

# British Columbia's Innovation Ecosystem



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# Agenda

1. Economic Context
2. BC's Overall R&D/Innovation Performance
3. R&D/Innovation Activity
  1. Higher Education
  2. Governments
  3. Private Sector
4. Trade Diversity
5. Observations

# Economic Context

- BC Real GDP (2016): **\$240.8 B**
  - Grew **13.8%** (2012-16)
  - In comparison, Canada's Real GDP grew by only **8.0%** in the same period
- BC Percentage of Canada's Real GDP (2016): **13.4%**
  - BC Percentage of Canada's Real GDP (2012): **12.7%**

## Canada

**Total Population:** 36,708,100 (2017)

### Gross Domestic Product (2017)

Real GDP: \$1,801 B  
Global GDP Ranking: 10<sup>th</sup>  
Real GDP Growth: 3.0%

**Exports** (Goods/Services): \$662 B (2017)

**Imports** (Goods/Services): \$711 B (2017)

### Gross Domestic Expenditures on R&D

GERD: \$32,810 M (2017)  
GERD/GDP: 1.53% (2017), OECD average: 2.38% (2015)  
OECD GERD/GDP Ranking: 20<sup>th</sup>/35 (2015)  
R&D Exp. per capita: \$894 (2017)

### Business Expenditures on R&D

BERD: \$16,745 M (2017)  
BERD/GDP: 0.78% (2017), OECD average: 1.27% (2015)  
OECD BERD/GDP Ranking: 21<sup>st</sup>/35 (2015)  
BERD Exp. per capita: \$456 (2017)

**Total # of Businesses:** 1,111,833 (2017)

### Breakdown by Business Size:

|                                 |          |
|---------------------------------|----------|
| <b>Small (1-99):</b> 1,090,385  | (98.07%) |
| <b>Medium (100-499):</b> 19,562 | (1.76%)  |
| <b>Large (500+):</b> 1,886      | (0.17%)  |

## British Columbia

**Total Population:** 4,817,160 (2017)

### Gross Domestic Product (2016)

Real GDP: \$240 B  
Provincial GDP Ranking: 4<sup>th</sup>  
Real GDP Growth: 3.5%

**Exports** (Goods/Services): \$100.9 B (2016)

**Imports** (Goods/Services): \$122.4 B (2016)

### Gross Domestic Expenditures on R&D

GERD: \$3,475 M (2015)  
GERD/GDP: 1.38% (2015)  
Provincial GERD/GDP Ranking: 4<sup>th</sup>/10 (2015)  
R&D Exp. per capita: \$740 (2015)

### Business Expenditures on R&D

BERD: \$1,855 M (2015)  
BERD/GDP: 0.74% (2015)  
Provincial BERD/GDP Ranking: 3<sup>rd</sup>/10 (2015)  
BERD Exp. per capita: \$395 (2015)

**Total # of Businesses:** 173,063 (2017)

### Breakdown by Business Size:

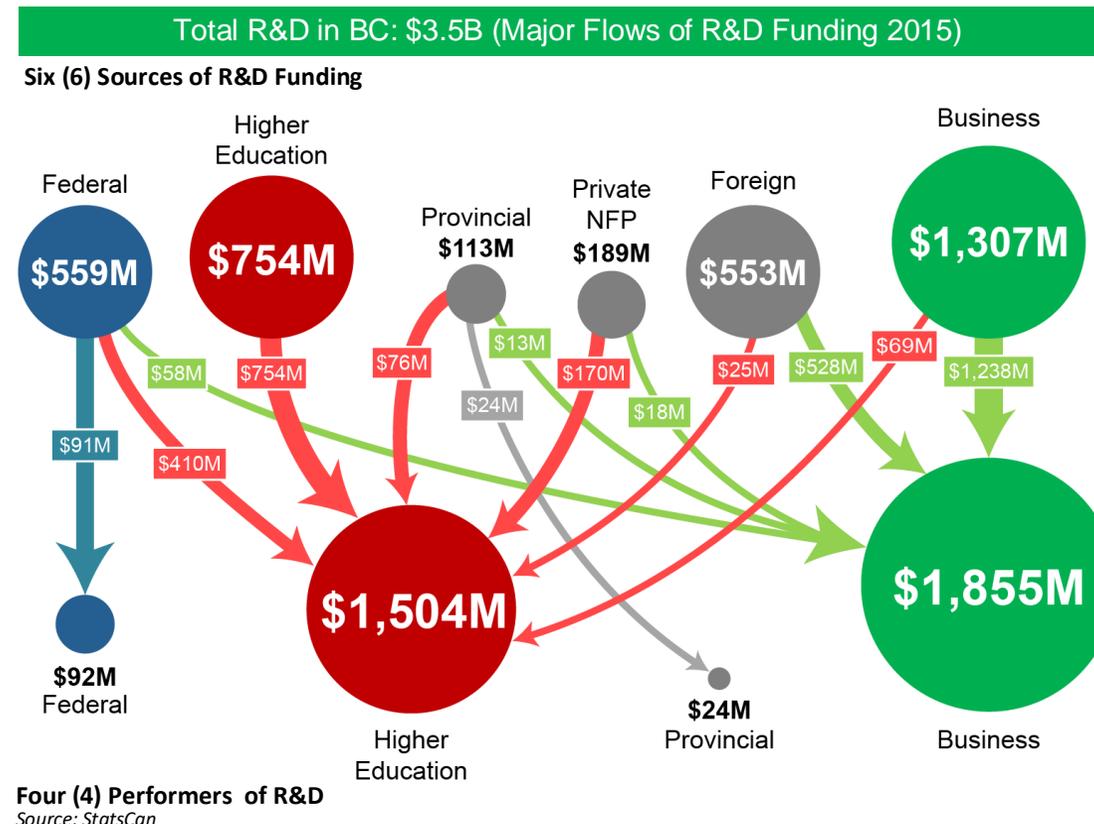
|                                |          |
|--------------------------------|----------|
| <b>Small (1-99):</b> 170,335   | (98.42%) |
| <b>Medium (100-499):</b> 2,540 | (1.47%)  |
| <b>Large (500+):</b> 188       | (0.11%)  |

Source: Statistics Canada, OECD

# BC's Overall R&D/Innovation Performance

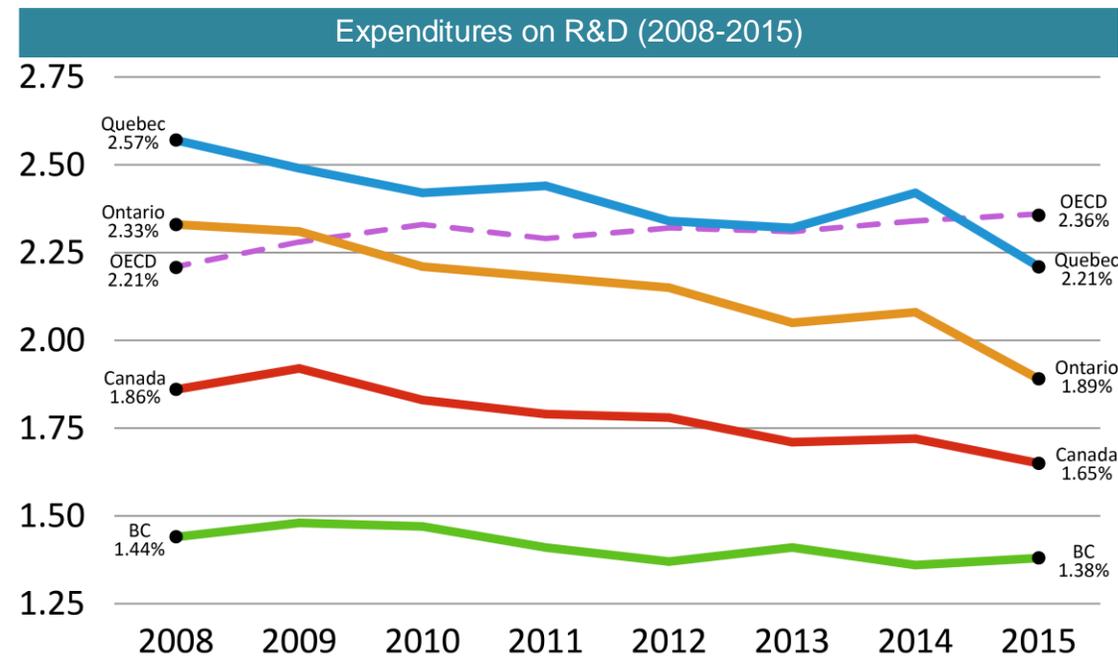
# R&D in BC

- BC performed **\$3.5 B** in R&D in 2015
  - This is about **10%** of the \$33.6 B spent on R&D in Canada
- Business performs **53%** of all R&D in BC and Higher Education performs **43%**
- The provincial government is a minor funder (**\$113 M**) and performer (**\$24 M**) of R&D in BC



# R&D in BC

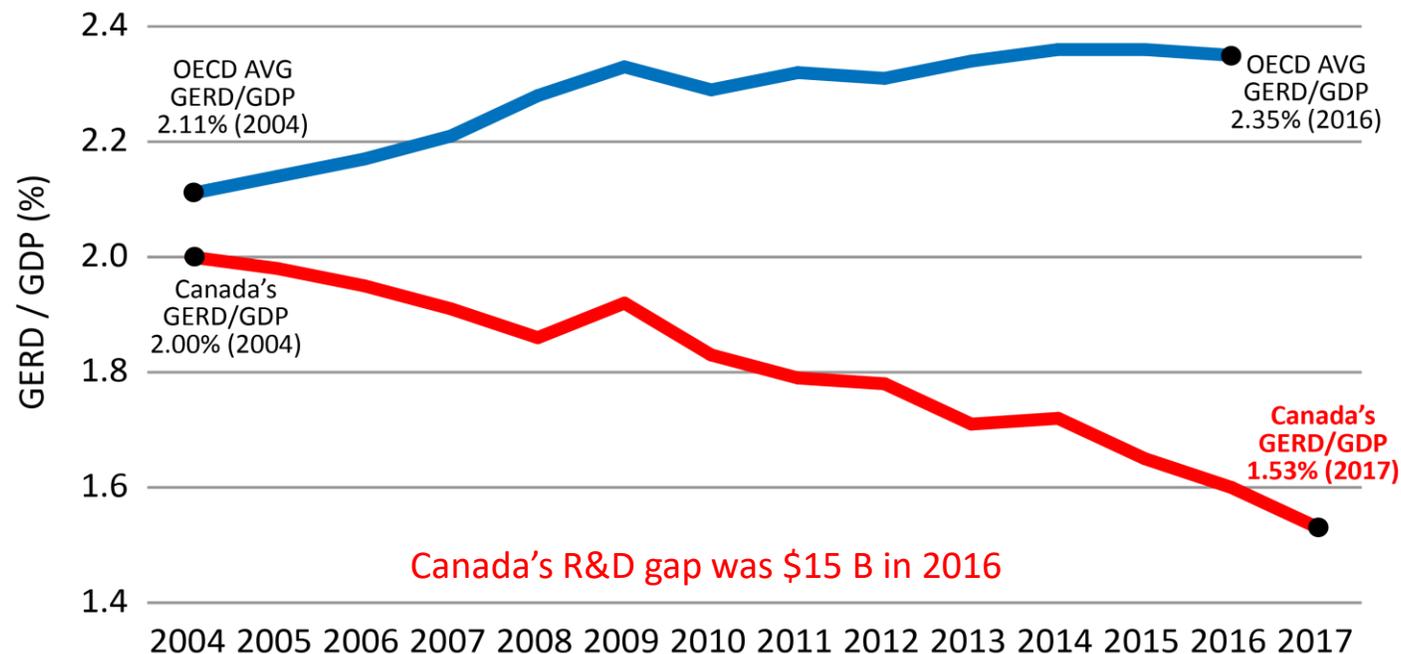
- BC's GERD/GDP, which was **1.38%** in 2015, has been consistently lower than the national average of 1.65%
- BC's GERD/GDP peaked in 2009 and has been decreasing since
  - This trend is prevalent not only in BC, but also in the rest of Canada, including Ontario and Quebec



