



BC Innovation
Commissioner

BC Innovation Commissioner's First Progress Report

Observations On Innovation In British Columbia

Delivered to
Hon. Bruce Ralston
Minister of Jobs, Trade and Technology
October 2018

Letter from BC's Innovation Commissioner

Dear Minister,

In the eight months since my appointment as BC's first Innovation Commissioner, I have been listening to advice on our province's strengths and where more focus on innovative practices may be beneficial.

The scope of my work is not just on our emerging sectors, but also on those more traditional sectors that made British Columbia what it is today: a diverse, dynamic province full of potential. After all, innovation is about solving problems and creating new opportunities through new and creative ideas, no matter the sector.

It is my assessment that BC is at a cross-roads: we have the opportunity to build on the advantages that have made the province what it is today by investing in business innovation to support both emerging and natural-resource sectors, making us more competitive in an ever-changing world.

The following progress report is the culmination of nearly 170 meetings with individuals inside government and in the private sector, here in BC, in Ottawa and internationally. As a result of these meetings, I have chosen to focus my efforts on increasing business-led innovation, which has seen the least forward momentum. That said, I recognize increasing investment in talent and research through our universities and colleges is the foundation for successful innovation of all kinds.

Business-led innovation will be supported by BC's great tech ecosystem, which is becoming a hotspot of interest for technology firms. With major corporations like Amazon, Sony, SAP and Microsoft, for example, building an increased footprint in BC and a strong presence in the digital gaming and the Virtual Reality/Augmented Reality space, other international brands have been turning their attention to BC. We need to encourage these companies to commit to the BC ecosystem through their investment in research and development and business units, and we need to cultivate those businesses with a footprint already here.

This presents a major opportunity, not just from an investment point-of-view but also in terms of having a healthy, vibrant ecosystem that is home to a mix of firms of all sizes. I believe through the establishment of innovation clusters across BC, we can improve our innovation performance and incent business investment in research and development and support the "scale-up" of businesses.

At the same time, I believe we can more effectively leverage federal investments and further encourage their support of business innovation in BC. I have prioritized regular meetings with senior officials in a range of federal departments since starting in this role, to encourage investments into BC. I believe further outreach will nurture the relationship between key federal agencies, BC ministries and businesses.

Recognizing the pace of change, my report also highlights the importance of an expanded and dynamic talent pool to help people adapt to the shifting labour market. The emerging economy is already upon us! Enabling technology in all sectors needs to be a key focus, recognizing how automation and other advancements can change the nature of work and increase our competitiveness and prosperity. When jobs change, it is important public and private supports are in place to ensure smooth job transition, particularly for mid-career workers with coveted experience.

I trust the enclosed report provides useful observations on the innovation landscape in British Columbia, and I look forward to continuing to work with you and your colleagues in ensuring BC is a leader in innovation and a globally recognized centre for technology.

Sincerely,
Alan E. Winter
BC's Innovation Commissioner

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Context

Why is innovation important globally?

Innovation is the process that enables people to adapt, change and prepare for the future. It can help business thrive, sectors evolve and lead to higher standards of living. Innovation drives prosperity, competitiveness, and job creation and is the catalyst for improvement and change. From urban centers to rural communities, from researchers looking to secure new patents to entrepreneurs working to bring their products to market, innovation has been described as the manifestation of human potential and creativity.

Economist Joseph Schumpeter labelled critical points in time, where innovation has made a significant change to how an economy operates, as “waves” (Appendix A). He emphasized that each wave generates many more jobs compared to the previous wave, although the nature of the jobs usually shifts.

As the Bank of Canada recently highlighted, technological disruption is “enabling growth everywhere, including in industries that have not traditionally been considered high-tech... As new technologies become widespread, they create opportunities for growth far beyond their original setting... technological change creates brand-new jobs in the high-tech sector, but the new incomes that are generated there create new jobs across the whole economic spectrum.”

The World Economic Forum’s Future of Jobs Report 2018 suggests “by 2022, roughly 75 million jobs worldwide will be lost, but that could be more than offset by the creation of 133 million new jobs.”

As British Columbia’s Labour Market Outlook 2018 notes, some positions may see tasks automated, but employment is not expected to be reduced as a result of automation. The Outlook suggests the prospect of increased automation in BC is expected to be positive, helping workers to focus on higher value tasks and addressing the predicted gap of 130,000 job openings over the coming decade.

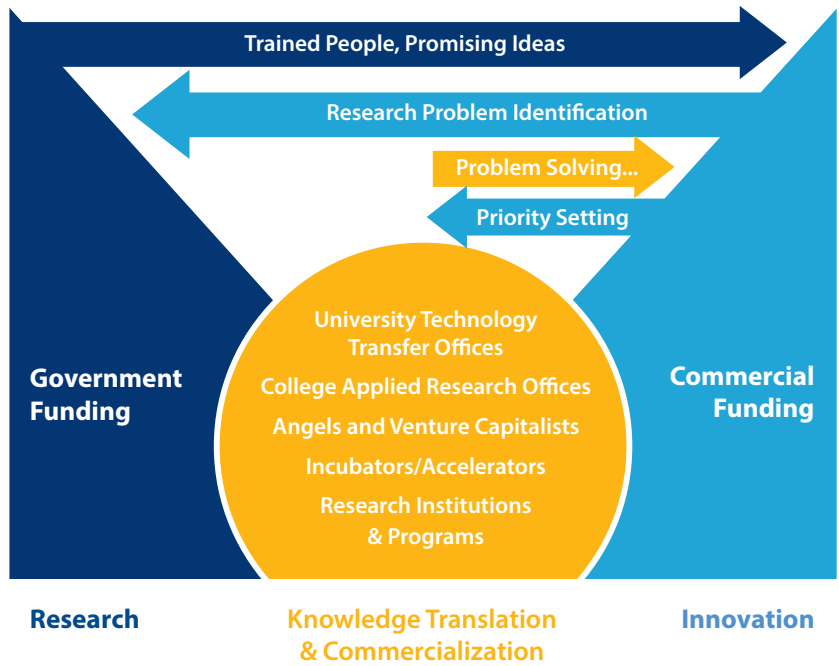
Automation, the gig economy and mid-tech jobs have already started to shape innovation and transform labour markets.

While innovation is often associated with the economy’s knowledge sector, encompassing industries such as information and communications technology (ICT), life sciences, digital media, and clean technology, it is in fact intrinsic to all sectors of the economy and is found in firms of all sizes and in all geographic locations. When research and knowledge are put into practice, the resulting innovation leads to the adoption of new ideas, the development of new technology, and transformative business practices that in turn improve competitiveness and prosperity.

The research and innovation continuum spans concept to commercialization. It includes initial research, development, scaling up, and exporting. Commercialization of research-based knowledge is a key activity of innovation. Through public-private collaboration, networks, and linkages, government plays an important role in de-risking innovation. Its involvement also generates many other benefits, such

as industry access to specialized equipment and talent, stimulation of new research questions, first customer advantages and policy and regulation changes arising from challenges innovators face (Figure 1).

Figure 1: The Innovation Ecosystem – Converting Research into Innovation¹
 (Source: adapted from Nicholson, 2011)



1. Innovation Ecosystem Figure: the horizontal axis represents the Research & Innovation continuum from curiosity-inspired fundamental research on the left to market-facing development/innovation on the right. Government funding generally declines as R&I shifts from fundamental research toward development/innovation, although funding is often provided in applied areas. Conversely, business funding generally declines as the developmental and market-facing content diminishes. This creates an inherent structural gap in the mid-range of the R&I spectrum and requires a variety of intermediary institutions to complement the roles of government funding and business participants in the innovation ecosystem.

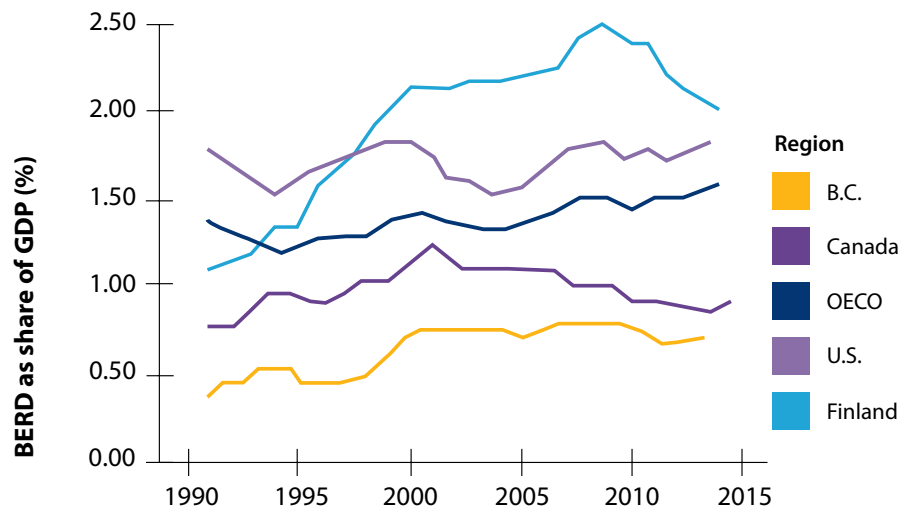
Canada and BC Innovation

Innovation is difficult to measure; however, key performance indicators such as research and development (R&D) intensity, labour productivity, and the number of patents are often used when comparing innovation systems globally.

The Conference Board of Canada identified business enterprise R&D spending (often called BERD) as an important indicator of business commitment to innovation and a key input into many high-value-added types of innovation. Research shows that BERD is associated with productivity and GDP growth. A multi-country study by the Organisation for the Economic Co-operation and Development (OECD) found that a “sustained increase of 0.1 percentage points in a nation’s BERD to GDP ratio would eventually translate to 1.2 per cent higher GDP per capita, other things being equal.”²

For more than two decades, BC has found itself falling behind on BERD compared to the Canadian and OECD averages, the United States and Finland (Figure 2). High resource prices, generally good trade with the U.S. and Asia, and other conditions in BC have meant that BC businesses have not had to innovate as much as businesses in other jurisdictions in order to be profitable. Overall, BC has been able to maintain a high standard of living despite relatively weak business innovation performance. However, volatile resource prices, US tariffs, and other trade uncertainty are already changing the equilibrium maintained for years. It is critical for businesses in BC to invest in R&D to improve their innovation performance.

Figure 2: Business Expenditures on Research and Development (BERD) as share of GDP (BC, Finland, the U.S., Canada, OECD), 1990 -2015³



2. Business Enterprise R&D Spending, The Conference Board of Canada

3. Source: the Conference Board of Canada, adapted from OECD, Main Science and Technology Indicators; Statistics Canada, CANSIM table 358-0001, GERD by Science Type and by Funder and Performance Sector; Statistics Canada, CANSIM table 384-0038, GDP, Expenditure-Based, Provincial and Territorial

BC Government's Approach

Realizing the need for a focus on innovation, the provincial government created Innovate BC with an expanded mandate over its predecessor, launched an Emerging Economy Task Force to help shape the province's future, and appointed BC's first Innovation Commissioner. (Appendices B and C)

SPOTLIGHT ON BC BUSINESS

MineSense Technologies is a leading BC data analytics firm that specializes in creating innovative technologies for the mining industry.

The company uses technology to sort low-grade ore to a level, improving efficiency and reducing use of energy, water and chemicals.

Headquartered in Vancouver, MineSense has offices and personnel in South America, Australia and Africa.

SPOTLIGHT ON BC BUSINESS

Finger Food is a Port Coquitlam based company that started in gaming in 2009. Today, it employs about 140 people, helping businesses to identify core challenges and using technology to help solve those challenges.

With clients in natural resources, robotics and retail, Finger Food uses mobile apps, video games, blockchain, wearable technologies, robotics and the Internet of Things to improve operations and future-proof.

BC Innovation Commissioner

The Innovation Commissioner acts as an advocate and ambassador on behalf of the BC technology sector in Ottawa, the Cascadia Innovation Corridor, and abroad. The Innovation Commissioner operates in the spirit of co-operation to strengthen national and cross-border relationships, and to help leverage federal funding programs which will benefit BC's innovators and businesses.

