

ABOUT THE ONTARIO CHAMBER OF COMMERCE

For more than a century, the Ontario Chamber of Commerce has been the independent, non-partisan voice of Ontario business. Our mission is to support economic growth in Ontario by defending business priorities at Queen's Park on behalf of our network's diverse 60,000 members.

From innovative SMEs to established multi-national corporations and industry associations, the OCC is committed to working with our members to improve business competitiveness across all sectors. We represent local chambers of commerce and boards of trade in over 135 communities across Ontario, steering public policy conversations provincially and within local communities.

The OCC provides exclusive support, networking opportunities and access to policy insight and analysis to our members. We also work alongside the Government of Ontario on the delivery of programs, and leverage our network to connect the business community to public initiatives relevant to their needs.



The OCC is Ontario's business advocate.

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EXECUTIVE SUMMARY

Ontario's economy is undergoing a period of rapid change. Twenty-first century globalization, urbanization, and technological transformation are challenging the status quo and redefining what it means to be competitive. Given these and other pressures, Ontario's overall prosperity will increasingly depend on the strength of its regions*. Yet, research demonstrates that population and economic growth have been remarkably imbalanced in recent decades, with growth rates in the Greater Golden Horseshoe and Ottawa far surpassing those in other areas of Ontario.

Given the economic discrepancies across the province, it is incumbent on policymakers to examine what economic development looks like in a globalized world, what it will take for Ontario to remain competitive, and how government can mitigate regional disparities.

The Great Mosaic: Reviving Ontario's Regional Economies offers a framework for thinking about the present and future of Ontario's regional economies. With this report, the Ontario Chamber of Commerce (OCC) examines the unique strengths, opportunities, and challenges of different communities across the province, and the need for deliberate strategies to support their long-term development. Our report offers 17 practical recommendations to help build an environment in which Ontarians can continue to adapt and thrive as the economy evolves.

The primary takeaways from this report include:

- Modern governance of economic development empowers a wide range of stakeholders
 outside government. These stakeholders include businesses, post-secondary
 institutions, and not-for-profit organizations. Regional collaboration, economic
 reconciliation with Indigenous peoples, and the use of data are all critical to mobilizing
 local assets.
- The most cost-effective way to drive economic development is to cultivate ecosystems of talent, trade, and infrastructure. Fostering an environment conducive to business growth is necessary to ensure the long-term success of both traditional and emerging sectors.
- Building regional capacity for innovation is fundamental to productivity and growth.
 This means improving commercialization and technology adoption, strengthening regional innovation centres, expanding broadband internet access, and facilitating cluster development.

Whether Ontario's economy will flourish in the face of ongoing disruption remains an open question. The OCC is optimistic that the province can successfully navigate the changing economy if government and its partners make deliberate and concerted efforts to unlock the economic potential of Ontario's regions.

^{*}A note about *regions:* There are countless ways to delineate Ontario's regions. This report defines regions loosely, without making a statement about how they should be organized or understood. Rather, we rely on existing definitions where convenient, for example using Statistics Canada's economic regions for data on employment and population growth.



ANCHOR INSTITUTIONS: Large public or non-profit institutions rooted in specific communities or regions. The most common examples are hospitals, post-secondary institutions, and municipal governments.¹

BROADBAND INTERNET: High-speed transmission networks that allow many messages to be communicated simultaneously. Broadband technologies can either be wired (such as fiber optic and Ethernet cable), wireless, or satellite.

CLUSTERS: Geographic concentrations of interconnected firms, service providers, venture capitalists, post-secondary institutions, and other organizations within a field.²

COMMERCIALIZATION: The process of introducing a new product or technology to market. Complementary to this is industry's adoption or implementation of that product or technology.

COOPETITION: Relationships between stakeholders that contain both elements of competition and cooperation.³

ECONOMIC DEVELOPMENT: The process through which an economy grows and/or becomes more advanced, especially when both economic and social conditions are improved.⁴

ECONOMIC DEVELOPMENT OFFICES (EDOS): Regional organizations that carry out economic development activities to support local needs. Program objectives include business retention and expansion, marketing, newcomer attraction, innovation, small business growth, tourism, and workforce development. EDOs can be either external corporations or internal municipal departments.

FIFTH-GENERATION WIRELESS (5G): The next evolution for mobile network technology. With unprecedented network speeds and network capacities, 5G is expected to transform global economies by enabling a new generation of products and services, including virtual and augmented reality, smart cities, remote healthcare, and new Internet of Things applications.

INDUSTRIAL COMMONS: Tangible and intangible assets that benefit a wide array of firms, including research, supports for entrepreneurial activity, robust pipelines of skilled labor, globally connected infrastructure, and responsive, reliable governance frameworks.⁵

INNOVATION: The creation of value-adding products, services, and processes that improve economic, health, or social well-being.⁶ Innovation can be either evolutionary (brought about by incremental advances) or revolutionary (disruptive and new).

INNOVATION CENTRES: Facilities that enable collaboration between researchers, industry, and investors to support the commercialization and implementation of new technologies.

PLACE-BASED ECONOMIC DEVELOPMENT: An approach that empowers local actors to shape their own economic development, with a focus on mobilizing regionally specific assets and competitive advantages.

REGIONAL DEVELOPMENT: Reductions in regional disparities brought about by employment and wealth-generating economic activities.⁷



SUMMARY OF RECOMMENDATIONS

The Governments of Canada, Ontario, and/or municipalities within Ontario should:

- 1. Embed stakeholder engagement within decision-making structures.
- 2. Implement longer-term budgets for economic development agencies and programs.
- 3. Improve SME access to economic development information and programs via regional contact points.
- 4. Promote regional collaboration.
- 5. Prioritize economic reconciliation with Indigenous peoples.
- 6. Enhance the use of data.
- 7. Prioritize infrastructure investments that unlock regional economic growth.
- 8. Modernize regulations that inhibit economic development.
- 9. Champion Ontario's brand.
- 10. Focus business supports on enhancing productivity and accelerating growth.
- 11. Cultivate a dynamic and inclusive ecosystem for workforce and talent development.
- 12. Address regional labour market needs by reforming immigration systems and encouraging worker mobility.
- 13. Work through post-secondary institutions and innovation centres to improve technology transfer.
- 14. Develop policies to fill the gaps in Ontario's innovation capacity.
- 15. Remove regulatory barriers that deter private sector investments in broadband
- 16. Ensure public funding for broadband is targeted, coordinated, and streamlined.
- 17. Facilitate value-add cluster development.