Source: StatsCan

# R&D gap between BC and the average performance of OECD countries

- In 2015, BC's GERD was **\$3.46 B**, or **1.38%** of the province's GDP
  - In order to reach the average OECD's GERD/GDP ratio of 2.36%, BC institutions would need to perform an additional **\$2.49 B** in R&D in 2015
  - Within this amount, BERD and GovERD expenditures in BC would need to increase by **\$2.25 B** and **\$0.54 B**, respectively, to match average OECD R&D/GDP ratios per GDP



Source: Statistics Canada, OECD

# Higher Education

# Higher Education R&D

- In 2015, Higher Education in BC performed **\$1.5 B** in R&D, making it Canada's **3<sup>rd</sup>** highest provincial performer, next to Ontario and Quebec
  - However, relative to the size of the province's economy, BC's HERD/GDP was **0.60%**, slightly lower than Canada's average of **0.66%**
  - This placed BC at **7<sup>th</sup>** among all Canadian provinces for HERD/GDP

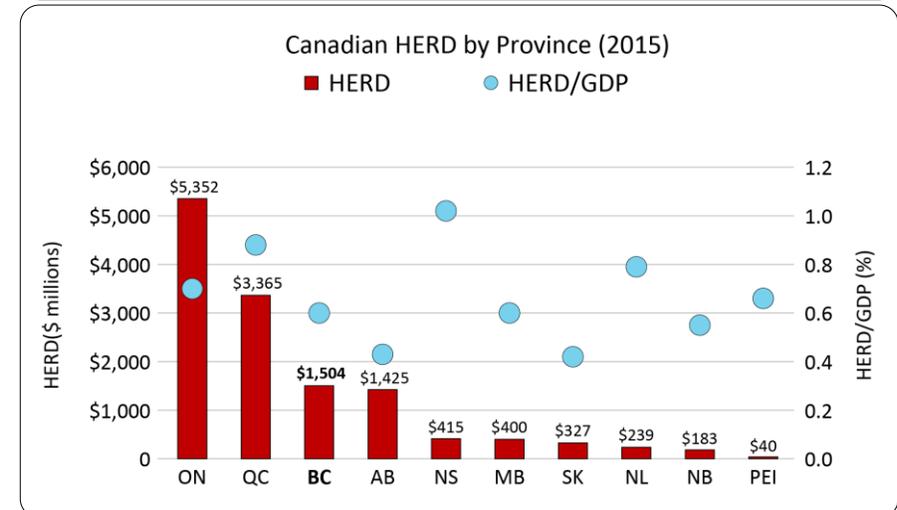
## Higher Edu R&D Expenditures (2015)

HERD: \$1.5 B

Provincial Rank: 3

HERD/GDP: 0.60% (Canada: 0.66%)

Provincial Rank: 7



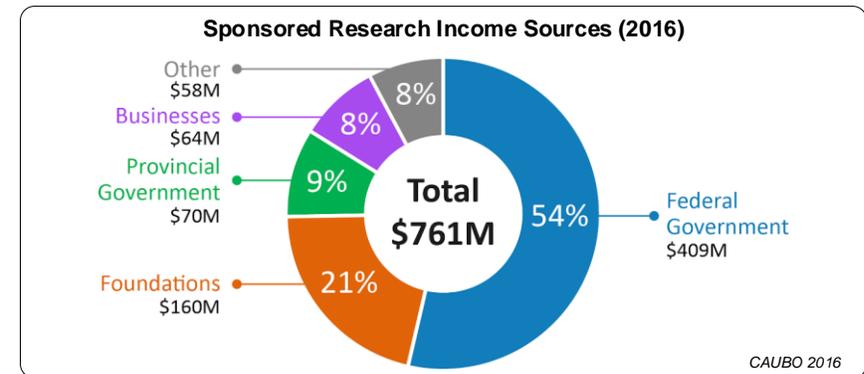
Source: Statistics Canada

# Higher Education – Sponsored Research

- The majority of sponsored research income comes from federal funding (**54%**), another **21%** from NFP foundations, and **9%** from the provincial government
- Provincial funding in higher education primarily goes towards general operation expenses
- **97%** of all Higher Ed research funding is concentrated within three research universities:
  - UBC, SFU, and University of Victoria

| University Sponsored Research          |          |
|--|----------|
| University                             | Budget   |
| <b>Research Intensive Universities</b> |          |
| 3 U of British Columbia                | \$532 M  |
| 18 Simon Fraser U                      | \$110 M  |
| 19 U of Victoria                       | \$100 M  |
| 49 U of Northern BC                    | \$ 8 M   |
| <b>Teaching Universities</b>           |          |
| 59 Thompson Rivers U                   | \$ 2.5 M |
| 63 Royal Roads U                       | \$ 1.9 M |
| 64 Vancouver Island U                  | \$ 1.9 M |
| 65 Emily Carr Institute                | \$ 1.7 M |
| 67 Trinity Western U                   | \$ 1.5 M |
| 69 U of the Fraser Valley              | \$ 1.3 M |
| 70 Kwantlen Polytechnic U              | \$ 0.9 M |

Source: CAUBO 2016  
Rankings are national rankings. List includes both private and public institutions



# Top 20 Canadian Universities by Publication (2009-14)

| Mainting in a G                       | Publication count (full) | Publication count (frac) |
|---------------------------------------|--------------------------|--------------------------|
| University of Toronto                 | 74,662                   | 42,908                   |
| <b>University of British Columbia</b> | <b>46,199</b>            | <b>25,856</b>            |
| McGill University                     | 37,657                   | 20,333                   |
| University of Alberta                 | 33,679                   | 19,497                   |
| Université de Montréal                | 30,066                   | 16,390                   |
| University of Calgary                 | 23,700                   | 13,495                   |
| University of Western Ontario         | 20,863                   | 12,692                   |
| University of Waterloo                | 20,495                   | 12,544                   |
| University of Ottawa                  | 22,060                   | 12,275                   |
| McMaster University                   | 22,208                   | 11,733                   |
| Université Laval                      | 15,600                   | 8,561                    |
| Queen's University                    | 13,397                   | 7,887                    |
| University of Manitoba                | 13,294                   | 7,414                    |
| Dalhousie University                  | 13,135                   | 7,122                    |
| University of Saskatchewan            | 12,062                   | 6,844                    |
| <b>Simon Fraser University</b>        | <b>11,806</b>            | <b>6,423</b>             |
| University of Guelph                  | 10,528                   | 6,022                    |
| Concordia University                  | 8,695                    | 5,798                    |
| <b>University of Victoria</b>         | <b>9,813</b>             | <b>5,118</b>             |
| Carleton University                   | 8,882                    | 5,107                    |

Source: Council of Canadian Academies (CCA), *Competing in a Global Innovation Economy: The Current State of R&D in Canada*

# Federal Granting Councils

- The Tri-Councils provided \$276 M, or 12.5% of total grant money, to BC in 2017/18
  - NSERC: **\$132 M**, SSHRC: **\$52 M**, CIHR: **\$92 M**
  - In addition, CFI has contributed **\$872 M** to **1,300+** projects in BC since 1997

## Natural Sciences & Engineering Research Council of Canada (NSERC)

|                                   |           |
|-----------------------------------|-----------|
| Total R&D Expenditures (2017-18): | \$1,096 M |
| Total grants awarded (2017-18):   |           |
| Canada                            | \$1,112 M |
| Ontario                           | \$ 435 M  |
| Quebec                            | \$ 276 M  |
| British Columbia                  | \$ 132 M  |
| Alberta                           | \$ 127 M  |

## Social Sciences and Humanities Research Council (SSHRC)

|                                   |         |
|-----------------------------------|---------|
| Total R&D Expenditures (2017-18): | \$650 M |
| Total grants awarded (2017-18):   |         |
| Canada                            | \$388 M |
| Ontario                           | \$161 M |
| Quebec                            | \$107 M |
| British Columbia                  | \$ 52 M |
| Alberta                           | \$ 24 M |

## Canadian Institutes for Health Research (CIHR)

|                                   |           |
|-----------------------------------|-----------|
| Total R&D Expenditures (2017-18): | \$1,057 M |
| Total grants awarded (2017-18):   |           |
| Canada                            | \$707 M   |
| Ontario                           | \$312 M   |
| Quebec                            | \$208 M   |
| British Columbia                  | \$ 92 M   |
| Alberta                           | \$ 62 M   |

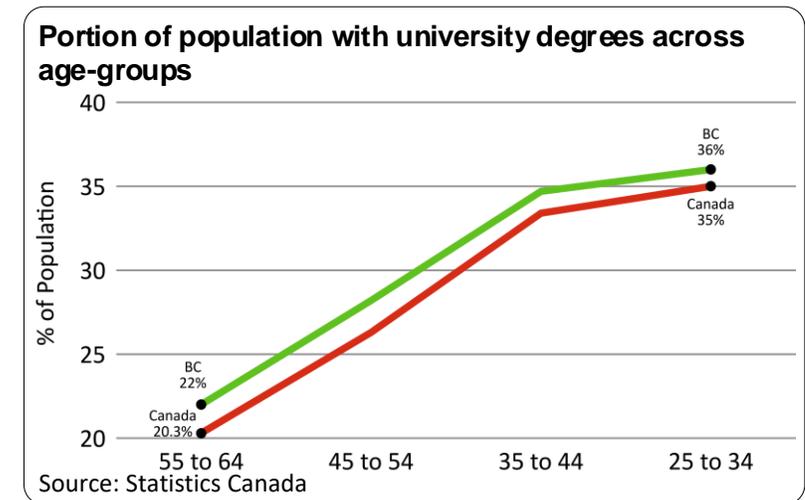
Source: NSERC, SSHRC, CIHR

# Higher Ed – University

- BC has a highly educated population (Census 2016)
  - **29.9%** of the population aged 25-64 years had a bachelor's degree or higher as the highest level of educational attainment, which is higher than Canada's average of **28.5%**
  - This is facilitated by the **higher proportion of university degree-holding immigrants and recent immigrants** compared to the Canadian-born population
- Only **46.5%** of students with a bachelor's degree or higher studied in BC, while **34.7%** studied outside of Canada and **18.8%** studied in another province or territory
  - In contrast, **60.2%** of the average Canadian population with a bachelor's degree or higher obtained their degrees within the same province or territory of residence
- **23.8%** of BC's population with a bachelor's degree or higher were in the STEM fields of study
  - Canada's average was 24.7%, with Alberta (28.1%) and Ontario (26.2%) leading the country in proportion of population having a STEM-related university degree
  - In 2015, the top field of study for university graduates was in Business/Management/Public Admin, with STEM-related graduates (Architecture/Engineering, Related) being substantially lower than social science, health, and business graduates

| Top Fields of Study in Universities (2015) |           |
|--|-----------|
| Field of Study                             | Graduates |
| 1. Business/Management/Public Admin        | 8.2 K     |
| 2. Social, Behavioural Sciences/Law        | 7.8 K     |
| 3. Health, Related                         | 4.4 K     |
| 4. Education                               | 3.8 K     |
| 5. Architecture/Engineering, Related       | 3.5 K     |

