A New Partnership with the EU

CETA and Digital FDI
Opportunities for Canada

ICTC CTIC

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Research by

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Preface

The Information and Communications Technology Council (ICTC) is a national centre for expertise for the digital economy. With over 25 years of experience delivering evidence-based research, practical policy advice and innovative capacity building programs, ICTC's goal is to strengthen Canada's digital advantage in a global economy.

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Abstract

Foreign Direct Investment (FDI) has and will continue to play a significant role in the Canadian economy. In 2018, FDI accounted for 52% of total gross domestic product (GDP) in Canada—a figure that was among the highest in the OECD. Although FDI to Canada was traditionally directed, in large part, toward sectors like oil and gas and primarily came from the United States, global oil crises coupled with escalating trade tensions highlight the need for diversification. Through primary research in the form of interviews with businesses across the European Union, this study explores Canada's opportunity for attracting FDI from the EU, via high-growth sectors such as Information and Communications Technologies (ICT). This study investigates the following: European technological priority areas, including digital industries, clean technologies, life sciences and others; local market needs in countries such as Germany, the Netherlands, Spain and others; the viability of the Canada-European Union Comprehensive Economic and Trade Agreement (CETA) as a mechanism for investment; and critical sentiments (both positive and negative) regarding the willingness of European businesses to invest in Canada. The report concludes with a set of tactical and timely recommendations for shaping a robust FDI strategy, based on the research findings. While not intended to be representative of the entire European Union (EU), this study showcases key insights for Canadian policymakers, economic development agencies, and other stakeholders interested in attracting FDI from technology businesses in the EU.

Glossary of Terms

2008 global recession – the general economic decline (recession) observed in world markets during 2008. The International Monetary Fund (IMF) concluded this was the most severe economic and financial meltdown since the Great Depression and is often regarded as the second worst downturn of all time.

CETA - Comprehensive Economic and Trade Agreement.

FDI - Foreign Direct Investment is a category of cross-border investment in which an investor resident in one economy establishes a lasting interest in, or a significant degree of influence over, an enterprise resident in another economy.

FDI inflow - Foreign Direct Investment inflow is a record of the value of cross-border transactions related to direct investment during a given period, usually a quarter or full year. Financial flows consist of equity transactions, reinvestment of earnings, and inter-company debt transactions.

FDI stock - Foreign Direct Investment stocks measure the total level of direct investment at a given point in time, usually the end of a quarter or full year.

FDI push levers - the factors that motivate companies to invest.

FDI pull levers - the factors that do not motivate companies to invest.

EU members states – The European Union consists of 28 member states, however, the United Kingdom (one of the 28) was excluded from the analyses in this report due to its recent decision to leave the EU.

ICT sector – refers to the Information and Communications Technologies sector, which includes a variety of sub-sectors. Manufacturing in this sector focuses on the production of equipment for industry, including computers, audio and video machinery, magnetic and optical media, and other electronic components. The ICT wholesaling subsector is responsible for the purchase and sale of both ICT equipment and services. The ICT software subsector includes the development of systems and network design, software engineering, and data processing; and finally, the telecommunications subsector includes wired and wireless carriers, Internet Service Providers (ISPs), and other program distributers.

Investment Canada Act - the purpose of the Act is to provide for the review of significant investments in Canada by non-Canadians in a manner that encourages investment, economic growth and employment opportunities in Canada. It also provides for the review of investments in Canada by non-Canadians that could be injurious to national security.

KIIs - Key Informant Interviews.

Primary industries – industries such as mining, agriculture, or forestry that are involved in obtaining or providing natural raw materials for conversion into consumer products.

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Executive Summary

Foreign direct investment (FDI) is recognized as a key driver of a country's economic and productivity growth. It can function to encourage the transfer of technology and expertise, contribute to the spread of best practices in corporate governance and legal traditions, and even play a positive role in international trade. FDI-receiving countries benefit immensely from this type of investment, and FDI-sending countries use it to expand their influence in international markets and promote their products and services.

FDI plays a significant role in the Canadian economy. In 2018, Canada's inward FDI stock accounted for 52% of total GDP. While slightly lower than the EU average (55%), this was 24% higher than the OECD average and 23% higher than that of the G20. Although historically, FDI in Canada was largely geared toward primary sectors like oil and gas, in 2018, manufacturing became the most significant sector for foreign direct investment. Notably, these investments were directed at lean manufacturing, clean technologies, as well as chemical and food manufacturing—all areas essential to high-technology sectors like biotech and food tech.

This expanding presence of technology across all sectors of the global economy coupled with mounting trade tensions makes it essential for Canada to focus on attracting high-quality FDI in sectors like ICT, and from jurisdictions such as the European Union. One needs to look no further than the 130% growth in ICT-centred FDI from the EU over the last five years to understand that these businesses have their eyes on Canada. Via interviews with 37 leaders of technology companies in the EU, this study sheds light on how we, as a nation, can leverage and strengthen this critical relationship to drive FDI.

A key milestone was the recent ratification of the CETA. CETA eliminates approximately 98% of duties on exports between Canada and the EU, and contains provisions that support cross-border investment. Although the businesses interviewed in this study were aware of CETA, the majority were not clear about how it could benefit them as investors. In addition to suggesting that Canada could make this advantage clearer to EU businesses, a strong interest was expressed in CETA's labour mobility provision. Since all interviewees were with multinational companies, the majority were eager to learn about how the labour provision could help them expand or start operations in Canada, including facilitating the transfer of expats or other employees.

So, what drives European technology businesses to invest? More importantly, what drives them to invest in Canada?

Posing these questions to companies across the EU, the vast majority identified Canada as a favourable destination for investment. In fact, Canada was awarded an "investment attractiveness score" nearly identical to that of the US, and far above Mexico. Among the top motivations for investment in Canada were the following: high consumer purchasing power, availability of skilled talent, trade openness, and proximity to the US and Latin American markets. Other important factors included (relatively) low corporate tax rates, a strong democracy and stable economy, and the cultural similarity to the EU. A deeper dive revealed an exceptionally positive outlook on Canada with respect to EU companies in the digital industries and life sciences sectors. These businesses identified Canada as an especially attractive destination for investment because of its strong digital-health ecosystem, extensive investments in Research and Development (R&D), and highly skilled talent base. The level of enthusiasm was slightly duller among companies in the clean tech space, and the least pronounced among businesses in the advanced manufacturing sector.

While Canada's positive features were recognized, notable barriers to investment were also expressed. These include the high cost of living in many attractive Canadian regions for FDI and rigorous FDI regulatory restrictions, notably in sectors such as telecommunications. However, by far, the most substantial barrier for FDI is Canada's lack of visibility. Interviewees admitted to a significant dearth of knowledge related to investment-attraction levers, incentives, and business activity in Canada. For example, while Canada's $950-million Innovation Superclusters Initiative is well known in the country, very few of the companies interviewed had ever heard of the Superclusters initiative, let alone the five focus areas. In fact, only three out of the 37 companies interviewed were somewhat familiar with the initiative, and only one of the three was aware of all five areas. With one business quoting the Dutch proverb "unknown is unloved", interviewees stressed the importance for Canada to tell its stories, build its brand, and share notable breakthroughs globally.

The current escalation of trade tensions and growing geopolitical conflicts have heightened Canada's need to shift gears and diversify its FDI-attraction strategy. Much of this journey will require the development of a comprehensive and targeted strategy that addresses the needs of European technology businesses. This journey will require forging new partnerships, strengthening existing ties, and effectively addressing roadblocks, all the while telling the world of our success stories and highlighting our strengths.

Introduction

With a population of just over 37 million,[1] Canada is a large country with a small population and a relatively small national market. Although Canada's annual GDP totalled slightly more than $1.8 Trillion (USD) in 2019 (making Canada the 10th largest economy in the world),[2] the EU[3] currently represents one of the largest economies globally, with a GDP of $18 Trillion (USD).[4] This economic power surpasses China and almost rivals the US. Additionally, with a population of nearly 450 million,[5] the EU represents one of the largest markets in the world, and one whose industrial reach extends far beyond its borders. A favourable trade relationship[6] between Canada and the EU represents not only an enormous opportunity for Canadian exporters but also a new opportunity to attract investment.

This project focuses on identifying and understanding foreign direct investment opportunities for EU technology-based companies in Canada. It includes an in-depth analysis of digital priority areas in the EU, push and pull levers of EU technology-based businesses capable of FDI, specific investment opportunities from targeted EU member states according to their digital priorities and strengths, and "good fit" Canadian jurisdictions for FDI.

This research is based on an analysis of primary and secondary data, including a total of 37 key informant interviews (KIIs) completed with senior leaders at European technology-based businesses. These interviews and complementing secondary data analysis highlight recent trends related FDI inflow to Canada from the EU, EU digital priority areas and sub-sectors, and showcase motivators and challenges to investing in Canada.

[1]Canada Population, Live (Worldometers, 2019). https://www.worldometers.info/world-population/canada-population/
[2]The world's top 10 largest economies (Focus Economics, 2019). https://www.focus-economics.com/blog/the-largest-economies-in-the-world
[3]For the purpose of this study, the "EU" will include all current EU member-states other than the United Kingdom.
[4]Real GDP growth (IMF, 2019). https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/EU/EURO/EUQ
[5]EU population (513 M), sans UK population (66 M).
[6]CETA, to be described below.

CETA: A New Opportunity for Canada

The concept for a free trade agreement between Canada and the European Union began to take shape in 2007 at the Canada-EU summit in Berlin. Leaders from both delegations agreed to conduct a joint study to examine the costs and benefits of establishing closer economic ties. This study became the framework that launched formal negotiations a year later. After several rounds of negotiations and consultations, the EU and Canada announced a consensus in October 2013 and, three years later, the official signing of the CETA took place. In the fall of 2017,[7] CETA came into force.

Considered as one of Canada's most progressive and ambitious trade initiatives, CETA eliminates duties on approximately 98% of the trade between Canada and the EU. Prior to the establishment of CETA, only one in four Canadian products exported to the EU was duty-free. CETA provides preferential access for Canadian goods and services to the EU market, and allows Canadian businesses to tap into the EU government procurement market, estimated to be worth in excess of $3 trillion annually.[8] While still in early stages, preliminary indications suggest that the agreement is already generating significant mutual benefits. Chief among these is the increase in trade activity between Canada and the EU over the last year: between October 2017 to September 2018, two-way merchandise trade rose to more than $155 billion. This represented nearly an 8% increase from the twelve-month period preceding CETA.

However, the benefits of CETA do not end with trade. With CETA now in place, there are more opportunities for an increase in cross-border investments between Canada and the European Union. Specifically, EU businesses can benefit from a relaxation of rules for foreign investment in Canada. Under CETA in conjunction with the Investment Canada Act (ICA), the investment threshold that requires EU businesses to undergo a net benefit formal review was raised to $1.5 billion from $354 million.[9] This change reduces the total number of EU investments requiring formal review.

CETA has many positive impacts on European technology businesses planning to invest in Canada. Although more detailed research into the agreement is required to identify specific regulatory attributes, the following is a brief list of benefits for investors under CETA[10]:

- Access to government procurement markets (investors are able to bid on large government contracts);
- Complete tariff elimination on manufacturing goods and IT products (important because EU businesses highlight access to goods and materials as an attractive feature of Canada);
- European ICT service providers receive the same treatment by Canada as their Canadian competitors (except for highly-regulated sectors like telecommunications);
- Enhanced protection of intellectual property (key for growth and IP monetization);
- Enhanced worker mobility, making it easier for highly skilled professionals and businesspeople to work in Canada (including short-term business visitors, investors, intra-company transferees, and professionals and technologists).

[7]EU: Chronology of events and key milestones (Government of Canada, June 20, 2019): https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/ceta-aecg/chronology-chronologie.aspx?lang=eng
[8]EU: Agreement overview (Government of Canada, October 25, 2017): https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/ceta-aecg/overview-apercu.aspx?lang=eng
[9]"The Comprehensive Economic and Trade Agreement: A 2016 update", RBC Economics. http://www.rbc.com/economics/economic-reports/pdf/other-reports/CETA%20update.pdf
[10]"CETA Opportunities and Benefits for the EU ICT Industry", EUCCAN https://euccan.com/eu-ict-industry/

SNAPSHOT

Canadian Supercluster Activities

The Government of Canada's $950 million Innovation Superclusters Initiative is projected to create in excess of 50,000 jobs and contribute more than $50 billion in GDP to Canada's economy over a 10-year period. The five superclusters together represent more than 450 businesses, 60 post-secondary institutions and another 180 participants in sectors covering approximately 78% of the Canadian economy.[11] A total of 14 Supercluster project initiatives have been announced, which has attracted almost $70 million in combined government and private-sector funding.[12] Although this initiative is fairly well known in Canada, interviews with EU technology businesses suggest that Canada's current international marketing activities related to the superclusters fall short. Specifically, very few interviewees were aware of the superclusters at all, and only one was able to name all five. Although findings on this and related topics are discussed later in the report, the following provides an overview of the superclusters and their current activities.

DIGITAL TECHNOLOGY SUPERCLUSTER

OCEAN SUPERCLUSTER

PROTEIN INDUSTRIES SUPERCLUSTER

NEXT GENERATION MANUFACTURING SUPERCLUSTER

AI-POWERED SUPPLY CHAINS SUPERCLUSTER (SCALE.AI)

Digital Technology Supercluster: Centred in British Columbia, the entities involved in this supercluster are engaged in virtual, mixed and augmented reality, big data analytics, quantum and cloud computing, as well as machine learning. These digital technologies are geared toward improving service delivery in natural resources, precision health and manufacturing.[13] The Government of Canada announced in November 2018 that it expects to invest up to $153 million in this supercluster, with total available funding of more than $360 million. This funding has allowed the cluster to advance various project initiatives.[14] Earlier this year, the cluster announced its first batch of projects focused on the application of tele-imaging and artificial intelligence to reduce wait times for skin cancer patients.[15]

[11]Digital Technology Supercluster kicks into high gear: https://www.canada.ca/en/innovation-science-economic-development/news/2018/11/digital-technology-supercluster-kicks-into-high-gear.html
[12]NGen Supercluster starts with project to scale the production of treatments for cancers and rare diseases: https://www.canada.ca/en/innovation-science-economic-development/news/2019/08/ngen-supercluster-starts-with-project-to-scale-the-production-of-treatments-for-cancers-and-rare-diseases.html
[13]Digital Technology Supercluster: http://www.ic.gc.ca/eic/site/093.nsf/eng/00011.html
[14]Digital Technology Supercluster kicks into high gear: https://www.canada.ca/en/innovation-science-economic-development/news/2018/11/digital-technology-supercluster-kicks-into-high-gear.html
[15]Digital Technology Supercluster will help solve pressing challenges in health care, natural resources and the industrial sector: https://www.canada.ca/en/innovation-science-economic-development/news/2019/03/digital-technology-supercluster-will-help-solve-pressing-challenges-in-health-care-natural-resources-and-the-industrial-sector.html

Ocean Supercluster: Centred on Atlantic Canada, activities in this supercluster are geared to harnessing emerging technologies such as autonomous marine vehicles, marine engineering and biotechnologies to strengthen Canada's ocean sector. This includes industries such as marine renewable energy, fisheries, aquaculture, oil and gas, defence, shipbuilding, and transportation.[16] In June 2019, the Ocean Supercluster announced the conditional approval of its first project. The project will be led by a Saint John-based marine technology company in collaboration with a number of other cluster partners for the development of an underwater technology service hub that will provide high-resolution mapping of the ocean floor.[17]

Protein Industries Supercluster: Centred in the Prairies, firms within this supercluster are actively engaged in the application of a number of agri-food technologies that are used to produce a variety of plant protein and plant-based coproducts across the agriculture and food-production sectors.[18] Earlier in 2019, the Protein Supercluster launched its first project, which is geared to the application of advanced technologies for improving oil and protein ingredient values in canola and hemp crops. The project was carried out by a Calgary-based oilseed ingredient manufacturer in collaboration with other cluster members. The project, funded by a joint public-private $8 million investment, will contribute to the commercialization of new plant-based ingredient products for the food ingredient, livestock feed and aquaculture markets.[19]

Next Generation Manufacturing Supercluster: Centred in Ontario, activities among the entities in this Supercluster are incorporating advanced technologies in product development and process design across the manufacturing sector. Some of these technologies include machine learning, advanced robotics, and 3D printing, among others.[20] Last year, the federal government announced that it will invest $230 million in this Supercluster, which has enabled companies to move forward with projects geared to enhancing capabilities in Canada's manufacturing sector.[21] The manufacturing Supercluster recently announced the approval of its first project, a $4.2 million initiative led by a Toronto-based company. This work will apply advanced manufacturing techniques to develop viral vectors (molecular tools used to deliver genetic material into patients suffering from late-stage cancers or ailments related to rare or inherited genetic disorders).[22]

AI-Powered Supply Chains Supercluster (SCALE.AI): Centred in Quebec, initiatives from the SCALE.AI Supercluster are geared to integrating the manufacturing, transportation, and ICT sectors in creating intelligent supply-chain networks primarily through the application of artificial intelligence and robotics technology.[23] In December 2018, the Federal government and Quebec's provincial government announced that they will invest $230 million and $30 million respectively in the AI-driven cluster.[24] This funding enabled the sector to launch its first set of projects to harness AI for cost savings and process efficiencies across a range of industries, including consumer goods, farming, telecom and shipping.[25]

[16]Ocean Supercluster: http://www.ic.gc.ca/eic/site/093.nsf/eng/00013.html
[17]Ocean Supercluster starts off with project to bring seafloor mapping to industries and researchers: https://www.canada.ca/en/innovation-science-economic-development/news/2019/06/ocean-supercluster-starts-off-with-project-to-bring-seafloor-mapping-to-industries-and-researchers.html
[18]Protein Industries Supercluster: https://www.ic.gc.ca/eic/site/093.nsf/eng/00012.html
[19]Protein Supercluster starts off with first project to boost crop value: https://www.canada.ca/en/innovation-science-economic-development/news/2019/06/protein-supercluster-starts-off-with-first-project-to-boost-crop-value.html
[20]Next Generation Manufacturing Supercluster: https://www.ic.gc.ca/eic/site/093.nsf/eng/00010.html
[21]Next Generation Manufacturing Supercluster kicks into high gear: https://www.canada.ca/en/innovation-science-economic-development/news/2018/11/next-generation-manufacturing-supercluster-kicks-into-high-gear.html
[22]NGen Supercluster starts with project to scale the production of treatments for cancers and rare diseases: https://www.canada.ca/en/innovation-science-economic-development/news/2019/08/ngen-supercluster-starts-with-project-to-scale-the-production-of-treatments-for-cancers-and-rare-diseases.html
[23]AI-Powered Supply Chains Supercluster (SCALE.AI): https://www.ic.gc.ca/eic/site/093.nsf/eng/00009.html
[24]Prime Minister announces investment in artificial intelligence to create over 16,000 jobs for Canadians: https://pm.gc.ca/en/news/news-releases/2018/12/06/prime-minister-announces-investment-artificial-intelligence-create
[25]SCALE.AI starts off with first projects: https://www.canada.ca/en/innovation-science-economic-development/news/2019/06/scaleai-starts-off-with-first-projects.html

SECTION I

Foreign Direct Investment in Canada: A Recent History

In this section: A FDI Inflow B FDI Stock

A
FDI Inflow

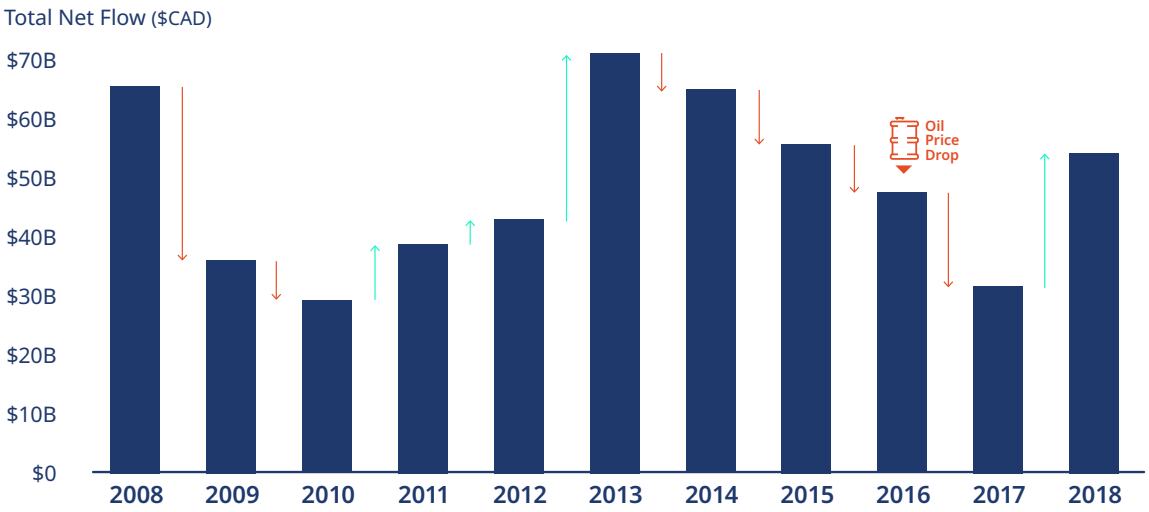
FDI Inflow to Canada: 2008-2018

Historically, the majority of inbound FDI to Canada has been directed toward Canada's traditional primary industries, such as mining and oil and gas extraction. Partly a result of this specific industry focus, FDI inflow to Canada has experienced volatility over the last decade, due to economic fluctuations of commodity prices. Following the 2008 global recession, FDI inflow dropped by 45% (from 2008 to 2009). Then, as oil prices soared between 2010 and 2014, activity picked up again. In July 2013, the value of Western Canadian Select (WCS)—western Canada's primary heavy crude benchmark—climbed to $90 USD per barrel,[26] spurring substantial growth in FDI inflow to a peak of C$71 billion by yearend.

