". Gunton defines a "normal return" in

TABLE 6. Financial data for Kaiser Resources
(figures are annual averages in millions of dollars
for the years 1975 to 1977)

Total revenue	\$283
Costs of production ⁽¹⁾	<u>152</u>
.*. Total income	\$131
Normal profit allowance ⁽²⁾	<u>41</u>
.*. Above normal profit	\$ 90
Direct and indirect taxes ⁽³⁾	<u>48</u>
.*. Uncollected resource rent	\$ 42

- NOTES: (1) Includes all costs of products sold (i.e. wages, materials, administration, interest depreciation, amortization, and depletion) as per balance sheets from Annual Reports.
- (2) The figure shown is the before tax profit necessary to pay the average current corporate income tax (26%) and provide an after tax return of 15% on shareholders equity.
- (3) Direct payments include payments to the provincial government under the Mineral Land Tax and the B.C. Mining Tax. Indirect payments are the extra current corporate income tax obligations incurred as a result of the extra profit generated by Kaiser's retention of a portion of the rent.

SOURCE: Adapted from Thomas Gunton, Resources, Regional Development and Provincial Policy: A Case Study of British Columbia (Ottawa: Canadian Centre for Policy Alternatives, 1982), p. 19 as computed from data in various issues of Kaiser Resources Annual Reports.

this case as an amount sufficient to pay corporate income tax and provide an after tax return of 15 percent on shareholders equity. Using this definition, a normal return for Kaiser in this case would be \$41 million, leaving an above normal profit or "resource rent" amounting to the average annual amount of \$90 million. Table 6 shows that of this sum, the state was able to collect \$48 million through mining taxes and extra corporate income tax obligations leaving \$42 million for Kaiser Coal Ltd. as uncollected resource rent.

As to how Kaiser used the income it obtained through extracting and exporting B.C.'s coal resources, Gunton shows that during the period 1975 to 1979, about 84 percent of Kaiser's cash flow was leaving the provincial economy (see Table 7). About 25 percent of Kaiser's income accrued to foreign shareholders as dividend payments whilst 59 percent constituted retained earnings which were leaked from B.C.; the major portion was apparently used by Kaiser to purchase Ashland Oil in Alberta. This operation was subsequently sold and the proceeds used to strengthen control over Kaiser Coal. In 1980, Kaiser Coal was sold to B.C.R.I.C. with the profits reverting to Kaiser Steel in California.

This discussion illustrates that large sums of money can be made from staple activity. However, when that activity is under foreign ownership and control and when there is limited state intervention to capture the rents generated, staple earnings flow out of the regional economy and may be invested in economic activity elsewhere. Thus the income created through resource extraction is not available to encourage more sustained or diversified development in the regional economy itself.

In the second example, an examination of financial data for B.C.R.I.C. (which owns 67 percent of B.C. Coal) indicates that although domestic owner-

TABLE 7. Distribution of Kaiser's cash flow (1975-1979)

	<u>Total</u>	<u>Amount leaked from B.C.</u>	<u>Amount remaining in B.C.</u>
Dividend payments*	28%	25%	3%
Retained earnings	<u>72%</u>	<u>59%</u>	<u>13%</u>
	100%	84%	16%

NOTES: *It is assumed that the ratio of B.C. shareholders to total Canadian shareholders is similar to the ratio of the B.C. population to the Canadian population.

SOURCE: Adapted from Thomas Gunton, Resources, Regional Development and Provincial Policy: A Case Study of British Columbia (Ottawa: Canadian Centre for Policy Alternatives, 1982), p. 20 as computed from data in various issues of Kaiser Resources Annual Reports.

ship may result in domestic retention of the income, it does not ensure that this income will be invested in the regional economy either. B.C.R.I.C. is a B.C.-based company with 64 percent of its registered shares owned by B.C. residents and another 16 percent owned by residents of Ontario and Quebec as of December 1981.²⁵ Thus the income earned through B.C.R.I.C.'s activities in the natural resource industries of western Canada is largely retained by domestic interests. However, retained earnings are not necessarily used to promote further backward and forward linkages from these resource industries or encourage diversification of regional economies away from dependence on resource extraction. For example, one of B.C.R.I.C.'s three major capital projects is an oil and gas field known as South Brae

located off the northeast coast of Scotland. B.C.R.I.C. is participating in this venture through B.C. Coal which has a 7.7 percent interest in the project. Initial production was expected to begin by June 1983 and although a temporary oversupply of oil on the world market has depressed prices, the company is confident that its investment will develop into a highly profitable asset in the long term. B.C.R.I.C.'s capital expenditure for this project amounted to \$71 million in 1981 and \$66 million in 1982. Some of this capital came from the earnings generated by B.C. Coal's exploitation of the Elk Valley coal resource for B.C.R.I.C. estimates that B.C. Coal will have contributed \$260 million to the total cost of bringing the South Brae project into commercial production. Thus part of the income generated by the publicly-owned coal resource of the Elk Valley is being used by domestic entrepreneurs to fund resource development elsewhere in the global economy and promote further earnings for corporate interests.

B. The Implications of Long-term Contracts with Japanese Buyers

This second section of the chapter tests the hypothesis that resource industries and staple regions involved in long-term contracts with Japanese buyers will experience greater stability than those operating under the American resource procurement strategy. The discussion will deal first with the extent to which such contracts provide stability for the staple producers, and second the degree to which this is reflected in the regional economy.

(a) Long-term Contracts and Staple Producers

It is difficult to make generalizations about long-term contracts between Japanese buyers and resource sellers because these contracts are complex documents and are not publicly available. In addition, each contract is different; one company publication notes that "no two contracts are exactly the same recognizing the individual concerns and preferences of each party to the transaction."²⁶ However, one can say that long-term contracts with the Japanese do not indicate the presence of a guaranteed market for a resource. An initial contract lasting on the average for ten to fifteen years is established when the two parties first enter into a trading relationship. This will indicate the total quantity demanded of the resource and a price calculation formula for the life of the contract. However, these should be seen only as "letters of intent" for the contracts are not strictly adhered to.²⁷ Actual prices and quantities (including a ± 5 to 10 percent clause) are established during annual negotiations each March. As described in a B.C.R.I.C. publication, "B.C. Coal sells most of its coal under long-term contracts which contain detailed quality specifications, are subject to periodic price review and specify the annual

volumes of coal to be purchased and shipped."²⁸ It should also be noted that these contracts are not enforceable; there are no "take or pay" clauses.²⁹

(i) Stability of Demand

In looking at whether long-term contracts offer stable demand for a regional staple it was found that there are a number of ways whereby contracts are changed and cut. First, the annually negotiated tonnages may well differ from the amount indicated in the initial contract. For example, Kaiser's initial contract with the Japanese steel mills indicated the annual quantity to be shipped as 4.75 million long tons ± 5 percent. However, from 1980 to 1982 the annually negotiated amounts have actually been 4.30 million long tons ± 5 percent.³⁰ For 1983, this amount fell to 3.1 million long tons ± 5 percent.³¹

Second, there may be cut backs on these annually negotiated amounts during the course of the year if the Japanese decide that they need less coal. Alternatively, if the steel mills discover they need more coal than supplied by current contracts, they are able to supplement their long-term contractual purchases by buying on the spot market.* Examination of Table 8 shows the annually negotiated amounts for B.C. Coal from 1976 to 1982 as compared to the amounts which the Japanese steel mills actually purchased. It may be seen that 1980 was the only year when the Japanese purchased all of the contracted amount. Cut backs are particularly evident

*This is often the case with American coal suppliers with whom the Japanese have fewer long-term contracts. The American mines produce a more specialized, high quality coal which the Japanese apparently prefer to buy on the spot market according to their changing needs for this more expensive coal.³²

TABLE 8. Contracted tonnages versus actual purchases from B.C. Coal Ltd. by Japanese steel mills, 1976-1982 (in millions of long tonnes).

	<u>Contracted amount</u>	<u>Amount actually purchased</u>
1976	4.75 ($\pm 5\%$)	4.10
1977	4.75 ($\pm 5\%$)	4.14
1978	4.75 ($\pm 5\%$)	4.07
1979	4.75 ($\pm 5\%$)	3.73
1980	4.30 ($\pm 5\%$)	4.30
1981	4.30 ($\pm 5\%$)	4.00
1982	4.30 ($\pm 5\%$)	3.23

SOURCE: B.C. Coal Ltd., 1983: personal communication.

for 1982 when the Japanese bought only 75 percent of contracted tonnage.³³ Table 9 shows annual amounts purchased by the Japanese from Fording Coal Ltd. which may be compared to the contracted amount (it should be noted that start-up problems and strikes inhibited Fording from supplying the annually contracted amount during the initial years of the operation). In 1983, B.C. Coal shipped 66 percent of contract volume and Fording shipped 75 percent in response to Japanese cut backs.³⁴

Finally, it was discovered that in extreme cases the Japanese may cancel long-term contracts before their completion if the resource supplier is not competitive with regard to alternate producers. This is accomplished by re-negotiating the contract and establishing a "winding-down" or "funeral" contract.³⁵ One example of this is Coleman Collieries whose operations straddled the B.C. - Alberta border. The company had a contract with the Japanese steel industry which called for the delivery of 1.5 million

TABLE 9. Contracted tonnages versus actual purchases from Fording Coal Ltd. by Japanese steel mills, 1972-1982 (in millions of metric tonnes).

	<u>Contracted amount</u>	<u>Amount actually purchased</u>
1972 ¹	3.0 ($\pm 10\%$)	1.24
1973 ¹	3.0 ($\pm 10\%$)	1.98
1974 ²	3.0 ($\pm 10\%$)	2.27
1975	3.0 ($\pm 10\%$)	2.91
1976 ²	3.0 ($\pm 10\%$)	1.74
1977	3.0 ($\pm 10\%$)	2.44
1978	3.0 ($\pm 10\%$)	2.69
1979	3.0 ($\pm 10\%$)	2.74
1980	3.0 ($\pm 10\%$)	2.65
1981	3.0 ($\pm 10\%$)	2.81
1982	3.0 ($\pm 10\%$)	2.40

NOTES: ¹Year of low production levels due to initial start-up problems.

²Year of lower than expected production levels due to miners' strike.

SOURCE: Fording Coal Ltd., 1983: personal communication.

tonnes of coal annually from 1967 to 1982. This contract was re-negotiated in 1977 and a "funeral contract" established from 1977 to 1980 to terminate the relationship between buyer and seller. The original contract was wound up because Coleman was not competitive due to: low quality reserves, a long distance between mine and preparation plant, and a need for new capital investment to make the operation viable.³⁶ Another example is the Smokey River Coal mine owned by McIntyre Mines and located at Grand Cache in Alberta. This company had a contract to produce metallurgical coal for the Japanese steel mills until 1983, but the Japanese recently stepped in

and negotiated a funeral contract from 1982 to 1984 to terminate the relationship because operations were not competitive.³⁷

(ii) Stability of Price

It was found that there are two ways whereby coal price is determined but in neither case will a set price necessarily be adhered to for the duration of the contract. In the first instance, the price of coal produced by new mines is determined according to a "base price plus escalation clause" formula which takes into account changes in the cost of inputs such as materials, labour, and fuel.³⁸ This method of determining resource prices is used for the two newest mines in the southeast, Greenhills and Line Creek, to help reduce uncertainty for the operator during the start-up period.³⁹

However, this method of price calculation will not be adhered to if the derived price differs significantly from the world price of coal.⁴⁰ This may work to the advantage of either party; for example, during the first five years of Kaiser's operations the price was determined by a base price plus escalation clause formula until rapid increases in the price of oil in 1975 meant that the world price of coal was far above that derived from the contract formula. At that point this method of price determination was replaced by annual negotiation which resulted in a price reflecting the world price of coal.⁴¹ This represents the second way of determining resource price in the long-term contract; that is, the price is established during the annual negotiations and basically follows the world price. Thus, it cannot be said that long-term contracts engender price stability for the staple producer.

Finally, in discussing price determination with the coal company representatives, another important element of the Japanese strategy was

revealed. The Japanese insist on F.O.B. (free-on-board) prices because they handle all shipping of the coal from Roberts Bank to Japanese ports.* This pricing arrangement and control over shipping gives the Japanese buyers the power to enforce any decisions they make with regard to cutting back on contracted tonnages. For example, during the coal cut backs in the summer of 1982, the Vancouver Sun reported the following:

Shipments are being delayed as long as is feasible. Coal carriers at sea are being ordered to reduce speed to delay their arrival here.⁴³

The Japanese steel mills simply inform the coal company of their decision to cut back on the negotiated amounts and then send fewer ships to collect the coal at Roberts Bank.

