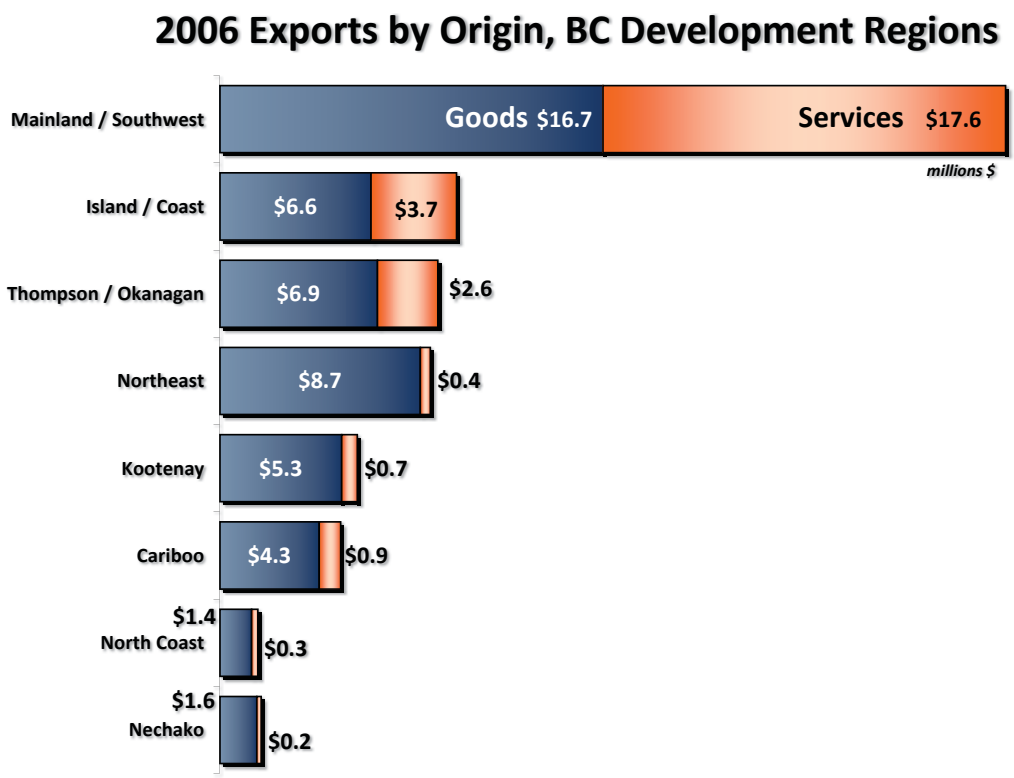
Regional Economic Analysis

Identifying the Spatial Origins of BC's Exports



Prepared for:

RuralBC

URBAN FUTURES

Strategic Research to Manage Change

Regional Economic Analysis

Identifying the Spatial Origins of BC's Exports

Prepared for:

The RuralBC Secretariat, Strategic Initiatives Office

August 2011

Table of Contents

Executive Summary

While many intuitively know that coal exports largely originate from the Northeast and Kootenay regions, natural gas from the Northeast, and forestry products from the Island / Coast region, there are little comprehensive data available on the composition of exports from different regions in the province, the degree to which each region contributes to the total export picture, or the ways in which the regional export landscape has changed over time. Given this, Urban Futures has developed an approach to estimating the value of exports originating in eight Development Regions throughout British Columbia.

Why the focus on exports? While exports may represent a smaller share of total economic activity than domestic consumption (exports were valued at just under $70 billion in 2009 while consumption was $126 billion), we will always have to import certain goods and services that we, ourselves, cannot easily produce; from iPods and blackberries to vitamin C (citrus fruit) and vitamin D (winter trips to sunny destinations), we will always be limited in some capacity by our available resources, our climate, or our market scale. As the limits on our resource endowment mean we must import some things, then we must, in turn, export others; put slightly differently, if we spend outside our economy, we must also earn outside it. The unavoidable consequence of having to import into our domestic economy is that we should at least match, if not exceed, these expenditures on imports with money we earn by selling outside our domestic economy (exports).

Given the importance of imports and exports to BC's economy, understanding the composition and origins of our exports is essential to the development of effective and efficient economic, fiscal, and trade policies. As such, in order to develop an assessment of the regional composition of BC's exports, a labour force based framework was developed, using the most recent Census data for the experienced labour force by industry and occupation classification for Development Regions in the province. Along with these data on people that are directly involved in the production of goods and services within the province, BC's total international and domestic exports of goods and services by industry sector were allocated to Development Regions.

Within the context of BC's exports having grown more than four-fold since 1981 (from $18 to $80 billion in 2010), the metropolitan regions of the province—the Greater Vancouver, Fraser Valley, Capital, and Central Okanagan Regional Districts—are estimated to have accounted for 48 percent ($37 billion) of BC's total exports and our non-metropolitan regions 52 percent ($41 billion). Comparing the contribution of the Lower Mainland specifically (Greater Vancouver and the Fraser Valley) and the rest of the province shows that 41 percent ($32 billion) of exports originated from the Lower Mainland while 59 percent ($46 billion) originated throughout the rest of the province.

While this initial conclusion may not be surprising for many given that 69 percent of BC's labour force and 70 percent of its population are located in the province's metro regions, considering the value of exports relative to the size of the labour force in each region does provide some surprises. For example, with only two percent of BC's labour force and population, the Northeast region accounted for more than $9 billion in exports, or 12 percent of BC's total. However, in terms of export value per labour force participant, the Northeast contributed $240,900 per labour force participant. As a point of comparison, with $78 billion in exports and 2.2 million labour force participants in the province as a whole, each person in the labour force in BC contributed roughly $35,600 to provincial exports.

Other findings of note pertain to the composition of exports originating in each region. While BC's international exports have historically been goods-based—with the forestry and energy and fuels sectors playing the greatest roles—service sector exports have historically comprised the bulk of exports to other

provinces in Canada. Given the structure of labour force activity within the metropolitan regions, a significant share of export value originated from the service sector, linking the activities within the metropolitan regions more to the domestic market. Conversely, the goods focus of the non-metropolitan regions, and the strong link between goods production and international exports, shows the province's non-metropolitan regions being more closely tied to international markets.

Thus, from a policy perspective, this analysis provides a framework through which comparative advantages maintained by each region can be identified, and it is within this framework—one that begins with identifying our regional comparative advantages—that we can ensure a robust economic future for the province as a whole.

I Introduction & Overview

As with all other provinces in Canada, British Columbia relies on exports as one means of sustaining—and improving—the economic well-being of its 4.5 million residents[1], as the sale of goods and services to our provincial neighbours, and to other countries throughout the world, both grows and diversifies the provincial economy. Exports are also a means through which resources can be generated so that we, the province's residents, can purchase things that we cannot produce here, from imports of coffee and tea to iPods and cell phones. As world-renowned economist Paul Krugman once stated: "*Exports are not an objective in and of themselves; the need to export is a burden that a [province] must bear because its import suppliers are crass enough to demand payment*".

Given the importance of exports to BC's economy, the development of effective and efficient economic, fiscal, and trade policies depends on the availability of timely information on trends in BC's trade flows. Such data are collected through balance of payments accounts[2], and are tabulated on a quarterly basis by Statistics Canada. While available at a broad provincial level, the data do not provide any details on where within the province exports originate or, perhaps more importantly, what the composition of BC's regional exports is—hence making it difficult to assess the contributions of specific regions to total provincial exports. This, in turn, makes the development of effective economic policies for regions throughout the province more challenging.

In light of this, the Strategic Initiatives Office of the RuralBC Secretariat has commissioned Urban Futures to conduct research aimed at identifying where within the province BC's exports originate. While most of the province's residents recognize, implicitly, that oil and gas exports originate from the northeastern part of the province, and that a significant proportion of our service exports originate from the Lower Mainland, it is important to re-emphasize that there is no comprehensive database which tracks where within the province our exports originate, or what the composition of regional exports might be.

The analytical framework adopted in this report provides a means to identify the activities that are fundamental to the production and export of goods and services from British Columbia. More specifically, the research is focused on the role played by BC's eight development regions (Island / Coast; Mainland / Southwest; Thompson / Okanagan; Kootenay; Cariboo; North Coast; Nechako; and Northeast) in international and interprovincial exports. With the nature of economic activity differing significantly between BC's metropolitan and non-metropolitan regions, the analysis also considers the contribution of each of these broad regions to the province's export base.

The report is structured as follows. In Section II, historical trends in BC's international and interprovincial trade flows are examined to identify trends in both imports and exports, and to establish the overall context for the analysis of the spatial origins of BC's exports. Section III describes the methodological approach to developing regional estimates of where BC's exports originate. Section IV provides the findings for BC's metropolitan and non-metropolitan regions and introduces the findings for BC's eight development regions. Section V presents detailed export profiles for BC's eight development regions for 2006, while Section VI describes the approach, and summarizes the findings, associated with estimating the spatial origins of BC's exports in 2010. This is followed by conclusions and strategic considerations in Section VII and an appendix in Section VIII.

1 2010 population, BC Stats.

2 Balance of payments accounts reconcile all monetary transactions annually between BC, the rest of Canada, and the rest of the world.

A Note on the Data Contained in this Report

While there is currently no single source of information documenting the origins of BC's exports, there is also no single comprehensive source of data on the composition of British Columbia's imports and exports. Therefore, for the purposes of this research, it is necessary to draw data from a number of different sources to paint a complete picture of BC's trade with the rest of Canada and with other countries. To summarize, the following is a list of data sources utilized in this research:

- Provincial Economic Accounts, Statistics Canada
- Trade Data Online, Industry Canada
- 2006 Census, Statistics Canada
- 2011 Labour Force Survey, Statistics Canada
- Regional Employment Projection Model, BC Stats and the Ministry of Jobs, Tourism and Innovation

As a starting point, Statistics Canada's Provincial Economic Accounts provide balance of payments based data on BC's total international and interprovincial imports and exports, of both goods and services, for the 1981 to 2009 period. For this research, these top-level data represent the provincial totals to which all other industry-specific export data are standardized to.

As part of their Trade Data Online program, Industry Canada publishes customs-based data[3] on British Columbia's international merchandise exports for 145 industry groupings in accordance with the 2007 North American Industry Classification System (NAICS). In addition to providing details of the current 2010 composition of BC's international goods exports, historical data are also available back to 1992. Thus, in addition to providing details on the composition of what BC exports to international destinations, these data also represent the most up to date estimates of international exports that are currently available.

In addition to providing the top-level totals for imports and exports, the Provincial Economic Accounts data are used to determine the industry composition of BC's international service exports, as well as the composition of both interprovincial exports of goods and services. While not providing a breakdown that is as current as the one provided by Industry Canada for international goods exports (detailed data from the Provincial Economic Accounts are only available for the 1998 to 2007 period), exports of international services and of interprovincial goods and services were estimated up to 2010 using patterns of change in each top-line total, as well as in each industry.

Labour force Information was obtained from a detailed custom cross-tabulation of 2006 Census data on the size of the experienced labour force[4] by industry (according to the 2007 NAICS) and occupation (according to the 2006 National Occupation Classification for Statistics, NOC-S) for regions in the province of BC. Other sources of employment data used in the analysis include Statistics Canada's most recent (2011) Labour Force Survey and employment projections from BC Stats' Regional Employment Projection Model (REPM), with both providing details on changes in industry-specific employment for regions in the province.

It is important to note here that as the most recently-available detailed industry and occupation data are from the 2006 Census, the regional export analysis presented in Sections III to V focuses on BC's export picture in 2006. In an effort to provide a more up to date context, Section VI presents an approach to, and the findings associated with, estimating BC's 2010 exports by region.

3 These data represent the value of all merchandise trade that clears customs. Therefore, given the nature of the data collection process, no information on the value of BC's services trade is provided by Industry Canada.

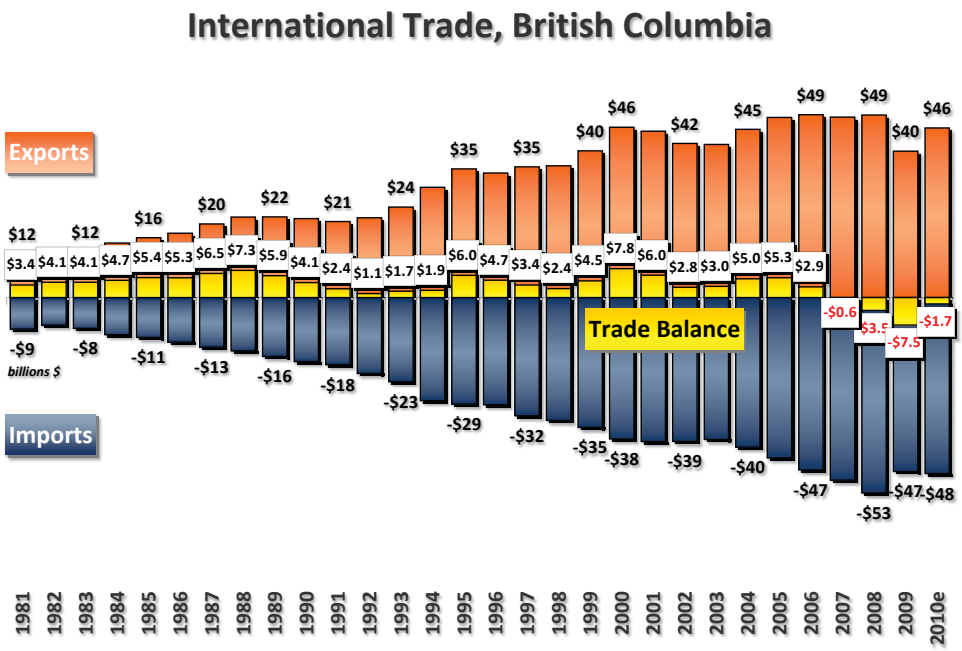
4 The *experienced labour force* refers to those people who were employed in the week prior to Census Day (May 16, 2006), as well as the unemployed who last worked for pay or in self-employment in either 2005 or 2006. These data were used in lieu of employment data to minimize the potential variability in the data that could introduced by considering employment at a single point in time.

II British Columbia's Trade Flows

At a broad level, BC's trade flows consist of four components: international imports, international exports, interprovincial imports, and interprovincial exports. In a geographical framework, trade flows can be defined as the exchange of goods and services between BC and other Canadian provinces (interprovincial trade) as well as with countries around the world (international trade). Trade can also be described by the direction in which the goods and services flow: imports are those goods and services purchased by BC's residents, businesses, and governments from other provinces and countries, while exports are those goods and services produced within BC that are purchased by residents, businesses, and governments outside of the province. The difference between the value of these two flows (exports minus imports) is referred to as BC's trade balance.

As each of the international and interprovincial flows of imports and exports differs considerably in terms of its magnitude (in Canadian dollars[5]) and in its composition (in terms of the inherent value of goods and services being traded), a logical starting point for the analysis of the spatial origins of BC's exports is to establish the historical pattern of trade flows into and out of BC.

Figure 1 **International and Interprovincial Trade Flows**



Over the past three decades BC's international exports have grown in value from $11.9 billion in 1981 to $45.8 billion by 2010 (almost a three-fold increase, Figure 1). Along the way there has been some volatility as a result of global demand shocks in the early-1990s, late-1990s, early-2000s, and most recently during the global financial crisis that began in 2008.

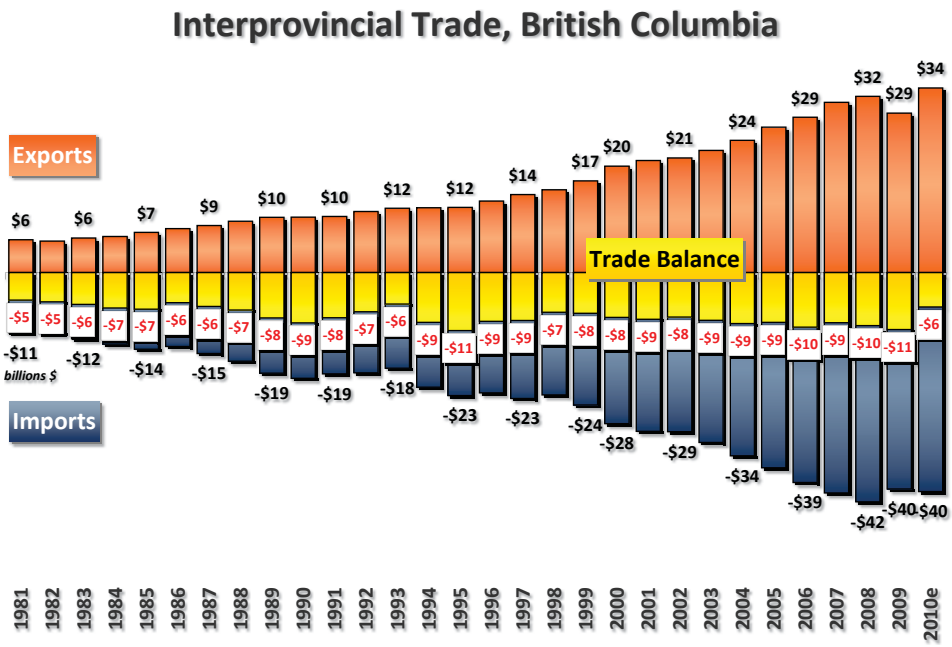
British Columbia's international imports have demonstrated less variability on an annual basis than have exports; having steadily grown from $9 billion in 1981 to a three-decade peak of $53 billion in 2008. In the following two years, imports fell back to between $47.0 and $47.6 billion, as the demand for imported products and services from BC's residents, businesses, and government declined due to the lingering effects of the 2009 recession.

That being said, with growth of over 400 percent over the past three decades, the total value of BC's international imports began to exceed the value of exports by 2007—the first time this had occurred in the last 30 years. While BC had run an annual international trade surplus that ranged between $1.1 and $7.8 billion dollars from 1981 to 2006, an international trade deficit was seen in 2007, at $600 million, and this quickly grew to $7.5 billion in 2009 before falling back to an estimated $1.7 billion in 2010.

Compared to the relationship that exists between BC and our international trading partners, a much

5 All dollar amounts cited in this report are current-dollar (inflation-unadjusted) estimates.

Figure 2

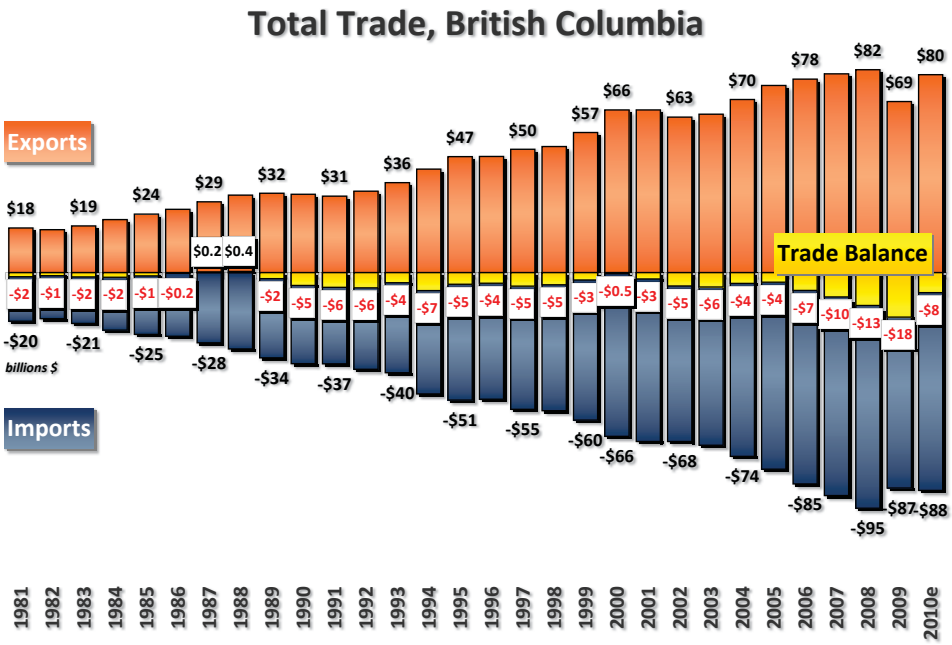


different one exists between BC and our trading partners throughout the rest of Canada. This is true in terms of both the overall dollar value of each respective trade flow and the relationship between imports and exports.

For example, since 1981, the value of BC's interprovincial exports, which grew from $6.0 billion to $34.0 billion by 2010, an almost 500 percent increase, represented only one-half of the value of international exports (an average of $16.2 billion versus $31.5 billion). Combined with the fact that interprovincial imports (which grew from $11.1 to $40.3 billion over the same period) have been much closer in value to that of international imports (a $24.1 billion annual average versus $28.2 billion), this has resulted in BC's interprovincial trade balance being in a deficit situation over the past three decades. BC's interprovincial trade deficit has ranged between a low of $5.1 billion (in 1981) and a high of $10.7 billion (in 1995). Over the past decade, BC's interprovincial trade deficit has averaged $9.0 billion per year (Figure 2).

By combining the value of both international and interprovincial imports and exports, an image of BC's overall trade picture emerges. As Figure 3 shows, the magnitude of BC's interprovincial trade deficits between 1981 and 2006 was sufficient enough to swamp the province's surpluses in international trade. As a result, BC's total trade deficit has ranged between $200 million (in 1986) and $7.3 billion (in 1994)—the latter representing the high water mark for BC's trade deficit until 2007, leading up to the global financial crisis that saw BC's trade deficit increase significantly.

Figure 3



Since 2007 BC's total trade deficit has grown from $9.8 billion to a 30-year high of $18.0 billion in 2009, due to the twin deficits in both interprovincial and international trade. The most recent estimates for 2010 indicate the trade deficit has since declined, to $8.1 billion, as the value of imports remained relatively stable (between $86.9 and $87.9 billion) and exports increased (from $68.9 billion in 2009 to $79.8 billion in 2010), driven in large part by growing global demand for BC's commodities.

While a more in-depth exploration of trends in BC's trade flows and their implications for future economic growth would be interesting—and in the context of developing effective economic and fiscal policies, vital—the focus of this research is on the province's exports and, more specifically, where within the province they originate from. Therefore, in order to provide further context for identifying the spatial origins of BC's international and interprovincial exports, the next step is to consider the composition of the province's exports; first in terms of the breakdown between goods and services, and then, further, by industry sector.

International and Interprovincial Exports of Goods & Services

Figure 4

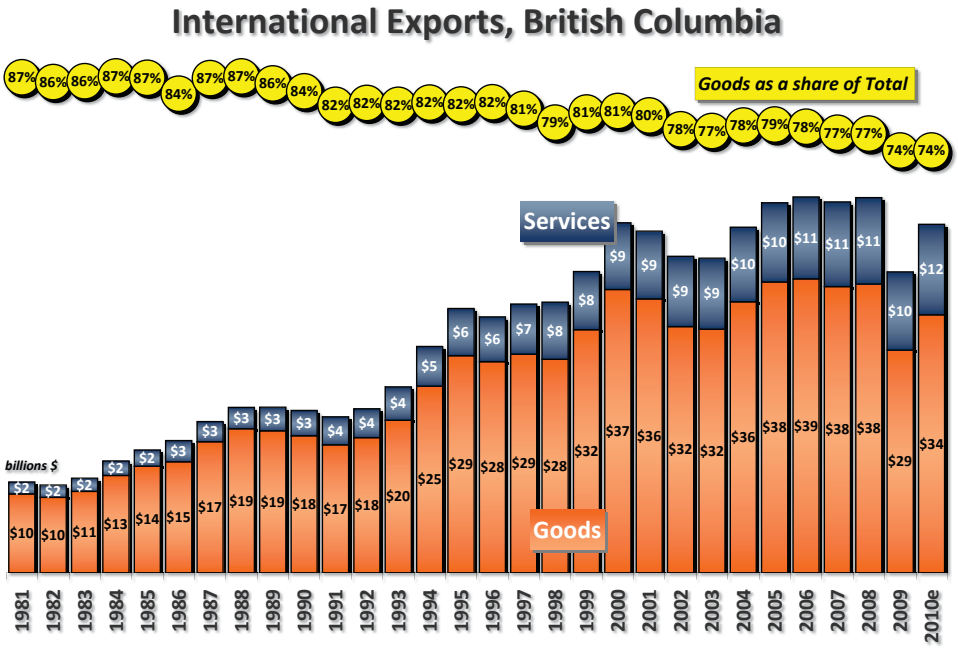
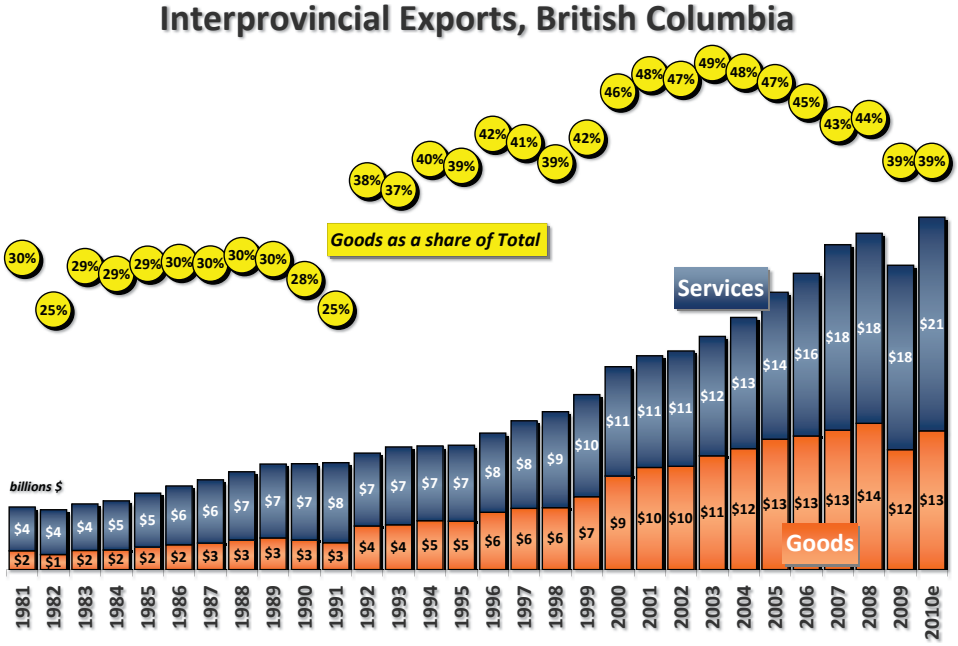


Figure 5



In considering the breakdown between the value of goods and services in BC's exports, Figure 4 shows that, in an international context, BC is overwhelmingly an exporter of things: since 1981, four out of every five dollars that the province has earned through international exports has come from the sale of goods. However, driven by the diversification of BC's economy and the economies of our trading partners, the share of goods in BC's international exports has trended downwards slightly, as the share of service exports has increased. The value of goods exports has fallen from 86 percent in the 1980s to 82 percent through the 1990s and further to 78 percent in the 2000s. The most recent data show that goods now comprise 74 percent of the value of BC's international exports, while the export of services now accounts for almost one-quarter of the value of total international exports—the highest share seen in the past three decades.

While BC's international exports are weighted towards goods, interprovincial exports consist of a greater share of services, currently averaging almost 60 percent of the value of BC's total exports to other parts of Canada (Figure 5).

Significant variation has been seen in the composition of interprovincial exports, however, with goods as a

share of total interprovincial exports increasing from an average of 30 percent through the 1980s, to 37 percent in the 1990s, and to 45 percent in the 2000s. The share of goods exports peaked at 49 percent in 2003 before falling back to below 40 percent in 2009 and 2010.

Goods account for 3 out of every 5 dollars earned by exports

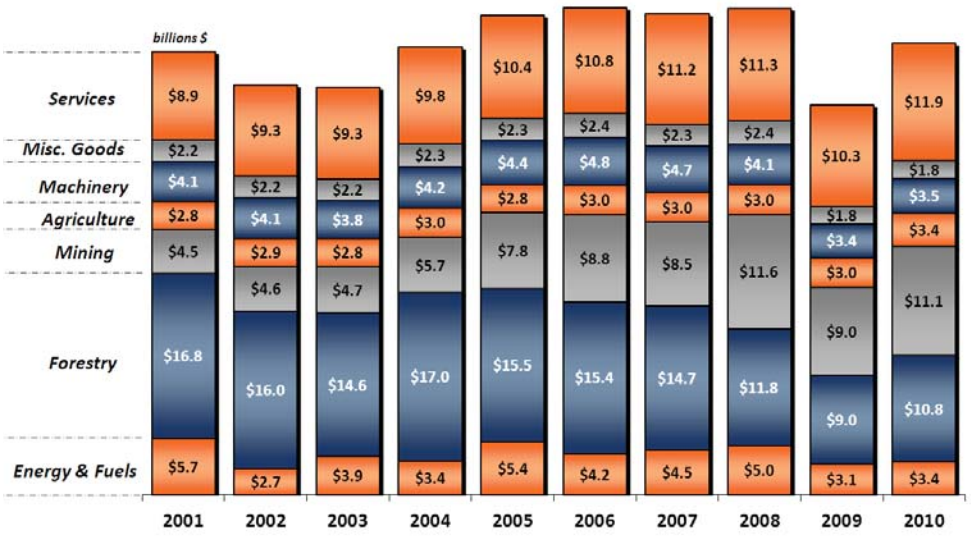
If BC's international and interprovincial exports are combined to provide a picture of total exports, the most recent data show that goods account for three out of every five dollars earned through exports, with this total falling slightly below the three-decade average of 67 percent. Interestingly, goods exports as a share of total exports from the province have remained relatively stable over the past 30 years, at 68 percent in both the 1980s and 1990s and 66 percent in the 2000s—a long-run pattern that is a function of the decreasing share of goods in international exports and an increasing share of interprovincial exports.

Composition of International and Interprovincial Exports

Just as the respective shares of BC's exports in goods and services have changed over time, so too has the industry composition of those goods and services.