This volatility in FDI inflow to Canada was driven by the strength of a few primary industries. So, as the Alberta economy entered a recession in late 2015, FDI inflow suffered. In February 2016, the WCS price per barrel dropped to $16 USD. It was devastating to the Alberta economy but also contributed to a noticeable downturn of FDI inflow to Canada. In 2017, Canada attracted the lowest level of inbound FDI since 2010.

[26]*Oil Prices: Price per barrel of WCS oil in US dollars (Alberta Government Economic Dashboard, March 23, 2019). https://economicdashboard.alberta.ca/OilPrice*
[27]*Oil Prices: Price per barrel of WCS oil in US dollars (Alberta Government Economic Dashboard, March 23, 2019). https://economicdashboard.alberta.ca/OilPrice*

FDI inward flow to Canada, 2008-2018 *(in billions C$)*



Source: Statistics Canada. Table 36-10-0025-01. Balance of international payments, flows of Canadian direct investment abroad and foreign direct investment in Canada, quarterly

2013 to 2018: Volatility for FDI in Primary Industries and Growing Interest in the ICT Sector

Between 2013 and 2017, FDI into Canada dropped a total of C$39.23 billion, or 55%, as a result, in large part, of the collapse of oil prices.

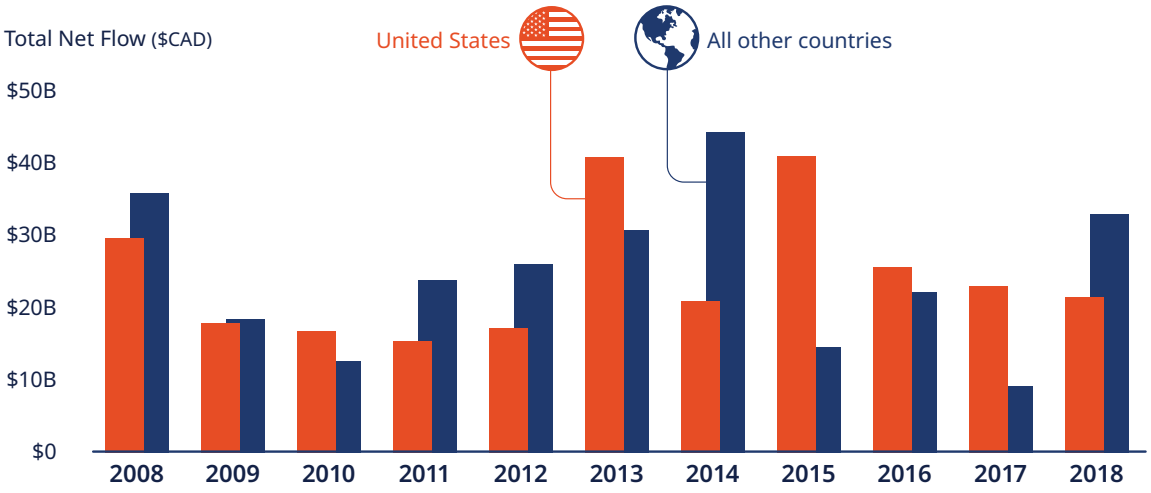
Despite the exodus of capital from Canada's oil and gas sector, however, this period also marked the emerging strength of high-growth technology-based sectors like digital media, advanced manufacturing, and artificial intelligence.

By 2018, FDI inflow to Canada bounced back strongly, up by 70% from 2017. FDI inflow to Canada that year reached nearly C$55 billion.

Our Southern Neighbour: The Role of the US in Canadian FDI Inflow

Historically, the United States has been the main source of FDI to Canada. In 2015, the US share of FDI to Canada totalled 78%, outstripping that of all other countries combined. However, mounting trade tensions and growing US protectionism combined with the downturn in the Alberta oil and gas sector reduced this investment by 40% in 2018. These developments further highlight the need for Canada to craft a diversified and targeted strategy to attract high-quality FDI from other countries or regions.

FDI inflow to Canada by region, 2008-2018 *(in billions C$)*



Source: Statistics Canada. Table 36-10-0025-01. Balance of international payments, flows of Canadian direct investment abroad and foreign direct investment in Canada, quarterly

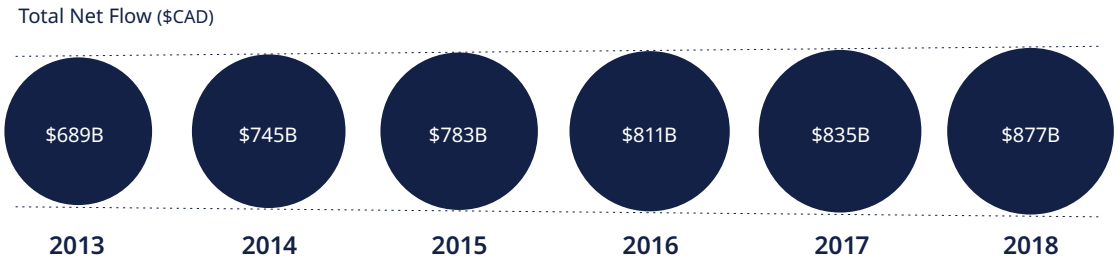
B

FDI Stock

FDI Stock in Canada: 2013-2018

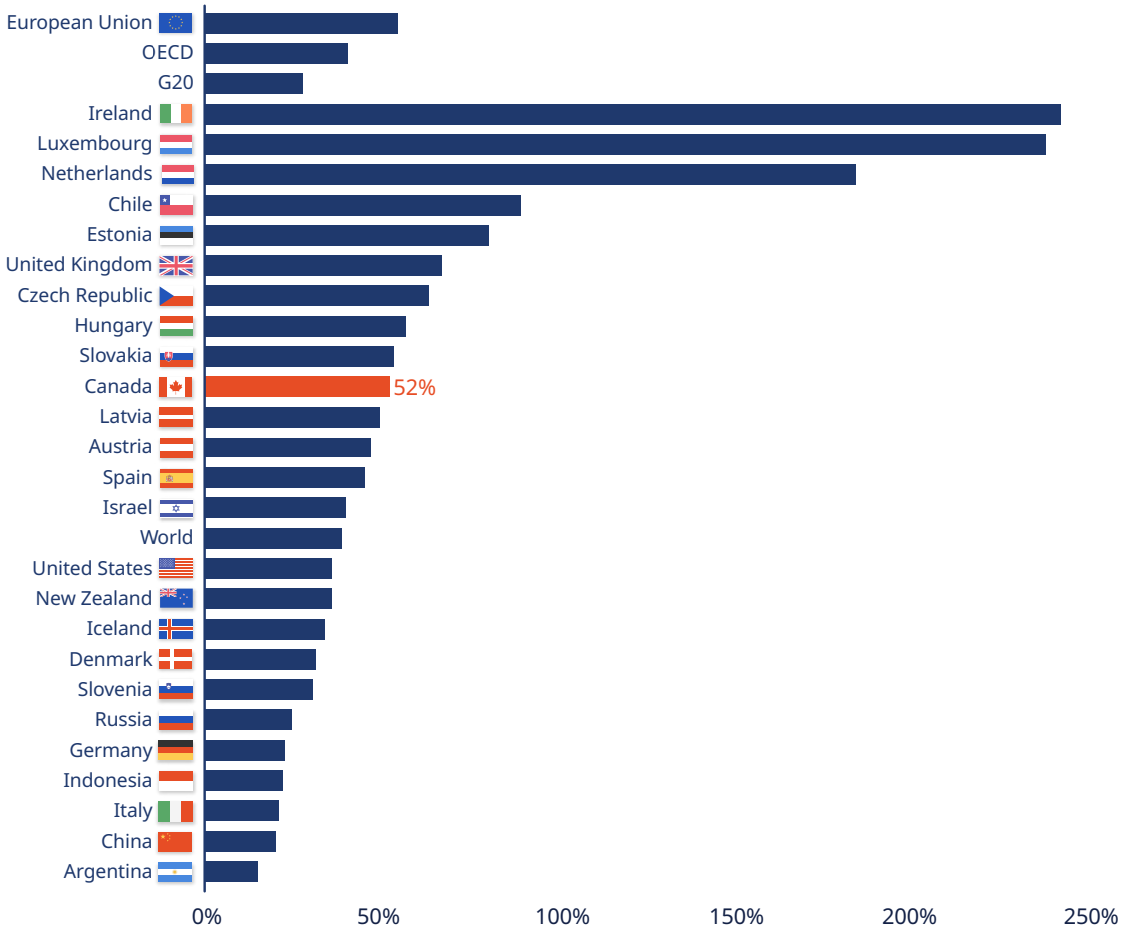
Despite the recent volatility in FDI inflow, FDI stock has been steadily growing in Canada. From 2013 to 2018, Canada's total FDI stock increased by C$188 billion, or 27%. From 2017-2018 alone, FDI stock grew by 5%, representing the largest increase seen in Canada during recent years.

Inflow of FDI stock to Canada, 2013-2018 *(in billions C$)*



Source: Statistics Canada. Table 36-10-0009-01 International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region, annual

FDI Stock as a Percentage of GDP: Zooming in on Canada 2018

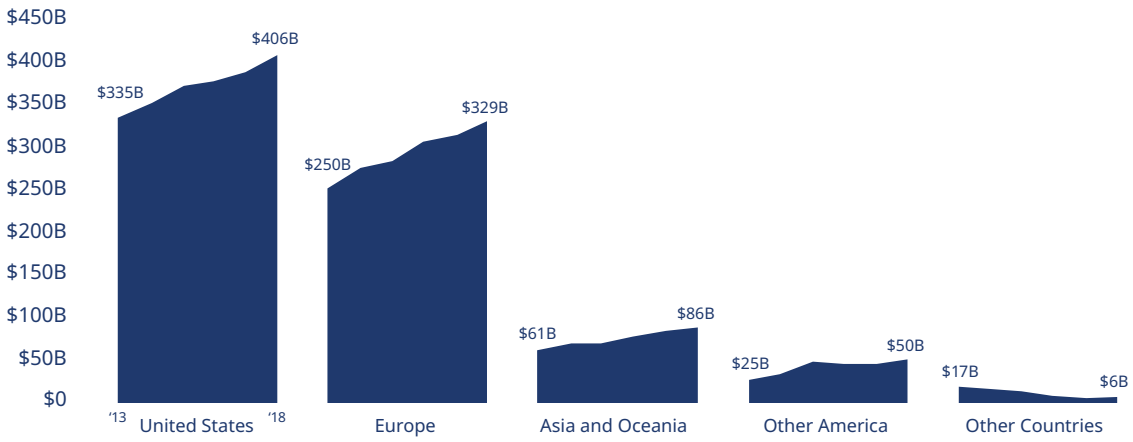


Source: OECD data, 2018.

FDI Stock in Canada by Region

Similar to declines in FDI inflow from the US, total FDI stock from the US has also declined by 2% over the last five years. In 2018, the US accounted for approximately C$406 billion of Canada's total FDI stock. At the same time, European FDI stock in Canada began to climb. Growing by a total of 1.5% since 2013, in 2018, Europe was the second most substantial holder of FDI stock in Canada, accounting for over C$329 billion, or almost 38% of the total.

FDI stock to Canada by investor region, 2013-2018 *(in billions C$)*



Source: Statistics Canada. Table 36-10-0009-01 International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region, annual.

FDI Stock in Canada by Industry

FDI stock in Canada was historically directed toward traditional and often primary industries, such as natural resources exploitation. However, in 2018, the manufacturing sector accounted for the largest increase in FDI stock in Canada, up C$17 billion, or 9%. While not all investment in this sector was geared to advanced manufacturing or other high-technology areas, for the first time in Canadian history, the majority of growth in FDI stock came from a sector other than energy.

Snapshot: Manufacturing and FDI Stock in 2018

In 2018, manufacturing was the most significant sector for foreign direct investment in Canada, accounting for 23% of FDI. The investment in the manufacturing sector was partly directed at lean manufacturing and clean technologies, as well as chemical and food manufacturing, which overlaps significantly with other high-technology sectors like biotech and food tech.

Increasingly, traditional manufacturing processes and procedures are shifting, with more and more businesses relying on technology to generate efficiencies to boost productivity and reduce costs. If leveraged appropriately, sub-sectors like advanced manufacturing may present significant growth potential for Canada.

While many industries contain elements of ICT or digitally-based solutions, the ICT[28] sector specifically attracted between 1.4% and 3% of the total inflow of FDI stock during 2013-2018. Although this figure is significantly lower than the above-noted industries, investment in this sector is on the rise. From 2013 to 2018, FDI stock in the ICT sector increased by C$6.5 billion or 68%; and from 2017 to 2018, FDI stock increased by C$2.8 billion or 21% to reach a total of C$16 billion.

FDI stock in Canada by major industries, 2013-2018

Source: Statistics Canada. Table 36-10-0009-01 International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region, annual

[28]*ICT sector – refers to the Information and Communications Technologies sector that combines the North American Industry Classification System (NAICS) codes 3341, 3342, 3343, 3344, 3346, 4173, 5112, 517, 518, 5415, 8112.*

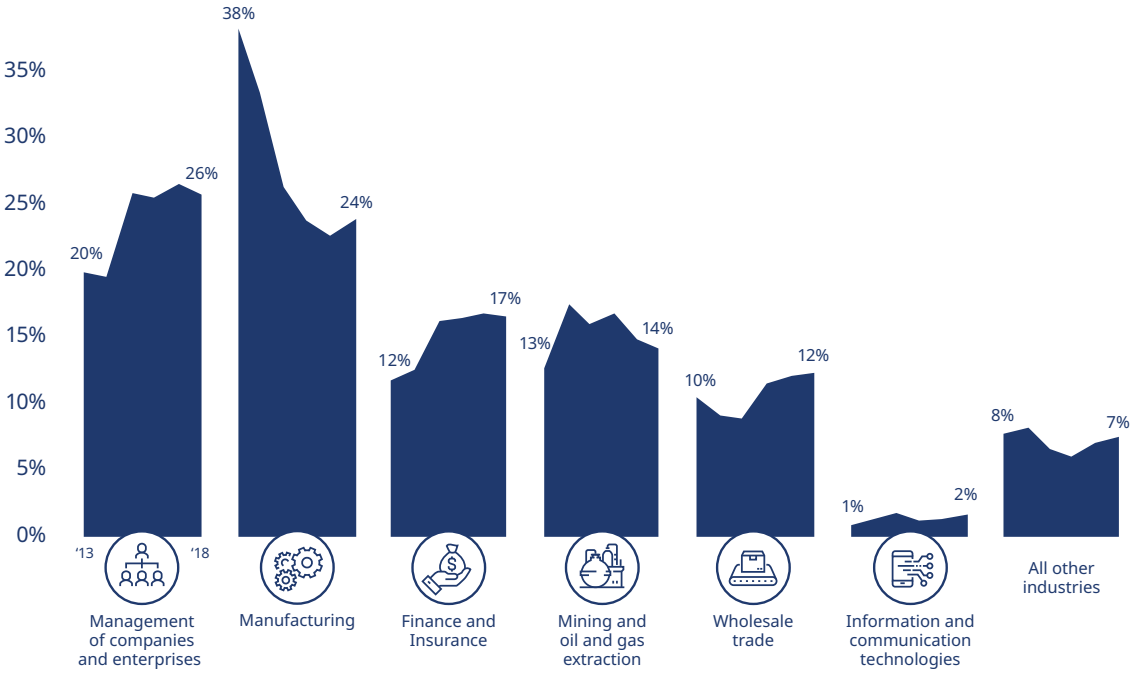
FDI to Canada from Europe

Different countries invest in different industries. In 2018, FDI stock originating from the US was primarily geared to Canada's primary industries, but the majority of FDI in Canada from Europe was directed toward service industries, accounting for 54% of all European FDI in Canada. Three sectors in particular account for more than half of European FDI stock in Canada: management of companies and enterprises (26%); finance and insurance (17%); and wholesale and retail trade (12%).

ICT FDI Stock in Canada from the EU: Growth of 130%

FDI stock in ICT from the EU increased by nearly 130%, from C$2.48 billion in 2013 to C$5.65 billion in 2018. As technology increasingly plays a central role in sectors like manufacturing, energy, agriculture, and others, overall investment into the digital economy is expected to increase.

FDI from Europe in Canada by major industries, 2013-2018



Source: Statistics Canada. Table 36-10-0009-01 International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region, annual

SECTION II

Canada as an Attractive Destination for FDI

Motivations for EU Companies to Invest Abroad

Companies choose to invest abroad for several reasons. One major motivator is to broaden or expand their market reach, i.e. obtain new buyers for goods and services. These market-seeking companies are often attracted by the higher potential returns on investment in a foreign market vs. additional investment at home. Second, resource-seeking companies look for cheaper locations of production (such as natural resources, labour, land and capital). Third, companies seek strategic assets like advanced technology, R&D facilities, supply chains to the global market, distribution networks, and other factors related to business expansion. Lastly, some FDI-producers are efficiency-seeking, including companies that aim to leverage free trade agreements and low or zero tariffs within an economic area.

Top Factors for EU Companies to Invest in Canada

Obtained via primary research[29] in the form of key informant interviews with 37 participants across eight countries in the EU, the top five motivators for EU technology businesses to invest in Canada are the following:

1. High consumer purchasing power
2. Availability of skilled talent
3. Low corporate taxes
4. Strong democracy and stable economy
5. Trade openness and proximity to other markets

Other important features included attractive immigration policies, cultural similarity to Europe, and government investment in R&D.