(iii) Concluding Remarks

In summarizing, one coal company representative suggested that a contract is not always a contract, there is no fixed resource price or quantity demanded which can be depended upon, and the quantity of coal sold is basically determined by how much the Japanese are prepared to buy for any particular year.⁴⁴ However, these conclusions should be qualified by a number of other statements which the coal company spokesmen made about long-term contracts with the Japanese. First, it should be pointed out that the coal companies much prefer this type of contractual purchasing arrangement to selling their resources on the spot market. Long-term contracts represent a commitment between buyer and seller and serve as a starting point for the annual negotiations concerning tonnages to be shipped. Theoretically contacts could be cut to zero but realistically,

* F.O.B. means that the price is quoted at the point of production and thus does not include the cost of transport.⁴²

as long as operations remain competitive, there is a basic tonnage which the Japanese will buy annually.⁴⁵ Thus, the existence of a long-term contract provides protection for the resource supplier during periods of economic downturn. This is aptly illustrated in the current situation where many of the smaller American mines which sell their coal on the spot market to Japan are having their sales cut by 100 percent, as compared to the 25 percent cut backs experienced on most long-term contractual arrangements.⁴⁶

Second, all of the coal company representatives interviewed stated that when the Japanese cut back on contracts they do so fairly and equally from all established and competitive mines. For example, at present their three main coal supplying regions around the world are all experiencing contract cut backs of 20 to 30 percent.⁴⁷ The company spokesmen also stated that the Japanese are not likely to cut back purchases from newly-established mines for this would severely affect the profit margins during the most risky stage in the life of a resource venture. However, recent events do not support this statement. For example, it has been reported that the Japanese steel industry has formally asked B.C. Coal for a reduction in the price of metallurgical coal from its recently completed Greenhills mine, even though the contract does not provide for such a request.⁴⁸

Third, it should be noted that the existence of long-term contracts plays an important role in facilitating a mining company's access to the capital needed to establish a new mine. Contracts are taken as an indication of market demand and consequent viability of the operation thus encouraging banks to invest in the resource project. In some instances long-term contracts were a necessity in order for the coal mines to begin

operation.⁴⁹ Such comments are supported and emphasized by other sources. Galway, in his study of Japanese involvement in B.C. copper, concluded that long-term contracts were regarded by lending institutions as a confidence sustaining factor which made debt financing feasible.⁵⁰ Smith, in looking at long-term contracts and the Australian coal industry states that this was also the case for many of the mines there.⁵¹

Thus it may be concluded that long-term contracts do not provide a stable market for the regional staple, although they do tend to lessen the severity of economic downturns. In further support of this finding some data on coal production and employment levels for the two major companies in the region is presented. These companies are chosen because they have been supplying the Japanese on long-term contract for some time whereas Byron Creek Collieries and Crows Nest Resources have only recently begun supplying the Pacific Rim.

Examination of Table 10 shows coal production levels for B.C. Coal and the earlier Kaiser. It may be seen that production has not been constant or increasing but has fluctuated, partially in response to periodic cut backs by the Japanese, the major buyers. For example, cut backs in 1976 and 1977 due to a declining demand for steel are reflected in lower annual production levels. Continued contract cut backs by the Japanese in 1978, 1979 and 1981 are less evident in overall production levels because B.C. Coal began to expand shipments to other customers (especially Korea) at this time.⁵² The cut backs of 1982 had such a pronounced impact on production levels because not only the Japanese but a number of other customers began cutting back on contracted tonnages.⁵³

Table 11 shows coal production figures for Fording Coal Ltd. and indicates that Fording has been less affected by cut backs than B.C. Coal.

TABLE 10. Annual production levels for Kaiser/B.C. Coal Ltd., 1968-1982 (in millions of long tonnes of clean coal).

1968/69 ¹	approximately	0.446
1970 ¹	approximately	1.785
1971 ¹	approximately	5.357
1972 ¹	approximately	5.357
1973 ¹		4.910
1974		5.714
1975		6.428
1976 ²		5.428
1977 ²		5.419
1978		5.803
1979		6.607
1980 ³		5.267
1981		7.500
1982 ²		5.200

- NOTES: ¹Fluctuating production levels due to initial start-up problems.
- ²Contract cut backs by the Japanese are reflected in lower production levels.
- ³Miners strike led to lower production level.

SOURCE: B.C. Coal Ltd., 1982: personal communication; B.C.R.I.C. Annual Report, 1982.

TABLE 11. Annual production levels for Fording Coal Ltd.,
1972-1982 (in millions of long tonnes of clean coal).

1972 ¹	1.009
1973 ¹	2.206
1974 ²	2.012
1975	2.833
1976 ²	1.611
1977	2.763
1978	2.746
1979	2.876
1980	3.432
1981	3.690
1982	3.940

NOTES: ¹Fluctuating production levels due to initial start-up problems.

²Miners strike led to lower production level.

SOURCE: Fording Coal Ltd., 1982: personal communication.

The company did not experience any major cuts in contracts until 1982 and thus production levels have been basically constant or increasing. The impact of these cut backs is not apparent in the 1982 production levels but is suggested when one considers that the planned production level for that year was 4.35 million tonnes whereas actual production reached only 3.94 million tonnes.⁵⁴

The implications of fluctuating demand and contract cut backs for workers in the staple sector are indicated in Tables 12 and 13. The size of the B.C. Coal (and earlier Kaiser) labour force has been constant or increasing since 1970 except for a decline in 1977, 1982, and 1983. These declines were the result of layoffs due to contract cut backs by the

TABLE 12. Annual size of Kaiser/B.C. Coal Ltd. labour force, 1970-1983
(includes all employees on salary and hourly wages).

1970	1384
1971	1377
1972	1517
1973	1653
1974	1871
1975	1888
1976	1896
1977 ¹	1774
1978	1794
1979	2058
1980	2065
1981	2153
1982 ¹	1912
Feb. 1983 ¹	1479

NOTES: ¹Contract cut backs by Japanese resulted in worker layoffs.

SOURCE: B.C. Coal Ltd., 1983: personal communication.

TABLE 13. Annual size of Fording Coal Ltd. labour force, 1972-1982
(includes all employees on salary and hourly wages).

1972	614
1973	677
1974	846
1975	917
1976	945
1977	1043
1978	1041
1979	1206
1980	1365
1981	1543
Oct. 1982	1545

SOURCE: Fording Coal Ltd., 1982: personal communication.

Japanese and consequent lower production requirements.⁵⁵ The impact on workers has been most severe during the most recent cut backs; 200 employees were laid off in September of 1982, and 397 the following February. Workers have also been detrimentally affected by the periodic shutdown of B.C. Coal's operations for seven weeks in the fall of 1982 and six weeks in the spring of 1983 as an attempt to lower production and stockpile levels.⁵⁶

The figures for Fording Coal Ltd. indicate that their labour force has not yet experienced any actual layoffs resulting from contract cut backs. However, rather than layoff workers, Fording has instituted a "work-sharing" program whereby the work week is shortened by one day during the current period of decreased demand.⁵⁷ A number of temporary shutdowns have occurred including one in late 1982 and four for 1983; on each occasion about 1500 employees are temporarily laidoff.⁵⁸

(b) Long-term Contracts and Regional Stability

Having examined the workings of long-term contracts and concluded that they do not provide a great deal of stability for staple producers, the discussion now deals with the extent to which this is reflected in the staples economy. How stable has the Elk Valley regional economy been from 1970 to 1982, the period during which its staple sector has been supplying coal on long-term contract for the Japanese market? This will be assessed by examining a number of indicators of regional economic growth including employment levels, income levels, population figures, vacancy rates, and construction activity.

No detailed annual data concerning the composition of the Elk Valley labour force could be found which would allow one to assess fluctuations in employment levels for various economic sectors. Some data on regional

unemployment figures is available, but only for the period after March 1979.⁵⁹ Examination of this information showed dramatic increases in the number of unemployed in the region between December 1981, and December 1982. In December of 1979, there were 283 unemployed in the Elk Valley, 313 in December 1980, 464 in December of 1981, and 1,182 in December 1982. By February of 1983 these figures had risen rapidly again to reach 1,749. Examination of Table 14 shows that the occupation most affected was "Mining and Quarrying" where the number of unemployed rose from 5 in December 1981, to 727 in February 1983. The number of unemployed miners increased by 145 times during this 14 month period reflecting the impact of contract cut backs and subsequent layoffs.* Inactivity in the staple sector also affected unemployment levels in related occupations. Table 14 shows that between December 1981 and February 1983, the number of unemployed in "clerical" occupations rose by 2.4 times, in "construction" 3.7 times, in "transportation equipment" 4.1 times, and in the "service" sector 2.8 times. Thus in 1982 there was a sudden increase in regional unemployment due to fluctuations in the staple sector.

Table 15 shows income levels for the three main communities in the Elk Valley from 1970 to 1980. Apart from a decline in 1978, regional incomes have been increasing throughout the contemporary phase of Elk Valley coal mining. Indeed, comparison with provincial figures shows that the Elk Valley incomes have generally been higher than the B.C. average income. This suggests that for the period from 1970 to 1980, the region has been experiencing a high rate of economic growth. Data is not yet

* It should be noted that the February 1983 figure was collected before the 6 week shutdown of B.C. Coal's operations.

TABLE 14. Unemployment figures by occupation for Elk Valley region, 1981-1983.

Occupation	December 1981		December 1982		February 1983	
	Number of unemployed	% of total	Number of unemployed	% of total	Number of Unemployed	% of total
Managerial, Administrative	3	0.7%	9	0.8%	10	0.6%
Sciences, Engineering	4	1.0%	19	1.7%	25	1.5%
Social Sciences	4	1.0%	2	0.2%	4	0.2%
Teaching	5	1.2%	12	1.1%	12	0.7%
Medicine, Health	13	3.1%	17	1.5%	23	1.3%
Art, Literature	1	0.2%	2	0.2%	1	0.1%
Sport, Recreation	1	0.2%	2	0.2%	2	0.1%
Clerical	84	20.1%	225	19.9%	203	11.9%
Sales	22	5.3%	38	3.4%	42	2.5%
Service	45	10.8%	96	8.5%	128	7.5%
Farming	3	0.7%	3	0.3%	8	0.5%
Forestry, Logging	23	5.5%	23	2.0%	23	1.3%
—>Mining, Quarrying	5	1.2%	266	23.5%	727	42.6%
Processing	64	15.3%	26	2.3%	24	1.4%
Machining	10	2.4%	30	2.7%	28	1.6%
Fabricating	21	5.0%	33	2.9%	45	2.6%
Construction	78	18.7%	255	22.6%	293	17.2%
Transportation Equipment	17	4.1%	54	4.8%	70	4.1%
Materials Handling	9	2.2%	9	0.8%	21	1.2%
Other craft equipment	1	0.2%	2	0.2%	4	0.2%
Occupation not stated	5	1.2%	7	0.6%	15	0.9%
Total	464	100%	1182	100%	1749	100%

SOURCE: Compiled from Canada, Employment and Immigration, "U.I. Unemployed by Canada Employment Centre", 1979-1983 (unpublished information).

TABLE 15. Average income of tax filers for Elk Valley communities and the province of B.C., 1970-1980.

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Elkford	\$6,745	\$7,669	N.A.	\$9,103	\$10,337	\$12,581	\$11,184	\$14,680	\$12,594	\$15,548	\$18,784
Sparwood	5,474	7,011	\$7,667	8,393	10,117	12,276	12,294	14,630	12,837	15,152	17,277
Fernie	6,005	6,535	6,747	7,565	8,419	10,804	11,232	13,055	12,171	13,856	16,522
Province of B.C.	5,842	N.A.	6,886	7,798	9,002	10,006	11,276	11,929	12,045	13,277	15,337

SOURCE: 1970-76 Elk Valley data from Revenue Canada, 1983: personal communication; 1970-76 B.C. data from Revenue Canada, Taxation Statistics, 1973-82 editions; all 1977-80 data from B.C., Ministry of Industry and Small Business Development, Statistics Bureau, "B.C. Taxation Statistics 1977 and 1978", "B.C. Taxation Statistics 1979 and 1980".

available to assess the impact of the recent cut backs and layoffs on regional incomes but one can assume that 1982 levels would be lower than those of previous years.

Table 16 shows population figures for the three main communities and for the Elk Valley region as a whole where available. These figures indicate that the area has shown a high population growth rate during the period under study. In fact, this rate has been higher than the rate of growth in the provincial population. Between 1966 and 1971 the Elk Valley population increased by about 55 percent whereas B.C.'s population rose by only 16 percent. The years from 1971 to 1976 witnessed a 32 percent rise in Elk Valley population compared to a 13 percent increase in the B.C. population.⁶⁰ Thus in spite of some fluctuations in the staple sector between 1970 and 1981, the region has experienced an unusually high

TABLE 16. Contemporary Elk Valley population figures.

	<u>1966</u>	<u>1971</u>	<u>1976</u>	<u>1981</u>
Elkford	-	167	1,875	3,126
Sparwood	1,928	2,154	4,050	4,157
Fernie	2,715	4,422	4,608	5,444
Elk Valley region	6,900*	10,725	14,150	N.A.

NOTES: *Estimated.

SOURCE: Compiled from B.C., Regional Index of B.C., 1966 and B.C. Regional Index 1978; Canada, 1981 Census of Canada, Cat. 93-910.

population growth rate due to heavy in-migration. More recent figures are not available but one would assume that the regional population has now stabilized or possibly declined from the 1981 level due to contract cut backs, layoffs, and possible out-migration.

Finally, looking at vacancy rates and construction activity from 1970 to 1982, there was a shortage of accommodation in the region throughout the 1970's.⁶¹ This was particularly pronounced around 1980 when the Elk Valley appears to have experienced a "boom" in economic activity due to the expansion of existing coal mines and the development of two new mines, Greenhills, and Line Creek. These developments resulted in in-migration, a strong demand for rental accommodation, and a low vacancy rate (see Table 17 and note results of C.M.H.C. vacancy survey for October, 1980). This activity also set off a boom in construction as shown in Table 18. In 1981 there occurred a major increase in the value of building permits awarded thus indicating a flow of capital into the region and a

TABLE 17. Apartment vacancy rates for Elk Valley communities, 1979-1982*.

	<u>Oct. '79</u>	<u>Oct. '80</u>	<u>Nov. '81</u>	<u>Oct. '82</u>
Elkford	N.A.	0%	N.A.	8.7%
Sparwood	0.6%	0%	0%	7.9%
Fernie	2.0%	0%	1.3%	6.0%

NOTES: *Based on C.M.H.C. surveys of rental apartments in buildings containing 6 or more units; does not include single detached houses, mobile homes, individual suites in condominium, non-profit housing, and public-sponsored rental units.