Figure 6

International Exports by Type, British Columbia



With its rich endowment of spruce, fir, and pine trees, international exports of BC's forestry products—from dimensioned lumber to other manufactured wood and paper products—have generated an average of $14.2 billion in annual revenue since 2001, or 40 percent the province's total international goods exports (Figure 6). However, both the value of international forestry exports and their share of total international exports have been falling since 2004—reaching a low of $9.0 billion in 2009, when forestry exports accounted for only 31 percent of international goods exports.

Forestry, Mining , and Services are BC's top international export sectors

While forestry exports have more recently fallen in both value and share relative to historical averages, international mining exports (which includes coal, metals such as gold, silver, copper, and zinc, and non-metallic minerals) have risen dramatically—by 149 percent—since 2001, going from $4.5 billion to $11.1 billion. On average the mining industry has been the second-largest component of BC's international goods exports by value over the past decade, representing 17 percent of the value of international goods exports.

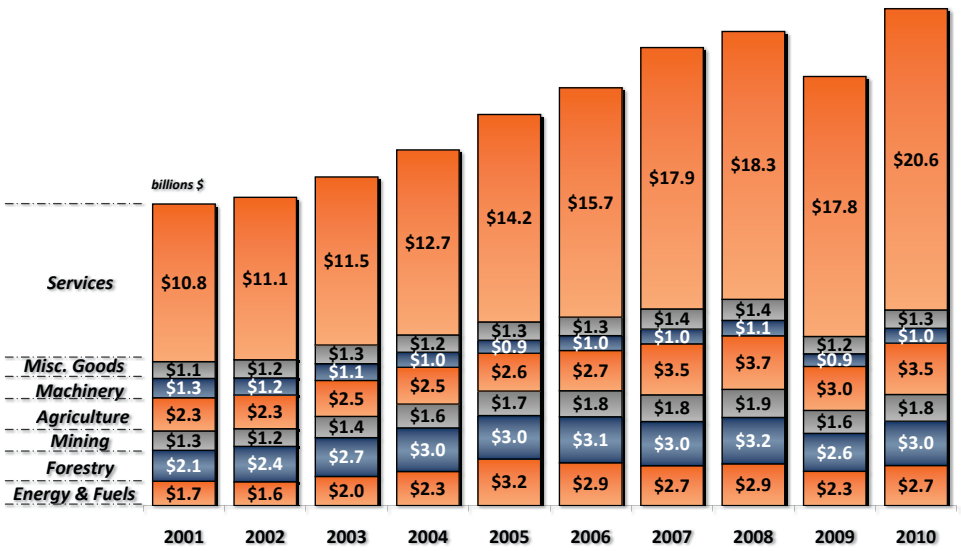
The value of international exports of energy and fuels—which includes natural gas and electricity—has moved in a cyclical fashion since 2001, going from $5.2 billion in that year to $2.7 billion the next, back to a decade-high of $5.4 billion in 2005, and finally down to $3.4 billion in 2010. On average, the energy and fuels sector has represented nine percent of the value of BC's international exports over the past decade, making it the third-largest international export sector.

Exports of machinery have averaged 12 percent of BC's international exports since 2001. This is followed by exports of agricultural products (which includes crops, animals, and fish) at eight percent, and finally miscellaneous manufactured products (such as electrical, electronic, and communications equipment and motor vehicles, among other things) at six percent.

While goods account for a significant proportion of international exports, it is important to note that services generated $11.9 billion in international export value in 2010. Accounting for an average of 23 percent of BC's international exports over the past decade, services have been growing in both total value and as a share of international exports, from $8.9 billion in 2001 (20 percent of all international exports in that year) to $11.9 billion (26 percent) in 2010. This growth has primarily been driven by growth in the export of finance, insurance and real estate services, transportation and communications services, and professional and other business services.

Figure 7

Interprovincial Exports by Type, British Columbia



A different picture emerges when considering the composition of BC's interprovincial exports (Figure 7). As indicated earlier, services account for a significant share of interprovincial trade, representing 56 percent of the total value of exports to other provinces. Furthermore, since 2001 the value of these service exports to other provinces has almost doubled, going from $10.8 billion to $20.6 billion (a 91 percent increase).

With respect to goods, the value of BC's interprovincial agricultural exports over the past ten years were the largest non-service export category, averaging $2.9 billion per year, and accounting for almost one-quarter (24 percent) of the total value of BC's interprovincial goods exports over that period. Close behind were forestry exports, which accounted for 23 percent of BC's total interprovincial goods exports, as they averaged just under $2.8 billion annually. Energy and fuels also accounted for a significant share of interprovincial goods exports, averaging $2.4 billion, or 20 percent of BC's goods exports to other provinces, since 2001.

Services account for over half of the value of exports to other provinces

While the value of interprovincial goods exports increased by 36 percent between 2001 and 2010, the substantial growth (91 percent) in services over this period served to reduce the contribution of goods-producing industries to total interprovincial exports. For example, despite increasing in dollar-value (by $1.2 billion) between 2001 and 2010, agriculture product exports as a share of total interprovincial exports declined to ten percent by 2010 from 11 percent in 2001. Similarly, forestry's share declined to nine percent from ten percent one decade earlier (in spite of the annual value of interprovincial forestry exports increasing by $930 million over this period). Overall, the value of BC's annual exports of services to other parts of Canada increased dramatically between 2001 and 2010, from $10.6 billion to $20.6 billion, driven primarily by the export of transportation services, retail and wholesale trade, and other professional and business services.

International exports are weighted towards goods; interprovincial exports are weighted towards services

The picture painted by the export data for BC shows that international exports are weighted heavily towards goods, with exports from our forests, gas deposits, and mines playing a significant role. While the domestic picture is much more weighted towards the export of services, it still echoes what is seen in international exports: agriculture, forestry, and energy and fuels are prominent factors in BC's interprovincial goods exports.

III Methodological Approach to Identifying the Spatial Origins of British Columbia's Exports

In order to delve beneath the general export trends that have characterized the province's economy over the past decade, the distribution of BC's experienced labour force by industry, occupation, and place of residence provides a useful mechanism for identifying the spatial origins of the province's exports. Two important features of these data, which have been collected as part of the most recent (2006) Census[6], make them integral to this analysis: a) they identify the location of the experienced labour force throughout the province, and b) they provide a detailed breakdown of the industries and occupations in which the experienced labour force works.

As the Census is a "place of residence"-based survey, it is assumed that in using these data there is a general correspondence—at a relatively high level of spatial aggregation—between where people work and where they live. Recognizing that some people could work outside of the region in which they live, it may seem more logical to use "place of work" data (also available through the Census) as a means to identify the spatial origins of BC's exports. Unfortunately, the place of work data have other limitations and would not necessarily provide any improvement over the "place of residence" data.[7]

As noted above, labour force data have been tabulated by both industry sector and occupation classification, which is important for two reasons (a complete list of the industries and occupations considered in this analysis can be found in the appendix to this report in Section VIII). First, the industry dimension provides the link between a region's labour force in a particular industry sector and the exports of goods or services in the same industry sector (for example, the forestry and logging sector). Second, the occupation dimension—which describes the type of work a person actually performs within a particular industry sector—permits identification of those labour force participants that can be tied to the activities that generate the underlying product or service that characterizes each industry sector.

Map 1

As an example, in addition to those people in occupations that are unique to forestry operations and are directly responsible for the extraction of BC's forestry products (such as tree-fellers or green-chain operators) there are a host of indirect occupations, such as head office functions in accounting, human resources, marketing, or legal services that are also found within the forestry industry. While the occupations unique to forestry would logically be located in the forests, the head office occupations may not necessarily be located in the region where the export originates. The cross-tabulation of industry and occupation data essentially allows us to determine, for each industry sector, those in the labour force who are directly tied to the extraction of the resources or the provision of the services being exported from each region within the province.

As indicated in the Introduction, these data were tabulated for regions throughout the province. While it is important to consider the metropolitan / non-metropolitan context—

6 Data from the 2011 Census, and more specifically the National Household Survey, will be available in 2013.

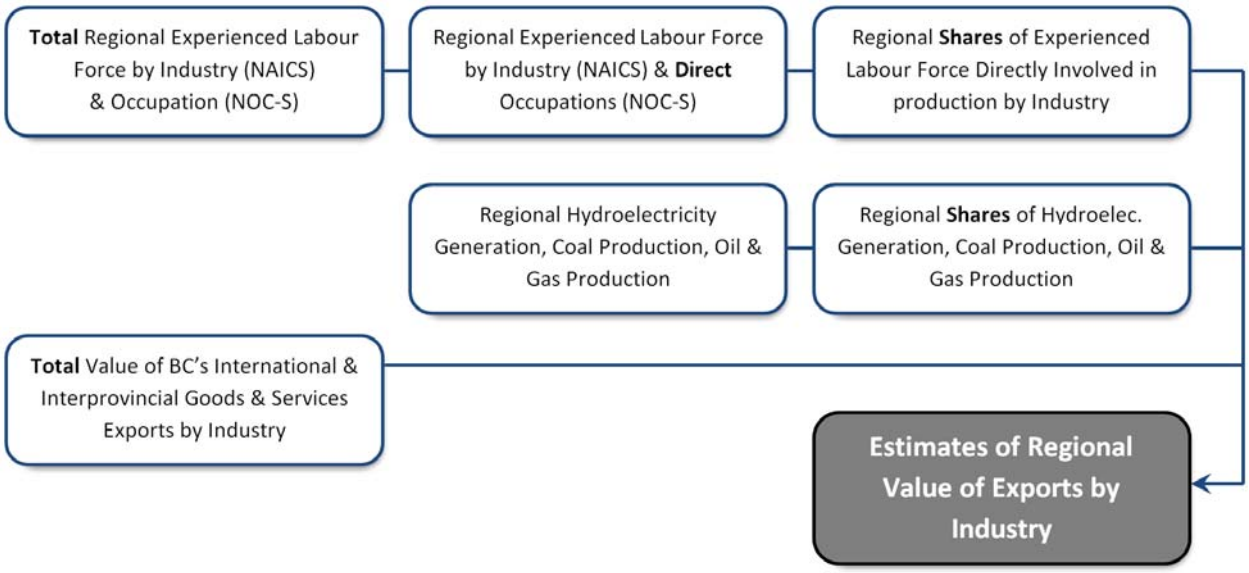
7 The primary limitation of the place of work data is that it is comprised of three categories of employment: people with a usual place of work outside the home; people who work at, or from, home; and people with no fixed workplace. In disaggregating the labour force data into these sub-groups (rather than using the total experienced labour force) results in a significant amount of suppressed data when the data for development regions is cross-tabulated by industry and occupation category.

Cross-tabulated occupation and industry data allow us to determine who is directly responsible for the extraction of resources or provision of services in each sector

given the service orientation of the metropolitan regions and the resource focus of the non-metropolitan regions—the analysis was compiled for BC's eight development regions, shown in Map 1 (refer to the appendix for a list of the regional districts comprising each development region). With respect to the metropolitan / non-metropolitan analysis, BC's metropolitan regions are comprised of the Lower Mainland (the Greater Vancouver Regional District and the Fraser Valley Regional District), the Capital Regional District (which includes the city of Victoria and its surrounding communities), and the Central Okanagan Regional District (which includes the city of Kelowna and its surrounding communities). Non-metropolitan regions have been assumed to comprise all communities outside of these four Regional Districts.

With the provincial export data and regional experienced labour force data in hand, the first step in the export allocation process is to identify the occupations that are directly responsible for generating the underlying products or services within each industry sector. With these specific occupations identified for each region, the next step is to calculate, on an industry specific basis, each development region's share of BC's 2006 experienced labour force in these direct occupations. Assuming constant labour productivity within each individual sector across all regions[8], the shares of direct regional employment for each industry are then applied to the total dollar value of BC's 2006 international and interprovincial goods and services exports in each industry category. The result is an allocation of the value of exports within each NAICS industry category to regions throughout the province. An example of the allocation process using the forestry industry has been included below.

General Modelling Framework, 2006 estimates



An Export Allocation Example: Forestry and Logging

In 2006, forestry & logging (NAICS code 113, a sub-sector of the larger forestry sector considered throughout this report) accounted for $807.3 million in total exports. The 21,470 people comprising the experienced labour force within forestry & logging in BC, 10,740 of these (50 percent) belonged to the Occupations Unique to Forestry, Primary Production Labourers, & Heavy Equipment Operators category; in other words, half of the experienced labour force in NAICS industry 113 was directly involved in the extraction, or production, of forestry-related products (Table 2). Among the other occupations in this

8 The assumption of constant labour productivity across regions is necessary to provide consistency in approach across sectors. It is understood that there may be differences in productivity by region and sector; however, without specific data that could inform regional productivity variations within sectors, we have adopted a constant labour productivity approach.

industry sector there were 1,145 people in Management Occupations and 1,775 people in Administration Occupations.

Table 2

Forestry & Logging (NAICS 113): Direct Employment & Exports by Region, 2006	Occupation									Estimated 2006 Regional Forestry & Logging Exports *(millions $)*
	Total Exp. Labour Force	Management	Administration	Technical & Professional Occs	Health, Culture, & Social Service Occs	Tourism & Sales	Trades, Transport, Equip. Operators, & Manu. Processors	Occs Unique to Forestry, Primary Prod. Labourers, & Heavy Equip. Operators	% of BC's Occs Unique to Forestry, Primary Prod. Labourers, & Heavy Equip. Operators	
Vancouver Island / Coast	6,420	265	520	585	20	75	1,760	3,195	30%	$240.1
Mainland / Southwest	2,580	270	300	210	10	130	705	955	9%	$71.8
Thompson / Okanagan	3,580	150	290	255	0	50	885	1,950	18%	$146.6
Kootenay	1,715	120	150	100	0	40	380	925	9%	$69.5
Cariboo	3,935	160	325	260	0	85	1,055	2,050	19%	$154.1
North Coast	930	40	60	35	10	0	220	565	5%	$42.5
Nechako	1,515	80	85	85	0	35	460	770	7%	$57.9
Northeast	795	60	45	65	0	20	275	330	3%	$24.8
British Columbia	21,470	1,145	1,775	1,595	40	435	5,740	10,740	100%	$807.3

The labour force data show that the Vancouver Island / Coast region of the province had the greatest number of people in this industry sector (representing 6,420 of the province's total of 21,470, or 30 percent). The Vancouver Island / Coast region also had the greatest number of people working in Occupations Unique to Forestry, Primary Production Labourers, & Heavy Equipment Operators at 3,195 people, or 30 percent of all people in this occupation in the province. Interestingly, with only nine percent of the total jobs in this industry sector in the Mainland / Southwest region, a significant proportion of indirect occupations were found here: for example, 24 percent of Management Occupations in the forestry industry were located in the Mainland / Southwest region.

With these direct occupations identified, the next step in the allocation process is relating each region's share of the industry-specific occupations directly associated with the origination of each industry's production to the value of BC's exports for that industry. Again, using the forestry example, the Vancouver Island / Coast region, with 30 percent of BC's direct occupations in forestry and logging, would be allocated $240.1 million in forestry and logging exports, 30 percent of the $807.3 million total that BC exported in 2006. The Cariboo region would be the second-largest contributor at $154.1 million (19 percent), followed by the Thompson / Okanagan region with $146.6 million (18 percent).

While this example focuses on the export of forestry and logging goods, service sector exports were allocated to regions using the same approach of identifying the "contact" occupations that directly deliver exported services (for example the chefs and the servers in restaurants, the guides in tourism, the cleaners in hotels, and the cashiers and sales clerks in retail). As with the forestry and logging example, certain occupations were excluded as not being directly involved (such as senior management, administrators, police and security guards, or dentists). Each region's share of the province's total experienced labour force in these service delivery occupations is applied to the total export of services for each industry classification to provide an estimate of each region's export of services.

Given the structure of the available data on experienced labour force and the nature of employment activity, it was necessary to develop a slightly different approach for the oil and gas, coal mining, and utilities sectors. The diverse employment structure of these three industries meant that a considerable

share of each industry's experienced labour force was located in regions where there was no obvious production of the products defining each industry. For example, with respect to utilities, a significant share of occupations (both direct and indirect) within this industry were located in the Lower Mainland; in part, due to BC Hydro's head offices being situated in Vancouver. However, only a small share of actual generation capacity is found within the Lower Mainland. As such, data on the distribution of generation capacity within the province was used to distribute the value of exports from this industry to regions within the province. A similar approach was used to allocate exports of coal, which was based on the distribution of coal production estimated for each of the ten coal mines located in BC[9], and oil and gas, which was based on the volume distribution of commercial extraction and production[10].

While one could argue that such an approach could be undertaken for other sectors (such as forestry and the distribution of output from mills throughout the province), identifying appropriate data to distribute export values for other goods-and-services-producing industries becomes increasingly challenging beyond the utilities, coal mining, and oil and gas industries. Therefore, with the exception of these three industry sectors it was decided that a uniform approach for all industry sectors and regions outweighed the value of tailoring each region's share according to a unique set of parameters for each industry.

The analysis is focussed on the origins of the goods and services exported, and not the supporting activities that take place before they are exported

Finally, it is important to note that in identifying the spatial origins of BC's exports through their assignment to specific regions within the province, the analysis is focused specifically on the origin of the goods and services that are exported, and not on the regions in which indirect (supporting) activities take place before they are ultimately exported. As an example, the fact that a forestry company's lawyers all work in downtown Vancouver should not—and does not—mean that forestry exports from that company originate in downtown Vancouver. This is not to say that supporting occupations in one region do not contribute to the value of exports that originate in another region, only that they are not associated with either the initial extraction/production of a commodity or the provision of a service that is, itself, exported.

9 BC Ministry of Energy and Mines and Responsible for Housing.
10 *Ibid.*

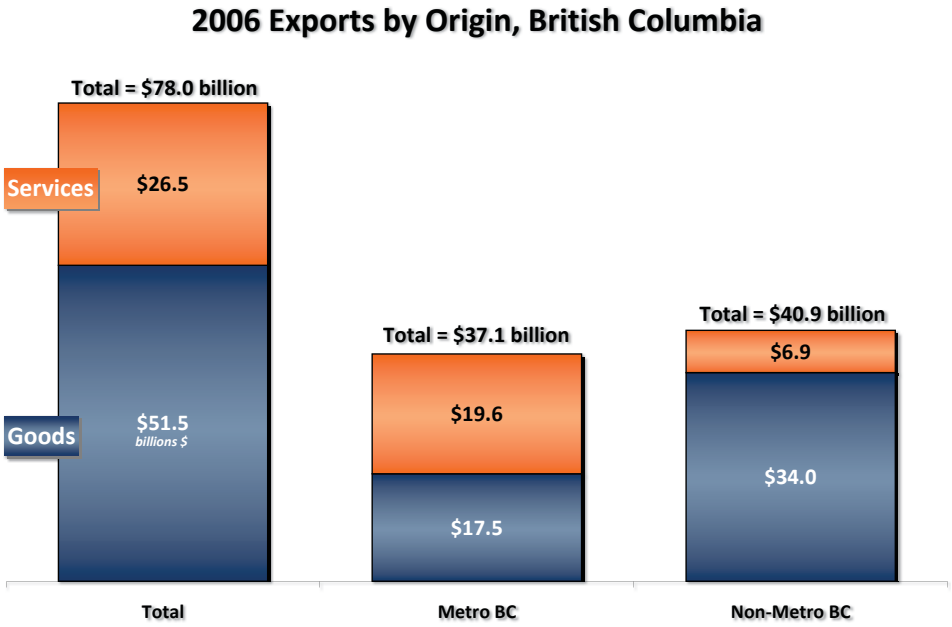
IV The Spatial Origins of British Columbia's Exports

The methodology described in the previous section is applied to each of the industry sectors at a level of aggregation that ensures consistency between both international and interprovincial exports and the data on experienced labour force, thereby yielding estimates of the value of exports generated from regions in British Columbia in 2006. The detailed industries have been aggregated into seven major industry sectors, with the value of exports from each industry and for each region summarized in the appendix (Section VIII) to this report.

With the most significant differences in economic activity seen between BC's metropolitan and non-metropolitan regions, it is logical to present the results for these broad regions before presenting the details for each individual development region (the latter of which can be found in Section V). It is also worth re-stating at this time that for this research, BC's metropolitan regions include the Greater Vancouver, Fraser Valley, Capital, and Central Okanagan regional Districts, while non-metropolitan regions comprise all other parts of BC.

Figure 8

Exports from Metropolitan and non-Metropolitan Regions of BC



As shown in Figure 8, this approach to spatially allocating the province's exports results in BC's metropolitan regions accounting for a total of $37.1 billion in total exports in 2006, or 48 percent of the province's $78.0 billion in exports. It is worth noting that if only the Lower Mainland and the Capital region are considered (with the Central Okanagan region being excluded), these two regions accounted for 45 percent of BC's exports; by further excluding the Capital region, the analysis shows that the Lower Mainland contributed 41 percent of the province's exports in 2006.

Metropolitan regions accounted for $37.1 billion in exports in 2006, 48 percent of BC's total

Of the total exports from all metropolitan regions, just under one-half (47 percent) were from the goods-producing sectors ($17.5 billion), while the remaining 53 percent were from the service sectors ($19.6 billion).

The province's non-metropolitan regions accounted for slightly more than half (52 percent) of total provincial exports, contributing $40.9 billion to total exports in 2006. Contrasting the composition of exports from the metropolitan region, the overwhelming majority of non-metropolitan exports were in goods-producing industries: 83 percent, or $34.0 billion, of the non-metropolitan regions' exports were in these industries, with only 17 percent of exports generated from the service sectors ($6.9 billion).

With the non-metropolitan regions weighted heavily to the goods-producing export sectors, they accounted for two-thirds (66 percent) of BC's $51.5 billion in international and interprovincial goods exports in 2006. Conversely, with only $6.9 billion of service exports originating in the non-metropolitan

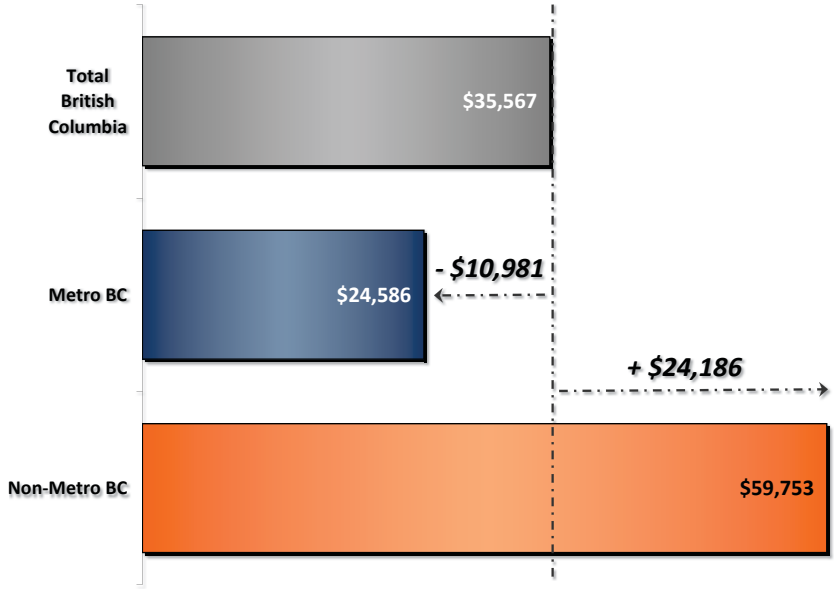
Non-metropolitan regions accounted for 2/3 of BC's total goods exports

regions, the metropolitan regions accounted for almost three-quarters (74 percent) of BC's total services exports of $26.5 billion to other provinces and countries in 2006.

Another way of considering the magnitude of these regional contributions is to consider them relative to the total experienced labour force in each region, or the average value of regional exports for each experienced labour force participant throughout BC (similar to a per capita measure). In this context it is useful to note that out of BC's total 2006 experienced labour force of 2.2 million people, 70 percent (1.5 million people) were situated in the province's metropolitan regions; the remaining 30 percent—680,000 people—were located throughout the rest of the province.

Figure 9

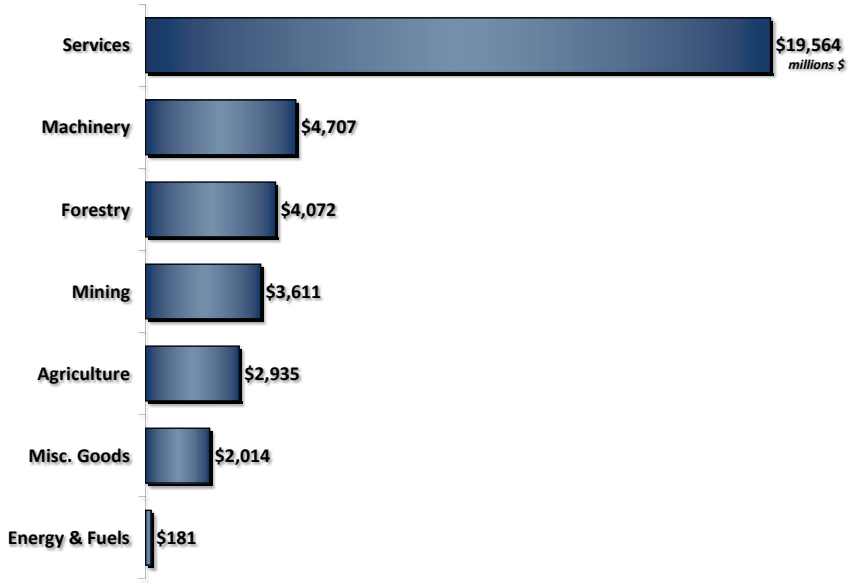
2006 Exports per Experienced Labour Force Participant, BC



Overall, with a total experienced labour force of 2.2 million and total exports of $78.0 billion, exports averaged $35,567 per experienced labour force participant across all of BC in 2006 (Figure 9). With the majority (70 percent) of the province's labour force in metropolitan regions, and a slightly smaller share of total provincial exports originating here (48 percent), the value of exports per experienced labour force participant in BC's metropolitan regions in 2006 was well below this average, at $24,586. With a much smaller share of the province's labour force (30 percent), and a slightly greater contribution to BC's total exports than the metropolitan regions (52 percent), the province's non-metropolitan regions contributed an average of $59,753 in export value per experienced labour force participant—more than twice that seen in the metropolitan regions.

Figure 10

2006 Exports by Type, Metropolitan British Columbia



It is important to note here that the measure of "per capita" exports does not in itself imply that the labour force participants of non-metropolitan regions are more productive than those living in metropolitan regions. What the measurement does show is that, relative to the size of their experienced labour forces, BC's non-metropolitan regions contribute more to BC's exports than do the metropolitan regions.

On an industry-specific basis, the largest component of exports originating from the metropolitan regions in 2006 was services, valued at $19.6 billion (Figure 10). Within this

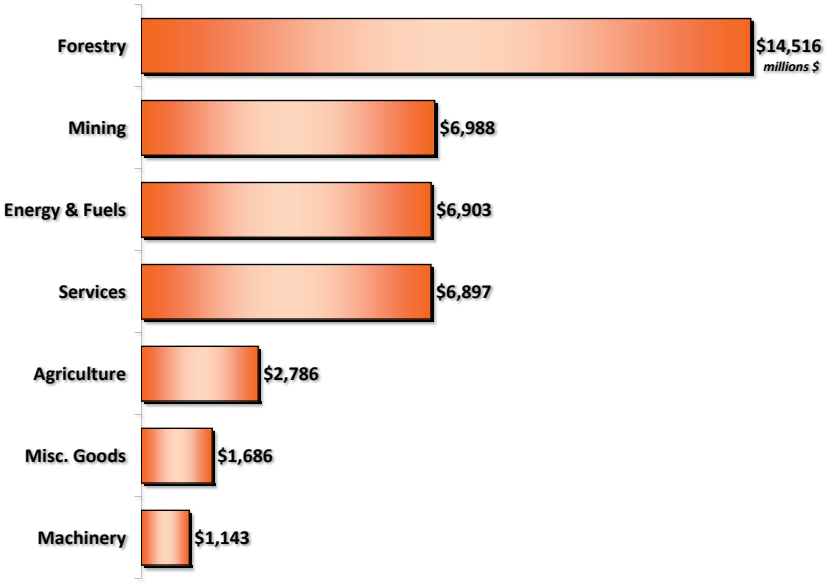
Relative to the size of their labour force, non-metro regions contribute much more to BC's exports than do metro regions

broad industry, significant exports were generated by the transportation, professional, wholesale trade, and accommodation and food services sectors.

In a distant second place was the $4.7 billion generated by the export of machinery (such as electrical and transportation equipment), which accounted for 13 percent of all exports originating from the metropolitan regions. Forestry exports, which in the case of the metropolitan regions consists mainly of manufactured wood products, accounted for an estimated $4.1 billion in 2006, or 11 percent of total regional exports. The other export categories (mining, agriculture, miscellaneous manufactured goods such as furniture, and energy and fuels) each represented ten percent or less of all exports originating in these regions and ranged between the $181 million in energy and fuels and the $3.6 billion in mining.

Figure 11

2006 Exports by Type, non-Metropolitan British Columbia



Contrasting the composition of exports originating in BC's metropolitan regions, the most prominent exporting industry in the non-metropolitan regions, by value, was forestry. In 2006 non-metropolitan regions generated an estimated $14.5 billion in forestry exports, 35 percent of their total regional export value (Figure 11).

Exports of energy and fuels (which includes natural gas and electricity), services, and mining (which includes, most prominently, exports of coal) all accounted for approximately equal shares (17 percent) of exports from the non-metropolitan regions. More specifically, mining exports generated $7.0 billion in income in 2006, followed by energy and fuels and services, each at $6.9 billion. Each of the remaining export sectors—agriculture, machinery and equipment, and miscellaneous manufactured products—each accounted for less than ten percent of the total value of exports originating in these regions, ranging between the $1.1 billion in machinery exports to the $2.8 billion in agriculture.