Background:

DISRUPTION AND DISPARITY IN ONTARIO

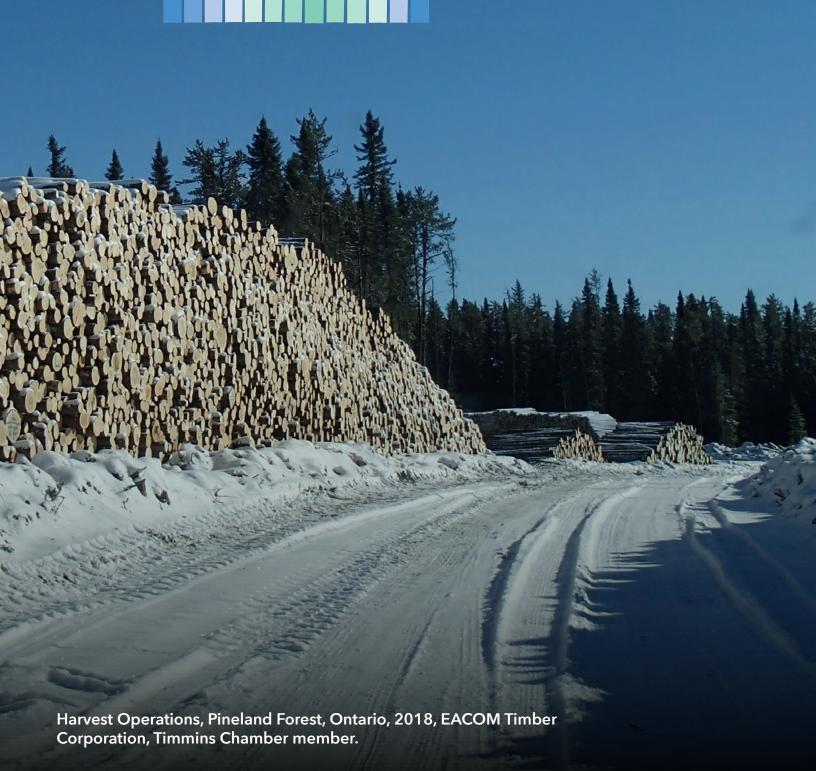
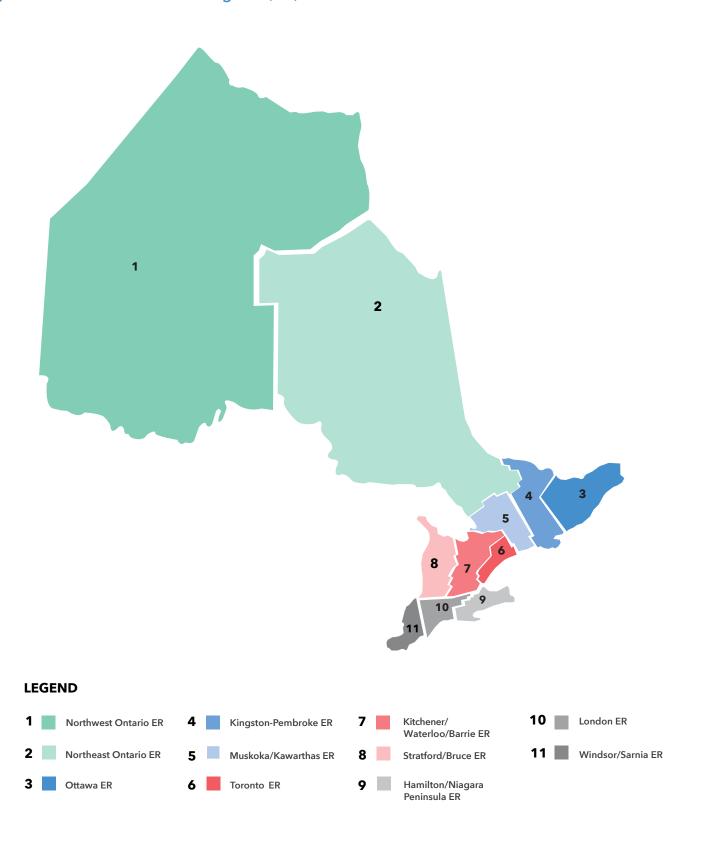


Figure 1: Ontario's Economic Regions (ER)



Source: The regional boundaries used in this report are informed by Statistics Canada's economic regions and the following paper: Ben Eisen and Joel Emes. 2016. The Five Solitudes of Ontario: A Regional Analysis of Labour Market Performance in Post-Recession Ontario. The Fraser Institute. https://www.fraserinstitute.org/sites/default/files/five-solitudes-of-ontario.pdf

ver the past two decades, a series of technological and demographic shifts have begun to transform Ontario's economic landscape. The 21st century has so far delivered intensified cross-border competition, industrial restructuring, urbanization, and an aging population. Economic development is the process through which a society grows or becomes more advanced, especially when social conditions are improved. At the same time, it describes government's attempts to manage that transformation and ultimately turn disruption into opportunity.

Ontario's experience with economic development is also one of regional disparity. Although often discussed as a singular entity, the province is composed of a multitude of smaller economies. Rural and remote areas, small and large cities, border towns, and Indigenous communities each have their own strengths, opportunities, and challenges – but even within each grouping the picture is complex.

Statistics about the province are heavily influenced by the performance of the Greater Golden Horseshoe (GGH). The GGH is Ontario's most populated region, encompassing the Greater Toronto Area (GTA) as well as the Kitchener-Waterloo-Barrie and Hamilton-Niagara Peninsula regions. The GTA alone contains 48 percent of Ontario's population and 51 percent of its service sector jobs, though only seven percent of goods-producing jobs. Finance, insurance, real estate, professional, and scientific services are clustered in the GTA, making up 22 percent of the region's employment (compared to 11 percent in the rest of the province). Employment in the rest of the GGH is well-diversified, with a strong presence of retail, health care, and manufacturing sectors.

Sixteen percent of Ontarians live in Eastern Ontario, comprised of the Greater Ottawa, Kingston-Pembroke, and Muskoka-Kawarthas regions. Eastern Ontario's economy is largely centred around service industries, including health care, professional, and social services. In Ottawa, public administration makes up 17 percent of employment.

Southwestern Ontario, with 11 percent of Ontario's population, includes the economies of London, Windsor-Sarnia, and the Stratford-Bruce Peninsula. Manufacturing is responsible for the largest share of

employment in Southwestern Ontario, accounting for 17 percent of jobs in the region overall and 26 percent of Windsor's GDP.¹⁰ The agri-food industry also boasts a strong presence in Southwestern Ontario, with 39 percent of the province's agriculture jobs contained within the region.

Northern Ontario encompasses nearly 88 percent of Ontario's landmass but only five percent of its population. Its economy is largely driven by strong natural resource industries, with 79 percent of Ontario's forestry, fishing, mining, oil and gas jobs located in the North. In recent years, declining commodity prices in global markets – no longer mitigated by trade barriers and subsidies – have added new pressure to the region's economy. Northern Ontario is also home to more than 270,000 jobs in the service sectors, including a large presence of public administration, health care, and retail.

'Rural Ontario' cuts across the province, with certain characteristics and challenges that transcend regional boundaries. Urbanization, as well as a trend towards consolidation of news outlets, hospitals, and other organizations has often led to both workers and jobs leaving rural communities. Rural regions also share higher energy costs than urban areas. However, researchers have illustrated that even rural Ontario is far from homogenous and the notion of an urban-rural divide is an oversimplification.¹¹

Given structural differences in Ontario's regions, it is perhaps unsurprising that the 2008 recession had a vastly different impact across the province. Southwestern Ontario was hit the hardest, while least affected were Ottawa and other areas in Eastern Ontario. Employment growth has also exhibited strong regional variation over the past 15 years (Figure 2). New jobs have mostly been concentrated in the GGH with little or negative growth in other parts of the province.

