

A photograph of a fishing boat on a log boom in a misty coastal setting. The boat is dark-colored with various equipment on deck. The log boom is filled with logs, and the background shows a hazy coastline with trees and hills. The text is overlaid on the image.

THE
7 MYTHS
OF BC'S
RESOURCE ECONOMY

PHILIP CROSS



Resource Works

JOBS FOR BC. INNOVATION FOR THE WORLD.

About the Resource Works Society

Resource Works is an independent Society open to participation by British Columbians from all walks of life who are concerned about their future economic opportunities. It is a response to the widespread observation that low economic literacy is a barrier to meaningful public discourse on matters central to the quality of life of British Columbians.

Resource Works communicates with British Columbians about the importance of the province's resource sectors for their personal well-being. It demonstrates how responsible development of British Columbia's resources creates jobs and innovation throughout the province, both directly and indirectly, while maintaining a clean and healthy environment. And Resource Works shows how the long-term economic future of British Columbia including the Lower Mainland depends on the responsible development and extraction of the province's resources.

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Kathy Kinloch is the president of British Columbia Institute of Technology.

Gerry Martin is a Terrace resident and past member of the Premier's Technology Council, member of the BC Jobs and Investment Board, advisory council member for the BC Agenda for Shared Prosperity, former chair of the BC Progress Board.

Dan Miller is a former Premier of British Columbia. He also served as the minister for municipalities, for energy, mines and petroleum resources, for skills training and labour, and for forests.

Angus Reid is a former professional football player,

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President and CEO of the Pacific Salmon Foundation and member of the Royal Society of Canada's expert panel on ocean climate change and marine biodiversity.

Kathryn Teneese is the chair of the Ktunaxa Nation Council. She is a member of the ʔakisqnuq (formerly Columbia Lake Band) of the Ktunaxa Nation and served as the Chief Negotiator for the Ktunaxa Nation in their ongoing negotiations

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About the Author

Philip Cross spent 36 years at Statistics Canada, the last few as its Chief Economic Analyst. He has written extensively on the natural resource sector, with over a dozen articles just in the last decade appearing in Statistics Canada's flagship publication for economics, the Canadian Economic Observer. Since leaving government, he has continued to study the natural resource sector in three papers for the Macdonald-Laurier Institute. He is a founding Senior Research Fellow of the Resource Works Society.



The author of this paper worked independently to evolve the research topic, the methodology, and the final text. This paper does not necessarily reflect the views of Resource Works Society directors, advisory council members, or supporters.

Table of Contents

Resource Works Governance	iii
Advisory Council	iii
Senior Research Fellows	iii
About the Author	v
The 7 Myths of the BC Resource Economy: Revealing the High Impact of A Vital Sector	1
Executive Summary	1
Myth # 1 BC’s resource sector is history.....	3
Myth # 2 All the money goes to equipment, not wages	4
Myth # 3 Only rural BC gets the jobs.....	5
Myth # 4 All the money and jobs leave the province	7
Myth # 5 The resource sector overall punches below its weight	8
Myth # 6 If it’s resources: it’s boom-and-bust.....	9
Myth # 7 The real money is in manufacturing	10
Conclusion: Support for natural resources means good jobs for British Columbia.....	12

The 7 Myths of the BC Resource Economy: Revealing the High Impact of A Vital Sector

Executive Summary

This paper examines how the results of the companion study, “*The Impact of the Growing Importance of Natural Resources on the Economy of British Columbia*,” explode some commonly held myths about natural resources and BC’s economy.

The impact of natural resources on the economy was studied using Statistics Canada’s Input/Output Accounts system. Output in BC’s natural resource sector was uniformly raised 10 percent (\$2.1 billion), and the impact traced for all industries and all provinces. The impact includes increased demand for inputs from other industries as the natural resource sector raises its production, as well as increased consumer spending resulting from higher incomes in all associated sectors.

The natural resource sector in BC is defined as all the primary industries (agriculture, forestry, fishing, trapping and mining) plus utilities, pipeline transport and the manufacture of wood, paper and primary metals. This definition of natural resources has been used by Statistics Canada.

Altogether, these natural resource industries contributed 11.3 percent of BC’s GDP in 2010, the latest year available for the detailed Input/Output Accounts.¹

Two other resource-based manufacturing industries (food and petroleum refining) were excluded for reasons related to confidentiality. The results also do not include the increased business investment and government spending that would likely result from the higher production of natural resources.