BC Innovation Commissioner's Role

The mandate of BC's Innovation Commissioner includes relationship-building with senior government leaders in Ottawa and abroad, and with BC's tech and innovation network, including partners in industry, academia and the province's regional tech accelerators.

- **Federal**

BC's Innovation Commissioner seeks and maintains strategic partnerships with federal government representatives, advocates for BC's share of federal innovation-related program funding, and champions BC's technology sector in Ottawa and abroad.

- **International**

BC's Innovation Commissioner promotes the province as a lucrative investment location and connects BC technology companies with national and international partners to expand market opportunities.

- **Provincial**

BC's Innovation Commissioner supports the development and implementation of innovation and technology-related mandates and priorities within the provincial government.

BC Innovation Commissioner's Workplan

The Innovation Commissioner's roadmap lays out his future activities, outputs, and intermediate and ultimate outcomes at the federal, international and provincial levels (Appendix C).

To date, BC's Innovation Commissioner has met with nearly 170 different organizations and business leaders. A detailed list can be found in Appendix D. The BC government's recent actions-to-date with respect to innovation, including ongoing programs and initiatives, can be found in Appendix E.

Federal Innovation Investment in BC

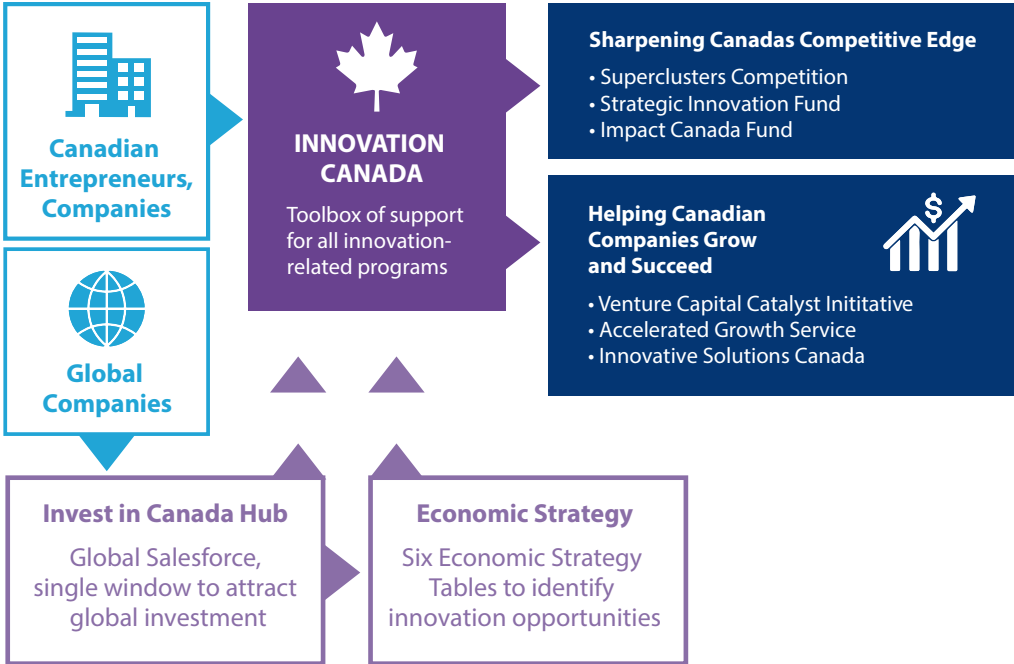
Context For the last couple of years, the federal government has focused attention and resources on innovation. For example, in its Innovation and Skills Plan, published in the 2017 Budget Plan, the federal government announced direct funding to industry for innovation that will rise by \$434 million in 2018-19, for a total increase of \$2.5 billion over five years, strengthening research and innovation through Innovation, Science and Economic Development Canada (ISED) and other science-based departments and agencies.

The plan targets six key areas, including advanced manufacturing, agri-food, clean technology, digital industries, health/bio-sciences, and clean resources.

Federal Innovation Programs ISED provides approximately 85% of the federal support for innovation. Major programs being funded over a five-year period include the Strategic Innovation Fund (\$1.26 billion); the Innovation Superclusters Initiative (\$950 million); and Sustainable Development Technology Canada and the Venture Capital Catalyst Initiative (\$400 million each).

Innovation Canada, led by ISED, is an online platform that serves as a one-stop-shop for Canada’s businesses and entrepreneurs seeking innovation funding (Figure 3).

Figure 3: Innovation Canada (Source: Government of Canada)



Other departments that have major federal support include National Research Council Canada (\$700 million invested in the Industrial Research Assistance Program); Canada Heritage's Canada Media Fund (\$353 million); and the Department of National Defence contains the Innovation for Defence Excellence and Security (IDEaS) program (\$313 million). [Appendix F](#) contains a list of major federal business-focused innovation programs.

Examples of recent federal government innovation investments in BC are noted in Figure 4.

Figure 4: Examples of Federal Innovation Investments in BC Enterprises

SPOTLIGHT ON BC BUSINESS

In April 2018, the federal and BC governments announced a partnership with STEMCELL Technologies to build a state-of-the-art manufacturing facility in BC.

The new facility will create jobs and establish BC as a leader in regenerative medicine, researching, developing and manufacturing a wide range of products that contribute to development of cell-based therapies.

Started in 1993, STEMCELL has grown to become Canada's largest biotech company, employing over 1,000 global employees, including 900 at four Metro Vancouver locations.

Federal Department	Enterprises & Projects	Allocated Amount
Innovation, Science, and Economic Development Canada (ISED)	STEMCELL Technologies for advanced manufacturing facility	\$22.5 M (Federal)
		\$22.5 M (Provincial)
Natural Resources Canada	Six projects in BC to promote innovation and diversification in forestry and support collaboration with Indigenous communities	\$6.45 M
Sustainable Development Technology Canada	D-Wave Systems (Burnaby) for energy-efficient, high-performance computing	D-Wave: \$10 M
	Ionomr Innovations Inc. (Vancouver) for clean tech innovation	Ionomr: \$2.3 M
	MineSense Technologies Ltd. (Vancouver) for cleaner mining processes	MineSense: \$4 M
Agriculture and Agri-Food Canada	Innovate BC for establishing Bioenterprise BC	\$0.8 M
	Sidney Centre for Plant Health	\$80 M

Notably, the cost-shared investment from the federal and provincial governments towards STEMCELL Technologies is expected to create 675 jobs by 2022 and up to 22,000 jobs by 2031 in BC.

From a research perspective, BC received a total amount of \$276 million (12.5% of the national allotment) which was provided by the federal granting councils (Figure 5).

Figure 5: Examples of Federal Investments in R&D, 2017-2018

2017 - 2018	Natural Sciences & Engineering Research Council of Canada	Social Sciences and Humanities Research Council	Canadian Institutes for Health Research	Total Grants Awarded
Canada	\$1,112 M	\$388 M	\$707 M	\$2,207 M
Ontario	\$435 M	\$161 M	\$312 M	\$908 M
Quebec	\$276 M	\$107 M	\$208 M	\$591 M
British Columbia	\$132 M	\$52 M	\$92 M	\$276 M
Alberta	\$127 M	\$24 M	\$62 M	\$213 M

Federal Research Centres in BC

A further way the federal government contributes to research and innovation in BC is through 19 federal research centres located across Metro Vancouver, greater Victoria, and other regions of the province (Figure 6) on pg 12.

In addition to supporting research and innovation in BC, the federal government provides funding to the Province through federal/provincial transfer programs (Appendix H).

The federal government also provides support to BC through various infrastructure programs. For example, in April 2018, the federal and BC governments announced the signing of a bilateral agreement that will provide more than \$4.1 billion in federal funding through the Investing in Canada plan over the next decade for infrastructure projects. This funding will support investments in public transit, green infrastructure, recreational and cultural infrastructure, and rural and northern communities. These projects will be cost-shared with the BC government, municipalities and other partners.

The Smart Cities Challenge, likewise, encourages communities of all sizes to adopt an approach to improving residents' lives through data, innovation and connected technology. Other federal government tools which encourage innovation include smart regulations and immigration.

Figure 6: Federal Research Centres in BC (Source: Government of Canada)

Federal Research Centres in BC
<p>National Research Council Canada:</p> <ul style="list-style-type: none">• Herzberg Institute of Astrophysics (Penticton/Victoria) includes:<ul style="list-style-type: none">◦ Dominion Radio Astrophysical Observatory◦ Dominion Astrophysical Observatory◦ Canadian Astronomical Data Centre◦ Canadian Advanced Network for Astronomical Research• Energy, Mining and Environment Research Centre (Vancouver)
<p>Agriculture and Agrifood Canada:</p> <ul style="list-style-type: none">• Summerland Research and Development Centre• Agassiz Research and Development Centre
<p>Canada Food Inspection Agency:</p> <ul style="list-style-type: none">• Sidney Centre for Plant Health (The Sidney Centre for Plant Health received \$80M/5 years in Budget 2017 to replace its current facility)• National Reference Centre for Food Virology – Burnaby
<p>Natural Resources Canada:</p> <ul style="list-style-type: none">• Pacific Forestry Centre (Victoria)
<p>Fisheries and Oceans:</p> <ul style="list-style-type: none">• Institute of Ocean Sciences (Sidney)• Pacific Biological Station (Nanaimo)• Centre for Aquaculture and Environmental Research (West Vancouver)• Cultus Lake Salmon Research Laboratory• Salmon Assessment and Freshwater Ecosystem (SAFE) Division at SFU
<p>Environment and Climate Change Canada:</p> <ul style="list-style-type: none">• Pacific Environmental Science Centre (North Vancouver)• Canadian Centre for Climate Modelling and Analysis (Victoria)• National Laboratory for Coastal and Mountain Meteorology (Vancouver)• Pacific Wildlife Research Centre (Delta)• Water and Climate Research Centre (Victoria)
<p>Statistics Canada:</p> <ul style="list-style-type: none">• With the main infrastructure located at UBC, the BC Inter-university Research Data Centre facilitates researchers' access to social research-related data. There are also branches at SFU, UVic, and UNBC. Funders include SSHRC, CIHR, CFI, Statistics Canada and the university partners.

In addition, the federal government operating departments often have strong linkages with their counterparts in the provincial government, resulting in programs such as the Growing Forward 2 program with the Ministry of Agriculture and Agri-Food Canada and the Forest Innovation Program with Natural Resources Canada and FP Innovations.

What We Heard

To better understand BC's position at the federal level and promote BC as a preferred location for innovation investment, the Innovation Commissioner traveled to Vancouver and Ottawa and met with numerous senior federal representatives. During these meetings, a number of opinions and suggestions were made.

- BC generally punches above its weight among provinces in terms of leveraging federal investment in research because of the quality of our research universities and institutions, the excellence of BC research, and the provincial investment in the BC Knowledge Development Fund (BCKDF) and research organizations like Genome BC and the Michael Smith Foundation for Health Research.
- Many senior federal officials are unaware of BC's innovation priorities and strengths due to a variety of reasons, including geographic distance, the relative lack of contact with senior officials from the BC government, and the fact that few senior federal officials have BC roots.
- Sustainable Development Technology Canada has funded product development in the clean energy arena, including three BC-based companies this past spring, some in collaboration with BC funding under the ICE Fund.
- Canada's Digital Technology Supercluster (based in BC and one of five national superclusters across Canada) is a significant federal investment in BC. It is important for BC to support the ecosystem around the Supercluster, including development of talent, training, infrastructure and sponsoring projects where the BC government is the customer.
- Data is the next generation natural resource and the federal government is developing a national data strategy. This is a specific opportunity for BC as a leader in digital identity and government applications (govTech).
- Increasing BC government investments in innovation and clearly identifying our innovation priorities would mean more opportunities for the federal government to partner with the Province on innovation investments.