Source: Statistics Canada



# Higher Ed – College Graduates

- In contrast to university degrees, the proportion of BC's population (**20.9%**) who held a college degree as their highest level of education attainment was lower than the Canadian average (**22.4%**) (Census 2016)
  - A higher proportion of the Canadian-born population held a college degree in BC than immigrants or recent immigrants
- **71.5%** with a college-equivalent degree studied in BC, while **16.3%** studied in another province or territory and **12.2%** in another country
  - On a national level, 82.4% of the population with a college-equivalent degree studied in the same province or territory of their residence
- In 2015, the top field of study for college graduates was in **Architecture and Engineering**, a STEM-related field
  - However, among the BC population with a college-equivalent degree, only **14.1%** were in the STEM fields of study, which is lower than Canada's average of **16.7%**
- Currently, only 1 out of 30 federally funded Technology Access Centres is located in BC

**College/Institute Sponsored Research**

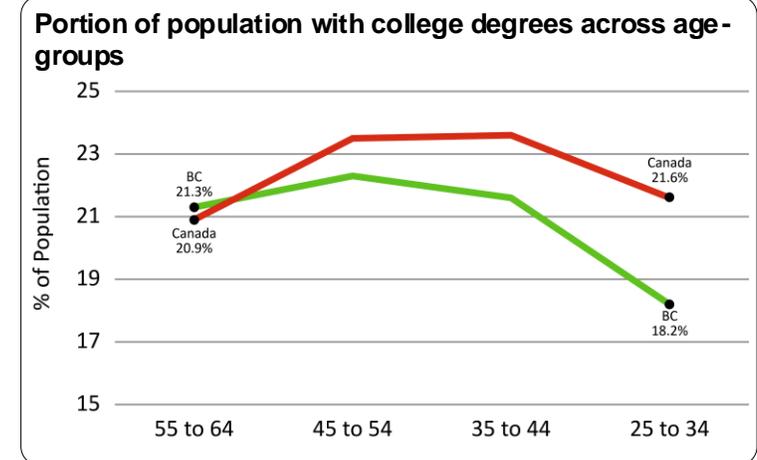
| College/Institute          | Budget  |
|----------------------------|---------|
| 10 BCIT                    | \$6.0 M |
| 35 Justice Institute of BC | \$1.9 M |
| 41 Camosun College         | \$1.6 M |

Source: Research Infosource  
Rankings are national rankings. List only top 50 Canadian research colleges

**Top Fields of Study in Colleges (2015)**

| Field of Study                                 | Graduates |
|--|-----------|
| 1. Architecture/Engineering, Related           | 5.7 K     |
| 2. Business/Management/Public Admin            | 5.3 K     |
| 3. Health, Related                             | 4.5 K     |
| 4. Personal/Protective/Transportation Services | 2.2 K     |
| 5. Social, Behavioural Sciences/Law            | 1.7 K     |

Source: Statistics Canada



**Technology-Access Centres (TAC)**

|     |    |
|-----|----|
| QC  | 13 |
| ON  | 9  |
| AB  | 4  |
| MB  | 2  |
| PEI | 1  |
| BC  | 1  |

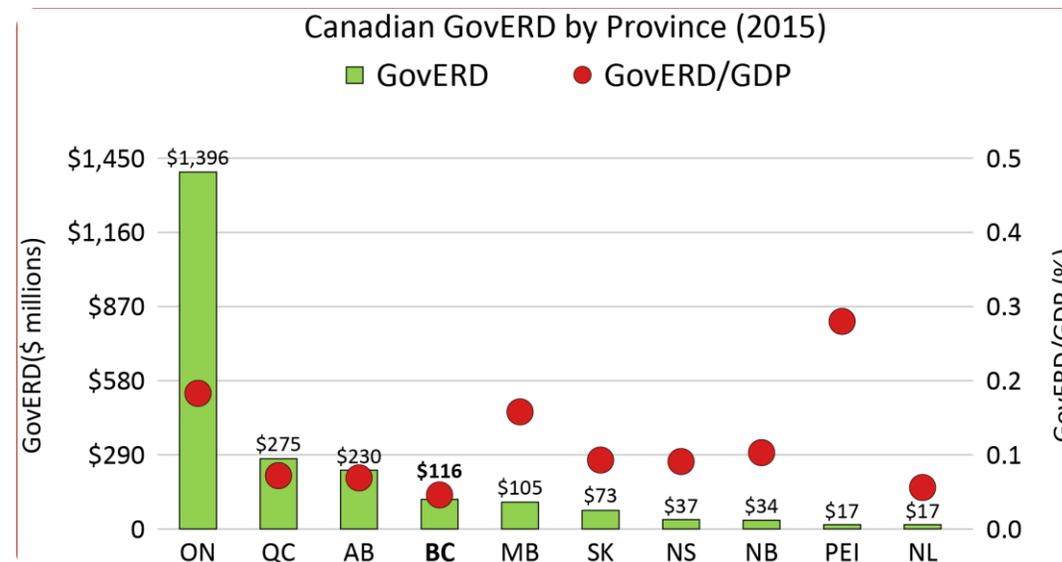
1 Camosun College: Advanced Manufacturing

Source: Tech-Access Canada

# Provincial and Federal Government Support for R&D/Innovation Activities

# BC Government Expenditures on R&D

- According to Statistics Canada, the provincial government funded **\$113 M** in R&D activities in 2015, with **\$76 M** going to higher education, **\$24 M** to provincial entities, and **\$13 M** to the business sector
- In addition, the federal government funded **\$559 M** in BC R&D activities, with **\$410 M** to higher education, **\$91 M** to federal research institutions, and **\$58 M** to BC businesses
- BC ranked last among provinces in GovERD performed relative to GDP at **0.046%**, but ranked **5<sup>th</sup>** among all provinces in GovERD funded at **0.57%**



Note: Figure shows GovERD **performed** by both federal and provincial governments  
Source: Statistics Canada

# Notable Provincial Innovation Initiatives in 2018

- Construction of a new Sustainable Energy and Environmental Engineering Building at Simon Fraser University's Surrey campus for 515 students that will create jobs, expand research and foster innovation
- \$50 M over 3 years to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development for investments in wildfire research and science to best inform local and provincial responses to wildfires and mitigation efforts
- \$6 M over 3 years to the Ministry of Energy, Mines and Petroleum Resources to meet regulatory requirements, assist large carbon emitters in key transportation and industry sectors adjust to a low carbon future, and develop an "Energy Roadmap"
- A new Health Science Centre at Vancouver Island University that will co-locate the majority of its health and chemistry programs into one facility. The Centre will also include the Applied Environmental Research Laboratory, which conducts applied research in the Environmental Sciences
- Construction of a new Industrial Training and Technology Centre at Thompson Rivers University in Kamloops for 550 additional students that will accommodate a range of new and existing trades, technology and industrial programs that will prepare students for in-demand careers in the region
- Construction of a new health sciences centre at Camosun College that will house 18 health science programs, such as community mental health, athletic and exercise therapy, nursing, and university-transfer health programming
- Develop a Food Innovation Centre at UBC to help small-scale processors enhance their potential for commercialization
- Add 2,900 tech-related spaces at BC post-secondary institutions and aim to provide 1,000 additional tech grads a year by 2023
- BC Graduate Scholarship Fund: \$12 M merit-based graduate scholarship with a strong focus on STEM graduates
- The scientific research and experimental development (SR&ED) tax credit is for Canadian controlled private corporations (CCPCs) that carry on SR&ED in BC – Qualifying companies can claim a refundable tax credit of 10% of the corporation's SR&ED
- Technology Programming: \$11 M in annual funding is added to institution budgets in 2020/21 to continue the four year ramp-up of new computers science, information technology, and engineering training throughout BC that began last year; this brings annual funding for this programming to \$36 million
- Energy Roadmap: \$4 M over 3 years to assist large carbon emitters in key transportation and industry sectors adjust to a low carbon future
- Agri-food Sector Support: \$29 M over 3 years to expand the agri-food sector by supporting a variety of initiatives that are part of Grow BC, Feed BC, and Buy BC
- Increased Funding for Arts: \$3 M over 3 years to Creative BC to promote and strengthen BC's motion picture, music, publishing, and digital media sectors
- Indigenous Skills Training: \$30 M over 3 years to continue the Indigenous Skills Training Development Fund. Projects are led by First Nations communities who identify labour market opportunities and work with accredited training providers to deliver the appropriate training.
- Establish an Emerging Economy Task Force to provide a better understanding of changing market conditions and emerging technological advancements
- Additional \$20M in government funding for Genome BC research projects
- STEMCELL Technologies: In collaboration with the federal government, BC will provide \$45 M towards STEMCELL Technologies to create up to 2,170 BC jobs by 2031 and build a state-of-the-art manufacturing facility in Burnaby. The federal government and the BC government will contribute \$22.5 M each to the project
- Implement an increase of the carbon tax by \$5 per tonne per year, beginning April 1, 2018 to meet the federal government's carbon-pricing mandate. Use revenue to fund further clean tech initiatives

- Significant funding goes towards infrastructure projects including the construction and renovation of research centres and laboratories at post-secondary institutions
  - Food Innovation Centre (UBC), Health Sciences Centre (Camosun College), Industrial Training and Technology Centre (Thompson Rivers University)

## Notable Provincial Innovation Initiatives in 2018

- Add **2,900** tech-related spaces at BC post-secondary institutions and aim to provide **1,000** additional tech grads a year by 2023
- **SR&ED**: qualifying Canadian-controlled private corporations (CCPCs) may claim a refundable tax credit of **10%**
- **\$4 M** over 3 years in an Energy Roadmap to assist large carbon emitters transition to a low-carbon future
- **\$45 M** joint-investment in STEMCELL Technologies by the federal and BC governments
- **\$30 M** in Indigenous Skills Training over 3 years
- **\$36 M** in annual funding for Technology Programming in 2020/21 (Budget 2018)

# Provincial Overview

- BC has mixed results relative to other provinces in its R&D performance as a ratio of GDP
  - GERD/GDP ranks **4<sup>th</sup>**
  - BERD/GDP ranks **3<sup>rd</sup>**
  - HERD/GDP ranks **7<sup>th</sup>**
  - GovERD/GDP ranks **10<sup>th</sup>**



Source: Statistics Canada

# Provincial Programs

## Jobs, Trade, and Technology

Annual Budget: \$105.3 M (2018-19)

|  |          |
|--|----------|
| International Business Development                 | \$21.8 M |
| Technology, Innovation, and Economic Development   | \$11.2 M |
| Workforce, Immigration, and Major Investments      | \$17.6 M |
| Integrated Data Office                             | \$8.7 M  |
| Small Business, Regulatory and Service Improvement | \$3.1 M  |
| Northern Development Fund                          | \$0.5 M  |

### BC Knowledge Development Fund (BCKDF)

Primary capital investment in support of research infrastructure. It aims to fund 40% of all total eligible project costs. It will invest over \$100 M for 75 post-secondary projects in BC.