SOURCE: C.M.H.C., Vancouver and Cranbrook offices, annual apartment vacancy surveys (unpublished).

TABLE 18. Total value of all building permits awarded
for Elk Valley communities, 1970-1982
(in thousands of dollars)

	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Elkford	\$720	\$1,020	\$4,312	\$2,211	\$5,185	\$5,842	\$2,706
Sparwood	4,197	3,530	1,457	970	2,870	3,507	1,861
Fernie	1,890	1,551	4,337	616	1,149	3,502	5,535
	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981*</u>	<u>1982</u>	
Elkford	\$582	2,710	2,546	3,356	13,293	19,614	
Sparwood	7,392	4,589	1,170	3,609	17,704	5,527	
Fernie	3,903	3,085	2,628	8,849	12,491	N.A.	

NOTES: *Construction boom.

SOURCE: Compiled from building permit files in Elkford Village Office,
Sparwood City Office, and Fernie City Office.

heightened pace of economic activity. These comments are supported by articles on Elkford and Sparwood which appeared in Trade and Commerce Magazine in May, 1981. That year Elkford was called "British Columbia's fastest growing centre in Coal Country" and witnessed the establishment of a town shopping centre, a thirty-five acre industrial park, and a \$10 million construction program to expand and improve sewage, drainage, and road facilities.⁶² Sparwood in 1981 was experiencing a housing boom and planning the expansion and re-vitalization of its commercial core plus identifying land for an industrial park.⁶³

However, this situation changed dramatically in 1982. Table 17 shows that apartment vacancy rates rose from 0-1 percent in 1981, to 6-9 percent in 1982. The region no longer featured a booming economy with a tight housing market. This conclusion is supported by discussions with a C.M.H.C. representative who stated that the residential units constructed during the 1980/81 boom cannot all be filled and thus the vacancy rate has climbed.⁶⁴ Between 1981 and 1982 there was an average 10 percent decline in house prices in the three main communities in the Elk Valley and in January of 1983, Fording Coal Ltd. lowered the prices of the houses it offered for sale by \$5,000 as an incentive to purchasers.⁶⁵ This downturn in demand for housing in the region is due to the uncertain economic conditions stemming from contract cut backs by the Japanese.⁶⁶

In concluding, in spite of some contract cut backs it may be seen that the Elk Valley did experience a high rate of economic growth from 1970 until 1982. Indeed, 1980/81 was a boom period associated with the signing of new contracts with Korean, Hong Kong, and Taiwanese customers. However, the situation since 1982 of major cuts in contracts by a number of customers has created instability for staple producers which is clearly

manifested in the staple economy by high regional unemployment figures, an increased vacancy rate, and a changed housing situation.

Thus long-term contracts do not indicate the presence of a secure market for a regional staple and do not result in the disappearance of the "booms" and "busts" which so often characterize staple economies. As to the assertion that these contracts offer some protection for staple sellers in times of downturn, further research would be needed to translate this into regional implications and suggest, for example, that regions operating with long-term contracts might suffer less severe economic downturns than those producing for the spot market.

C. The Implications of Japanese Multiple-Sourcing

The research findings appear to support the hypothesis that a resource region supplying the Japanese market as part of the multiple-sourcing strategy will be more sensitive to changing conditions of its competitors than a region under the American resource procurement strategy. In this section of the chapter the competitive nature of the supply side which multiple-sourcing engenders will be described as well as the way in which Japanese buyers foster and take advantage of this situation. Second, the effects of multiple-sourcing for supplying regions will be discussed and some empirical examples presented.

(a) Competition on the Supply Side

With regard to the supply and demand situation for metallurgical coal in the Pacific Rim there is one main market and a number of suppliers. Japan is the most important purchaser followed at some distance by the newly-industrializing countries of South Korea and Taiwan. European markets are too far away to be economically supplied to any great extent. Following the multiple-sourcing strategy Japanese purchasers divide their requirements among the coal producers of the region: Australia, the United States, Canada, the U.S.S.R. and China. South Africa, although a relatively smaller producer, also exports coal to Pacific Rim markets. This results in competition between those suppliers to increase their share of the Japanese market. Examination of Table 19 shows the percentage contribution of each supplier; these figures may vary from year to year as conditions in one region change and the Japanese patronize an alternate supplier. For example, in 1978 the U.S. contribution to Japanese imports of metallurgical coal dropped to 18 percent due to labour upheaval causing disruptions in supply.

TABLE 19. Foreign suppliers of Japanese coking coal needs, 1970-1981.

	<u>Australia's contribution</u>		<u>USA contribution</u>		<u>Canada's contribution</u>		<u>U.S.S.R. contribution</u>		<u>South Africa's contribution</u>		<u>Other suppliers</u>		<u>Total</u>	
	<u>Million tonnes</u>	<u>%</u>	<u>Million tonnes</u>	<u>%</u>	<u>Million tonnes</u>	<u>%</u>	<u>Million tonnes</u>	<u>%</u>	<u>Million tonnes</u>	<u>%</u>	<u>Million tonnes</u>	<u>%</u>	<u>Million tonnes</u>	<u>%</u>
1970	16.5	34%	25.3	52%	3.2	7%	2.8	6%	0	0	1.0	1%	48.8	100%
1975	22.7	37%	22.4	37%	10.6	18%	3.0	5%	0	0	1.9	3%	60.6	100%
1978	24.5	49%	8.8	18%	10.9	22%	2.1	4%	2.3	4%	1.6	3%	50.2	100%
1979	26.0	46%	13.4	24%	10.4	19%	2.1	4%	2.3	4%	1.9	3%	56.1	100%
1980	25.8	42%	19.3	31%	10.5	17%	1.9	3%	2.9	5%	1.5	2%	61.9	100%
1981	29.2	44%	21.5	32%	9.6	15%	1.1	2%	3.0	5%	1.3	2%	65.7	100%

SOURCE: Keith A.J. Hay, S.R. Hill, and S.S. Rahman, Canadian Coal for Japan (Ottawa: Econolynx International Ltd., 1982), p.4.

In consequence the Australian and Canadian shares both increased as the Japanese purchased more from these suppliers.⁶⁷

Thus the coal industry supplying Japan is highly competitive. All of the coal company representatives interviewed confirmed this. At B.C. Coal it was stated that operations must remain competitive or the company risks having contracts cut and that volume supplied by a more efficient producer.⁶⁸ Spokesmen at Fording Coal emphasized that they look at the global scene when identifying competitors. Indeed, all of the companies operating in the Elk Valley make efforts to monitor closely each coal mine around the world with regard to coal quality, price, transport infrastructure, and so forth. Each company is competing for the same major market yet there is very little any one can offer to distinguish itself from its competitors. Coal quality is set, the Japanese establish the volume they are willing to buy, and there are constraints on the price attainable (the Japanese would not accept a price which is out of line with that of competitors and it is unlikely that a company could afford to undercut prices and still earn a normal return on investment).

However, the coal companies do have a small degree of control over their relative competitive position with regard to non-fixed factors of production. As mentioned previously, it is extremely important for the Japanese to receive a steady inflow of raw materials. Suppliers may therefore be able to improve their competitive position by paying special attention to factors such as labour and transportation which might interrupt resource production and flow. Efforts in this direction were being made by the Elk Valley coal producers. For example, B.C. Coal, in an attempt to avoid labour disputes and decrease labour turnover rates, has a large industrial relations department and offers mortgage assistance encouraging

employees to buy houses in the area.⁶⁹ At Crow's Nest Resources it was confirmed that a history of good management-labour relations at the mine-site is very attractive to Japanese buyers.⁷⁰ To this end the company has instituted a "multiple-skilling" practice where the worker is paid according to the number of mining skills he/she can acquire, and the same fringe benefits are offered to union members and management.⁷¹ The degree of attention paid to variable factors of production, particularly the role of labour, indicates the highly competitive nature of the coal supply side.

As was hypothesized earlier, Japanese resource buyers are able to take advantage of the competitive situation engendered by multiple-sourcing and pit one supplier against the other. Each of the coal company representatives interviewed agreed that the Japanese do play company off against company, and coal region against region. Even B.C. Coal, of which the Japanese are part-owners, is no less susceptible to this practice.⁷² This "playing off" of suppliers is particularly noticeable during the annual contract negotiation period each March. The Japanese strategy is to establish a coal price with the companies in one supplying region and then negotiate consecutively with other suppliers. They will not accept a price above that already established and thus each region has little choice but to acquiesce. This was illustrated during the coal price negotiations in March, 1983. Representatives of the Japanese steel industry negotiated first with South African suppliers and then with Chinese, both of whom accepted a U.S.\$13.00 cut in price per tonne. They then negotiated with their American coal suppliers for a price of US\$54.00 per tonne and reached the same agreement with Australian producers (equivalent to a U.S.\$12.00 cut from the previous year's price).⁷³ At that point the Japanese began negotiations with the western Canadian coal mines pressing for a price cut

which would bring Canadian contracts in line with those already settled.⁷⁴ Thus those prices were used as leverage and Canadian suppliers had no choice but to accept a U.S.\$13.00 price cut per tonne in order to hold onto their business with the Japanese.

The Japanese attempt to encourage this competition between coal suppliers. It is obviously to their advantage. One way this is done is by keeping the supply side fairly transparent. For example, the Japanese steel industry publishes an information source entitled The Tex Report which shows contract and other pertinent information for each supplier. Apparently this is a market ploy enabling suppliers to find out about their competitor's position and improve their own operation accordingly, thereby encouraging competition amongst coal suppliers.⁷⁵

Furthermore, it has been alleged that the Japanese foster competition by encouraging over-capacity on the supply side.⁷⁶ Indeed this strategy was offered by one coal company representative as a possible explanation of the motives behind Japanese interest in British Columbia's northeast coal development project; that is, the Japanese may be attempting to encourage an over-supply situation for coal in B.C. and in the Pacific Rim thereby affording the Japanese as major buyers greater power in playing region off against region.

Dramatic evidence of this over-supply situation for metallurgical coal is found in a 1983 study by Halvorson forecasting coal mining activity.⁷⁷ Examination of Table 20 shows that Japanese steel interests have created this situation by letting out contracts for more coal than they require. For example, for 1985 it is estimated that the Japanese will need to import 60 million tonnes of metallurgical coal. Based on their traditional contributions, about 36 million tonnes of that amount

TABLE 20. Comparison of forecasted Japanese metallurgical coal requirements from Australia and western Canada with contracted amounts (in millions of tonnes).

	<u>1983</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>	
A. <u>DEMAND</u>						
Japan's crude steel production ¹	93	102	108	119	132	
.. Amount of coal required	59	64	71	78	86	
Amount supplied domestically	4	4	4	4	4	
Amount needed to be imported	55	60	67	74	82	
B. <u>SUPPLY</u>						
Amount required from Australia and Canada ²	34	36	36	43	51	
Amount required from other suppliers ²	21	24	31	31	31	
C. <u>CONTRACTED AMOUNTS</u>						
	A ³	B ⁴	A ³	B ⁴	A ³	B ⁴
Australia	29	39	37	45	8	45
Western Canada	15	15	16	22	13	22
Total	44	54	53	67	21	67
D. <u>SURPLUS</u>						
Amount required from Australia and Canada	34	34	36	36	36	36
Amount contracted from Australia and Canada	44	54	53	67	21	67
Surplus	10	20	17	31	-15	31

NOTES: ¹Based on current forecasts by Japanese Steel Industry and the International Iron and Steel Industry to 1990, followed by a 2% per year growth to 2000.

²Based on past contributions to Japanese market and expected future performance.

³Case A assumes that existing contracts due to expire by this date are not renewed.

⁴Case B assumes that existing contracts due to expire by this date are renewed.

SOURCE: Adapted from H.N. Halvorson Consultants Ltd., Forecast of Coal Mining Activity to 2002 for B.C. Hydro and Power Authority, March 1983, p. 37, 39.

would come from Australian and western Canadian suppliers. However, assuming that contracts due to expire by this date are renewed, the Japanese will have actually contracted for 67 million tonnes. This results in a surplus of 31 million tonnes. Even if one assumes that contracts due to expire by 1985 are not renewed, the Japanese will have contracted for 17 million tonnes more than they need. Such a strategy ensures that Japanese industry receives a stable supply of raw materials whilst heightening competition amongst its suppliers and facilitating Japanese ability to play weakened suppliers off against each other.

(b) The Effects for Coal Supplying Regions

Japanese multiple-sourcing means that there is less security of market demand for any one supplier than under the American resource procurement strategy where the penetrated resource region constitutes the main or only supplier. Demand for a region's resource will be affected not only by fluctuations in demand for the final product, but also by any changes in the competitive position of that region relative to Japan's other suppliers. This was confirmed by one of the coal company representatives who attested that if one supplier is performing poorly, the Japanese will wind down purchases and buy from a more reliable supplier. It should also be noted that any change in the total number of suppliers affects existing supply regions. Some empirical examples are presented to illustrate these themes.