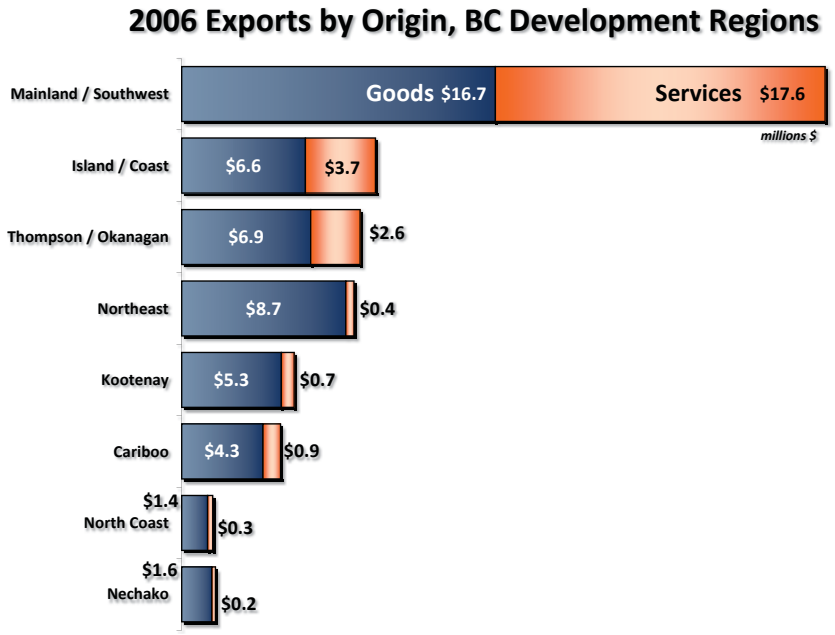
Given this approach to identifying the spatial origins of BC's exports, Figure 10 clearly demonstrates the predominance of service sector exports within BC's metropolitan regions. This should not be surprising, given the overall composition of labour force activity within the metropolitan regions, with 82 percent of the labour force working in the service sector of the economy.

The role played by the province's non-metropolitan regions in the extraction and export of our natural resources is also evident in Figure 11: almost 80 percent of all export activity from these regions was directly linked to rural and resource activities such as farming, timber harvesting, mining, and fishing.

British Columbia's Exports by Development Region

Considering the composition of exports originating in BC's metropolitan and non-metropolitan regions provides some insight into the differing economic structure of the province's urban and rural communities. However, it is possible to consider in more detail the wide range of endowments, experiences, and exports that are found throughout the province. To this end, the same data and approach can be applied

Figure 12



to development regions, with Figure 12 providing a starting point for the analysis of exports by detailed region.

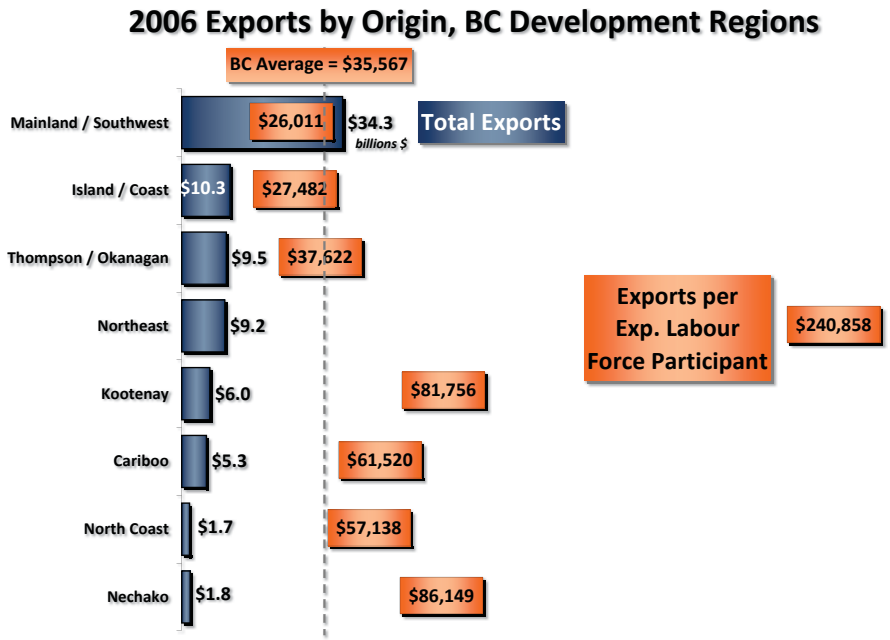
With the most significant share of the province's population (60 percent) and experienced labour force (also 60 percent) located in the Mainland / Southwest, this region provided the largest contribution to the province's export base among all development regions within BC in 2006. Specifically, the total value of goods and services exports originating in this region was $34.3 billion, with goods exports totalling $16.7 billion (49 percent of the region's total value of exports) and service exports totalling $17.6 billion (accounting for the other 51 percent of the region's exports, thereby amounting to 66 percent of BC's total service exports).

The Mainland / Southwest region made the single largest regional contribution to BC's exports

With relatively large urban centres at their cores, both the Island / Coast and Thompson / Okanagan regions also contributed significantly to BC's service exports: the $3.7 billion in services exports originating in the Island / Coast region (36 percent of the total value of its exports) represented 14 percent of BC's total; while the $2.6 billion in service exports originating in the Thompson / Okanagan region (27 percent of the total value of its exports) accounted for a further ten percent. In total, these three development regions were responsible for nine out of every ten dollars generated through service exports in BC in 2006.

While contributing significantly to service exports, each of these regions in fact exported more goods, by value, than did the remaining development regions throughout the province, with the exception of the Northeast. Overall, the Island / Coast, Mainland / Southwest, and Thompson / Okanagan regions were responsible for $54.1 billion (69 percent) of BC's $78.0 billion of total goods and services exports in 2006.

Figure 13



Resource-based exports—specifically those in forestry, mining, and oil and gas—dominated the contributions of the other five development regions. Of the $23.9 billion in exports that originated from the combined Kootenay, Cariboo, North Coast, Nechako, and Northeast regions, goods exports were valued at $21.4 billion, representing 89 percent of their total. As a result, service exports played a much smaller role, both

within their export sectors (accounting for only 11 percent of total exports from these regions) and as a share of the total services exports from BC (ten percent).

When the distribution of BC's experienced labour force within the province is recognized, a different picture emerges. While exporting almost three times more by value than any other region, the Mainland / Southwest's contribution to BC's exports per experienced labour force participant—at $26,011—was 27 percent below the provincial average of $35,567 (Figure 13). The two other regions with large urban components—the Island / Coast and Thompson / Okanagan regions—fell on opposite sides of the provincial average, producing export values per experienced labour force participant of $27,482 and $37,622, respectively (Figure 13).

In the Northeast region the value of exports per labour force participant was $240,858; the provincial average was $35,567

With its small population, the most dramatic result that emerges in considering exports per labour force participant is the province's Northeast corner. With a 2006 experienced labour force of 38,125—representing only two percent of the provincial total—and exports of $9.2 billion, the Northeast's contribution to provincial exports per experienced labour force participant was $240,858, almost seven times the provincial average of $35,567 and nine times the per experienced labour force participant export value of $26,011 generated in the Mainland / Southwest region.

In the next section, more detailed profiles of each development region are presented, including some general details on the industrial composition of their economies, their exports, and their contribution to the region's export base.

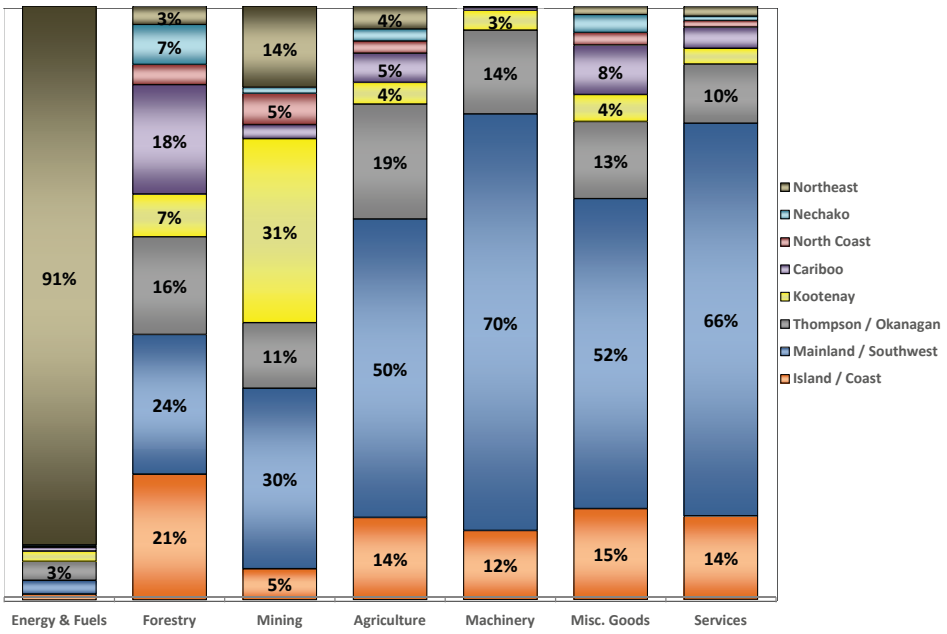
V 2006 Development Region Profiles

Before considering each of BC's individual development regions in detail, Figure 14 summarizes the contribution each region made to the province's exports in seven broad sectors in 2006.

British Columbia's energy and fuels exports were driven by the Northeast region, which accounted for 91 percent of exports in this sector in 2006, a result of the vast reserves of natural gas located in the region. While the Mainland / Southwest accounted for only two percent of BC's energy and fuels exports, this region played a much greater role in all other exports sectors, accounting for between 24 percent of exports (in forestry) and 70 percent (in machinery).

Figure 14

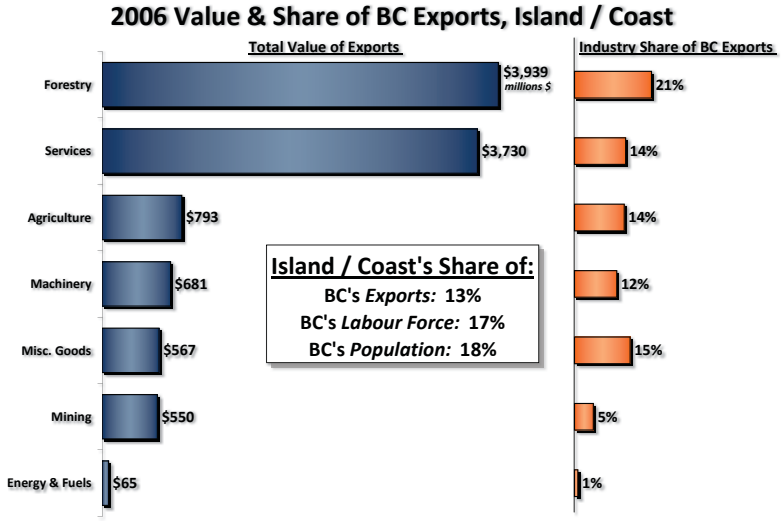
Share of Exports by Sector, 2006



Both Thompson / Okanagan and Island / Coast also played relatively significant roles in BC's exports outside of the energy and fuels sector. Specifically, Thompson / Okanagan contributed between ten percent of exports (in services) and 16 percent (in forestry), while Island /Coast accounted for 12 percent of the total value of machinery exports, 14 percent of agriculture and services exports, 15 percent of miscellaneous manufactured goods exports, and 21 percent of forestry exports.

Other contributions of note include the Kootenay region of BC accounting for 31 percent of total mining exports (through its export of coal), the Cariboo region generating 18 percent of the province's forestry exports and eight percent of its miscellaneous goods exports, and the Northeast—in addition to its huge role in the energy and fuels export sector—contributing 14 percent of BC's mining exports.

Island / Coast



The Island / Coast region's economy reflects a mix of rural and urban activities; with 19 percent of the experienced labour force in the Island / Coast region in goods-producing industries and 81 percent in service-based activities (the latter is slightly higher than the provincial average of 79 percent).

The City of Victoria, located in the southern part of the region, is the provincial capital and therefore home to a range of education, health, and public sector institutions; as such, it has a significant concentration of service-based employment. Goods-producing activities are more prominent outside of Victoria, with forestry and agriculture playing important roles throughout the rest of the region.

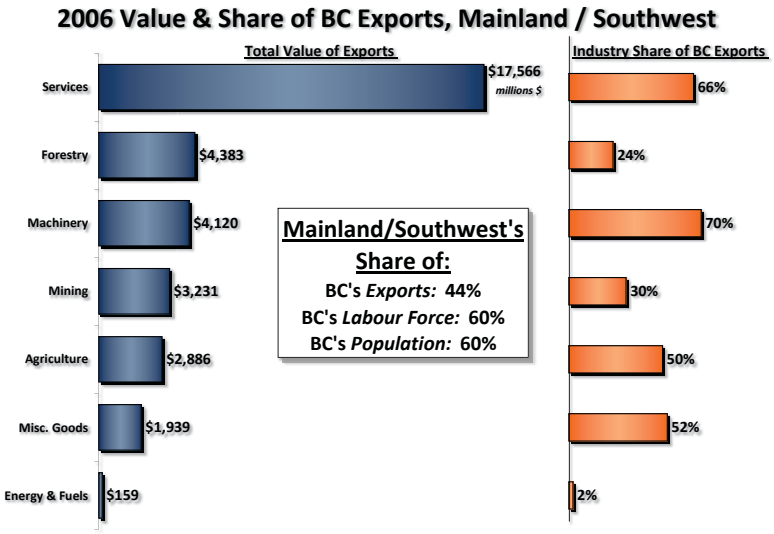
Based on the composition of its experienced labour force and the mix of occupations directly involved in producing the region's exports, forestry-related exports totalled en estimated $3.9 billion in 2006, representing the region's largest contribution to BC's exports. More specifically, exports of timber, manufactured wood, and paper products originating from the Island / Coast region represented more than one-fifth (21 percent) of the total value of forestry exports from the province in 2006.

Service exports from the Island / Coast totalled $3.7 billion in 2006, significantly more than the combined value of exports in agriculture, machinery, mining, miscellaneous manufactured products, and energy and fuels ($2.7 billion total). With both the second-largest experienced labour force and population of any development region in the province (376,000 people in the labour force and 745,000 residents in 2006), service exports accounted for 14 percent of total service-based exports from the province in 2006.

While not nearly as prominent as the region's forestry and service sectors, agricultural activity throughout the region (such as in the Cowichan and Comox Valleys) generated $793 million dollars in export revenue in 2006, representing 14 percent of all provincial exports of agricultural goods. Exports of machinery from the region generated $681 million, while miscellaneous goods, mining (including coal from the Quinsam mine), and energy and fuels each contributed between one and 15 percent of BC's exports, by value, in 2006. Collectively, these sectors accounted for 18 percent of this region's exports.

Overall, $10.3 billion worth of British Columbia's 2006 exports originated from the Island / Coast region, representing 13 percent of BC's total exports. However, this falls below the region's share of BC's experienced labour force (17 percent) and population (18 percent). As such, this region made a below-average per labour force participant contribution to BC's export base in 2006.

Mainland / Southwest



Representing the metropolitan core of British Columbia, the Mainland / Southwest region had the greatest share of its experienced labour force in service-based industries in 2006 compared to other regions throughout the province: while only 18 percent of its labour force was in goods-producing sectors, 82 percent was in service-based industries.

With 1.3 million people in the labour force and 2.5 million residents—both representing 60 percent of BC's total in 2006—it is not surprising that the value of exports originating from the Mainland / Southwest region was so substantial, at an estimated $34.3 billion. As such, the region accounted for 44 percent of BC's exports in 2006.

Given the diverse service-based economy of the region, which includes transportation and port-related activities, as well as professional/scientific/technical services, it is also not surprising that services represented the largest export sector in the region at $17.6 billion. In 2006 the Mainland / Southwest region accounted for two-thirds (66 percent) of BC's total service exports.

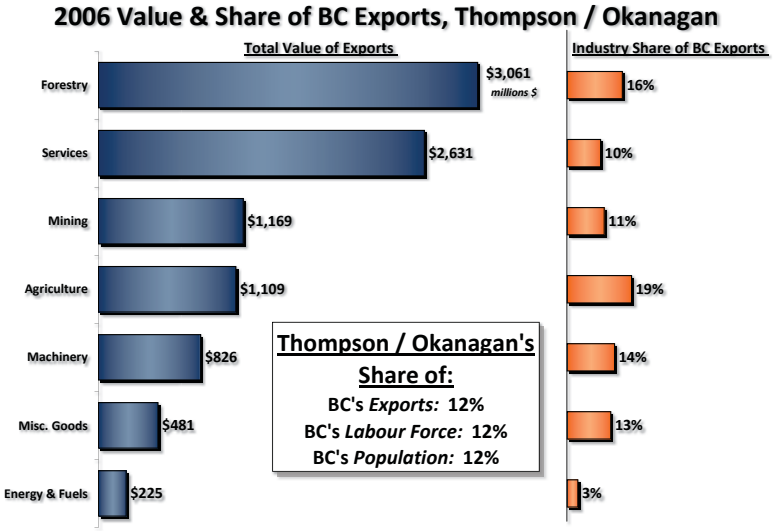
At roughly one-quarter the value of its service exports, forestry and wood-related product exports from this region totalled $4.4 billion in 2006. This resulted from, among other things, logging activities in the Sunshine Coast and Squamish-Lillooet regions, and the shipment of wood products from sawmills in the Lower Mainland. In total, the $4.4 billion in forestry related exports from this region were significant in a provincial context, accounting for almost one-quarter (24 percent) of the province's total exports of forestry-related goods.

Exports of machinery from the Mainland / Southwest region were valued at $4.1 billion in 2006, with the region accounting for 70 percent of BC's total exports of products in this category. Next were mining exports, which generated $3.2 billion in revenue and accounted for 30 percent of the provincial total in this sector. Agricultural product exports from the region are also noteworthy: from the cranberry farms in Greater Vancouver to the farms of the Fraser Valley, this region generated 50 percent ($2.9 billion) of BC's total agriculture export revenue in 2006.

In addition to the export of machinery, the manufacturing dimension of the region's economy is further emphasized through consideration of its exports of miscellaneous manufactured goods which, at $1.9 billion, accounted for 52 percent of total provincial exports in this sector in 2006. Finally, exports of energy and fuels were valued at $159 million in 2006, representing only two percent of BC's total in this sector.

On a per labour force participant basis, this region contributed only $26,011—the lowest value in the province.

Thompson / Okanagan



Compared to the province as a whole, the Thompson / Okanagan region has a greater focus on goods production: slightly more than one-quarter of its experienced labour force worked in the goods sector in 2006 (versus 21 percent provincially), with the service sector accounting for the balance of the labour force.

With a growing metropolitan core (the city of Kelowna) and a large rural component, the 2006 export profile of the region is very similar to that of the Island / Coast region, with forestry and services factoring in prominently.

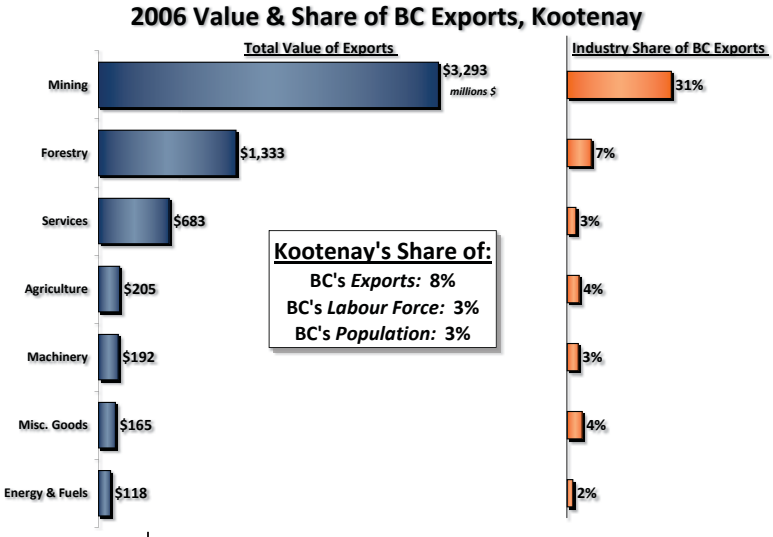
Logging and other forestry-related activities in and around Vernon and throughout the North Thompson part of the region yielded an estimated $3.1 billion in exports for the province in 2006. As such, the region accounted for 16 percent of total exports of forestry-related products in BC.

Given the increasing diversity and magnitude of jobs within the city of Kelowna and in smaller centres, services represented the second-largest export sector in the Thompson / Okanagan, generating $2.6 billion in provincial export income in 2006. This represented ten percent of the total value of BC's exports of services in 2006.

Almost $1.2 billion in mining exports originated in this region, 11 percent of the BC total (from mines such as the Highland Valley copper-molybdenum-gold-silver mine and the MAX molybdenum mine). As well, the value of agriculture exports from Thompson / Okanagan—which includes production in BC's growing wine industry—was $1.1 billion, representing 19 percent of total provincial exports in agriculture.

Overall, 12 percent of BC's total exports originated in the Thompson / Okanagan region in 2006. With 12 percent of the province's experienced labour force (and population), the Thompson / Okanagan's contribution to the province's exports in 2006 was slightly above the provincial average on a per labour force participant basis. In this region, the value of exports per labour force participant was $37,622 in 2006, compared to the provincial average of $35,567.

Kootenay



With 30 percent of its experienced labour force in goods-producing sectors, industries such as forestry, mining, and agriculture play a much bigger role in the Kootenay region than in the province as a whole.

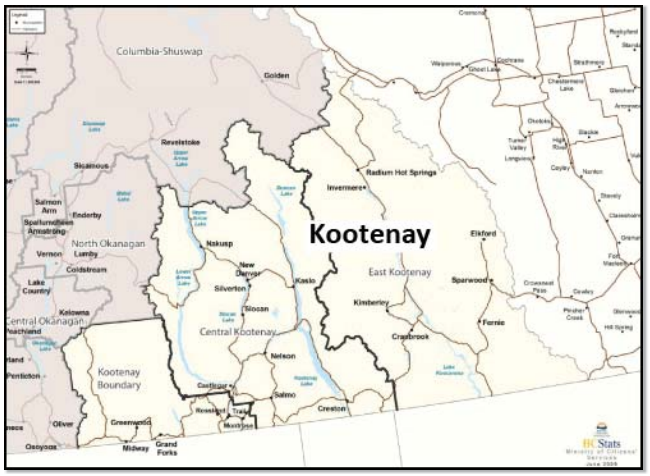
For example, with a number of mines located throughout the region, four percent of the region's labour force is in mining-related activities. Coal mining accounts for the bulk of mining employment, but the region is also home to a gold-copper mine, as well as operations that extract building stone, gypsum and aggregates.

With a long history of mining activity in the Kootenay region, this sector generated an estimated $3.3 billion in exports in 2006, accounting for 31 percent of BC's total mining exports. With significant deposits of copper, coal and zinc (of note is the fact that the world's largest zinc smelter is located in Trail) and a variety of other metals and minerals, the value of mining exports in 2006 was significantly larger than the next largest export sector (forestry).

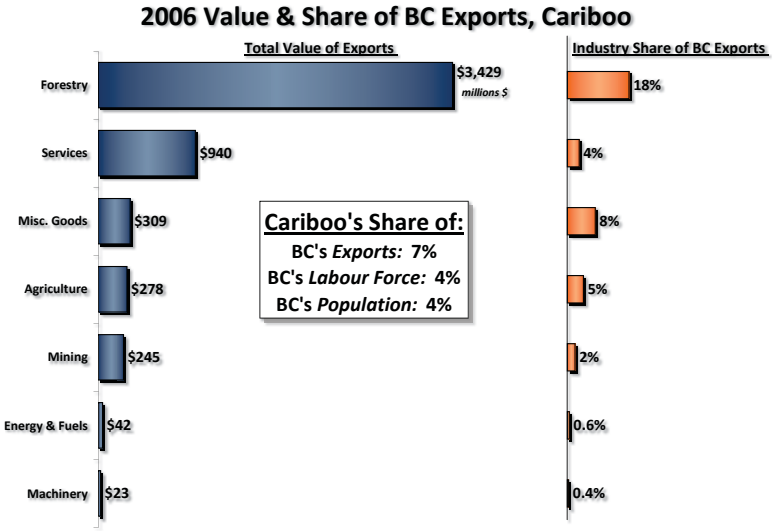
With a heavy reliance on exports of coal produced in the Fording River, Greenhills, Line Creek, Coal Mountain, and Elkview mines, coal mining exports originating in the Kootenay region accounted for 82 percent of the total value of coal exports in BC in 2006. Exports from the forestry sector—largely comprised of manufactured wood products—generated $1.3 billion in export income in 2006, seven percent of provincial forestry-based exports.

Service exports represented the third largest export sector in the Kootenays. Generating $683 million in 2006, services represented 11 percent of the region's total exports, but only three percent of BC's total service exports, largely generated from the travel and accommodation, and retail sectors. Although only the third-largest export sector by value within the region, the value of service exports exceeded the aggregate value of exports in agriculture, machinery, miscellaneous goods, and energy and fuels ($681 million) that originated from the Kootenay region. Exports from each of these individual sectors represented no more than four percent of total BC exports in each sector.

Overall, with total international and interprovincial exports of $6.0 billion (eight percent of BC's total), an experienced labour force of 73,300 (three percent of BC's total), and a population of 143,400 (also three percent), the Kootenay region contributed a more-than-proportional share to the value of BC's exports in 2006. On average, the value of exports per experienced labour force participant in the Kootenay region was $81,756, 130 percent above the province-wide average.



Cariboo



While the Kootenay region has historically been associated with mining activity, the Cariboo region has a long history rooted in forestry activities.

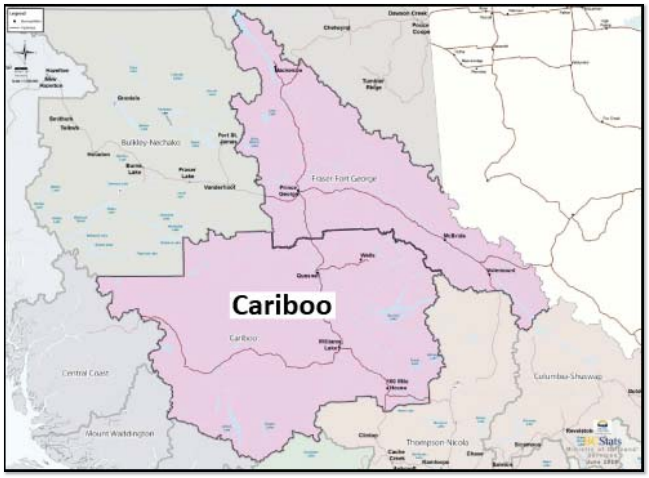
With a significant share of the region's experienced labour force engaged in activities directly associated with the production of forestry products, the communities of Williams Lake, Prince George, Mackenzie, McBride, and the forest areas that surround them, contribute significantly to BC's exports of forestry, logging, and manufactured wood products. In 2006, an estimated $3.4 billion worth of forestry exports (18 percent of the BC's total) originated in the Cariboo region, almost four times the value of the next largest export sector, services.

Service exports originating from the region, at $940 million, represented four percent of BC's total value of service exports. With Prince George serving as the primary transportation hub for BC's northern regions, the export of transportation-related services accounted for 52 percent of service exports from the Cariboo.

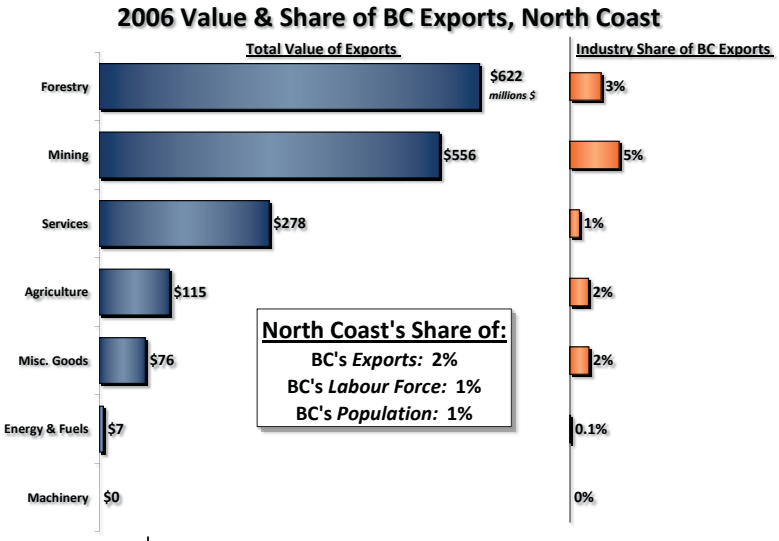
Service exports were, in turn, more than three-times the value of the next biggest export sector, miscellaneous goods manufacturing, which generated $309 million in export revenue in 2006, representing eight percent of BC's total exports in this sector. Exports of agricultural and mining products were also significant, at $278 million and $245 million respectively. That being said, exports from the agriculture sector comprised only five percent of BC's total, while mining exports represented just two percent.

Exports of energy and fuels, and machinery, from this region each accounted for less than one percent of BC's total exports in each sector. Energy and fuels exports were valued at $42 million in 2006, while machinery exports totalled $23 million.

With its experienced labour force of almost 85,600 people (representing four percent of BC's total) and a population of 157,600 (also four percent), exports of $5.3 billion resulted in this region contributing a more-than-proportional share to BC's total export value in 2006 ($61,520 per person in the experienced labour force versus the $35,567 average provincially, a 73 percent difference).



North Coast



Like other largely rural regions, economic activity in the North Coast region is focused more towards goods-producing industries than in the province as a whole (34 percent of the North Coast's experienced labour force is in these sectors versus 21 provincially). Within the goods-producing side of the economy, this region is highly dependent on forestry, fishing, mining and processing activities related to the range of natural resources.