International Innovation Investment in BC

Context When it comes to building economic relationships with international partners, the flow of foreign direct investment (FDI) into BC is an important form of capital coming into the province. Not all FDI drives innovation, but a majority does. Unlike the flow of capital from trade, direct investments involve a high degree of commitment in terms of investors’ time and expertise. Foreign businesses and investors who make a direct investment in BC often also invest in BC’s economic success. FDI is important for BC not only from the economic aspect, but also from the relationship building perspective between economies.

From January to May 2018, more than US\$1.5 billion in capital expenditures flowed into BC – the highest amount in the last five years. These 12 projects, recorded during the first five months of 2018, exceeds the total for all projects in 2017. Also, the average project size has increased rapidly on a year-to-year basis since 2013, and the total number of jobs created is significant compared to previous years (Figure 7).

Figure 7: FDI into BC, includes greenfield and expansion projects, 2013 – 2018
Source: FDI Markets

Year	Projects	Capital Expenditures \$M (USD)	Jobs Created	Average Jobs	Companies
2018 (Jan - May)	12	1,556	3,553	296	10
2017	33	1,294	2,638	79	31
2016	20	676	1,315	65	20
2015	27	747	1,415	52	26
2014	36	1,109	2,294	63	33
2013	25	1,387	1,412	56	24
Total	153	6,769	12,627	82	138

The United States has dominated the FDI source market in BC with almost 64% of total projects in the top 10 source countries. The total amount of capital expenditures from the U.S. is almost US\$4.5 billion, accounting for almost 75% of total capital expenditures in the top 10 source countries (Figure 8 on pg 15).

Figure 8: Top 10 Source Countries (Source: FDI Markets)

Country	No. Projects	Capital Expenditures \$M (USD)
U.S.	85	4,469
UK	12	472
Japan	6	308
China	12	302
India	3	146
Switzerland	3	81
Australia	3	58
Germany	5	56
Hong Kong	2	54
France	2	44
Total	133	5,990

Software and IT services, communications, and real estate are the top three industries for FDI in BC. These three industries together account for about 83% of total capital expenditures in the top 10 industries (Figure 9).

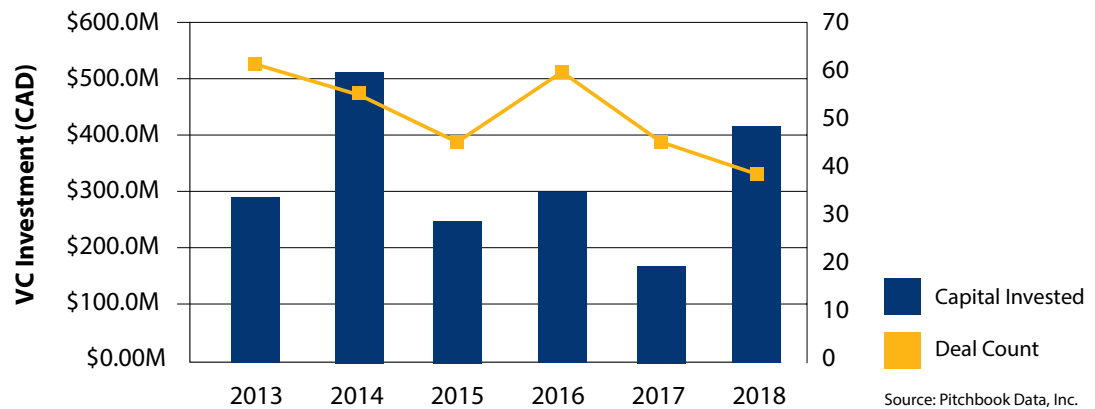
Figure 9: Top 10 Industries (Source: FDI Markets)

Industry	No. Projects	Capital Expenditures \$M (USD)
Software & IT services	38	3,386
Communications	14	727
Real Estate	11	485
Transportation	17	421
Coal, Oil and Natural Gas	3	185
Business Services	23	128
Financial Services	9	103
Industrial Machinery, Eq.	5	34
Consumer Products	3	27
Consumer Electronics	3	13
Total	126	5,509

International Investment Examples

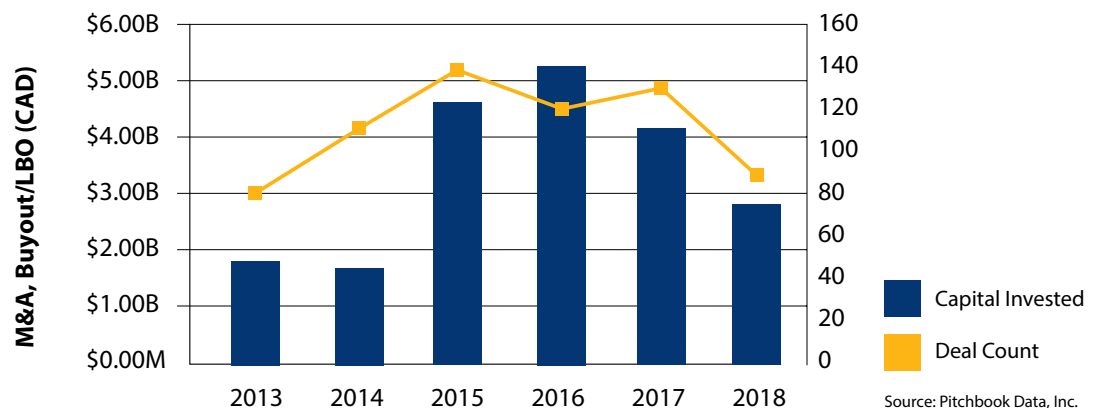
As of September 2018, BC had already more than doubled the total amount of international innovation venture capital (VC) investments in 2017 (Figure 10). In terms of the total VC investment value from the last five years, 2018 is already tracking close to 2013, which was a record year for BC. However, the number of deals shows a declining trend - 39 deals in the first three quarters of 2018, which is significantly lower than the 61 deals in 2013. This indicates that the average VC investment amount per deal has been significantly larger so far in 2018 than previous years.

Figure 10: International Innovation VC investments in BC, 2013 -2018
(as of September 19, 2018)



As of September 19, 2018, a total number of 89 deals have been made by international investors through mergers and acquisitions (M&A), buyout and leveraged buyout (LBO). A total of \$2.64 billion was invested in BC companies through these deals (Figure 11).

Figure 11: Purchase of BC companies through M&A, Buyout and LBO by international investors, 2013 – 2018 (as of September 19, 2018)



What We Heard

- Generally, BC punches above its weight in terms of attracting venture capital. The Conference Board of Canada gives BC a “B” in this area, tied for the highest among all Canadian provinces. The Small Business Venture Capital Tax Credit program has been a key driver in this regard – BC should consider the possibility of a developing a partnership with the federal government through this tax credit.
- Notwithstanding the success of seed and early stage investment attraction, there are still gaps in later stage financing in BC which directly impact small business’ ability to scale up. Also, there is a recent trend that the larger venture capital investments are going to Toronto.
- Since the U.S. tax changes, BC’s business environment is less competitive than other jurisdictions and therefore less likely to attract capital in the future.
- BC’s strength in attracting and growing talent is a draw to international investors, and the investments in additional STEM seats announced at the #BCTECH Summit are welcomed. International investors suggested the BC government should continue to ramp up these investments to keep talent as an ongoing draw to doing business in BC.
- We do well in bringing investments and firms into BC, however, we could do better by maintaining connections with these firms once they have arrived and encouraging them to increase their investments. Since it is often easier to increase investment into existing companies than to attract new companies, the BC government could gain more opportunities for growth with sufficient “aftercare”.
- In order to make multinational corporation (MNC) investments in BC more sustainable, MNCs often place a strong focus on helping their BC-based clients to scale up. It is important to have MNC offices and anchor companies based in BC because they support the innovation ecosystem in different ways, including:
 - Supporting the growth of smaller businesses that are part of their BC and international supply chain
 - Developing talent, including hiring and training co-ops and recent graduates, which often then lead to spin-offs and labour transfers to small businesses
 - Developing senior talent with expertise in international sales, marketing and product development
 - Increasing labour mobility and knowledge transfer across the ecosystem
 - Increasing salaries, which improves affordability for workers and forces smaller firms to become more competitive - hence enabling them to better compete in global markets
- To paraphrase a Silicon Valley venture capitalist, international companies bring new sources of oxygen, nutrients and diversity to the tech and innovation ecosystem in BC.

Province of British Columbia

Context

One of the BC government's three key commitments is to "build a strong, sustainable, innovative economy that works for everyone." The Minister's mandate letter prioritizes innovation, including establishing "BC as a preferred location for new and emerging technology by supporting venture capital investment in BC startups, taking measures to increase the growth of domestic BC tech companies, and removing barriers to attracting and repatriating skilled workers."

The BC government is also developing a clean growth strategy to integrate the Province's goals for climate action, clean energy, and sustainable economic growth; and developing a technology strategy to further strengthen BC's tech sector and position it to help drive technology adoption and innovation across all sectors.

How is BC Doing?

Innovation is a key driver of the economy and technology is one of the drivers of innovation.

BC's tech sector has experienced strong growth over the past decade. Direct employment has grown to over 106,000 jobs (5% of BC's workforce) in over 10,200 companies⁴. In 2016, the tech sector generated \$28.9 billion in revenue and 7% of GDP – one of the fastest GDP and revenue growth rates in Canada (Figure 12 on pg 19).

An added benefit of tech sector employment is that the average earnings of technology employees in BC are \$1,690 per week, which is 80% higher than those of the average BC worker.

The tech sector in BC consists of a growing base of companies across a diverse range of sub-sectors such as clean technology, ICT, digital media, and life sciences. It is made up primarily of small businesses, with 90% of tech companies having less than 10 employees, with a focus on services (93%) rather than manufacturing. The majority of these companies are located in areas of high population density such as the Mainland/Southwest, Vancouver Island/Coast and the Thompson/Okanagan regions (Figure 13 on pg 18).

The pace of growth in the tech sector is continuing, driving both economic and job growth in the province. However, although the tech sector remains relatively small compared to other jurisdictions, particularly those in the US (Figure 14 on pg 20), it is critical to the generation and diffusion of technology through the economy.

It is important to recognize the tech sector, although 7% of GDP, has the potential to drive competitiveness in other sectors. As shown in Figure 12, the whole of the BC economy is becoming "tech-enabled."

Regardless of the strong tech sector, BC has a mixed record on innovation. On the one hand, the province has fostered many entrepreneurial start-ups, including in the high technology sector.

SPOTLIGHT ON BC BUSINESS

A former sawmill in Canal Flats is making the transition into a data centre. In the process, it is expected to bring tech jobs to the rural East Kootenay community. Three years after the mill's closure, work is underway to develop the Columbia Lake Technology Centre. Proponents hope to have 100 people employed in the community. This transition to the future economy has been made possible not just by the creativity of the residents of Canal Flats but also by the availability of space, access to power and high-speed fiber optic network.