Therefore, the results are lower-bound estimates of the overall impact of BC's natural resources.

The results show that the original \$2.1 billion increase in output triggered \$4.5 billion of spending across Canada, after accounting for all the increased demand for inputs and higher consumer spending. To meet this growth in GDP, 37,177 jobs are added across the country.

The lion's share of employment growth stays in BC, which adds 29,561 jobs. Since the Input/Output data tell us which industries in BC hire these workers, and the Labour Force Survey provide data on the regional distribution of employment by industry, the study was able to map the regional distribution within BC of the employment gains. The results will surprise many: the Lower Mainland garners just over 50 percent of all jobs flowing from the growth of BC's natural resource sector.

Myth # 1

BC's resource sector is history

As documented in the companion study, a 10 percent increase in the value of output in BC's resource sector boosts GDP in Canada by \$4.5 billion. BC reaps most of the benefit, as its total incomes increase by \$3.7 billion or 1.9 percent of its GDP.

Increasing GDP by 1.9 percent is very significant: it almost equals the growth of BC's entire economy in 2012. Governments regularly tout major economic initiatives that are designed to increase growth by fractions of a percentage point, such as free-trade initiatives or major tax reforms.² In developing BC's natural resource base, governments at all levels have an opportunity to affect growth by whole percentage points, not fractions of a point.

Canada adds 37,177 jobs to meet the growth in GDP, spawned by increased output in natural resources. Most of the jobs (29,561) are in BC. This is equivalent to 1.3 percent of employment in the province.

The broader lesson is that while the natural resource sector represents a small share of employment, its contribution to employment growth is significant. This reflects the large purchases the resource sector makes from the jobs-rich services sector.³

Just over half of the \$3.7 billion increase in BC's GDP originates in the \$2.1 billion expansion of the natural resource sector. This triggers another \$1.6 billion increase in other industries. Services grow by almost

\$1.2 billion. The largest gains are in finance, insurance and real estate, transportation, business and professional services, and retail trade (see Table 1). The ratio of total growth in GDP to the increase in GDP in the natural resource sector implies a multiplier of 1.74: that is, every dollar of additional output in natural resources generates GDP growth of \$1.74 in BC.

Table 1: Increase in GDP in BC, by industry (000 \$)

Total BC	3,712,888
Goods	
Agriculture	128,867
Forestry	300,615
Fishing	18,180
Other primary	71,066
Mining	950,056
Utilities	487,086
Manufacturing	542,376
Construction	58,858
Services	
Trade	166,837
Transportation	184,585
Finance, insurance and real estate	456,181
Professional services	97,511
Business services	55,428
Accommodation and food	29,118
Information and recreational services	49,843
Arts and recreation	10,021
Other services	41,846
Education	13,591
Health	24,472
Public Administration	25,899

Myth # 2

All the money goes to equipment, not wages

The increase in resource output leads to 37,177 more jobs in Canada. The increase reflects significant gains in the resource sector and elsewhere, especially in services. Natural resources add 12,214 jobs. Other industries responding to the increased demand for inputs into resource production and spending of higher incomes from the growth of the natural resource sector gain another 24,963 jobs. The multiplier effect is higher for employment than for GDP.

Moreover, most jobs created are well-paying full-time jobs, both in the resource sector and elsewhere. Statistics Canada calculates “full-time equivalent” jobs, which converts part-time jobs into their equivalent in terms of full-time jobs. After accounting for part-time jobs, mostly in areas like retailing and

accommodation and food, the number of full-time equivalent jobs is 35,249, very close (within 95 percent) to the total number of 37,177 jobs added. This reflects that most of the jobs created by the resource sector are full-time jobs, whether in mining, forestry, manufacturing or in financial and business services, transportation, etc.

On average, the new jobs pay an average of \$61,230 a year in wages, salaries and benefits. The highest wages are in the natural resource sector, with an average labour income of \$69,068. Overall, labour income rises by \$2.2 billion across Canada as a result of growing BC’s resource sector. BC reaps 80.2 percent of this increase in incomes.

Myth # 3

Only rural BC gets the jobs

The majority of jobs created from the 10 percent expansion of resource output in BC are in the Lower Mainland. Overall, jobs in

BC expand by 29,561, with 16,413 (or 55.5 percent) in the Lower Mainland (see Table 2).