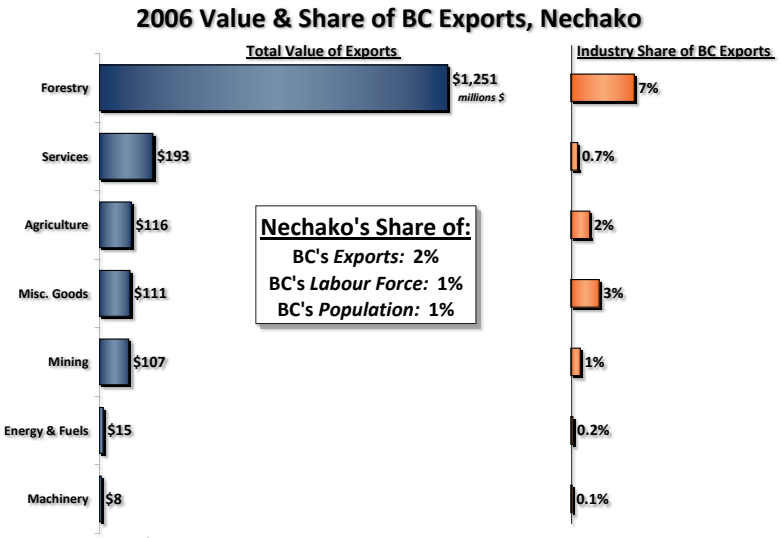
Given the structure of its labour force, the mix of occupations directly involved in the production of goods and services, and the composition of BC's exports, the North Coast's greatest contribution to BC's total exports was in the forestry sector, totalling $662 million in 2006. As such, forestry exports from this region accounted for three percent of BC's total.

The mining industry also had a notable presence in 2006, with exports totalling $556 million, five percent of BC's total value of exports in this sector. With the prominence of the port, rail, and road transportation network in Prince Rupert, complimented by the tourism sector, services accounted for $278 million in exports, making it the North Coast's third-largest export sector. That being said, considering the value of BC's total service exports in 2006, the North Coast was a small contributor, accounting for only one percent of BC's service exports.

Exports from the agriculture sector were valued at $115 million and represented two percent of BC's total in this sector. Also representing two percent of BC's total sector-specific exports were those of miscellaneous manufactured goods, which totalled $76 million. Energy and fuels exports were worth only $7 million (0.1 percent of the provincial total), while the region had no exports of machinery.

As with other resource regions, the North Coast's experienced labour force and resident population—almost 29,000 labour force participants (one percent of BC's total) and 58,800 residents (also one percent)—were both significantly smaller than its share of total provincial exports, which represented two percent of BC's total. This means that the North Coast also contributed a more-than-proportional share to BC's total export value in 2006: $57,138 per person in the experienced labour force versus the provincial average of $35,567.

Nechako



Compared to all other regions in British Columbia, the Nechako region had the largest proportion of its experienced labour force in goods-producing industries in 2006, at 41 percent. As in other non-metropolitan regions of BC, Nechako's economy is resource-based, relying heavily on a primary production sector that includes both forestry and mining.

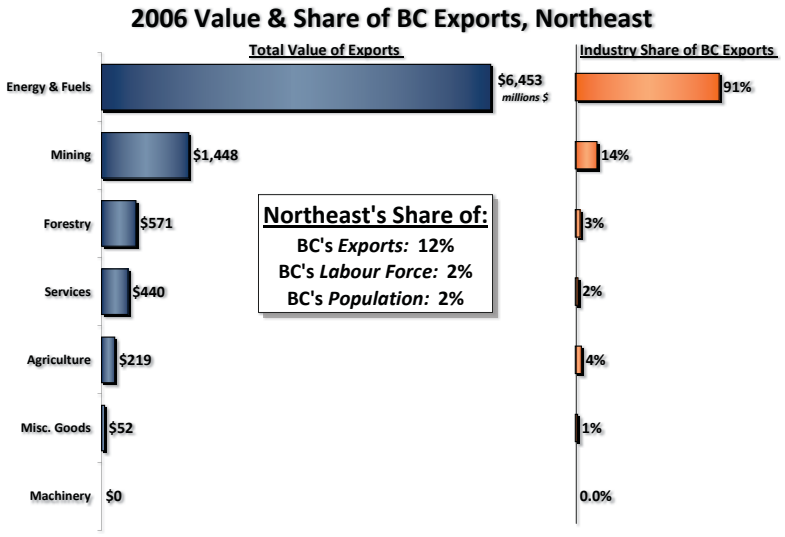
In terms of value, forestry was, by a wide margin, the largest export sector in Nechako in 2006, with forestry product exports totalling an estimated $1.3 billion, seven percent of BC's total. Wood manufacturing accounted for 71 percent of this region's total exports; this is not surprising, given the presence of two large and modern sawmills, Canadian Forest Products' Houston operation, and West Fraser Mill's Houston Forest Products.

Service exports, primarily those relating to transportation, generated $193 million in exports, less than one percent of BC's total service exports. Similar to the North Coast region, exports from the agriculture sector brought in $116 million (two percent of BC's total agriculture exports), while exports of miscellaneous manufactured goods generated $111 million (three percent of the provincial total in the sector).

With significant production at the Huckleberry mine—a large copper/molybdenum mine located near Smithers and Houston—the mining sector contributed $107 million to the region's export base (one percent of total mining exports from BC) in 2006.

Second only to the Northeast region, Nechako's per labour force participant contribution to BC's total exports in 2006 was $86,149, 142 percent above the provincial average of $35,567. This was the result of the region generating $1.8 billion in total export revenue (two percent of BC's total), while representing only one percent of the province's experienced labour force (20,895 out of 2.2 million) and population (40,000 out of 4.2 million).

Northeast



With 37 percent of the region's experienced labour force in good-producing sectors in 2006, the Northeast had the second-largest share of its labour force in these sectors versus other regions in BC.

The importance of the goods sector in the Northeast's economy is largely due to its oil and gas industry, with nine percent of labour force activity in oil and gas and a further ten percent in construction activities. While not a major producer of oil, with virtually all of BC's gas resources in this region, significant quantities of natural gas are produced from gas fields in northeastern BC. Unlike other types of resource extraction, gas production is not labour intensive, with most of the direct employment associated with exploration and initial drilling. Extraction is largely done by pumps and transportation via pipeline, so employment in the industry only partly reflects the importance of natural gas in Northeast's economy.

Located in the western-most portion of the Western Canadian Sedimentary Basin, the Northeast region is the only area of the province that produces commercial quantities of natural gas. With these commodities in high demand—both in other provinces and territories in Canada, and in other countries, namely the United States—energy and fuels were, not surprisingly, the leading export sector for the Northeast region in 2006. In total, an estimated $6.5 billion in energy and fuels exports originated here, accounting for 91 percent of BC's exports in this sector. Also contributing to the high value of exports originating in this sector is the fact that almost 40 percent of the province's total electricity generation capacity is found in the Northeast region.

While energy and fuels exports accounted for four out of every five dollars earned in export income in the Northeast in 2006, the second-largest export sector, by value, was mining. This was led by significant exports of coal from the Willow Creek, Brule, Wolverine, and Trend mines outside of Tumbler Ridge. In total, mining exports from the Northeast totalled $1.5 billion, 14 percent of the province's mining exports.

Exports from the forestry sector ($571 million, three percent of BC's total forestry exports), the service sector ($440 million, two percent), and the agriculture sector ($219 million, four percent), are also noteworthy.

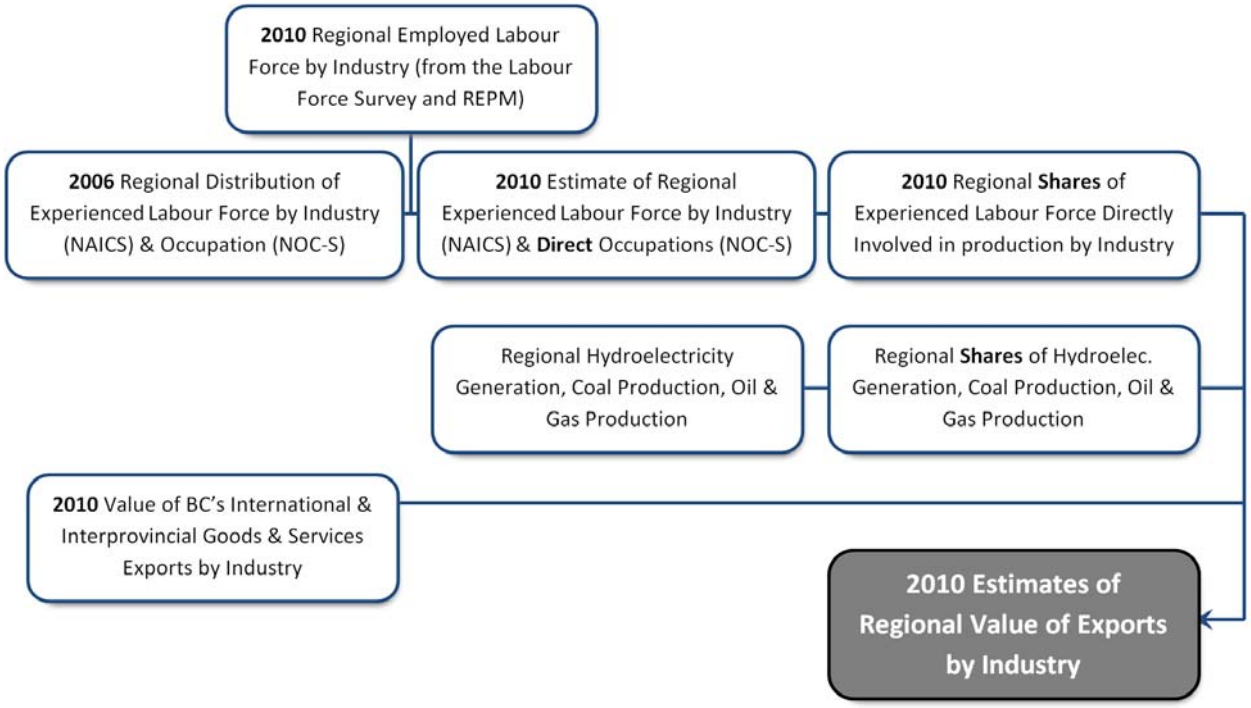
As a result of the Northeast's substantial contribution to BC's total exports in 2006 ($9.2 billion out of $78.0 billion, 12 percent), driven by the energy and fuels sector, this region provided the greatest export value relative to its experienced labour force and population (each representing two percent of BC's total) of any region in the province. Its 2006 exports per labour force participant of $240,858 compared to the provincial average of only $35,567.

VI 2010 Regional Export Estimates

With current details of the experienced labour force by industry and occupation classifications only available with the release of the results from the 2011 Census and the accompanying National Household Survey in 2013, considering the spatial origin of BC's exports for 2010 required several other data sources to be integrated into the analysis. One source of current data on the changing composition of employment and labour force for regions throughout the province is Statistics Canada's Labour Force Survey (LFS). However, although the LFS publishes annual estimates of employment by industry sector for development regions in the province, it only does so for 16 broad industry classifications and does not cross-tabulate the industry data with occupation classifications.

To provide a greater degree of detail in the industry classifications, data from BC Stats' and the Ministry of Jobs, Tourism and Innovation's Regional Employment Projection Model (REPM) were used in conjunction with the most recent LFS estimates to provide regional industry-based employment estimates for 16 goods-producing, and eight service-producing, sectors within BC's development regions for 2010.

General Modelling Framework, 2010 estimates



As both data sources provided estimates for industry sectors, the next step was to convert the industry totals to an industry by occupation classification matrix. This was done by assuming that the regional distribution of occupations within each industry remained as seen in 2006, with this distribution of occupations within each industry sector applied to the 2010 industry totals. While it is reasonable to expect that some changes in occupation structure would have occurred between 2006 and 2010, it was assumed that more significant changes would have characterized the industry sectors (such as the decline in forestry employment or an increase in mining) than the composition of occupations within a particular industry. In other words, the hypothesis here is that, within the context of a growing or declining industry, there would be a proportionate number of people working in, for example, occupations unique to forestry or as managers, within the industry sector, and an increase or decrease in overall industry activity would be accompanied by a proportionate change in each of the occupation types working within that industry.

This process generated a 2010 estimate of regional experienced labour force by industry and occupation through which the occupations deemed to be directly associated with goods and services production could be identified and applied to the 2010 industry-specific export data (as was done with the 2006 data).

Finally, the most recent LFS and REPM data are only available for the combined North Coast / Nechako region. As such, the 2010 export data for these two regions have been combined and output for this broader region included as part of the 2010 estimates that follow.

2010 Highlights by Development Region

As an accompaniment to the 2010 sector-specific export values for each of BC's development regions that are presented in the following pages, a few general comments are warranted.

For starters, it is important to note that while the value of BC's exports increased by $1.8 billion between 2006 and 2010—going from $78.0 to $79.8 billion, a 2.3 percent increase—the value of goods exports actually declined by eight percent (by $4.2 billion) while the value of service exports increased by 23 percent (by $6.0 billion). As a result of these changes, the service sector (not surprisingly) became a more prominent contributor to almost every development region's export base, relative to other sectors, by 2010.

Also shaping the changes seen between 2006 and 2010 was a significant decline in the value of BC's forestry exports between 2006 and 2010, with this being particularly noteworthy for regions where forestry plays a large role in local employment. As an example, when combined with the 26 percent decline in BC's forestry exports between 2006 and 2010 ($4.8 billion), growing service exports saw the value of services in the Island / Coast and Thompson / Okanagan regions overtake forestry as the largest export sector by 2010. This switch between forestry and services also characterized the Northeast region, although the export value of energy and fuels, as well as mining, remained well above that of services in 2010.

Again, much of the changing landscape of regional exports between 2006 and 2010 has emerged due to the significant decline in the value of goods exports from the province since 2006. In the coming years, as the balance between the export value of goods and services returns towards a longer-run historical relationship, the prominence of services in these regions may fall as the value of goods exports becomes more substantial.

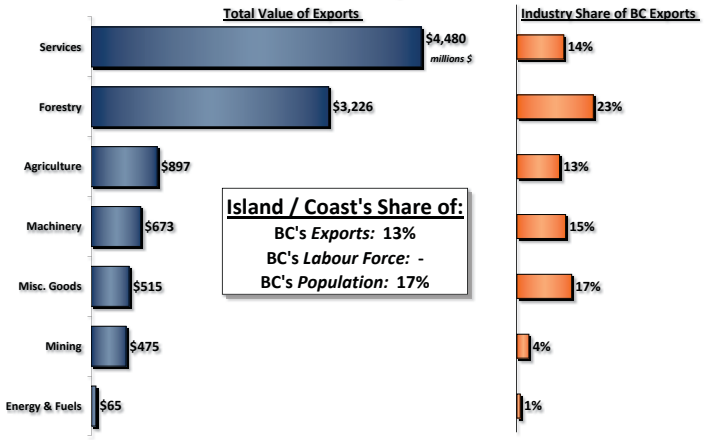
In the Mainland / Southwest, the 20 percent growth in agriculture exports BC-wide between 2006 and 2010 and declines in the export value of forestry, machinery, and mining, saw agriculture become the second-largest export sector in this region by 2010. While agricultural exports moved up in the ranks, the estimated $3.2 billion in exports from this sector still fell well below that of the value of service exports: at an estimated $21.7 billion in 2010, the value of service exports from the Mainland / Southwest region was 1.5 times greater than the value of all goods exports ($14.1 billion).

Similarly, growth in the value of BC's agriculture exports, combined with a decline in mining, saw agriculture overtake mining in terms of its total contribution to the Thompson / Okanagan's export base by 2010. In the Cariboo, a decline in the value of miscellaneous manufactured goods exports saw this sector's prominence also decline in favour of agriculture between 2006 and 2010.

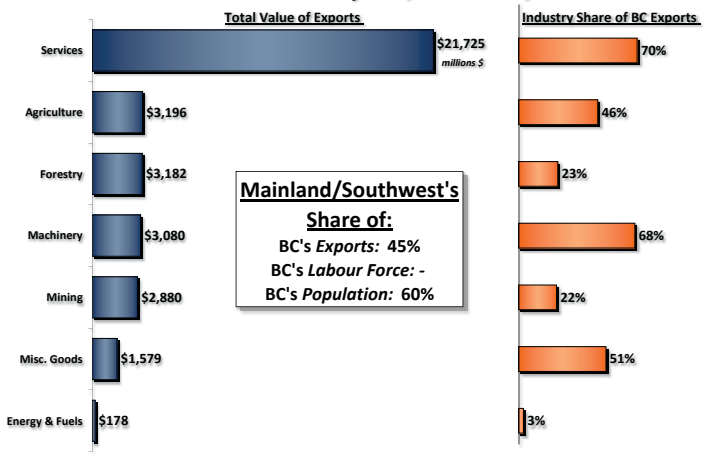
Finally, while the hierarchy of export sectors in the Kootenay region, in terms of their values, did not change appreciably between 2006 and 2010, the relative contributions of machinery (which declined by 19 percent) and miscellaneous manufactured goods (which grew by four percent) changed places by 2010.

As noted above, many of the regional changes seen between 2006 and 2010 can be attributed to the continued growth in BC's exports of services and the decline in the value of forestry exports which began in 2004. From more than $20 billion in total forestry exports in 2004, the value of forestry exports had fallen to $11.6 billion by 2009 before increasing back to an estimated $13.8 billion by 2010; over the same period services grew from $22.5 (2004) to $32.5 billion (2010). While the value of service exports is expected to remain strong – which is of particular relevance to the Mainland / Southwest region – the degree to which the value of forestry exports continues to grow, as and when the US housing market slowly recovers to its long-run average level of construction activity, and/or as BC continues to diversify export markets for its forestry products (primarily by expanding exports to Asia), will have implications for most of the non-metropolitan regions throughout the province. Similarly, growing export values for energy and fuel products, as well as for mining and minerals products, will more heavily impact the province's non-metropolitan regions.

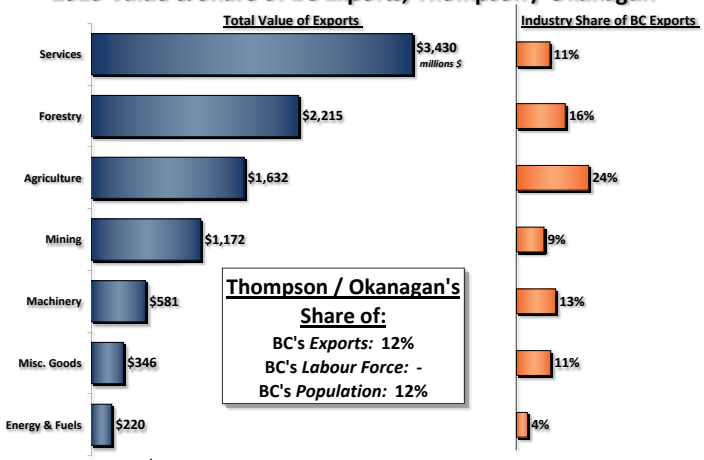
2010 Value & Share of BC Exports, Island / Coast



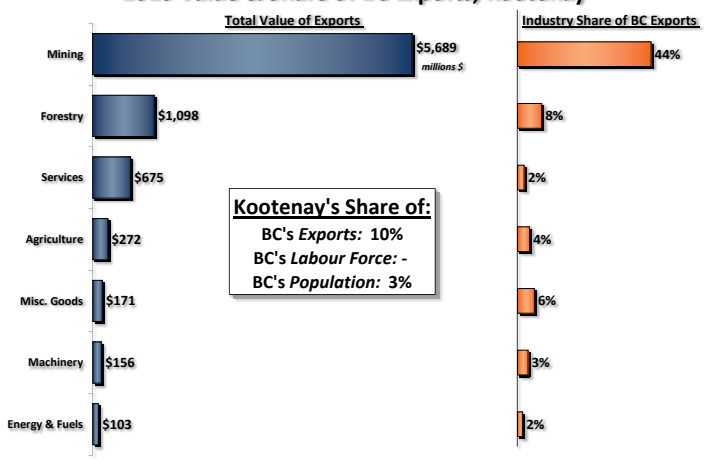
2010 Value & Share of BC Exports, Mainland / Southwest



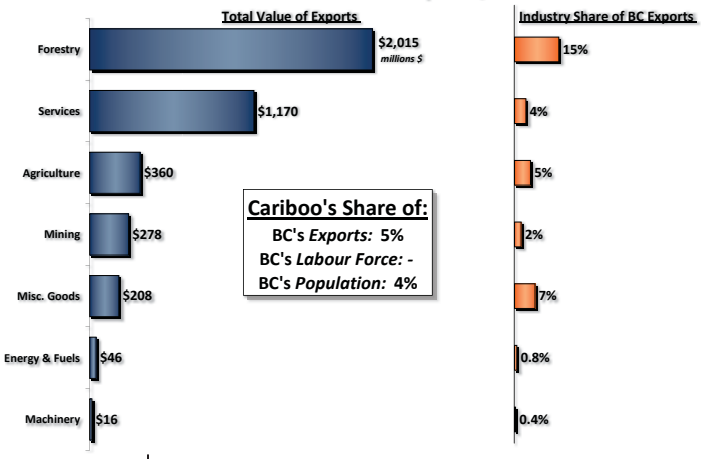
2010 Value & Share of BC Exports, Thompson / Okanagan



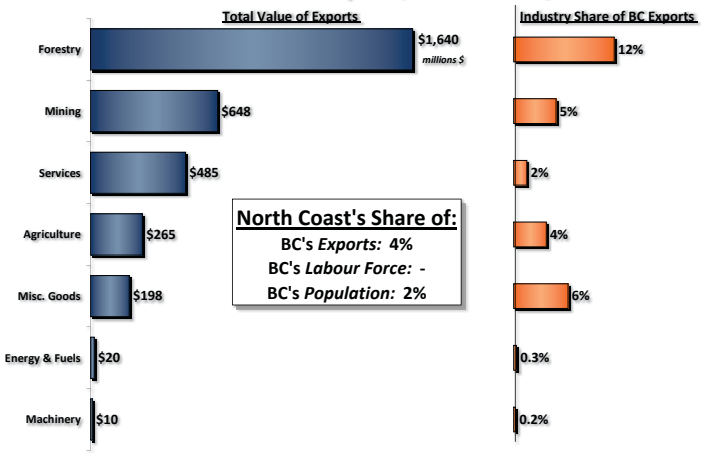
2010 Value & Share of BC Exports, Kootenay



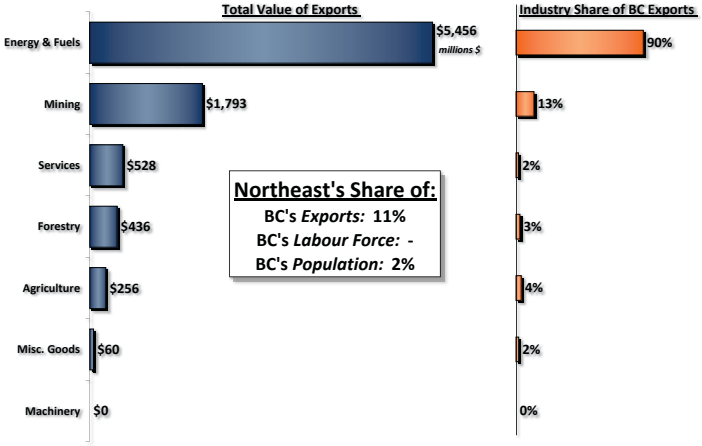
2010 Value & Share of BC Exports, Cariboo



2010 Value & Share of BC Exports, North Coast / Nechako



2010 Value & Share of BC Exports, Northeast



VII Conclusions & Strategic Considerations

British Columbia has a large and diverse economy which produces a wide range of goods and services that are sold to markets throughout Canada and the rest of the world. The province's exports, in turn, help BC's residents and businesses to import a wide range of goods and services, while the government is better able to fund a wide range of public services, from health care, to education and social services.

Given this, it is in the best interests of residents, businesses, and government to work together to ensure that the communities and industries generating the province's exports have the manpower, the infrastructure, and the support that they require to produce export income that is, ultimately, shared among all British Columbians. To this end, we require information that allows us to identify where in the province our exports are originating. Unfortunately, while a significant amount of provincial-level data are available—thereby permitting a broad, BC-wide picture of exports to be painted—the available data currently provide no information about where within the province exports originate or what their composition is.

The goal of this research, therefore, was to develop a framework for allocating the value of BC's exports, by sector, to regions throughout the province. The research shows that BC's non-metropolitan regions accounted for slightly more than half (52 percent) of total BC exports in 2006, contributing $40.9 billion to total exports, while the metropolitan regions accounted for $37.1 billion, representing 48 percent of the province's $78.0 billion in exports.

Of the exports from the metropolitan regions, slightly more than half (53 percent) were from the service-producing sectors ($19.6 billion), while exports from the non-metropolitan regions were heavily weighted towards the goods-producing sectors: 83 percent ($34.0 billion) of the value of total exports from these regions originated in the forests, mines, fields and factories.

While a slightly greater value of exports originated from BC's non-metropolitan regions in 2006, a different picture emerges when these exports are considered relative to the size of the resident experienced labour force in each region. In the context of exports per experienced labour force participant, BC's non-metropolitan regions contributed more than twice that of the metropolitan regions: with 40 percent of the province's experienced labour force, the non-metropolitan regions generated just under $60,000 per person active in the labour force versus the $24,600 in the metropolitan regions. That being said, this is not to suggest that any one region in the province is more productive, important, or deserving than another; it does, however, provide insight into where and how policy directions could be focused for specific regions in BC.

For example, like other western Canadian provinces, BC—and in particular its non-metropolitan regions — has a clear comparative advantage in the extraction and export of natural resources, be it in the forestry, mining, or energy sectors. As such, while exploring potential comparative advantages in other sectors is certainly warranted, economic development policies in these regions should first be directed towards further developing the existing advantages we enjoy in the production of resource-based products. These policies should take two directions: encouraging more productive and efficient operations to ensure that the greatest value possible is extracted from our vast resource endowment, and diversifying the range of markets into which goods are currently exported. This is similarly true for the province's metropolitan regions, which show a comparative advantage in service sector activities due to the economies of scale and scope created by, and associated with, the province's more urban centres.

A final comment on future research is warranted: with the 2006 Census representing the most recent detailed data on employment in regions throughout the province, it will be vitally important to re-base

this research following the release of the 2011 Census (which is expected in early 2013). This will help us further understand how changes in the magnitude and composition of BC's exports and the location and composition of BC's labour force are changing the export picture for the province's regions.

In closing, it is hoped that this research furthers discussions on the importance of exports to the province's economy and its residents, and on specific policy directions for particular regions within the province. Such discussions will, in turn, allow for the development of more effective strategies to respond to economic changes that will directly, and indirectly, affect us all in the years to come. In addition, it is hoped that this approach to identifying the spatial origins of BC's exports stimulates further research into potential differences in same-sector labour productivity levels across regions or the ongoing refinement of the use of experienced labour force data as a mechanism for spatially allocating exports throughout the province.