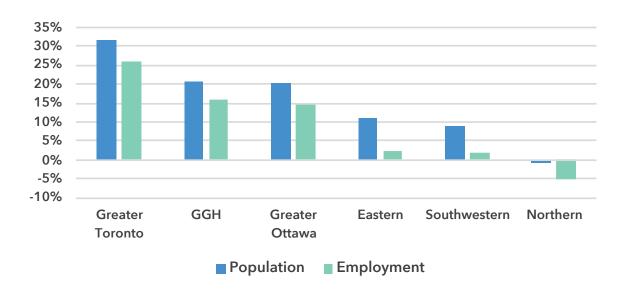


Figure 2: Change in Employment and Population, 2003-2018

Note: GGH excludes GTA. Eastern excludes Greater Ottawa.

Source: Statistics Canada. 2018. "Labour force characteristics by province, territory and economic region, annual" (Table 14-10-0090-01).
https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410009001.

In our 2019 Business Confidence Survey, the OCC found notable regional differences in business confidence among its members. Firms in the GGH were significantly more likely to report feeling confident in Ontario's economic outlook than those in the rest of the province (35 and 26 percent, respectively). Research from the Mowat Centre suggests residents in Ontario, like businesses, also exhibit regional variation in their economic outlook; 34 percent of people in Toronto and Ottawa agree the economy of their city or region has improved over the past five years, compared to only 14 percent of people in Northern Ontario. 14

Part of the disparity in confidence stems from expectations about the impact that emerging technologies will have on local economies. Phenomena such as the Internet of Things and automation — while both an opportunity and a threat — are proving to be disruptive forces for many sectors. Overall, approximately 47 percent of jobs in Ontario are susceptible to becoming automated in the near future. However, regions with large employment shares in manufacturing, mining,

quarrying, and oil and gas extraction are most susceptible to job loss from automation. Least susceptible are communities with large hospitals, post-secondary institutions, and/or public sector presence. 17

It is important to note that the industries most likely to introduce automation are also facing large labour shortages. In many cases, automation is not displacing workers but helping businesses operate at capacity. For example, in 2014, Ontario's agricultural sector had 8,600 unfilled jobs, resulting in \$436 million in lost sales. Similar labour shortages are seen in manufacturing and construction.

Meanwhile, businesses in Ontario are competing with other jurisdictions at a level never seen before. Just within the past two years, Canada signed two historic trade agreements with the European Union and ten other countries in the Asia-Pacific region: the Comprehensive Economic and Trade Agreement (CETA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Once the CPTPP is fully in force, Canada will have preferential market access to 51 countries with nearly

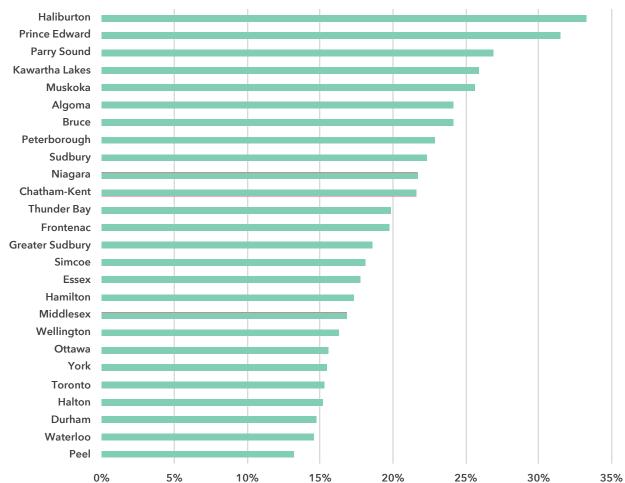
1.5 billion consumers via 14 trade agreements – a number that is only expected to continue growing.¹⁹

Global trade has been a positive phenomenon overall for Ontario. Increased competition has provided customers with greater selections of goods and services at lower prices, while giving local businesses unprecedented growth potential. However, despite all its benefits, increased levels of trade have inflicted temporary restructuring costs by forcing some workers to retrain and transition into new jobs as their old jobs move to lower-cost jurisdictions.

Globalization has led to another global megatrend: the increasing concentration of firms and people in large cities. Urbanization inevitably creates opposing pressures for metropolises and rural communities, with important consequences for housing affordability, wealth distribution, urban sprawl, loss of farmland, and economic growth across the province. Since 1996, eight out of 11 districts in Northern Ontario have experienced a population decline that is expected to continue to 2041.²⁰

The outmigration of youth from the North has slowed somewhat since the early 2000s, and there is some evidence to suggest the trend may be reversing as technology unlocks remote job opportunities and people move away from large urban centres in search of a different, more affordable lifestyle. The Greater Sudbury and Nipissing are indeed experiencing net in-migration from other parts of the province, though most other Northern communities continue to see the opposite trend. Rural Ontario may also see population growth in the future if living costs in large cities continues to rise. It is a some population of the province in large cities continues to rise.





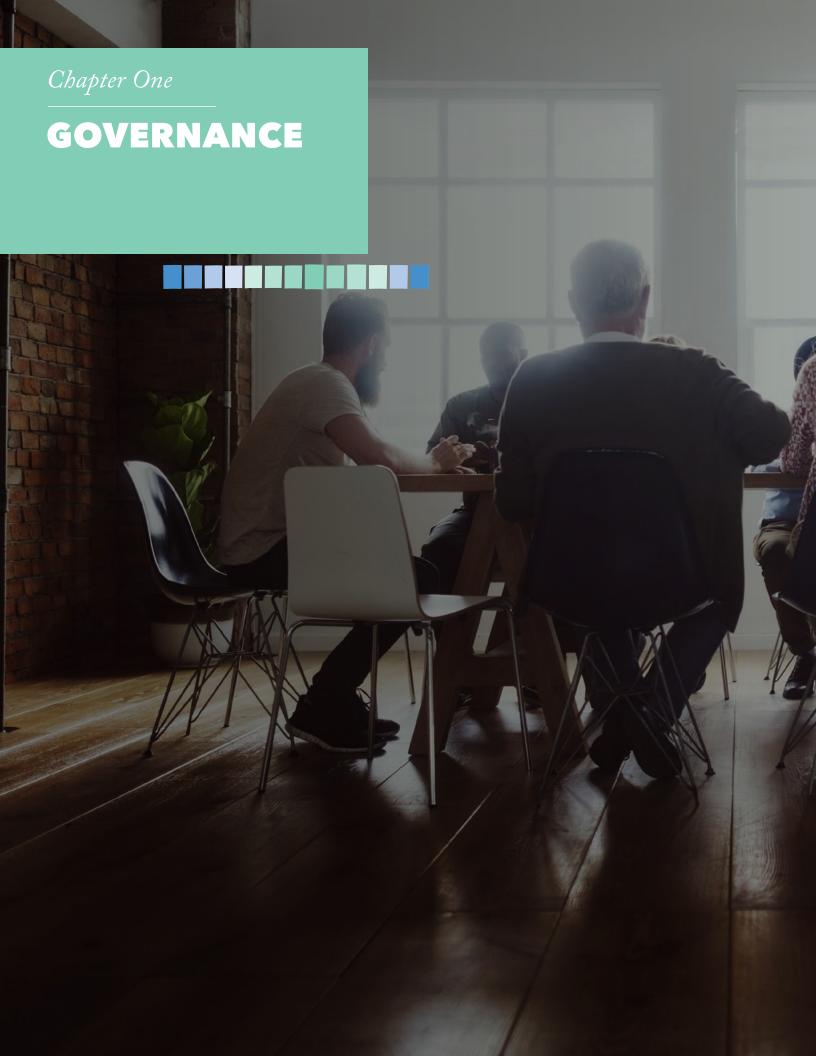
Source: Statistics Canada. 2018. "Population estimates, July 1, by census division, 2016 boundaries" (Table 17-10-0139-01). https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410009001&pickMembers%5B0%5D=2.1.