Recent declines in the competitive positions of Australian and American coal suppliers are alleged to have aided British Columbia in increasing its share of the Japanese market. An article following a symposium on the Pacific Rim coal trade in January 1982 declared that

"B.C. is now set to pick up billions of dollars worth of coal contracts as faltering Australian and U.S. suppliers face labour strife in their mines and long delays at their coal ports."⁷⁸ It was reported that the U.S. has poor port capacity on its west coast and customers had experienced serious delays in shipping. For example, in 1981 Japanese coal companies had to pay about \$300 million in demurrage charges at Hampton Roads coal port in Virginia. Australia is also strike prone both at the mines and ports; in 1981 Australian mines were able to supply only 80 percent of contracted coal due to labour disruptions at both of the country's ports. B.C.'s coal handling port apparently benefitted from these problems as Japanese ships were diverted from Australian and U.S. ports to collect coal from Roberts Bank.⁷⁹

In this instance it may be clearly seen that variable factors of production, labour and transportation, were responsible for weakening the competitive position of Australian and American suppliers. In consequence Japanese coal buyers turned their attention to B.C. According to participants at the symposium, "....B.C.'s labour climate is stable compared to that of Australia and its rail transportation is the most efficient in the world."⁸⁰ Furthermore it has been suggested that these factors encouraged the development of B.C.'s northeast coal mines as well as new mines in the Elk Valley. The executive vice-president of B.C. Coal was quoted as saying, "The northeast coal producers won the contracts.... because of labour strife in Australia and the port and transportation problems in the U.S."⁸¹

A second example illustrates that under the multiple-sourcing strategy changes in the performance of one supplier coupled with a decline in demand for the final product can affect all supplying regions. During 1981/82 the

Japanese steel mills increased their purchase of American coal on the spot market in anticipation of renewed labour problems in the Australian coal fields.⁸² Thus American suppliers benefitted from a perceived decline in the competitive position of Australian coal producers. However, the anticipated labour problems did not materialize, plus global demand for steel began to decline sharply. The Japanese discovered that they had over-purchased and began to cut back on contracts with all suppliers in the summer of 1982.⁸³

Finally, an addition to the number of raw material sources on which the Japanese depend intensifies competition for all supplying regions. For example, Byron Creek Collieries in identifying its competitors includes both present and future thermal coal mines.^{84*} The emergence of a new raw material source in the form of B.C.'s northeast coal development will affect the overall supply and demand picture for the Pacific Rim coal trade. This project will be producing about 7 million tonnes of metallurgical coal for Japan and will mean an increased number of suppliers for the Japanese to play off against each other.

The impact of this increase in coal supply becomes very serious in the present situation of declining demand for metallurgical coal. As Table 21 shows, Japanese steel output has been gradually declining since its peak in 1973 and is understood to be entering a long-term and permanent phase of decline; for example, the influential Japanese Ministry of International Trade and Industry (M.I.T.I.), has been discouraging domestic investment in steel since 1974.⁸⁶ However, in the short-term there has

*Seven new thermal coal mines are proposed in the area of Alberta west of Edmonton. All will be supplying primarily the Pacific Rim.⁸⁵

TABLE 21. Japanese coking coal requirements in relation to steel production, 1970-1983 (in millions of tonnes).

	<u>Imported coking coal</u>	<u>Crude steel production</u>
1970	46.73	93.32
1971	43.47	88.56
1972	43.78	96.90
1973	53.72	119.32
1974	58.90	117.13
1975	57.82	102.31
1976	56.45	107.40
1977	56.27	102.40
1978	48.95	102.11
1979	52.15	111.75
1980	58.31	111.40
1981	66.60	112.00
1982	N.A.	99.55
1983	N.A.	92.50*

NOTES: *Estimated by Japan Iron and Steel Federation.

SOURCE: 1970-1981 figures from Keith A.J. Hay, S.R. Hill, and S.S. Rahman, Canadian Coal for Japan (Ottawa: Econolynx International Ltd., 1982), p. 27, 31; 1982 and 1983 figures from Vancouver Sun, Jan. 19, 1983, p. F7 as quoted by Japan Iron and Steel Federation.

been a sudden and unanticipated decline in steel production stemming from the global recession and a drop in the demand. Total steel production for 1982 was initially planned to reach 115 million tonnes but lowered demand led to a revised production schedule and only 93.5 million tonnes were actually produced.⁸⁷

As previously mentioned, this decline in demand for steel has led the Japanese to cut back on contracts with all suppliers. This situation will be aggravated when northeast coal begins production in 1984. For example, British Columbia is currently in the ironic position of having its coal industry capacity doubled whilst one-third of the industry's workforce has been laid off due to poor markets.⁸⁸ Multiple-sourcing in this instance means that a declining demand for this raw material must be shared amongst an increased number of suppliers and thus cut backs will be more severe than would have been the case if the northeast coal project had not been developed. The security of market demand for all supplying regions has been threatened not only by a decline in demand for the final product, but also by the emergence of a new supplier under the Japanese multiple-sourcing strategy.

D. The Implications of Japanese Consortium Resource Purchasing

The research findings appear to support the hypothesis that consortium resource purchasing results in less than equitable returns for the regional resource as is the case under the American strategy which permits transfer pricing. Consortium purchasing means that one or two of the nine Japanese steel mills act as representatives of the industry as a whole and negotiate the annual contracts with each coal supplier around the world. Two of the steel mills, Nippon Kokan and Kobe (N.K.K.), represent the nine in negotiating and coordinating all metallurgical coal purchases from southeastern B.C. and the new northeast coal project. Nippon Steel, the largest Japanese steel producer, coordinates purchases from Australian and American suppliers.⁸⁹ These nine steel mills always act in conjunction and are the same unit which owns 33 percent of B.C. Coal and has a combined 10 percent equity in the Quintette mine of the northeast coal project.⁹⁰ Two Japanese utility consortia, Japan Coal Development Corporation (J.C.D.C.) and the Electric Power Development Company (E.P.D.C.), are responsible for coordinating purchases of thermal coal from the Elk Valley.

This manner of purchasing raw materials reflects the group orientation of Japanese society and is seen in numerous aspects of Japanese business. One coal company spokesman explained that during annual negotiations with the Japanese it must be remembered that one is dealing not with an individual but with a group which will have reached a consensus beforehand.⁹¹ Moreover, once this group makes a decision, they adhere to it and the customer must behave accordingly or risk losing the business.⁹²

What are the implications of this manner of resource buying for the coal producers? Keeping in mind the basic supply and demand situation and the multiple-sourcing strategy previously described, it is argued that

consortium purchasing complements multiple-sourcing and aids Japanese coal buyers in taking advantage of the competitive coal supply situation. The Japanese are able to present a unified bargaining position to suppliers so that not only are coal producers in the Pacific Rim competing for one major national market, but they are also competing to do business with one purchasing unit in that market. This institutional arrangement allows the buyers a great deal of power in setting the terms and conditions of their purchases in contracts with the weak, fragmented, and geographically separated coal suppliers. The following description of the Australian coal industry applies equally well to the situation of coal suppliers in the Elk Valley:

...fragmented Australian exporters were placed in a weak bargaining position by the organized and united purchasing policies of Japanese importers. This problem was seen to be particularly acute in the coal trade where a consortium of Japanese steel mills negotiated separately with the individual Australian coal producers.⁹³

Further evidence was provided through the interviews. When asked how consortium resource purchasing affected their position, one respondent stated that customers who negotiate as a group have much more power to obtain the conditions they want than if they were negotiating as individual companies with each supplier.⁹⁴ Group purchasing puts each fragmented supplier at a disadvantage and enables the consortium to practise monopoly pricing.⁹⁵ This comment is supported by statements made by Walter Riva, the chief executive of B.C. Coal, who suggests that B.C. mines are not getting a high enough price for their coal in the contracts stemming from 1980.⁹⁶ In consequence it was indicated that the coal region of the Elk Valley may not be getting a fair return for its resources.⁹⁷

FOOTNOTES

1. B.C. Coal 1982: personal communication.
2. Ibid.
3. M.H. Watkins, "A Staple Theory of Economic Growth", in Approaches to Canadian Economic History, ed. W.T. Easterbrook and M.H. Watkins (Toronto: Macmillan Company of Canada Ltd., 1978), p. 55.
4. Adapted from: Canada, Energy, Mines, and Resources, Mineral Policy - A Discussion Paper, 1981, p. 115.
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VI. ANALYSIS OF FINDINGS

The question posed at the outset of this study was, "what are the implications of the Japanese resource procurement strategy for a staple resource region such as the Elk Valley?" I suggested that this strategy differs in significant respects from the American strategy with which we are more familiar and as such might have a different impact on a staples region. The major characteristics of the Japanese strategy were described and it was hypothesized that in some ways this strategy could have positive effects, but in other respects it may present different sets of problems for a staples resource region. In this section I summarize the research findings, relate them to the initial hypotheses, and then tie together the various strands of information to elucidate the implications of the Japanese strategy for a resource region.

A. Summary of Research Findings

Looking first at the possibility for domestic entrepreneurs to respond to Japanese market demand and establish a resource venture, we were interested in the difference this might make to the development of backward, forward, and fiscal linkages. With regard to stimulating backward linkages from Elk Valley coal mining it was found that there is no apparent difference between the purchasing patterns of the foreign and domestic coal companies. However, this finding is rather tenuous for it is based only on general discussions with purchasing agents since directly comparable data on purchasing patterns could not be obtained. Thus one cannot extrapolate from this example to the broader issue and conclude that domestic companies do not buy more inputs from Canadian manufacturers

than do foreign companies. Other far more detailed and comprehensive studies have convincingly determined that domestically-controlled companies are indeed more likely to purchase inputs from domestic over foreign sources.¹

It was also found that backward linkages from coal mining are not strongly developed in the domestic economy. Some manufacturing of low-level technology inputs does occur in the provincial and national economy but with regard to the more sophisticated, high-technology inputs, Canadian participation is limited to the assembly of inputs manufactured elsewhere. These findings are supported by larger works dealing with the development of backward linkages in the Canadian economy for the mining industry as a whole.

Returning to the original hypothesis, what can be inferred from these findings? It is felt that although the backward linkages from the staple sector are in this case underdeveloped, one cannot immediately conclude that domestic control does not play a role in stimulating investment in domestic input supplying industries. For example, in the case of manufacture of coal mining equipment it appears that British and American manufacturers gained the initial advantage because the market for such products was quite large there. The Canadian market in comparison was small. Furthermore, closer examination of the extent of domestic control of the staple sector in this case study reveals that this control of a major portion of the industry is only recent. The contemporary phase of coal mining in the Elk Valley was initiated by Kaiser, a foreign-controlled company which dominated the staple industry for twelve years. This company may well have purchased inputs from foreign sources established through the connections of its parent company, Kaiser Steel of California. In this way access to the coal industry market would have been restricted for Canadian manufacturers. It is only

recently (1980) that these major coal operations of the region have been purchased by Canadian interests and thus the company may still be following the purchasing patterns established by its predecessor. All of the coal companies interviewed indicated that they were interested in greater purchasing of inputs from Canadian manufacturers, but found that there were very few in existence. One reason behind this could be that foreign control of the staple sector in the recent past inhibited market access for Canadian manufacturers and present attempts are unsuccessful due to an inability to compete with existing and well-established foreign suppliers. There are assuredly a host of other explanations as to why there are so few Canadian manufacturers of inputs to the coal industry; lengthy further investigation would be required to elaborate on these.

In the case of forward linkages it was found that there are no domestic industries which use the region's metallurgical coal as an input. Canadian control of part of the staple sector in this case does not appear to encourage the development of such linkages domestically; both foreign and Canadian companies are constrained in any attempt to encourage further processing for there is no Canadian market for metallurgical coal which they can supply competitively. The contemporary coal mining economy of the Elk Valley has emerged purely in response to a foreign demand for raw materials and those foreign customers are not interested in purchasing the regional staple in further processed form. Thus the research findings suggest that domestic control of the staple does not ensure the development of forward linkages from that sector for market constraints may well inhibit any such interest on the part of domestic controllers.

Turning finally to the fiscal linkages from coal mining, it was found that domestic control of part of the staple sector may lead to domestic

retention of the income created through staple extraction. However, this does not ensure that the income will be used to diversify the staple economy or otherwise benefit the people of the province who ultimately own that staple resource.

In summarizing, the Japanese investment strategy allows greater opportunities for domestic control over staple development. As such it will be preferred by economic nationalists such as Watkins, Levitt, and Gray who argue that foreign control of resource development under the American strategy inhibits the growth of linkages from the staple sector. However, the findings of this study suggest that domestic control of the staple cannot necessarily in and of itself automatically generate backward, forward, and fiscal linkages from that sector. The data presented here indicates that there remain a number of other factors which impede domestic development of those linkages; for example, historical reasons of initial advantage, problems of competition encountered by domestic interests, market constraints, and differing opinions on how staple income should be spent.

The second hypothesis suggested that the purchase of the regional staple on the basis of long-term contracts would engender economic stability for the staple region. The research findings concluded that the price and quantity specifications of the long-term contracts were not always adhered to and that a decline in demand for the final product did produce a decline in Japanese demand for the regional staple. Such fluctuations in demand resulted in social and economic instability in the staple region. Thus the implications of the Japanese strategy for regional economic stability are not much different from the fluctuations in demand and instability witnessed under the American strategy of overseas resource procurement. However, the existence of long-term contracts may well provide some protection for the

staple industry during periods of severe economic downturn and as such are certainly preferable to selling the staple on the open market.

Third, the Japanese practice of multiple-sourcing and consortium resource purchasing was examined. The research findings supported the initial hypotheses for it was shown that multiple-sourcing does render operations in any one staple region more sensitive to competing suppliers, and that consortia purchasing from those fragmented suppliers weakens the bargaining position of the staple industry and the returns received for the regional resource.

B. The Implications of the Japanese Strategy for a Staple Resource Region

The objective in this section is to link these findings and demonstrate how the characteristics of the Japanese resource procurement strategy reinforce each other to ensure Japanese resource security. In so doing some of the consequences of this strategy for supplying regions can be more clearly revealed.