[29] *See the Research Methodology section in the Appendices*

The following list highlights the positive influences for investment.

Factors that positively influence EU investment to Canada

Top factors for EU Companies that influence the decision to invest in Canada	Number of companies selecting feature as attractive	Percentage of companies selecting feature as attractive
High consumer purchasing power	22	63%
Availability of skilled talent	21	60%
Low corporate taxes (for the time being)	14	40%
Strong democracy and stable political environment	13	37%
Trade openness and proximity to other markets	13	37%
Attractive immigration policies	6	17%
Cultural symbiosis (to Europe)	5	14%
Government investment in R&D	4	11%
Language (English-speaking country)	4	11%
IP regulation and policies (favourable)	3	9%
Quality of infrastructure (high quality)	3	9%
Availability of business support networks (accelerators, incubators)	2	6%
Stable banking system	2	6%
Data protection regulation and policy	1	3%
Diversity (high levels)	1	3%
Education levels (high levels)	1	3%
Quality of life (high quality)	1	3%
Quality of work performed (high quality)	1	3%

Source: ICTC 2019. Note: only 35 of 37 interviewees answered this question.

Among the challenges potentially preventing FDI to Canada from EU technology businesses, the top 3 are the following:

1 Insufficient knowledge or information related to government support and incentive programs;

2 High cost of living in the most attractive cities for FDI;

3 Government regulation and protectionism, particularly in sectors like telecommunications

Other factors highlighted were the small size of the Canadian market and current trade uncertainties, which may impact access to nearby markets like the US.

Negative factors for EU companies that influence the decision not to invest in Canada

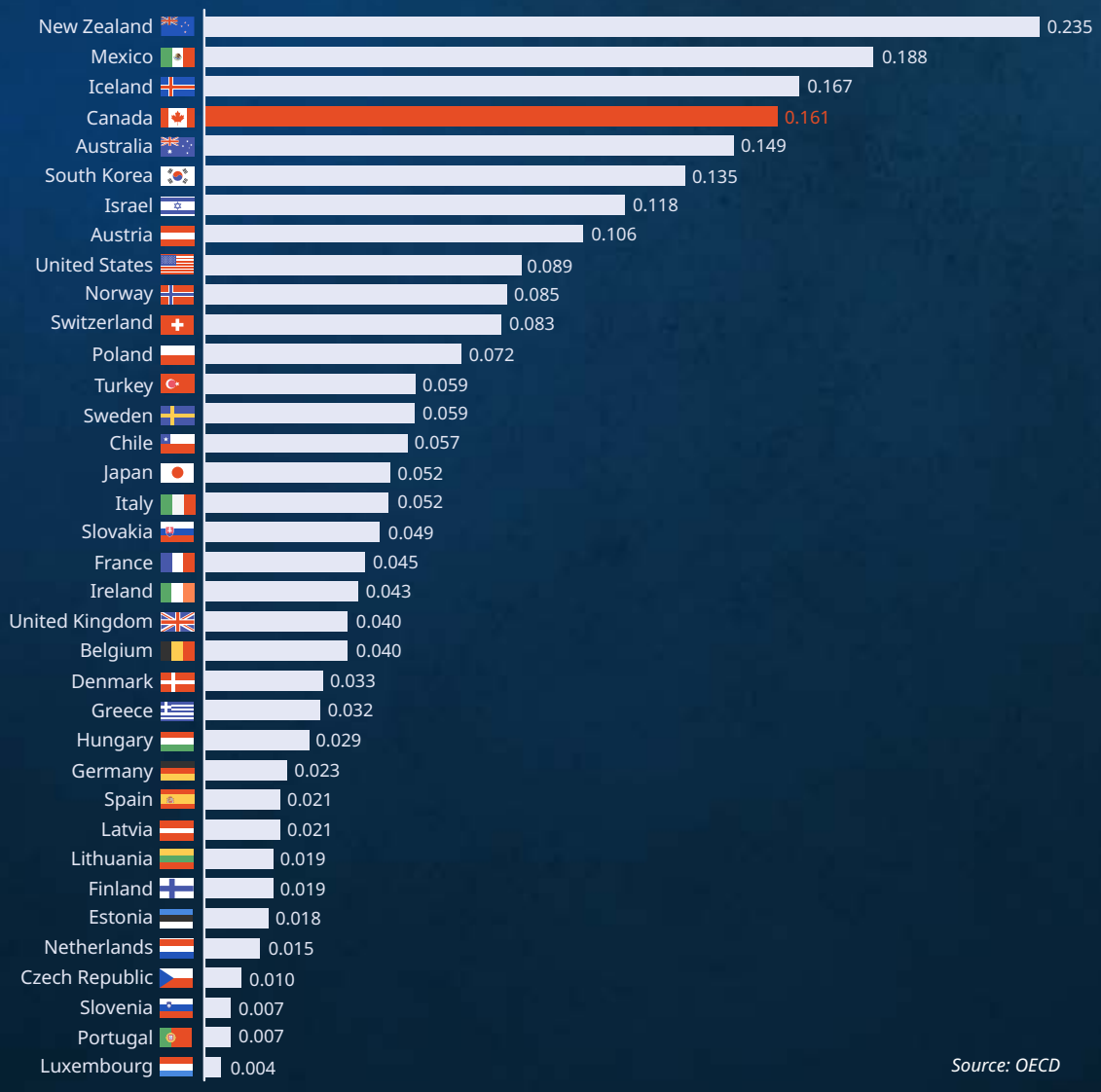
- Insufficient information about government support and incentive programs
- High cost of living in Canada's most economically attractive cities: Toronto, Vancouver
- Government regulation and protectionism, particularly in the telecom sector
- Geographically large country with a small population
- Uncertainty related to CUSMA trade agreement (and impact on relationship with the US)

Source: ICTC 2019.

Regulatory concerns: how high FDI regulatory restrictiveness impacts Canada

Government regulation and protectionism was highlighted by interviewees as one of the top three deterrents for FDI. According to the OECD's Foreign Direct Investment Regulatory Restrictiveness Index (FDI RRI) measuring foreign equity restrictions, screening and prior approval requirements, rules for key personnel, and other restrictions on the operation of foreign enterprises, Canada is the fourth most highly restrictive country in the OECD for FDI. Compare this to European nations leading advancements in the digital economy and investment attraction like Germany, Spain, the Netherlands, or Luxembourg who had among the fewest regulatory restrictions in this area.

FDI Regulatory Restrictiveness Index *All Industries*



Source: OECD

Telling our stories globally, instead of to each other:

Building the Supercluster brand and the importance of sharing key breakthroughs, investments and successes in the Canadian tech ecosystem

Generally, key informants highlighted that a strong innovation and technology ecosystem was a top factor when considering a country as a possible destination for investment or expansion.

However, in the case of government-sponsored incentives, very few (8%) European technology-based companies had ever heard of the Innovation Superclusters or were aware of any clusters of activity in any specific city or region.

Only three companies (ones that already have a presence in Canada) out of 37 interviewed were familiar with the Superclusters; and only one company was able to identify all five Superclusters.

As a result, the majority of interviewees specifically highlighted that Canada could benefit from targeted marketing to make these activities and incentives more well-known internationally.

The importance of clear information on government-sponsored support and incentives for FDI

Overall, key informants indicated that government-supported FDI support and incentives are highly important factors when considering a country as a possible destination for investment or expansion.

However, in the case of Canada, many EU companies (more than 90%) were either not at all aware of such incentives or had only a vague knowledge about them. As a result, their exposure to and interest in Canada tended to be low to medium.

Only two companies (that already have a presence in Canada) were familiar with key Canadian incentive programs that aim to attract and sustain FDI.

Benefits of CETA remain unclear, but interest is strong in worker mobility

A significant number of key informants identified trade openness, relationships and favorable trade agreements as one of the top factors for investment.

However, according to the companies interviewed in this study, many claim not to "pay [much] attention" to CETA at the current time, or are unaware of how they can take advantage of [CETA]. While they were familiar with the agreement, most stated that they did not have enough knowledge of how CETA can benefit them in general, let alone in the investment process.

Of the companies interviewed, six take advantage of the elimination of duties on imports; five use the access government procurement markets and investment provisions benefit; and four reported using the labour mobility provisions benefit.

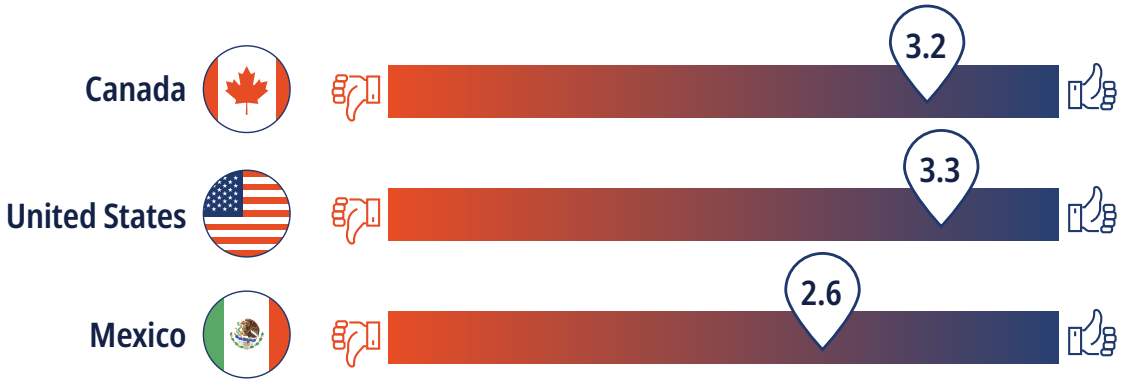
Companies were, by far, the least familiar with and most interested in CETA's labour mobility provisions. Since interviewees were all multi-national with operations (and employees/expats) in several countries, many expressed strong interest in receiving more information about this provision and learning about how it can assist them in expanding or starting operations in Canada.

Perceptions of Canada as a destination for investment vs. other jurisdictions

In order to assess the relative "attractiveness" of Canada in comparison to other markets, the businesses interviewed ranked their perceptions of Canada, the USA and Mexico. Using a scale from 1 (strongly disagree that x-country is a good destination for investment) to 4 (strongly agree that x-country is a good destination for investment), EU technology businesses rated these three countries.

Overall, Canada was perceived as a favourable destination for investment by EU technology-based businesses, scoring an average of 3.2 on the investment attractiveness scale.[30] This score was in line with that of the US, whose rank slightly outpaced Canada with a score of 3.3[31]. Comparatively, Mexico was well-behind both Canada and the US, scoring 2.6[32]. Only one company (explained below), in the clean technologies sector, strongly disagreed (scoring Canada only a 1), stating that Canada was a very poor destination for investment. Two companies, one in the digital industries sector and the other in advanced manufacturing sector (also explained below) viewed Canada negatively, giving it a score of 2. Apart from these outliers, the vast majority of scores were in the 3 or 4 range (agree and strongly agree that Canada is an attractive destination for investment).

Scale of attractiveness for investment opportunities



Source: ICTC 2019.

[30]*Based on 32 responses*
[31]*Based on 33 responses*
[32]*Based on 28 responses*

SECTION III

EU Digital Priority Areas & High Technology Sectors

Over the last decade, Europe has implemented significant initiatives to facilitate sustainability while maintaining the need for a competitive economy. Horizon 2020 R&D innovation funding is the biggest EU research and innovation funding program ever undertaken,[33] budgeted at €77 billion during the 2014 to 2020 period.

The vast majority (93%) of this funding is allocated toward the following three priorities:[34]

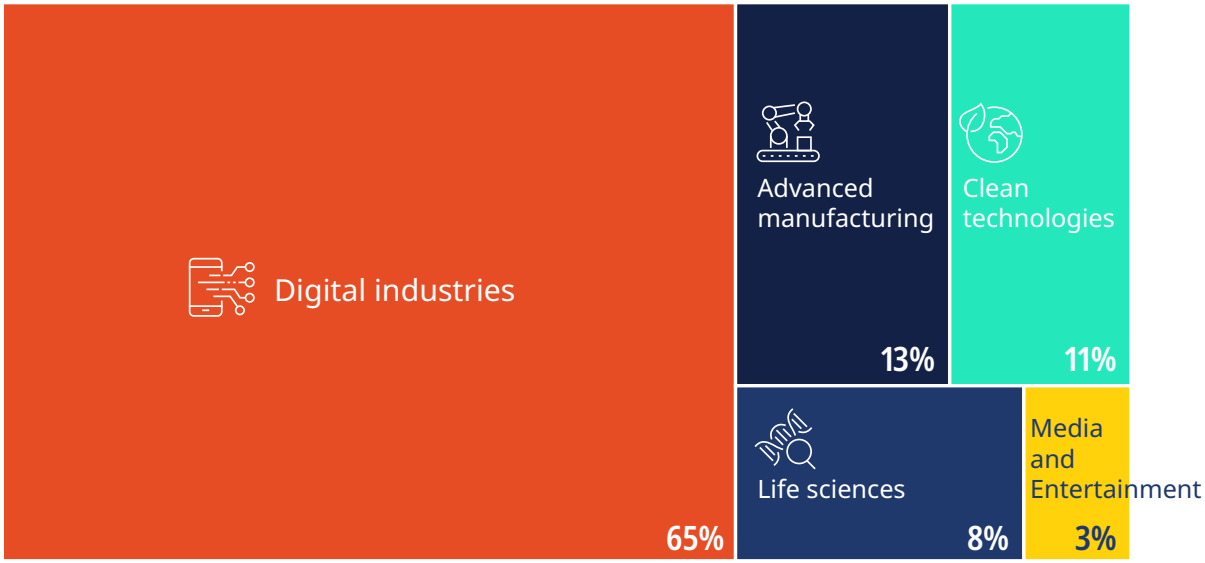
1	"Excellent science" initiatives, including funding for collaborative research on future and emerging technologies	32% budget allocation or more than €24.4 billion
2	"Industrial Leadership", including strategic investments in enabling and industrial technologies such as ICT, materials, nanotechnologies, biotechnology, manufacturing, and space	22% budget allocation or more than €17.0 billion
3	"Societal challenges", including funding for secure, clean and efficient energy, and smart, green, and integrated transport	39% budget allocation or almost €30 billion

[33]*European commission: Horizon 2020 Work Programme from 2018 to 2020 https://ec.europa.eu/programmes/horizon2020/en/news/horizon-2020-work-programme-2018-2020*
[34]*European commission, "The New EU Framework Programme for Research and innovation". https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/281113_Horizon%202020%20standard%20presentation.pdf*

The rapid pace of Canadian development in artificial intelligence (AI), analytics, and Internet of Things (IoT) overlap with European priority areas and digital strengths, potentially making Canada an attractive destination for tech-based FDI from the EU. In 2016, The European Commission presented the Digitizing European Industry Initiative (DEI), which aims to reinforce the EU's competitiveness in digital technologies and ensure that every business in Europe can fully benefit from digital innovation. To reach this goal, the European Commission put in place four priority areas for a successful and innovative economy: partnerships, regulations, skills, and a Digital Innovation Hub (DIHs). The latter is a network of support facilities where companies can get help to improve their businesses, their production processes and their products and services using digital technology.[35] The EU budgeted € 500 million for the DIHs for the 2016-2020 period.[36]

With this renewed focus on innovation and sustainable growth across the economy, the EU showcases strength in several key digital sub-sectors such as advanced manufacturing, life sciences, digital industries, and media and entertainment. These sectors and others were the focus of this research and were highlighted in interviews with key informants.

Key informant sector representation



Source: ICTC 2019.

[35] *European commission: Pillars of the Digitising European Industry initiative https://ec.europa.eu/digital-single-market/en/pillars-digitising-european-industry-initiative*
[36] *European commission: The Digitising European Industry initiative in a nutshell https://ec.europa.eu/digital-single-market/en/news/digitising-european-industry-initiative-nutshell*

Digital Industries

Digital Industries (ICT) are a diverse, innovative and growing segment of the EU's economy, and progress in this area became a crucial factor to innovate and improve the competitiveness of the EU's digital economy. According to Eurostat data, in 2018, more than one in 10 EU enterprises analyzed big data; more than one in four EU enterprises used cloud computing services; and during 2017, one in five EU enterprises reported making electronic sales (e-sales).[37]

The ICT sector represents nearly 5% of the European economy,[38] generating 25% of total business expenditures in R&D, and attracting investments that account for 50% of all European productivity growth.[39]

ICT underpins innovation and competitiveness across all industries, which is why ICT-related topics can be found across all Horizon 2020 R&D innovation program priorities, such as Excellence Science, Industrial Leadership, and Societal Challenges. One example from the Industrial Leadership pillar aims to speed up development of technologies that help innovative European small and medium enterprises (SMEs) grow into world-leading companies. Research and innovation activities are addressed under the 'Leadership for enabling industrial technologies' (LEIT) objective of the Horizon 2020 work program. The objective covers six main activities, including a new generation of components and systems, advanced computing, future internet, content technologies and information management, robotics, micro- and nano-electronic technologies, and photonics.

Overall, key informants in the digital industries sector identify Canada as an attractive country for investment. Five out of 24 interviewees (21%) already have a presence in Canada, and six expressed their intention to either expand their current Canadian operations or enter the Canadian market.

Advanced mobile networks, IoT and future mobility applications are key areas where we are keen to develop products and services [in Canada].

[37] *Eurostat: Digital economy and society statistics - enterprises https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Digital_economy_and_society_statistics_-_enterprises#Use_of_cloud_computing_services*
[38] *European commission: ICT Research & Innovation https://ec.europa.eu/programmes/horizon2020/en/area/ict-research-innovation*
[39] *European commission: ICT Research & Innovation https://ec.europa.eu/programmes/horizon2020/en/area/ict-research-innovation*

The majority of companies interviewed in this sector identified the following factors as key influencers in the decision to invest in Canada. In order, they are the following:

1. Proximity to other markets;
2. Availability of skilled talent;
3. Stable social and political environment;
4. High quality of infrastructure;
5. High quality of life;
6. Ease of doing business;
7. Favourable tax climate;

More specifically, the two main reasons for companies in this sector to expand into Canada were 1) the need to be close to their customers,[40] this proximity helping them deliver services at a lower cost; and 2) the skilled and multicultural workforce, allowing them "maximize the benefit of these diverse skills".

Conversely, a number of deterrents to investment in Canada were also mentioned by companies in this sector. The top aspects deterring investment into Canada included:

1. The small market size;
2. The existence of non-refundable tax credits;
3. The high labour costs; and for those in the telecom subsector,
4. The highly restricted regulatory environment.

The SR&ED Canadian tax credits are not fully refundable unlike Ireland, UK, or France.

The Canadian government must find a way for companies to be able to monetize the unused portion of those tax credits in order to make [the credits] more appealing in the future. This could be achieved by making a portion of the unused credits in one specific year eligible for full refund, pending certain conditions.

Although a lack of knowledge about the Canadian tech ecosystem did not specifically feature as a challenge in this sector, the majority of respondents were not familiar with the Canadian Superclusters. Only one respondent recalled vaguely being aware of about half of them. The vast majority of interviewees in this sector expressed that Canada should increase international awareness of such developments to better attract investment and build its brand.

[40] *Canada and surrounding markets.*

Advanced Manufacturing

The manufacturing sector is the second-largest contributor to the EU economy. It comprises 2.1 million enterprises that employ over 30 million people. In 2016, the manufacturing sector contributed approximately 15% toward total EU GDP.[41]

Advanced manufacturing is an integration of manufacturing with information and communications technologies. It includes solutions that can improve productivity, save energy, reduce waste and pollution, and save on production costs.