However, immigrants from other countries continue to settle disproportionately within the GTA and other large cities. In 2015, 94 percent of immigrants settled in Toronto, Ottawa-Gatineau, Hamilton, Kitchener-Waterloo, London, or Windsor, even though the rest of the province contains around one-third of the overall population.²⁴ The same pattern is seen with refugees.

The aging population is another trend with regional undertones. (Figure 3) To be sure, the entire province is seeing increased pressure on health care and other services as the proportion of retired residents grows over time. However, this challenge is accentuated in rural communities, where seniors generally make up an even larger share of the population than elsewhere in Ontario.²⁵ These communities also tend to have smaller tax bases to begin with, and large physical distances between residents, making it more difficult to fund requisite additions to public services. Perhaps unsurprisingly, businesses in Northern Ontario are twice as likely as those in the rest of the province to cite the aging population as a reason for low confidence in Ontario's economic outlook (47 and 23 percent, respectively).²⁶

Meanwhile, certain policy priorities are shared across Ontario. Businesses operating in all regions identify access to talent, the ability to navigate regulations, high input prices, and the capacity for innovation as being critical to their competitiveness.²⁷ And, when surveyed, people living across the province agree that economic competitiveness and spending more on education and health care are top priorities.²⁸

Evidently, the Government of Ontario is confronted with a large province of disparate regions. Given government's limited resources, how can it effectively manage the province's economic development?





anywhere in the world is no simple undertaking. New challenges arise rapidly and frequently, and any attempt to control outcomes is subject to a multitude of exogenous factors. Governments, with their tendency for risk aversion and process-heavy decision-making, can be slow to respond to local challenges and opportunities as they develop. Even with the most dynamic systems in place, anticipating change can be difficult at best.

For Ontario, the task is particularly complex. The province is composed of a plenitude of communities with individual needs, separated by large distances. To add to the challenge, coordination is required across at least three orders of government (four in two-tier municipalities).

When it comes to regional development, all hands are on deck. The Government of Canada oversees six Regional Development Agencies across the country. In Ontario, these are the Federal Economic Development Agency for Southern Ontario (FedDev) and the Federal Economic Development Initiative for Northern Ontario (FedNor). Both FedDev and FedNor act as intermediaries between the federal innovation agenda and provincial priorities, partnering with private and public sector organizations in an effort to strengthen local industries, build infrastructure, and support workforce development.²⁹ The federal government also invests in regional broadband and transportation infrastructure under different funding envelopes.

The Government of Ontario runs a wide range of regional development programs of its own (see the Appendices for a non-exhaustive list of federal and provincial economic development programs in Ontario). The Ministry of Economic Development, Job Creation and Trade provides support for municipalities, industry, and not-for-profits to strengthen business attraction and expansion across the province. The Ministry of Agriculture, Food and Rural Affairs promotes agri-food and rural economic development in Ontario, and the Ministry of Energy, Northern Development and Mines focuses on the North. In addition to these programs, a range of

other government initiatives contribute to economic development by addressing specific issues such as skills mismatches and industrial electricity prices.

At the local level, the *Municipal Act*, 2001 specifies the means through which municipalities may engage in economic development. Economic development offices (EDOs) carry out activities to support local needs, which vary by community. Program objectives include business retention and expansion, marketing, newcomer attraction, innovation, small business growth, tourism, and workforce development.

The Economic Developers Council of Ontario (EDCO) is a not-for-profit organization, independent of government, with a mandate to enhance the capacity of economic developers in Ontario. EDCO's membership includes over 1,000 professional economic developers, as well as members in related sectors such as academia and real estate. EDCO supports two certification programs, the Ec.D (Canadian) and the CEcD (international), by hosting professional development opportunities throughout the year.

Other local initiatives are led by an array of non-governmental organizations – many of which are funded wholly or partially by government – including post-secondary institutions, Ontario Centres of Excellence, workforce planning boards, Business Improvement Areas, Small Business Enterprise Centres, Community Futures Development Corporations, and Regional Tourism Organizations.

For decades, Ontario's approach to economic development has brought new jobs and growth to the province. Federal, provincial, and municipal agencies have worked productively to advance regional development, and many businesses and communities continue to benefit from their support. Yet, in many ways, the modern economy has challenged the efficacy of the status quo, not just in Ontario but in advanced economies around the world. Limited public resources are stretched across a patchwork of small-scale, sometimes duplicative efforts. Of Governments' actions—at all levels—have at times failed to move at the increasingly rapid pace of business and their support has too often been inconsistent and unpredictable.

EMBRACING A MODERN FRAMEWORK

In order to thrive in the 21st century economy, Ontario must embrace a modern approach to regional economic development. The underlying goal should be to reinforce the existing assets and competitive advantages within Ontario, with a focus on making its regions globally competitive, not necessarily economically equal.

This approach, often referred to as place-based economic development, works best when local stakeholders are empowered to define their opportunities and shape their economic futures accordingly. It requires collaborative governance structures that engage actors across the private, public, and not-for-profit sectors.³¹ In most jurisdictions, economic development planning increasingly occurs at the cluster level, with central governments taking a less prominent role. Multistakeholder governance tends to result in flexible, placebased policies and programs that respond more readily to local realities than traditional top-down governance. In the long-term, this leads to economic growth that is both shared and enduring.

For place-based economic development to work well, stakeholders need a stable, predictable environment in which to make decisions. Elected officials should, and always will, have an important role to play in economic development as they are most directly accountable to the public. However, political involvement must not be excessive. In the eyes of many businesses in Ontario, decisions about economic development are too often politicized. Although non-governmental stakeholders are typically involved in important decisions, they tend to be engaged in an ad hoc, consultative way. Industry is frequently offered the chance to provide feedback on proposed policies, but their expertise is rarely embedded within the policy design process from the outset.

ANCHOR INSTITUTIONS AS **ECONOMIC ENGINES**

Anchor institutions - universities, hospitals, and other large public or non-profit employers - play a major role in modern place-based regional development.32 In many communities, these organizations employ a considerable portion of the population, own significant real estate, and act as the biggest purchasers of goods and services. As a result of this economic leverage, anchor institutions can support community well-being during times of economic transition. Globally, many institutions have deliberately done so by offering training opportunities to the local workforce, directing more purchases at local suppliers, creating new jobs, and incubating new businesses.33

For instance, research by the Brookings Institution found that post-secondary institutions have contributed significantly to the economic revival of many communities in the Rust Belt region of the United States. Specifically, universities and colleges are "central to attracting and preparing talent, and serve as anchors for new business growth and economic development in many of the region's historic industrial and trading cities."34

Similarly, regions in Ontario with strong anchor institutions have an opportunity to leverage the economic influence of their anchors to improve community resilience to economic disruption. Anchor strategies should focus on developing place-based solutions, forming public-private partnerships, and making strategic investments.