VIII Appendix

British Columbia's Estimated 2006 Total Exports by Industry & Development Region

Value of exports in millions current $	Island / Coast *NET of Capital*	Mainland / Southwest *NET of Greater Vancouver & Fraser Valley*	Thompson / Okanagan *NET of Cental Okanagan*	Kootenay	Cariboo	North Coast	Nechako	Northeast	Non-metropolitan Regions	Lower Mainland	Capital Region	Central Okanagan	Metropolitan Regions	British Columbia Total
Energy & Fuels	**$60**	**$24**	**$184**	**$118**	**$42**	**$7**	**$15**	**$6,453**	**$6,903**	**$135**	**$6**	**$41**	**$181**	**$7,084**
211 Oil and Gas Extraction	$0	$0	$0	$0	$0	$0	$0	$6,143	$6,143	$0	$0	$0	$0	**$6,143**
22 Utilities	$9	$24	$124	$49	$0	$3	$0	$114	$323	$42	$6	$0	$48	**$371**
324 Petroleum and Coal Products Manufacturing	$50	$0	$60	$69	$42	$4	$15	$196	$436	$92	$0	$41	$133	**$569**
Mining	**$374**	**$198**	**$767**	**$3,293**	**$245**	**$556**	**$107**	**$1,448**	**$6,988**	**$3,033**	**$176**	**$402**	**$3,611**	**$10,599**
2121 Coal Mining	$53	$0	$0	$2,686	$0	$0	$0	$528	$3,267	$0	$0	$0	$0	**$3,267**
All Other Mining & Related Manu. Products	$321	$198	$767	$607	$245	$556	$107	$921	$3,721	$3,033	$176	$402	$3,611	**$7,332**
Forestry	**$3,718**	**$910**	**$2,682**	**$1,333**	**$3,429**	**$622**	**$1,251**	**$571**	**$14,516**	**$3,473**	**$220**	**$378**	**$4,072**	**$18,588**
113 Forestry and Logging	$229	$45	$132	$70	$154	$42	$58	$25	$756	$26	$11	$14	$51	**$807**
321 Wood Product Manufacturing	$1,727	$539	$1,778	$823	$2,202	$292	$891	$365	$8,617	$2,282	$125	$263	$2,669	**$11,286**
322 Paper Manufacturing	$1,735	$320	$736	$438	$1,068	$285	$301	$179	$5,063	$747	$60	$93	$900	**$5,963**
323 Printing and Related Support Activities	$27	$6	$36	$2	$4	$2	$0	$2	$80	$418	$24	$8	$450	**$530**
Support Activities for Forestry	$0	$0	$0	$0	$0	$0	$0	$0	$1	$0	$0	$0	$0	**$1**
Agriculture	**$579**	**$386**	**$887**	**$205**	**$278**	**$115**	**$116**	**$219**	**$2,786**	**$2,500**	**$213**	**$222**	**$2,935**	**$5,721**
111-112 Farms	$132	$127	$315	$72	$99	$10	$41	$79	$876	$675	$60	$74	$809	**$1,685**
114 Fishing, Hunting and Trapping	$130	$13	$2	$0	$1	$45	$2	$0	$193	$94	$25	$0	$120	**$312**
311 Food Manufacturing	$266	$197	$445	$104	$140	$56	$57	$111	$1,376	$1,465	$104	$117	$1,685	**$3,061**
312 Beverage and Tobacco Product Manufacturing	$51	$49	$124	$29	$38	$4	$16	$29	$340	$265	$24	$31	$320	**$660**
Support Activities for Agriculture	$0	$0	$0	$0	$0	$0	$0	$0	$1	$1	$0	$0	$1	**$2**
Machinery	**$258**	**$137**	**$524**	**$192**	**$23**	**$0**	**$8**	**$0**	**$1,143**	**$3,983**	**$423**	**$301**	**$4,707**	**$5,850**
Includes:														
333 Machinery Manufacturing														
334-335 Computer, electronics, electrical product manu.														
336 Transportation Equipment Manufacturing														
Miscellaneous Manufactured Goods	**$467**	**$141**	**$365**	**$165**	**$309**	**$76**	**$111**	**$52**	**$1,686**	**$1,798**	**$100**	**$116**	**$2,014**	**$3,700**
Includes:														
313-316 Clothing and textile manufacturing														
325 Chemical Manufacturing														
326 Plastics and Rubber Products Manufacturing														
337 Furniture and Related Product Manufacturing														
339 Miscellaneous Manufacturing														
Total Goods Exports ($ millions)	**$5,457**	**$1,796**	**$5,410**	**$5,306**	**$4,327**	**$1,376**	**$1,607**	**$8,743**	**$34,022**	**$14,921**	**$1,138**	**$1,460**	**$17,520**	**$51,542**
Share of BC Goods Exports	*11%*	*3%*	*10%*	*10%*	*8%*	*3%*	*3%*	*17%*	*66%*	*29%*	*2%*	*3%*	*34%*	
Total Services Exports ($ millions)	**$1,748**	**$893**	**$1,723**	**$683**	**$940**	**$278**	**$193**	**$440**	**$6,897**	**$16,674**	**$1,982**	**$908**	**$19,564**	**$26,461**
Share of BC Services Exports	*7%*	*3%*	*7%*	*3%*	*4%*	*1%*	*1%*	*2%*	*26%*	*63%*	*7%*	*3%*	*74%*	
Total Exports ($ millions)	**$7,205**	**$2,689**	**$7,133**	**$5,990**	**$5,266**	**$1,654**	**$1,800**	**$9,183**	**$40,920**	**$31,595**	**$3,120**	**$2,369**	**$37,083**	**$78,003**
Share of Total BC Exports	*9%*	*3%*	*9%*	*8%*	*7%*	*2%*	*2%*	*12%*	*52%*	*41%*	*4%*	*3%*	*48%*	
Total Experienced Labour Force (millions)	**0.187**	**0.084**	**0.167**	**0.073**	**0.086**	**0.029**	**0.021**	**0.038**	**0.685**	**1.234**	**0.189**	**0.086**	**1.508**	**2.193**
Share of BC's Experienced Labour Force	*9%*	*4%*	*8%*	*3%*	*4%*	*1%*	*1%*	*2%*	*31%*	*56%*	*9%*	*4%*	*69%*	
Total Exports per Exp. Labour Force Participant	**$38,589**	**$31,877**	**$42,732**	**$81,756**	**$61,520**	**$57,138**	**$86,149**	**$240,858**	**$59,753**	**$25,610**	**$16,508**	**$27,661**	**$24,586**	**$35,567**
As a Share of BC Average	*108%*	*90%*	*120%*	*230%*	*173%*	*161%*	*242%*	*677%*	*168%*	*72%*	*46%*	*78%*	*69%*	

British Columbia's Regions

Development Region	Regional District
Vancouver Island / Coast	
	Capital
	Cowichan Valley
	Nanaimo
	Alberni-Clayoquot
	Comox Valley
	Strathcona
	Powell River
	Mount Waddington
	Central Coast
Mainland / Southwest	
	Fraser Valley
	Greater Vancouver
	Sunshine Coast
	Squamish-Lillooet
Thompson / Okanagan	
	Okanagan-Similkameen
	Thompson-Nicola
	Central Okanagan
	North Okanagan
	Columbia-Shuswap
Kootenay	
	East Kootenay
	Central Kootenay
	Kootenay Boundary
Cariboo	
	Cariboo
	Fraser-Fort George
North Coast	
	Skeena-Queen Charlotte
	Kitimat-Stikine
Nechako	
	Bulkley-Nechako
	Stikine
Northeast	
	Peace River
	Northern Rockies

Industry Aggregations Used in the Analysis

Energy & Fuels	
	211 Oil and Gas Extraction
	22 Utilities
	324 Petroleum and Coal Products Manufacturing
Mining	
	212 Mining (except Oil and Gas)
	331 Primary Metal Manufacturing
	332 Fabricated Metal Product Manufacturing
	327 Non-Metallic Mineral Product Manufacturing
Forestry	
	113 Forestry and Logging
	321 Wood Product Manufacturing
	322 Paper Manufacturing
	323 Printing and Related Support Activities
	Support Activities for Forestry
Agriculture	
	111-112 Farms
	114 Fishing, Hunting and Trapping
	311 Food Manufacturing
	312 Beverage and Tobacco Product Manufacturing
	Support Activities for Agriculture
Machinery	
	333 Machinery Manufacturing
	334-335 Computer, electronics, electrical product manu.
	336 Transportation Equipment Manufacturing
Miscellaneous Manufactured Goods	
	313-316 Clothing and textile manufacturing
	325 Chemical Manufacturing
	326 Plastics and Rubber Products Manufacturing
	337 Furniture and Related Product Manufacturing
	339 Miscellaneous Manufacturing

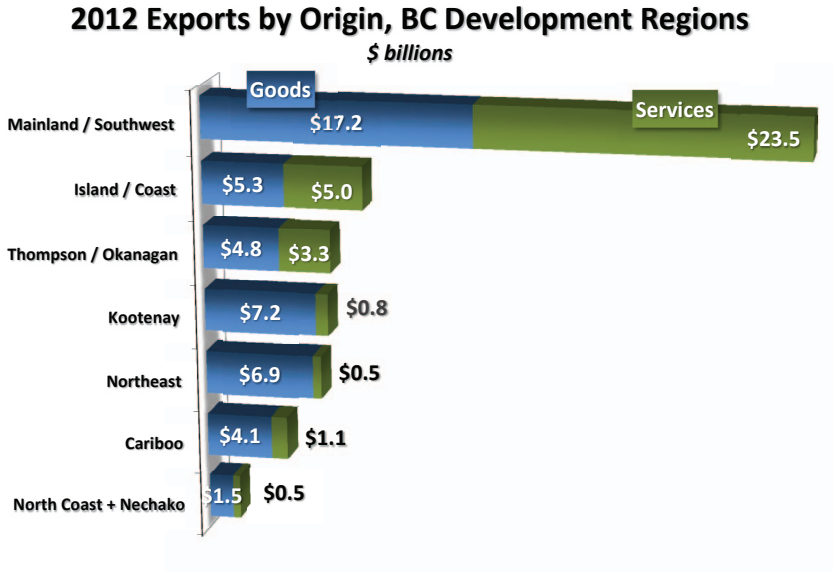
Detailed Industries & Occupations Used in the Spatial Allocation of Exports

Industry - 2007 NAICS (145)	Occupation - 2006 NOCS (47)
111-112 Farms	A0 Senior management occupations
113 Forestry and Logging	A1 Specialist managers
114 Fishing, Hunting and Trapping	A2 Managers in retail trade, food and accommodation services
115 Support Activities for Agriculture and Forestry	A3 Other managers, n.e.c.
211 Oil and Gas Extraction	B0 Professional occupations in business and finance
212 Mining (except Oil and Gas)	B1 Finance and insurance administration occupations
2121 Coal mining	B2 Secretaries
2122 Metal ore mining	B3 Administrative and regulatory occupations
2123 Non-metallic mineral mining and quarrying	B4 Clerical supervisors
213 Support Activities for Mining and Oil and Gas Extraction	B5 Clerical occupations
219 Mining-Unspecified	C0 Professional occupations in natural and applied sciences
221 Utilities	C1 Technical occupations related to natural and applied sciences
23 Construction	D0 Professional occupations in health
311 Food Manufacturing	D1 Nurse supervisors and registered nurses
312 Beverage and Tobacco Product Manufacturing	D2 Technical and related occupations in health
313-316 Clothing and textile manufacturing	D3 Assisting occupations in support of health services
321 Wood Product Manufacturing	E0 Judges, lawyers, psychologists, social workers, ministers, policy officers
322 Paper Manufacturing	E1 Teachers and professors
323 Printing and Related Support Activities	E2 Paralegals, social services workers & occs in edu & religion, n.e.c.
324 Petroleum and Coal Products Manufacturing	F0 Professional occupations in art and culture
325 Chemical Manufacturing	F1 Technical occupations in art, culture, recreation and sport
326 Plastics and Rubber Products Manufacturing	G0 Sales and service supervisors
327 Non-Metallic Mineral Product Manufacturing	G1 Wholesale, technical, insurance, RE sales specialists, & retail, wholesale, grain buyers
331 Primary Metal Manufacturing	G2 Retail salespersons and sales clerks
332 Fabricated Metal Product Manufacturing	G3 Cashiers
333 Machinery Manufacturing	G4 Chefs and cooks
334 + 335 Computer, eltrnc product, elec. equip manufacturing	G5 Occupations in food and beverage service
336 Transportation Equipment Manufacturing	G6 Occupations in protective services
337 Furniture and Related Product Manufacturing	G7 Occupations in travel and accommodation, including attendants in recreation and sport
339 Miscellaneous Manufacturing	G8 Child care and home support workers
41 Wholesale Trade	G9 Sales and service occupations, n.e.c.
411 Farm Product Wholesaler-Distributors	H0 Contractors and supervisors in trades and transportation
412 Petroleum Product Wholesaler-Distributors	H1 Construction trades
413 Food, Beverage and Tobacco Wholesaler-Distributors	H2 Stationary engineers, power station operators and electrical trades & telecomm occs
414 Personal and Household Goods Wholesaler-Distributors	H3 Machinists, metal forming, shaping and erecting occupations
415 Motor Vehicle and Parts Wholesaler-Distributors	H4 Mechanics
416 Building Material and Supplies Wholesaler-Distributors	H5 Other trades, n.e.c.
417 Machinery, Equipment and Supplies Wholesaler-Distributors	H6 Heavy equipment and crane operators, including drillers
418 Miscellaneous Wholesaler-Distributors	H7 Transportation equipment operators and related workers, excluding labourers
419 Wholesale Agents and Brokers	H8 Trades helpers, construction and transportation labourers and related occupations
441-444, 453-454 Local retail	I0 Occupations unique to agriculture, excluding labourers
445-452 Possible travel related retail	I1 Occs unique to forestry ops, mining, oil & gas extraction and fishing, excluding labourers
481-488 Transportation Aggregate	I2 Primary production labourers
481 Air Transportation	J0 Supervisors in manufacturing
482 Rail Transportation	J1 Machine operators in manufacturing
483 Water Transportation	J2 Assemblers in manufacturing
484 Truck Transportation	J3 Labourers in processing, manufacturing and utilities
485 Transit and Ground Passenger Transportation	
486 Pipeline Transportation	
487 Scenic and Sightseeing Transportation	
488 Support Activities for Transportation	
491 Postal service + 492 Couriers and messengers	
493 Warehousing and Storage	
51 Information and Cultural Industries NET OF 512 (aggregate)	
512 Motion Picture and Sound Recording Industries	
52 Finance and insurance + 53 Real estate and rental & leasing	
541 Professional, Scientific and Technical Services	
551 Management of Companies and Enterprises	
561 Administrative and Support Services	
562 Waste Management and Remediation Services	
611 Educational Services	
62 Health care and social assistance	
71 Arts, Entertainment, and Recreation	
721 Accomodation services + 722 Food services and drinking places	
81 Other services (except public administration)	
91 Public administration	

What, Where, & How Much?

Identifying the Spatial Origins of BC's Exports

Updated to 2012



Prepared for BC's Ministry of Jobs, Tourism and Skills Training

BRITISH COLUMBIA
www.gov.bc.ca

by

URBAN FUTURES
Strategic Research to Manage Change

May 2013

What, Where, & How Much?

Identifying the Spatial Origins of BC's Exports

Updated to 2012

May 2013

Table of Contents

Summary of Major Findings

The development of effective and efficient economic, fiscal, and trade policies depends on the availability of timely information on trends in BC's trade flows. While data are available at the provincial level, they provide no details about where within the province British Columbia's exports originate, or what the composition of our regional exports might be. This makes it difficult to assess the contributions of specific regions to total provincial exports, and the composition of local exports to which specific regional economic development policies could be directed. As such, this report is primarily concerned with assigning BC's exports, by value, to each of the province's seven development regions.

Before drilling down to the regional level, this research finds that BC's metropolitan regions (consisting of the Vancouver, Abbotsford-Mission, Victoria, and Kelowna Census Metropolitan Areas) contributed more to BC's exports (in 2012) than did our non-metropolitan regions—albeit marginally—when measured in current-dollar value. Exports from BC's metro regions were weighted more towards the service sectors (such as transportation, warehousing, and communication, as well as retail and wholesale trade), while non-metro exports tended to be focussed more on the resource sectors, including forestry, mining, and energy and fuels.

Not surprising given its large share of BC's labour force and employment, the Mainland/Southwest region was found to account for the greatest export value in BC in 2012, accounting for over half of BC's total exports. The largest export sector for the Mainland/Southwest was transportation, warehousing, and communication.

In a distant second was the Island/Coast region, with its largest sector being forestry. This was followed by the Kootenay and Thompson/Okanagan regions, while the region with the lowest value of exports was North Coast/Nechako.

While considering the spatial pattern of the *total value* of exports originating in BC's regions is one way of looking at the role each region plays in generating export revenue, viewing the data in a slightly different way provides a dramatically different interpretation of the findings. More specifically, when adjusting the total value of exports originating in each region by the size of each region's labour force (in other words, calculating a *per capita* type of measure based on each region's underlying productive labour capacity), the Northeast sector emerges as making the greatest contribution to BC's exports (again, on a per labour force participant basis). Each of the remaining resource-based regions—Kootenay, Cariboo, and North Coast/Nechako—generated a value of exports that was above the provincial average when adjusted for the size of their labour force, while each of the Mainland/Southwest, Island/Coast, and Thompson/Okanagan regions generated a below-average value.

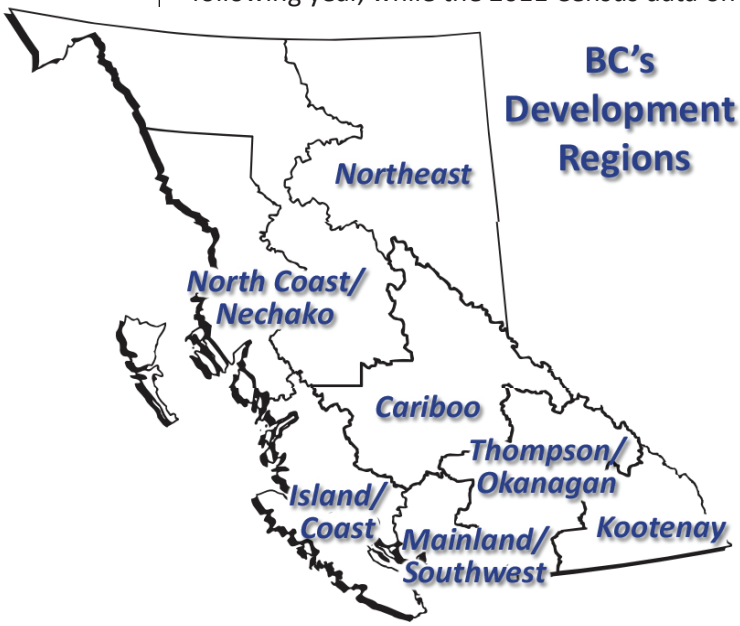
While this research is not meant to imply that any one region is more important than another in the context of economic growth and development, it is hoped that the analysis furthers discussions of the importance of exports to BC's economy and to its residents, and of specific policy directions for particular regions.

I Introduction & Overview

As with all other provinces in Canada, British Columbia relies on exports as one means of sustaining—and improving—the economic well-being of its 4.5 million residents. The sale of goods and services to our provincial neighbours, to our largest trading partner south of the 49th parallel, and to other countries around the world both expands and diversifies the provincial economy. The funds generated by provincial exports also contribute directly and indirectly to our personal incomes, which in turn allows us to purchase the things that we cannot produce locally, from the imports of coffees and teas, to computers, iPhones and tablets. As world-renowned Princeton economist Paul Krugman noted: "*Exports are not an objective in and of themselves; the need to export is a burden that we [a province] must bear because our import suppliers are crass enough to demand payment*".

The development of effective and efficient economic, fiscal, and trade policies depends on the availability of timely information on trends in BC's trade flows. Such data are collected through balance of payments accounts[1], and are tabulated on a quarterly basis by Statistics Canada. While available at the provincial level, these data provide no details about where within the province our exports originate, or what the composition of our regional exports might be. This makes it difficult to assess the contributions of specific regions to total provincial exports, and the composition of local exports to which specific regional economic development policies could be directed.

In light of this, BC's Ministry of Jobs, Tourism, and Skills Training has requested that Urban Futures update research on the spatial origins of BC's exports produced for the Strategic Initiatives Office of the Rural BC Secretariat in 2011 in a way that enables regular updates to the analysis to be made. With this goal in mind, data from Statistics Canada's Labour Force Survey (LFS) now forms the basis of this analysis due to the frequency of the LFS's publication (LFS data are published annually, versus only every five years from the Census) and their more timely publication (annual LFS data are reported in the first quarter of the following year, while the 2011 Census data on employment will not be released until late 2013).



With respect to its geographic focus, this research is concerned with identifying the role played by each of BC's seven development regions (Island/Coast; Mainland/ Southwest; Thompson/Okanagan; Kootenay; Cariboo; North Coast/Nechako[2]; and Northeast) in contributing to BC's international and interprovincial exports. With the nature of economic activity differing significantly between BC's metropolitan and non-metropolitan regions, the analysis also considers the contribution of BC's urban and rural economies to the province's export base. For purposes of this analysis, BC's metropolitan regions comprise the aggregate of the Lower Mainland (the Vancouver and Abbotsford-Mission CMAs in the Mainland/Southwest region [3]), the Victoria CMA (located within the Island/Coast region), and the Kelowna CMA (located within the Thompson/Okanagan region).

1 Balance of payments accounts reconcile all monetary transactions annually between BC, the rest of Canada, and the rest of the world.
2 The North Coast and Nechako development regions have been combined for purposes of this research due to data availability.
3 CMAs: Census Metropolitan Areas are regions defined by Statistics Canada that consist of one or more neighbouring municipalities situated around a core. CMAs must have a total population of at least 100,000, of which at least 50,000 live in the core.

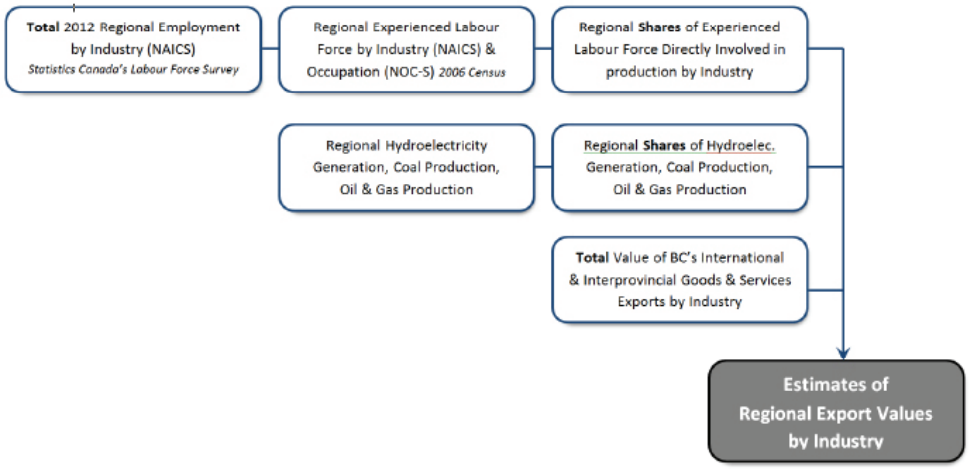
This report has been structured into five major sections. The following section (Section II) provides a brief overview of the methodological approach and data used to develop the spatial export estimates. This is followed by highlights for BC's metropolitan and non-metropolitan regions (Section III), which in turn is followed by profiles of each of the seven development regions (Sections IV to X). Strategic considerations and further research ideas are presented in Section XI. The final section is an Appendix that contains both technical and non-technical components. Section A-I expands on the brief methodological approach presented in Section II, detailing the data and the approach used in the spatial export analysis. Section A-II presents historical trends in BC's interprovincial and international imports, exports, and trade balance, along with how the industry composition of the province's exports has changed over time. Finally, a number of summary tables are presented in Section A-III.

II Brief Overview of Approach Used to Identify the Spatial Origins of BC's Exports

The approach used to allocate the value of BC's exports to its seven development regions is, at its core, relatively straightforward (Chart 1 below). Employment data, classified by 16 *industry sectors,* from Statistics Canada's 2012 Labour Force Survey for BC's regions serves as the foundation for the analysis. The reason for using industry-specific employment data is that this allows us to link regional employment by industry with the types of goods exported by the industry that produced them within a standard classification hierarchy (the North American Industry Classification System, NAICS).

That being said, while employment described by industry classification focuses on what is produced by each *industry sector*, the nature of this research requires us to also consider the *occupational classifications,* or the kind of work that each person performs within in each industry sector. The reason for considering occupations within industries is that industry data include not only the people who directly produce the exported product or service, but also a host of others working in other capacities, such as head office functions, accounting, human resources, marketing, legal, or IT services, many of which may not be directly related to the production or even located in the region where the export originates.

Chart 1



Therefore, industry-by-occupation data from the 2006 Census (the most recent source of this information) were used to identify the proportion of jobs in each industry sector that were directly involved in the extraction, production, or generation of BC's exports. This proportion of *direct jobs* in each industry sector considered through the Census was then applied to the current (2012) number of jobs in each industry in each region as per the LFS. This created a current spatial assessment of where within BC the *direct jobs* were located by industry sector. Next, based on this spatial estimate of direct jobs, each region's share of BC's direct employment for each industry sector was calculated. Finally, these direct employment shares were applied to BC's 2012 international and interprovincial export values by industry sector, thereby yielding estimated values of exports in each industry that would have originated in each of the province's seven development regions.

A slightly different approach was used for three export sectors. Hydroelectricity, coal, and oil and gas exports were allocated to development regions based on the location of infrastructure related to each of these industries in light of the detailed spatial information describing the location and magnitude of production within each of these sectors that is available. As we have a good understanding of where BC's dams, coal mines, and active oil and gas fields are located—and how much capacity, or production, can be attributed to each—an infrastructure-based approach was used to spatially allocate exports from these three sectors.

As alluded to in Section I, the approach used in this analysis differs slightly from what was used previously in that Statistics Canada's LFS data represent the base employment figures (rather than the Census). This approach has two benefits. First, updates can be made more frequently (i.e. annually, versus every five

years if Census data are used), and second, the most recent LFS data are available in a more timely manner than the Census. While the LFS details employment by industry in BC's regions up to the end of 2012, the most recent Census data on employment will not be released until the end of 2013 and will only provide details on regional employment for 2011. Given a slightly different methodological approach, while the results between this and previous research are relatively consistent, output from previous research should not be compared directly to the current findings.

III The Spatial Origins of British Columbia's Exports

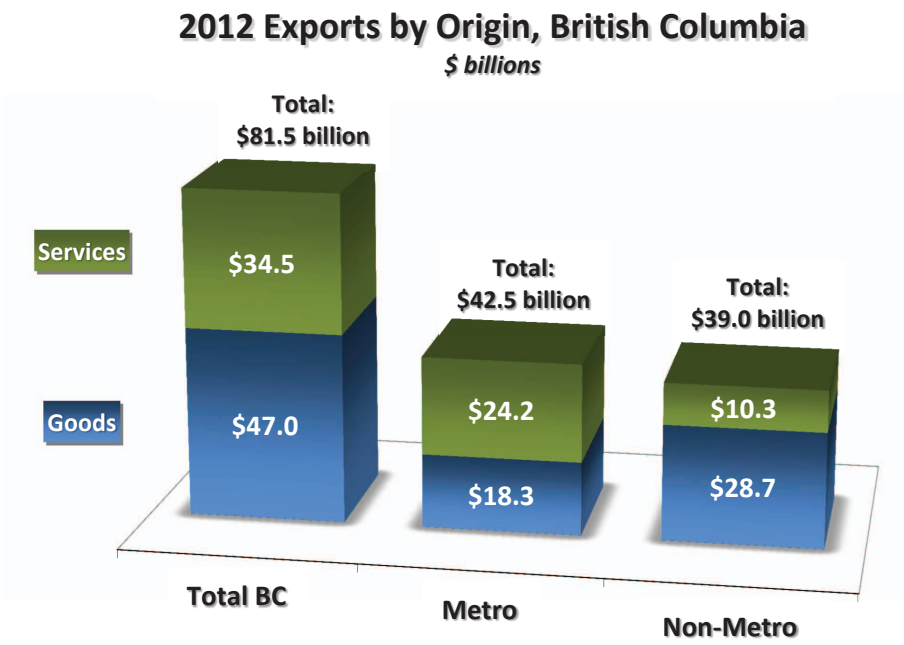
While the focus of the following analysis is on BC's seven development regions, consideration is first given to the metropolitan (metro) and non-metropolitan (non-metro) contributions to provincial exports given the service orientation of BC's metro regions and the resource (goods) focus of the non-metro ones. This level of geographic focus (metro versus non-metro) represents a good starting point for presenting the approach and results of this spatial analysis before the details for each development region are presented (in Sections IV to X). It is also worth re-stating here that BC's metro regions comprise the aggregate of the Vancouver and Abbotsford-Mission CMAs (the Lower Mainland), as well as the Victoria and Kelowna CMAs. The non-metro regions include all non-CMA parts of the province.

1 Exports from BC's Metropolitan & non-Metropolitan Regions

Based on the approach outlined above (and further detailed in Section A-I), BC's metro regions generated a total of $42.5 billion in total exports in 2012, or 52 percent of the province's $81.5 billion in total exports in that year (Figure 1). If only the Lower Mainland and Victoria CMAs are considered (in other words, if the Kelowna CMA is excluded from consideration), these two regions accounted for 49 percent ($40.3 billion) of the value of BC's exports in 2012; furthermore, if only the Lower Mainland is considered, this region generated 45 percent ($36.7 billion) of the province's export revenue in 2012. In terms of their composition, 57 percent of metro region exports were from service-based sectors ($24.2 billion) in 2012, while the other 43 percent were from goods-producing sectors ($18.3 billion).

Within the service industry, substantial export revenue was generated by the transportation, warehousing, and communications sector ($10.2 billion) as well as through retail and wholesale trade ($4.6 billion). On the goods-producing side of the ledger, mining (and related products) generated the greatest export revenue for BC's metro regions ($4.6 billion), followed closely by exports of machinery ($4.1 billion) and agriculture and related products (just under $4.1 billion).

Figure 1



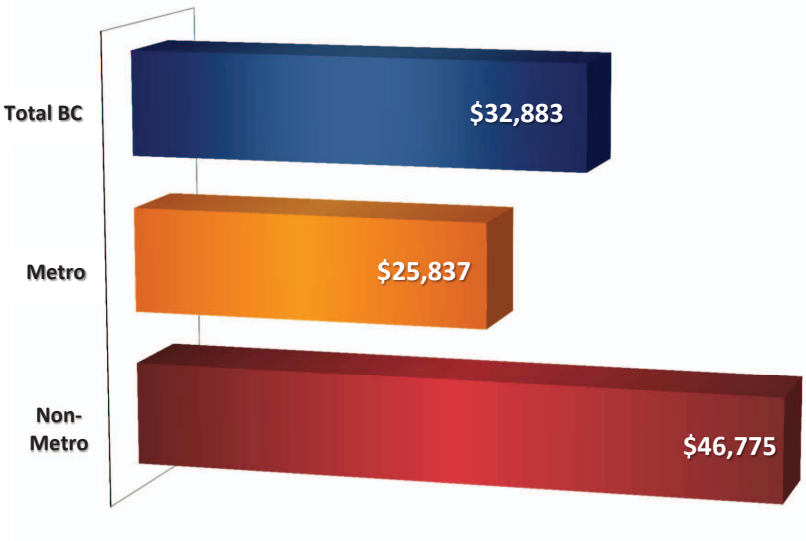
With 52 percent of BC's exports coming from the metro regions in 2012, 48 percent of total provincial exports were generated in the non-metro parts of the province, contributing $39.0 billion to BC's total export income in that year. Contrasting the composition of exports from the metro regions, the majority of non-metro exports were in the goods-producing sectors. More specifically, almost three quarters (74 percent) of the non-metro regions' export

income ($28.7 billion) was earned through the sale of goods, while only 26 percent ($10.3 billion) was generated by the service sector. The most prominent exporting industry from the non-metro regions (by value) was forestry, which generated $10.8 billion in export income in 2012. This was followed by mining, which contributed $8.4 billion in export income.

With the non-metro regions tilted heavily towards the goods-producing export sectors, they accounted for almost two-thirds (61 percent) of BC's $47.0 billion in international and interprovincial goods exports in 2012. Conversely, with only $10.3 billion of service exports originating from the non-metro regions, the metro regions accounted for 70 percent of BC's $34.5 billion in total services exports to other provinces and countries in 2012, illustrating the prominence of services to BC's urban economies and the provincial resource base to our rural economies.

Figure 2

2012 Exports Per Labour Force Participant, BC



Another way of considering the magnitude of these regional export contributions is to consider them relative to the total number of people active in the labour force in each region, or the average value of regional exports *per labour force participant* (similar to a per capita measure of total export value). For example, with a total labour force of 2.5 million and total exports of $81.5 billion, exports averaged $32,883 per labour force participant across all of British Columbia in 2012 (Figure 2).