4. The 2016 KPMG British Columbia Technology Report Card

Figure 12: Tech Generation and Diffusion in the BC Economy
 (Source: as defined by industry representatives, adapted from BC Stats)



Figure 13: Distribution of technology businesses by region, 2016
 (Source: BC Stats)

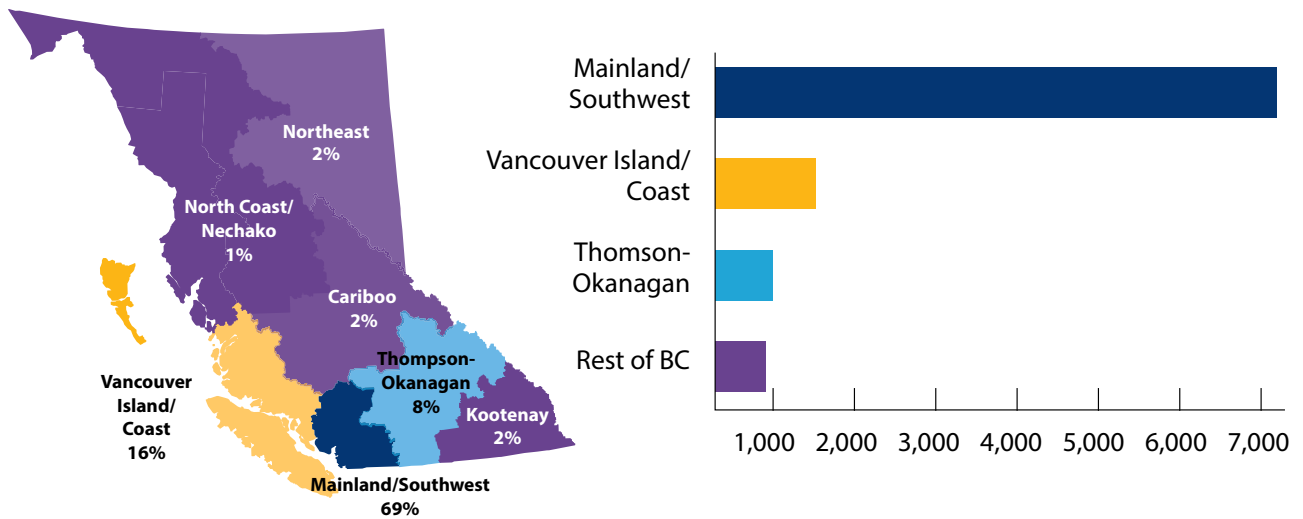
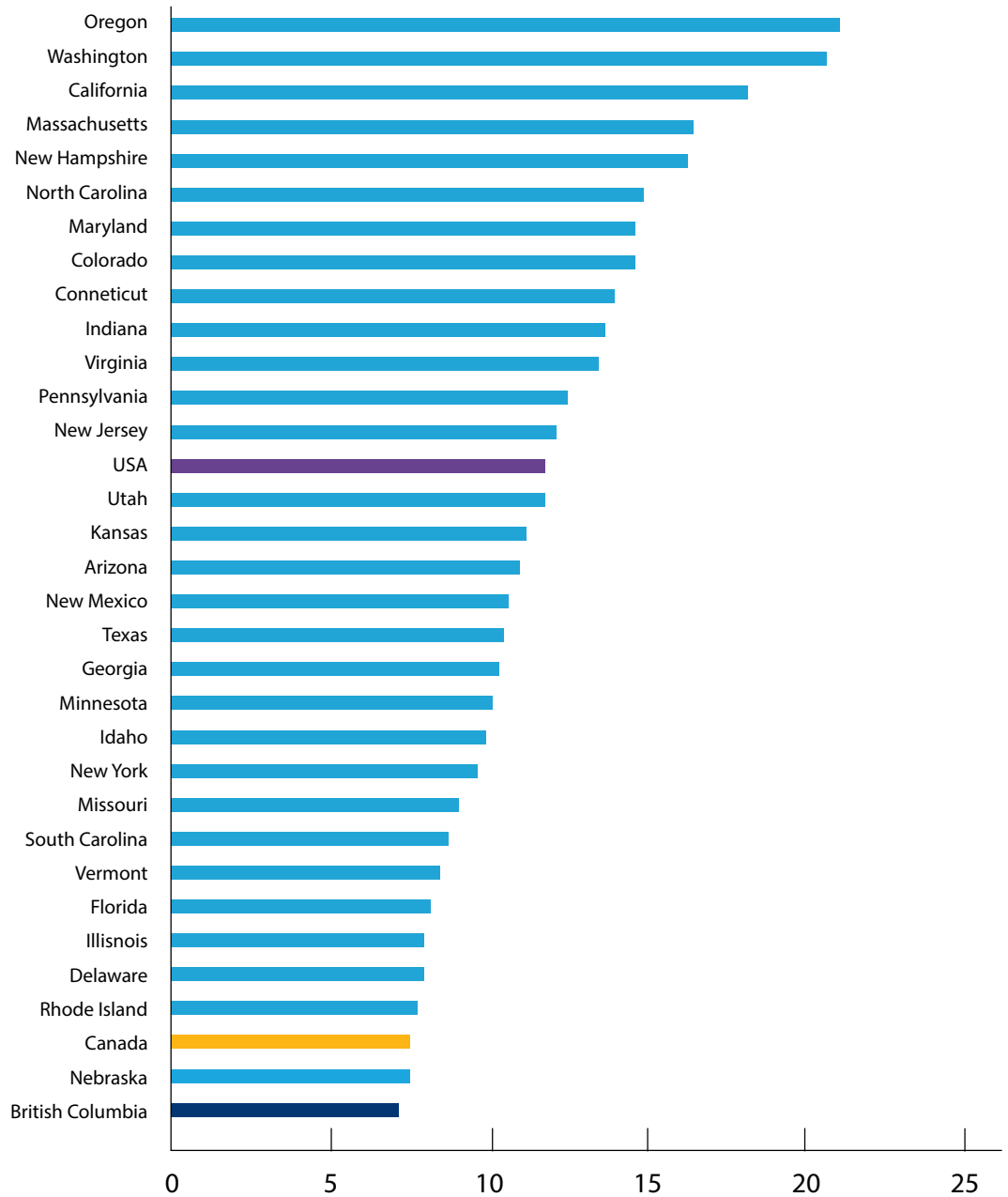


Figure 14: Percentage of GDP from technology sector, 2015

(Source: Profile of the British Columbia Technology Sector: 2017 Edition by BC Stats)



SPOTLIGHT ON BC BUSINESS

LlamaZOO is a BC-based company developing 3D visualization solutions for the mining, oil and gas, forestry and other sectors. Born out of its founders' experience in the video game industry, the company now builds interactive and large scale three-dimensional experiences that help address real-world challenges. The company sees technology, for example, helping address the huge costs, time-loss and risks associated with site visits, training and maintenance.

The province also benefits from strong post-secondary institutions along with pockets of recognized excellence in fields such as genomics, health, forestry, clean technology, digital media and others. This was highlighted in the 2018 innovation scorecard from the Conference Board of Canada, where BC received an "A+" on the entrepreneurial ambition indicator, the percentage of the working age population who report being engaged in early-stage entrepreneurial activity.

However, BC does not fare as well in some of the other indicators, suggesting the province has an opportunity to improve its performance. This is especially true for business investment into R&D and researchers doing R&D. Other key areas that require focus are: increasing labour productivity, the number of patents and investment into ICT and government funding of public R&D.

What We Heard

- The federal government is taking an active approach to innovation by providing direct financial support to innovative companies (e.g., through their Strategic Innovation Fund). The BC governments' approach to innovation has been to focus more on tax credits than direct support. For instance, while BC spends approximately \$150 million annually to support business R&D through the Scientific Research and Experimental Development (SR&ED) tax credit program.
- BC excels at start-ups; for example, Startup Genome ranks Vancouver as the number one start-up ecosystem in Canada and 15th in the world. Reflecting this, BC's tech sector is made up primarily of small businesses (with 90% of BC technology companies having less than 10 employees).
- However, BC Stats data indicates that BC has the least number of large firms (those with more than 500 employees) among all Canadian provinces. In particular, BC needs to encourage and highlight the larger BC tech companies, such as STEMCELL, as provincial and national champions, since we are losing the headquarters of significant BC players such as MDA and Avigilon.
- BC needs to focus on scaling up small firms with high potential into sustainable firms that will help drive innovation, economic growth and job creation in BC. Scaled-up companies (say, over 150 employees) are also less likely to be bought out and moved elsewhere (e.g., the United States).

- Obstacles to scaling up in BC include:
 - a talent gap at senior levels to support the further growth of companies,
 - the lack of late-stage venture capital financing, the lack of provincial programs that can support this activity and that can also lever additional federal funding that supports scaling up, and
 - the lack of protection of intellectual property in Canada
- The Digital Technology Supercluster is a significant federal investment in BC. We need to support the ecosystem around the supercluster so that it is a sustainable model increasing business-led R&D in the province and across Canada.
- There are opportunities for government, industry and universities around digital identity supported by emerging technologies such as blockchain and digital customer acquisition by business.
- Increased investment in innovation by pension funds would be welcome, such as OMERS in Ontario and the CDPQ in Quebec.
- BC has significant strengths in life sciences both in research capability and in commercial investments in the province. However, we need to develop better links between the sector and the BC health system to enable BC to capitalize on these strengths.
- Procurement is one lever the provincial government has to incent business-led R&D in BC. Whether it is contracts for connectivity, IT systems, health systems or through crown corporations such as BC Hydro or BC Ferries, each dollar spent by the government has the potential to contribute to centres of innovation in BC.
- BC and the federal government have an opportunity to work together on developing the Cascadia Corridor and to build the current momentum into a tangible advantage as a global brand.

My Observations

My first eight months as BC's Innovation Commissioner have been focussed on listening to advice on how to best advance innovation in BC. I have had discussions with senior federal government officials, international investors, tech sector representatives and others.

From their feedback and perspectives, and based on the data my office has gathered, I firmly believe the best route to sustain prosperity is through developing a highly innovative economy. This requires a strong economic and technology strategy focussed on supporting increased business investment in research and development; developing excellent talent at our colleges and universities; and on scaling up small businesses with high growth potential.

I believe that establishing innovation clusters across BC would significantly improve our innovation performance by incenting business investment in research and development and business scale up. Innovation clusters can be categorized in three ways:

- Regional/community clusters that focus on rural and First Nations eco-systems. Each community in BC is different but we can encourage community development through conducting technical and business assessments in each community and linking with universities and colleges.
- Emerging technology clusters that bring together talent and resources from business and academia to take advantage of the opportunities that emerging technologies will bring, such as quantum computing, AR/VR, regenerative medicine, AI and energy fusion.
- Scale up, market-driven clusters that support firms to thrive, connect to global opportunities and raise growth capital, leading to further growth. As businesses grow into large, global leaders, they create more jobs, expand the economy, and are less likely to relocate.

We need to treat the federal government as a partner in supporting business innovation in BC. This will require increased interactions between BC Ministers and senior officials with their counterparts in Ottawa. Building and maintaining these relationships is important in getting BC back on the federal government's radar and ensuring that we are maximizing opportunities for federal government innovation investments in BC. In addition, to more effectively leverage federal innovation investments into BC priorities, BC needs to proactively establish innovation funding partnerships with the federal government by developing specific programs through which the Province is able to commit to cost sharing.

We must make building deeper connections through targeted outreach efforts, particularly with officials based in central Canada, a priority so these decision-makers can hear directly from BC government ministries and industry organizations. Included within our Office workplan is hosting a BC-based symposium to help link key decision-makers from Ottawa with BC policymakers and industry leaders to build better connections and help drive better outcomes.

We need to treat major companies that invest in BC as partners in growing our innovation ecosystem. As noted earlier, these companies support the growth of smaller businesses that are part of their supply chain; develop talent including hiring and training co-ops and recent graduates; and increase salaries, which improves affordability for workers and encourages smaller firms to become more competitive and hence enables them to better compete in global markets.

Since accepting the role as BC's Innovation Commissioner, I have reached out to dozens of private enterprises of all sizes, and been approached by many others, each sharing insight into why they are operating in BC and what the future may hold. It is clear: they see BC as a great place to do business and we must continue to fuel this passion.

In the months ahead, I will engage with industry organizations and companies to help them find new markets or new investment to give them the opportunity to grow as they would like. As detailed in Appendix C, this includes supporting international business development missions, leading roundtables with businesses considering international pursuits and co-leading industry-focused missions to Ottawa to connect directly with senior government staff.

As the long-term success of BC's technology sector and its innovation performance requires an expanded and dynamic talent pool, BC needs to continue to focus on talent development. As Premier Horgan has said, we need the right people with the right skills for the right jobs.

It is important that BC continue to support an increase in science, technology, engineering and mathematics (STEM) graduates, who also develop life-long skills such as creativity, teamwork and problem-solving. In addition, a relatively large share of tech jobs is accessible to workers without a bachelor's degree – some have described this as "mid-tech." Individuals who can fill these jobs already have skills and experience tech employers are looking for – from project management to sales, and operations. These skills are critical to building and growing business and will continue to be in-demand. Lastly, the Provincial Nominee Program can be an important and effective tool in meeting the talent requirements of the BC technology industry when homegrown talent isn't available.