Table 2: Regional Distribution in BC of Jobs Added, by industry

Region	BC	Vancouver Island	Lower Mainland	Okanagan	Kootenay	Cariboo	NW	NE
Jobs added	by industry							
Agriculture	3397	486	1699	727	241	241	0	0
Other primary	5396	971	1295	971	648	755	324	432
Utilities	1903	293	1170	293	147	0	0	0
Construct	820	127	486	106	34	30	17	21
Manufact	5001	520	3200	610	185	305	120	60
Goods	16517	2397	7850	2707	1255	1331	461	513
Trade	3174	495	1996	359	111	111	51	51
Transport	1387	183	963	92	46	46	24	35
FIRE	1942	223	1383	200	37	37	25	37
PST	1517	218	1088	121	32	24	17	17
Admin	1254	229	809	135	28	28	14	14
Education	246	42	156	24	7	8	6	4
Health	481	95	281	55	20	18	5	5
Info & Culture	569	80	389	41	25	10	7	7
Acc & food	1073	196	644	117	43	43	12	18
Other	1157	197	717	116	35	35	23	35
Public Admin	247	62	137	20	7	9	9	4
Services	13047	2020	8563	1280	391	369	193	227
Total	29561	4417	16413	3987	1646	1700	654	740

Source: Labour Force Survey, Cansim Table 282-0061, using job growth projected by Statistics Canada's

Input/Output Accounts resulting from a 10 percent gain in output in natural resources. "Other primary" includes forestry, fishing and mining; "PST" stands for professional, scientific and technical services; and "FIRE" for finance, insurance and real estate.

Two factors explain this result. First, developing natural resource creates more jobs in services than in the primary industry itself (12,778 versus 8,793). While the rural areas of BC do benefit most from extracting natural resource, especially the forestry, fishing and mining industries, the spin-off from increased demand for services mostly benefits Vancouver and the Lower Mainland. Second, the Lower Mainland has a substantial presence in two key resource industries: agriculture and the processing of resources by manufacturing.

Just over 50 percent of the 8,793 jobs added in the primary industries (agriculture, forestry, fishing and mining) are outside

Vancouver Island and the Lower Mainland. However, the Lower Mainland reaps 66.1 percent of all the services jobs flowing from the growth in resource output. As a result, the Lower Mainland alone adds 8,563 jobs in the services sector. Trade, business services, finance, transportation, accommodation and food, and other personal services lead these increases. Vancouver Island garners 16.3 percent of the service jobs, while the rest of BC gains only 17.6 percent of the growth in services. This reflects the location of most of the professional and financial services in big cities as well as the importance of the Lower Mainland as a transportation hub, especially for exports.

Myth # 4

All the money and jobs leave the province

Of the 37,177 jobs created, 80 percent (29,561) are in BC (see Table 3). This is because some inputs that the resource sector uses have to be sourced locally, such as electricity to power equipment or transportation to carry inputs to producers and then output to markets. Mostly,

Table 3: Increase in Employment, by province, 2010

Total Canada	37,177
By province	
Newfoundland	24
PEI	8
Nova Scotia	84
New Brunswick	87
Quebec	1,174
Ontario	3,294
Manitoba	392
Saskatchewan	297
Alberta	2,231
BC	29,561
North	25

however, the local inputs reflect the wide range of services that the resource sector purchases. This includes business and financial services, such as engineering, accounting, banking and legal services, where knowledge of local rules and regulations is necessary.

Only 16.7 percent of the spending triggered by developing resources in BC goes to imports. This reflects the low propensity to import in both the natural resource sector and in services. In fact, it is the manufacturing sector that needs most of the increase in imports. Of the 83.3 percent of spending that stays in Canada, 82.1 percent remains in BC. Even 66 percent of indirect benefits stay in BC.

Resource industries rely very little on imported inputs.⁴ In this regard, they are more like services than manufacturing, which imports over 25 percent of its inputs (some manufacturing industries, like autos, import nearly 50 percent of parts used in production).

Myth # 5

The resource sector overall punches below its weight

The natural resource sector in BC had double-digit changes in its real growth rate three times between 2002 and 2012. In 2002, it expanded by 10.9 percent, while in 2009, it contracted by 12.4 percent, before rebounding by 10.0 percent in 2010. The resource sector also posted gains of 7.3 percent in 2005 and 6.5 percent in 2011, which likely resulted in double-digit growth after factoring in the impact of price changes.⁵ So the 10 percent change in

nominal GDP assumed in the model is common in BC's recent history.

Since the summer of 2013, the fortunes of natural gas and forestry—two industries plagued by years of low prices—have improved dramatically. These industries account for 23.7 percent of GDP in BC's resource sector, so their sharp recovery could easily lead to more double-digit changes in resource output, when Statistics Canada publishes the data for 2013 and 2014.