RECOMMENDATION 1:

Embed stakeholder engagement within decisionmaking structures.

A central feature of place-based economic development is the prominent role that businesses, post-secondary institutions, not-for-profits, and other local stakeholders play in mobilizing a region's potential. There are several benefits to institutionalizing the engagement of these groups. First, any effort at economic development is more likely to be successful when informed by those on the front lines and carried out through strong partnerships with them. Second, it allows for more agile responses to local realities; when stakeholder engagement is not structurally embedded, information takes longer to reach decision-makers and may no longer be pertinent by the time any action is taken.³⁵

Finally, empowering non-governmental actors provides some distance between policy and politics, mitigating the temptation to use economic development as a political device. Businesses looking to potentially invest in a community prefer to deal with politicians at the very end of the process. In addition, pilot projects are often seen as politically motivated when they are designed and implemented by provincial agencies.

Formalized stakeholder engagement can be achieved by establishing arm's length organizations to manage economic development initiatives, or permanent advisory committees to guide them. Such structures do currently exist in Ontario. The provincial government's Mining Working Group and Agricultural Advisory Committee are two recent examples that have been well received by the business community. However, these are temporary structures and there is room for more system-wide adoption of stakeholder engagement.

At the local level, many of Ontario's EDOs are external corporations as opposed to internal municipal departments with Boards of Directors that oversee them. These EDOs tend to be more flexible and are able to respond more quickly to threats and opportunities. While the ideal governance structure of an economic development agency depends on local context, it is worth considering where organizations could benefit from embedding more formal stakeholder engagement or oversight in their governance models.

RECOMMENDATION 2:

Implement longer-term budgets for economic development agencies and programs.

One of the greatest challenges for businesses and practitioners is the lack of predictability associated with economic development programs. Application windows appear to open and close arbitrarily, with the administrators themselves often uncertain about the future of the projects they run.

One solution is to implement longer-term budgets, as more predictable and stable funding allows both program administrators and beneficiaries to engage in longer-term planning, which can allow for more meaningful projects. This is true for provincial bodies such as Ontario's Small Business Enterprise Centres, as well as federal ones like the Northern Ontario Heritage Fund Corporation and FedNor.

EDOs would also benefit from more stable funding. Since the 1990s, the provincial government has gradually downloaded many of its financial responsibilities onto local governments, putting pressure on municipalities to increase taxes and development charges while spending less on infrastructure and core services that directly support economic development. Unsurprisingly, a majority of Ontario's municipalities cite budget constraints as a top barrier to their economic development.³⁷ Greater stability in transfer payments from the Province to municipalities, and from municipalities to EDOs, would give them more predictability and ultimately allow for more strategic, long-term investments in regional economic development.

RECOMMENDATION 3:

Improve SME access to economic development information and programs via regional contact points.

On one hand, the myriad of economic development programs and services across Ontario is a tremendous asset for the province. It creates a system wherein support can be targeted to address the needs of different regions, sectors, and phases of development. On the other hand, it can be difficult for businesses to understand and navigate the support system. Unsurprisingly, many small and medium-sized enterprises (SMEs) are unaware of what is available to them.³⁸

For foreign investors, the Invest in Ontario office acts as a first point of contact. Access to similar one-stop windows would help local actors make the most

of supports available to them. At a minimum, these organizations should be prepared to efficiently respond to inquiries from businesses and entrepreneurs with upto-date information about taxes, grants, and regulation. They might also go beyond information sharing, for instance, to help clients write grant applications.

Depending on the region, EDOs, Small Business Enterprise Centres, and chambers of commerce/ boards of trade may be well-positioned to act as regional contact points, as they already have productive relationships with municipalities and businesses in their region. The Government of Ontario should identify and/or establish appropriate centres within different regions, equip them with information about available programs, and provide any training and resources needed to ensure staff are able to respond efficiently to client inquiries.

REGIONAL COLLABORATION

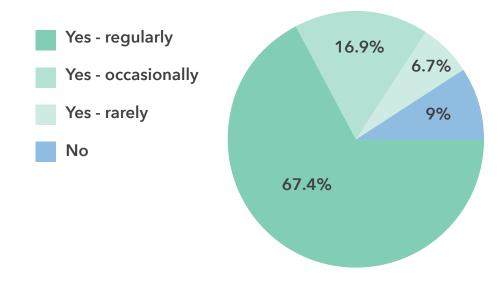
In a world where capital, labour, and goods move easily across borders, fragmented and uncoordinated efforts at economic development risk falling short of their objectives. By contrast, partnerships among businesses, government, post-secondary institutions, innovation centres, entrepreneurs, not-for-profits, and other stakeholders allow regions to accomplish more by pooling resources and minimizing duplication. Additionally, provincial and federal agencies such as FedNor typically prefer to deal with one voice and have

often encouraged regional collaboration as a strategy to better access their funding.³⁹ Similarly, prospective investors are more attracted to communities that present themselves as part of a region.⁴⁰

There are many productive examples of regional collaboration in Ontario. For example, the Smart Freight Centre is a joint initiative established by the University of Toronto, York University, McMaster University, local businesses, and the Region of Peel to improve how goods are delivered across the Greater Toronto and Hamilton Area. The Centre aims to "break down silos" to address shared transportation challenges, such as congestion, emissions, and automation.⁴¹

In 2019, the OCC surveyed EDOs and Community Futures Development Corporations (CFDCs) across Ontario to better understand how they collaborate with other organizations in their surroundings. Among the EDOs and CFDCs that responded, 91 percent reported collaborating with local chambers of commerce or boards of trade (Figure 4), 96 percent reported collaborating with other EDOs, and 80 percent reported collaborating with local workforce planning boards. 42 Common areas of collaboration include joint marketing of the region, promotion of events, data sharing, and participation in committees and task forces.

Figure 4: Percentage of EDOs and CFDCs in Ontario that Collaborate with Local Chambers of **Commerce or Boards of Trade**



Source: A survey of n=89 EDOs and CFDCs was conducted online by the OCC between June 4 and July 19, 2019.

Chapter One: Governance

While regional collaboration is evidently widespread in Ontario, it often lacks the depth needed to bring about significant benefits. In most cases, collaboration has been limited to information sharing, without joint planning or strategic implementation of projects. Individual municipalities, EDOs, industry associations, and other stakeholders tend to produce their own strategies for economic development, often with little coordination. ⁴³ As a result, mandates often overlap or appear unclear to businesses and investors, diluting their effectiveness and missing opportunities to reinforce shared objectives.

COLLABORATION IN PETERBOROUGH

Peterborough and the Kawarthas Economic Development (PKED) delivers economic development services through a Memorandum of Understanding with the City and County of Peterborough. To achieve its mandate, PKED partners with the Greater Peterborough Chamber of Commerce, Community Futures Peterborough, the Innovation Cluster, the Downtown Business Improvement Area, the Workforce Development Board, and various other organizations in the region.

This collaboration has resulted in several joint projects and a new atmosphere of cooperation. Since 2016, many of these agencies have moved their offices to Venture North, a three-story business hub, giving them a level of physical proximity that will help foster even more collaboration in years to come.