This suggests that tech is a plausible economic development strategy for a wider array of communities and regions than conventional knowledge suggests, especially as IT continues to spread and all sectors become tech-enabled.

Some have argued that BC's thriving tech sector can be a double-edged sword: on one hand, it offers highly valued and well-paying jobs in new locations. On the other hand, there are misgivings that new ways of generating products and services will lead to the transition of some jobs. Breaking the cycle of job displacement requires BC to develop a new approach to skills development for an often-overlooked pool of talent: mid-career workers. Supporting the transition

to a new career path will require the right training programs so their extensive experience can be successfully applied to a new sector and they can adapt to the rapidly changing labour market.

As a member of both the InnovateBC Board and the Emerging Economy Task Force, I will help to make the right connections, focussing our combined efforts under the forthcoming Technology Strategy and also promoting innovation opportunities across BC, particularly for women, Indigenous and rural communities.

Conclusion

British Columbia has long enjoyed the advantages of circumstance – abundant natural resources, an attractive geographic setting, and favourable access to North American and Pacific Rim markets. However, these advantages have sometimes led to competitive complacency, which has left the province behind in areas such as innovation, productivity, value added product development and business investment in research and development.

BC has a clear choice going forward. We can hope that commodity prices, housing prices, tourism, and construction have sufficient strength to maintain the province's current level of prosperity; or we can proactively make investments in business innovation and cluster development across BC that will enhance the sustainable and clean growth of the province's emerging sectors and high-potential firms and make BC more competitive in an increasingly dynamic global market.

As BC's Innovation Commissioner, I encourage this province, its governments, its business, its institutions and its people to embrace the opportunities that come with an emphasis on innovation – evolving our traditional sectors, growing new ones, and raising the standard of living for the people who choose to call this province home.

References

- B.C.'s Labour Market Outlook: 2018 Edition (2018, September). Retrieved September 28, 2018, from https://www.workbc.ca/getmedia/1dce90f9-f2f9-4eca-b9e5-c19de9598f32/BC_Labour_Market_Outlook_2018_English.pdf.aspx
- British Columbia technology report card (2016, October). Retrieved September 28, 2018, from <https://assets.kpmg.com/content/dam/kpmg/ca/pdf/2016/10/BC-tech-report-card-FY16.pdf>
- Budget Plan. (2017, March 22). Retrieved September 28, 2018, from <https://www.budget.gc.ca/2017/docs/plan/toc-tdm-en.html>
- Budget Plan. (2018, February 27). Retrieved September 28, 2018, from <https://www.budget.gc.ca/2018/docs/plan/toc-tdm-en.html>
- Business Enterprise R&D. (n.d.). Retrieved September 28, 2018, from <https://www.conferenceboard.ca/hcp/provincial/innovation/berd.aspx>
- Business Enterprise R&D Spending. (n.d.). Retrieved September 28, 2018, from <https://www.conferenceboard.ca/hcp/Details/Innovation/berd.aspx?AspxAutoDetectCookieSupport=1>
- Competing in a Global Innovation Economy: The Current State of R and D in Canada. Council of Canadian Academies. (2018, April 10). Retrieved September 28, 2018, from <http://new-report.scienceadvice.ca/>
- Ehlert, U. (2016, September 13). Cities, companies, and innovation – Accelerate! Retrieved September 28, 2018, from <https://understandinginnovation.blog/2016/09/13/cities-companies-and-innovation-accelerate/>
- Emerging Economy Task Force to guide B.C.'s economic strategy. (2018, July 10). Retrieved September 28, 2018, from <https://news.gov.bc.ca/releases/2018JTT0031-001369>
- fDi Markets: The in-depth crossborder investment monitor from the Financial Times. (n.d.). Retrieved September 28, 2018, from <https://www.fdimarkets.com/>
- First innovation commissioner to champion B.C.'s tech sector. (2018, February 05). Retrieved September 28, 2018, from <https://news.gov.bc.ca/releases/2018JTT0004-000146>
- High Technology. (2018, January 25). Retrieved September 28, 2018, from <https://www2.gov.bc.ca/gov/content/data/statistics/business-industry-trade/industry/high-technology>

Innovation. (n.d.). Retrieved September 28, 2018, from <https://www.conferenceboard.ca/hcp/provincial/innovation.aspx>

Innovation Canada: A Call to Action. (n.d.). Retrieved September 28, 2018 from [http://rd-review.ca/eic/site/033.nsf/vwapj/R-D_InnovationCanada_Final-eng.pdf/\\$FILE/R-D_InnovationCanada_Final-eng.pdf](http://rd-review.ca/eic/site/033.nsf/vwapj/R-D_InnovationCanada_Final-eng.pdf/$FILE/R-D_InnovationCanada_Final-eng.pdf)

Innovation commission to support B.C. commercialization, jobs and economy. (2018, March 1). Retrieved September 28, 2018, from <https://news.gov.bc.ca/releases/2018JTT0004-000308>

New board appointed to Province's tech agency, Innovate BC. (2018, May 14). Retrieved September 28, 2018, from <https://news.gov.bc.ca/releases/2018JTT0024-000914>

Research Centres. (2018, July 06). Retrieved September 28, 2018, from http://science.gc.ca/eic/site/063.nsf/eng/h_63460E76.html

Statistics. (2017, March 30). Retrieved September 28, 2018, from <https://www2.gov.bc.ca/gov/content/data/statistics>

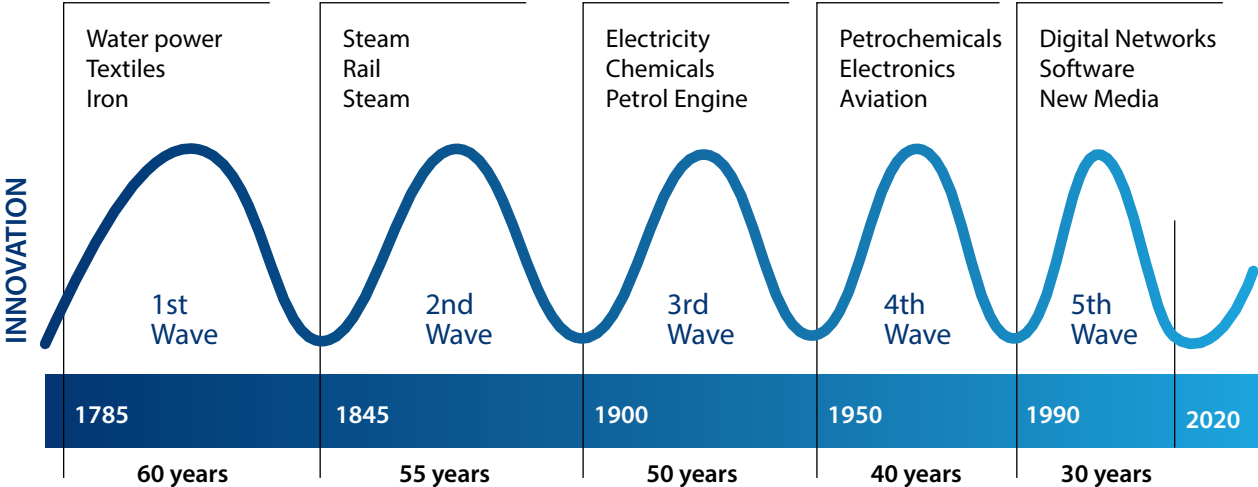
Technological Disruption and Opportunity, remarks by Stephen Poloz, Governor, Bank of Canada. (2018, September 27). Retrieved September 28, 2018, from <https://www.bankofcanada.ca/2018/09/technological-disruption-and-opportunity/>

The Future of Jobs Report 2018. (2018, September 17). Retrieved September 28, 2018, from <https://www.weforum.org/reports/the-future-of-jobs-report-2018>

Venture Capital, Private Equity and M&A Database. (n.d.). Retrieved September 28, 2018, from <https://pitchbook.com/>

Appendices

Appendix A: Schumpeter Waves Accelerate



Source: Understanding Innovation, adapted from The Economist

According to economist Joseph Schumpeter’s wave theory, we are currently experiencing the tail end of the 5th innovation wave, putting us in an era of rapid and profound change, where people, businesses and governments need to be more adaptable and resilient to take advantage of the emerging opportunities that create jobs and drive growth across all sectors and industries.

Appendix B:
BC Government
Innovation-Related Media
Releases

First innovation commissioner to champion BC's tech sector
Government of BC News Release – February 5, 2018

British Columbia's thriving tech sector will have a new voice in Ottawa and abroad, following Alan Winter's appointment as the province's first innovation commissioner.

"We're thrilled to have Alan Winter take on this newly created role of innovation commissioner, and we look forward to creating new opportunities for BC tech companies, shepherding innovation across all industries and all regions of the province, and generating good jobs for people in BC," said Premier John Horgan. "Today's announcement is an example of what can be achieved through co-operation and putting the people of BC first. I know that Mr. Winter will proceed in that spirit of co-operation to strengthen national and cross-border relationships, and ensure that BC maximizes federal funding to benefit BC innovators and employers."

The innovation commissioner is a component of the Confidence and Supply Agreement with the BC Green Party caucus to help BC's tech sector access the capital, as well as the national and international connections it needs to succeed. Recognizing its potential for success, the BC government has adopted the concept as part of its efforts to establish BC as a preferred location for new and emerging technologies.

"We proposed the innovation commissioner to be an advocate and ambassador on behalf of the BC technology sector in Ottawa and abroad, to enable BC companies to more easily tap into existing federal programs and build key strategic relationships," said BC Green Party Leader Andrew Weaver. "Alan Winter's distinguished career as a leader in innovation makes him precisely the right person to champion our tech sector and help BC to capitalize on our strengths to build a thriving 21st-century economy."

As BC's foremost tech advocate, Winter's mandate will include relationship-building with senior government leaders in Ottawa and with BC's tech and innovation network, including partners in industry, academia and the province's regional tech accelerators.

"Alan Winter's breadth of senior leadership experience in the biotech and information technology fields makes him the ideal ambassador for our tech and innovation sector," said Minister of Jobs, Trade and Technology Bruce Ralston. "His appointment is one of the many ways your government is working to enhance BC's economy and continue to grow our thriving innovation sector."

The innovation commissioner will help leverage federal funding programs in support of BC's tech and innovation sector. He will also take an active role in BC's partnership with Washington state to further develop the Cascadia Innovation Corridor.

"I want to make sure BC companies are at the front of the line for investment and partnership opportunities, both here in Canada and around the world," Winter said.

“My first priority will be championing Canada’s Digital Technology Supercluster, which could provide BC’s tech sector with a major boost in federal funding.”

The innovation commissioner has been appointed by order-in-council for a term of one year, with the option for reappointment based on performance.

[Emerging Economy Task Force to guide BC’s economic strategy](#) *Government of BC News Release - July 10, 2018*

BC’s new Emerging Economy Task Force has launched, with the goal of ensuring British Columbians around the province can benefit from advances in innovation and technology.

The 14-member task force, led by chair Kathy Kinloch, is composed of people with a range of expertise and experience, from industry, business and academia. It has been established to provide a better understanding of how global conditions and emerging technological advancements will shape the future of BC’s economy. “Understanding the emerging economy is imperative to ensuring that everyone has the opportunity to participate and benefit from our economy as it grows and evolves,” said Bruce Ralston, Minister of Jobs, Trade and Technology. “The task force will gather input from industry leaders to assess and determine the changing nature of business and the economy in the years ahead, and recommend how our government can best anticipate change.”

The Emerging Economy Task Force is a central part of the BC government’s Confidence and Supply Agreement with the BC Green Party caucus.

“To support our province’s long-term economic success, we need made-in-BC solutions to stay on top of the changing nature of business,” said Andrew Weaver, BC Green Party leader. “We proposed an Emerging Economy Task Force as a means of addressing how technology, innovation and global trends are changing business and society. This task force brings together key people who can identify the challenges we will face in the years ahead, and help us capitalize on the opportunities that arise.”