#### Funded Projects

|           |              |                      |
|-----------|--------------|----------------------|
| 1998-2018 | Number: 1225 | Value: \$665,214,045 |
| 2016/17   | Number: 58   | Value: \$20,363,141  |
| 2017/18   | Number: 31   | Value: \$12,634,975  |

### Cascadia Innovation Corridor

Partnership to enhance collaboration in research, trade, transportation, and education between BC and Washington State

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#### Key Areas of Focus:

**Higher Education:** Cascadia Urban Analytics Cooperative (CUAC) for urban solutions

**Innovation:** High-speed Rail Impact Study between Seattle and Vancouver

**Venture Capital:** Greater access to funding and foreign talent

**Life Sciences:** Advancing research through big data, 3-D imaging and AI

### BC Immigrant Investment Fund Ltd (BCIIF)

*Crown corporation aimed at:*

1. Establishing BC as a preferred location for new and emerging technologies through venture capital and domestic business growth

2. Work with rural and northern communities and equity-seeking groups to make investments that support innovation and job growth

Both funds below are managed by Kensington Capital Partners Ltd.

*Portfolios*

#### BC Renaissance Capital Fund (BCRCF)

\$90M investment made to nine funds between 2007-11. Used to attract venture capital fund managers and grow venture capital ecosystem

#### BC Tech Fund

Makes investments into BC-based venture capital funds and co-investments into BC tech companies. Received \$100M from BCRCF

- Jobs, Trade, and Technology is the main ministry driving innovation in BC, with a budget of **\$105.3 M (2018-19)**
- Key initiatives include:
  - BC Knowledge Development Fund: **\$100M** in primary capital investment into research infrastructure
  - Cascadia Innovation Corridor: enhance trade, research, transportation, and education between **BC and WA**
  - BC Immigrant Investment Fund: supporting financing from private investors to accelerate innovation and job growth. This also manages the new BC Tech Fund which will receive **\$100 M**
  - Help manage the **#BCTech Strategy**

# Provincial Programs - Continued

- Key initiatives include:
  - a **\$12 M merit-based graduate scholarship** supporting STEM and Indigenous graduates
  - the **Sprint with Us** program that allows private companies to bid on developing public ICT projects
  - the **Canada-BC Agri-Innovation Program**, which replaces Growing Forward 2, that aims to support R&D projects in the agricultural sector

| Environment and Climate Change Strategy |          |
|---|----------|
| Annual Budget: \$179.3 M (2018-19)      |          |
| Environmental Protection                | \$11.8 M |
| Environmental Sustainability            | \$24.0 M |
| Climate Action                          | \$15.6 M |
| Park Enhancement Fund                   | \$ 9.8 M |
| Sustainable Environmental Fund          | \$23.6 M |

| Advanced Education, Skills, and Training   |           |
|--|-----------|
| Annual Budget: \$2,211.6 M (2018-19)       |           |
| Educational Institutions and Organizations | \$2,006 M |
| Labour Market and Information              | \$16.9M   |

| Merit-based Graduate Scholarship  |  |
|---|--|
| Funding: \$12M (2018-2021)  |  |
| BC's first merit-based scholarship that will support STEM and regional programs, as well as Indigenous students |  |

| Indigenous Relations and Reconciliation  |         |
|--|---------|
| Annual Budget: \$99.5 M (2018-19)        |         |
| First Nations Fund                       | \$1.9 M |
| First Nations Clean Energy Business Fund | \$7.3 M |

| Health                                |              |
|---------------------------------------|--------------|
| Annual Budget: \$19,753.9 M (2018-19) |              |
| Health Programs                       | \$19,521.8 M |

| Community Overdose Crisis Innovation Fund  |  |
|--|--|
| Funding: \$6M/year (2018-20)   |  |
| Currently supporting 20 high-priority BC communities where overdose crisis is most prevalent. Part of 3-year, \$322M investment to address overdose crisis |  |

| Tourism, Arts, and Culture                  |          |
|---|----------|
| Annual Budget: \$144.4 M (2018-19)          |          |
| Sport                                       | \$21.4 M |
| Tourism, Creative Sector, Arts, and Culture | \$36.5 M |
| BC Arts and Culture Endowment               | \$ 2.5 M |

| Energy, Mines, and Petroleum Resources |          |
|--|----------|
| Annual Budget: \$60.3 M (2018-19)      |          |
| Mines and Mineral Resources            | \$22.9 M |
| Electricity and Alternative Energy     | \$4.2 M  |
| Oil and Gas                            | \$16.8 M |
| Innovative Clean Energy Fund           | \$2.3 M  |

| Agriculture                       |          |
|-----------------------------------|----------|
| Annual Budget: \$93.1 M (2018-19) |          |
| Agriculture Science and Policy    | \$18.9 M |
| Business Development              | \$48.4 M |
| Agricultural Land Commission      | \$4.6 M  |

| Canada-BC Agri-Innovation Program   |  |
|---|--|
| Funding: \$14 M (2018-23)   |  |
| Part of the Canadian Agriculture Partnership, which will support R&D, pilot, and commercialization in BC's agriculture sector |  |

| Forests, Lands, Natural Resource Operations, and Rural Development |           |
|--|-----------|
| Annual Budget: \$734.2 M (2018-19)                                 |           |
| Resource Stewardship   | \$101.7 M |
| Rural Development, Lands, and Innovation                           | \$ 55.0 M |

| Citizens' Services                      |           |
|---|-----------|
| Annual Budget: \$524.2 M (2018-19)      |           |
| Services to Citizens and Businesses     | \$18.1 M  |
| Office of the Chief Information Officer | \$5.4 M   |
| Procurement and Supply Services         | \$3.3 M   |
| Technology Solutions                    | \$150.8 M |

| Sprint with Us   |  |
|--|--|
| Offers companies the opportunity to bid on government contracts of up to \$2 M. Since it began, 58 companies have registered, with the first contract going to FreshWorks Studio (\$1.5 M). This is part of BC Developers' Exchange, a network of private and public innovators working together on software challenges. |  |

| Transportation and Infrastructure  |  |
|------------------------------------|--|
| Annual Budget: \$890.1 M (2018-19) |  |

| Education                            |  |
|--------------------------------------|--|
| Annual Budget: \$6,340.8 M (2018-19) |  |

# Innovate BC

- Crown agency of the province
- Aim is to connect innovators with funding and experts to commercialize their innovations and scale up their companies
- \$22.8 M in funding (Budget 2017/18)
  - \$13.5 M for Tech Works
  - \$4.2 M for programs and initiatives

| Innovate BC (Acceleration Network)  |                             |                  |
|---|-----------------------------|------------------|
| <b>Innovate BC</b>  |                             | <b>\$22.8 M*</b> |
| <b>Budget (2017/18)</b>   | <b>Tech Works</b>           | <b>\$13.5 M</b>  |
|   | <b>Programs/Initiatives</b> | <b>\$ 4.2 M</b>  |
| <small>*Note: Regular annual funding of \$6.1 M and one year funding of \$13.5 M to Tech Works from the BC government</small>   |                             |                  |
| BC Acceleration Network   |                             |                  |
| Accelerator   | Participants                | Expenses         |
| • Accelerate Okanagan   | 27                          | \$ 455 K         |
| • e@UBC   | 28                          | \$ n/a           |
| • Foresight Cleantech Accelerator Centre  | 18                          | \$1,220 K        |
| • Innovation Boulevard  | 20                          | \$ n/a           |
| • Innovation Central Society  | 7                           | \$ 120 K         |
| • Innovation Island Technology Association  | 10                          | \$ 475 K         |
| • Kamloops Innovation Centre  | 12                          | \$ 150 K         |
| • Kootenay Association for Science and Technology   | 8                           | \$ 337 K         |
| • New Ventures BC   | 15                          | \$ 320 K         |
| • VentureLabs   | 46                          | \$ n/a           |
| • Victoria Innovation, Advanced Technology, and Entrepreneurship Council  | 28                          | \$ 670 K         |
| <small>Note: Expenses are for the FY 2016/17</small>  |                             |                  |
| Ignite  |                             |                  |
| Provides funding for the commercialization of new natural resources and applied sciences technology in BC   |                             |                  |
| Since 2016:   | Projects: 15                | Funding: \$3.5 M |
| BC Tech Co-op Grants Program  |                             |                  |
| Salary support of \$2,700/semester to BC tech companies or non-tech companies seeking tech-roles for hiring co-op students  |                             |                  |
| Will receive part of the \$10.5 M provincial tech investment into co-op opportunities and entrepreneurial training for post-sec students  |                             |                  |
| BCIC - New Ventures Competition   |                             |                  |
| BC's largest and longest-running venture capital that aims to promote the growth of early-stage tech companies  |                             |                  |
| Since 2001, past winners have raised over \$302 M in financing, \$200 M in revenues, and created more than 3,700 jobs in BC   |                             |                  |
| Natural Resources and Applied Sciences Endowment  |                             |                  |
| \$50 M fund that targets projects in natural resources, applied sciences, and engineering that aim to improve BC's R&D, advanced training, technology transfer and commercialization capacity |                             |                  |

Source: Innovate BC

## Not-For-Profits based in BC

- Significant funding from the provincial government into life science not-for-profits in BC, including:
  - Genome BC, The Centre of Drug Research and Development, Michael Smith Foundation for Health Research, and the Rick Hansen Institute

| Not-for-Profits Based in BC  |  |
|--|--|
| <b>Ocean Networks Canada Society</b><br>Annual Budget: \$12.5 M (2017)<br>\$5 M initial investment from BC in 2016           | <b>Genome BC</b><br>\$17 M in grant funding from BC (2018)<br>\$257 M committed to Genome BC since 2001                                  |
| <b>The Centre for Drug Research and Development</b><br>\$16 M planned contributions from ISED (2018/19)<br>16 projects in BC | <b>Michael Smith Foundation for Health Research</b><br>\$17 M in grants from BC (2018)<br>\$460 M committed to the foundation since 2001 |
| <b>BC Bioenergy Network</b><br>\$25 M one-time grant from BC (2008)<br>Has invested \$16 M in 18 projects since 2008         | <b>Rick Hansen Institute</b><br>\$23.6 M over 4 years from Western Economic Diversification (2018/19)                                    |