In 2017, PKED entered into a multi-year partnership with two First Nations and nearby municipalities to pursue economic development projects of mutual benefit. This unique partnership is part of the Community Economic Development Initiative (CEDI) implemented by the Federation of Canadian Municipalities and the Council for the Advancement of Native Development Officers.⁴⁵

Public transit illustrates the practical impacts this can have on economic development. In many communities across the province, transit systems stop at or before municipal borders. Mobility is limited as residents are unable to travel seamlessly between regions, which in turn hinders the ability of businesses to attract and retain talent. Shared funding and planning between

organizations within adjacent municipalities could help to address such regional transit gaps.

One of the main challenges with collaboration is that stakeholders (firms, industries, regions) feel a need to compete for limited resources (investment, talent, political favour). At the same time, they often share broad goals and specific interests. This creates a need for what is known as *coopetition*. Often discussed in the context of clusters, coopetition describes relationships between stakeholders that contain both elements of competition and cooperation. For example, businesses within a region might compete for top-tier talent while cooperating at the same time to promote their region as a destination for new immigrants. Governments can play an important role in catalyzing coopetition as a strategy for regional development.

RECOMMENDATION 4:

Promote regional collaboration.

Ontario's economic development practitioners understand that regional collaboration is both beneficial and necessary in a world of aggressive global competition and limited resources. ⁴⁶ Yet they face a series of barriers, including distrust, competition for resources, limited staff capacity, and a lack of awareness of potential linkages.

The provincial government can play a role in spurring the strategic use of collaboration by addressing some of these barriers. For instance, it can act as a convener by offering forums for regional collaboration, including events, workshops, and online databases. In the past, stakeholders have benefitted from such initiatives by the Ministry of Agriculture, Food and Rural Affairs. In its role as convener, government can help identify potential areas of alignment between stakeholders with shared needs or priorities. The Province can also champion partnerships that are working well as examples of successful models that may be replicated elsewhere.

It is important to note that, despite its many potential benefits, collaboration tends to fail in the long-term when it does not develop organically based on shared interests. ⁴⁷ Since the provincial government is not ideally positioned to identify optimal groupings, its involvement should be limited to promoting and supporting collaboration, without mandating it or requiring it as a precondition to access funding.

INDIGENOUS ECONOMIC DEVELOPMENT

Any effort to strengthen Ontario's regional development is bound to be more effective when it recognizes Indigenous peoples as critical partners and works with Indigenous communities to foster economic reconciliation.

In 2016, there were 374,395 Indigenous people living in the province, with a younger average age than the rest of the population.⁴⁸ Approximately 11 percent identified as self-employed.⁴⁹ Unfortunately, Indigenous business owners face barriers to accessing financial services, information on business opportunities, and training programs.⁵⁰ In 2017, only 12 percent of self-employed Indigenous people received assistance with their businesses, and fewer than five percent received support from a municipal or provincial government.⁵¹ While many of the challenges they face are similar to those of non-Indigenous businesses, access to support can be particularly difficult as Indigenous businesses tend to be located more remotely and are sometimes seen as higher-risk investments.⁵²



Despite considerable room for improvement, Canada's business community is leading efforts at economic reconciliation. One such initiative is the Progressive Aboriginal Relations (PAR) certification program offered by the Canadian Council for Aboriginal Business, through which companies improve their Aboriginal relations. Since 2001, 345 companies have participated in the program.

Other promising work is being carried out by Aboriginal economic development corporations

(AEDCs), organizations that invest in, own, and/or manage local businesses to advance their communities' economic development. Over time, AEDCs have become more common and more sophisticated, often forming mutually beneficial partnerships with offreserve businesses, investors, governments, and other stakeholders, though partnership opportunities have sometimes been limited by negative perceptions and a lack of information. 4

RECOMMENDATION 5:

Prioritize economic reconciliation with Indigenous peoples.

First and foremost, the Canadian and Ontario governments must recognize reconciliation as an opportunity, not an obligation, and one that will take a long time to carry out. A reconciliation lens should be applied across the public sector as it is an objective that cuts across various mandates. This requires fostering long-term relationships with Indigenous business associations and other groups to understand needs and craft appropriate solutions. Examples within Ontario include AEDCs, the National Aboriginal Capital Corporations Association, the Canadian Council for Aboriginal Business, the Southern First Nations Secretariat, and the Anishnawbe Business Professional Association. Secretarions of the Canadian Council for Secretarion of the Anishnawbe Business Professional Association.

Further, all departments that oversee economic development programs should examine the relevance and accessibility of their initiatives to Indigenous peoples, as well as the impacts (or lack thereof) on Indigenous outcomes. The Ontario government should make awareness training mandatory for staff who work with Indigenous businesses, people, or programs in any capacity.⁵⁷

Federal and provincial governments should use procurement to support Indigenous entrepreneurship by providing suppliers with incentives to have more Indigenous content in their businesses.⁵⁸ Investing in Northern Ontario's infrastructure projects will have long-term benefits as weak infrastructure is a major barrier to Indigenous economic development and Indigenous firms are often involved as proponents or contractors in these projects. Some examples are the forest access roads and Ring of Fire route discussed in Chapter 2. The Ontario government should work with Indigenous stakeholders to identify these opportunities.

THE VALUE OF GOOD INFORMATION

When it comes to economic development, data is an invaluable asset. It can be used to map assets, opportunities, vulnerabilities, and threats across the province, providing the information needed to act effectively. Among other things, data can and should be used to identify regional skills shortages, susceptibility to automation, business succession needs, and opportunities for export growth. In a diverse jurisdiction like Ontario, reliable information is essential to understanding local realities and addressing disparities.

Data is just as important for designing effective interventions and measuring their performance over time. Governments run a plethora of programs under the umbrella of economic development, including exhibitions, trade missions, grants and loans, workforce development, and many more. A good understanding of causal relationships between different program types and their outcomes enables policymakers to select the right tools and make better use of tax dollars.

Choosing the right metrics is critical. For example, job creation, while important, can lead to shortlived wins if it is the only focus. This is because job numbers are not necessarily the best measure of long-term performance for industries that are becoming more labour efficient, such as agriculture, mining, and manufacturing. A more worthwhile exercise is to measure progress along different outcomes (growth, prosperity, and inclusion) with a focus on key enablers (innovation, trade, talent, and infrastructure).⁵⁹ Indicators of economic development need to reflect a contemporary understanding of what drives competitiveness in modern markets, where the emphasis is shifting from physical capital to intangible assets such as intellectual property.⁶⁰ Governments in Canada and Ontario already do collect and disseminate data relatively well. Most provincial programs require some level of performance measurement and municipalities engage in municipal benchmarking through Ontario's Ministry of Municipal Affairs and Housing. Several resources are available to support better data usage, including Public Sector Digest's Municipal Economic Development

However, there is undeniable room for improvement. Ontario needs to collect more of the right information,

Index,65 TrilliumGIS,66 and ConnectON.67

including data on skills mismatches and the impact of disruptive technologies.⁶⁸ In recent years, budget constraints have led Statistics Canada to reduce the scope of its programs and cancel others, such as the Survey of Labour and Income Dynamics in 2012.