First, it is important to examine the motivations behind the Japanese preference for not investing equity in overseas resource ventures and the implications for those domestic or foreign interests who do control the venture. In encouraging the emergence of overseas resource suppliers, the Japanese are only interested in acquiring a secure, uninterrupted flow of raw materials to feed Japanese industry. American multinational corporations in their overseas resource ventures are also primarily concerned with ensuring a stable supply of resources for parent company manufacturing activity. The American strategy is to ensure vertical integration through direct investment and control of the foreign resource venture, and

associated infrastructure if necessary. The Japanese, in contrast, achieve this aim by establishing long-term contracts with resource suppliers and relying on a number of such suppliers around the world. Japanese industrialists will provide debt financing but will become minority equity partners only under exceptional circumstances where such participation is crucial to the project's survival. This relationship between resource buyer and seller has been termed "quasi-integration" as opposed to the full vertical integration achieved by the American strategy of direct investment.²

This practice allows the Japanese to shift all costs and risks associated with direct investment onto the domestic (or foreign) entrepreneurs who undertake to finance and operate the resource venture and the private or public interests who build the associated infrastructure. In and of itself this would not appear to be particularly objectionable. Domestic interests, to the extent that they respond to Japanese market demand and are able to secure capital to establish the venture, will incur the risks of investment but will also experience full control over the operation and associated profit earnings. However, the findings of this study suggest that upon closer examination, the Japanese strategy of overseas resource procurement gives rise to a set of new problems which serves to increase the costs and risks associated with resource development in a staples region.

For example, under the American resource procurement strategy there would be some security of market demand for the staple region stemming from the fact that the venture was specifically developed to supply its parent company and is likely to be the main (or only) supplier of the resource. Under the Japanese strategy that region would be one among a number of competing suppliers, a situation of which Japanese resource

purchasers take advantage by playing suppliers off against each other. Their ability to do this is facilitated by the relationship of quasi-integration with resource suppliers. For example, long-term contracts require annual meetings to negotiate the specifics of purchasing terms and these provide an opportunity for Japanese buyers to collect information concerning the supplier's competitive position. The few instances where Japanese buyers hold minority equity positions in the resource venture also permit access to production information. Such endeavors are part of the sophisticated Japanese information gathering system which, as one coal company spokesman suggested, may result in Japanese coal buyers knowing more about a coal mine than do its owners.³

The absence of Japanese equity investment in the resource venture means there are fewer factors constraining a possible termination of the relationship between resource buyer and seller. Under the American strategy, if the needed resource becomes available on more attractive terms elsewhere in the global economy a major deterrent to re-location of operations is the heavy investment made by the parent company in the initial resource region. The costs of abandoning, dismantling, or selling their operations would constrain such a re-location decision. However, under the Japanese strategy where there are generally no binding investment ties the Japanese can re-negotiate purchasing terms, establish a funeral contract, and begin patronizing a new resource supplier with no impact on the buyer's profit position.

The organization of Japanese resource purchasers into one strong united consortium which sets the terms and conditions under which it is willing to purchase the regional staple poses a new challenge to resource suppliers. Because they may have few alternate markets and are competing with a number

of other suppliers as part of the Japanese multiple-sourcing strategy, regional resource producers have little bargaining power in dealing with this consortium. The institutional arrangement of Japanese resource buyers thus inhibits resource sellers from receiving adequate returns for the regional staple.

One of the most important ways through which the Japanese strategy of resource procurement serves to increase the risks associated with staple activity is their encouragement of over-capacity on the part of resource suppliers. This is accomplished in the case of the coal industry by writing contracts for more coal than Japanese steel interests can buy. It should be remembered that such "long-term contracts" are often instrumental in allowing resource developers to acquire the needed investment capital for they are seen as an indication of a secure market and consequent project viability. Thus these contracts play an important role in getting the resource project started. However, as Table 20 showed, the Japanese do not require all of the coal which they contract to buy and thus these purchasing agreements are not always honoured. Furthermore, any change in Japanese demand (resulting from a decline in the demand for the final product or the emergence of a relatively more efficient producer) will result in cut backs or the possible winding-down of existing contracts. Japanese control over the shipping of the raw material gives the buyer the power to enforce such cut back decisions.

This means that resource developers, to the extent that they used initial contracts as a basis for mine design and production capacity and had been producing to fulfill the terms of such contracts, will bear the cost of unused capacity and unsold coal. The owners of the associated transportation system will be affected by revised production levels and

subsequent lowered patronization of their services. These costs will then be translated into lessened job security for workers and economic instability in the staple region. Finally, if the state was involved in carrying or subsidizing the costs of infrastructure development in the resource region, expected returns on investment will be lowered due to decreased tax revenues. It may be seen that the absence of equity investment, the encouragement of a number of competing suppliers, and the manipulation of purchasing contracts are mutually reinforcing features of the Japanese strategy which effectively shift the risks of resource development onto the owners of the venture and the inhabitants of the staple region while achieving the primary goal of ensuring a secure inflow of raw materials for Japanese industry.

If, as has been suggested, part of the motivation behind the creation of the northeast coal project was a desire by the Japanese to encourage over-capacity and an increased number of competing suppliers in western Canada, these findings do not bode well for the economic future of this resource venture. Northeast coal may well prove to be a costly example of the risks engendered by the Japanese resource procurement strategy, aggravated by faulty government decision-making.

Since the project was first announced questions have been raised as to whether there is sufficient market demand to justify the investment in this new and isolated coal region.⁴ Nevertheless, government and business interests have proceeded with the venture. The B.C. and federal governments are investing \$1.3 billion to develop the new townsite, new port, railways, roads, and power lines, and people have migrated to the region to take part in the anticipated economic boom based on coal.⁵ One study calculates the B.C. government subsidy for northeast coal to amount to \$120 an annual tonne

whilst each job is costing the government \$400,000 to create.⁶ Meanwhile, earlier doubts about the ability of the Japanese market to absorb this new supplier appear to be valid for the Japanese steel mills are seeking to bring down the price stipulated in the contracts.⁷ The impact of price and quantity cuts on the viability of the resource venture would be disastrous: mining companies would not get the expected return on their investment, lowered production levels would mean less than anticipated tax revenues for the government, and the workers in the new town would experience economic instability with no opportunities for alternate employment.⁸

Turning now to other implications of the Japanese strategy, some comments can be made regarding the relationship of quasi-integration between resource buyer and seller and the extent to which this might lessen the opportunities for Canadian manufacturers to supply inputs to the resource venture. As previously suggested, quasi-integration permits regular contact between the two parties and access to production information. In so doing it increases the likelihood that Japanese industrial interests participating in the purchasing consortium will be aware of equipment needs and may offer to supply inputs from within their own diverse network of business interests in Japan. Hay confirms this possibility in acknowledging that one of the benefits of minority Japanese equity in an overseas resource venture is the opportunity which this provides to collect market information and technological know-how with which to develop products suitable for foreign markets.⁹

One such example where a Japanese manufacturer was patronized over a Canadian subsidiary of an American company occurred during the awarding of contracts for stacker-reclaimers to be used at the new Ridley Terminal coal-

handling port built for the northeast coal project. Apparently the \$19 million contract was awarded to Mitsubishi Canada Ltd. for reasons of "timing and technology"; this decision resulted in job and income loss for Canadians since the Canadian subsidiary had indicated that it would have kept 96 percent of its sub-contracts within Canada whereas Mitsubishi will keep only 53.2 percent within the country.¹⁰ A representative of the subsidiary stated that no specific reason was given for the rejection of the bid, nor was the company allowed an opportunity to improve its bid and re-tender.¹¹ One cannot conclude from this that Mitsubishi was patronized as a favour to the Japanese resource buyers. However, it can be suggested that the quasi-integrative relationship with resource sellers which characterizes the Japanese strategy may well facilitate access for Japanese manufacturers to the Canadian market for resource equipment.

Finally, some remarks can be offered concerning the Japanese resource procurement strategy and the possibility for exporting raw materials in further processed form from staple regions. The literature on Japanese economic policy refers to recent moves to restructure Japanese industry and encourage greater offshore resource processing.¹² However, upon closer examination it appears that this is only occurring in specific industries and for specific reasons. Perhaps the most important motivation is the rise in the cost of imported fuels and hence the increased costs associated with processing in Japan itself.¹³ One of the Japanese industries which has been most affected by increased oil prices is aluminum refining; this is also one of the major examples where Japanese industrial interests have encouraged greater processing of the raw material in overseas resource regions and are prepared to purchase the goods in semi-processed form.¹⁴ The rationale behind this move is a desire to take advantage of abundant

yet inexpensive fuel and power sources which can be found in the same location as the raw material. For example, a hydro-electric power plant and aluminum refining plant are being built in Indonesia to produce aluminum ingots for the Japanese market, and two huge aluminum smelters are being developed in Australia to exploit bauxite deposits and energy supplies.¹⁵

Increased local processing of raw materials destined for Japan is not being witnessed in a great number of other industries. In the case of copper mining, high energy costs have affected the competitive position of smelting activity but apparently it still remains more economical for the Japanese to use domestic capacity and thus they are reluctant to see greater copper smelting occurring in B.C.¹⁶ The Japanese also appear reluctant to buy processed products of the provincial forest industry. Protection of the Japanese sawmill industry, surcharges on dressed lumber, and a desire to maintain traditional wood processing methods inhibits B.C. attempts to export the forestry staple in a more processed form to Japan.¹⁷ As previously indicated it seems extremely unlikely that the Japanese steel industry would change its policy toward coal suppliers and encourage provincial production of coke which it would be prepared to buy.

It is concluded that the Japanese resource procurement strategy does set constraints on the degree of resource processing which is likely to occur in the staple region. Japanese industrial interests are basically concerned with securing supplies of raw materials from overseas to produce manufactured goods for export. The success of the Japanese economy stems from the efficiency of this manufacturing sector and the competitive position of their exports in world trade. As such it is unlikely that Japanese economic planners would encourage large-scale decentralization of domestic processing capacity. Some forward linkages from resource activity

are being encouraged in foreign resource regions but only under specific circumstances where that region offers a cost advantage which renders traditional domestic processing uneconomical in comparison.

FOOTNOTES

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VII. CONCLUSION

Having discussed the Japanese resource procurement strategy and its implications for a staple resource region I will conclude by focusing on some of my more general findings and relating these to basic questions concerning nationality of ownership and the development of linkages. Some policy recommendations are made in this area. I then suggest a revised emphasis in dealing with staple economies and present some policy directions to cope with the particular problems posed by the Japanese resource procurement strategy. The final section deals with the limitations of my study and discusses fruitful areas for further research.

A. Policy Suggestions

Much of the work dealing with staple regions and the resource-based nature of the Canadian economy itself has focused on the need to capture backward and forward linkages and on the role of domestic ownership of the resource sector in facilitating such growth. However, the research findings presented here indicate that some degree of domestic control is not sufficient to encourage the development of linked activity. It is suggested that state intervention is needed to ensure that more of the economic opportunities afforded by the resource base are taken advantage of. Based on discussions with government officials and coal company purchasing agents as well as consultation of secondary sources on mineral policy, I offer some suggestions to encourage greater domestic input provision and resource processing.

There are two general directions which government policy can pursue to foster the development of backward linkages from the staple sector.

First, we can try to ensure that resource industries are patronizing existing Canadian equipment manufacturers to the fullest degree possible; that is, make sure that existing capacity is being used. Efforts in this direction have been made through the establishment of federal and provincial procurement policies for all mega-projects. In B.C., for example, the provincial procurement policy attempts to ensure that all B.C. companies supplying the required resource equipment are able to bid for the contracts stemming from major resource projects.¹ However, these policies are only newly established (1981) and are not enforceable, as indicated by the example of the purchase of stacker-reclaimers from Japanese manufacturers instead of Canadian suppliers (an interesting topic for further study would be an examination of the effects of these new procurement policies for Canadian suppliers).

Second, government policy could encourage greater development of Canadian input manufacturers; that is, attempt to increase Canadian capacity. Based on my research findings and the conclusion that few of the inputs to mining are domestically manufactured, I will try to develop this idea further and outline the basic components of such a strategy.

It is obviously impossible at this stage to capture all of the backwardly-linked activity and manufacture all of the inputs to mining in Canada. Such an attempt would require a massive re-direction of investment capital, would take years to come to fruition, and is unlikely to produce a viable industry which could effectively compete with experienced and well-established operations elsewhere. Yet there does exist a large market for mining machinery and economic planners should ensure that Canadian industry is better prepared to take advantage of this market opportunity.

One way to accomplish this would be to identify areas where Canadian capacity is weak or underdeveloped and provide state aid to facilitate growth. This would be a selective process focusing only on those sectors where it is felt that Canadian capacity could be viably developed; the process of product identification and development would be based on close consultation between the mining industry and the equipment manufacturers with government serving to initiate and facilitate the interaction. Such a strategy would have three general components:

(1) To be effective this strategy would require a firm decision on the part of government and industry that it is both desirable and worthwhile to actively develop a greater portion of backwardly-linked activity in Canada. The mining industry must be cognizant of the benefits to be experienced from proximity to input manufacturers (for example, greater facility in acquiring replacement parts, repairs, and service). Governments also stand to benefit from such development through job creation, industrial growth, and increased tax revenue. As such both parties have to be firmly committed to take long-term action, for halfhearted and piecemeal efforts are ineffectual.