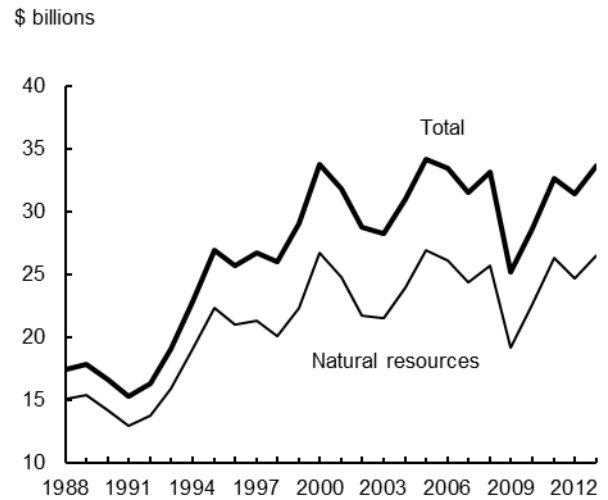
Myth # 6

If it's resources: it's boom-and-bust

Critics disparage industries with a true boom/bust cycle if each bust nullifies the gains made during the boom. This leaves the economy back where it started, with little or no long-term growth, but at a cost of instability that plagues investment planning, government finances and people's lives.

BC's resource exports have followed a strong upward trend, nearly doubling since 1991 despite temporary setbacks during recessions (Figure 1). Much of the growth in the early 1990s reflects the development of the Montney and Horn River natural gas fields in Northeastern BC.

Figure 1: BC Domestic Exports



Source: Statistics Canada, Cansim Table 228-0060

The long-term upward trend of BC's resource industry reflects several factors. Prices for natural resources have risen over time, encouraging investment and output to shift to this sector. Even in areas where prices were weak, such as natural gas, technological changes made production profitable. And firms in the resource sector must keep producing during all but the most severe downturns to cover the large fixed costs involved in the sector.

Myth # 7

The real money is in manufacturing

The largest job gains are in the primary industries, notably forestry and mining. This plays to Canada's comparative advantage. While manufacturing and processing jobs could be done offshore or are vulnerable to increased competition from imports, the actual extraction of resources must be done in Canada. China cannot produce and export minerals or natural gas in place of BC. China needs all the (considerable) resources it produces to feed its voracious domestic market, and still must import resources.

The largest downstream benefit from increasing the development of natural resources lies in the services required, not in manufacturing. Services jobs increase more than twice as much as manufacturing in response to growth in the resource sector, although certain manufacturing industries like wood, paper and primary metals expand during a resource boom.

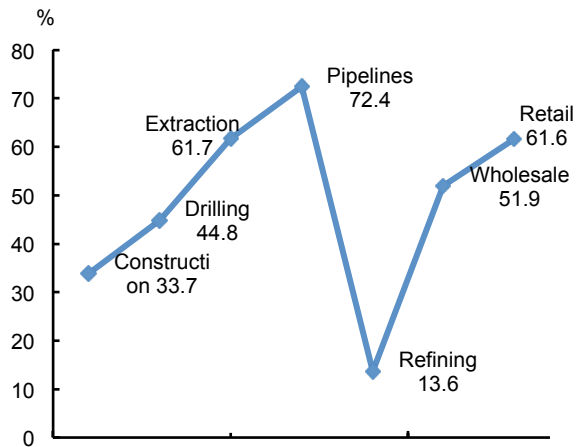
The modern global economy offers no long-term guarantees for the success of any industry. But resource extraction and the services required to produce these resources have proven to be a secure and stable source of growth. In contrast, the past decade showed the vulnerability of manufacturing, such as in Ontario's auto and ICT industries or Canada's textile and clothing industries.

People often confuse moving up the stages of processing from resource extraction to

manufacturing with moving up the value-added chain. In most instances, manufacturing represents less value-added as a percent of output, not more. This phenomenon is sometimes described as the "Smiling Curve" (a phrase coined by Stan Shih, the founder of Acer, and popularized as the "Smiley Curve" by James Fallows⁶), which plots the value-added by stage-of-processing and finds a U-shaped curve. It shows that, for most goods, the most value-added occurs in activities related to extraction, such as construction and the transport of oil and gas by pipeline. Value-added is also high for services, such as transportation or financial and business services required by the resource sector. Manufacturing lies in the middle of the production process, where value-added is lowest.