To maintain BC’s strong economic position, it is important for communities and industries to embrace innovation in order to capitalize on potential new developments.

“The priority of the task force is to define what an emerging economy in BC looks like, and what factors will affect economic growth in the next five, 10 and 25 years,” said Kinloch, president of the British Columbia Institute of Technology. “We will be working collaboratively to deliver advice and recommendations to the government that will help shape policy and provide made-in-BC solutions to support an innovative and diverse economy.”

The task force held its first meeting on Tuesday, July 10, 2018, at MineSense Technologies, a leading BC data analytics firm that specializes in creating innovative technologies for the mining industry.

“MineSense develops and utilizes new digital technologies that are transforming the mining industry,” said Jeff More, MineSense CEO. “The work of the Emerging Economy Task Force will help BC’s industries stay ahead of the technological curve.”

The task force will undertake engagement, assessment and advisory work starting in summer 2018, and will provide an interim report to the Ministry of Jobs, Trade and Technology in fall 2018. A final report is due in spring 2019 and will be made public shortly thereafter.

[Innovation commission to support BC commercialization, jobs and economy](#) *Government of BC News Release – March 1, 2018*

Technology entrepreneurs and businesses throughout British Columbia will be better able to access provincial funding and support through Innovate BC, the Province’s new innovation commission.

The British Columbia Innovation Council Amendment Act, introduced in the legislature today, proposes to expand the mandate of the BC Innovation Council. The Crown agency will be renamed Innovate BC.

“Innovation is the lifeblood of a successful economy, and your government is working to ensure the benefits of our tech and innovation sector are felt by people in all regions of our province,” said Minister of Jobs, Trade and Technology Bruce Ralston. “By making Innovate BC a single point of contact for entrepreneurs and businesses across BC, we will ensure people get the help they need to create good jobs and benefit from the opportunities of the emerging economy.”

The innovation commission is a component of the Confidence and Supply Agreement with the BC Green Party caucus, to provide a single point of contact for tech businesses throughout the province looking to build capacity, reach global markets, attract new investment and access startup capital. Recognizing its potential to support BC tech, the provincial government has adopted the concept as part of its efforts to help BC innovators thrive.

Innovate BC will be BC’s primary agency to promote company growth, resulting in jobs, increased revenue and economic development, and ensuring that all regions of the province benefit from the opportunities of the emerging economy.

“Innovate BC will help entrepreneurs seize the exciting opportunities of the 21st-century economy,” said BC Green Party Leader Andrew Weaver. “This key BC Green platform commitment was developed through consultation with tech sector leaders. Their creativity and ambition are deeply inspiring, and I am delighted to support them as they drive BC’s economy. In addition to supporting the thriving tech sector in our cities, Innovate BC’s provincewide mandate will help link tech with our resource centres so that communities across the province can benefit from these exciting opportunities.”

The Crown agency will also provide tech entrepreneurs provincewide with tools, resources and expert guidance, and support Indigenous entrepreneurship by working with the First Nations Technology Council.

Innovate BC will absorb all the programs and services currently delivered by the BC Innovation Council, in addition to expanding its mandate. These changes will ensure that BC is more competitive nationally and globally, and can attract additional investment to scale up the provincial tech ecosystem. Innovate BC will make recommendations to government on how to best create science, technology and innovation policy that promotes the commercialization of BC technologies.

“With this expanded mandate, we are excited to continue to power our province’s economic engine through the exchange of innovation into traditional and emerging industries,” said BC Innovation Council president and CEO Shirley Vickers. “Across BC, we’ll serve as a single point of contact for both tech companies and enterprise that need programs and funding that support company growth and competitiveness.”

Innovate BC’s board of directors will have regional representation when it is announced this spring. In collaboration with the board, the BC government will work with industry stakeholders to review programs that support the tech and innovation sector provincewide. BC Innovation Council staff will be absorbed by Innovate BC.

Appendix C: Innovation Commissioner Roadmap

ULTIMATE OUTCOMES	Federal Government Investment	International Investment and Markets	Provincial Priorities
<p>INTER-MEDIATE OUTCOMES</p>	<p>BC's Tech Sector has a Higher Profile in Ottawa BC has a Greater Share of Federal Innovation-Related Funding Sustained Strategic Partnerships with the Federal Government Guided by a Shared Vision of Innovation</p> <p>Broader Federal Awareness of the Strengths of BC's Tech Sector and Opportunities for Innovation in BC Federal Funding is Aligned with Priority Areas for BC Partnerships are Established and Renewed in Support of Mutual Aims and Efforts Strong Working Relationships with Federal Representatives Through Various Forms of Engagement</p>	<p>BC's Tech Sector has a Higher Profile Internationally Increased International Investment in BC BC Tech Companies Have Expanded Markets Nationally and Internationally</p> <p>Strong Collaboration with Trade Offices to Raise Market Awareness Growth Oriented BC Tech Companies are Scaling-up Internationally Active Connections with Investors and Venture Capital Firms (Funds) BC Industry Associations and Tech Companies Are Pursuing New International Markets</p>	<p>Innovation is a High Priority and is Being Acted on by the Province</p> <p>Supercluster Projects are Underway in BC Emerging Tech and Innovation Proposals are Being Supported Throughout BC Indigenous Governments and Companies are Pursuing Innovation Opportunities Business Led Centres of Innovation are Being Championed Regional Companies are Pursuing Innovation Opportunities</p>
<p>OUTPUTS</p>	<p>Compendium of Government Departments, Innovation-Related Programs and Funding (P) Event and Conference Presentations (P) Key Federal Meetings and Consultations Innovation Commissioner Symposium</p>	<p>BC Tech Business Roundtable Compendium of Investors, Venture Capitalists, Companies and Foundations BC Tech Sector Snapshot (P) Tech Missions Cascadia Promotion Opinion Pieces (P)</p>	<p>BC Tech Summit BC Innovation Study (P) BC Tech Strategy BC Innovation Ecosystem Map (P) Semi-Annual IC Progress Reports (P) Regional Tech and Innovation Engagement Indigenous Tech and Innovation Engagement</p>
<p>ACTIVITIES</p>	<p>Create and Maintain a Directory of National and Federal Departments and Representatives with Mandates for Innovation Engage with Federal Representatives Broaden the Understanding of Federally Funded Programs in BC: <ul style="list-style-type: none"> Identify Innovation-Related Programs and Funding Identify Programs Aligned with BC Priorities and Strengths Host or Co-Host an Innovation Commissioner 'Symposium' Work with Federal Representatives to Co-Create a Vision for Innovation Co-Lead Tech Missions to Ottawa Advocate for BC's Increased Share of Specific Federal Programs and Initiatives</p>	<p>Working with the International Business Development Division of the BC Ministry of Jobs, Trade and Technology: <ul style="list-style-type: none"> Develop a Framework for Prioritizing Opportunities for International Investment Develop a Directory of National and International BC Investors Further the Network of Relationships with International Investors Connect BC Tech Companies with National and International Partners Develop Materials to Promote BC's Tech Sector and Communicate BC's Advantage Work with Industry Associations Representing BC's Tech Sector to Further the Understanding of Marketing Challenges Hold a Roundtable(s) with Key BC Tech Companies that have International Pursuits</p>	<p>Working with the Technology and Innovation Branch of the BC Ministry of Jobs, Trade and Technology: <ul style="list-style-type: none"> Promote Innovation Priorities Identify Cross-Ministry Innovation Priorities and Programs Champion the Digital Supercluster Help Advance and Link the Work of the BC Emerging Economy Task Force, Innovate BC, the Tech Strategy and the Clean Growth Strategy Provide Advice on Emerging Tech and Innovation Ideas Promote Innovation Opportunities with First Nations and in the Regions of BC</p>

(P): Publicly Oriented Outputs from the Office of the Innovation Commissioner

**Appendix D:
Innovation
Commissioner's Meeting List
(Feb 5th - Oct 3rd 2018)**

- #BCTECH Summit
- Accelerate Okanagan
- Accel-RX
- Agriculture and AgriFood Canada
- Alacrity
- Ambassador of Israel to Canada
- Avista Corp
- Axine Water Technologies
- Ayogo
- Babcock (UK)
- Babylon Health (UK)
- BAE Systems (UK)
- Bardel Entertainment
- BC Association of Institutes + Universities
- BC Business Council
- BC Colleges
- BC Colleges - Council of Presidents
- BC Construction Association
- BC Innovation Council
- BC Tech Association
- BDC
- Biba Ventures Inc
- BIO International Convention
- Bioenterprise
- Blue Fuel Energy Corp
- Boehringer Ingelheim
- Borealis GeoPower
- Bundesministerium für Bildung und Forschung (BMBF) - German Federal Ministry of Education and Research
- Bundesministerium für Wirtschaft und Energie (BMWi) - German Federal Ministry of Economy and Energy
- Business Council of Canada
- Camosun College
- Canada Foundation for Innovation
- Canada UK Chamber of Commerce - Technology Forum
- Canada UK Joint Science and Technology Committee
- Canada-Israel Industrial Research & Development Foundation
- Canada's Digital Technology Supercluster
- Canada's High Commissioner to the UK
- Canadian Embassy (Germany)
- Canadian Manufacturers and Exporters British Columbia Stakeholders Dinner
- Carmanah Technologies
- Centre for Drug Research and Development
- Chief Medical Officer, UK Government
- Chrysalix
- Chrysalix Venture Capital
- CIFAR
- Clean Energy BC
- Coastal First Nations
- Consul General of Canada to the Pacific Northwest Seattle
- Consul General of France
- Consul General of Israel
- Council of Canadian Academies
- Creative BC
- Creative Labs
- Department for Business, Energy and Industrial Strategy, UK Government
- DigiBC
- Emily Carr University of Art + Design
- Esri Canada
- EurekaFest
- First Nations Technology Council
- FPIInnovations
- Fraunhofer Institutes - Berlin Center for Digital Transformation
- Futurpreneur Canada
- GE Business Innovations
- General Electric
- General Fusion
- Genome Canada
- GenomeBC
- Geoscience BC
- Gevity Inc
- GH Associates (UK)
- Global Affairs Canada
- Global Affairs Canada, Chief Trade Commissioner
- Greentown Labs

- GSK
- Hasso Plattner Institute (Germany)
- Health and Social Services Innovation, Province of Quebec
- Health Canada
- Helmholtz Association (Germany)
- High Commission of Canada (UK)
- IBM Canada
- IMC Canada
- Industry Canada
- Infrastructure Canada
- Innovate BC Board
- Innovate UK
- Innovation Boulevard
- Innovation Canada
- Innovation Island Technology Association
- Innovation, Science and Economic Development Canada
- Innovative Medicines Canada
- Institute of Ocean Sciences
- Integral Strategy Network
- INTERFACE Health CEO Summit 2018
- International Healthcare Summit Kelowna
- Inventysinc
- Kwantlen Polytechnic University
- Leibniz Association (Germany)
- Lifesciences BC
- Masimo
- Mass Challenge
- Max Planck Society (Germany)
- Medtronic
- Michael Smith Foundation for Health Research
- Microsoft
- Milken Institute Global Conference
- MITACS
- NaiKun Wind Energy Group
- National Research Council of Canada - Industrial Research Assistance Program
- National Research Council of Canada
- National Research Council of Canada - Dominion Astrophysical Observatory
- Natural Science and Engineering Research Council of Canada - Pacific
- New Hippo Health
- Northeastern University
- Novus
- Ocean Networks Canada
- Okanagan Community Partner Roundtable
- Okanagan Entrepreneur Roundtable
- Omers Ventures
- OneEleven
- Ontario Centres of Excellence
- PACCAR
- PNWER Conference
- Research Universities Council of BC
- Rogers Communications
- Rogers Communications
- Royal Roads University
- ScienceWorld British Columbia
- Seaplane launch – meeting with Government officials
- Servier Canada
- Siemens (UK)
- Sinclair Group Forest Products
- Small Business Task Force
- Smart Cities Challenge iректорate
- South Island Prosperity
- STEMCell
- Sustainable Development Technology Canada
- TELUS Health
- The Catapult Programme (UK)
- The Catapult Programme (UK) - Cell and Gene Therapy Catapult
- The Catapult Programme (UK) - Digital Catapult
- The Catapult Programme (UK) - Energy Systems Catapult
- The Catapult Programme (UK) - Future Cities Catapult
- The Catapult Programme (UK) - Transport Systems Catapult
- The VRARA
- Thompson Rivers University
- Totem Capital Corporation
- TRIUMF
- TRIUMF Innovations Inc
- Tri-University Partnership Office
- UK Department of Business, Energy and Industrial Strategy
- UK Quantum delegation
- UK Research and Innovation
- UK Science and Innovation Network
- UK Trade Envoy to Canada
- Union of BC Municipalities Annual Convention
- University of British Columbia
- University of Northern British Columbia
- University of Victoria
- US Tech Meeting
- Vancouver Economic Commission
- VIATEC
- Washington State Government
- Western Economic Diversification Canada
- WestGrid
- whoknowzme
- Xenon-Pharma

Appendix E: BC Government's Innovation-Related Actions

In January 2018, the Ministry of Advanced Education, Skills & Training (AEST) announced 2,900 tech-related spaces that will produce 1,000 additional tech-grads a year by 2023, to improve access to training and education. To support these new spaces, AEST plans to increase investment up to \$42 million a year in ongoing funding.