(2) As part of the process of consultation between the various players, the mining companies would be called upon to provide information concerning the sectors where Canadian goods and services were not competitive or were not available. This would be followed by discussion with equipment manufacturers to determine in which of these areas Canadian capacity could be developed or improved. The role of government would be to initiate and maintain communication between the two parties and to provide financial aid to nascent equipment manufacturers where needed. It should be noted that in identifying these areas it may well be necessary

to ensure that the goods have export potential. Although the Canadian market for mining supplies is large in total, the market for individual inputs may be small and thus foreign markets will have to be pursued.²

(3) Finally, there would need to be a firm commitment by the mining industry to buy from the new Canadian equipment manufacturers in the initial start-up phase and provide feedback on performance so that the operations could become efficient producers. Patronization of domestic manufacturing capacity during its infancy is crucial in giving the operation the experience needed to become competitive. This is well illustrated by the example of Swan Wooster which was only a small Vancouver-based engineering firm until awarded the contract to build Roberts Bank. This opportunity gave the company valuable experience and it is now one of the major world companies designing and building bulk commodity handling terminals.

The notion of equipment buyer and manufacturer consultation initiated and overseen by government could also be applied to the research and development of new equipment and technology relevant to mining. Nickel et al., in their study of the Canadian mining industry, suggest the following:

More cooperation between mining and its suppliers might prove useful, particularly given the structure of the innovative process in mining. Typically the definition of the problem comes from the mining company; the supply firm then directs its research efforts accordingly.³

In attempting to develop forward linkages from the staple sector one must be more cautious about making a general statement promoting state intervention for there may be a number of problems which government policy alone cannot overcome. As Payne notes, further resource processing may be politically relatively easy to encourage via joint-ventures or subsidies

but in spite of significant effort, no government in B.C. has yet been particularly successful in this end.⁴ There are different constraints associated with different minerals and with the various stages in resource processing; the ability of government to encourage forward linkages will vary according to the nature of these constraints.⁵ In the case of a staple region producing for Japan it is clearly the nature of market demand which inhibits further domestic processing and it is doubtful that government intervention could change this.

Thus careful case by case analysis is required to identify the factors inhibiting forward linkages. Government should intervene only in situations where such action can clearly play a role in alleviating those constraints. Furthermore, forwardly-linked activity should be encouraged only when it is clearly viable. A federal discussion paper on mineral policy concurs stating:

... because of the general level of tax expenditures and other subsidies, governments should determine whether the public cost of job creation in smelting and refining is worthwhile; ...for each case, other opportunities that pay a higher social rate of return and generate greater employment at lower public cost should be considered.⁶

This point must be kept in mind when advocating greater state intervention to encourage both backward and forward linkages. The development of such activity must represent the best use of scarce capital resources. An over-emphasis on investment in linked activities must not lead to the growth of inefficient industry for which a region has no comparative advantage. In the case of the B.C. coal industry, for example, my findings suggest that attempts to manufacture more domestic mining equipment would encounter a number of obstacles and that coke production is not feasible.

In such instances efforts to develop linkages may not be the best policy direction to pursue. Instead, attention should be focused on state intervention to better manage the staple industry and alleviate the particular problems posed by foreign resource procurement strategies. In the case of the B.C. coal industry and those staple regions dependent on the export of resources to Japan, the development of an appropriate policy should have three aims:

- (1) to strengthen the bargaining position of the resource sellers and ensure adequate returns for the regional resource,
- (2) to properly plan the extent and rate of growth of the staple industry, and
- (3) to collect wherever possible the resource rents generated and invest this income to benefit the people of the province, who are ultimately the owners of the resource.

We need to respond to the Japanese multiple-sourcing strategy which results in competing suppliers being played off against each other. This problem becomes particularly acute when competing staple regions emerge within the same province as is presently the case for coal in British Columbia. Our position as resource sellers in Pacific Rim trade must be strengthened by achieving greater coordination and control of the supply side. To do so we will have to counter institutional purchasing arrangements practised by the Japanese with changes in the organization of staple producers. One way would be to form what might be termed a "resource cartel" composed of all the producers in the provincial or national staple industry. This would lessen competition and allow resource suppliers to negotiate the terms of sale to the Japanese as one united group. Apparently

this has been practised by coal producers in New South Wales, Australia.⁷ Further research analyzing the effectiveness of this strategy for those producers would be helpful in developing an appropriate policy to manage the B.C. coal industry.

A second option would be to establish a government marketing board to oversee developments in the staple industry and purchase the output from each provincial producer to be re-sold to the Japanese.⁸ In this way the coal producers, for example, would be represented as one selling unit with a set price at which it is willing to sell its product. The aim would be to counter the monopoly pricing practised by the Japanese and attempt to achieve a better return for our resources. Government involvement in resource marketing would provide sellers with greater leverage in bargaining and help raise such trade issues to a level of international diplomacy. This would force the Japanese to be more cautious in overextending contracts and then cutting back on them. The possibility of greater communication with competing resource sellers located in other countries should also be considered in this effort to achieve greater coordination on the supply side.

A government marketing board would help realize the second policy aim for it would be responsible for overseeing the pace and timing of new resource projects as well as expansions in the capacity of existing ventures. This should prevent the development of excess capacity and emergence of competing suppliers. The board could also collect and exchange production information and conduct market analysis; for example, before any major new contract is signed, market research conducted by the board must determine that there is sufficient long-term demand to warrant production so that resource sellers do not fall prey to Japanese efforts to create over-

capacity. Such action would represent an attempt to respond to the sophistication of information gathering systems on the part of the Japanese by greater organization and sharing of information on the supply side. The board should also make every effort to encourage market diversification and avoid dependence of the staple industry on the Japanese market.

Finally, having attempted better organization of the staple industry and a strengthened bargaining position to earn higher returns for our resources, we must ensure that these returns are used to alleviate some of the problems associated with staple economies. Resource rents should be used to avoid over-concentration on the staple sector and the economic fluctuations associated with changes in external demand, the effects of which are particularly severe in those communities dependent on the staple industry. The research findings presented here indicate that we cannot rely on foreign or domestic controllers of resource ventures to invest the income from staple activity in promoting economic diversification. The development of an appropriate policy to better manage the staple industry must include state intervention to capture resource rents and direct this capital toward pursuits which would provide greatest benefit to the provincial economy as a whole.⁹

There are a number of ways by which this may be done. Gunton outlines some of the possibilities including the taxing of resource companies where taxes are set either as a percentage of the profit generated, a percentage of total revenue, or as a royalty on the quantity of resource produced.¹⁰ Alternatively, Payne suggests direct public entrepreneurship where crown corporations are directly involved in mineral exploration, production, and marketing so that the state can create and retain the rents from resource development.¹¹ As to how these rents should then be used, the general aim

would be to diversify the economy away from the dominant staple export and attempt to achieve greater social and economic stability in those particular communities dependent on staple production. It is difficult to be more specific at this point; detailed suggestions would require careful analysis of the provincial economy and its various regions to determine economic opportunities which could be developed to provide viable long-term, profit-generating, and job-creating projects.

B. Concluding Comments

In discussing the limitations of this study certain problems were encountered in testing some of the hypotheses and producing conclusive evidence concerning the implications of the Japanese resource procurement strategy. One of the main difficulties was in testing the hypothesis concerning the implications of domestic control of the staple sector for the development of backward linkages. In a theoretical context it is quite straightforward to suggest a relationship between these two factors but it is more challenging to actually show this empirically. The attempt was complicated by the fact that the case study chosen does not represent a clear example of a domestically controlled staple sector. The coal industry of the Elk Valley includes both foreign and domestically controlled companies; furthermore, one of these (B.C. Coal) has only recently come under domestic control whilst another (Byron Creek Collieries) was recently purchased by foreign interests. This posed a problem when attempting to test the first hypothesis which compared purchasing patterns of domestic and foreign controlled firms. Only one of the four companies has a strong history of domestic ownership and that company (Fording Coal Ltd.) did not complete the forms regarding source of inputs. B.C. Coal Ltd. completed

the forms but may still be following the purchasing patterns established by its previous foreign owner. It is for these reasons and the fact that the sample size is extremely small that the results of this part of the study comparing purchasing patterns are not particularly useful.

There was also a problem in attempting to link the evidence concerning the development of backward linkages back to the question of domestic control of the staple sector. For example, how can one isolate the factors responsible for the underdevelopment of domestic input manufacturing for coal mining? To what extent has foreign control of part of the coal industry contributed to this and to what extent would a stronger degree of domestic control change this situation? Ideally, to examine the relationship between domestic control of a staple industry and the development of desired linkage effects one would need to compare the linkages generated by an industry with a strong history of domestic control with those stemming from an industry under clear and long-term foreign control.

Similar problems in providing conclusive evidence were encountered when examining the implications of the Japanese multiple-sourcing strategy and the effects of consortium resource purchasing. It is difficult to produce hard data which effectively "proves" that Japanese resource buyers play suppliers off against each other or that operations in each supplying region stand to be affected by changes in the competitive position of other suppliers. Instead I had to rely on statements from the resource suppliers themselves and descriptions of past incidents where a supplier may have benefitted or suffered from the behaviour of its competitors. Likewise it follows theoretically that consortium resource purchasing on the part of the Japanese allows monopoly pricing; however, it is far more difficult to illustrate in quantitative terms how a better resource price could be

obtained if suppliers were able to deal with individual Japanese resource buyers.

Finally, data limitations inhibited the calculation of fiscal linkages and the resource rent component generated by the Elk Valley coal industry. It would have been interesting to discover the size of rents being generated (although due to the current downturn the rents would not be large) and the economic sectors and geographic regions in which this income was subsequently invested. Nevertheless it is felt that the surrogate examples do illustrate that we cannot depend on foreign or domestic controllers of staple industries to invest the income generated from the exploitation of a commonly-held resource in ways which would alleviate the problems of staple economies and generate more sustained regional economic development.

It should be pointed out that my policy suggestions are preliminary in nature and require further research. The aim of the study was not to produce policy recommendations but rather to investigate the implications of the Japanese resource procurement strategy for staple resource regions. However, having concluded that the strategy produces a number of new problems and challenges for staple regions it seemed useful to offer some preliminary suggestions which might form the basis for further policy discussion and investigation.

Another area for further research suggested by the findings of my study is a thorough analysis of the new northeast coal project and the staples region being created in northern B.C. We need to closely monitor this project over the next few years to determine if the predictions of this study and others prove true. If so, further evidence concerning the implications of the Japanese resource procurement strategy and the need for effective policy action will be generated. The role played by Japanese

minority investors in a resource project was not directly addressed in my study and is more important in the northeast project where Japanese interests control about 40 percent of the largest mining company, Quintette Coal Ltd.¹² A study of northeast coal should include an examination of the role and influence of the Japanese partners in the joint-venture; for example, how much input do they have into production decisions concerning items such as equipment purchases, mine capacity, and resource price?

Finally, we need to better monitor the extent and nature of Japanese investment in B.C. as well as the effects of having many of our resource industries dependent on the Japanese market. There appears to be little analytical and policy oriented research being conducted on the important economic ties linking B.C. and Japan. This study represents an addition to that work and hopefully a useful one in its attempt to outline some of the implications of Japanese involvement in the coal industry in south-eastern B.C. We need to examine other staple industries such as forestry and fishing to see if the characteristics of Japanese involvement are similar and if the results of this involvement corroborate the findings presented here. Such research would add to our knowledge base and aid in the development of effective policy to better manage our staple industries and respond to the problems posed by the Japanese resource procurement strategy. Without such action staple regions such as the Elk Valley are doomed to continue over-expanding capacity in response to inflated Japanese demand, competing intensely to sell to a monopolistic buyer, and then incurring all the costs of contract cut backs initiated by that buyer.

FOOTNOTES

1. Ministry of Industry and Small Business Development 1982: personal communication.
2. P.E. Nickel et al., Economic Impacts and Linkages of the Canadian Mining Industry (Kingston: Centre for Resource Studies, Queens University, 1978), p. 118; and Fording Coal Ltd. 1982: personal communication.
3. Nickel et al., p. 122.
4. Raymond W. Payne, "Coping with the Japanese Connection: Lessons from the Mining Industry in B.C." (Paper presented to the Canadian Regional Science Association, Vancouver, June 1983), p. 33.
5. Nickel et al., p. 125.
6. Canada, Energy, Mines and Resources, Mineral Policy - A Discussion Paper, 1981, p. 109.
7. Ben Smith, "The Japanese Connection - Negotiating A Two-Way Street," in Australia's Resources Future, ed. Peter Hastings and Andrew Farran (Melbourne: Thomas Nelson Party Ltd., 1978), p. 125.
8. Payne, p. 36.
9. Ibid., p. 35.
10. Thomas I. Gunton, Resources, Regional Development and Public Policy: A Case Study of British Columbia (Ottawa: Canadian Centre for Policy Alternatives, 1982), p. 23.
11. Payne, p. 35, 36.
12. B.C., Ministry of Industry and Small Business Development, North East Coal Office, "North East Coal Development" folder, (1983).