Advanced manufacturing was identified as one of the Key Enabling Technologies (KET) that the EU will be focusing on. With the Horizon 2020 R&D innovation program allocating approximately €17 billion during the 2014-2020 period toward the "Industrial Leadership" category,[42] advanced manufacturing has seen a lot of activity in the areas of advanced computing, sensor technologies and robotics.

Working in partnership with industry, the EU has established two public-private partnerships (PPP). The first of these partnerships is known as Factories of the Future and has a €1.15 billion budget. The second PPP is called SPIRE (Sustainable Process Industry through Resource Efficiency) and it has a €0.9 billion budget. The aim of the PPPs is to boost Europe's industrial leadership and competitiveness while addressing Europe's concerns about job creation, energy sustainability and resource efficiency[43] tied to the manufacturing sector.

Key informants (five) from the advanced manufacturing sector tended to identify Canada as a less attractive place for investment, compared to those in the digital industries. This was largely due to lack of visibility into Canada's tech growth areas.

One of the companies, a producer of maritime equipment that may have been a fit for the Ocean Supercluster, gave the lowest attractiveness score to Canada. Its reasoning for doing so was that the Canadian market "is quite invisible" in the world when it comes to advanced manufacturing. Furthermore, the company expressed this sentiment in the following Dutch proverb:

Unknown is unloved

[41] *EUROSTAT: Manufacturing statistics - NACE Rev. 2 https://ec.europa.eu/eurostat/statistics-explained/index.php/Manufacturing_statistics_-_NACE_Rev._2*
[42] *Forbes: The Future Of Manufacturing In Europe: 7 Transformative Forces That Will Boost Industrial Growth (2019) https://www.forbes.com/sites/sarwantsingh/2016/03/29/future-of-manufacturing-in-europe-seven-transformative-forces-that-will-boost-industrial-growth/#4e9ea86674e3*
[43] *European commission: Key Enabling Technologies https://ec.europa.eu/programmes/horizon2020/en/area/key-enabling-technologies*

The advanced manufacturing companies interviewed identified the following areas of improvement for Canada to enhance its appeal to EU investors:

- Actively inform EU companies about strategic projects taking place in Canada, engage in discussions with EU companies regarding partnerships;
- Raise awareness of currently available opportunities in Canada:
- Highlight and promote regional benefits, delineated by sector. It is essential to help EU companies understand where the best investment opportunities in Canada exist.

"Clustering for the sake of clustering": One experience with the Advanced Manufacturing Supercluster

Only one interviewee reported knowledge of the advanced manufacturing Supercluster. The company began to engage with [the Supercluster] in order to form partnerships and begin working in Canada, however, it quickly pulled out, describing the process as "quite complex and a bit artificial [...] clustering for the sake of clustering without looking at the results."

While this company did not have a good experience with the Advanced Manufacturing Supercluster, it reported interest in the Vancouver-based Digital Technology Supercluster, suggesting that this cluster possessed a backbone capable of succeeding and producing results.

Life Sciences

Life sciences refers to the study of living organisms and is a subsector that spreads across a variety of industries, including agriculture, forestry, food, energy, chemical, health and the bio economy. Biotechnology—a subset of life sciences—is the application of scientific and engineering principles to living organisms. It often includes a mix of traditional scientific processes and ICT. Biotechnology contributes to the modernization and advancement of European industry via the production of competitive, safe, sustainable and innovative materials, chemicals, and fuels.[44]

Like Advanced Manufacturing, Biotechnology was recognized as a KET and was prioritized by the EU, under Industrial Leadership. Together with Advanced Manufacturing, the EU made its biotechnology strategy a part of Europe 2020 funding.

The final Horizon 2020 work program announced in 2017 included a pilot that featured a 50% funding rate for some innovation actions with a high-technology-readiness level. This pilot aims to allow larger, high-cost demonstration projects to be funded and to leverage commitment from the industry. Biotechnology was among the limited number of areas receiving this 50% funding rate.

In life sciences, interviewees identified Canada as very attractive for investment. While only a small number of companies (three) from the life-sciences field were available for interview, their perception of Canada was, by far, the most positive of all sub-sectors. Especially positive factors included a strong digital health ecosystem, notable advancements in R&D and an excellent source of talent, products and supplies. Two of the three participants interviewed already have a presence in Canada, with plans for expansion; and the third identified plans to develop an R&D partnership within Canada in the coming years, notably in the Quebec region.

Canada is an important market.... It is especially good from an R&D perspective and has a strong digital health ecosystem. [Canada is important] both in terms of talent, sourcing products and supplies and is a [strong] consumer market.

However, despite this positive perception of Canada as a location for investment, none of the participants—even those with a presence in Canada—were familiar with the Superclusters, or any other incentive programs or policies that are designed to attract FDI.

All three interviewees suggested that Canada can improve by creating more avenues for interaction with stakeholders and actively disseminating relevant information to increase Canada's visibility.

[44]*European commission: Biotechnology https://ec.europa.eu/growth/sectors/biotechnology_en*

Clean Technologies

Increasing the share of renewable energy in Europe is one of the headline targets of the Europe 2020 strategy. The EU is on track to produce 20% of its energy from renewable sources by 2020, and it aims to grow this to 32% by 2030. In 2016, renewables totalled 17% of all energy sources. This is more than double the rate of renewable energy the EU produced only 10 years earlier.[45]

The gradual transformation toward clean energy and a carbon-neutral economy is one of the main goals and challenges for the EU. In 2015, the EU initiated the "Clean Energy for all Europeans" package and agreed to rewrite and update its energy policy framework to facilitate the transition from fossil fuels to clean energy. By doing so, the EU stimulated the necessary public and private investment to demonstrate leadership in the fight against climate change and to deliver on the commitments for reducing greenhouse gas emissions under the Paris Agreement[46].

In November 2018, the European Commission presented its new strategic long-term vision, A Clean Planet for All. The EU's goal is to become the world's first climate-neutral major economy by 2050.[47] This long-term strategy aims to achieve climate neutrality by fostering action in seven strategic areas: energy efficiency; deployment of renewables; clean, safe and connected mobility; competitive industry and a circular economy; infrastructure and interconnections; bioeconomy and natural carbon sinks; and carbon capture and storage to address remaining emissions.[48]

The overall perception of Canada by the Clean Technology businesses interviewed was mixed. Three companies with no presence in Canada identified it as a reasonably attractive country for investors; however, one interviewee with a presence in Canada strongly disagreed with the statement. This negative sentiment was so pronounced that this company with a presence in 80 countries was making plans to close its operations in Canada. Unfortunately, the interviewee did not feel comfortable elaborating further.

[We] have an export-oriented expansion strategy and will locate in countries where this can be easily implemented and which have the greatest appetite for innovation.

Lastly, and not surprisingly, none of the participants—even those that have a presence in Canada— were familiar with the superclusters, or any other incentive programs related to FDI. The interviewees unanimously agreed that Canada can enhance its appeal to EU technology-based investors by actively working to increase awareness of investor-friendly policies and incentives (in this case, related to the renewable energy market). Furthermore, clean tech interviewees also mentioned that they would appreciate business support services, including on-the-ground assistance and information related to taxation, incentives, and Canadian environmental regulations.

[45]*Eurostat: Renewable energy in the EU. (2019) https://ec.europa.eu/eurostat/documents/2995521/9571695/8-12022019-AP-EN.pdf/b7d237c1-ccea-4adc-a0ba-45e13602b428*
[46]*European commission: Clean energy for all Europeans package https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans*
[47]*European commission: 2050 Long-term strategy https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-long-term-strategy*
[48]*European commission: 2050 Long-term strategy https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-long-term-strategy*

Media and Entertainment

The media and entertainment industry is one increasingly influenced by emerging technologies such as 3D, Virtual Reality (VR), and Augmented Reality (AR), as well as disruptive ICT technologies such as IoT, Big Data, 5G, and others.

The Media and Entertainment sector is important for the European Union, highlighted by the European Commission under the Horizon 2020 R&D innovation program. Specifically, media and entertainment falls under the Industrial Leadership and Societal Challenges pillars.

Video gaming is a growing subsector of European entertainment. According to the Interactive Software Federation of Europe (ISFE), the European video games market was worth over €21B in 2018, growing by 15% from 2017 to 2018.[49] Creative Europe, a €1.46 billion European Union program for the cultural and creative sectors, was formed in 2014, providing the video gaming sector in the EU funds for R&D, commercialization, and market penetration.[50]

Although many of the companies in the "digital industries" category extend to media and entertainment, only one key informant was classified as specifically tied to Media and Entertainment and, in particular, video gaming. This interviewee already had a presence in Canada and was adamant that it is a highly attractive country for investors. Reasons for this statement included the availability of highly skilled talent, the growth in relevant post-secondary educational programs for producing skilled talent, and reasonable costs of living and doing business. Top centres for gaming were identified as Vancouver and Montreal.

Canada has a great pool of techno-creative talent, and a lot of good and relevant training programs. We had a smooth talent attraction process.

This company was familiar with all of the superclusters and Canada's digital-specific incentive programs. As a result, this interviewee did not have recommendations for improvement. However, more research is required to fully understand the perceptions of EU media and entertainment companies.

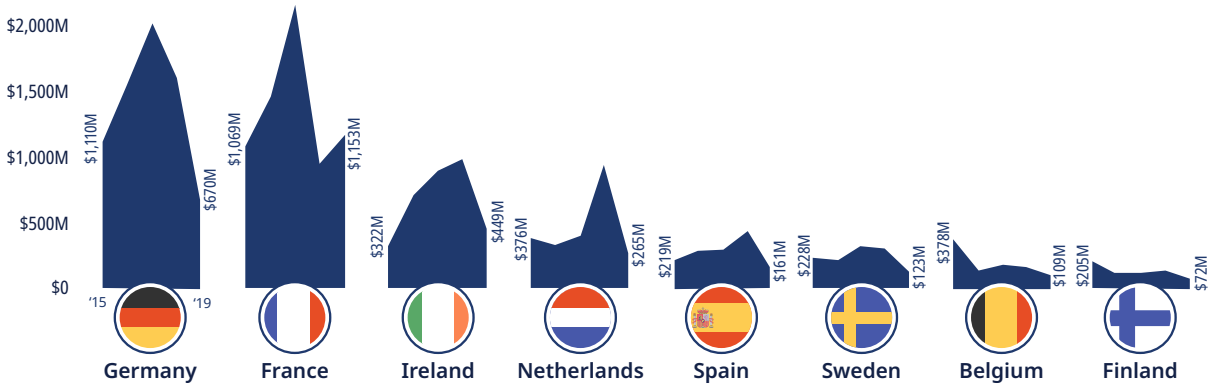
[49]*Interactive Software Federation of Europe. (2019). Key Facts 2019. https://www.isfe.eu/wp-content/uploads/2019/08/ISFE-Key-Facts-Brochure-FINAL.pdf*
[50]*European Commission: Video game development https://ec.europa.eu/programmes/creative-europe/media/video-game-development_en*

SECTION IV

EU Country Profiles: Opportunities for Canada

While the EU continues to make substantial advances in technology-driven research, innovation, and investment, a number of key countries lead the way in global FDI. Notable examples of FDI-producing EU countries are Germany, France, Ireland, and the Netherlands. Consequently, the top three EU countries investing in Canada during 2015-2019 were France, Ireland and Germany.

Top EU countries with the highest capital expenditures to the Software & IT services sector globally *(in millions US$, January 2015 – September 2019)*



Data Source: fDi Intelligence, from the Financial Times Ltd 2019 (Data retrieved on October 11th, 2019).

Germany

Digital Industries, Advanced Manufacturing, and Media & Entertainment

The German ICT market is the fifth largest in the world, and in 2018 Germany was ranked the most innovative economy globally by the World Economic Forum.[51] Specific market opportunities include fintech (Germany has the fourth largest fintech market in the world), big data, cloud services, cybersecurity, AI, and many other digital services developments. For instance, US$23.6 billion is planned for German cities and municipalities to implement smart cities technologies, where ICT and networks are deployed to link municipal infrastructure such as energy, buildings traffic, water and sewage, with a goal of moving toward sustainable and resource-friendly urban development. Additionally, the Horizon 2020 program offers €80 billion funding for multinational collaboration projects in this space, as well as for individual researchers and SMEs.[52]

Advanced manufacturing[53] is also an area of strength in Germany, where the country is actively positioning itself as a lead provider of robotics, process control instrumentation and electronics industry production equipment.[54] For instance, Germany is the fifth largest robot market in the world with about 20,000 industrial robots utilized in various industries each year.[55] To advance sectoral advantages, 84% of German manufacturers plan to invest €100 billion or more per year into smart manufacturing technologies through 2025.[56] The media and entertainment industry is also very substantial in Germany, with the country being Europe's largest gaming market. Gaming hubs such as Berlin, Hamburg, and the Rhine/Ruhr area are just a few examples of major metropolitan areas that have German gaming companies.[57] In 2018, the German gaming market generated total of €4.4 billion, with €1.8 billion being spent on in-game purchases.[58] Lastly, the rising use of smartphones in Germany has also resulted in increasing demand for mobile games, opening the door to new customers.

Conversely, recent investment by German companies in Canada includes Pilz Canada—the subsidiary of a German safety automation equipment manufacturing company—which opened a new headquarters in Mississauga, Ontario, earlier this year,[59] and digital gaming company SOFTGAMES. SOFTGAMES, one of world's largest developers of Messenger Games, announced the launch of their new studio in Toronto in January 2019.[60]

[51] *Whiting, Kate. Germany is the world's most innovative economy (World Economic Forum, October 18 2018) https://www.weforum.org/agenda/2018/10/germany-is-the-worlds-most-innovative-economy/*
[52] *Germany - Smart Cities. Export.gov. https://www.export.gov/article?id=Germany-Smart-Cities*
[53] *fDi: Digital Economies of the Future 2018/19.*
[54] *Germany – Advanced Manufacturing. Export.gov. https://www.export.gov/article?id=Germany-Advanced-Manufacturing*
[55] *Ibid.*
[56] *Ibid.*
[57] *Germany – Advanced Manufacturing. Export.gov. https://www.export.gov/article?id=Germany-Advanced-Manufacturing*
[58] *Ibid.*
[59] *Pilz Canada opens new Canadian headquarters: https://www.cpecn.com/news/pilz-canada-opens-new-canadian-headquarters/*
[60] *Softgames opens office in Toronto: https://www.gamesindustry.biz/articles/2019-01-16-softgames-opens-office-in-toronto*

Several interviews were completed with German companies, however, they spanned a number of industry verticals, making it inappropriate to identify any key "German" perceptions of Canada. The following text box—while not meant to be an objective and exhaustive overview—represents a few interesting comments by German companies. Overall, the most important theme highlighted the need for Canada to actively promote itself and the initiatives tied to investment.

There should be more promotion of Canadian opportunities in Germany. Canada should be 'making more noise' about what is happening, what it has to offer, and how EU companies can engage in the market.

I only have a general impression of Canada as a business location. I am aware that it has an immigration policy that is targeted at bringing qualified people to the country, but that's it.

It is important for Canada to differentiate itself from other business locations. This would be best done by having a genuine focus on certain areas of genuine excellence. I do not think that a generic statement about "superclusters" will work to support investment, as every industrial location is claiming this. Canada needs a clearer identity or image in order to attract more investment from Germany.

I would be interested to know which German companies have already established operations in Canada. This would help me to understand what Canadian sectors are interesting for my competitors and customers here in Germany. And I can imagine that such a list would be a useful tool for marketing purposes (assuming it is a reasonably high number of companies).

Marketing could be improved to create a unique selling proposition for Canada, as did Israel in building a reputation for IT security.

France

Digital Industries and Advanced Manufacturing

France is the top importer of telecommunications services in the EU. The most prominent telecommunications industries in France are mobile phones and broadband. The country has one of the largest broadband subscriber bases in Europe.[61] With telecom falling under the digital services industry, 5G is a central focus of the French telecommunications sector at the current time. In fact, France has noted that it will begin rolling out 5G mobile phone service across the country in 2020. With an already well-established automotive and transportation market, the rollout of 5G will be significant for further enabling French-based advances in connected and autonomous vehicles.

Other areas where France is a significant contributor are aerospace, defence, and manufacturing. France's "Industry of the Future" program has already set aside €2.5 billion in tax incentives for companies that invest in their own production base for modernization, and an additional €2.1 billion in loans for SMEs looking to modernize. These investments supplement the €1.2 billion the government has made available in loans to companies already investing in fields such as robotics, energy efficiency and digital programs.[62] Reported revenue for the French civil aerospace industry in 2018 grew to € 50.36 billion.

Much of France's investments into Canada have focused on the digital industries sector. For example, Agorize is a French company that operates an online platform for hackathons and open innovation challenges. Earlier this year, Agorize announced that it has raised CAD $20 million, which will be used to facilitate its expansion into Canada.[63] Other recent digital services investments from France includes Paris-based tech consultancy firm Axionable, which opened an AI research lab in Montreal in 2019.[64] On the media and entertainment front, Ubisoft[65] announced in March 2019 that it will expand its studio in Winnipeg and hire 100 more employees. Novaquark also announced in February 2019 that it will open its second studio in Montreal and hire a team of up to 50 people to ramp up development.

[61] France – Telecommunications (export.gov, June 12, 2018) https://www.export.gov/article?id=France-Telecommunications-SEC
[62] France – Additive Manufacturing (AM). Export.gov. https://www.export.gov/article?id=France-Additive-Manufacturing-AM
[63] Agorize raises $20 MILLION CAD, Expanding Canadian Presence: https://betakit.com/agorize-raises-20-million-cad-expanding-canadian-presence/
[64] French tech consultancy Axionable opens AI research lab in Montreal: https://www.consulting.ca/news/978/french-tech-consultancy-axionable-opens-ai-research-lab-in-montreal
[65] Ubisoft plans massive expansion to Exchange District studio: https://globalnews.ca/news/5013827/ubisoft-expansion-exchange-district-winnipeg/

The following text box features some interesting viewpoints of French companies interviewed in this study. Overall, French businesses felt confident in the quality of talent in Canada but also noted that the cost of acquiring it was relatively high in comparison to France.

We have been blown away by the quality and multi-cultural nature of the talent [in Canada].

From a cost and tax perspective, it's much better than the U.S.

The quality of life in Canada is very good. It often wins prizes for this, but the cost of acquiring talent and paying them accordingly is high. We are paying around 40% more for a developer/tech operative in Toronto than other companies but we do that to ensure we can attract the top human capital in the city.