In February 2018, Dr. Alan Winter was appointed BC's first innovation commissioner as an advocate for the tech and innovation sector in Ottawa, the Cascadia Innovation Corridor and abroad.

In March 2018, BCIC was renamed Innovate BC and the crown corporation's mandate was expanded for it to be BC's primary agency to promote company growth, resulting in jobs, increased revenue and economic development, and ensuring that all regions of the province benefit from the opportunities of the emerging economy.

In April 2018, the Honourable Navdeep Bains, Minister of Innovation, Science and Economic Development, and the Honourable Bruce Ralston, British Columbia's Minister of Jobs, Trade and Technology, announced a combined investment of \$45 million in biotechnology company STEMCELL Technologies. The federal government and the Province will each contribute \$22.5 million.

In June 2018, Ministry of Citizens' Services (CITZ) announced a new procurement strategy that includes replacing the 20-year-old BC Bid system and simplifying the bidding process. The strategy will also take advantage of made-in-BC innovation to further open up procurement to tech businesses in BC.

In May 2018, Ministry of Jobs, Trade and Technology (JTT) announced the Small Business Task Force to make recommendations to build on the sector's growth, and enhance job creation for people in BC.

In July 2018, JTT announced an Emerging Economy Task Force to develop "made-in-BC solutions" and look at how government can encourage innovative and sustainable industries to drive economic growth in BC in the 21st century.

In July 2018, government announced a \$6-million scholarship fund to support graduate students and innovative research throughout BC. The graduate scholarships are research focused, with an emphasis on science, technology, engineering and mathematics, as well as professional, Indigenous and regional programs.

The BC Government has initiated development of a clean growth strategy, which aims to pull together climate action, clean energy and sustainable economic growth for the province. The strategy will be released in the fall of 2018.

Recommendations from newly established entities (Innovation Commissioner, Innovate BC, Emerging Economy Task Force and Small Business Task Force) will culminate in a new technology sector strategy in fiscal 19/20. The strategy will ensure BC takes full advantage of the opportunities presented by investments made in the technology sector, for the benefit of all British Columbians.

Key Ongoing Innovation Programs and Initiatives:

- **Innovative Clean Energy (ICE) Fund**
The ICE Fund is a Special Account, funded through a levy on certain energy sales, designed to support the Province's energy, economic, environmental and greenhouse gas reduction priorities, and to advance BC's clean energy sector.
- **BC Knowledge Development Fund (BCKDF)**
Established in 1998, the British Columbia Knowledge Development Fund (BCKDF) is the government's primary capital investment in support of research infrastructure in BC. The BCKDF provides funding for public post-secondary institutions, research hospitals and affiliated non-profit agencies.
- **Cleantech Scale-Up Program**
BC's support for Alacrity's program matches federal funding from Western Economic Diversification Canada, along with funding contributions from Export Development Canada and Alacrity.
- **Cascadia Corridor Initiative**
The Corridor, first signed into agreement by BC and Washington in September 2016, is an initiative that will spur economic growth and technological innovation in the region. It will encourage cross-border partnerships between governments, companies, and universities, and is poised to become a boon to the high-tech, life sciences, clean tech, and data analytics industries. The corridor also aims to tackle some of the most pressing issues facing cities and communities today, ranging from transportation to climate change.
- **Clean Growth Hub MOU**
The BC government and BC Hydro have signed a memorandum of understanding (MOU) with the Clean Energy Association of British Columbia that supports continued collaboration on delivering clean, reliable and affordable electricity.

**Appendix F:
Key Federal Government
Business Innovation
Programs**

Dept.	Program	Budget	Program Description
AGRICULTURE AND AGRI-FOOD CANADA	ENABLING COMMERCIALIZATION AND ADOPTION	\$200M (2017-2022)	Enabling Commercialization and Adoption Stream facilitates the commercial demonstration, commercialization and adoption of innovative agri-based products, technologies, processes or services. This stream is designed to support and reduce the financial risk associated with late-stage activities on the innovation continuum.
BUSINESS DEVELOPMENT BANK OF CANADA	CLEAN TECH PROGRAMS		<p>BDC offers loans and advisory services with a focus on small and medium-sized companies. BDC Capital, a subsidiary of BDC, offers specialized financing, including venture capital, equity as well as growth and business transition capital. BDC's Venture Capital arm makes strategic investments in Canadian companies through its Energy/Cleantech Fund, Healthcare Fund and IT Fund. BDC is a complementary lender, offering commercial loans and investments that complement support available from private-sector financial institutions.</p> <p>To accelerate commercialization and growth, Budget 2017 proposes to provide: nearly \$1.4 billion in new financing, starting in 2017–18, through the Business Development Bank of Canada and Export Development Canada:</p> <ul style="list-style-type: none"> • \$380 million in equity financing to support clean technology firms; • \$570 million in working capital to support clean technology firms; and • approximately \$450 million in additional project financing for capital-intensive clean technology firms. <p>https://www.bdc.ca/en/pages/home.aspx</p>

Dept.	Program	Budget	Program Description
CANADIAN HERITAGE	CANADA MEDIA FUND	\$352M	<p>The Canada Media Fund (CMF) delivers financial support to the Canadian television and digital media industries through two streams of funding. The Experimental Stream encourages the development of innovative, interactive digital media content and software applications and the Convergent Stream supports the creation of convergent television and digital media content for consumption by Canadian.</p> <p>https://cmf-fmc.ca/</p>
CANADA REVENUE AGENCY	SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT (SR&ED) PROGRAM		<p>The SR&ED Program is a federal tax incentive program designed to encourage Canadian businesses of all sizes and in all sectors to conduct research and development (R&D) in Canada. The program is administered by the Canada Revenue Agency.</p> <p>https://www.canada.ca/en/revenue-agency/services/scientific-research-experimental-development-tax-incentive-program/claiming-tax-incentives.html</p>
CROWN-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA	ABORIGINAL BUSINESS AND ENTREPRENEURSHIP DEVELOPMENT ABED		<p>Aboriginal Business and Entrepreneurship Development (ABED) works with Aboriginal entrepreneurs and its partners to provide a range of services and supports. Aboriginal entrepreneurs and communities can qualify for business development support to assist with business planning; establishment (capital); costs; business acquisitions; business expansions; marketing initiatives that are local, domestic, or export oriented; new product or process development; adding technology to improve operations and competitiveness; operating costs in association with capital costs; and financial services, business support, business-related training, and mentoring services.</p> <p>https://www.aadnc-aandc.gc.ca/eng/1375201178602/1375202816581</p>

Dept.	Program	Budget	Program Description
EXPORT DEVELOPMENT CANADA	CLEAN TECH PROGRAMS		<p>EDC provides trade credit insurance and export financial services, bonding products and small business solutions to Canadian exporters and investors and their international buyers. EDC also supports Canadian direct investment abroad and investment into Canada. Much of its business is done in partnership with other financial institutions and through collaboration with the government of Canada.</p> <p>To accelerate commercialization and growth, Budget 2017 proposes to provide: nearly \$1.4 billion in new financing, starting in 2017–18, through the Business Development Bank of Canada and Export Development Canada:</p> <ul style="list-style-type: none"> • \$380 million in equity financing to support clean technology firms; • \$570 million in working capital to support clean technology firms; and • approximately \$450 million in additional project financing for capital-intensive clean technology firms. <p>https://www.edc.ca/</p>
GLOBAL AFFAIRS CANADA	CANEXPORT	\$50M (2016-2021)	<p>The CanExport program is a five-year, \$50-million Government of Canada program that provides direct financial assistance to small and medium-sized businesses (SMEs) registered in Canada that are seeking to develop new export opportunities and markets, especially high-growth emerging markets.</p> <p>http://international.gc.ca/trade-commerce/funding-finance-ment/canexport/about-afpropos.aspx?lang=eng</p>
INNOVATION, SCIENCE AND ECONOMIC DEVELOPMENT CANADA	INNOVATION SUPERCLUSTERS INITIATIVE	\$950M (2017-2022)	<p>The program aims to pull together technology clusters across the country into large collectives, focussing on technology innovation in the areas of ocean sciences, artificial intelligence, advanced manufacturing, protein industry, and digital technology.</p>

Dept.	Program	Budget	Program Description
INNOVATION, SCIENCE AND ECONOMIC DEVELOPMENT CANADA	CENTRES OF EXCELLENCE FOR COMMERCIALIZATION AND RESEARCH	\$30M	<p>Centres of Excellence for Commercialization and Research (CECR) match clusters of research expertise with the business community to share the knowledge and resources that bring innovations to market faster. Centres advance research and facilitate commercialization within four priority areas: the environment; natural resources and energy; health and life sciences; and information and communications technologies.</p> <p>http://www.nce-rce.gc.ca/Programs-Programmes/CECR-CECR/Index_eng.asp</p>
	INNOVATIVE SOLUTIONS CANADA	\$100M	<p>Innovative Solutions Canada is a program that supports the scale up and growth of Canada's innovators and entrepreneurs by having the federal government act as a first customer. By funding proposed solutions, the program supports the development of early-stage, pre-commercial innovations.</p> <p>https://www.ic.gc.ca/eic/site/101.nsf/eng/home</p>
	STRATEGIC INNOVATION FUND	\$1.26B (2017-2022)	<p>The Strategic Innovation Fund allocates repayable and non-repayable contributions to firms of all sizes across all of Canada's industrial and technology sectors. The Strategic Innovation Fund's objective is to simplify the application processes, accelerate processing, and provide assistance that is more responsive and focused on results. The program has four Streams:</p> <ul style="list-style-type: none"> • Stream 1: Encourage R&D that will accelerate technology transfer and commercialization of innovative products, processes and services • Stream 2: Facilitate the growth and expansion of firms in Canada • Stream 3: Attract and retain large scale investments to Canada • Stream 4: Advance industrial research, development and technology demonstration through collaboration between the private sector, researchers and non-profit organizations. <p>https://www.canada.ca/en/innovation-science-economic-development/programs/strategic-innovation-fund.html</p>