Government agencies within the province also need to make better use of available data. Information that businesses currently provide – for example, through administrative records and surveys like EmployerOne – is not always used to the extent it could be to structure programs and investments. For instance, data could be used better to help target initiatives based on the risk of plant closures, susceptibility to automation, skills mismatches, and priority areas for succession planning.

LESSONS FROM ABROAD: THE WHAT WORKS APPROACH

The United Kingdom (UK) takes a forward-thinking approach to evidence-based policymaking with its What Works approach. In 2013, the Cabinet Office created a group of evidence institutions called What Works Centres "to improve the way government and other organizations create, share and use... high quality evidence for decision-making."

There are now ten independent What Works Centres covering various policy areas.⁶² For example, the What Works Centre for Local Economic Growth is responsible for regional economic development. Each centre uses data to assess the effectiveness of different policy solutions, shares findings in an accessible way, and works with decision-makers to translate evidence into action. The Cross-Government Trial Advice Panel, composed of experts from across academia and government, supports civil servants to implement the What Works approach into their respective departments.⁶³ Several countries, including Canada, have adopted versions of the What Works approach, but most efforts to date have focused on the social sector.64

RECOMMENDATION 6: Enhance the use of data.

There are numerous obstacles to using data well, including resource constraints, organizational cultures, a lack of universally accepted standards, and difficulty attributing long-term outcomes to specific initiatives. Governments can also be reluctant to share information that might reveal that a program they championed fell short of its intended results.

Unlocking the potential of data to drive economic development will require a cultural shift, as bureaucrats, elected officials, and practitioners must first understand and actualize its importance. There needs to be a government-wide understanding that spending money to collect and evaluate meaningful information today allows for a more cost-effective use of tax dollars in the long-term.

At a minimum, departments within the Government of Ontario should earmark a greater share of their budgets for program evaluation. The Province should also consider adopting the What Works approach to support its economic development, using the UK's What Works Centre for Local Economic Growth as a model. This centre would work with local stakeholders to craft region-specific economic development programs and policies, implement them as pilots, and assess their impacts over time. In a province as diverse as Ontario, this approach is bound to be more effective than one-size-fits-all solutions.

Using data well will also require more strategic coordination across relevant federal and provincial agencies. Over the past two years, the governments of Ontario and Canada have each consulted the public on data strategies, but their focus has largely been on digital technologies, commercial data, and privacy. As a next step, both governments should work together with the private sector and research partners to develop a cohesive strategy for optimizing regional economic data. This process should explore:

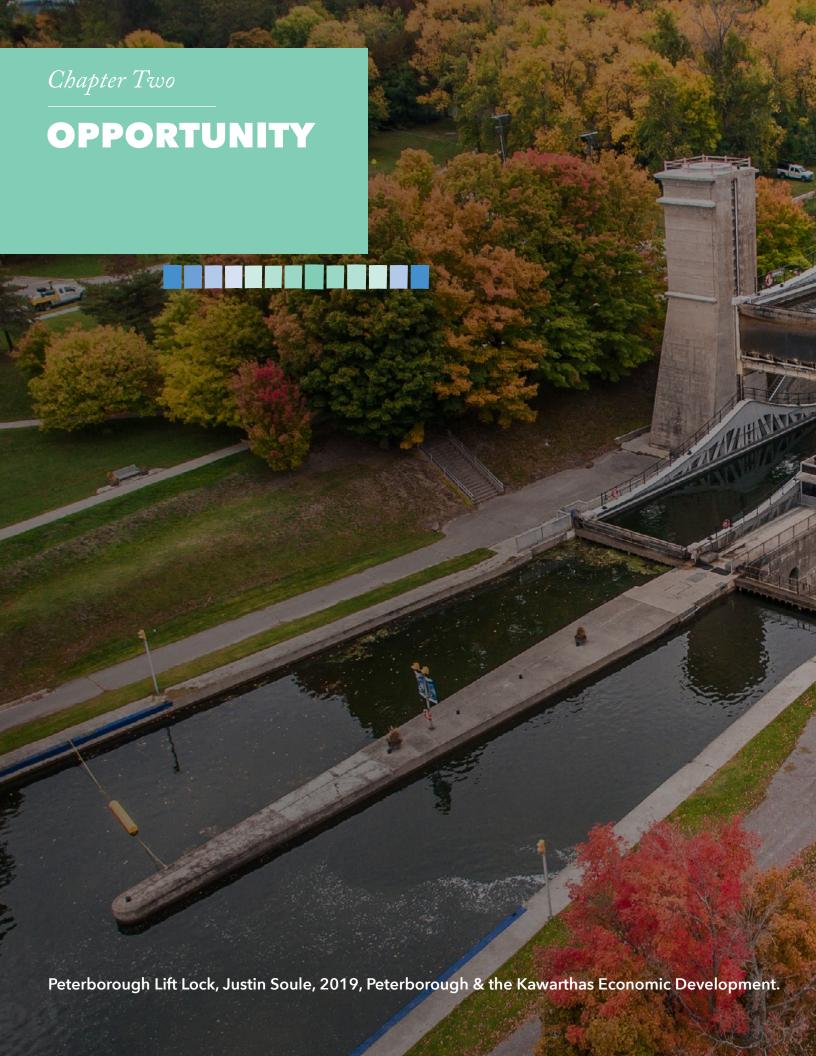
- What types of labour market information and other data are most relevant to economic development in the 21st century;
- Opportunities to collect data more cost-efficiently, for example by turning information that is already collected for administrative purposes into official statistics, or partnering with private firms and nonprofits that collect data;

- Systems through which agencies can more effectively share information that crosses sectoral and/or jurisdictional boundaries; and
- How information will be actioned to support economic development and other objectives.⁶⁹

Stakeholders should periodically review the agenda for data collection to update metrics and explore new partnerships. Selecting appropriate performance indicators is critical and should be informed by content experts as well as local actors that understand what is relevant to their contexts.

While data is incredibly valuable to overall success, it is important to be cognizant of the administrative burden it can sometimes place on those required to collect and evaluate it. For smaller businesses, applying for government funding can already involve navigating a prohibitive amount of red tape. Thus, the level of data that funders request should be proportionate to the amount of funding they are disbursing to applicants. Where possible, recipients (especially SMEs and notfor-profits) should also receive guidance and support to help them collect the requisite information.

Partnerships with academic groups, such as the University of Waterloo's Masters of Economic Development and Innovation Program, can be a useful way to build capacity, share information, reduce the burden on local governments and small businesses, and improve the impartiality of evaluation efforts. Indeed, academic researchers have already explored many questions central to Ontario's long-term economic development. Translating such available evidence into action requires the provincial government to support and inspire deeper organizational transformation across the public sector. Finally, to maximize its value, data should be shared openly to the extent that this does violate the privacy or security of relevant parties.





the trusted brand of safe, high-quality goods and services it can offer. While developing economies benefit from low input costs and regulatory standards, Ontario should not seek to compete in a race to the bottom. The province is fortunate to have an abundance of raw materials, world-class talent, and a global reputation for ethically sourced and environmentally sustainable industries. Each region is equipped with unique strengths and opportunities to build on that advantage. Remaining competitive and ensuring that prosperity is equitably distributed will require deliberate, concerted efforts from government and the private sector to map and mobilize the sources of Ontario's economic potential.