The oil and gas industry represents a good example of the Smiley Curve. Industries involved in the extraction and transportation of oil and gas or in services generate more value-added than refining. Transportation by pipeline is required before oil refining takes place, which explains why this service is portrayed before manufacturing (see Figure 2), while all other services occur after refining.

Figure 2: Value-added Share, by industry of gross output, 2009



While refining has high gross output, most of this value comes from the crude oil it uses as an input, not the value that refining adds. The industry is still critically important; without it, we would not have fuel for our vehicles, plastics for our homes or chemicals

for our medicines. This metric shows that the value generated by refining is low compared with that of extracting or transporting crude oil. This answers why we export more crude than refined oil: crude is where the most value lies. The lower value added in refining also means refineries cannot be too far from their markets, as there is little margin within which to absorb transportation costs.⁷

The Smiley Curve of value-added in the supply chain has been observed in other products. For example, the value of producing a smart phone is greatest in the stages of production before manufacture, such as engineering and design, or after its manufacture, such as marketing, finance and the telecom contract made with the customer. Manufacturing the smart phone itself is a necessary if low value-added activity.

Conclusion: Support for natural resources means good jobs for British Columbia

This paper reviews the most commonly held myths about BC's natural resource sector. Rather than being too small to affect the overall economy, BC's resource industries have the potential to boost GDP by whole percentage points—far more than the mere fractions touted by governments when adopting new trade or tax policies.

While resources are capital-intensive, they also have a significant impact on jobs in BC because of the array of services they buy as inputs. Moreover, these are mostly full-time, well-paying jobs, the type most coveted. The majority of these jobs are in the Lower Mainland, not remote regions, reflecting their role as a source of financial and business services and as a transportation hub. Most of the activity generated by growth in the resource sector stays in BC, with some going to imports from the rest of Canada or from abroad.

The 10 percent change in nominal resource output assumed in the simulation has ample precedents, having occurred in at least three and probably five years since 2002. BC's resource sector does not follow a boom/bust cycle with no net growth. Instead, it has posted a strong upward trend since the 1990s, with exports more than doubling.

Finally, extracting resources rather than moving up the value-added chain to more manufacturing is a more profitable and secure source of income and jobs for two reasons. One, resource extraction is less vulnerable to global competition. Two, value-added is actually lower—not higher—in manufacturing than in resource extraction, partly due to more intense competition.

Good government policy should support the expansion of BC's natural resource industries in order to create and secure higher incomes and more well-paying, full-time jobs in the province.

¹ Adding food manufacturing raises the share of natural resources in BC's GDP of \$191.1 billion in 2010 by 0.2 percent.

² For example, replacing the PST/GST tax system with the HST would boost real GDP per capita in BC by 0.7 percent between now and 2020, according to "*Economic And Fiscal Impacts of rescinding the Harmonized Sales Tax in British Columbia*" prepared by Ernie Stokes for the BC Independent HST Panel, March 2011. Free trade with the EU is estimated to lift Canada's GDP by 0.77 percent by 2014, according to the European Commission Directorate-General for Trade, <http://ec.europa.eu/trade/policy/countries-and-regions/countries/canada/>.

³ Philip Cross, "Multipliers and outsourcing: how industries interact with each other and affect GDP." *Canadian Economic Observer*, Statistics Canada Catalogue No 11-010-X, Vol 19, No 1, January 2006.

⁴ Less than 10 percent of the inputs used by the natural resource sector were imported, according to Philip Cross, "Loonie tunes: Industry exposure to the rising exchange rate." *Canadian Economic Observer*, Statistics Canada Catalogue No 11-010-X, Vol 21, No 3, March 2008.

⁵ Data for the change in nominal GDP is only available for three years, as Statistics Canada converts to a new basis for its GDP estimates. Price changes almost always exaggerate changes in resource output. For example, the 12.4 percent drop in 2009 becomes 28.4 percent after factoring in lower prices, while the 10 percent recovery in 2010 becomes a 16.3 percent rebound.

⁶ Fallows used it to explain why manufacturing was outsourced to low-wage countries like China, while high-value added activities remained in the US. See James Fallows, "China Makes, the World Takes." *The Atlantic*, July 1, 2007.

⁷ The concepts and data behind the discussion of value-added in the oil industry are elaborated in Philip Cross's "*Extracting the Most Value from Canada's Petroleum*" commentary published by The Macdonald-Laurier Institute, September 2013.