# Federal Government support for BC R&D/Innovation Activity

- Significant federal investments in cleantech, energy, health, digital ICT, and agri-food sectors
  - **\$275 M** for LNG pipeline and facilities as part of a **\$40 B** investment, may stimulate related R&D/technology activity
  - **\$22.5 M** towards STEMCELL Technologies for a state-of-the-art manufacturing facility in Burnaby
  - **\$80 M** in funding to replace the Sidney Centre for Plant Health in Sidney, BC
  - Expected federal support of up to **\$200 M** for Digital Technology Supercluster in BC

## Innovation, Science, and Economic Development

Annual Budget: \$2,591 M (2017-18)

Total R&D Expenditures: \$777 M (2017-18)

- Combined \$45 M investment from the Canadian and BC government towards STEMCELL Technologies, which will create 675 BC jobs by 2022 and up to 2.2 K jobs by 2031
- The Innovation Superclusters Initiative will invest up to \$950 M between 2017 – 2022 to support business-led innovation super clusters, including a Digital Technology supercluster in BC

## Sustainable Development Technology Canada

• Has invested \$243 M in BC-based projects since 2001 May 30, 2018

- \$10 M to D-Wave Systems of Burnaby, BC for energy-efficient high-performance computing
- \$2.3 M to Ionomr Innovations Inc. of Vancouver, BC for clean tech innovation
- \$4 M to MineSense Technologies LTD. Of Vancouver, BC for cleaner mining processes

## Natural Resources Canada

Annual Budget: \$1,339 M (2017-18)

Total R&D Expenditures: \$186 M (2017-18)

- LNG Canada: \$275 M federal support for Kitimat, British Columbia LNG facility, part of \$40 B investment
- NRCan allocated \$6.45 M for six projects in British Columbia to promote innovation and diversification in forestry and support collaboration with Indigenous communities

## Agriculture and Agri-Food Canada

Annual Budget: \$2,251 M (2017-18)

Total R&D Expenditures: \$364 M (2017-18)

- April 2018 – Canadian Agricultural Partnership: a 5-year, \$3 B investment by federal, provincial, and territorial governments to strengthen the agriculture and agri-food sector
- Investment of \$80 M to replace the Sidney Centre for Plant Health

## National Research Council Canada

Annual Budget: \$1,000 M (2017-18)

Total R&D Expenditures: \$644 M (2017-18)

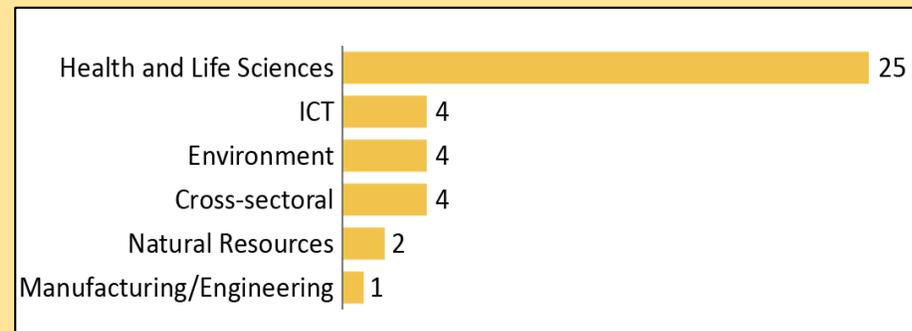
- The BC Clean Energy Technology Cooperative unites the world-class talent, expertise and infrastructure of three leading-edge organizations (NRC, University of British Columbia, and Powertech Labs)
- The BC Hydrogen Highway is now the world's largest demonstration of hydrogen and fuel cell technology
- NRC's 66,000 square foot LEED Gold-certified building is located on the University of British Columbia campus in Vancouver, BC (21 specialized laboratories, including 7 hydrogen-safe labs)

# Federal Networks of Centres of Excellence

- Four of the six Federal NCEs in BC are related to Health and Life Sciences

| NCEs in British Columbia  |          |         |
|---|----------|---------|
| <b>1 Networks of Centres of Excellence (NCE)</b>  |          |         |
| Kids Brain Health Network – KBHN  | \$39.1 M | 2009-19 |
| <b>1 Canada-India Research Centre of Excellence</b>   |          |         |
| India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability | \$22.0 M | 2012-21 |
| <b>4 Centres of Excellence for Commercialization and Research (CECR)</b>  |          |         |
| Accel-Rx Health Sciences Accelerator – Accel-Rx   | \$14.5 M | 2014-19 |
| Centre for Drug Research and Development – CDRD   | \$23.0 M | 2008-18 |
| Ocean Networks Canada Innovation Centre   | \$11.0 M | 2009-18 |
| Prostate Centre's Translational Research Initiative for Accelerated Discovery and Development PC-TRiADD                     | \$26.3 M | 2008-18 |

**Number of Networks of Centres of Excellence by Sector (2018)**



# Western Economic Diversification Canada

- Major Initiatives:
  - Western Innovation Initiative (WINN)
  - Western Diversification Program
- Will commit **\$6 M** to the Rick Hansen Institute in 2018/19 and **\$23.6 M** over 4 years
- According to the Federal Government's Expenditure Plan, WD funding is estimated to decline from **\$228 M** in 2017/18 to **\$150 M** in 2018/19<sup>1</sup>
  - The impact on BC funding is unknown as WD amalgamates funding for all the western provinces

<sup>1</sup>Source: [Government Expenditure Plan and Main Estimates](#)

| <b>Western Economic Diversification Canada</b>  |          |
|---|----------|
| Minister of Innovation, Science, and Economic Development<br>Budget 2017/18: \$228 M                    |          |
| <b>Budget</b>   |          |
| Business Development and Innovation   | \$96.8 M |
| Community Economic Growth   | \$74.3 M |
| Policy, Advocacy, and Coordination  | \$ 6.8 M |
| <b>Western Innovation Initiative (WINN)</b>   |          |
| Five-year \$100M federal loan initiative that helps SME's commercialize new and innovative technologies |          |
| Funded projects in BC:  | 12       |
| Funding in BC:  | \$14.8M  |
| <b>Western Diversification Program (WDP)</b>  |          |
| Funding of large, new and/or strategic advanced initiatives.  |          |
| Since 2015, WD funded projects have created 3.4K jobs in BC   |          |
| \$9.4M in funding for 12 Indigenous projects in BC  |          |

# Federal Economic Strategy Tables and Superclusters

- 5 Superclusters and 6 Economic Strategy tables represent a new approach to economic development in Canada (see summary on next slide)
- BC businesses have the potential to benefit from all the Economic Strategy Tables, and the 5 Supercluster initiatives (e.g. the Advanced Manufacturing Supercluster). Initiatives may be relevant for many BC industries
- In addition, life sciences research can also benefit from the Digital Technology Supercluster through Precision Health initiatives

## 6 Economic Strategy Tables:

1. Advanced Manufacturing
2. Agri-Food
3. Clean Technology
4. Digital Industries
5. Health/Bio-Sciences
6. Resources of the Future

## 5 Superclusters:

1. Ocean Technologies (Halifax)
2. Artificial Intelligence (Montreal)
3. Advanced Manufacturing (Toronto/Waterloo)
4. Protein Innovation (Regina)
5. Digital Technology (Vancouver)

## BC Digital Technology Supercluster

### Impact over 10 years:

\$1.4 B invested  
Create 50 K jobs  
\$15 B in cumulative GDP growth  
100 projects will be created  
Involvement from 1,000 org.

--

### Participation from:

250 private sector partners  
25 BC post-secondary institutions  
Funding commitments over \$500 M

### Phase 1 Programs:

1. Precision Health
2. Data Commons
3. Digital Twinning
4. Ecosystem Development

# Superclusters and the Economic Strategy Tables



Health/Bio-sciences

Clean Resources

Advanced Manufacturing

Economic Strategy Tables

Digital Technology

Clean Technology

Agri-Food

AI

Ocean Technology

Digital Technology

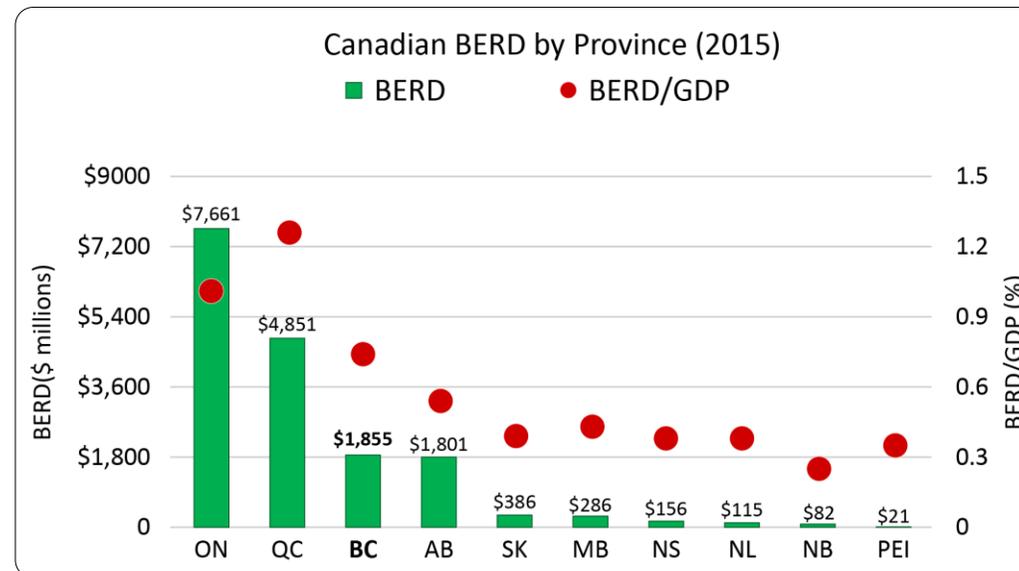
Protein Innovation

Advanced Manufacturing

# Private Sector R&D/Innovation

# Business Expenditure on R&D

- According to Statistics Canada, BC businesses performed **\$1,855 M** in R&D in 2015, making them the largest R&D performers in BC
- BC BERD ranked **3<sup>rd</sup>** among all provinces in absolute terms and relative to the province's GDP
  - However, BC's BERD/GDP ratio of **0.74%** represents a decline from the 2009 figure, where BC business performing R&D was **0.83%** of BC's GDP



Source: Statistics Canada

# Private Sector

- Main R&D corporate spenders in BC are the **ICT** and **life sciences** sector
- Strong presence of ICT multinationals operating in BC, including Microsoft, Amazon, Electronic Arts, Sony, and Avigilon
- Telus Corp., in the tech and science industry, was the largest company in BC by revenue in 2017
- However, natural resource and manufacturing & transportation companies had the largest presence in the 2017 Top 100 BC Business List