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APPENDIX A: Coal Mining Statistics for Elk Valley Region, 1898-1979.
 (production figures are in tonnes; employment figures include
 both wage earners and salaried employees)

	<u>1898</u>	<u>1899</u>	<u>1900</u>	<u>1901</u>	<u>1902</u> ²	<u>1903</u>	<u>1904</u>
(A) Coal Production ¹	9,334	103,000	206,803	379,355	393,961	589,888	662,685
Coke Production	361	30,000	65,915	111,683	107,837	149,764	218,857
Volume of coal for Canadian markets	n.a.	n.a.	n.a.	n.a.	111,701	173,949	168,980
Volume of coal for U.S.	n.a.	n.a.	n.a.	n.a.	101,776	146,010	118,188
Volume of coal for Japan	-	-	-	-	-	-	-
Volume of coal for other foreign markets	-	-	-	-	-	-	-
Volume of coke for Canadian markets	n.a.	n.a.	n.a.	n.a.	81,073	122,006	119,004
Volume of coke for U.S.	n.a.	n.a.	n.a.	n.a.	26,764	27,758	97,690
(B) Number employed	n.a.	450	477	989	984	1,271	1,439

APPENDIX A (continued)

	<u>1905</u>	<u>1906</u>	<u>1907</u>	<u>1908</u> ²	<u>1909</u>	<u>1910</u>	<u>1911</u> ²
(A) Coal Production ¹	831,933	720,449	876,731	883,205	923,865	1,365,119	442,057
Coke Production	256,125	189,385	206,541	234,869	245,017	215,696	66,005
Volume of coal for Canadian markets	148,939	150,793	218,221	200,908	136,406	182,578	95,139
Volume of coal for U.S.	246,002	230,863	291,410	266,829	353,389	751,087	204,894
Volume of coal for Japan	-	-	-	-	-	-	-
Volume of coal for other foreign markets	-	-	-	-	-	-	-
Volume of coke for Canadian markets	145,044	134,646	140,987	206,413	205,391	204,947	66,034
Volume of coke for U.S.	113,337	53,400	59,890	34,196	40,478	8,730	1,267
(B) Number employed	1,490	1,745	2,290	2,524	2,427	3,111	2,427

APPENDIX A (continued)

	<u>1912</u>	<u>1913</u>	<u>1914</u>	<u>1915</u>	<u>1916</u>	<u>1917</u>	<u>1918</u>
(A) Coal Production ¹	1,261,212	1,331,725	955,183	852,572	882,270	551,751	732,864
Coke Production	264,333	286,045	234,577	240,421	240,121	129,499	164,080
Volume of coal for Canadian markets	231,076	287,410	140,094	82,594	75,319	73,797	77,642
Volume of coal for U.S.	551,742	527,620	389,383	370,020	386,953	225,847	342,218
Volume of coal for Japan	-	-	-	-	-	-	-
Volume of coal for other foreign markets	-	-	-	-	-	-	-
Volume of coke for Canadian markets	213,041	236,465	177,853	215,982	207,413	116,252	147,725
Volume of coke for U.S.	50,257	50,626	54,313	24,597	34,377	12,711	17,404
(B) Number employed	2,410	2,666	2,397	1,748	1,674	1,481	2,327

APPENDIX A (continued)

	<u>1919</u>	<u>1920</u>	<u>1921</u>	<u>1922</u>	<u>1923</u>	<u>1924</u> ²	<u>1925</u>
(A) Coal Production ¹	558,806	847,389	759,755	554,361	740,531	273,518	854,480
Coke Production	57,067	67,792	59,434	41,400	58,919	30,615	75,185
Volume of coal for Canadian markets	65,927	205,076	104,261	138,735	236,796	128,861	431,206
Volume of coal for U.S.	373,348	479,342	495,331	333,451	353,725	70,674	249,436
Volume of coal for Japan	-	-	-	-	-	-	-
Volume of coal for other foreign markets	-	-	-	-	-	-	-
Volume of coke for Canadian markets	48,996	35,805	41,878	25,742	34,818	22,687	53,153
Volume of coke for U.S.	8,134	31,718	18,092	15,524	23,564	8,232	21,936
(B) Number employed	1,369	1,582	1,774	1,538	1,434	1,147	1,466

APPENDIX A (continued)

	<u>1926</u>	<u>1927</u>	<u>1928</u>	<u>1929</u>	<u>1930</u>	<u>1931</u>	<u>1932</u>
(A) Coal Production ¹	848,448	907,519	1,001,523	886,706	689,236	661,426	587,875
Coke Production	92,137	86,855	61,964	n.a.	65,848	65,264	29,452
Volume of coal for Canadian markets	418,724	445,478	587,548	474,607	456,933	481,051	466,126
Volume of coal for U.S.	197,233	271,995	240,023	231,655	76,752	43,023	27,665
Volume of coal for Japan	-	-	-	-	-	-	-
Volume of coal for other foreign markets	-	-	-	-	-	-	-
Volume of coke for Canadian markets	65,841	63,936	48,002	n.a.	43,176	48,592	16,597
Volume of coke for U.S.	26,296	21,919	13,902	n.a.	22,672	16,672	12,855
(B) Number employed	1,431	1,494	1,621	1,503	1,252	1,211	1,001

APPENDIX A (continued)

	<u>1933</u>	<u>1934</u>	<u>1935</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>	<u>1939</u>
(A) Coal Production ¹	477,677	627,619	407,110	470,606	459,136	434,068	561,958
Coke Production	5,906	21,887	24,375	30,392	43,012	48,814	48,501
Volume of coal for Canadian markets	409,237	505,079	338,200	362,210	319,318	293,364	384,706
Volume of coal for U.S.	18,588	23,532	23,091	38,565	43,018	47,400	57,820
Volume of coal for Japan	-	-	-	-	-	-	-
Volume of coal for other foreign markets	-	-	-	-	-	-	-
Volume of coke for Canadian markets	451	15,278	8,812	15,706	18,933	25,283	26,531
Volume of coke for U.S.	4,455	6,609	15,563	14,686	24,079	23,531	21,970
(B) Number employed	698	754	819	606	628	693	732

APPENDIX A (continued)

	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>	<u>1946</u>
(A) Coal Production ¹	776,518	1,026,053	1,047,713	927,482	1,120,665	869,647	862,669
Coke Production	60,437	82,325	86,454	78,585	74,036	63,188	69,638
Volume of coal for Canadian markets	548,412	731,015	719,333	600,428	745,197	587,282	557,032
Volume of coal for U.S.	74,690	84,632	126,580	154,239	156,225	111,928	108,094
Volume of coal for Japan	-	-	-	-	-	-	-
Volume of coal for other foreign markets	-	-	-	-	-	-	-
Volume of coke for Canadian markets	38,862	52,588	55,230	43,247	38,702	35,176	32,688
Volume of coke for U.S.	21,575	29,737	31,224	35,338	35,334	28,012	36,950
(B) Number employed	731	921	864	1,150	1,179	1,067	1,083

APPENDIX A (continued)

	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>
(A) Coal Production ¹	1,162,426	1,289,185	1,238,576	1,138,389	1,249,501	1,198,293
Coke Production	106,523	103,371	151,141	136,740	172,449	177,266
Volume of coal for Canadian markets	735,851	798,485	1,242,979	752,953	811,733	761,470
Volume of coal for U.S.	133,219	192,045	105,442	72,362	77,936	60,601
Volume of coal for Japan	-	-	-	-	-	-
Volume of coal for other foreign markets	-	-	-	-	-	-
Volume of coke for Canadian markets	41,965	39,601	83,893	78,028	92,984	104,908
Volume of coke for U.S.	64,558	63,770	67,248	68,712	79,465	77,533
(B) Number employed	1,215	1,326	1,129	1,176	1,101	1,045

APPENDIX A (continued)

	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>
(A) Coal Production ¹	1,255,620	1,169,788	1,164,438	1,302,584	994,635	691,642	597,540
Coke Production	166,579	172,635	183,946	198,675	148,805	161,241	129,162
Volume of coal for Canadian markets	816,696	783,785	686,678	793,601	585,767	333,575	256,494
Volume of coal for U.S.	62,169	36,296	116,447	93,499	91,767	68,300	40,097
Volume of coal for Japan	-	-	-	-	-	-	62,683
Volume of coal for other foreign markets	-	-	-	-	-	-	-
Volume of coke for Canadian markets	99,757	90,857	117,945	128,276	77,026	87,515	69,683
Volume of coke for U.S.	66,822	81,778	66,946	70,399	71,779	73,726	59,479
(B) Number employed	1,147	1,095	1,136	1,048	995	725	724

APPENDIX A (continued)

	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
(A) Coal Production ¹	743,979	932,191	823,785	883,303	1,050,286	1,058,446	1,058,679
Coke Production	139,041	160,703	152,885	154,843	149,759	167,271	173,336
Volume of coal for Canadian markets	179,925	253,300	197,584	188,809	243,719	288,844	202,859
Volume of coal for U.S.	20,128	9,041	3,610	1,799	2,055	998	1,171
Volume of coal for Japan	272,729	375,487	331,095	367,331	393,491	402,693	376,249
Volume of coal for other foreign markets	-	-	-	-	-	-	-
Volume of coke for Canadian markets	72,304	89,034	79,703	76,770	76,218	96,059	94,192
Volume of coke for U.S.	66,737	71,669	73,182	78,073	73,541	71,212	79,144
(B) Number employed	786	797	630	611	607	562	522

APPENDIX A (continued)

	<u>1967</u> ^{2,3}	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u> ⁴	<u>1973</u> ²
(A) Coal Production ¹	946,224	1,107,258	1,084,940	3,480,631	5,602,000	6,552,155	7,772,070
Coke Production	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Volume of coal for Canadian markets	252,061	244,586	231,557	430,497	74,367	70,781	74,690
Volume of coal for U.S.	10,266	660	37,581	11,083	754	302	224
Volume of coal for Japan	407,198	449,845	326,184	1,786,855	4,063,778	5,695,028	7,306,327
Volume of coal for other foreign markets	-	-	-	128,785	207,101	38,876	-
Volume of coke for Canadian markets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Volume of coke for U.S.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
(B) Number employed	446	544	695	1,270	1,457	1,969	2,180

APPENDIX A (continued)

	<u>1974</u>	<u>1975</u>	<u>1976²</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
(A) Coal Production ¹	8,531,941	9,542,100	7,498,155	8,580,418	9,093,776	10,583,425
Coke Production	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Volume of coal for Canadian markets	194,420	490,125	301,432	312,987	463,970	773,026
Volume of coal for U.S.	10,514	2,877	321	1,783	3,791	-
Volume of coal for Japan	7,630,659	7,706,993	6,429,299	6,865,306	7,019,275	7,911,170
Volume of coal for other foreign markets	459,786	465,005	640,215	1,089,118	1,676,941	1,720,428
Volume of coke for Canadian markets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Volume of coke for U.S.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
(B) Number employed	2,498	2,647	2,627	2,868	2,983	n.a.

- NOTES: ¹These are "raw coal" production figures; some of this coal is then used to produce coke.
²A year when mine disasters or strikes affected production.
³Coke was still produced from 1967-1981 but the production figures do not appear in the Annual Reports of the Minister of Mines and Petroleum Resources.
⁴Coal production figures changed in 1972 from "raw coal" to "clean coal" masking major changes in production levels between 1971 and 1972.

SOURCES: Compiled from: B.C., Department of Mines, Annual Report of the Minister of Mines, 1898-1959 editions and Department of Mines and Petroleum Resources, Minister of Mines and Petroleum Resources Annual Report, 1960-1977 editions, and Department of Energy, Mines and Petroleum Resource. Annual Report of the Ministry of Energy, Mines and Petroleum Resources, 1977-1979 editions.

APPENDIX B

MAIN STAGES INVOLVED IN THE MINING AND PREPARATION
OF COAL

(1) Surface Coal Mining

- (a) First drilling and blasting occurs to expose the coal seams. Large rotary drills produce blastholes which are filled with explosives to loosen the rock overburden.
- (b) Trucks and electric shovels (e.g. a 200 tonne truck matched with a 25 cubic yard electric shovel) are used to haul the loosened rock to disposal areas.
- (c) Coal recovery begins and bulldozers are used to move the coal to a loading point. There the coal is loaded onto 100 or 200 tonne trucks by front-end loaders. The trucks transport the coal to a central breaker station where it is crushed and sent on a conveyor belt to storage silos at the preparation plant.
- (d) Throughout the mining process haul roads must be maintained to keep equipment and tire costs at a minimum.

(2) Underground Coal Mining

- - Machines known as continuous miners (equipped with spinning cylinders or disks studded with metal teeth) are used to cut tunnels which are then supported by steel arches. Hydraulic monitors using a high pressure water jet dislodge the coal which is then carried away in steel flumes to a dewatering plant on the surface.

(3) Preparation Plant Procedure

- The raw coal is conveyed on belts from the storage silos to the wash plant where it is screened and washed to produce clean coal. The coal is then dried and conveyed to clean coal silos from which it is loaded onto unit trains destined for Roberts Bank. Residue from the washing procedure is dumped into adjacent settling ponds.

SOURCE: Coal Association of Canada, Coal in Canada, n.d. and Kaiser Resources, "Coal Mining and Processing in British Columbia," n.d.

APPENDIX C

MAIN STAGES INVOLVED IN THE HANDLING OF COAL AT
ROBERTS BANK PORT

- (a) Train reaches port and enters the dumping station where the contents of each unit car are automatically dumped. A rotary dumper with a remotely-controlled indexing arm lifts each car and empties the coal onto a hopper. Coal is then transported on a conveyor belt to one of the stockpiling areas, or the shiploading system.
- (b) If the coal is being stockpiled the conveyor belts will feed the coal to one of three huge stacker reclaimers which can stockpile coal at the rate of 4,000 tonnes an hour.
- (c) The stacker reclaimers are also used to reclaim coal and convey it to any of the three shiploaders which then load the coal directly onto the ship's hold.

SOURCE: Westshore Terminals Ltd., "Westshore Terminals Ltd." n.d.