The Netherlands

Digital Industries

The Netherlands is a European hub for ICT companies, with several homegrown and international transplants. In fact, 60% of Forbes' Global 2000 ICT companies have operations in the Netherlands.[66] With a strong base of telecom providers, the Netherlands is currently ranked the most connected country in the EU (2018).[67] Moreover, the Dutch ICT sector has been steadily growing since 2010,[68] and recently the country has emerged as a central location for cybersecurity companies. There are over 400 cybersecurity companies located in the Netherlands, with top organizations such as the Hague Security Delta (the world's leading security cluster), the EU European Cybercrime Centre, the European Network for Cyber Security, the NATO Cyber Security Agency, and the Cyber Security Academy.[69] The Netherlands is also emerging as a fintech leader, with a specific focus on blockchain. By 2017, the Netherlands had already launched more than 25 blockchain trials with businesses in banking and energy. In 2018, the country formally announced its first National Blockchain Agenda. A collaboration between government, industry and research institutions, the initiative set aside millions of euros for blockchain research and its applications.[70]

In terms of investment from the Netherlands, fintech is important. Examples include Adyen, a payments platform that provides a modern end-to-end infrastructure, connecting directly to Visa, MasterCard, and other consumers payment methods. In 2018, Adyen had expanded its platform service to several companies in Canada, including Dollar Shave Club, Adidas, Busbud and Canada Goose.[71] Additionally, Ohpen, a fintech company that offers cloud-based SaaS core banking services recently secured €25 million in Series C investment funding for expansion activities, and the company considered Canada among a group of five countries potentially slated for investment.[72] Lastly, CALVI, a digital billing communication-solutions provider also expanded to Toronto in July 2019 because "with 230 different nationalities, Toronto is officially ranked the most multicultural city on this planet," according to Walter Neeft, managing director of CALVI Americas.[73]

[66] *Information Technology (Invest in Holland) https://investinholland.com/industries/information-technology/*
[67] *Erixon, Fredrik; Lamprecht, Philipp. Cooperation in Europe's Digital Economy: How do Countries Position Themselves? (ECIPE, October 2018) http://ecipe.org/publications/cooperation-in-europes-digital-economy/*
[68] *Ibid.*
[69] *The Netherlands Emerges as a Global Leader in Cybersecurity (Cision, September 6 2018) https://www.prnewswire.com/news-releases/the-netherlands-emerges-as-a-global-leader-in-cybersecurity-300705457.html*
[70] *Lyons, Elliot. Netherlands sets National Blockchain Agenda (Holland Fintech, May 11, 2018) https://hollandfintech.com/2018/05/netherlands-sets-national-blockchain-agenda/*
[71] *Adyen expands its unified commerce offering to Canada: https://www.adyen.com/press-and-media/2018/adyen-expands-its-unified-commerce-offering-to-canada*
[72] *Ohpen raises €25 million series C financing for international expansion to third country: https://www.ohpen.com/ohpen-international-expansion/*
[73] *CALVI expands global footprint https://www.calvi-insight.com/about-us/news-blogs/most-recent/press-release-calvi-expands-global-footprint/*

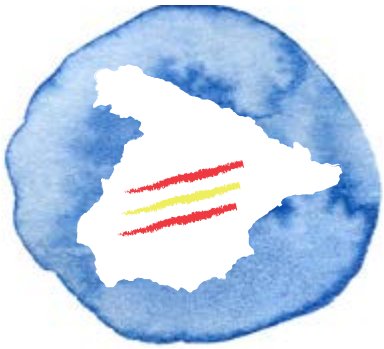
The following text box includes comments by Dutch companies. Overall, businesses felt that Canada was an attractive country for investment, specifically noting the cultural similarity to Europe, compared to the US. Many Dutch companies felt that Canada should market this specific advantage.

> *Canada should position itself more clearly to European tech investors, especially in comparison to the U.S.*

> *Canadian values are closer to those in Europe (in comparison to U.S. values) which should be an advantage.*

> *Canada is an attractive country for growth, with a generally friendly attitude towards international business.*

> *The growth and development of the circular economy in Canada is attractive.*



Spain

Clean Technologies and Advanced Manufacturing

The manufacturing and energy sectors are two of the main drivers of the Spanish economy. In terms of manufacturing, the country's automobile manufacturing subsector is vibrant. Spain is Europe's second-largest automobile manufacturer and eighth-largest in the world, with an annual vehicle production of close to 3 million units. The sector accounts for roughly 19% of Spain's annual exports and about 9% of the country's GDP.[74] Spain is also a major player in clean technologies, particularly renewable energy. The country is home to the world's largest solar industry and is the headquarters for Iberdrola, the largest renewable energy-producing company in the world.[75] In 2018, wind energy was the second-largest source of electricity generation in Spain. The country is ranked fifth in the world in wind-power generation capacity. Clean technologies exports from Spain are worth over €2.5 billion per year, and it invests approximately €85.5 million annually in R&D, contributing roughly €2.4 billion to the country's GDP.[76] Spain is also a significant player in the aerospace industry and is home to Airbus Defence and Space, a world leader in military aircraft manufacturing.

Examples of investments from Spain to Canada include Enerfin, Spain's first wind farm in Quebec, proving renewable energy for approximately 30,000 households. Its energy will be delivered to Hydro-Quebec Distribution under a 20-year Electricity Supply Contract[77]. CaixaBank, the top retail bank in Spain, opened an office in Toronto in 2018, which is its second representative office in North America, after New York City. CaixaBank offers support and advisory services in the fields of foreign trade, company banking, and corporate banking to Spanish companies with interests and operations in Canada, as well as to Canadian multinationals and companies that operate in Spain.[78]

[74] *The Biggest Industries in Spain: https://www.worldatlas.com/articles/the-biggest-industries-in-spain.html*
[75] *The Biggest Industries in Spain: https://www.worldatlas.com/articles/the-biggest-industries-in-spain.html*
[76] *export.gov: https://www.export.gov/article?id=Spain-market-overview*
[77] *Elecnor completes financing for wind power project in Québec. https://www.newswire.ca/news-releases/elecnor-completes-financing-for-wind-power-project-in-quebec-510247631.html*
[78] *CaixaBank opens in Toronto its first representative office in Canada. https://www.caixabank.com/comunicacion/noticia/caixabank-opens-in-toronto-its-first-representative-office-in-canada_en.html?id=41406*

The following comments represent Spanish company views about investing in Canada. While limited, the overall sentiment was that Canada must place more emphasis on marketing itself internationally.

> *Canada needs to increase the awareness of what there is to offer and what is being done in comparison to the U.S.*

> *Canada is perceived as a stable, safe and positive market for business, but other features should be made clear to investors.*

Scandinavia

Life Sciences, Digital Industries and Media & Entertainment

According to the UN's 2019 Global Innovation Index, Sweden was ranked as the second most innovative country in the world (after Switzerland).[79] In 2017, Sweden received some of the highest per capita R&D investment among EU member countries, totalling more than €14 billion or approximately 3.1% of the country's GDP.[80] Sweden is ranked among the top three countries in the world for per capita publishing of scientific articles on medicine and bioscience and places in the top five countries globally for the number of pharmaceuticals, medical technology, and biotechnology patents held.[81] Over the past decade, the Swedish government has been investing heavily in life science research. The country has a large and dynamic life sciences industry with a number of world-leading companies, such as Diamyd Medical, Calliditas Therapeutics and Getinge. Sweden is also a leader in the areas of digital health and medical technology and is home to more than 800 companies related to this sector, employing approximately 40,000 employees.[82]

The capital city of Stockholm is also fast becoming a global hub for technology and innovation and is widely regarded as the tech startup capital of Europe. In fact, the city created the second highest number of "unicorns" ($1 billion startup company) per capita in the world, after Silicon Valley. Some of these unicorns included Skype and Spotify, among others.[83]

In 2016, over $1.4 billion was invested in Stockholm tech companies, a seven-fold increase since 2012. Some of these deals included Activision Blizzard's acquisition of King—the founder of Candy Crush—for $5.9 billion in 2015, and PayPal's $2.2 billion acquisition of Stockholm-based digital payments startup iZettle. Other notable investments in Swedish tech companies over the years included Microsoft's $8.5 billion purchase of Skype in 2011.[84] Stockholm has emerged as a top location for media and entertainment businesses, particularly related to gaming and music.

Examples of FDI from Sweden to Canada include telecommunications provider Ericsson, which opened its Global Information and Communication Technology Centre in Vaudreuil-Dorion (Montreal suburb) in 2016. It is estimated that US$171.8 million was invested, creating over 100 jobs. This centre has enabled engineers globally to accelerate innovation cycles, reduce cost and better support Ericsson's customers.[85] Nova Bus, a bus manufacturer and subsidiary of Sweden-based Volvo, expanded its factory in Saint-Eustache, a suburb of Montreal in 2017. Approximately US$156 million was invested in this expansion, with a goal of increasing its production and opening new markets in Canada and the US.[86] Another notable Scandinavia-based EU country for FDI is Denmark. Norway, though not part of the EU is also a top investor, as is Finland from Northern Europe.

[79] *Global Innovation Index 2019: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019.pdf*
[80] *UNESCO data, 2017. http://uis.unesco.org/apps/visualisations/research-and-development-spending/*
[81] *Embassy of Sweden: https://www.swedenabroad.se/en/about-sweden-non-swedish-citizens/united-kingdom/swedish-tech/*
[82] *Embassy of Sweden: https://www.swedenabroad.se/en/about-sweden-non-swedish-citizens/united-kingdom/swedish-tech/*
[83] *Embassy of Sweden: https://www.swedenabroad.se/en/about-sweden-non-swedish-citizens/united-kingdom/swedish-tech/*
[84] *The Tech Scene in Stockholm: https://agilesearch.io/the-tech-scene-in-stockholm/*
[85] *fDi Markets. Data Access on October 17, 2019*
[86] *Ibid.*

The following comments showcase Scandinavian-company sentiments related to investment into Canada. These were primarily taken from companies in the telecom space, which is perceived as having a high level of regulation around telecom services and data flow.

> *From export control standpoint, Canadian regulations are easier to navigate than that of the U.S.*

> *Canada needs to be promoting cross-border data flows and limit data localization requirements.*

> *In the telecom sector, foreign ownership restrictions limit the inflow of funds.*

> *Radio Spectrum licensing for wireless communications (cellular and 5G) is slow and restrictive, compared to the US and other areas.*

Belgium & Luxembourg

Digital Industries and Life Sciences

According to the Digital Economy & Society Index (DESI),[87] in 2018, Belgium ranked eighth among 28 countries in digital-economy development.[88] Belgium's total ICT market size in 2016 was assessed at $13.5 billion, employing approximately 70,000 people[89]. Belgium has also demonstrated a strong political will to develop the ICT sector. For instance, in April 2015, the Belgian Federal government launched the "Digital Belgium" initiative, moving toward faster connectivity, next-generation mobile data, and digital skills.[90] Over the past five years, e-commerce in Belgium has also skyrocketed. In 2016, consumers spent over US$9 billion online, representing 10% growth over the previous year. The fastest growing market segment is grocery shopping, which was up 165% since 2015. This led to an increasing growth of supermarket e-commerce with Delhaize, Colruyt and Carrefour, the three largest supermarket chains, all rolling out online platforms.[91] The growth of high-tech security equipment and installation services in Belgium has been driven by an increased awareness of terrorism.[92] The Belgian government plans to invest €110 million to digitalize police operations, using enterprise cloud solutions, artificial search intelligence, automated follow-up and alarming systems.[93]

Recent investments from Belgium to Canada include Comsof, a world leader in creating intelligent network planning and design software. Comsof expanded its office in Toronto in 2019 to better serve its growing North American client base. The company plans to double its workforce in its new office, with an approximate US$4.1 million capital investment.[94] With a capital investment of US$6 million, ACTITO, a marketing software brand of Belgium-based Citobi and provider of relationship marketing solutions, opened a new office in Quebec City in 2018.[95] The office will serve as a base for North American operations. Closely neighboring Belgium, Luxembourg is a world-renowned location for digital industries, and in particular fintech.

[87]DESI ranks European Union member states on digital performance and competitiveness. This ranking takes into account digital public services, connectivity, integration of digital technology, use of internet and human capital.
[88]Belgium ICT services. Export.Gov. https://www.export.gov/article?id=Belgium-ICT-Services
[89]Ibid.
[90]Ibid.
[91]Ibid.
[92]Belgium Safety and Security. Export.Gov. https://www.export.gov/article?id=Belgium-Safety-and-Security
[93]Ibid.
[94]fDi Market. Data access on Oct.17, 2019
[95]LE NÉOLOUVANISTE ACTITO AU NOUVEAU MONDE... ET AUX PAYS-BAS !https://www.solutions-magazine.com/actito-nouveau-monde/#

The following comments capture a few sentiments expressed by businesses in Belgium and Luxembourg. Like the Netherlands, the cultural similarity of Canada and high-quality talent are seen as advantages, but interviewees noted the high cost of living in the top locations for FDI as a growing challenge.

> *Canada has very good talent in some of their universities.*

> *Canada is a middle ground in comparison with the US, where the US is more agile in business attitudes, but Canada is more European culturally and in government and regulations.*

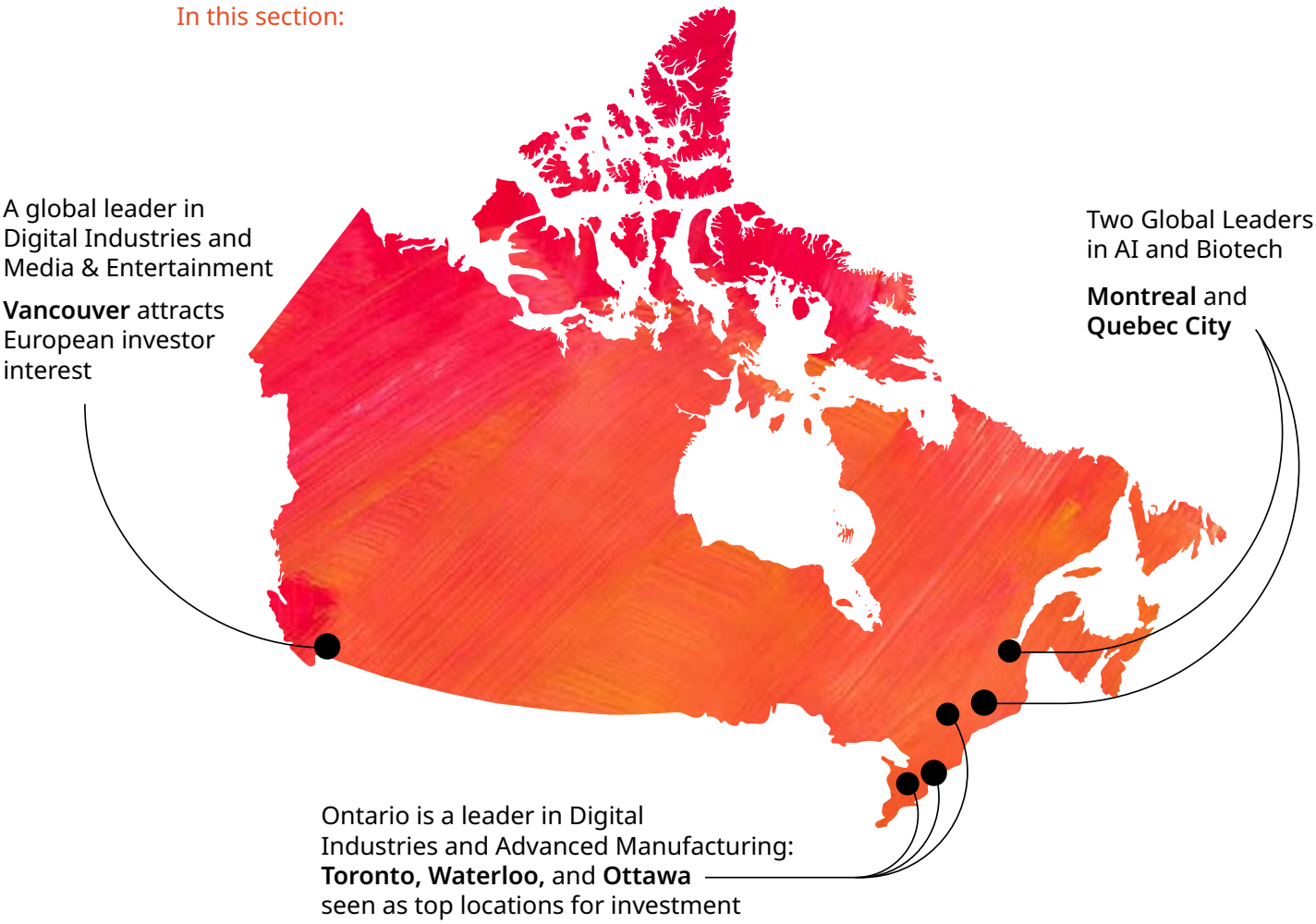
> *A key challenge is the high cost of living, which makes it more and more unaffordable for employees.*

SECTION V

Top 6 Canadian Locations for Tech-based EU Investment

Digital technology is increasingly playing a role in the economic and social transformation of Canadian cities. Developments in AI, big data and IoT, autonomous systems, and digital media are enabling the development of emerging sub-sectors such as e-health, advanced manufacturing, ag-tech and others. Technology is becoming a driver of the country's growth, sustainability, and competitiveness. Guided by overall research findings and feedback from EU investors, the following presents a "matching" of the top six Canadian locations for potential EU tech-based investment according to sector.

In this section:



AI AND BIOTECH

Montreal

POPULATION 4,255,500

In 2018, Montreal was recognized by FDI Magazine as a top location for FDI. That year, the city won the award for "Best Digital Foreign Direct Investment Strategy," surpassing other competitors from around the world, including the likes of Los Angeles and New York. Montreal's investment strategy centres on promoting its leading-edge sectors, its highly skilled workforce, its vibrant startup community, and its numerous specialized R&D centres. In 2017, the city attracted over $2 billion in foreign direct investment, 40% of which was in the digital sector, with notable arrivals by Facebook and Google.[96]

Moreover, home to leading global experts in artificial intelligence, Montreal is quickly becoming a top global hub for research in AI and robotics. The SCALE AI Supercluster is in Montreal, and the city is also home to over 5,000 tech companies, many of which have a growing focus on AI. Additionally, top organizations like Google Brain, DeepMind, MILA, Element AI and others have made Montreal their base to conduct research, develop technologies, and research the applications of AI across many verticals.[97] In addition to a strong basis in AI, the city is also considered to be a major player in the media and entertainment sector, and has become a hub for the gaming industry. It is home to 150 games studios and 12,000 game developers. Ubisoft Entertainment, a major player in the gaming industry, has operations in Montreal, employing approximately 3500 individuals.[98]

Based on the primary research, Montreal is perceived as a good fit for companies in Digital Industries (especially those investing in AI), and in Life Sciences (especially those investing in R&D). Montreal offers ready access to skilled talent, a relatively low cost of living, and high quality of life.

[96] *Greater Montréal crowned for its foreign direct investment strategy in the digital sector (Montreal International, October 9 2018): https://www.montrealinternational.com/en/news/greater-montreal-crowned-for-its-foreign-direct-investment-strategy-in-the-digital-sector/*
[97] *Easton, Laura. Canada's Artificial Intelligence Ecosystem – Montreal (Medium, April 20, 2018) https://medium.com/believing/canadas-artificial-intelligence-ecosystem-4798b0517016*
[98] *Montreal tech and AI talent brings in the big names: https://www.fdiintelligence.com/Special-Reports/Montreal-tech-and-AI-talent-brings-in-the-big-names*

AI AND BIOTECH

Quebec City

POPULATION 817,400

With over 500 high-tech companies that generate nearly $2 billion in revenue annually, Quebec City boasts a flourishing technology ecosystem. Quebec City is home to state-of-the-art research centres and programs that support technology entrepreneurs and its high-tech sector. The city has Canada's highest ratio of researchers to population, with more than 5,500 researchers; 400 laboratories, research centres and institutes; 120 R&D companies; five universities; and 38 colleges, technical institutions and vocational schools.[99] Quebec City has also seen significant levels of tech investment in recent years. According to a PwC investment report, Quebec City's tech companies secured a significant increase in venture-capital funding in Q2 2018, valued at $193 million through five deal contracts (up from $8 million for just one deal in Q1 2018).[100] The life science and health-technology industries are also vibrant in Quebec City. It is home to world-renowned research centres and many innovative companies, including Optel Group Pharmaceuticals, Syneous Health, and others. These companies provide the Quebec City region with cutting-edge expertise in areas such as biopharmaceuticals and medical technology.[101]

Based on the primary research, Quebec City is of interest to EU investors, particularly those in Life Sciences. Quebec City is especially attractive to French-speaking countries and to those that plan to build out their research and product development capacity. The city offers a highly skilled workforce, a high quality of life and an even lower cost of living compared to neighbouring city, Montreal.