## Main Corporate R&D Budgets (2016)

| Canada                               |                  |
|--------------------------------------|------------------|
| 1. Bombardier Inc.                   | \$1,968 M (same) |
| 2. Magna International Inc.          | \$ 662 M (same)  |
| 3. Valeant Pharmaceuticals Int. Inc. | \$ 557 M (up)    |
| 4. Canadian Natural Resources Ltd.   | \$ 549 M (up)    |
| 5. BCE Inc.                          | \$ 518 M (down)  |
| British Columbia                     |                  |
| 20. TELUS Corporation                | \$ 184 M (down)  |
| 26. MDA                              | \$ 126 M (down)  |
| 29. Sierra Wireless, Inc.            | \$ 97 M (down)   |
| 35. Arbutus Biopharma Corporation    | \$ 81 M (up)     |
| 36. Westport Fuel Systems Inc.       | \$ 79 M (up)     |

Source: Research Infosource 2017

\* May include R&D performed abroad

## Top 10 BC Businesses (by 2017 Revenue)

|                              | Revenue (\$M) | Sector            |
|------------------------------|---------------|-------------------|
| 1. Telus Corp                | \$13,304      | Tech & Science    |
| 2. Teck Resources Ltd        | \$12,048      | Natural Resources |
| 3. Jim Pattison Group        | \$10,100      | Retail            |
| 4. Finning International Inc | \$ 6,265      | MFG & Transport   |
| 5. BC Hydro and Power        | \$ 5,874      | Natural Resources |
| 6. ICBC                      | \$ 5,644      | Finance           |
| 7. H.Y. Louie Co. Ltd        | \$ 5,400      | Retail            |
| 8. West Fraser Timber Co     | \$ 5,130      | Natural Resources |
| 9. Canfor Corp.              | \$ 4,658      | Natural Resources |
| 10. Gold Corp                | \$ 4,445      | Natural Resources |

Source: BCBusiness Top 100 2018

## Major multinationals operating in BC

### Microsoft

Opened the **Microsoft Canada Excellence Centre** in 2017, which will inject **\$90 M** per year directly into the Vancouver economy and have an estimated economic impact of **\$180 M** per year

### Amazon

New Amazon HQ expansion in Vancouver, bringing in **3,000** new high tech jobs in e-commerce, cloud computing, and machine learning. They currently employ **1,000+** researchers and engineers in the city

### Other Notable MNEs in BC

Avigilon, Ballard Power Systems, Electronic Arts, Boeing, Cisco, Disney, General Electric, Sony, Tableau

## Top 100 BC Businesses Sector Distribution (2017)

| Sector               | Revenue (\$M) | # of Companies |
|----------------------|---------------|----------------|
| Natural Resources    | \$54,235      | 30             |
| MFG & Transportation | \$42,834      | 29             |
| Retail               | \$36,695      | 14             |
| Tech & Science       | \$18,146      | 6              |
| Finance              | \$14,285      | 8              |
| Real Estate          | \$ 9,180      | 10             |
| Tourism & Culture    | \$ 5,158      | 3              |

Source: BCBusiness Top 100 2018

# Access to Risk Capital

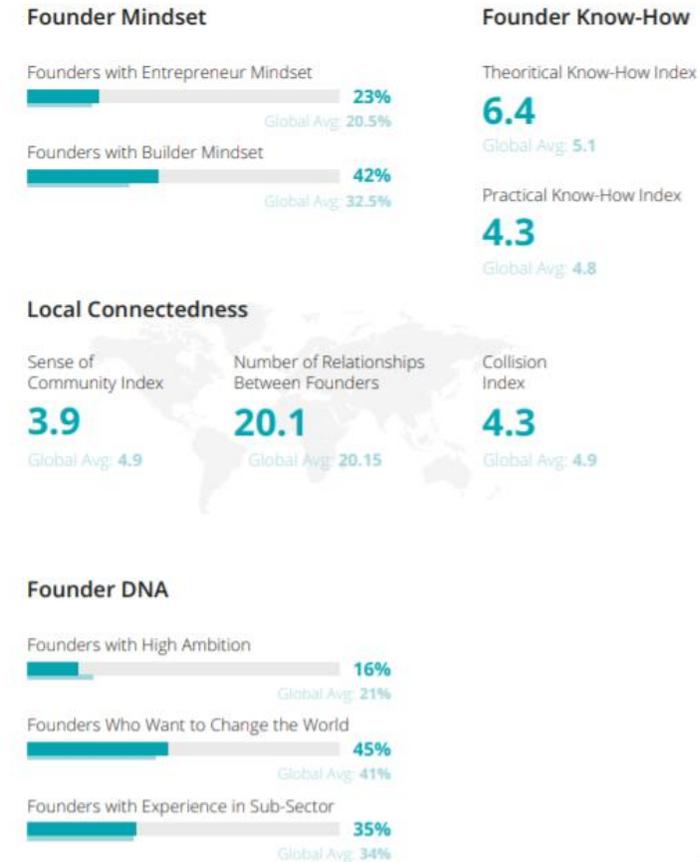
- BC companies received **\$646 M** in venture capital funding through **91 deals**, an average of **\$7.1 M/deal**, in 2017
  - Vancouver had 77 deals and \$513 M in VC investment
  - 15% of all VC deals in Canada were in BC
  - In comparison, 70% of all VC deals were in Ontario and Quebec
  - The value and number of VC deals in BC increased 28% and 50%, respectively, since 2016
- Most of Canada's venture capital deals in 2017 are in the ICT, life sciences, and cleantech field
  - The top 2 BC deals in 2017 were with ICT companies
- In 2017, BC experienced **55 private equity deals**, valued at **\$2.9 B**, an average of **\$53 M/deal**
  - Vancouver had 33 deals and \$2.9 B in PE
  - Under 10% of all PE deal in Canada were in BC, compared to 55% and 18% in Quebec and Ontario, respectively
  - Similar to VC, over 70% of PE deals were in Ontario and Quebec
  - The value of and number PE deals in BC increased 41% and 692%, respectively, since 2016

| Access To Risk Capital                  |  |                           |
|---|--|---------------------------|
| <b>Venture Capital (2017)</b>           |  |                           |
| Canada                                  | Invested: \$3.5 B                                    | (+11% from 2016)          |
|   | Deals: 592   | (+10% from 2016)          |
| Top Canadian Sectors                    |  |                           |
|   | ICT  | \$2,498 M (375 deals)     |
|   | Life Sciences  | \$ 696 M (105 deals)      |
|   | Clean Tech   | \$ 137 M ( 35 deals)      |
| VC deals distribution by province       |  |                           |
|   | Ontario (40%), Quebec (30%), BC (15%)                |                           |
| VC value distribution by province       |  |                           |
|   | Ontario (40%), Quebec (37%), BC (18%)                |                           |
| BC                                      | Invested: \$646 M                                    | (+28% from 2016)          |
|   | Deals: 91  | (+50% from 2016)          |
| Top Deals in BC                         |  |                           |
|   | Vision Critical Communications (ICT)                 | \$76M                     |
|   | Visier Inc (ICT)                                     | \$61M                     |
| Notable BC VC Firms                     |  |                           |
|   | Vanedge Capital                                      | Quark Venture Capital     |
|   | Yaletown Partners Inc                                | Chrysalix Venture Capital |
| <b>Private Equity (2017)</b>            |  |                           |
| Canada                                  | Invested: \$26.3 B                                   | (+91% from 2016)          |
|   | Deals: 603   | (+11% from 2016)          |
| Top Canadian Sectors                    |  |                           |
|   | Consumer & Retail                                    | \$4,355 M ( 78 deals)     |
|   | ICT  | \$2,821 M ( 98 deals)     |
|   | Industrial & Manufacturing                           | \$1,603 M (117 deals)     |
| PE deals distribution by province       |  |                           |
|   | Quebec (55%), Ontario (18%), Alberta (11%), BC (9%)  |                           |
| PE value distribution by province       |  |                           |
|   | Quebec (41%), Ontario (33%), Alberta (12%), BC (11%) |                           |
| BC                                      | Invested: \$2,900 M                                  | (+41% from 2016)          |
|   | Deals: 55  | (+692% from 2016)         |
| Top Deals in BC                         |  |                           |
|   | Teekay Offshore Partners LP (Oil & Gas)              | \$938 M                   |
|   | Old PSG Wind-Down Ltd (Consumer & Retail)            | \$575 M                   |
| <b>Canadian Angel Investment (2017)</b> |  |                           |
| <b>Canada</b>                           | Invested: \$162.6 M                                  | <b>Western Canada</b>     |
|   | Deals: 505   | Invested: \$16.13 M       |
|   |  | Deals: 122                |
|   | # of Angel Investors in BC                           |                           |
|   | 296 investing in 2,127 companies                     |                           |

# Global Startup Ecosystem Rankings 2017

| Hub                  | Performance | Funding   | Market Research | Talent    | Startup Experience |
|----------------------|-------------|-----------|-----------------|-----------|--------------------|
| 1. Silicon Valley    | 1           | 1         | 1               | 2         | 1                  |
| 2. New York City     | 3           | 2         | 3               | 7         | 4                  |
| 3. London            | 4           | 4         | 2               | 10        | 5                  |
| 4. Beijing           | 2           | 5         | 19              | 8         | 2                  |
| 5. Boston            | 6           | 6         | 12              | 4         | 3                  |
| 6. Tel Aviv          | 9           | 8         | 4               | 11        | 7                  |
| 14. Stockholm        | 17          | 20        | 8               | 18        | 12                 |
| <b>15. Vancouver</b> | <b>19</b>   | <b>19</b> | <b>7</b>        | <b>15</b> | <b>15</b>          |
| 16. Toronto          | 18          | 12        | 5               | 20        | 18                 |
| 17. Sydney           | 20          | 10        | 13              | 12        | 17                 |
| 18. Chicago          | 13          | 15        | 20              | 13        | 14                 |
| 19. Amsterdam        | 10          | 17        | 17              | 19        | 16                 |
| 20. Bangalore        | 11          | 18        | 16              | 17        | 19                 |