APPENDIX D

INTERVIEW QUESTIONS

- (1) For each piece of equipment please indicate on the accompanying forms the location of your supplier and the location where the piece was originally manufactured. (e.g. local Elk Valley region, outside Elk Valley but within national economy, USA, or elsewhere).
- (2) For each of the retail and commercial services related to mining please indicate on the accompanying form the location of your supplier (e.g. local Elk Valley region, outside Elk Valley but within B.C., outside B.C. but within Canada, or elsewhere).
- (3) At what stage of processing is the coal mined by your company when it leaves the Elk Valley? What possibilities are there for further processing within the local region? What are the attitudes of the Japanese purchasers toward further processing?
- (4) How many countries do you supply with coal and what percentage of total production goes to each? Is all the coal you mine sold on long-term contract? Who are your long-term contracts with? How long does each contract last and what are the terms of each contract with regard to price and quantity? Who sets the price and quantity of the coal and how often do these figures change?
- (5) What have your annual production levels been for each year of operation? Do you feel that long-term contracts with the Japanese engender stability of production and stability of price? How have your operations been affected by the recent cut backs by Japanese purchasers? Have there been any cut backs before now?

- (6) What is the size of your labour force and how has it changed for each year of operation? How has labour been affected by recent cut backs in contracts by the Japanese?
- (7) Who are your major competitors for the Japanese market? How does their coal quality, labour cost, resource price, and transport cost compare with yours? What do you think of the B.C. labour situation? Are you aware of any attempts on the part of the Japanese to play one supplier against another? If so, how does this affect your position? What features of the B.C. supply situation do you think the Japanese buyers find attractive? Do you make any special efforts to provide uninterrupted supply to your Japanese customers? Is it possible for a contract to not be renewed because a supplier is not competitive? How far can signed contracts be cut?
- (8) What is the difference between customers who negotiate individually and those who negotiate as a consortium? How does it affect your position to be negotiating with a powerful and united Japanese consortium?

Manufactured Inputs Used:

	Location of Supplier	Location of Manufacturer
<u>Open Pit Equipment</u>		
200 tonne trucks		
100 tonne trucks		
350 tonne trucks		
170 tonne trucks		
Water trucks		
35 ton trucks		
Coal bucket front end loaders		
Rock bucket front end loaders		
Hydraulic shovel		
25 cu. yard electric shovels		
15 cu. yard electric shovels		
8 cu. yard electric shovels		
Rotary drills		
Crawler & rubber tire dozers		
Graders		
Main conveyors		
Truck boxes		
Hydraulic cylinders		

Manufactured Inputs Used:

	Location of Supplier	Location of Manufacturer
<u>Underground Equipment</u>		
Continuous miners		
Pipes		
Flumes		
Hydraulic monitor		
Shuttle cars		
Belt conveyors		
Steel arches		
Feeder-breaker		
Supply vehicles		
Pumps		
Double-deck vibrating screens		
Slurry pumps		
Gland water pumps		
Emergency pumps		
Compressors		
Exhaust fans		
Pipe couplings		
Screens		
Underground transformers		

Manufactured Inputs Used:	Location of Supplier	Location of Manufacturer
<u>Preparation Plant Equipment</u>		
Breakers		
Heavy media bath		
HM cyclones		
Froth flotation cells		
Hydro cyclones		
Magnetic separators		
Centrifuges		
Desliming screens		
Clean coal screens		
Refuse screens		
Vacuum filters		
Vacuum pumps		
Abrasive slurry pumps		
Heavy media pumps		
Sump pumps		
General pumps		
Scrubber pumps		
Rotary breaker		
Conveyor belts		
Raw coal silos		
Exhaust fans for dryer		
Rotary crusher		
Belt feeders		
Clean coal silos		
Refuse bin		

Manufactured Inputs Used:

	Location of Supplier	Location of Manufacturer
<u>Wear Parts</u>		
Toothed buckets		
Blade buckets		
Drill bits		
Tracks		
Gearing & drives		
Wear plates		
Skirting		
Transmissions		
Wire rope		
Diesel engines & parts		
Electrical components		
Belting		
Hydraulics & hosing		
Rubber tires		
Power unit components		
Cutter heads & components		
Electric motors		
Transmission		

Retail & Commercial Services Related to mining:	Location of Supplier
Catering	
Welding	
Machining	
Engine rebuilding	
Hydraulics rebuilding	
Auto/truck repair	
Industrial equipment supply	
Brake service	
Concrete construction forms & accessories	
Ready-mix concrete	
Contractors equipment repair, supply	
Crane rental delivery service	
Electric motor repair	
First aid equipment & supplies	
Furnace cleaning & repair	
Heating contractors	
Plumbing contractors	
Insulation contractors	
Mechanical contractors	
Paint contractors	
Excavating contractors	
Drilling contractors	
Electric contractors	
Machinery distribution, lease, rental	
Radio communications equipment & systems	
Sand & gravel	
Haulage	
Tool sharpening	
Security services	
Steam cleaning & thawing	
Sandblasting	

Retail & Commercial Services Related to mining: (continued)	Location of Supplier
Tire sales & service	
Towing	

APPENDIX E: FORMS COMPLETED BY B.C. COAL
REGARDING SOURCING OF INPUTS
AND SERVICES¹

Manufactured Inputs Used:

	Location of Supplier	Location of Manufacturer
<u>Open Pit Equipment</u>		
200 tonne trucks	local	Canada & USA
100 tonne trucks	local	Canada & USA
350 tonne trucks	local	Canada & USA
170 tonne trucks	local	Canada & USA
Water trucks	local	Canada & USA
35 ton trucks	local	Canada & USA
Coal bucket front end loaders	local	Canada & USA
Rock bucket front end loaders	local	Canada & USA
Hydraulic shovel	local	France
25 cu. yard electric shovels	local	USA
15 cu. yard electric shovels	local	USA
30 cu. yard electric shovels	local	USA
Rotary drills	local	USA
Crawler & rubber tire dozers	local	USA
Graders	local	USA
Main conveyors	local	USA
Truck boxes	local	USA
Hydraulic cylinders	local	Spain

Summary: 100 percent supplied through local Elk Valley
supply outlets; approximately 50 percent
manufactured in Canada and 50 percent manu-
factured in USA.

Manufactured Inputs Used:	Location of Supplier	Location of Manufacturer
<u>Underground Equipment</u>	Canada & USA	U.K. & USA
Continuous miners		
Pipes	Japan	Japan
Flumes	Canada	Canada
Hydraulic monitor	Japan	Japan
Shuttle cars	USA	USA
Belt conveyors	Canada & UK Japan	Canada & UK Japan
Steel arches	U.K.	U.K.
Feeder-breaker	USA	USA
Supply vehicles	U.K. & USA	U.K. & USA
Pumps	Canada & USA, Japan	Canada & USA, Japan
Double-deck vibrating screens	USA	Spain
Slurry pumps	USA	USA
Gland water pumps	USA	USA
Emergency pumps	USA	USA
Compressors	USA	USA
Exhaust fans	USA & U.K.	USA & U.K.
Pipe couplings	Canada	Canada
Screens	USA	USA
Underground transformers	UK	UK

Summary: Very little supplied in local or national economy;
mostly manufactured in USA, U.K., and Japan.

Manufactured Inputs Used:	Location of Supplier	Location of Manufacturer
<u>Preparation Plant Equipment</u>		
Breakers	USA	USA
Heavy media bath	USA	USA
HM cyclones	USA	USA
Froth flotation cells	Vancouver	USA
Hydro cyclones	USA	USA
Magnetic separators	USA	USA
Centrifuges	USA	USA
Desliming screens	Canada	USA
Clean coal screens	Vancouver	USA
Refuse screens	Vancouver	USA
Vacuum filters	USA	USA
Vacuum pumps	Canada	Canada
Abrasive slurry pumps	Canada	USA
Heavy media pumps	Canada	USA
Sump pumps	Canada	USA
General pumps	Canada & USA	Canada & USA
Scrubber pumps	Canada	USA
Rotary breaker	USA	USA
Conveyor belts	Canada	Canada & USA, Japan
Raw coal silos	?	?
Exhaust fans for dryer	Vancouver	Canada
Rotary crusher	Canada	Canada
Belt feeders	Canada	Canada
Clean coal silos	?	?
Refuse bin	Canada	Canada

Summary: About 50 percent available from Canadian (but not local) suppliers; almost all manufactured in USA.

Manufactured Inputs Used:

	Location of Supplier	Location of Manufacturer
<u>Wear Parts</u>		
Toothed buckets	local	USA & Canada
Blade buckets	local	USA
Drill bits	B.C.	USA
Tracks	Canada	USA
Gearing & drives	local	USA & Canada
Wear plates	local	Canada
Skirting	local	Canada
Transmissions	local	Canada
Wire rope	local	Canada
Diesel engines & parts	local	USA
Electrical components	local	USA
Belting	local	Canada, UK, Japan
Hydraulics & hosing	local	Canada
Rubber tires	local	Canada, USA, Japan
Power unit components	local	Canada, USA
Cutter heads & components	Saskat- chewan	USA
Electric motors	Calgary	Canada
Transmission	local	USA

Summary: Approximately all locally supplied; about 75 percent manufactured in USA and 25 percent in Canada.

Road Equipment Requirements:	Location of Supplier	Location of Manufacturer
Compactors	local	USA
Water trucks	Canada	USA
Boom trucks	local	Canada
Pickups	local	Canada
Crewcabs	local	Canada
Fuel trucks	local	Canada
Lube trucks	local	Canada
Line trucks	local	Canada
Ambulances	local	Canada
Tow trucks	local	Canada
Fire trucks	Canada	Canada
Tire trucks	local	Canada
Dewatering trucks	local	USA
Mobile pumps	local	USA
Mobile welders	local	USA
Compressors	local	Canada, USA
Backhoe	Canada	USA
Towerlights	Vancouver	Vancouver
Lubrication stations	Canada	USA
Fork lifts	Canada	USA

Summary: About 100 percent locally supplied; about 50 percent manufactured in Canada and 50 percent in USA.

Retail & Commercial Services Related to mining:	Location of Supplier
Catering	Vancouver
Welding	B.C. Coal & local
Machining	B.C. Coal & local
Engine rebuilding	B.C. Coal & local
Hydraulics rebuilding	local
Auto/truck repair	B.C. Coal
Industrial equipment supply	local
Brake service	B.C. Coal & Calgary
Concrete construction forms & accessories	local
Ready-mix concrete	local
Contractors equipment repair, supply	B.C. Coal & local
Crane rental delivery service	local
Electric motor repair	B.C. Coal & Calgary
First aid equipment & supplies	local
Furnace cleaning & repair	local
Heating contractors	local
Plumbing contractors	local
Insulation contractors	local
Mechanical contractors	local
Paint contractors	local
Excavating contractors	local
Drilling contractors	Alberta
Electric contractors	local
Machinery distribution, lease, rental	local
Radio communications equipment & systems	local
Sand & gravel	local
Haulage	local
Tool sharpening	B.C. Coal
Security services	local
Steam cleaning & thawing	local
Sandblasting	B.C. Coal & local

Retail & Commercial Services Related to mining: (continued)	Location of Supplier	Location of Manufacturer
Tire sales & service	local & Vancouver & Calgary	
Towing	B.C. Coal	

Summary: About 100 percent locally available.

* * * * *

NOTES: ¹ This information is summarized from the data received from B.C. Coal Ltd. It is extremely difficult to be absolutely accurate about the source of each piece of equipment and its components but it is felt that this information is a good indication of the sources of B.C. Coal's inputs and services as of 1982.

SOURCE: B.C. Coal Ltd. 1982: personal communication.

APPENDIX F: FORMS COMPLETED BY WESTSHORE
TERMINALS LTD. REGARDING SOURCING
OF INPUTS AND SERVICES¹

	Location of Supplier	Location of Manufacturer
Equipment Used:		
<u>Major Equipment</u>		
Rotary dumper	USA	
Conveyor belts	Canada	Japan/USA
62-metre boom stacker reclaimer	Canada	Canada/ Japan
Trimmer	Canada	
Shiploaders	Canada	Canada/ Germany
Pumping system	Canada	
Tank trucks	Canada	
High volume pumps	local & USA	
<u>Wear Parts</u>		
For excavators and stacker reclaimers:		
Tracks	USA & local	
Bucketwheel teeth	local	
Idlers	local & USA	
Belting	local, Japan & USA	
Electrical components	local & USA	
For conveyor belts:		
Idlers	Canada & USA	
Sections	Canada	
Wear plates	Canada	
Skirting	Canada	
Drives and gearing	Canada & USA	
Belting	Canada & USA & Japan	

	Location of Supplier	Location of Manufacturer
Others:		
Auxiliary conveyors	Canada	
Bins	Canada	
Hoppers	Canada	
Chutes	Canada	
Electric Motors	Canada & USA	
Electric control systems	Canada & USA	
Toothed buckets	Canada	
Blade buckets	Canada	
Transmissions	Canada	
Wire rope	Canada	
Diesel engine and parts	Canada & USA	

Retail and Commercial Services:	Location of Supplier	Location of Manufacturer
Catering	local	
Welding	local	
Machining	local	
Engine rebuilding	local	
Auto/truck repair	local	
Industrial equipment supply	local	
Brake service	local	
Compressors	local	
Compressors	local	
Contractors equipment repair, supply	local	
Crane rental service	local	
Electric motor repair	local	
Mechanical contractors	local & provincial	
Electrical contractors	local & provincial	
Machinery distribution, lease, rental	local	
Radio communications equipment and systems	local	
Tool sharpening	local	
Security services	local	
Steam cleaning and thawing	local	
First aid equipment and supplies	local	

NOTES: ¹This information is summarized from the data received from Westshore Terminals Ltd. Unfortunately it is incomplete because I failed to differentiate between the location of the manufacturer and the supplier at the time of the interview.

SOURCE: Westshore Terminals 1982: personal communication.