[99] *Québec City: A booming hub for technology entrepreneurship: https://blogue.quebec-cite.com/en/business/key-industries/quebec-city-booming-hub-technology-entrepreneurship/*
[100] *Often overlooked, Quebec City's tech is punching above its weight: https://betakit.com/often-overlooked-quebec-citys-tech-is-punching-above-its-weight/*
[101] *Life Sciences and Health Technologies: A Booming Industry in Quebec City:*

The following is a list of incentives for business generation (local and international) and investment attraction in the province of Quebec that make Montreal and Quebec City an even more attractive investment destination.

- **Development Capital:** Investissement Quebec offers equity financing of more than $5 million along with debt financing of up to $100M.[102]

- **Development of E-Business:** This tax measure is designed to consolidate the development of IT throughout Quebec. It enables specialized companies to innovate in the IT sector and receive a tax credit to an annual maximum of $25,000 per eligible employee. The tax credit is equal to 30% of the eligible salaries paid by the company to eligible employees.[103]

- **Refundable tax credit for film and television production:** This credit is applicable to 28% of labour costs to a maximum of 50% of production costs for film and television production (both local and foreign). Combined, this creates an effective tax rate of 17.5% for all eligible production costs.

[102] *https://www.investquebec.com/international/en/about-us/a-financing-corporation/financial-products/development-capital.html*
[103] *https://www.investquebec.com/international/en/about-us/a-financing-corporation/financial-products/development-of-e-business.html*

DIGITAL INDUSTRIES AND ADVANCED MANUFACTURING

Ottawa

POPULATION 1,074,500

The Ottawa-Gatineau census metropolitan area (CMA) tops the list of Canadian cities for its share of adults aged 25 to 64 who have a bachelor's degree or higher (43.5% in 2016).[104] With almost one-tenth of its workforce employed in technology-based roles,[105] Ottawa is considered to be one of the most technology-intensive cities in Canada. The city is a leader in autonomous vehicles, telecommunications, and digital media.[106] Ottawa is also home to companies such as Mitel Networks Corporation, a large telecom provider, and the multinational e-commerce company Shopify. Ottawa has established itself as an internationally recognized centre for R&D, home to more than 90%[107] of Canada's telecommunications-related research. Ottawa's technology cluster has a host of R&D facilities, including the Communications Research Centre, the Centre of Excellence in Next Generation Networks, the Autonomous Vehicles Innovation Network, Defence Research and Development Canada, as well as other facilities that help to foster innovation primarily within Ottawa's ICT sector. The city is also host to several incubators and research centres, including the National Research Council of Canada and Canada's Advanced Research and Innovation Network, which are actively cultivating world-class expertise in technology fields such as cybersecurity, IoT, and autonomous vehicles.[108]

Based on the primary research gathered from interviews with EU investors, Ottawa was perceived to be a good fit for companies in digital industries, especially those companies who invest in telecom and ICT manufacturing. Although investors in the telecom space were reluctant to move into Canada due to high regulatory restrictiveness, Ottawa was highlighted as the destination of choice, should those restrictions be loosened or removed. Ottawa was perceived as attractive because of a high quality of life, relatively low cost of living (compared to other big cities such as Vancouver and Toronto), and strong and steady supply of tech talent.

[104] *Education in Canada: Key results from the 2016 Census: https://www150.statcan.gc.ca/n1/daily-quotidien/171129/dq171129a-eng.htm*
[105] *Shehadi, Sebastian. Canada makes global ICT waves (FDI Intelligence, December 13, 2018): https://www.fdiintelligence.com/Special-Reports/Canada-makes-global-ICT-waves*
[106] *Shehadi, Sebastian. Canada makes global ICT waves (FDI Intelligence, December 13, 2018): https://www.fdiintelligence.com/Special-Reports/Canada-makes-global-ICT-waves*
[107] *Invest in Ottawa. https://www.investottawa.ca/communications-technology/*
[108] *Clemens, Jason. Ottawa cements reputation as ICT stronghold (fDI Intelligence, December 13 2018): https://www.fdiintelligence.com/Special-Reports/Ottawa-cements-reputation-as-ICT-stronghold*

DIGITAL INDUSTRIES AND ADVANCED MANUFACTURING

Toronto

POPULATION 6,341,900

Toronto is the country's largest technology hub and home to one of the most significant clusters of mobile application companies in North America. Moreover, while Montreal is currently the most robust AI cluster in Canada, Toronto has some of the highest concentration of AI startups in the world.[109] Some of the companies in the Toronto's AI startup space include AlayaCare, providing a cloud-based platform for home healthcare practitioners, and Integrate.ai, a company that develops AI-powered platforms for business-to-consumer enterprises.[110] The city is often referred to as the Silicon Valley of the North and is considered to be strong in a number of tech areas, including fintech and blockchain. From 2014 to 2018 alone, investment in Toronto-based fintech startups grew by a compound annual growth rate (CAGR) of more than 27%[111].

Bolstering the growth and scale up of fintech companies in Toronto are organizations like Toronto Finance International (TFI), a public-private partnership between Canada's biggest financial institutions and government to support and promote Toronto as a global fintech hub. Borrowel, Financeit, and Flexiti Financial are part of this hub. Big data, IoT and the creative industries in Toronto are also well-situated for sustained and continued growth, particularly with companies such as Denologix and Massive Insights featuring prominently in the area of big data analytics. While still in early phases, developments like the Waterfront project test the issues related to data use, connectivity, and IoT to ensure the proper functioning of Canada's first "smart city" environment. These developments are particularly important in attracting investment. Toronto is becoming increasingly digitized and technology is having a significant influence on activities related to manufacturing, transportation, and healthcare—industries that have perennially attracted high levels of investment not only in Toronto but also other large Canadian urban centres.

On the media and entertainment front, recent research by the Entertainment Software Association also found that Ontario (and Toronto in particular) has more than 170 video-game companies,[112] making it the second-largest contributor to the industry in Canada, behind Quebec. Some of the companies operating in the video gaming industry in Toronto include Game Hive, Zynga, and Gameloft.

According to interviewees, Toronto was deemed a good fit for, more or less, all sectors but is especially attractive for companies in the digital industries sector (including fintech). Toronto is favoured due to its proximity and access to other markets as well as its very strong access to skilled and diverse talent. Where Toronto fared less positively was in relation to the cost of living and labour, which were both perceived as high.

[109]*Mitchell, Jason. Montreal tech and AI talent brings in the big names (fDi Intelligence, December 13, 2018) Canada makes global ICT waves: https://www.fdiintelligence.com/Special-Reports/Canada-makes-global-ICT-waves*
[110]*Artificial Intelligence Startups In Toronto: https://tracxn.com/explore/Artificial-Intelligence-Startups-in-Toronto/*
[111]*The Pulse of Fintech 2018 (KPMG, 2018) https://home.kpmg/content/dam/kpmg/co/pdf/2018/07/pulse-of-fintech.pdf*
[112]*The Canadian Video Game Industry (ESA, 2017) http://theesa.ca/wp-content/uploads/2017/10/ESAC2017_Booklet_13_Digital.pdf*

Waterloo

POPULATION 567,700

Waterloo is currently ranked among the top 20 technology clusters in the world.[113] The city's premier post-secondary institution, the University of Waterloo, is a top global destination for skilled talent and boasts one of the best co-op programs in North America. The university collaborates with over 7000 employers, enabling students to gain access to valuable paid work experience for periods of up to two years. Also, 96% of the university's co-op grads find employment in their chosen field.[114]

Waterloo specializes in AI, big data, fintech, advanced manufacturing and robotics,[115] and the Toronto-Waterloo corridor has more than 16 universities and colleges.[116] Popular US-based company Square has operations in Waterloo and the city is also home to other high-tech companies such as Blackberry, D2L, among others.

Communitech is a public-private innovation hub that supports a community of more than 14,000 companies, ranging from startups to large global players. Communitech assists tech companies in Waterloo scale their activities through access to access to capital, customers and talent.[117]

Although traditionally known for software development, the City of Waterloo has recently attracted investments in other tech related areas. VueReal, a company specializing in microscopic nanotechnology and a producer of micro-LED, announced in 2018 that it will build a $24-million advanced nanotechnology centre at its facility in Waterloo. Approximately one-third of the funding for this project is being sourced from an $8.5-million grant from Sustainable Development Technology Canada, a foundation created by the federal government to support businesses focusing on clean technology innovation.[118] NERV Technology Inc., an innovative med-tech venture, also secured CDN$1-million in pre-seed funding to help cover the costs associated with preclinical studies and further development of its flagship post-operative sensory platform product.[119] Plum, a growing Waterloo-based tech company, also recently announced that it secured US$4.2 million in funding.[120]

The Waterloo area was perceived favourably by European investors for its strong digital ecosystem, robust access to skilled talent, and relatively low cost of living. Based on the interviews, Waterloo is identified as a good fit for the companies in Advanced Manufacturing and Digital Industries. EU businesses are very aware of the tech talent graduating from the University of Waterloo, but the reality may be skewed by lack of data on graduate retention rates (unclear how many University of Waterloo graduates actually remain in the city following graduation).

[113]Pender, Terry. Toronto-Waterloo tech corridor among top 20 in the world (The Record, April 17 2018) https://www.therecord.com/news-story/8398212-toronto-waterloo-tech-corridor-among-top-20-worldwide/
[114]https://uwaterloo.ca/future-students/co-op
[115]Shehadi, Sebastian. Canada's smaller cities show big ambitions (fDi Intelligence, December 13, 2018) https://www.fdiintelligence.com/Special-Reports/Canada-s-smaller-cities-show-big-ambitions
[116]Sorensen, Chris. Universities drive startup activity in Toronto-Waterloo corridor: Silicon Valley think tank (UofT News, April 30 2018) https://www.utoronto.ca/news/universities-drive-startup-activity-toronto-waterloo-corridor-silicon-valley-think-tank
[117]https://www.communitech.ca/who-we-are/
[118]Waterloo tech firm making big investment in nanotechnology: https://www.therecord.com/news-story/8942910-waterloo-tech-firm-making-big-investment-in-nanotechnology/
[119]NERV TECHNOLOGY CONTINUES BUILDING A FUTURE OF SAFE SURGERIES WITH LATEST ROUND OF FUNDING: http://news.communitech.ca/nerv-technology-continues-building-a-future-of-safe-surgeries-with-latest-round-of-funding/
[120]HOW COFFEE FUELLED PLUM'S US$4.2-MILLION RAISE: http://news.communitech.ca/how-coffee-fuelled-plums-us4-2-million-raise/

The following incentives for business generation (local and international) and investment attraction exist in the province of Ontario:

- **Ontario Research and Development Tax Credit:** Qualifying corporations can claim a non-refundable tax credit on eligible scientific research and experimental development expenditures performed in Ontario to reduce their Ontario corporate income tax.[121]

- **Ontario Innovation Tax Credit:** Qualifying corporations can claim a refundable tax credit for expenditures on scientific research and experimental development performed in Ontario.[122]

- **Ontario Business Research Institute Tax Credit:** Eligible corporations can claim a 20% refundable tax credit for qualified expenditures on scientific research and experimental development work performed in Ontario under contract with eligible research institutes.[123]

- **Ontario Interactive Digital Media Tax Credit Bulletin:** The Ontario Interactive Digital Media Tax Credit (OIDMTC) is a refundable tax credit available to qualifying corporations for expenditures related to the creation, marketing and distribution of eligible interactive digital-media products.[124]

[121] *Ontario Research and Development Tax Credit (Ontario Ministry of Finance) https://www.fin.gov.on.ca/en/credit/ordtc/*
[122] *Ontario Innovation Tax Credit (Ontario Ministry of Finance) https://www.fin.gov.on.ca/en/credit/oitc/*
[123] *Ontario Business Research Institute Tax Credit (Ontario Ministry of Finance) https://www.fin.gov.on.ca/en/credit/obritc/*
[124] *Ontario Interactive Digital Media Tax Credit (Ontario Ministry of Finance) https://www.fin.gov.on.ca/en/credit/oidmtc/bulletin-march-2017.html*

DIGITAL INDUSTRIES AND MEDIA & ENTERTAINMENT

Vancouver

POPULATION 2,650,000

Vancouver is Canada's third-largest city, with a CMA population of 2.5 million. The "Gateway to the Pacific" and Canada's largest port, Vancouver is known for its high-tech industry, film and entertainment sector, and natural resources. Ranked the sixth most livable city in the world by the Economist Intelligence Unit, the city attracts people from around the world for its cosmopolitan culture, access to mountains and ocean, and thriving economy. The city is home to two major universities: the University of British Columbia and Simon Fraser University. The city is also world-recognized for its namesake urban planning style—Vancouverism—which prioritizes high density towers and rapid transit. With the Digital Technology Supercluster based in Vancouver along with more than 60 visual effects (VFX) and animation studios, Vancouver has the highest concentration of domestic and foreign-owned studios in the world.[125]

International transplants such as Microsoft, Amazon, Sony, Lucasfilm and many others call Vancouver their Canadian base. The city has strong allure for international talent and business. Moreover, its proximity to the US—specifically Seattle and Silicon Valley—adds to the appeal as a destination for FDI.

According to the interviews collected, Vancouver is a good fit for companies in Digital Industries and Media and Entertainment, with particular interest expressed from companies in the areas of video-game development and data visualization. Vancouver was especially attractive due to its availability of skilled talent, proximity to US top tech hubs, emerging development of the Cascadia Innovation Corridor, and very high quality of life. However—similar to Toronto—Vancouver fared less well in relation to its high cost of living. While the cost of labour was lower in Vancouver than Toronto, the exorbitant cost of living appears to be internationally-known. This is something that may prove problematic, particularly for worker mobility (potentially impacting the ability of companies to send expats to Vancouver).

[125] *VFX & Animation (Vancouver Economic Commission) https://www.vancouvereconomic.com/vfx-animation/*

The following incentives for business generation (local and international) and investment attraction exist in the province of British Columbia:

- **Investment Capital Incentives:** Investors are eligible for tax credits for investing in Venture Capital Corporations, Eligible Business Corporations and Employee Share Ownership Plans. Corporations that invest in a registered venture-capital corporation or a registered eligible business corporation may receive a 30% non-refundable tax credit.

- **Scientific Research and Experimental Development:** British Columbia's Scientific Research and Experimental Development (SR&ED) program mirrors the federal program and provides qualifying companies conducting scientific research and experimental development in BC with a refundable tax credit up to $300,000 and a non-refundable tax credit up to 10% of qualified British Columbia SR&ED expenses.

- **Film Production and Digital Media:** Includes: Tax credits of 28% for eligible British Columbia labour expenses for movie and TV projects, increasing to 35% for eligible domestic productions filmed in the province. There are also regional tax credits for labour expenses related to movie and TV projects filmed outside the designated Vancouver area.

SECTION VII

Recommendations from EU Technology-based Businesses

Canada is perceived as a country that has a friendly business environment for European and international companies. In addition to cultural similarities, Canada's stable economic and political environment, friendly immigration policies and highly skilled talent are also recognized as attractive investment levers among EU-based companies. Yet, despite the many positive features identified, a number of challenges were also highlighted in relation to Canada as a destination for investment. Based on primary research extracted from interviews, the following recommendations are provided in the interest of increasing investment to Canada:

1

Canada should boost marketing and engagement with EU technology companies. There should be a focus on increasing awareness of key business activities and success stories taking place in Canada and highlighting incentives available to investors.

More than 90% of interviewees were unaware of Canada's Superclusters initiative or any associated business opportunities. Moreover, none of the companies interviewed were aware of any FDI-specific incentive programs or policies in Canada that they could leverage.

"It's clear that there is a weird disconnect—Canadians are seen as clever, progressive, friendly but the specifics are not matched in reality. We just don't know names or specific details about clusters or companies like we do in the US."

Suggested marketing and engagement strategies identified include i) higher volume or more targeted marketing and/or access to information on activities and incentives; ii) dedicated Canadian investment professionals on the ground to provide information and create partnerships; iii) detailed, customized and ongoing information on CETA, business opportunities pertaining to the Supercluster initiative, FDI- specific incentives, regulation changes, and other such efforts.

2 Canada should focus on designing FDI- specific incentives for EU businesses.

Canada's lack of FDI- specific incentives targeting EU businesses may function as "putting the brakes" on further investment from the EU. For instance, the SR&ED Program (which is the federal government's largest single program for R&D) provides differential tax credits to Canadian-controlled private corporation (CCPC) and foreign-controlled companies. Generally, a CCPC can earn a refundable Investment Tax Credit (ITC) at a rate of 35% on qualified SR&ED expenditures up to CAD $3 million. A CCPC can also earn a non-refundable ITC at the basic rate of 15% on an amount over CAD 3 million. In comparison, "other corporations," including foreign-controlled companies can only earn a non-refundable ITC at the basic rate of 15% on qualified SR&ED expenditures.[126] It is critical that Canada take actions to create a favourable investment climate by creating effective FDI incentives.

3 A targeted campaign highlighting the benefits of CETA, particularly the worker mobility provision, would prove useful.

Many EU companies interviewed expressed interest in CETA but were largely unaware of it or did not know how to utilize the agreement in a way that is beneficial to investment. While this was perceived as a challenge, many businesses also noted significant interest in the worker mobility provision and were keen to understand how CETA could be leveraged in that respect. A better knowledge of this provision coupled with Canada's high quality of life may increase investment from EU companies who have interest in sending expats abroad—a common practice for multinationals in the beginning phase of market penetration.

4 Canada needs a comprehensive national FDI-attraction strategy for the EU, and its regional economic development agencies are key players.

In addition to a national FDI strategy, comprehensive attraction strategies should be designed at the regional level to fully take advantage of each region's unique appeal for attracting EU investors. Regional economic development agencies are significantly important in showcasing their regional strengths and providing customized business intelligence. EU investors saw this as essential to maintaining and further developing existing business relationships. For instance, the Hamilton Economic Development Agency has recently implemented a thorough support program for foreign companies investing in the city. A customer-relationship management system is used to track and monitor visits and company information, allowing the agency to remain up to date with investors. According to the agency, dedicated staff visit about 100 foreign companies annually, providing information about the city's economy, training programs, and opportunities of interest in the city.[127]

[126] *Scientific Research and Experimental Development Tax Incentive Program. https://www.canada.ca/en/revenue-agency/services/scientific-research-experimental-development-tax-incentive-program/claim-sred-tax-incentive-what-tax-incentive.html (Date modified: 2019-04-17)*

Conclusion

Using a combination of primary and secondary research, this study provides insights on FDI opportunities, needs and challenges as expressed by European technology-based investors. Top factors motivating EU investment into Canada includes proximity to other markets; a stable economy and political landscape; and high consumer purchasing power of Canadians.

On the other hand, top challenges and barriers that prevent investment include insufficient knowledge or information related to incentive programs and activities such as the Superclusters initiative; the relatively high cost of living in the most attractive cities for FDI; and high regulation and FDI restrictions, particularly in sectors like telecommunications. Yet, despite these limitations, EU investors perceive Canada as a favourable destination for investment, allotting an "attractiveness" score that is almost equal to that of the United States. Key municipalities such as Montreal, Ottawa, Toronto and Vancouver are of particular interest to EU investors, with many seeking ways to leverage CETA for sending workers to these locations.

Crafting a strategic FDI-attraction policy that targets EU investors is no easy feat. It will require concerted collaboration, partnership and the development of targeted marketing campaigns across a variety of fronts. However, once drafted and exported, such a policy should prove invaluable to attracting high-quality investment that will help Canada grow and compete in the global digital economy.