Source: Global Startup Ecosystem Report 2017, 2018, *Startup Genome*



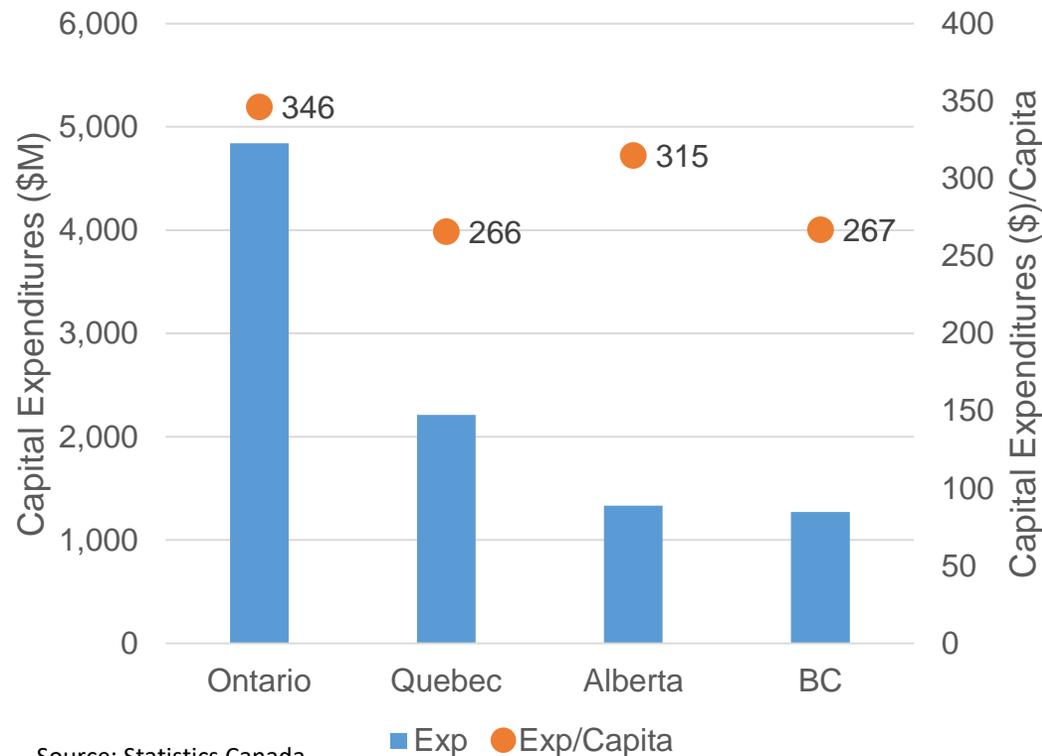
Source: Global Startup Ecosystem Report 2018, *Startup Genome*

- Startup Genome produces an annual report that ranks startup ecosystems around the world based on a variety of metrics, including performance, funding, market research, talent, and startup experience
- Vancouver was part of the top 20 startup ecosystems in the Global Startup Ecosystem Report 2017 edition, ranked at **number 15**. And it was the **top performing ecosystem in Canada – just ahead of Toronto**

# Machinery & Equipment Capital Expenditures

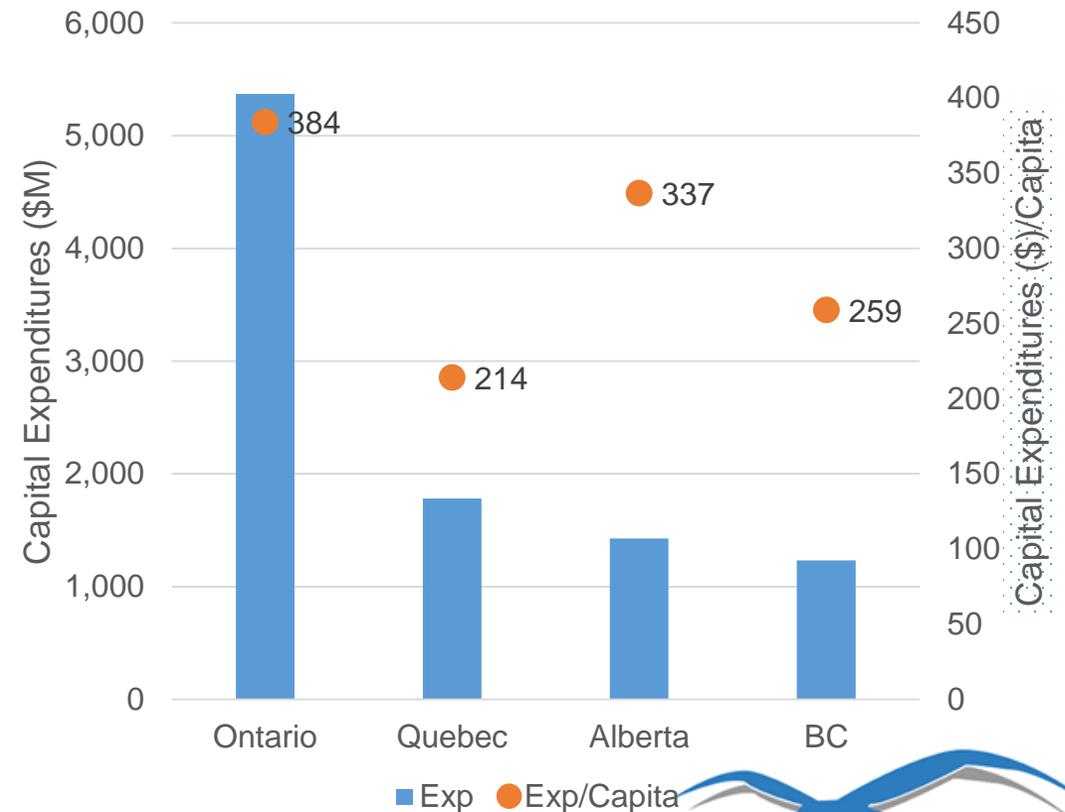
- BC spends relatively less than Ontario, Quebec, and Alberta on Computers, Office Equipment, and Software
- On a per capita basis, BC spends **\$267 per capita** on computers and office equipment, higher than Alberta but less than Ontario and Quebec
- On software, BC spends **\$259 per capita**, which is higher than Quebec, but lower than Ontario and Alberta

Computers and Office Equipment, excl. software



Source: Statistics Canada

Software



# 2018 TSX Venture 50

| Sector                   | # of BC Companies |
|--------------------------|-------------------|
| Clean Technologies       | 4                 |
| Diversified Industries   | 5                 |
| Energy & Energy Services | 4                 |
| Mining                   | 9                 |
| Technology               | 5                 |
| <b>Total</b>             | <b>28</b>         |

Venture 50 is a list of the top performers on the TSX Venture Exchange based on 3 criteria:

1. Market Capitalization Growth
2. Share Price Appreciation
3. Trading Volume Amount

**BC-based companies constitute over 50% of the ranking, with a strong performance in the mining sector**

## Notable BC Companies on the List

### Clean Technologies

Emerald Health Therapeutics, Inc.  
LexaGene Holdings Inc.  
Aurora Solar Technologies Inc.

### Diversified Industries

Mission Ready Services Inc.  
Hempco Food and Fiber Inc.  
Uniserve Communications Corporation

### Energy & Energy Services

GEN III Oil Corporation  
Molori Energy Inc.  
Renaissance Oil Corp.

### Mining

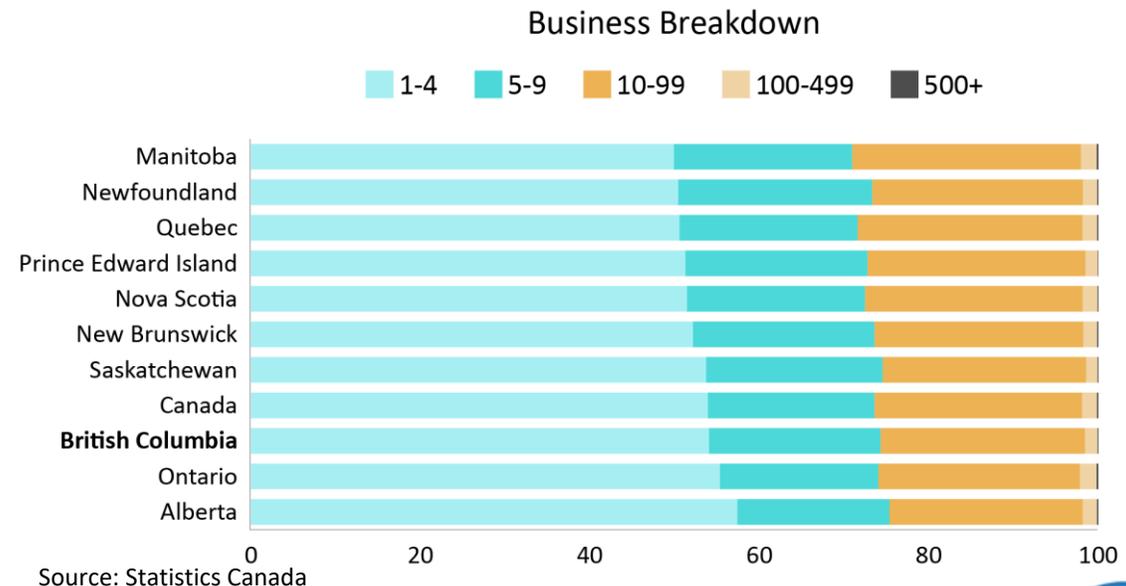
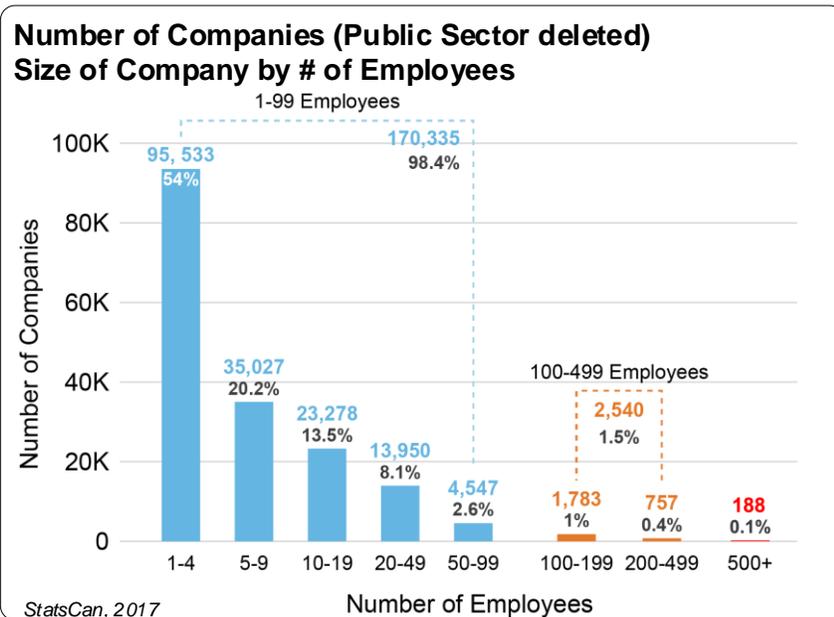
Garibaldi Resources Corp.  
Novo Resources Corp.  
Metallis Resources Inc.

### Technology

Reliq Health Technologies Inc.  
BTL Group Ltd.  
NexOptic Technology Corp.

# BC Startups

- According to Statistics Canada, **54.05%** of companies in BC are micro-firms (firms with 1-4 employees), which may indicate a supportive startup culture (as concluded by the global startup ecosystem ranking)
  - However, this trend is not specific to BC, as a vast majority of Canadian businesses are also micro-firms or SMEs, particularly in Alberta and BC
- **10%**, or **188**, of Canada's large enterprises (firms with 500+ employees) reside in BC and comprise **0.11%** of all businesses in BC
  - In comparison, over 45% of Canada's large enterprises are based in Ontario, comprising 0.21% of all Ontario businesses
- BC has been successful in the creation of startups, but is there adequate support to help some of these companies to scale-up?