Dept.	Program	Budget	Program Description
INNOVATION, SCIENCE AND ECONOMIC DEVELOPMENT CANADA	SUSTAINABLE DEVELOPMENT TECHNOLOGY CANADA	\$400M (2017 -2022)	<p>The SD Tech Fund supports the development and pre-commercial demonstration of clean technologies. This funding will support projects across Canada to develop and demonstrate new clean technologies that promote sustainable development, including those that address environmental issues such as climate change, air quality, clean water and clean soil.</p> <p>https://www.sdtc.ca/en</p>
	VENTURE CAPITAL CATALYST INITIATIVE	\$400M (2017- 2020)	<p>Through the Venture Capital Catalyst Initiative, the Government is seeking to build a portfolio of large funds-of-funds and alternative models that strengthen and broaden the Canadian Venture Capital ecosystem, and increase the availability of late-stage Venture Capital over time.</p> <p>The Initiative will allocate capital to two streams:</p> <ul style="list-style-type: none"> Stream 1 will allocate \$350 million to large private sector-led funds-of-funds that will seek to maximize returns through diversified investments, support skilled VC fund managers, and attract substantial private sector capital. Stream 2 will allocate \$50 million for proposals in areas that can provide a financial return to investors, but would not otherwise be addressed by Stream 1. Applicants under this stream should have strategies focused on supporting underrepresented groups such as women or diverse fund management teams and entrepreneurs, or emerging regions and sectors. <p>https://www.ic.gc.ca/eic/site/061.nsf/eng/h_03052.html</p>
	ACCELERATED GROWTH SERVICE	\$13.5M (2018- 2023)	<p>The Accelerated Growth Service has been consolidated with the the Industrial Research Assistance Program's Concierge Service. The Accelerated Growth Service (AGS) helps growth-oriented Canadian businesses to expand by helping them access the key government services they need to grow, such as financing, exporting, innovation services and business advice</p>
	INDUSTRIAL AND TECHNOLOGICAL BENEFITS POLICY		<p>https://www.ic.gc.ca/eic/site/086.nsf/eng/home</p>

Dept.	Program	Budget	Program Description
INNOVATION, SCIENCE AND ECONOMIC DEVELOPMENT CANADA	CLEAN GROWTH HUB	\$12M (2017-2021)	The Clean Growth Hub is a whole-of-government focal point for clean technology focused on supporting companies and projects, coordinating programs and tracking results. The Hub's team of experts from across government will help companies and researchers pursuing clean technology projects identify the federal programs and supports most relevant to their needs. Hub representatives can also help answer questions regarding policy, regulatory and procurement issues.
NATIONAL DEFENCE	DEFENCE INNOVATION RESEARCH PROGRAM		The goal of the DIRP is to benefit Canada by introducing new and innovative technologies into the Department of National Defence and the Canadian Armed Forces. The program also supports the strategic research interests of the Canadian Armed Forces, the strategic objectives of DRDC, and research and innovation opportunities for the Canadian defence and security innovation base.
	INNOVATION FOR DEFENCE EXCELLENCE AND SECURITY (IDEaS)	\$313M (2017-2022)	Announced in Canada's defence policy, Strong, Secure, Engaged (June, 2017), DND introduced the Innovation for Defence Excellence and Security (IDEaS) program to improve DND's access to the creative potential of Canadian innovators to build defence capability and economic impact. The program supports the formation of an innovation ecosystem from the early stages of an idea, creates awareness of defence and security challenges and mobilizes innovators to develop prototypes and capabilities for defence and security capabilities. https://www.canada.ca/en/department-national-defence/programs/defence-ideas.html
NATURAL RESOURCES	ENERGY INNOVATION PROGRAM	\$49M (2016-2019)	The Energy Innovation Program supports research, development and demonstration projects to bolster innovation in the clean energy sector. http://www.nrcan.gc.ca/energy/funding/icg/18876

Dept.	Program	Budget	Program Description
NATURAL RESOURCES	ECOENERGY INNOVATION INITIATIVE		<p>Activities funded under ecoEII are in five strategic priority areas including: Energy Efficiency, Clean Electricity and Renewables, Bioenergy, Electrification of Transportation, and Unconventional Oil and Gas. The Initiative consists of two separate funding streams: R&D projects and demonstration projects.</p> <p>http://www.nrcan.gc.ca/energy/funding/eii/4985</p>
	FOREST INNOVATION PROGRAM	19.6M (2016)	<p>The Forest Innovation Program (FIP) supports research, development and technology transfer activities across Canada's forest sector. Together, these activities are intended to help the sector pursue its ongoing transformation through the development and adoption of innovative science-based solutions.</p> <p>http://www.nrcan.gc.ca/forests/federal-programs/13137</p>
	FOREST RESEARCH INSTITUTES INITIATIVE	\$2.4M 2018-19	<p>The overall objective of the Forest Research Institute Initiative is to support NRCan's goal of sustainable natural resources development by harnessing innovation and technology through public / private collaboration to advance the competitiveness of the forest sector.</p>
	INDUSTRIAL RESEARCH ASSISTANCE PROGRAM	\$700M (2018-2023)	<p>The Industrial Research Assistance Program (NRC-IRAP) is an innovation assistance program that supports small and medium-sized enterprises (SMEs) in the development and commercialization of technologies</p> <p>https://www.nrc-cnrc.gc.ca/eng/irap/</p>
	INVESTMENTS IN FOREST INDUSTRY TRANSFORMATION PROGRAM	\$55M (2017-2022)	<p>The Investments in Forest Industry Transformation (IFIT) program's goal is to provide funding for projects at the pilot to commercialization phase, with the intent of helping these technologies get to market.</p> <p>http://www.nrcan.gc.ca/forests/federal-programs/13139</p>

Dept.	Program	Budget	Program Description
NATURAL SCIENCES AND ENGINEERING RESEARCH COUNCIL OF CANADA	STRATEGIC PARTNERSHIP GRANTS FOR NETWORKS AND PROJECTS	\$49M (2016)	<p>The goal of NSERC's Strategic Partnership Grants is to increase research and training in targeted areas that could strongly enhance Canada's economy, society and/or environment within the next 10 years. Research and training under these grants must be conducted through a partnership between academic researchers and industry or government organizations.</p> <p>http://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/SPG-SPS_eng.asp</p>
PUBLIC SERVICES AND PROCUREMENT CANADA	BUILD IN CANADA INNOVATION PROGRAM	\$23M (2016)	<p>The Build in Canada Innovation Program (BCIP) is intended to help Canadian companies of all sizes move their state-of-the-art goods and services from the laboratory to the marketplace.</p> <p>https://www.tpsgc-pwgsc.gc.ca/app-acq/picc-bcip/index-eng.html</p>
WESTERN ECONOMIC DIVERSIFICATION CANADA	WESTERN DIVERSIFICATION PROGRAM	\$21M (2017-2018)	<p>The Western Diversification Program (WDP) is the main program through which Western Economic Diversification Canada (WD) makes strategic investments in initiatives with not-for-profit organizations with the purpose of enhancing and strengthening the economy of Western Canada.</p> <p>https://www.wd-deo.gc.ca/eng/301.asp</p>
	WESTERN INNOVATION INITIATIVE	\$100M (2013-2019)	<p>The Western Innovation (WINN) Initiative is a five-year federal initiative that offers repayable contributions for small and medium-sized enterprises (SMEs) with operations in Western Canada, in order to help move their new and innovative technologies from the later stages of research and development to the marketplace.</p> <p>https://www.wd-deo.gc.ca/eng/home.asp</p>

Appendix G: Federal Innovation Items in Recent Federal Budgets

Innovation Item	Description
CanCode Program	<p>This program supports initiatives providing educational opportunities for coding and digital skills development to Canadian youth from kindergarten to grade 12 (K-12). It also supports initiatives that provide K-12 teachers with the training and professional development they need to introduce digital skills, coding and related concepts into the classroom.</p> <p>https://www.canada.ca/en/innovation-science-economic-development/programs/science-technology-partnerships/cancode.html</p>
MITACS	<p>Mitacs is a national, not-for-profit, research organization dedicated to promoting high-quality research and innovation by building linkages between academia and industry through internships. Mitacs Accelerate is a national internship program that provides graduate students and postdoctoral fellows with four to six month internships at a company, under the guidance of a professor. Mitacs Elevate is a postdoctoral fellowship program which provides a foundation of research, business, entrepreneurship and scientific management skills to recent PhD graduates. Mitacs Globalink program is composed of four sub-programs, which create opportunities for international students to conduct research in Canada and for Canadian students to conduct research in other countries</p> <p>http://www.mitacs.ca/en</p>
Telecommunications Act Review	<p>To ensure that Canadians continue to benefit from an open and innovative Internet, the Government of Canada has appointed an external Panel to review Canada's communication legislative framework. The review will examine issues such as telecommunications and content creation in the digital age, net neutrality and cultural diversity, and how to strengthen the future of Canadian media and Canadian content creation.</p> <p>https://www.ic.gc.ca/eic/site/110.nsf/eng/home</p>
Intellectual Property Strategy	<p>The IP Strategy will help Canadian businesses, creators, entrepreneurs and innovators understand, protect and access intellectual property (IP). The IP Strategy is composed of legislation, advice and tools for growth.</p> <p>http://www.ic.gc.ca/eic/site/108.nsf/eng/h_00000.html</p>

Innovation Item	Description
<p>NRC Reimagine</p>	<p>Budget 2018 announced a “re-imagined” NRC, proposing to provide \$540 million over five years and \$108 million annually for measures to reinforce research strengths and role as a trusted collaboration partner of industry including the following:</p> <ul style="list-style-type: none"> • \$150 million over five years and \$30 million per year ongoing for NRC scientists to work with innovators from post-secondary institutions and businesses on multi-party research and development programs • \$30 million over five years and \$6 million ongoing to establish an ideation fund to target breakthrough research ideas through a competitive, peer-reviewed process • \$62 million over five years with \$12.4 million per year ongoing, to lower access fees charged to small and medium-sized enterprises and universities and colleges • The conversion of \$59.6 million per year in temporary funding into ongoing, permanent funding to allow for better long-term research planning and delivery <p>Budget 2018 also announced an investment of \$700 million over five years starting in 2018-2019, and \$150 million per year ongoing to support business research and development projects up to a new threshold of \$10 million. In addition, Budget 2018 highlighted the targeted actions that the NRC will be taking to include more women, youth, Indigenous peoples, persons with disabilities and visible minorities among our researchers.</p> <p>https://www.nrc-cnrc.gc.ca/eng/about/corporate_overview/year_at_glance_2016.html</p>
<p>Stats Can Innovation</p>	<p>The information compiled by this survey will be used by governments to better understand the impact of business strategy, innovation decisions and operational adaptations on the Canadian economy including business competitiveness, efficiency and productivity.</p>
<p>Security in the digital age</p>	<p>The Strategy’s core goals are reflected in Budget 2018’s substantial investments in cyber security – totaling more than \$500 million dollars over five years. Among the new measures introduced:</p> <ul style="list-style-type: none"> • Funding for the new Canadian Centre for Cyber Security to support leadership and collaboration between different levels of government and international partners, while providing a clear and trusted resource for Canadian citizens and businesses. • The creation of the National Cybercrime Coordination Unit to expand the RCMP’s capacity to investigate cybercrime, establishing a coordination hub for both domestic and international partners. • Funding to foster innovation and economic growth, and the development of Canadian cyber talent. <p>https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/ntnl-cbr-scrtr-strtg/index-en.aspx#s1</p>

Innovation Item	Description
SIF Rural Broadband	<p>Canada government plans on investing \$100 million CAD over the next years, in order to support Strategic Innovation Fund (SIF) projects that “relate to LEO satellites and next-generation rural broadband.”</p> <p>“The Government recognizes that access to the internet is more than just a convenience—it is an essential means by which citizens and businesses access information, offer services and create opportunities,” reads an excerpt from the 2018 federal budget proposal. “To reach the most remote areas of Canada, new technological solutions will be required. One promising example is the use of low Earth orbit (LEO) satellites.”</p>

Appendix H: Federal Transfer Payments to BC

	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Major Transfers										
Canada Health Transfer	3,354	3,550	3,741	3,972	4,197	4,190	4,455	4,731	4,875	5,066
Canada Social Transfer	1,435	1,484	1,528	1,551	1,593	1,642	1,697	1,751	1,804	1,859
Total - Federal Support	4,789	5,034	5,269	5,523	5,790	5,832	6,152	6,482	6,680	6,925
Per Capita Allocation (dollars)	1,087	1,128	1,172	1,216	1,263	1,256	1,312	1,364	1,388	1,421

Source: Government of Canada, Department of Finance.