Appendices

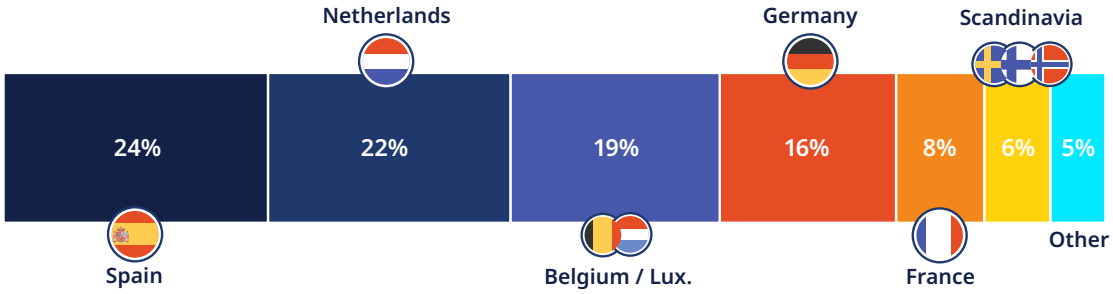
Research Methodology

The research methodology used in the development of this report consisted of a combination of primary and secondary research.

Primary research

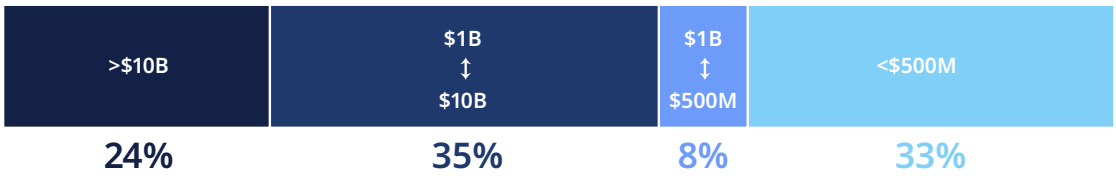
A total of 37 KIIs were conducted, of which 13 (35%) have a presence in Canada. The KIIs were conducted across the European Union, with a focus on Spain (9 KIIs), Netherlands (8 KIIs), Belgium/Luxembourg (7 KIIs), Germany (6 KIIs), France (3 KIIs), Scandinavia (2 KIIs), and other countries in the EU (2 KIIs).

Key informants: Country representation



Source: ICTC 2019.

Key informants: company revenue brackets



Source: ICTC 2019.

The key informants represented five sectors within the digital economy: digital industries (24 KIIs), advanced manufacturing (5 KIIs), clean technologies (4 KIIs), life sciences (3 KIIs); media and entertainment (1 KII).

Key informants: sector representation

Source: ICTC 2019.

Secondary research

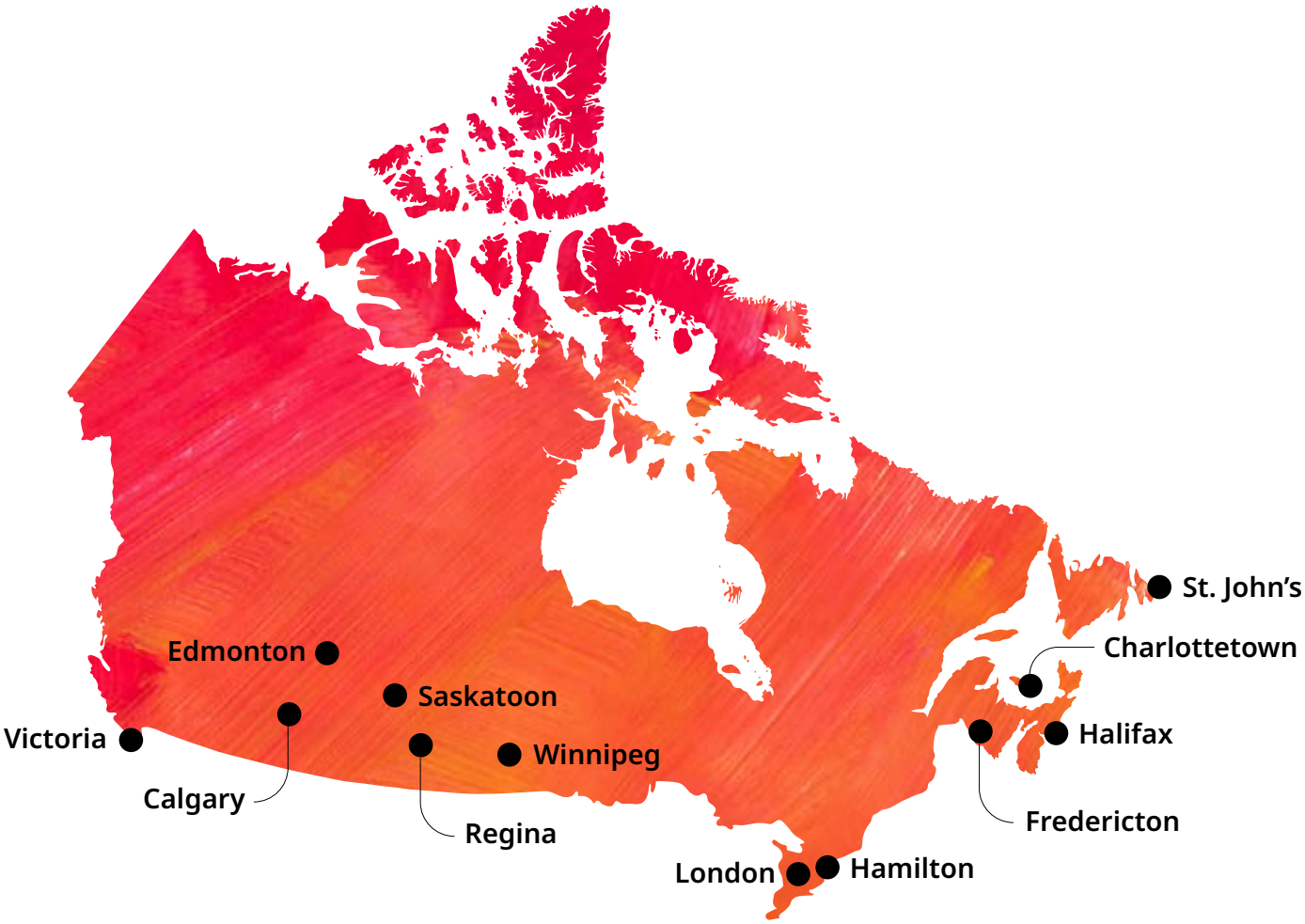
The secondary research for this study focused on an analysis of existing data and literature, including but not limited to Horizon 2020, EuroStat, OCED, Stats Canada, FDI Markets, and FDI Benchmark.

Limitations of Research

While ICTC had attempted to ensure the research was as exhaustive as possible, a few limitations exist. Even though a higher number of KIIs were completed than originally intended, the sample pool remains relatively small, which means that responses do not represent objective "trends" of the entire EU market. Instead, these are initial insights to be used for the purpose of crafting FDI strategies. It is recommended that this research be expanded and continually monitored to ensure validity.

Additionally, ICTC had originally targeted higher representation from certain companies and sectors. ICTC aimed to obtain more representation from Germany, Ireland and Scandinavia because of their history of investment in Canada. ICTC also targeted higher representation from the Media & Entertainment sector because of its strong presence in Canada, specifically in Vancouver and Montreal. Despite extensive outreach to engage businesses from the above-noted countries and sectors, interest and availability dictated the final number of participants.

Other Emerging Canadian Locations for Tech-based EU Investment



The East Coast:

Atlantic Canada's Ocean-business Cluster

Halifax

POPULATION 430,500

With a population of over 400,000[128], Halifax is the largest city in Atlantic Canada. The region is home to seven universities and three community colleges, attracting over 40,000 students annually.[129] Halifax also has a relatively well educated workforce. In 2016, the city had the fifth highest proportion of university graduates among its population aged 25 to 64, when compared to other large Canadian urban centres.[130] There are over 300 companies operating in the oceans sector in Nova Scotia. Industries that make up this sector include those related to fisheries and aquaculture, ocean technology products and service providers, shipbuilding, and marine transportation among others.

To support innovation in this sector, Halifax has research and collaboration hubs for ocean-based businesses, such as The Centre for Ocean Ventures & Entrepreneurship (COVE). COVE supports ocean technology commercialization by providing shared equipment and infrastructure access and facilitating partnerships among industry players who collaborates on ocean-related technology projects. COVE is home to a to several ocean technology companies, researchers, and marine-based service providers—in total, the organization has close to 50 members. Some COVE-affiliated companies will be participating in the Ocean Supercluster's initial project, OceanVision. This is a three-year $20-million project focused on the development of new marine technologies and products for high-resolution imaging and mapping of the ocean's seafloor.[131] The companies engaged in this project include Kraken Robotics, an unmanned submarine and sonar manufacturer; Turbulent Research, an ocean acoustics company; Leeway Marine, a marine service company; and MacArtney Canada, a supplier of underwater technology specializing in the design, manufacture, sales and service of systems to offshore oil, gas and renewable energy industries.[132]

Also located in Halifax is the Ocean Frontier Institute (OFI), an international hub for ocean science. OFI provides funding to support research and the delivery of data science and other technology-related tools to policy-makers, scientists, and industry players. Areas of focus include improving prediction and mitigation of major storms, better management of the ocean's living resources, enabling sustainable approaches to aquaculture, marine transportation policy and risk reduction, and ocean monitoring.[133] The city also hosts other high-profile ocean-related research institutions, including The Bedford Institute of Oceanography (BIO).[134]

[128] *Halifax CMA*
[129] *Discover Halifax: https://discoverhalifaxns.com/plan/universities/*
[130] *Education in Canada: Key results from the 2016 Census: https://www150.statcan.gc.ca/n1/daily-quotidien/171129/dq171129a-eng.htm*
[131] *Canada's Ocean Supercluster Commits Funding to Kraken's $20M OceanVision Project: http://www.globenewswire.com/news-release/2019/06/28/1876101/0/en/Canada-s-Ocean-Supercluster-Commits-Funding-to-Kraken-s-20M-OceanVision-Project.html?culture=en-us*
[132] *Dartmouth ocean tech company taps into $20M innovation project: https://www.cbc.ca/news/canada/nova-scotia/dartmouth-ocean-tech-taps-into-20m-innovation-project-1.5199228*
[133] *Ocean Frontier Institute – a new international hub for ocean science: http://toobigtoignore.net/ofi/*
[134] *Nova Scotia Business Inc: https://www.novascotiabusiness.com/business/oceans*

Halifax has the highest concentration of ocean-related PhDs in the world. Utilizing the strength of the ocean sector in the province and combining it with the power of technology, Halifax recently opened the National Research Council Institute for Marine Biosciences, which explores the commercial potential of technologies in marine biosciences and life sciences.[135]

The following incentives for business generation (local and international) and investment attraction exist in Halifax and Nova Scotia:[136]

Atlantic Innovation Fund: This program aims to increase Atlantic Canada's innovation capacity by funding R&D projects linked to the commercialization of technology-based products, processes, or services.

Digital Media Tax Credit: Offers a refundable tax credit of up to 50% for costs directly related to the development of interactive digital-media products.

Digital Animation Tax Credit: This refundable tax credit applies to costs directly related to the development of digital animation in Nova Scotia.

Charlottetown

POPULATION 76,700

The CMA of Charlottetown has a population of about 77,000. It has five post-secondary institutions (one university and four colleges).[137] Bioscience is one of the fastest growing industries in Atlantic Canada, specifically in PEI.[138] Charlottetown itself is home to BioAlliance, a private-sector-led not-for-profit organization. The organization fosters collaboration among the private sector, researchers, academic institutions, and government agencies in order to support the growth and development of the bioscience sector in PEI.[139] Since 2005, the PEI Bioscience Cluster has more than tripled in size, with remarkable growth in business revenues and employment, showing a marked increase in private and public-sector investments.[140] Recent investments in the cluster include a $16.4 in MicorSintesis, an animal health company in 2019.[141] Additionally, biotech company BioVectra opened a $4 million warehouse process development facility in Charlottetown in 2017.[142] This cluster has over 50 companies who generates over $200 million in revenue annually, and employ close to 1600 individuals.[143] Charlottetown's BioAlliance is also home to the Emergence Bioscience Business Incubator. Emergence is a virtual incubator that supports the formation and growth of innovative bioscience and food-sector ventures.[144] Natural Products Canada, North America's first business accelerator dedicated to the commercialization of products and technologies based on natural product chemistry is also located in Charlottetown.[145]

[135]Nova Scotia, Canada is a hotbed of business brilliance in key sectors that are driving the world's economy: https://discoverhalifaxns.com/meetings-conventions/industry-sectors/
[136]Nova Scotia Business Inc. Digital Media: https://www.novascotiabusiness.com/business/digitalmedia
[137]Education in Charlottetown: https://canadianvisa.org/blog/cities-and-places/charlottetown/education-in-charlottetown
[138]Positioning PEI Biotech Companies to Move Products from Lab to Market: https://www.canada.ca/en/atlantic-canada-opportunities/news/2017/09/positioning_pei_biotechcompaniestomoveproductsfromlabtomarket.html
[139]Prince Edward Island BioAlliance: https://peibioalliance.com/
[140]The Prince Edward Island Bioscience Cluster: https://peibioalliance.com/wp-content/uploads/2018/05/BA-Flat-Sheet-Blue-Updated-March-2018r.pdf
[141]MicroSintesis Announces $16.4M Investment: https://peibioalliance.com/news/microsintesis-16m-investment/
[142]BioVectra Inc. is proud to announce the opening of a new flagship warehouse and process development suites in Charlottetown, Prince Edward Island.: http://www.biovectra.com/biovectra-inc-celebrates-opening-flagship-warehouse-process-development-suites-part-global-biotech-week/
[143]The Prince Edward Island Bioscience Cluster: https://peibioalliance.com/wp-content/uploads/2018/05/BA-Flat-Sheet-Blue-Updated-March-2018r.pdf
[144]Emergence. Canada's Bioscience Business Incubator: https://emergencebioincubator.com/
[145]Prince Edward Island Bio Alliance Biocluster Overview: https://peibioalliance.com/pei-bioscience-cluster/

The following incentives for business generation (local and international) and investment attraction exist in Charlottetown and PEI:

Advanced Marine Technology Tax Rebate: A 10-year tax rebate that is applicable to eligible companies operating in the advanced marine technology sector. This includes companies with proven research capacity developing innovative marine technology for global applications and those engaged in the research and development, manufacture and export of advanced marine technology products and services in Prince Edward Island for export off PEI.[146]

Aerospace and Defence Tax Rebate: A tax rebate incentive for aerospace and defence-related companies. It offers a full yearly rebate on all corporate income tax paid to the province of Prince Edward Island and includes a full yearly rebate of all real property tax relating to ownership or rental of spaces in Prince Edward Island.[147]

Fredericton

POPULATION 108,100

Fredericton is home to over 70% of the New Brunswick's knowledge-based industries.[148] The city has recently emerged as a cyber security research and innovation hub by attracting R&D investment from both the government and private sector.[149] Last year, the Government of Canada (through Opportunities New Brunswick), invested $3.1 million to establish the Cybersecurity Innovation Centre in Fredericton. The Centre provides IT-sector companies and researchers based in New Brunswick with opportunities that will allow them to keep up with the evolving nature of cybersecurity technologies. The centre will also allow for greater collaboration in research and skills development, as well as foster connections and partnerships between government, academia and industry on cybersecurity.[150] Fredericton is also home to Canadian Institute for Cybersecurity, located at the University of New Brunswick.

The following incentives for business generation (local and international) and investment attraction exist in Fredericton and New Brunswick:

Research and Development Tax Credit: New Brunswick's R&D tax credit is a 15% refundable credit on eligible expenditures, which includes work related to experimental development, both applied and basic research, along with other forms of support work.[151]

[146]Advanced Marine Technology Tax Rebate: https://www.princeedwardisland.ca/en/information/innovation-pei/advanced-marine-technology-tax-rebate
[147]Aerospace and Defense Tax Rebate: https://www.princeedwardisland.ca/en/information/innovation-pei/aerospace-and-defence-tax-rebate
[148]Ignite Fredericton: https://www.ignitefredericton.com/innovation-amp-technology
[149]Fredericton, NB — a National Leader in Cyber Security: http://www.industryandbusiness.ca/development-and-innovation/fredericton-nb-a-national-leader-in-cyber-security
[150]New Centre will Position New Brunswick as a Leader in Cybersecurity and Innovation: https://www.canada.ca/en/atlantic-canada-opportunities/news/2018/08/new-centre-will-position-new-brunswick-as-a-leader-in-cybersecurity-and-innovation.html
[151]Research and Development Tax Credit: https://www2.gnb.ca/content/gnb/en/departments/finance/taxes/taxcredit.html

St. John's

POPULATION 202,500

St. John's is home to Oceans Advance, a regional technology cluster that includes private companies, research and development and educational institutions.[152] These entities are primarily engaged in activities related to the development and application of ocean and marine technology. These technologies are typically used to deliver solutions and generate efficiencies through safe and sustainable exploration, development, monitoring and use of ocean resources.[153] The city is also home to Memorial University, one of the largest of its kind in Atlantic Canada. More than 40% of total research at Memorial and 68% of research in the Faculty of Science is ocean related.[154] Moreover, the university also houses the Ocean Engineering Research Centre, which focuses on advancing ocean engineering research and technology development; promoting interaction between researchers and ocean technology stakeholders, including via things like technology transfer; entrepreneurship; and commercialization of research.[155]

The following incentives for business generation (local and international) and investment attraction exist in St. John's and Newfoundland:[156]

Newfoundland and Labrador Interactive Digital Media (IDM) Tax Credit: This tax credit is applicable to eligible companies developing IDM products in Newfoundland. The refundable tax credit is applicable to up to 65% of qualifying expenditures, including salaries and other forms of eligible remuneration.

Scientific Research and Experimental Development Tax Credit: This refundable tax credit allows corporations to claim 15% of their eligible research and development expenditures, provided these expenditures are eligible for the federal Scientific Research and Experimental Development tax credits.

Film and Video Tax Credit: This refundable provincial Corporate Income Tax credit is provided to eligible local film projects at a rate of 40% of eligible local labour costs.

Economic Diversification and Growth Enterprises Program (EDGE): This Program was designed to encourage new business investment in the province of Newfoundland and Labrador. The main incentive of this program is a tax rebates (federal, provincial, and municipal) ranging from 50% to 100% for periods of up to 15 years.

Venture Capital Tax Credit (VCTC): The (VCTC) program is designed to encourage investment and foster growth in industries such as information technology, cleantech and ocean technologies, among others. The VCTC allows investors to qualify for a non-refundable tax credit equal to 30% of the amount invested in a Qualifying Venture Capital Fund.