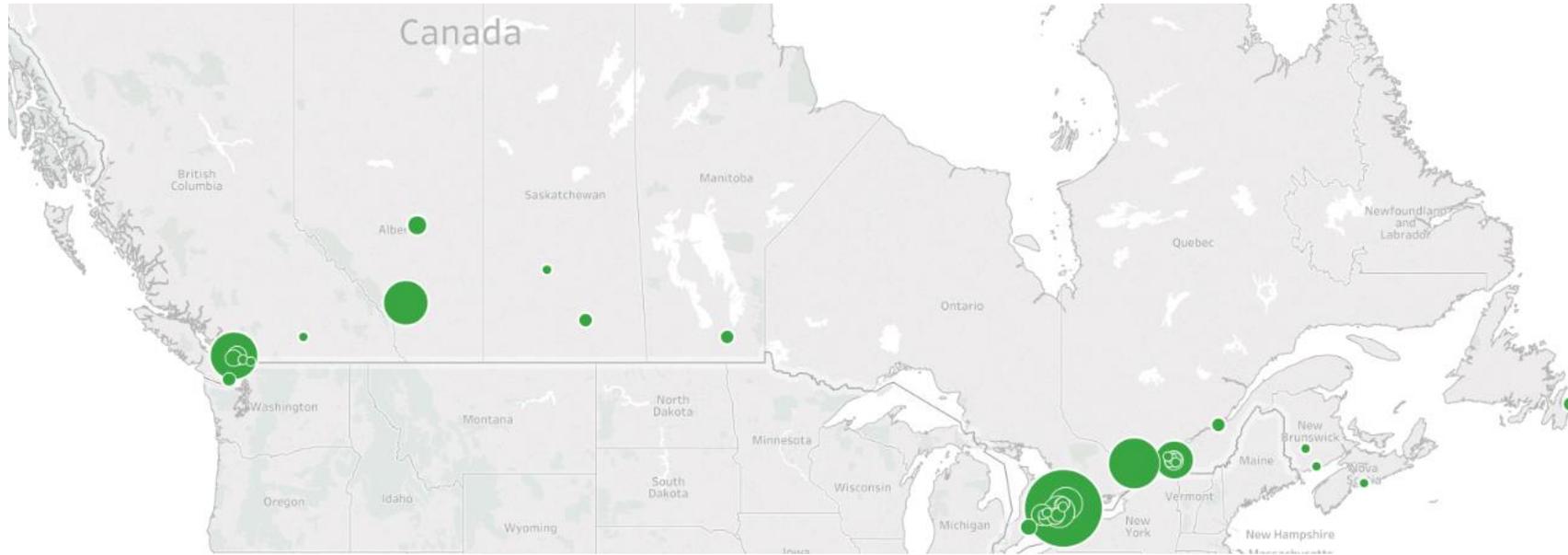
# BC Startups

- The Narwhal List 2018: Ranking by the University of Toronto Impact Centre that ranks Canada's fastest scaling private startup companies in the tech and health sciences sector
- **9** out of 52 of the top Canadian tech startups are based in BC, with **8** in Vancouver
  - 36 are based in Ontario and 7 in Quebec
- **1** out of 15 of the top Canadian health science startups is based in BC
  - 8 are based in Quebec, 5 in Ontario, and 1 in Alberta

| Company                        | Founded | Total Funding (\$M) | Sector                       |
|--------------------------------|---------|---------------------|------------------------------|
| Hootsuite                      | 2008    | 230                 | Internet                     |
| CryptoKitties                  | 2017    | 12                  | Internet                     |
| Visier                         | 2010    | 92                  | Internet                     |
| D-Wave Systems                 | 1999    | 209.4               | Comp Hardware                |
| Kindred Systems                | 2014    | 43                  | Industrial                   |
| Arctic Blockchain              | 2018    | 8.2                 | Computer Hardware & Services |
| Mojio                          | 2012    | 41                  | Mobile & Tel                 |
| 1QBit Information Technologies | 2012    | 35                  | Software                     |
| INSTANT Financial              | 2015    | 15.3                | Internet                     |
| Canary Medical                 | 2013    | 26                  | Healthcare                   |

Source: The University of Toronto Impact Centre, *The Narwhal List*

# Branham Top 250 CDN ICT Companies

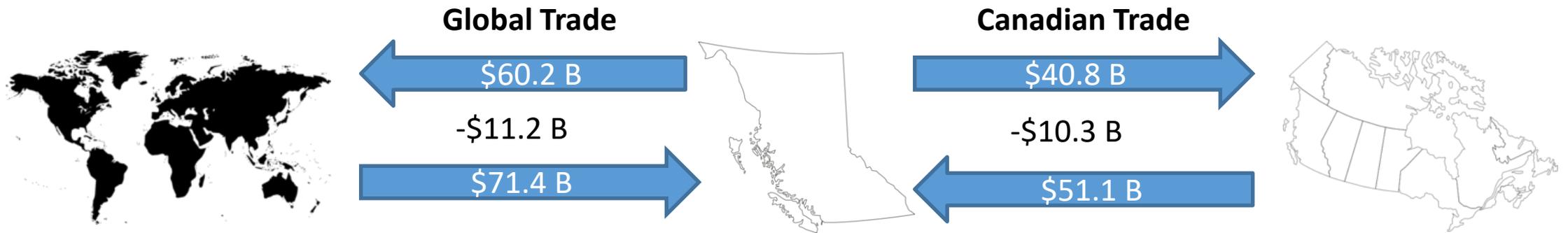


- Clusters of major ICT companies in Vancouver, Calgary, Toronto, Ottawa, and Montreal

# Trade Diversity

# Trade

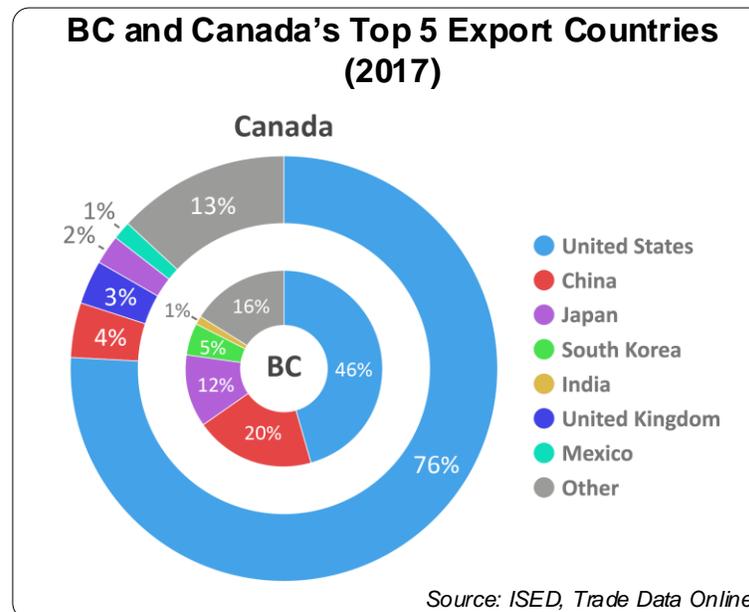
- BC exported **\$100.9 B** worth of goods and services in 2016, while importing **\$122.4 B**
- BC is an import-reliant province, with a negative trade balance of **-\$21.5 B**



Source: Statistics Canada

# Diversification in Trade

- BC's top 5 export countries:
  - US, China, Japan, South Korea, India
- BC export markets are more diversified than Canada's, with exports to the U.S. constituting only 46% of all exports
  - In comparison, Canadian exports to the U.S. constitute 76% of all exports
- Given the turbulent nature of the negotiation of the USMCA and emerging trade conflicts, BC may be in a prime position to lead Canada into new and diversified trade markets, particularly in Asia



# FDI into BC (includes greenfield and expansion projects)

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

- 2018 has seen the highest amount of FDI expenditures (**\$1,556 M**) and jobs created (**3,553**) in BC in the past 5 years
- Since 2013, the software & IT services industry has seen the largest share of FDI investments totalling **\$3,386 M**
  - In comparison, the second largest industry with FDI expenditures, communications, received only \$727 M
- Since 2013, most of BC's FDI investments came from the **U.S.**, with **85** projects and **\$4.5 B** invested
  - China and UK come second, each with investments in 12 BC projects

| Top 10 FDI Industries in BC (2013–18) |          |               |
|---------------------------------------|----------|---------------|
| Sector                                | Projects | Capex (US \$) |
| Software & IT Services                | 38       | 3,386 M       |
| Business Services                     | 23       | 128 M         |
| Transportation                        | 17       | 421 M         |
| Communications                        | 14       | 727 M         |
| Real Estate                           | 11       | 485 M         |
| Financial Services                    | 9        | 103 M         |
| Industrial Machinery, Eq.             | 5        | 34 M          |
| Coal, Oil and Natural Gas             | 3        | 185 M         |
| Consumer Electronics                  | 3        | 13 M          |
| Consumer Products                     | 3        | 27 M          |

| Top 10 FDI Source Countries in BC (2013–18) |          |               |
|---|----------|---------------|
| Country                                     | Projects | Capex (US \$) |
| US  | 85       | 4,469 M       |
| China                                       | 12       | 302 M         |
| UK  | 12       | 472 M         |
| Japan                                       | 6        | 308 M         |
| Germany                                     | 5        | 56 M          |
| Australia                                   | 3        | 58 M          |
| India                                       | 3        | 146 M         |
| Switzerland                                 | 3        | 81 M          |
| France                                      | 2        | 44 M          |
| Hong Kong                                   | 2        | 54 M          |

Source: fDi Markets

## International Students by Country

- BC has 45,000 students studying in the province's higher education system
- Of these, Chinese students constitute the highest percentage (**38.6%**)
  - India ranks second with 5,500 students (12.3% of total)
- The top 5 countries for international students are also BC's top 5 export destinations, particularly in Asia

### International Students by Country (2015/16)

| Country       | Number | Percentage |
|---------------|--------|------------|
| China         | 17.4 K | 38.6%      |
| India         | 5.5 K  | 12.3%      |
| U.S.          | 2.5 K  | 5.6%       |
| S. Korea      | 1.7 K  | 3.7%       |
| Japan         | 1.4 K  | 3.1%       |
| Outside Top 5 | 16.6 K | 36.8%      |

- This correlation between international students and export markets may indicate a cultural strength to be further developed

Source: Statistics Canada

# Observations

## Summary of Observations

1. Stronger R&D sectors in digital technology and life sciences
2. Challenge in scaling many small companies to compete internationally (including weak investments in business R&D)
3. R&D centralization around the lower mainland, especially in Vancouver
4. Relatively limited provincial government support for R&D compared to other provinces (e.g. Quebec)
5. A strength in diversified global export markets

# Thank you!

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