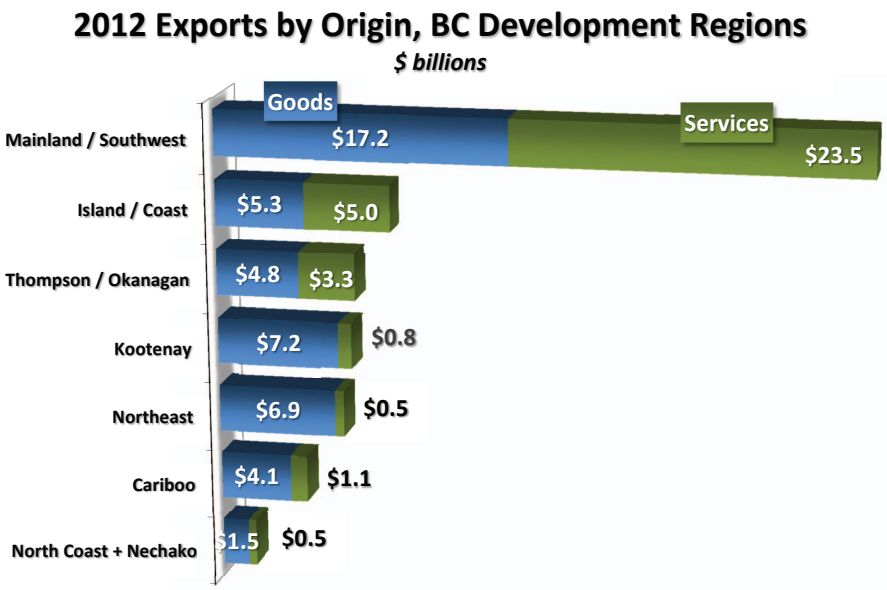
Out of BC's total 2012 labour force of 2.5 million, 66 percent (1.6 million) were in the province's metro regions in 2012, with the remaining 34 percent (834,000 participants) located throughout the non-metro regions. As such, with the majority of the province's labour force in metro regions (66 percent), and a smaller share of total provincial exports originating from these locations (52 percent), the value of exports *per labour force participant* from BC's metro regions in 2012 was $25,837, below the provincial average of $32,883.

Although the non-metro regions represented a much smaller share of the province's labour force (34 percent), they made a proportionally greater contribution to BC's total exports (48 percent). The province's non-metro regions therefore contributed an average of $46,775 in export value per labour force participant in 2012, 51 percent more than in the metro regions. (It is important to note here that the measure of "per capita" exports does not in itself imply that the labour force participants of non-metro regions are any more productive than those living in metro regions.)

2 British Columbia's Exports by Development Region

Considering the composition of exports originating in BC's metro and non-metro regions provides a glimpse into the different economic structures of BC's regions. Considering the distribution and composition of direct employment across all of BC's seven development regions allows a more detailed picture of the distribution of provincial export values to be seen. To this end, Figure 3 presents a summary snapshot of the value of exports generated by each of BC's development regions in 2012.

Figure 3



Given the scale of direct employment in the Mainland/Southwest region, the total value of goods and services exports originating from the Mainland/Southwest region in 2012 was $40.1 billion, 50 percent of BC's total exports in 2012. Goods-based exports from the region totaled $17.2 billion in 2012, accounting for 42 percent of the region's total value of exports. The remaining 58 percent of the Mainland/Southwest region's export value originated from the service sector, representing $23.5 billion in 2012.

While this large and diverse region represented 37 percent of all goods exports from the province in 2012, it represented more than two-thirds (68 percent) of BC's service-based exports. This is not an unexpected result, as the region's employment base is oriented towards service-based industries (influenced as it is by the large service-based economies of the Vancouver and Abbotsford-Mission CMAs) relative to other parts of the province.[4]

With relatively large metro areas within their boundaries, both the Island/Coast and Thompson/Okanagan regions also contributed substantially to the total value of BC's service exports. For example, with an estimated $10.2 billion in total export value originating from the Island/Coast region in 2012 (13 percent of BC's total export value), $5.0 billion was generated through the export of services and $5.2 billion from goods. Similarly, out of the Thompson/Okanagan's $8.1 billion in exports (ten percent of the provincial total), $3.3 billion was generated through service exports, with the remaining $4.8 billion earned through the sale of goods. Combined service exports from these two regions accounted for almost one-quarter of BC's total service exports (24 percent).

In total, these three large development regions were responsible for 92 percent of the provincial service exports in 2012 ($31.7 billion out of $34.5 billion), highlighting the greater focus of the metro economies on service-based activities. Within this broad service sector, the Island/Coast, Mainland/Southwest, and Thompson/Okanagan regions combined to account for a low of 90 percent of BC's education and transportation, warehousing, and communication exports to a high of 94 percent of provincial exports in the finance, insurance, and real estate sector. Conversely, these three regions were responsible for a much smaller share of provincial goods exports, representing 58 percent ($27.3 billion) of BC's $47.0 billion in goods exports in 2012.

As would be expected, it was in the less urban regions of the province where a far greater proportion of resource-based exports were found to originate. More specifically, exports from the forestry, mining, and oil and gas sectors dominated the contributions of the four mostly rural development regions. Of the $22.5 billion in exports that originated from the Kootenay, Cariboo, North Coast/Nechako, and Northeast regions in 2012, goods exports were valued at $19.7 billion, representing 87 percent of the total export value from these regions (and 42 percent of BC's total goods exports). As a result, service exports played a much smaller role within each region (accounting for only 13 percent of total exports from these four regions) and as a share of the total provincial services exports (representing only eight percent).

4 According to the latest LFS data, 82 percent of employment in BC's metro regions was in service-based sectors in 2012, versus 75 percent in the non-metro regions.

When the spatial distribution of BC's labour force is considered alongside the value of their export contributions, a much different picture emerges from the one that focuses solely on the total value of exports generated from each region.

For example, while the Mainland/Southwest region was clearly shown to provide the largest contribution to the province's export base among all development regions within BC in 2012 (see Figure 3), it made the second-*smallest* contribution to exports on a *per labour force participant* basis at $26,187 per labour force participant (Figure 4). Put slightly differently, while exporting almost four times more by value than any other region in BC due to its size, the Mainland/Southwest's contribution to BC's exports per labour force participant was 20 percent below the provincial average of $32,883. The two other regions with large urban areas—the Island/Coast and Thompson/Okanagan regions—were also below the provincial average, producing export values per labour force participant of $26,026 and $29,434, respectively.

Figure 4

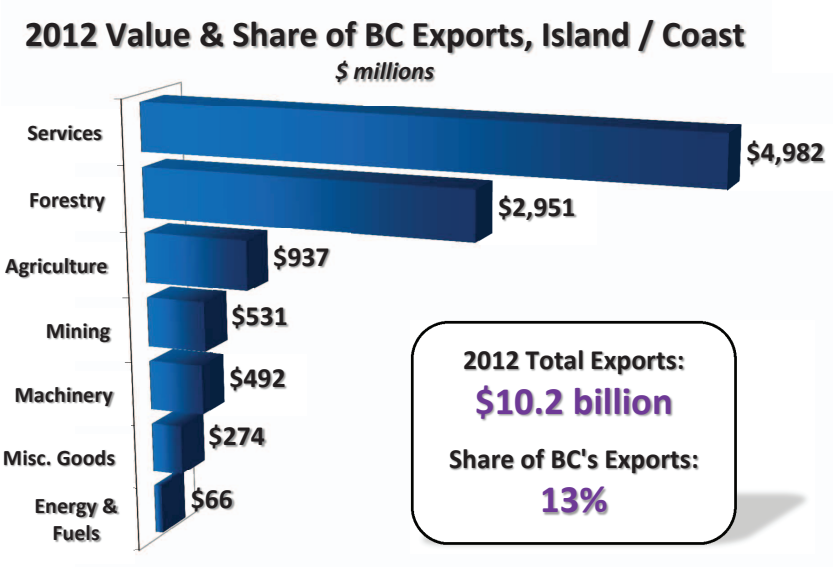
With a relatively small population and labour force, the Northeast corner of the province emerges as the region with the greatest contribution to provincial exports per labour force participant. With a 2012 experienced labour force of 41,400 people (less than two percent of the provincial total) and exports of $7.4 billion, the Northeast's contribution to provincial exports per labour force participant was $179,910 in 2012, almost seven times the provincial average of $32,883. The Kootenay region generated the second-greatest value of exports per labour force participant in the province at $98,501, followed by the Cariboo ($56,455) and the North Coast/Nechako region ($44,436).

While this section has provided an overview of the findings of the spatial export analysis, the following sections (IV to X) provide more detailed profiles for each development region, including information on the sectoral composition of their economies, their resource bases, and their resulting contribution to BC's export base.

IV 2012 Development Region Profiles: Island/Coast

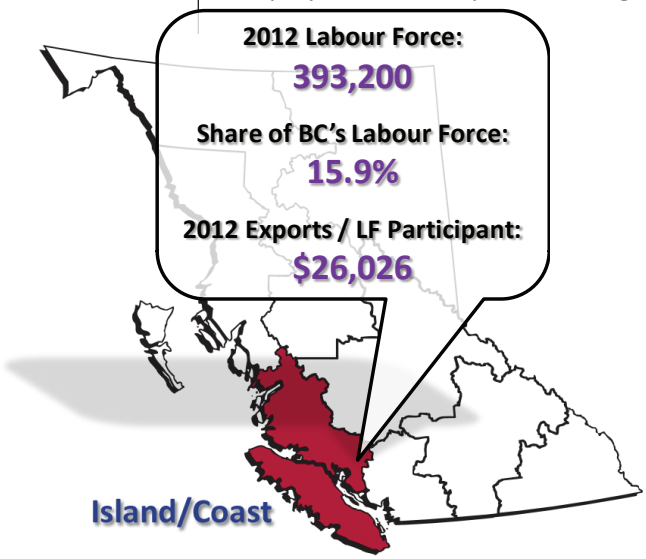
The Island/Coast region includes all of Vancouver Island as well as the central coast of BC from Powell River to Bella Coola. With the Island/Coast region being home to an estimated 788,211 residents in 2012, this was the second largest region in the province in terms of population. Its largest municipalities include Saanich, Nanaimo, and Victoria, which combined to account for 36 percent of the region's population.

Figure 5



In 2012 the Victoria CMA, from the City of Victoria to North Saanich, accounted for 46 percent of the region's population (359,548 residents). This southern Vancouver Island economy has traditionally been driven by service sector activities (namely tourism and public administration), while many of the mid- and north-Island communities rely on the coastal forest industry, fisheries, and related manufacturing[5]. With a significant share of its population and labour force concentrated in the metropolitan area, service sector activities dominate regional exports. For example, service sector exports from the Island/Coast region were valued at $5.0 billion in 2012 and accounted for 49 percent of exports (14 percent of BC's service exports). Transportation, warehousing, and communications and retail and wholesale trade activities have played a key role in shaping the region's service exports (27 percent of their value in 2012).

In the goods-producing sector, forestry represented the second-largest industry sector, generating almost $3.0 billion in exports and accounting for 29 percent of the region's exports in 2012 (representing 22 percent of BC's total forestry exports in that year). This sector is expected to remain strong in the coming years, with Western Forest Products—the largest private employer on Vancouver Island, with 3,000 employees—recently committing $200 million for investments to upgrade and modernize mills and equipment on the Island.[6]



Exports from all other good-producing industries generated a combined $2.3 billion in 2012, accounting for the remaining 22 percent of the region's exports. Agriculture stands out as the third-largest source of export income for the region, albeit significantly behind forestry, at $937 million in 2012. The Island's agricultural sector benefits from a long growing season and the increasing prominence of niche-product producers such as an expanding wine industry.

In summary, Island/Coast generated 13 percent of BC's exports in 2012, while representing almost 16 percent of the provincial labour force. As such, the region made a smaller-than-proportional contribution to the value of BC's exports in 2012, at $26,026 (versus $32,833 province-wide)—the lowest of the seven regions in BC.

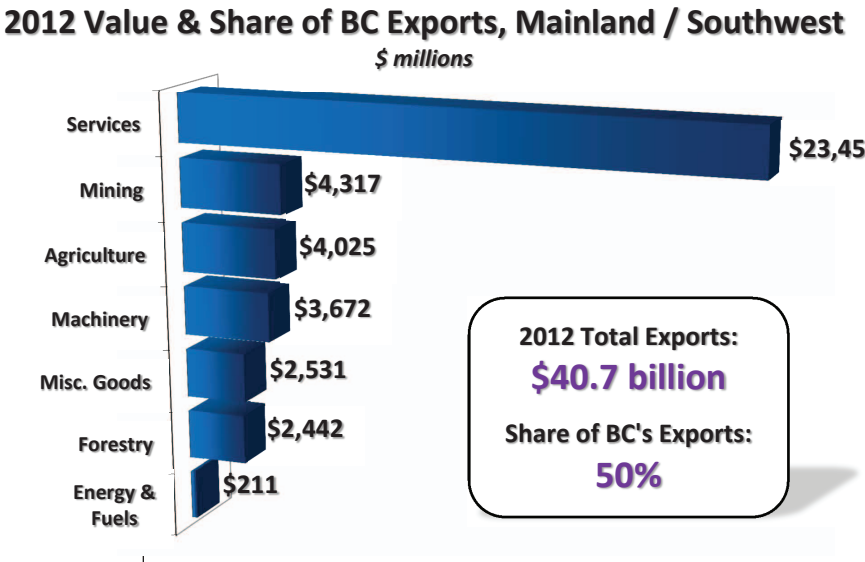
5 Institute of Chartered Accountants of BC, 2012 BC Check-Up.

6 http://m.theglobeandmail.com/news/british-columbia/asian-demand-revitalized-bc-timber-industryarticle2205830/?service=mobile

V 2012 Development Region Profiles: Mainland/Southwest

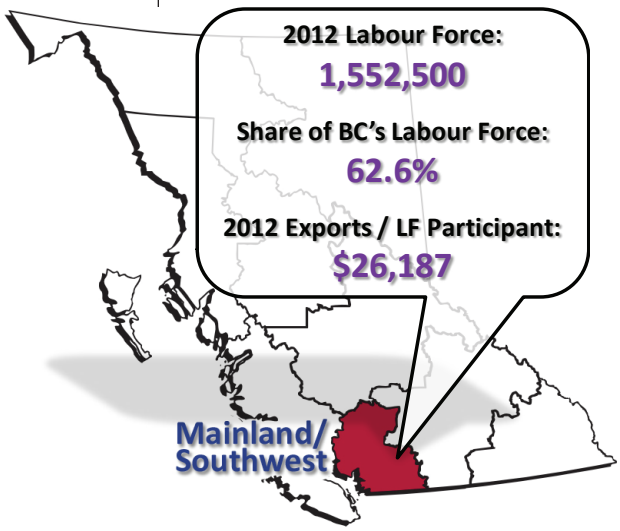
Appropriately located in the southwest corner of the province, the Mainland/Southwest region, with 2.8 million residents in 2012, was the largest in the province. The region's three largest municipalities are Vancouver, Surrey, and Burnaby which collectively accounted for 49 percent of the region's population in 2012. The region is home to Canada's largest and busiest port, the second busiest airport in Canada, and an extensive network of warehouses and distributions facilities throughout Richmond, Delta, Pitt Meadows and the Port Kells area in Surrey which provide import/export distribution services throughout North America.

Figure 6



In total, the Mainland/Southwest region generated $40.7 billion through its exports in 2012, 50 percent of BC's total. The largest sector was services, which generated $23.5 billion in income, 58 percent of the regional total and 68 percent of BC's total service exports. Within this broad industry, transportation, warehousing, and communication services ($9.2 billion) and retail and wholesale trade services ($4.0 billion) accounted for 56 percent of regional service exports.

While accounting for only eleven percent of total regional exports, mining (which in addition to raw materials includes non-metallic mineral products manufacturing, primary metal manufacturing, and fabricated metal product manufacturing) was the second largest export sector in 2012, with a total of $4.3 billion from this sector. The value of agriculture exports—largely from the Fraser Valley and the non-urban parts of the region—was similar to that of mining, generating $4.0 billion in income in 2012. This was followed by exports of machinery ($3.7 billion), miscellaneous manufactured goods ($2.5 billion), and forestry ($2.4 billion), with much of the logging activity taking place in the Sunshine Coast and Squamish-Lillooet parts of the regions and the shipment of wood products from the Lower Mainland.

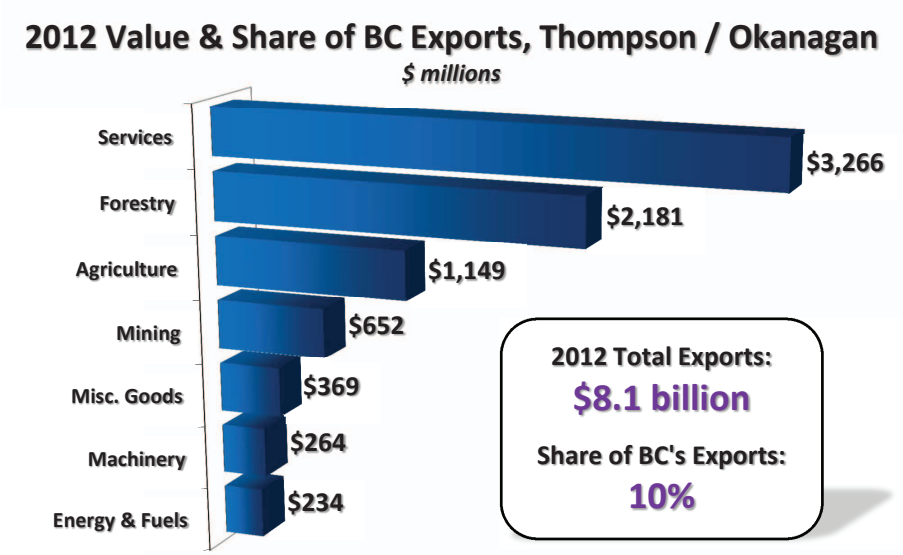


With almost 63 percent of provincial labour force living in the Mainland/Southwest region, but only 50 percent of BC's exports originating there, the Mainland/Southwest made a smaller-than-proportional contribution to BC's exports in 2012. Measured on a per labour force participant basis, the region generated $26,187 in export income per person in the labour force—20 percent below the province-wide average of $32,883 (and lower than all regions except Island/Coast).

VI 2012 Development Region Profiles: Thompson/Okanagan

The Thompson/Okanagan region is located in south-central BC, between the Cascade Mountains in the west and the Monashee Mountains and Alberta border in the east. In 2012, the region's population was 540,788, making it the third-largest in BC. Its largest communities are Kelowna, Kamloops, and Vernon, with these three communities accounting for 46 percent of the region's 2012 population.

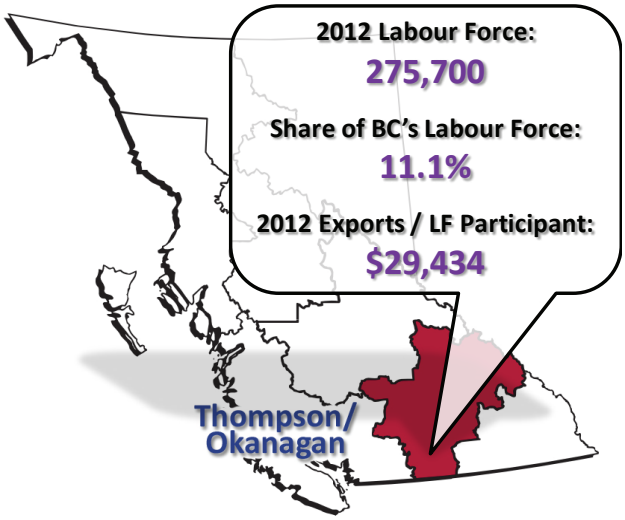
Figure 7



The Thompson/Okanagan is a growing tourist and retirement destination, which has in part been a significant component of investment and construction activity in the region over the past decade, with a particular focus on wineries, culinary pursuits, as well as golf, ski and support activities. Given the importance of tourism in the area, it is not surprising that the region's largest export sector is services: in 2012, they accounted for 40 percent of the region's exports and generated $3.3 billion in revenue (nine percent of BC's service exports).

The composition of the region's exports also reflects the importance of historical ties to forestry, agriculture and mining. For instance, forestry exports generated $2.2 billion in revenue in 2012, representing 27 percent of the region's exports and 17 percent of BC's forestry exports. With the Thompson and Okanagan valleys among BC's premiere agriculture, viticulture, and wine production regions, agriculture was the third-largest export sector in the region, generating $1.1 billion in 2012, 14 percent of the region's total exports (and 15 percent of BC's agricultural exports).

The recent addition of the New Afton Mine (an underground gold, copper and silver mine) and an ongoing expansion at the Highland Valley Copper Mine has further consolidated mining as a key export sector within the region. Generating $652 million n 2012, mining was responsible for eight percent of the region's exports, and five percent of total mining exports from BC. All other industries combined (miscellaneous manufactured goods, machinery, and energy and fuels) represented the remaining eleven percent of exports from this region in 2012, with a combined value of $867 million.

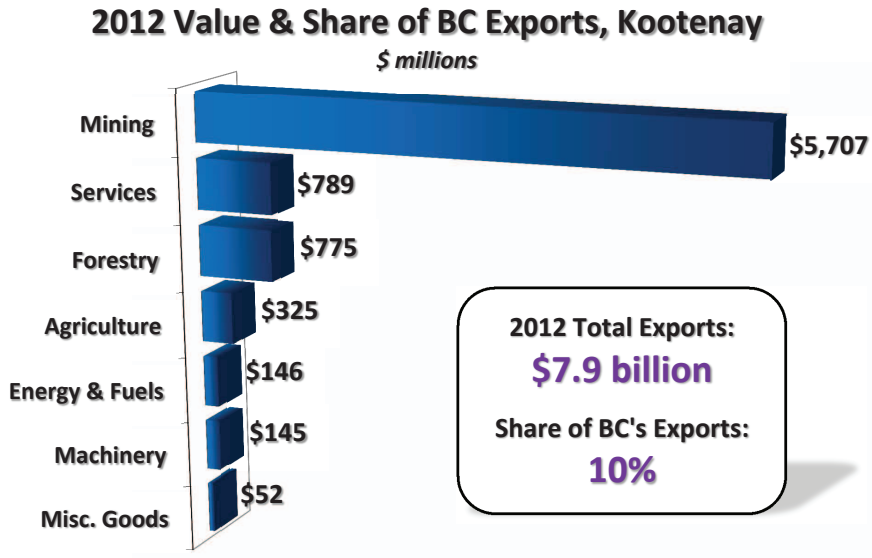


Overall, ten percent of BC's exports originated in the Thompson/ Okanagan region in 2012. In accounting for just over eleven percent of the provincial labour force in 2012, this region made a smaller-than-proportional per labour force participant contribution to BC's exports of $29,434. This was ten percent below the provincial average of $32,883.

VII 2012 Development Region Profiles: Kootenay

The Kootenay region, located in the southeastern corner of British Columbia, was home to 153,240 residents in 2012, or three percent of BC's population. The region's three largest municipalities are Cranbrook, Nelson, and Castlegar, collectively representing 24 percent of the region's population in 2012. Due to the abundance of natural resources located throughout this part of the province, the vast majority of the Kootenay region's exports were from the goods sector (90 percent), with service-based exports only accounting for ten percent of the region's total exports of $7.9 billion in 2012.

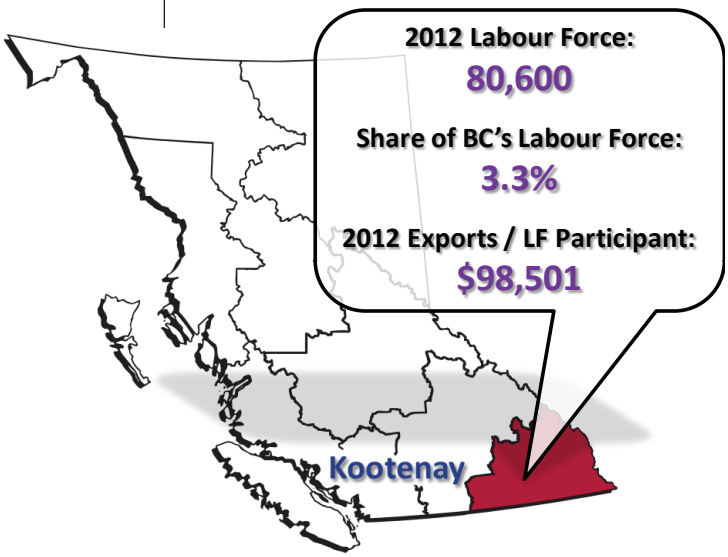
Figure 8



Within the goods-producing sector, mining is the predominant industry, with the Fording River, Greenhills, Line Creek, Coal Mountain, and Elkview mines playing a significant role in regional economic activity. The most recent LFS data show that 28 percent of jobs in the goods-producing sectors were in the mining and oil and gas extraction sector in 2012, four times the six percent share seen provincially. Overall, mining exports from the Kootenays were valued at $5.7 billion in 2012, accounting for 72 percent of the value of all exports originating from this region. Further to this, the Kootenay region accounted for 44 percent of total mining exports from the province in 2012. Much of this mining export income was specifically generated through the sale of coal, which represented $5.2 billion in export income in 2012.

The broad service sector was the second-largest industry in the Kootenays in 2012 in terms of export value, albeit a distant second to mining. Due in part to the diversity of year-round resort facilities, the service sector generated an estimated $789 million in total export income for this region—ten percent of the value of total regional exports and two percent of BC's total service exports.

Forestry generated $775 million in export income, which was ten percent of the region's total exports and six percent of BC's total forestry exports. While logging activity is seen throughout the region, wood processing activities are focused in a host of mills in the region's smaller cities, including Elko and Canal Flats, both owned and operated by Canfor. The remaining four goods-producing sectors (agriculture, energy and fuels, machinery, and miscellaneous goods) accounted for a total of $668 million in exports in 2012.

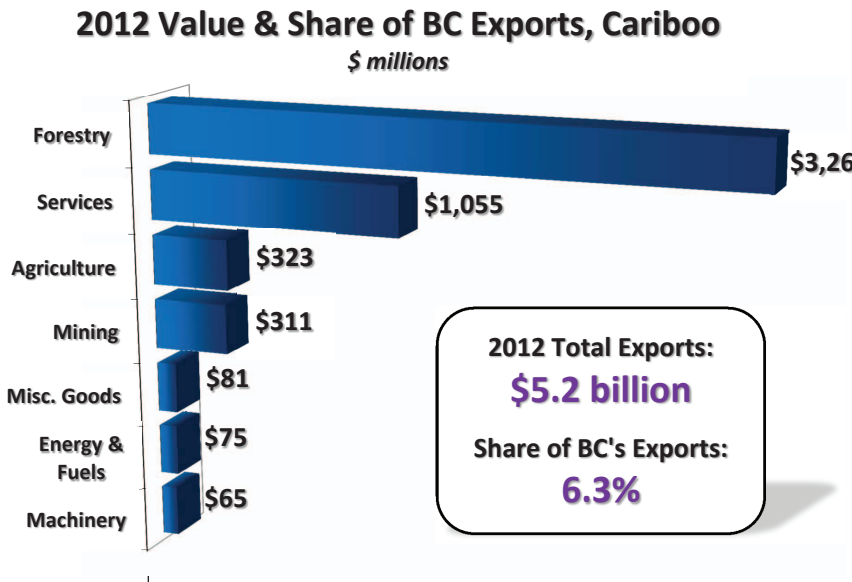


Overall, exports originating in the Kootenay region were valued at $7.9 billion—ten percent of BC's total in 2012. With only three percent of BC's labour force, the Kootenay region made a more-than-proportional contribution to the value of BC's exports in 2012. On average, exports per labour force participant in the Kootenay region were valued at $98,501—three times the $32,883 seen province-wide.

VIII 2012 Development Region Profiles: Cariboo

The Cariboo region is situated in central British Columbia and comprises the Fraser-Fort George and Cariboo Regional Districts, with Prince George serving as the largest population centre (it was home to 76,286 of the region's 163,208 residents in 2012, or 47 percent).

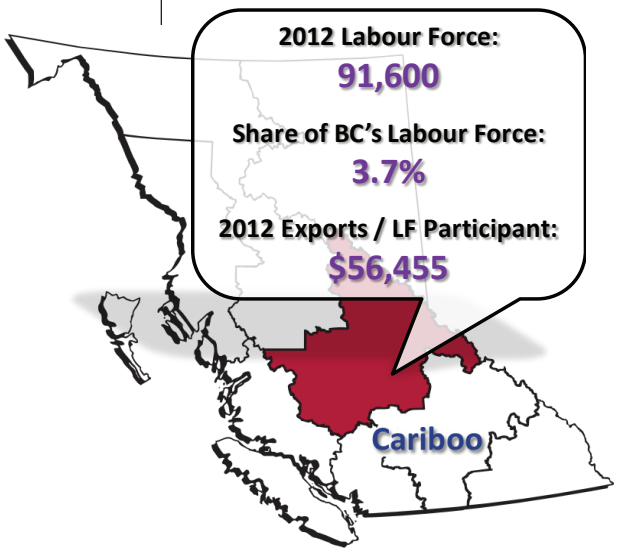
Figure 9



Historically, forestry has been the mainstay of the region's economy. More recently, the region has become the largest biomass pellet-producing area in the world, accounting for 86 percent of BC's wood-pellet capacity.[7] The reopening of idled mills in Mackenzie and other towns has further helped to revive forestry as the region's most important source of exports, with this sector generating $3.3 billion in income in 2012. In doing so, forestry represented 63 percent of the region's total exports of $5.2 billion and 25 percent of BC's forestry exports.

With Prince George serving as the major service and supply centre for central and northern BC, and becoming increasingly important as a hub for the east-west movement of people and goods into and out of the upper half of the province, the service sector was, unsurprisingly, the second-largest export industry, by value, in the Cariboo in 2012: it generated $1.1 billion in income, equivalent to 20 percent of the region's total exports (but only three percent of BC's total services exports). The single largest export sector within services was transportation, warehousing, and communication at $542 million, accounting for 51 percent of regional service exports.