[152] *Newfoundland's Ocean Technology Cluster: https://www.hydro-international.com/content/article/newfoundland-s-ocean-technology-cluster*
[153] *OceansAdvance Inc: http://oceansadvance.net/about-us/#targetText=Newfoundland%20and%20Labrador%20is%20the,the%20path%20to%20the%20Arctic.&targetText=In%202005%2C%20a%20group%20of,ocean%20technology%20cluster%20management%20organization*
[154] *Waves of Innovation NL Ocean Technology R&D Facilities: http://oceansadvance.net/waves-of-innovation-nl-ocean-technology-rd-facilities/*
[155] *Ocean Engineering Research Centre: https://www.mun.ca/engineering/research/facilities/centres/oerc/*
[156] *Credits, Incentives and Benefits: https://www.fin.gov.nl.ca/fin/tax_programs_incentives/business/cib.html*

Ontario:

A leader in Digital Industries, Life Sciences and Advanced Manufacturing

Hamilton

POPULATION 786,600

Hamilton is located on the western tip of Lake Ontario and has historically been an industrial and manufacturing centre. This industrial history is suggested by its nicknames: The Electric City, The Hammer, Steel Town. Today, the city is reinventing itself as a post-industrial urban tech hub, strategically linked by rail and highway within the enormous Greater Toronto and Hamilton Area (GTHA), a region with a population of 7 million that is forecast to reach 8.6 million by 2031.[157] The city has an increasingly vibrant community of young residents seeking relief from busier and pricier Toronto. It has several universities and colleges, including McMaster University (ranked among the Top 100 globally by Time's Higher Education) and Mohawk College.[158]

Hamilton has a vibrant advanced manufacturing sector that contributes approximately $12 billion in GDP to Ontario, accounting for roughly 4% of the Province's total economy.[159] Several steel manufacturing companies are in the city, with ArcelorMittal Dofasco (headquartered in Hamilton) relying on cutting-edge technology to maintain their advantage within a highly competitive industry. The firm has implemented a World Class Continuous Improvement (WCCI) system, which sets the goal of zero injuries, zero loss, zero waste, and has spurred the invention of technologies like an automated basic oxygen furnace to speed up the output of ultra-low carbon and advanced high-strength steels.[160] Additionally, in 2017, the Hamilton Health Services (HHS) collaborated with IBM Canada to launch the Innovation Exchange Centre, a partnership that positioned Hamilton as a leader in high-tech medical technology and healthcare innovation. This initiative fosters greater collaboration among researchers, healthcare professionals and industry on projects that allow for the integration of the healthcare ecosystem via an innovative platform to improve the delivery of healthcare in the city.[161] The initiative also supports collaboration with local companies to accelerate the commercialization and implementation of their healthcare products and services.[162] Firms collaborating on the initiative include Hamilton-based Mariner Endosurgery, which unites machine learning, robotic assistance and advanced visualization to augment surgeon performance; Gene Blueprint, which develops an application that combines a person's DNA, proprietary algorithm, patented gene scores and lifestyle data to make evidence-based recommendations for tailored nutrition and exercise strategies; and Arinai, which uses IBM's AI to translate clinical jargon and enable informed consent in various languages. Hamilton is also home to the McMaster Innovation Park,[163] where more than 100 startups, established technology companies, and advanced research labs reside.[164]

[157] *http://www.metrolinx.com/thebigmove/en/introduction/1_3_GTHA_challenges.aspx*
[158] *https://www.timeshighereducation.com/world-university-rankings/2020/world-ranking#!/page/0/length/25/locations/CA/sort_by/rank/sort_order/asc/cols/stats*
[159] *Snapshot of Hamilton's Advanced Manufacturing Sector: https://investinhamilton.ca/industries/advanced-manufacturing/*
[160] *https://dofasco.arcelormittal.com/who-we-are/at-a-glance/world-class-manufacturing.aspx*
[161] *IBM Answers Our Questions about Making the Move to Hamilton: http://thinkhamilton.blog/ibm-answers-our-questions-about-making-the-move-to-hamilton/*
[162] *Hamilton Health Sciences and IBM launch accelerator: https://www.canhealth.com/2017/07/05/hamilton-health-sciences-and-ibm-launch-accelerator/*
[163] *Ontario cities recognized as FDI Cities of the Future: https://www.investinontario.com/spotlights/ontario-cities-recognized-fdi-cities-future*
[164] *Look North: The world's eyes shift to North America's next great tech centre: https://mail.yahoo.com/d/folders/1?.intl=ca&.lang=en-CA&.partner=none&.src=fp*

London

POPULATION 786,600

With a CMA population of over 530,000, London, Ontario, is a regional centre for healthcare and education (the well-regarded University of Western Ontario). London's attractiveness as a tech city is its affordable cost of living. This has attracted both tech companies and tech talent, particularly to its downtown core.[165] London has become a hub for digital-media companies and is home to over 300 digital creative companies, employing approximately 9,000 individuals. Examples include Autodata Solutions, which creates software for vehicle sales and services, and InfoTech, an information technology research and advisory company. The tech sector has become one of London's leading economic drivers.[166] London is also home to a vibrant advanced manufacturing sector that is driven by high automation, robotics, and technology to produce high-value products by major firms, including General Dynamics Land Systems (military vehicles), Brose (vehicle components), and 3M (consumer goods). Advanced manufacturing accounts for roughly 10% of employment in the region. The National Research Council also has a manufacturing and automotive innovation hub research facility in London that fosters collaboration among researchers and automotive manufacturers. The hub is focused on mass customization, process industrialization, and data-driven factory automation.[167]

Western University and Fanshawe College both offer programs related to the digital economy. These include programming, computer science, graphic design, website design and more.[168] Additionally, London has industry associations and programs geared to assisting tech entrepreneurs. TechAlliance, is the area's regional member-based innovation centre, providing entrepreneurs and tech companies with business analysis, prototyping, and market intelligence services. The government initiative Ontario Centres of Excellence also supports commercialization of academic intellectual property, industry-academic collaboration, and the development of emerging technologies such as 5G, advanced computing, and autonomous vehicles.[169]

[165]*Southern Ontario: The Next Silicon Valley?: https://www.budgetboss.ca/ontario-tech-boom/*
[166]*Why Tech Companies are moving to London Ontario: https://perspective.ca/tech-companies-flocking-to-london-ontario/*
[167]*London Economic Development Corporation: https://www.ledc.com/manufacturing*
[168]*Information Technology & Website Design Growth In London Ontario: https://www.smartwebpros.com/blog/website-design-information-technology-growth/*
[169]*London Economic Development Corporation: https://www.ledc.com/digital-creative*

Manitoba:
An Opportunity for Digital Industries and Media & Entertainment

Winnipeg

POPULATION 832,200

Winnipeg, the capital of Manitoba, is a railway and transport hub with a diversified economy. According to the report "2018 Scoring Canadian Tech Talent," between 2012 and 2017, Winnipeg recorded the second highest rate of growth in technology employment among Canadian mid-sized cities. The city's tech workforce increased by nearly 40% over that five-year period, bringing the total level of tech employment to 16,900.[170] SkipTheDishes, an app-based food delivery serviced was part of the city's tech growth. Winnipeg is home to a thriving and growing community of small and medium-sized ICT companies and was recently ranked as the least expensive city to operate a tech company.[171] Its companies operate in communications technology, cybersecurity, digital media, fintech, machine learning, AI, and SaaS, among other technologies. Some of its international tech giants include Ubisoft, Microsoft and Amazon Web Services.[172] The city offers generous tax credits for tech-based R&D investments, fostering research and collaboration among tech companies, particularly startups, and government institutions such as labs and hospitals.[173] Smartpark Innovation Hub (SIH), located at the University of Manitoba, is the primary research and technology park in the province. The hub is made up of some of the most innovative companies in Manitoba and helps foster collaboration among industry, government, entrepreneurs, researchers and post-secondary institutions with the aim of driving further innovation. The centre offers rentable office space for companies, new space for laboratories, and serves as a technology incubator for tech star-ups.[174]

The following incentives for business generation (local and international) and investment attraction exist in Manitoba:

Manitoba Manufacturing Investment Tax Credit: The Manufacturing Investment Tax Credit targets manufacturing plant and equipment purchased for first-time use in manufacturing or processing in Manitoba. Corporations may earn a tax credit of up to 9% tax.

Manitoba Film and Video Production Tax Credit: This refundable tax credit is for film and video production and is based on eligible salaries paid to Manitoba residents and qualifying non-resident employees for work performed on eligible films or videos produced in Manitoba.

Interactive Digital Media Tax Credit: This refundable corporation income tax credit is for companies that develop and produce interactive digital-media projects in Manitoba. The tax credit is equal to 40% of the remuneration. The maximum tax credit on an eligible project is $500,000.

Manitoba Research and Development Tax Credit: This program targets scientific research and experimental development in Manitoba. Corporations may earn a tax credit of up to 20% on eligible R&D expenditures.

[170]City holds its own in tech sector Winnipeg growing as a technology hub: https://www.winnipegfreepress.com/business/city-holds-its-own-in-tech-sector-501161341.html
[171]Economic Development Winnipeg: https://www.economicdevelopmentwinnipeg.com/key-industries/information-communications-technology
[172]Canada's smaller cities show big ambitions: https://www.fdiintelligence.com/Special-Reports/Canada-s-smaller-cities-show-big-ambitions
[173]How Winnipeg focused on local strengths to create a tech hub in central Canada: https://techcrunch.com/2017/04/04/how-winnipeg-focused-on-local-strengths-to-create-a-tech-hub-in-central-canada/
[174]Smartpark Innovation Hub opens at the University of Manitoba: https://news.umanitoba.ca/smartpark-innovation-hub-opens-at-the-university-of-manitoba/

Saskatchewan:
A Canadian leader in the Ag-tech revolution

Regina

POPULATION 257,300

Regina, the capital of Saskatchewan, has major industries including oil and gas, potash, farm products, and various minerals and clays, as well as the University of Regina. The Greater Regina Area is part of Canada's farm belt and is a regional hub for plant protein crop production. Products such as lentil beer have been launched by Rebellion Brewing in Regina.[175] With agriculture and ag-processing becoming increasingly intertwined with high technology, the city has positioned itself to take advantage of future growth and expansion in this emerging sector.[176] Regina is also home to companies and institutions that are part of the Protein Supercluster. This supercluster leverages genomics and novel processing technology to increase the value of key Canadian crops to position Canada as a leader. The sector is expected to generate $4.5 billion in GDP and create more than 4,500 jobs over the next 10 years.[177]

Saskatoon

POPULATION 322,600

Saskatoon is the largest city in the province of Saskatchewan. Agricultural industries, potash, mining, and oil and gas drive significant employment—alongside the University of Saskatchewan. The city is headquarters of the world's largest uranium company, Cameco, and the world's largest potash producer, Nutrien (nearly two-thirds of the world's potash reserves are located near Saskatoon). According to a 2017 report from the Saskatoon Regional Economic Development Authority, Saskatoon's technology sector had over 65 companies operating in the city, employing approximately 8,000 people. Companies such as Noodlecake, Point2, Vendasta Technologies, and Zu are part of this tech sector.[178] The report notes that the technology industry accounts for roughly 2.5% of all Saskatchewan businesses and 1.3% of total employment in the province. Saskatoon is also home to the Innovation Place, a technology park that provides office space, mentorship, business opportunities in the technology sector and a supportive environment for startup and early stage technology companies. Co.Labs, a technology incubator that connects startups to tech entrepreneurs, also offers services that helps companies accelerate their business ventures through product validation, market intelligence, and prototype development.

[175] *https://economicdevelopmentregina.com/news/every-drop-in-saskatchewan*
[176] *Supercluster Funds Welcomed in Regina: https://economicdevelopmentregina.com/news/supercluster-funds-welcomed-in-regina*
[177] *https://www.ic.gc.ca/eic/site/093.nsf/eng/00012.html*
[178] *https://web.archive.org/web/20160423085118/http://www.sreda.com/key-industries/ict/*

The following incentives for business generation (local and international) and investment attraction exist in the province of Saskatchewan:

Corporation Income Tax Rebate for Capital Investment in Primary Steel Production: This allows eligible primary steel producers to receive a rebate on new or expanded production capacity for up to five years.

Manufacturing and Processing Tax Incentives: Available to firms in the manufacturing and processing industry.

Saskatchewan Commercial Innovation Incentive (SCII): The Saskatchewan Commercial Innovation Incentive offers eligible corporations a reduction of the provincial corporate income tax rate to 6%.

Saskatchewan Lean Improvements in Manufacturing (SLIM): SLIM provides funding to agribusiness for infrastructure projects that improve productivity and efficiency.

Saskatchewan Technology Startup Incentive: This incentive will offer a 45% non-refundable tax credit for individual and corporate equity investments in eligible technology startup businesses.[179]

Alberta:
Cleantech and Life Sciences Hub

Edmonton

POPULATION 1,420,900

Edmonton, the capital of Alberta and Canada's most northern major city, has a CMA population of over 1.4 million. Traditionally the oil and gas manufacturing and services centre, Edmonton is now also a major innovation hub for AI, bioinformatics and human-machine interaction. Within the bioinformatics sector, firms such as Destiny Bioscience use biostatics to optimize efficiency for cannabis growers. Organizations like AMII, AAIA, and Google DeepMind are found in Edmonton because of its AI expertise. Edmonton is currently third in the world for machine learning research and the University of Alberta is one of the top institutions for computer science graduates. In addition to AI, Edmonton is a centre of life sciences, e-health and biotech. With one of the world's leading 4D medical simulation labs[180] and technology-enabled circular health initiatives like Health City,[181] Edmonton is one of Canada's top locations for healthcare-based innovation. Examples include Nanostics, which is developing a novel blood test to diagnose and predict prostate cancer, and Clinisys, which develops a variety of secure, scalable and user-friendly e-Healthcare solutions for the healthcare industry.[182]

[179] *Innovation Saskatchewan: https://innovationsask.ca/technology*
[180] *Bergot, Nichole Building a better surgeon: Simulation lab could literally put rookies in the best hands, say U of A researchers (Edmonton Journal, April 25 2019) https://edmontonjournal.com/news/local-news/april-25-building-a-better-surgeon-simulation-lab-could-literally-put-rookies-in-best-hands-say-u-of-a-researchers*
[181] *Edmonton Healthy City. https://edmontonhealthcity.ca/*
[182] *https://www.cbc.ca/news/canada/edmonton/edmonton-alberta-health-city-microsoft-1.4469476*

Calgary

POPULATION 1,486,000

Calgary is the largest city in Alberta. With a population of nearly 1.5 million, Calgary is ranked by the Economist as the most livable city in Canada, and fifth in the world. SAIT and the University of Calgary are located in the city, which has more head offices per capita than any other Canadian city and some of the highest average incomes. Historically, Calgary acted as a top destination for FDI from the US into the oil and gas sector. This sector is still a significant contributor of economic growth and investment attraction; however, the city is also building its strength in cleantech, ag-tech, digital media, and autonomous systems. Examples include Goodlaywer (an online marketplace for legal services), chata.ai (an AI-driven app designed to optimize business software), KnoGeo (developed software to visualize real estate data in 3D), Deepwater Farms (operates aquaponic farms), and Neuraura (uses micro-sensors to map brains of those suffering from neurological diseases like Alzheimer's to develop better neuromodulation implants).[183] In 2018, Calgary became the first city in Canada to develop a multi-system testing area for autonomous systems, including drones and vehicles.[184] That same year, the city launched a driverless shuttle that can transport up to 12 passengers from the Zoo to the science museum[185], and innovative companies like Decisive Farming, Aurora and Sundial are creating new opportunities for the city in ag-tech.

Calgary has a variety of grants and funding available for firms, including the Alberta Enterprise Corporation (invests Alberta-focused venture-capital funds that finance early stage technology startups), Canadian Technology Accelerators (helps Canadian companies with an existing technology, product, or service explore opportunities in foreign markets), CanExport (financial support for small or medium-sized firm's efforts to find new export opportunities), the National Angel Capital Organization (NACO) Canada (members assist Canadian startups with capital, expert advice and professional networks) NRC IRAP Concierge Service (provides a single access point where small and medium enterprises can find advice to help them innovate and accelerate their growth), the Scientific Research & Experimental Development Tax Incentive Program (SR&ED) (provides tax incentives for applied research and experimental development for the purpose of achieving technological advancement), Seed Ups programs (gets companies ready to pitch engaged investors), and the Venture Capital Association of Alberta (members invest capital and expertise in information and communications technology, cleantech and energy technologies, agriculture/bio and life sciences).[186]

The following incentives for business generation (local and international) and investment attraction exist in Alberta:

Alberta Investor Tax Credit (AITC): This tax credit encourages investment in non-traditional sectors, with strong job-creation potential.

Capital Investment Tax Credit (CITC): This tax credit encourages manufacturing, processing and tourism infrastructure companies to make capital investment in Alberta.

Scientific Research and Experimental Development (SR&ED) Tax Credit: This provides a refundable tax credit to qualified corporations that incur eligible expenditures in respect of SR&ED activities.

[183] *https://www.startupcalgary.ca/startup-calgary-stories*
[184] *Sky's the limit as Calgary opens testing area for drones and new technologies (Calgary Herald, October 20 2018) https://calgaryherald.com/news/local-news/skys-the-limit-as-calgary-opens-testing-area-for-drones-and-new-technologies*
[185] *Hudes, Sammy. City launches driverless shuttle pilot to test autonomous vehicle technology (Calgary Herald, September 6 2018). https://postmedia.us.janrainsso.com/static/server.html?origin=https%3A%2F%2Fcalgaryherald.com%2Fnews%2Flocal-news%2Fcity-launches-driverless-shuttle-pilot-to-test-autonomous-vehicle-technology*
[186] *https://www.calgaryeconomicdevelopment.com/industries/focus-areas/technology/*

British Columbia:
A global leader in Media & Entertainment

Victoria

POPULATION 395,500

Greater Victoria is home to a vibrant and diverse technology sector, which has been a major driver of innovation and economic growth for the BC's capital city.[187] According to a recent study published by the Victoria Innovation, Advanced Technology and Entrepreneurship Council (VIATEC), Victoria's technology sector has experienced significant growth over the past decade, with direct industry revenue increasing from $1B to a little over $4B between 2004 and 2017. The total economic impact was estimated to be approximately $5.2B in 2017. In 2017, the industry comprised over 950 companies employing close to 16,800 individuals. The study also noted that growth in revenue and the number of technology firms for Greater Victoria outpaced the national average over that time period. The technology sector included firms producing digital and software products and services, to aerospace and pharmaceuticals.[188] Example include 21Q Ventures (a social and dating company), AOT Technologies (IoT Product Engineering Services and software), and Geocortex (geological mapping and software). Greater Victoria and its surrounding regions are also home to one of the largest marine technology clusters in Canada.[189] Together with Vancouver, Victoria has over 900 companies operating in ocean-related activities, with the cluster hosting a number of research institutes, industry associations and universities. For example, Victoria-based Terra Remote Sensing offers high-tech imaging, sonar, and LiDAR services for oceanographers and marine environments.[190] The University of Victoria's School of Earth and Ocean Sciences is recognized as a global centre of excellence in ocean, earth and atmospheric research. The university's Ocean Networks Canada initiative, through its Innovation Centre, facilitates collaboration with industry players, and has over 100 researchers and experts engaged in the observation of ocean data and real-time monitoring of Canada's coasts lines.[191] The Vancouver Island Technology Park (VITP) is also located in Victoria. The park is a major centre for technology activity to assist tech startups in Victoria by providing physical infrastructure that links provincial, national and international resources with emerging or growing tech companies.[192]

[187] *VIATEC releases Economic Impact Study of the Technology Sector in Greater Victoria: https://www.bctechnology.com/news/2018/11/6/VIATEC-releases-Economic-Impact-Study-of-the-Technology-Sector-in-Greater-Victoria.cfm*
[188] *Economic Impact of the Technology Sector in Greater Victoria: https://www.viatec.ca/articles/economic-impact-of-the-technology-sector-in-greater-victoria*
[189] *Home of Project Neptune Canada and leaders in oceans technology: https://marinetechcentre.ca/current-companies/*
[190] *https://www.terraremote.com/about/services/*
[191] *British Colombia. A Rising Leader in Ocean Technology: https://www.britishcolumbia.ca/TradeBCPortal/media/Marketing/bc-oceantech-mit.pdf*
[192] *Growing Business in BC's Capital City: https://www.victoria.ca/assets/Business/Documents/economic-development-strategy.pdf*