Agriculture exports from the Cariboo generated $323 million in income for BC, followed closely by the mining sector at $311 million. Mining sector activities are anchored by the Gibraltar mine near Williams Lake and the Endako mine near Fraser Lake. The remaining sectors (miscellaneous manufactured goods, energy and fuels, and machinery) combined to generate $220 million in export revenue in 2012.



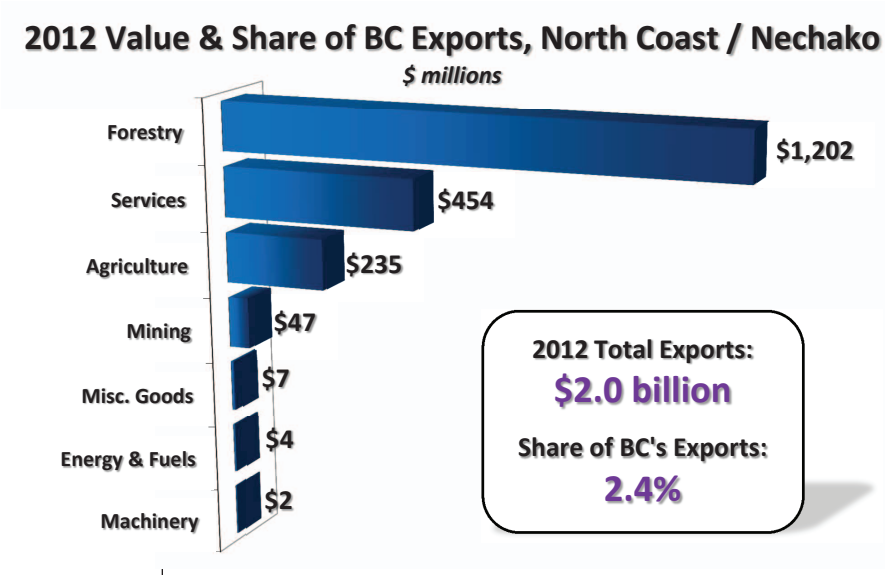
Overall, with less than four percent of BC's labour force and more than six percent of provincial exports originating in the Cariboo, this region made a more-than-proportional contribution to BC's export base in 2012. On average, exports per labour force participant in the Cariboo region were valued at $56,455—72 percent greater than the $32,883 seen province-wide, third-highest in BC.

7 Source: InvestBC 2013, p.50.

IX 2012 Development Region Profiles: North Coast/Nechako

The North Coast/Nechako region, located in the northwest corner of the province, is the largest by area in the province; however, it was home to only 98,994 people in 2012, making it the second-smallest by population. The region's largest municipalities include the resource communities of Prince Rupert, Terrace, and Kitimat, which account for a combined 34 percent of the North Coast/Nechako regional population.

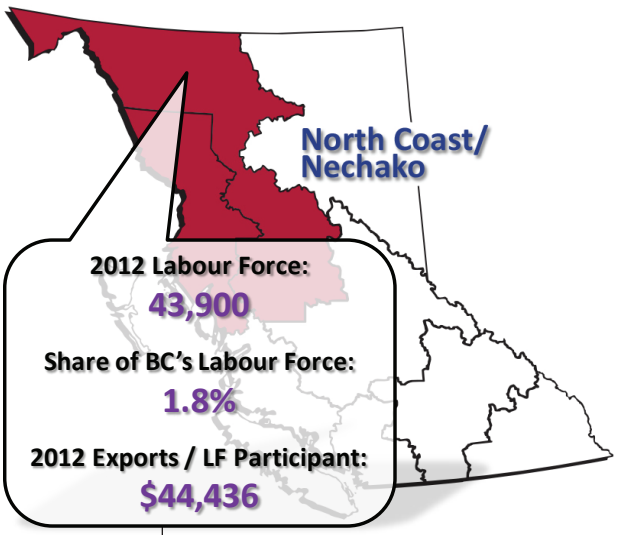
Figure 10



The mainstay of the economy in the North Coast/Nechako region has historically been forestry. The diversification of the forest sector in the region has brought about pulp and pellet-plant operations, bio-energy facilities, and value-added wood production. As such, 62 percent of total regional exports of $2.0 billion was generated by the forestry sector ($1.2 billion, nine percent of BC's total forestry exports) in 2012.

Relatively robust service exports have benefitted from the ongoing diversification of the regional economy, as large-scale projects related to power generation, distribution and transmission, port and industrial development, as well as pipelines, are either underway or planned to start over the next decade. The prominence of port, rail and road transportation networks combined with the tourism sector has also boosted service sector activities in the region. In 2012, service exports totalled $454 million, comprising 23 percent of the region's total. Of this, more than half ($259 million) was in transportation, warehousing, and communication.

The agriculture sector generated the third-highest export revenue in the North Coast/Nechako region in 2012, at $235 million (three percent of the regional total). Boosted by the mining industry's expansion across BC, the region's mining sector brought in $47 million in export income in 2012, representing less than one percent of total regional exports. The remaining sectors—miscellaneous manufactured goods, energy and fuels, and machinery—combined to earn $13 million through exports.

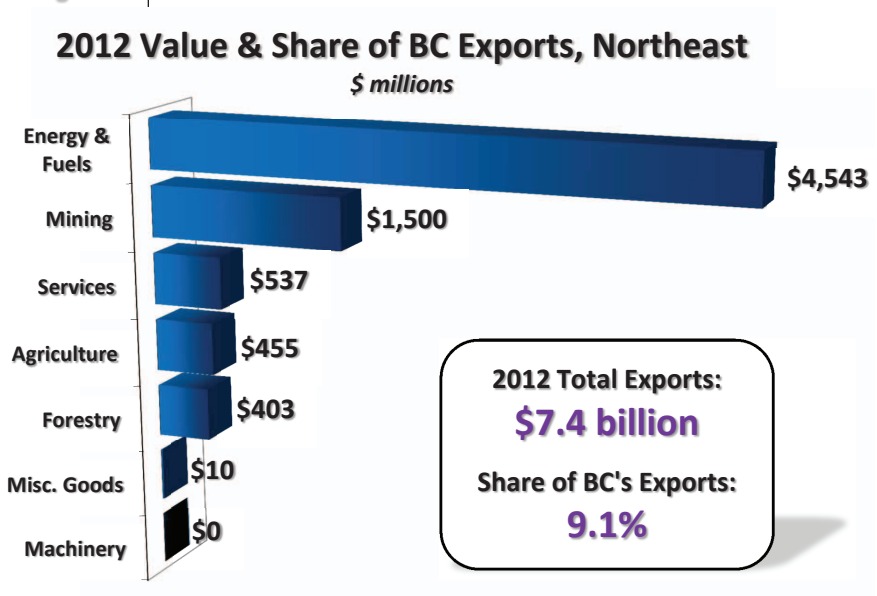


Overall, with only 1.8 percent of BC's labour force and 2.4 percent of provincial exports originating from this region, the North Coast/Nechako region made a more-than-proportional contribution to BC's export base in 2012. On average, exports per labour force participant in the region were valued at $44,436—35 percent greater than the $32,883 seen province-wide.

X 2012 Development Region Profiles: Northeast

The Northeast region of BC is, appropriately, located in the northeast corner of the province. Despite accounting for the second-greatest land area of the seven BC regions considered in this report, it was home to only 72,555 people in 2012, making it the least-population region in the province. It's largest communities include Fort St. John and Dawson Creek, which combined represent 46 percent of the regional population.

Figure 11



Located as it is in the western-most portion of the Western Canadian Sedimentary Basin, BC's Northeast is the only region in the province that produces commercial quantities of natural gas. As such, the energy and fuels sector is a major economic driver and catalyst for the region's many investment and construction-related projects. In addition to natural gas production, hydro-electric power generation and transmission from the Peace and WAC Bennett Dams and, more recently, wind power facilities are also significant economic contributors.

Of a total of $7.4 billion in total exports in 2012, 61 percent was generated in the energy and fuels sector ($4.5 billion); as such, the Northeast accounted for 86 percent of the total value of BC's energy and fuels exports in 2012. Home to numerous coal mines—including Willow Creek, Brule, Wolverine and Trend—mining also plays a key role in the Northeast's economy. In terms of exports, the Northeast's mining sector generated $1.5 billion in income in 2012, 20 percent of the regional total and eleven percent of BC's total mining (and related product) exports

Accompanying the development and expansion of oil and gas and coal mining operations in the region, services are the third-largest export sector in the region. In 2012, the export of services generated $537 million in value and accounted for seven percent of the region's exports. As BC's principal grain and canola production centre, a major supplier of traditional and exotic livestock, and the source of much of BC's honey production, the region's agriculture sector generated $455 million in exports in 2012, followed by $403 million in forestry.

With less than two percent of BC's labour force but more than nine percent of its exports (by value), the Northeast made the greatest contribution to BC's exports on a per labour force participant basis of any region in the province, at $179,910. This was 83 percent greater than the next-largest contributor (the Kootenay region), and almost six times the provincial average of $32,883.

XI Conclusions & Strategic Considerations

British Columbia has a large and diverse economy that produces a wide range of goods and services that are sold to markets throughout Canada and the rest of the world. The province's exports, in turn, help BC's residents and businesses to import a wide range of goods and services, while the government is better able to fund a wide range of public services, from health care, to education and social services.

Given this, it is in the best interests of residents, businesses, and government to work together to ensure that the communities and industries generating the province's exports have the manpower, the infrastructure, and the support that they require to maximize the export income that is, ultimately, shared among all British Columbians. To this end, we require information that allows us to identify where in the province our exports are originating. Unfortunately, while a significant amount of provincial-level data are available—thereby permitting a broad, BC-wide picture of exports to be painted—the available data currently provide no information about where within the province exports originate or what their particular composition is.

The objective of this research is twofold. First and foremost, it is concerned with the development of a framework for allocating the value of BC's exports, by sector, to regions throughout the province. The research shows that BC's metro regions accounted for slightly more than half (52 percent) of BC's total exports in 2012, generating $42.5 billion in export income, while the non-metro regions generated $39.0 billion and accounted for 48 percent of the province's $81.5 billion in exports.

Of the exports from the metro regions, the majority was from the service-providing sectors, which generated $24.2 billion in total exports (57 percent of total exports from the metro regions). Conversely, the non-metro regions were heavily weighted towards the goods-producing sectors: $28.7 billion (74 percent of their total exports) was generated from their forests, mines, fields and factories.

While a slightly greater value of exports originated in BC's metro regions in 2012, a different picture emerges when the value of these exports is considered against the size of the active labour force within each region. In the context of exports per labour force participant, BC's non-metro regions, with only 34 percent of the province's labour force and 48 percent of provincial exports, generated $46,775 per person in the labour force, versus $25,837 in the metro regions (where 66 of BC's labour force was). That being said, this is not to suggest that any one region in the province is more productive, important, or deserving than another; it does, however, provide insight into where and how policy directions could be focused for specific regions in BC.

For example, like other western Canadian provinces, British Columbia—and in particular its non-metro regions—has a clear comparative advantage in the extraction and export of natural resources, be it in the forestry, mining, or energy sectors. As such, while exploring potential comparative advantages in other sectors is certainly warranted, economic development policies in these regions should first be directed towards further developing the existing advantages we enjoy in the production of resource-based products. These policies should take two directions: encouraging more productive and efficient operations to ensure that the greatest value possible is extracted from a particular resource endowment, and diversifying the range of markets into which goods are currently being exported. This is similarly true for the province's metro regions, which show a comparative advantage in service sector activities due to the economies of scale and scope created by, and associated with, the province's urban centres.

A few comments regarding future research in this area are warranted. First, with the 2006 Census currently representing the most recent detailed data on experienced labour force in regions throughout the province, it will be possible to update the analysis relating to the occupational structure of each

industry to a 2011 Census base towards the end of 2013 or in early 2014. To the extent that changes in the proportion of direct jobs within each industry sector is seen across regions in BC when compared to the 2006 Census data, this could impact the allocation of export revenues to each region. Second, in moving to the LFS base for regional employment by region (as was done for this report), this analysis can now be updated on an annual basis as new data become available each year. Similarly, it is also possible to consider the data annually looking back in time to paint a picture of how the particular contributions of each region to BC's exports have changed over the recent past. It could prove insightful to assess how regional exports have been changing historically across industry sectors, both as a result of changes in the total export income generated by BC within each sector and as a result of changes in the spatial distribution of employment throughout the province. Finally, annual updates of the analysis will provide a mechanism to monitor the impact that any particular policy initiatives are having—something that would not have been possible without this current research.

As has been stated in previous iterations of this report, it is hoped that this analysis furthers discussions of the importance of exports to BC's economy and to its residents, and of specific policy directions for particular regions. Such discussions will, in turn, allow for the development of more effective strategies to respond to economic changes that will directly, and indirectly, affect us all in the years to come. In addition, it is hoped that this approach to identifying the spatial origins of BC's exports stimulates further research into potential differences in same-sector labour productivity levels across regions (for example, addressing the question of whether loggers in the Cariboo are more efficient than those in the Kootenays) or the ongoing refinement of the use of Census and LFS data as mechanisms for spatially allocating exports throughout the province.

Appendix

A-I Methodological Approach to Identifying the Spatial Origins of British Columbia's Exports

In order to generate estimates of the value of exports for regions within British Columbia, three steps are required. The first step is to consider the magnitude of sectoral employment in each of BC's seven development regions (Island/Coast, Mainland/Southwest, Thompson/Okanagan, Kootenay, Cariboo, North Coast/Nechako, and Northeast) as per Statistics Canada's Labour Force Survey (LFS). The LFS data detail employment by 16 industry categories for each region between 1987 and 2012 and establish the distribution and patterns of change in annual employment for each region in the province.

The second step relates to the 2006 Census, whereby data describing the occupational details for people working within each industry are used to determine the number of *direct* jobs related to goods and service production within each of the seven regions.

The final step relates the current levels of employment by industry sector and estimates of direct jobs with the most recent export data by industry sector to derive export value estimates (by industry) for each region in BC. Both the data and the methodology used to generate the estimates are explained in more detail below.

1 Employment by Industry, Labour Force Survey: 1996-2012

With the goal of producing estimates of the value of exports by region within BC that can be updated on a yearly basis in mind, the analysis relies heavily on employment by industry data from Statistics Canada's LFS. This publication— a rotating monthly survey of approximately 54,000 households in Canada, resulting in the collection of labour market information for approximately 100,000 individuals Canada-wide—is the only source of annual data on the changing composition of employment and labour force in regions throughout BC and Canada. The LFS provides employment estimates by industry, by occupation, by public and private sector, by hours worked, and by many other labour market variables that are among the most timely and important measures of performance of the Canadian economy.

That said, while the LFS provides timely estimates of employment by industry sector for development regions in BC, it only does so for 16 broad industry classifications and does not cross-tabulate the industry data with occupation classifications. As it is the occupation classifications within each industry sector that are used to determine the proportion of employment in each industry that would be directly involved in the production of exports for each sector, a second data source is used in conjunction with the LFS; that is, the most recent (in this case, 2006) Census.

2 Experienced Labour Force by Industry & Occupation, Census: 2006

The detailed distribution of BC's experienced labour force by industry and occupation classification from the 2006 Census provides the foundation for identifying the employment within each industry sector that would be directly involved in production of exports. Two important features of these data make them integral to this analysis: a) they identify the location of the experienced labour force throughout the province, and b) they provide a detailed breakdown of the industries and occupations in which the experienced labour force works. In this instance, the currently-available tabulation represents a matrix of the employed labour force by 66 industries cross-tabulated by 47 occupation classifications for each development region in the province (a complete list of the industries and occupations considered in this analysis can be found in Section A-III).

The experienced labour force data have been tabulated in this manner for two reasons. First, the industry dimension provides the link between the number of jobs in a particular industry sector in a region and the exports of goods or services from the same industry sector (for example, the forestry and logging sector). Second, the occupational dimension, which describes the type of work a person actually performs within a particular industry sector, permits identification of those labour force participants that can be directly associated with the activities that generate the underlying product or service that characterizes each industry sector.

As an example, in addition to those people who are in occupations that are unique to forestry operations and are directly responsible for the harvesting and processing of BC's forestry products (such as tree-fellers or green-chain operators), there are a host of indirect occupations within the forestry industry, including head office functions in accounting, human resources, marketing, and legal services. As an example, while there were 1,730 people working in the forestry and logging industry in the Kootenay region, only 730 were in occupations unique to forestry operations (42 percent), with the remaining jobs found in a broad range of occupations, from secretaries and clerical occupations (100 jobs) to sales and service occupations (40 jobs). While the 730 jobs unique to forestry occupations would be considered directly-related to production within this industry, many of these other occupations would be dependent on the activities of those direct jobs. Therefore, although these indirect functions certainly play an important supporting role within the forestry sector as a whole, they are not, by their very nature, directly involved in the generation, extraction, or production of forestry products or—in the context of this research—BC's exports.

With the "direct" occupations identified for each industry by region in BC, the next step is to relate the share of each region's experienced labour force that is deemed to be in occupations directly responsible for generating the underlying goods or services that are being exported to the industry specific export data.

3 Exports by Industry: 1982-2012

As a starting point, Statistics Canada's Provincial Economic Accounts provide balance of payments based data on BC's total international and interprovincial imports and exports, of both goods and services, for the 1982 to 2011 period. For this research, these top-level data represent the provincial totals to which all other industry-specific export data are standardized to.

As part of their Trade Data Online program, Industry Canada publishes customs-based data[8] on British Columbia's international merchandise exports for 145 industry groupings in accordance with the 2007 North American Industry Classification System (NAICS). In addition to providing details of the current 2012 composition of BC's international goods exports, historical data are also available back to 1992. Thus, in addition to providing details on the composition of what BC exports to international destinations, these data also represent the most up to date estimates of international exports that are currently available.

In addition to providing the top-level totals for imports and exports, the Provincial Economic Accounts data are used to determine the industry composition of BC's international service exports, as well as the composition of both interprovincial exports of goods and services. While not providing a breakdown that is as current as the one provided by Industry Canada for international goods exports (detailed data from the Provincial Economic Accounts are only available for the 1998 to 2009 period), exports of international services and interprovincial goods and services were estimated up to 2012 using patterns of change in each top-line total, as well as in each industry.

8 These data represent the value of all merchandise trade that clears customs. Therefore, given the nature of the data collection process, no information on the value of BC's services trade is provided by Industry Canada.

4 Estimating Regional Exports for 2012

Although the LFS and the Census represent the two main data sources used in the development of regional export values, a couple of other data sources were also integrated into the analysis.

Given the structure of the available data on experienced labour force and the nature of employment activity, it was necessary to develop a slightly different approach for the oil and gas, coal mining, and utilities sectors. The diverse employment structure of these three industries meant that a considerable share of each industry's experienced labour force was located in regions where there was no obvious production of the products defining each industry. For example, with respect to utilities, a significant share of occupations (both direct and indirect) within this industry were located in the Lower Mainland; in part, due to BC Hydro's head offices being situated in Vancouver. However, only a small share of actual generation capacity is found within the Lower Mainland. As such, data on the distribution of generation capacity within the province was used to distribute the value of exports from this industry to regions within the province. A similar approach was used to allocate exports of coal, which was based on the distribution of coal production estimated for each of the ten coal mines located in BC, and oil and gas, which was based on the volume distribution of commercial extraction and production.

While one could argue that such an approach could be undertaken for other sectors (such as forestry and the distribution of output from mills throughout the province), identifying appropriate data to distribute export values for other goods-and-services-producing industries becomes increasingly challenging beyond the utilities, coal mining, and oil and gas industries. Therefore, with the exception of these three industry sectors it was decided that a uniform approach for all industry sectors and regions outweighed the value of tailoring each region's share according to a unique set of parameters for each industry.

Once the regional estimates of direct employment by industry sector were developed for each industry, the shares of provincial direct employment for each region were applied to BC's industry-specific export values to generate the regional estimates of industry-specific export values.

A couple of final notes on this approach and the data used in the calculations. First, while it is reasonable to expect that some changes in occupation structure would have occurred between 2006 and 2012 (thereby influencing the distribution of direct employment across BC's regions), it was assumed that more significant changes would have characterized the industry sectors (such as a decline in forestry employment or an increase in mining jobs) than the composition of occupations *within* a particular industry. In other words, the hypothesis here is that within the context of a declining forestry sector there would be a *proportionate* fall in the number of tree-fellers as there would be in the number of accountants within the forestry industry sector.

Also, as the Census is a "place of residence"-based survey, it is assumed that in using these data there is a general correspondence—at a relatively high level of spatial aggregation—between where people work and where they live. Recognizing that some people could work outside of the region in which they live, it may seem more logical to use "place of work" data (also available through the Census) as a means to identify the spatial origins of BC's exports. Unfortunately, the place of work data have other limitations and would not necessarily provide any improvement over the "place of residence" data, such as the requirement to spatially allocate jobs with "no fixed workplace", a challenging task given that these jobs have not, through the Census, been assigned to a particular location.

5 An Example of the Export Allocation Process: Forestry & Logging

In 2012, forestry & logging (NAICS code 113, a sub-sector of the larger forestry sector considered throughout above) generated an estimated $701.2 million in total export income. Of the 17,785 people working in this sector, 8,916 of them (50.1 percent) were deemed to be directly involved in the generation of forestry and logging exports; in other words, 50.1 percent of the employment in this sector was estimated to be in Occupations Unique to Forestry, Primary Production Labourers, & Heavy Equipment Operators category (see table below). The remaining 8,868 people working in this sector (49.9 percent of total employment) were deemed to be in supporting occupations (i.e. ones that were only indirectly involved in the generation of export income).

Forestry & Logging (NAICS 113): Direct Employment & Exports by Region, 2006	2012 Total Employment	Proportion in Direct Employment (based on 2006 Census)	Proportion in Indirect Employment (based on 2006 Census)	2012 Total Direct Employment	Share of BC's 2012 Total Direct Employment in Forestry & Logging	Estimated 2012 Regional Forestry & Logging Exports *(millions $)*
Vancouver Island / Coast	5,100	49.8%	50.2%	2,538	28.5%	$199.6
Mainland / Southwest	2,000	37.0%	63.0%	740	8.3%	$58.2
Thompson / Okanagan	2,500	54.5%	45.5%	1,362	15.3%	$107.1
Kootenay	1,000	53.9%	46.1%	539	6.0%	$42.4
Cariboo	4,900	52.1%	47.9%	2,553	28.6%	$200.8
North Coast/Nechako	1,800	54.6%	45.4%	983	11.0%	$77.3
Northeast	485	41.5%	58.5%	201	2.3%	$15.8
British Columbia	**17,785**	**50.1%**	**49.9%**	**8,916**	**100.0%**	**$701.2**

In BC, the Cariboo region had the second-largest number of people in this industry sector in 2012 (representing 4,900 of the province's total of 17,785, or 27.6 percent). However, the Cariboo region was estimated to have had the greatest number of people working in direct forestry and logging occupations (those Unique to Forestry, Primary Production Labourers, & Heavy Equipment Operators) at 2,553 people, or 28.6 percent of all people in direct forestry and logging occupations in the province. Interestingly, while 11.2 percent of all forestry and logging jobs were estimated to be in the Mainland/Southwest region in 2012, a significant proportion of indirect occupations were also found to be here (63 percent of all jobs in this sector, the highest of any region). As a result, only 8.3 percent of BC's direct jobs in forestry and logging were deemed to be in the Mainland/Southwest region.

With the magnitude of direct employment in forestry and logging identified for each region, the next step in the allocation process was to relate each region's share of the industry-specific direct occupations to the value of BC's forestry and logging exports. The Cariboo region, with 28.6 percent of BC's direct occupations in forestry and logging, was allocated $200.8 million in forestry and logging exports—28.6 percent of the $701.2 million total that BC exported in 2012. The Island/Coast region was the second-largest contributor at $199.6 million (28.5 percent), followed by the Thompson / Okanagan region with $107.1 million (15.3 percent).

It is important to note here that in identifying the spatial origins of BC's exports through their assignment to specific regions within the province, the analysis is focused specifically on the origin of the goods and services that are exported, and not on the regions in which indirect (supporting) activities take place before they are ultimately exported. As an example, the fact that a forestry company's lawyers all work in downtown Vancouver should not—and does not—mean that forestry exports from that company originate

in downtown Vancouver. This is not to say that supporting occupations in one region do not contribute to the value of exports that originate in another region, only that they are not associated with either the initial extraction/production of a commodity or the provision of a service that is, itself, exported.

Finally, service sector exports were allocated to regions using the same approach of identifying the "contact" occupations that directly deliver exported services (for example the chefs and the servers in restaurants, the guides in tourism, the cleaners in hotels, and the cashiers and sales clerks in retail). As with the forestry and logging example above, certain occupations were excluded as not being directly involved (such as senior management, administrators, police and security guards, or dentists). Each region's share of the province's total experienced labour force in these service delivery occupations is applied to the total export of services for each industry classification to provide an estimate of each region's export of services.

A-II British Columbia's Trade Flows

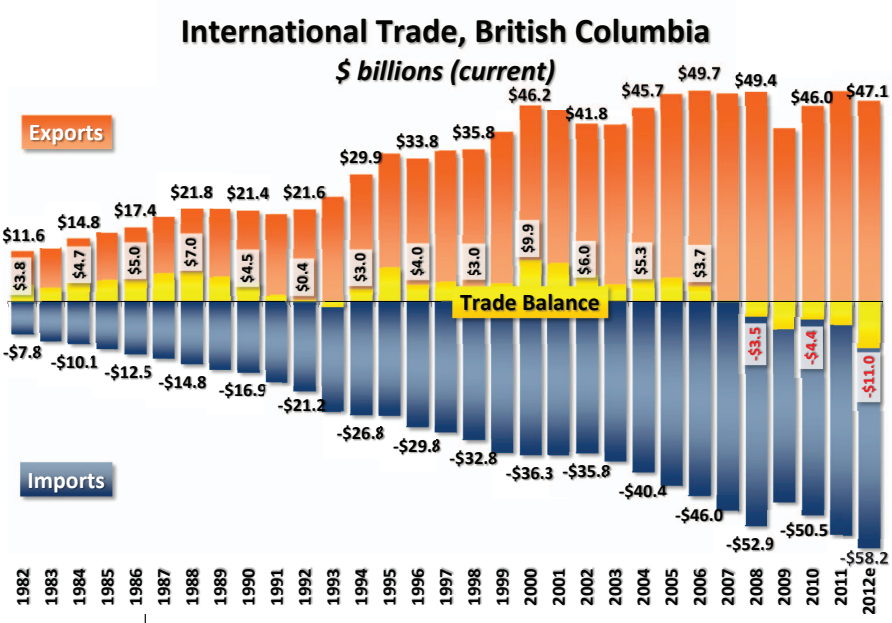
In a geographical framework, trade flows can be defined as the exchange of goods and services between BC and other Canadian provinces (interprovincial trade) as well as with other countries around the world (international trade). Trade also needs to be described by the direction in which the goods and services flow: imports are those goods and services purchased by BC's residents, businesses, and governments from other provinces and countries, while exports are those goods and services produced within BC that are purchased by residents, businesses, and governments outside of the province. At a broad level, therefore, BC's trade flows consist of four components: ***international imports, international exports, interprovincial imports***, and ***interprovincial exports***. The difference between the value of these flows (exports minus imports) is referred to as the provincial trade balance.

Each of the international and interprovincial flows of imports and exports differs considerably in terms of both magnitude (in Canadian dollars) and composition (in terms of the inherent value of goods and services being traded). As the magnitude and composition of both interprovincial and international exports forms the foundation for this research, it is useful to consider trends in BC's trade flows to provide some context for the analysis.

1 International & Interprovincial Trade Flows

Over the past three decades, BC's international exports have grown significantly in value, increasing from $11.6 billion in 1982 to an estimated $47.1 billion by 2012—more than a four-fold increase (Figure A-1)[9]. During this period there was some volatility in international exports flows; more specifically, while the value of BC's exports have grown since the early-1980s, negative global demand shocks in the early-1990s, late-1990s, early-2000s, and most recently during the global financial crisis of 2008, served to check that growth.

Figure A-1



That being said, British Columbia's international imports have demonstrated less variability than the value of our imports. Over the same period, imports have grown steadily from $7.8 billion in 1982 to a high of $58.2 billion by 2012 (a 646 percent increase). Over the past decade the value of imports to BC has grown almost continuously, except for the decline seen in 2009, when employment, incomes, and purchasing power declined throughout the province during the recession.

In terms of our ***international trade balance***, the total value of BC's international imports began to exceed the value of exports in 2007—only the second time this had occurred in the last three decades (previously only seen for one year in 1993). While BC had experienced an annual international trade surplus that ranged between $423 million (1992) and $9.9 billion (2000) each year, our international trade deficit which began at $240 million in 2007 grew to $6.6 billion by 2009 and further to an estimated $11.0 billion in 2012.

9 Refer to Section A-I for a description of the data and estimation methods used in this assessment of total exports and imports.

Compared to the relationship that exists between BC and our international trading partners, a much different one exists between BC and our trading partners throughout the rest of Canada. This is true in terms of both the overall dollar value and the magnitude of our trade balance.

Figure A-2

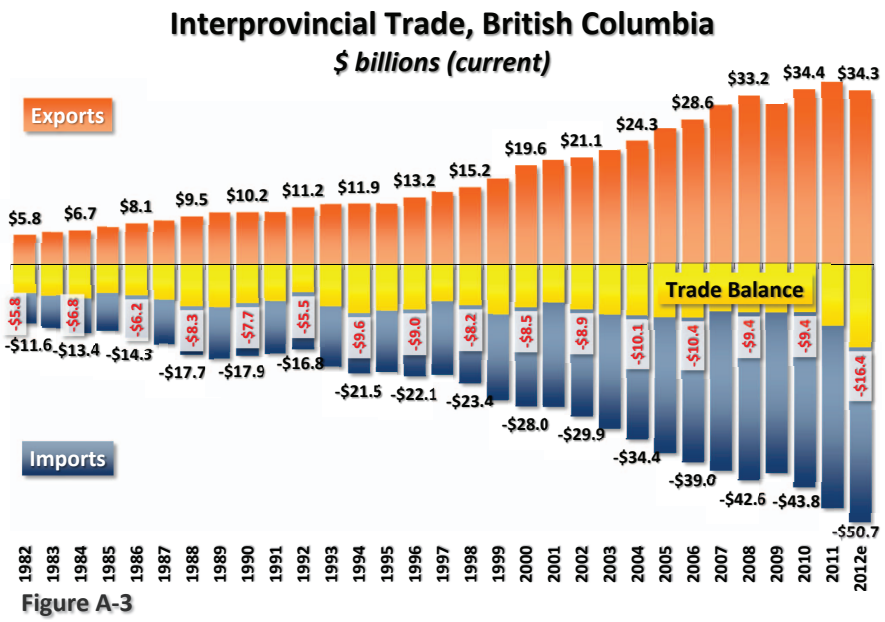
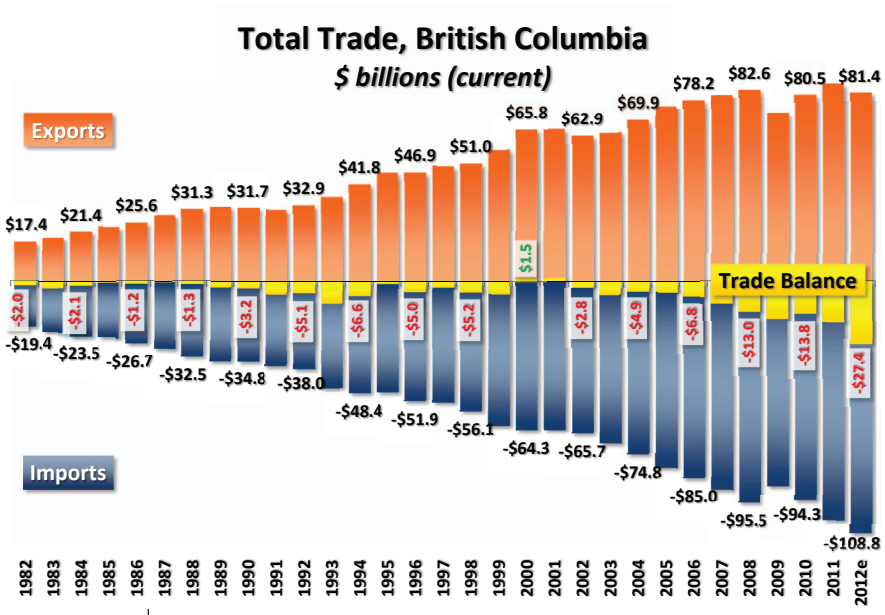


Figure A-3



For example, the value of BC's interprovincial exports, while growing by 470 percent from $5.8 billion in 1982 to $33.5 billion by 2012 (faster than the 306 percent for international exports), was much smaller in magnitude than international exports. On average interprovincial exports from BC have represented only 54 percent of the value of BC's international exports over the past 30 years.

Meanwhile, BC's interprovincial imports (which grew from $11.6 to $50.7 billion over the same period, a 337 percent increase), have accounted for an average of 86 percent of the value of international imports since 1982. As a result, BC's ***interprovincial trade balance*** has been in a deficit situation over the past three decades. More specifically, BC's interprovincial trade deficit ranged between a low of $5.5 billion (in 1992) and a high of $16.4 billion (in 2012). Over the past decade, BC's interprovincial trade deficit has averaged $10.6 billion per year, and has been growing in the past few years (Figure A-2).

By combining the value of both international and interprovincial imports and exports, an image of BC's ***total trade*** picture emerges. As Figure A-3 shows, with the exception of 2000 and 2001, the magnitude of BC's interprovincial trade deficits between 1982 and 2012 was sufficient enough to overwhelm the province's surpluses in international trade. As a result, BC's ***total trade balance*** ranged between a deficit of only $467 million (in 1987) and $9.6 billion (in 1993)—the latter representing the high water mark for BC's trade deficit up until 2008, when the global financial crisis pushed BC's trade deficit upwards as the value of imports climbed relative to exports. Note that BC had one year of trade surplus, 2000 when the value of exports exceeded import by $1.5 billion. Since 2007 however, BC's total trade deficit has grown from $9.5 billion to 30-year highs of $17.6 billion in 2011 and an estimated $27.4 billion in 2012 due to the twin deficits in both interprovincial and international trade.

While a more in-depth exploration of trends in BC's trade flows and their implications for future economic growth would be interesting—and vital in the context of developing effective economic and fiscal policies—the focus of the research in this report is on the province's exports and, more specifically, where

within the province they originate from. Therefore, in order to provide further context for identifying the spatial origins of BC's international and interprovincial exports, it is useful to consider the ***composition*** of the province's exports, first in terms of the breakdown between goods and services, and then further by industry sector.

2 International & Interprovincial Exports of Goods & Services

Figure A-4

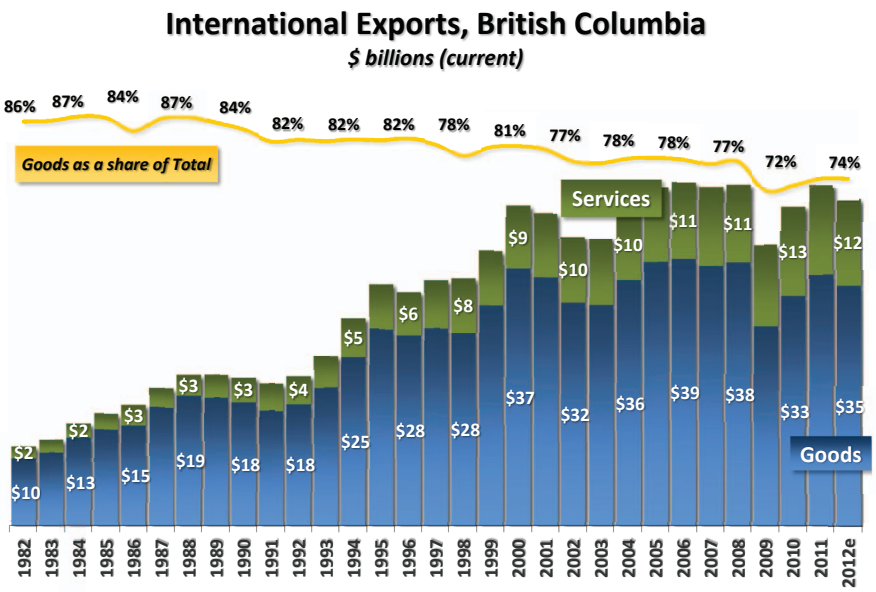
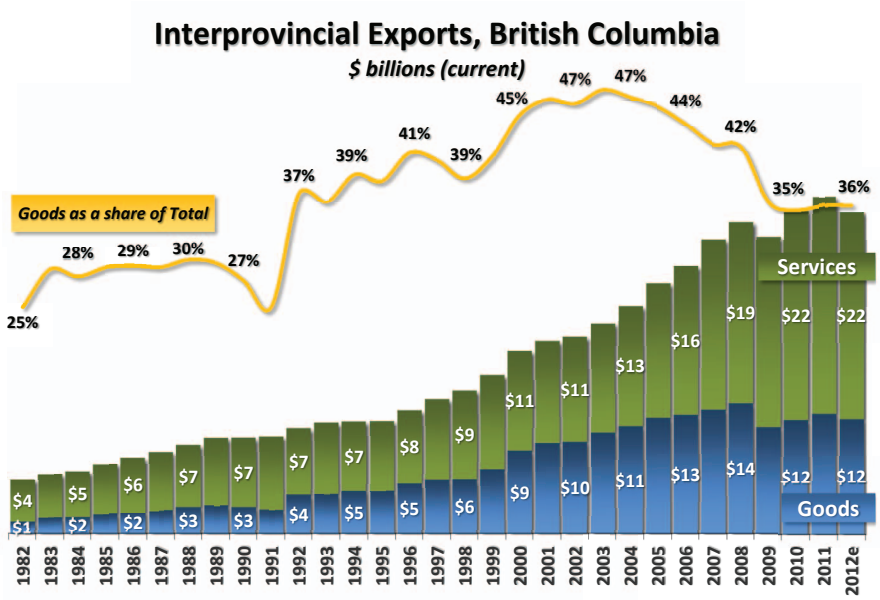


Figure A-5



In considering the breakdown between the value of goods and services in BC's exports, Figure A-4 shows that in an international context, BC is overwhelmingly an exporter of things: since 1982, 79 cents out of every dollar that the province has earned through international exports has come from the sale of goods. However, driven by both the diversification of BC's economy and of our trading partners, the share of goods in BC's international exports has trended downwards slightly over time as service-based exports have increased.

From the range of 86 percent during the 1980s, the value of goods exports fell into the 82 percent range through the 1990s and further towards 78 percent during the 2000s. The most recent estimates show that goods now account for three quarters (74 percent) of the value of BC's international exports.

In contrast to BC's international exports—which are strongly weighted towards the goods-producing sectors—the province's interprovincial exports consist of a much greater share of services, averaging 61 percent of the value of BC's total exports to other parts of Canada since 1982 (Figure A-5).

Significant variation has been seen in the composition of interprovincial exports, however, with goods increasing as a share of total interprovincial exports from an average of 28 percent in the 1980s to 36 percent in the 1990s and further to 45 percent in the 2000s. The share of goods exports peaked at 48 percent in 2003 before falling back to below 40 percent in 2009 (36 percent). Since 2009, goods are estimated to have accounted for a relatively stable share of BC's total interprovincial exports, in the range of 35 to 36 percent.

In combining BC's international and interprovincial exports to paint a picture of total exports, goods-producing sectors have accounted for three out of every five dollars earned through exports over the past

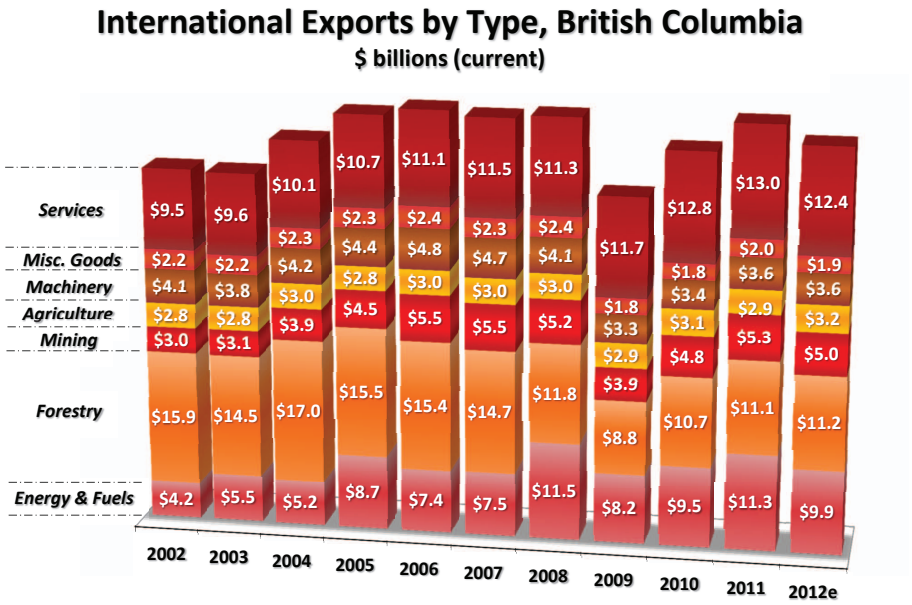
decade, only slightly below the three-decade average of 65 percent. Indeed, goods exports as a share of total exports have remained relatively stable over the past 30 years, going from 65 percent in the 1980s to 67 percent in the 1990s and to 64 percent in the 2000s—a long-run pattern that is a function of the decreasing share of goods in international exports and an increasing share in interprovincial exports.

3 Composition of International and Interprovincial Exports

Just as the respective shares of BC's exports in goods and services have changed over time, so too has the industry composition of those goods and services.

With its rich endowment of spruce, fir, and pine trees, international exports of BC's forestry products—from dimensioned lumber to other manufactured wood and paper products—have generated an average of $13.3 billion in annual revenue since 2002, or 38 percent of the province's total international goods export value over that period (Figure A-6). However, both the value of international forestry exports and their share of total international exports declined steadily between 2004 and 2009—reaching a low of $8.8 billion in 2009, when forestry exports accounted for only 30 percent of international goods exports. Since 2009 the forestry sector has experienced a modest recovery, with exports rising back towards an estimated $11.2 billion in 2012.

Figure A-6



Since 2002, the value of international exports of energy and fuels—which includes natural gas and electricity—has seen significant growth, increasing from $4.2 billion in 2002 to $9.9 billion a decade later (a 235 percent increase to 2012). That said, much attention has been garnered in recent years by BC's falling natural gas royalties due to falling gas prices. This is reflected in Figure A-6, with energy and fuels exports falling by 12 percent between 2011 and 2012. Despite this recent decline, the energy and fuels sector has represented an average of 23 percent of the value of BC's international exports over the past decade, making it the province's second-largest international export sector.

Similarly, international mining exports (which include coal, metals such as gold, silver, copper, and zinc, and non-metallic minerals) have also risen dramatically since 2002, from $3.0 billion to an estimated $5.0 billion in 2012 (a 166 percent increase). On average, the mining industry has been the third-largest in the context of BC's international goods exports over the past decade, representing 14 percent of the value of international goods exports since early 2000.

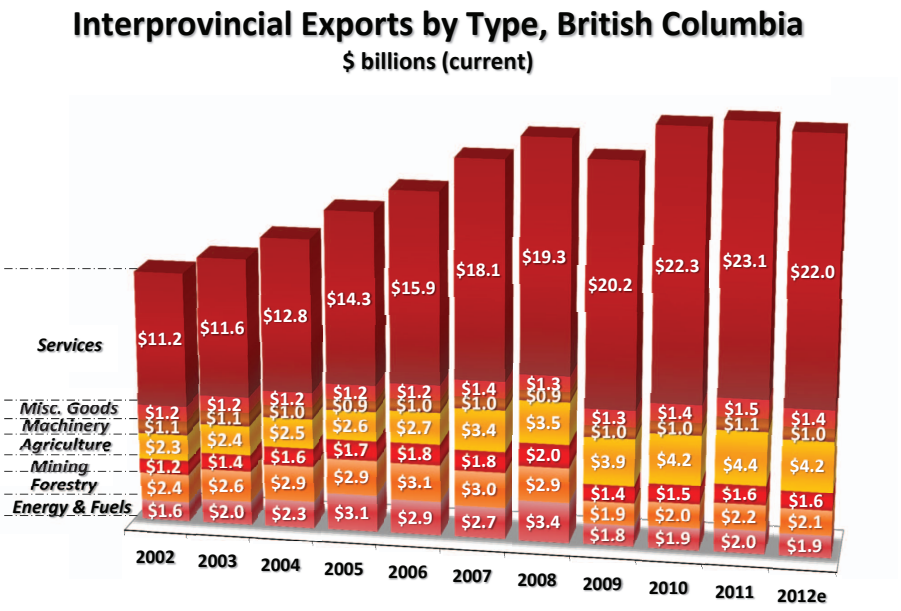
The value of machinery exports has averaged eleven percent of BC's international exports since 2002, followed by exports of agricultural products (crops, animals, and fish) at eight percent, and miscellaneous manufactured products (electrical, electronic, and communications equipment and motor vehicles, among other things) at six percent.

While goods account for a significant proportion of international exports, services also generated significant revenue, at $12.4 billion in 2012. Accounting for an average of 24 percent of BC's international exports

over the past decade, services have been growing in both total value and as a share of international exports, from $9.5 billion in 2002 (23 percent of all international exports in that year) to $12.4 billion (26 percent) in 2012. This growth has primarily been driven by growth in the export of professional and other business services, transportation and communications services, and retail and wholesale trade.

A different picture emerges when considering the composition of BC's interprovincial exports (Figure A-7). As indicated earlier, services account for a significant share of interprovincial trade, representing an average 58 percent of the total value of exports to other provinces since 2002. Furthermore, the value of these service exports to other provinces has almost doubled over the past decade, going from $11.2 billion in 2002 to an estimated $22.0 billion in 2012 (a 96 percent increase).

Figure A-7



The value of agricultural exports to other provinces over the past ten years represented the largest of BC's goods-producing sectors, averaging $3.3 billion per year since 2002, and accounting for over one-quarter (27 percent) of the total value of BC's interprovincial goods exports over that period. Close behind was interprovincial forestry exports, which accounted for 21 percent of BC's total interprovincial goods exports, averaging just under $2.6 billion annually. Energy and fuels also accounted for a significant share of interprovincial goods exports, averaging $2.3 billion, or 19 percent of BC's goods exports to other provinces since 2002.

While the value of interprovincial goods exports increased by 25 percent between 2002 and 2012, the substantial growth in service exports (96 percent) over the same period served to reduce the contribution of goods-producing industries to total interprovincial exports. For example, despite increasing in dollar-value (by $364 million) between 2002 and 2012, mining exports as a share of total interprovincial exports declined to five percent by 2012 from six percent in 2002. Similarly, energy and fuel saw its share of total interprovincial exports decline to six percent from eight percent a decade earlier, in spite of the annual value of interprovincial energy and fuel exports increasing by $285 million over this period.

The picture painted by the export data for BC shows that international trade of BC's exports are weighted heavily towards goods, with exports from our forests, gas fields, and mines playing a significant role. While the domestic picture is much more weighted towards the trade of services, it still reinforces what is seen in international exports: agriculture, forestry, and energy and fuels still feature prominently within BC's interprovincial goods export landscape.

British Columbia's Estimated 2012 Total Exports by Industry & Region

Value of exports in millions current $	Island / Coast *NET of Victoria CMA*	Mainland / Southwest *NET of Lower Mainland*	Thompson / Okanagan *NET of Kelowna CMA*	Kootenay	Cariboo	North Coast/Nechako	Northeast	Non-metro Regions	Victoria CMA	Lower Mainland	Kelowna CMA	Metro Regions	British Columbia Total
Energy & Fuels	**$55**	**$34**	**$203**	**$146**	**$75**	**$4**	**$4,543**	**$5,060**	**$11**	**$176**	**$31**	**$218**	**$5,278**
211 Oil and Gas Extraction	$0	$0	$0	$0	$0	$0	$4,327	$4,327	$0	$0	$0	$0	**$4,327**
22 Utilities	$7	$18	$103	$40	$0	$2	$84	$255	$4	$31	$0	$35	**$290**
324 Petroleum and Coal Products Manufacturing	$48	$16	$100	$106	$75	$1	$131	$478	$7	$145	$31	$183	**$661**
Mining	**$348**	**$15**	**$506**	**$5,707**	**$311**	**$47**	**$1,500**	**$8,435**	**$184**	**$4,302**	**$146**	**$4,632**	**$13,067**
2121 Coal Mining	$79	$0	$0	$5,234	$0	$0	$1,190	$6,503	$0	$0	$0	$0	**$6,503**
All Other Mining & Related Manufactured Products	$269	$15	$506	$473	$311	$47	$311	$1,932	$184	$4,302	$146	$4,632	**$6,564**
Forestry	**$2,808**	**$488**	**$1,904**	**$775**	**$3,261**	**$1,202**	**$403**	**$10,842**	**$143**	**$1,954**	**$277**	**$2,374**	**$13,216**
113 Forestry and Logging	$192	$35	$99	$42	$201	$77	$16	$661	$8	$23	$8	$40	**$701**
321 Wood Product Manufacturing	$1,122	$232	$1,258	$441	$1,573	$668	$248	$5,541	$84	$1,242	$213	$1,539	**$7,081**
322 Paper Manufacturing	$1,454	$218	$530	$286	$1,473	$446	$136	$4,544	$47	$626	$54	$727	**$5,271**
323 Printing and Related Support Activities	$40	$4	$18	$5	$15	$10	$3	$95	$4	$62	$2	$68	**$163**
Agriculture	**$724**	**$358**	**$944**	**$325**	**$323**	**$235**	**$455**	**$3,364**	**$213**	**$3,667**	**$206**	**$4,086**	**$7,450**
111-112 Farms	$159	$135	$327	$120	$110	$24	$174	$1,050	$35	$668	$45	$748	**$1,798**
114 Fishing, Hunting and Trapping	$194	$0	$12	$0	$0	$124	$0	$330	$33	$0	$0	$33	**$363**
311 Food Manufacturing + 312 Bev & Tobacco Manu.	$372	$223	$604	$206	$213	$87	$281	$1,985	$144	$2,999	$161	$3,304	**$5,289**
Machinery	**$165**	**$11**	**$131**	**$145**	**$65**	**$2**	**$0**	**$520**	**$326**	**$3,662**	**$133**	**$4,121**	**$4,641**
Includes:													
333 Machinery Manufacturing													
334-335 Computer, electronics, electrical product manu.													
336 Transportation Equipment Manufacturing													
Miscellaneous Manufactured Goods	**$138**	**$0**	**$211**	**$52**	**$81**	**$7**	**$10**	**$498**	**$136**	**$2,531**	**$158**	**$2,826**	**$3,323**
Includes:													
313-316 Clothing and textile manufacturing													
325 Chemical Manufacturing													
326 Plastics and Rubber Products Manufacturing													
337 Furniture and Related Product Manufacturing													
339 Miscellaneous Manufacturing													
Services	**$2,421**	**$3,006**	**$2,035**	**$789**	**$1,055**	**$454**	**$537**	**$10,298**	**$2,561**	**$20,449**	**$1,230**	**$24,240**	**$34,538**
Retail & Wholesale Trade	$447	$152	$387	$134	$205	$55	$86	$1,466	$432	$3,860	$262	$4,554	**$6,020**
Education	$19	$10	$21	$9	$11	$6	$5	$81	$25	$182	$9	$216	**$297**
Health	$21	$5	$16	$7	$7	$3	$2	$59	$22	$115	$8	$145	**$204**
Accommodation & Food Services	$215	$135	$261	$104	$105	$42	$32	$894	$257	$1,727	$139	$2,123	**$3,018**
Transportation, Warehousing, & Communications	$858	$529	$730	$350	$542	$259	$285	$3,551	$1,047	$8,650	$496	$10,193	**$13,744**
FIRE	$203	$150	$253	$48	$71	$30	$46	$802	$234	$2,368	$131	$2,733	**$3,536**
All Other Services	$659	$2,026	$367	$137	$115	$58	$81	$3,444	$544	$3,547	$184	$4,275	**$7,719**
Total Goods Exports	**$4,239**	**$906**	**$3,898**	**$7,150**	**$4,116**	**$1,497**	**$6,911**	**$28,717**	**$1,013**	**$16,293**	**$952**	**$18,257**	**$46,975**
Share of BC Goods Exports	*9%*	*2%*	*8%*	*15%*	*9%*	*3%*	*15%*	*61%*	*2%*	*35%*	*2%*	*39%*	
Total Services Exports	**$2,421**	**$3,006**	**$2,035**	**$789**	**$1,055**	**$454**	**$537**	**$10,298**	**$2,561**	**$20,449**	**$1,230**	**$24,240**	**$34,538**
Share of BC Services Exports	*7%*	*9%*	*6%*	*2%*	*3%*	*1%*	*2%*	*30%*	*7%*	*59%*	*4%*	*70%*	
Total Exports	**$6,660**	**$3,913**	**$5,933**	**$7,939**	**$5,171**	**$1,951**	**$7,448**	**$39,015**	**$3,574**	**$36,742**	**$2,182**	**$42,497**	**$81,513**
Share of Total BC Exports	*8%*	*5%*	*7%*	*10%*	*6%*	*2%*	*9%*	*48%*	*4%*	*45%*	*3%*	*52%*	
Total Labour Force (millions)	**0.207**	**0.187**	**0.183**	**0.081**	**0.092**	**0.044**	**0.041**	**0.834**	**0.186**	**1.366**	**0.093**	**1.645**	**2.479**
Share of BC's Labour Force	*8%*	*8%*	*7%*	*3%*	*4%*	*2%*	*2%*	*34%*	*8%*	*55%*	*4%*	*66%*	
Total Exports per Labour Force Participant	**$32,158**	**$20,958**	**$32,456**	**$98,501**	**$56,455**	**$44,436**	**$179,910**	**$46,775**	**$19,202**	**$26,901**	**$23,488**	**$25,837**	**$32,883**
As a Share of BC Average	*98%*	*64%*	*99%*	*300%*	*172%*	*135%*	*547%*	*142%*	*58%*	*82%*	*71%*	*79%*	

British Columbia's Regions

Development Region	Regional District
Vancouver Island / Coast	
	Capital
	Cowichan Valley
	Nanaimo
	Alberni-Clayoquot
	Comox Valley
	Strathcona
	Powell River
	Mount Waddington
	Central Coast
Mainland / Southwest	
	Fraser Valley
	Greater Vancouver
	Sunshine Coast
	Squamish-Lillooet
Thompson / Okanagan	
	Okanagan-Similkameen
	Thompson-Nicola
	Central Okanagan
	North Okanagan
	Columbia-Shuswap
Kootenay	
	East Kootenay
	Central Kootenay
	Kootenay Boundary
Cariboo	
	Cariboo
	Fraser-Fort George
North Coast / Nechako	
	Skeena-Queen Charlotte
	Kitimat-Stikine
	Bulkley-Nechako
	Stikine
Northeast	
	Peace River
	Northern Rockies

Detailed Industries & Occupations Used in the Spatial Allocation of Exports

Industry - 2007 NAICS (66)	Occupation - 2006 NOCS (47)
111-112 Farms	A0 Senior management occupations
113 Forestry and Logging	A1 Specialist managers
114 Fishing, Hunting and Trapping	A2 Managers in retail trade, food and accommodation services
115 Support Activities for Agriculture and Forestry	A3 Other managers, n.e.c.
211 Oil and Gas Extraction	B0 Professional occupations in business and finance
212 Mining (except Oil and Gas)	B1 Finance and insurance administration occupations
2121 Coal mining	B2 Secretaries
2122 Metal ore mining	B3 Administrative and regulatory occupations
2123 Non-metallic mineral mining and quarrying	B4 Clerical supervisors
213 Support Activities for Mining and Oil and Gas Extraction	B5 Clerical occupations
219 Mining-Unspecified	C0 Professional occupations in natural and applied sciences
221 Utilities	C1 Technical occupations related to natural and applied sciences
23 Construction	D0 Professional occupations in health
311 Food Manufacturing	D1 Nurse supervisors and registered nurses
312 Beverage and Tobacco Product Manufacturing	D2 Technical and related occupations in health
313-316 Clothing and textile manufacturing	D3 Assisting occupations in support of health services
321 Wood Product Manufacturing	E0 Judges, lawyers, psychologists, social workers, ministers, policy officers
322 Paper Manufacturing	E1 Teachers and professors
323 Printing and Related Support Activities	E2 Paralegals, social services workers & occs in edu & religion, n.e.c.
324 Petroleum and Coal Products Manufacturing	F0 Professional occupations in art and culture
325 Chemical Manufacturing	F1 Technical occupations in art, culture, recreation and sport
326 Plastics and Rubber Products Manufacturing	G0 Sales and service supervisors
327 Non-Metallic Mineral Product Manufacturing	G1 Wholesale, technical, insurance, RE sales specialists, & retail, wholesale, grain buyers
331 Primary Metal Manufacturing	G2 Retail salespersons and sales clerks
332 Fabricated Metal Product Manufacturing	G3 Cashiers
333 Machinery Manufacturing	G4 Chefs and cooks
334 + 335 Computer, eltrnc product, elec. equip manufacturing	G5 Occupations in food and beverage service
336 Transportation Equipment Manufacturing	G6 Occupations in protective services
337 Furniture and Related Product Manufacturing	G7 Occupations in travel and accommodation, including attendants in recreation and sport
339 Miscellaneous Manufacturing	G8 Child care and home support workers
41 Wholesale Trade	G9 Sales and service occupations, n.e.c.
411 Farm Product Wholesaler-Distributors	H0 Contractors and supervisors in trades and transportation
412 Petroleum Product Wholesaler-Distributors	H1 Construction trades
413 Food, Beverage and Tobacco Wholesaler-Distributors	H2 Stationary engineers, power station operators and electrical trades & telecomm occs
414 Personal and Household Goods Wholesaler-Distributors	H3 Machinists, metal forming, shaping and erecting occupations
415 Motor Vehicle and Parts Wholesaler-Distributors	H4 Mechanics
416 Building Material and Supplies Wholesaler-Distributors	H5 Other trades, n.e.c.
417 Machinery, Equipment and Supplies Wholesaler-Distributors	H6 Heavy equipment and crane operators, including drillers
418 Miscellaneous Wholesaler-Distributors	H7 Transportation equipment operators and related workers, excluding labourers
419 Wholesale Agents and Brokers	H8 Trades helpers, construction and transportation labourers and related occupations
441-444, 453-454 Local retail	I0 Occupations unique to agriculture, excluding labourers
445-452 Possible travel related retail	I1 Occs unique to forestry ops, mining, oil & gas extraction and fishing, excluding labourers
481-488 Transportation Aggregate	I2 Primary production labourers
481 Air Transportation	J0 Supervisors in manufacturing
482 Rail Transportation	J1 Machine operators in manufacturing
483 Water Transportation	J2 Assemblers in manufacturing
484 Truck Transportation	J3 Labourers in processing, manufacturing and utilities
485 Transit and Ground Passenger Transportation	
486 Pipeline Transportation	
487 Scenic and Sightseeing Transportation	
488 Support Activities for Transportation	
491 Postal service + 492 Couriers and messengers	
493 Warehousing and Storage	
51 Information and Cultural Industries NET OF 512 (aggregate)	
512 Motion Picture and Sound Recording Industries	
52 Finance and insurance + 53 Real estate and rental & leasing	
541 Professional, Scientific and Technical Services	
551 Management of Companies and Enterprises	
561 Administrative and Support Services	
562 Waste Management and Remediation Services	
611 Educational Services	
62 Health care and social assistance	
71 Arts, Entertainment, and Recreation	
721 Accomodation services + 722 Food services and drinking places	
81 Other services (except public administration)	
91 Public administration	