DIFFERENT SECTORS, SIMILAR CHALLENGES

To understand the driving forces behind Ontario's regional economic development, consider the footprints of some of its largest economic sectors: tourism, mining, forestry, agriculture, and manufacturing.



Fall, Justin Soule, 2019, Peterborough & the Kawarthas Economic Development.

Tourism is an important source of employment for communities across the province, small and large. The sector contributes over \$32 billion to provincial GDP, employs more than 390,000 people, and contributes significant tax revenues to all orders of government.⁷¹ Its impact on Ontario's economy is widespread, generating demand for transportation, accommodation, food services, and several other

industries.⁷² In some regions, tourism accounts for more than 15 percent of all jobs.⁷³

The mining supply and services sector consists of more than 900 companies across Ontario, with combined mineral production valued at around \$10 billion per year. The sector has thrived as a result of sustained commitment on behalf of both government and industry; a skilled workforce, stable political environment, low mining tax rates, and state-of-the art geoscience have all contributed to the sector's success. Many mining jobs are located in the North, but the benefits of a strong mining sector are felt across the province when global firms choose to invest in Ontario. The Toronto Stock Exchange (TSX) and the TSX Venture Exchange are home to half of the world's public mining companies.

Forestry contributes another \$12 billion annually to Ontario's GDP and supports 170,000 jobs across the province. Given the right policy environment, the sector is poised to grow as a result of increasing global demand for value-added wood products, such as furniture and construction materials. Indeed, more and more architects and engineers are choosing to use wood for its sustainability, quality, and speed of construction.

Agriculture is especially important to the economies of rural Ontario, home to one of the highest quality food production systems in the world. Ontario agrifood value chain – from farms to retail – contributes \$40 billion per year to the provincial economy. Though largely concentrated in Southwestern Ontario, agriculture boasts a strong footprint in all regions, employing more than 81,000 people in the East and 11,700 in the North. As a result of population growth, global demand for food is projected to increase by between 59 and 98 percent between 2005 and 2050 and consumer preferences are shifting towards the safer, higher-quality food produced in Ontario. In Ontario.

Another historic building block of Ontario's economy is manufacturing, which continues to boast a strong presence across the province. In the regions of Windsor-Sarnia, Kitchener-Waterloo-Barrie, and London, manufacturing represents more than 15 percent of all jobs. Provincially, the sector accounts for 12 percent of GDP, generates more than \$300

billion in annual output, directly employs more than 770,000 residents, and accounts for more than 80 percent of exports.⁸²

Ontario's forestry, mining, agriculture, and manufacturing sectors have experienced their fair share of challenges in recent years. Cross-border competition has intensified, input costs have risen, capital investment levels have fallen, and skills gaps have widened. Tourism faces many of the same challenges, including growing competition with emerging countries like Thailand that are actively leveraging tourism as an economic development strategy. Restoring competitiveness within these sectors has far-reaching regional benefits, while allowing them to stagnate puts Ontario's broader economic future at risk.

In addition to the historically dominant industries discussed here, the province has developed an advantage in sectors as diverse as digital technologies, finance, construction, nuclear power, and cannabis.* With well-established firms in each of these areas, Ontario stands to capitalize on new trade opportunities and growing global demand. And, while each sector is unique, the long-term performance of each industry depends on a similar foundation of policies and economic resources.

THE INDUSTRIAL COMMONS

The most cost-effective way to unleash Ontario's economic potential is to invest in ecosystems of talent, trade, infrastructure, and innovation – collectively referred to as the *industrial commons* because they benefit a wide range of firms and sectors. ⁸⁴ While government is not well suited to pick winners and losers at the firm or industry level, it can and should build overall capacity within the economy so that all businesses can respond nimbly to new challenges and opportunities. Further, taking a 'horizontal' approach to economic development can mitigate negative competition effects that may arise when interventions are targeted at specific organizations or industries. ⁸⁵

The industrial commons approach encourages investments in growth-enabling energy and transportation infrastructure, research and entrepreneurial activity, skilled labour, and responsive governance structures. 86 In contrast, it

shies away from an overreliance on subsidies and grants, which can sometimes favour one-time job creation over long-term economic growth.

Local governments in Ontario are mostly prohibited from using direct subsidies or bonuses to attract new business investment. Practitioners of economic development in Ontario generally support this restriction, noting that bonusing has not been a cost-effective way to create long-term wealth in the United States, where it is widely used, and that it can also put smaller communities at a disadvantage.⁸⁷



Greenbelt Microgreens facility, Hamilton.

To be sure, providing direct financial support to businesses can be effective, but only when funding is directed at productivity enhancers like skills training or technology adoption. Examples of such funds include the Canada-Ontario Job Grant, the Industrial Research Assistance Program, and the Northern Innovation Program.

For the most part, governments should focus on making strategic, long-term investments in the industrial commons. Business retention and expansion (BRE) programs are helpful because they address systemwide barriers to scaling up successful firms, rather than focusing on attracting new ones. Additionally, BRE programs typically cater to the needs of SMEs in rural areas, where the growth potential is substantial and a small public investment can have a large impact on regional development. Indeed, SMEs account for more than 88 percent of private sector employment in Ontario, and tend to rely heavily on the industrial commons due to their limited individual resources.

^{*}To learn more about Ontario's cannabis industry, see: Catrina Kronfli. 2019. Supporting Ontario's Budding Cannabis Industry. Ontario Chamber of Commerce. https://occ.ca/wp-content/uploads/Supporting-Ontarios-Budding-Cannabis-Industry.pdf.

Chapter Two: Opportunity

Government initiatives are most effective when they leverage partnerships, which allow tax dollars to be stretched further, build trust and collaboration, and create more sustainable programs that can last several years. A good example of this is the Strategic Skills Initiative.

The industrial commons approach requires governments to build systems conducive to the success of many different economic sectors. In addition to investing in infrastructure and human capital, this calls for smart land use planning. The ease with which businesses can access commercial and industrial land factors into their willingness to invest in a community, while the affordability and quality of residential development inform people's willingness to live and work there.

Population growth in Ontario's cities, particularly in their suburbs, will continue to put pressure on infrastructure. 94 Urban planners must take this into account by integrating transportation with housing, employment, and service delivery – fully embracing the concept of complete communities. Planners will need to adjust to the growing role that mixed-use lands will play and learn to adapt nimbly to changes in the way people choose to live and work.



Aerial View of Peterborough, Justin Soule, 2019, Peterborough & the Kawarthas Economic Development.

In many of Ontario's larger cities, housing affordability challenges are tied to a lack of supply, as layers of approvals and costs limit investment in residential development. It takes an average of 250 days to deal with construction permits in Canada, longer than it does in any other G7 country and nearly three times as long as in the United States. ⁹⁵ In 2019, the Ontario

THE STRATEGIC SKILLS INITIATIVE

The Strategic Skills Initiative (SSI) was a \$130 million multi-year grant program first announced in Ontario's 1998 Budget and administered by the Ministry of Economic Development and Trade. The program was designed to fund projects that would develop those skills most critical to the competitiveness of growing industries.

Through SSI, the Ontario government provided start-up contributions for projects developed through partnerships between industry and training providers. SSI was thus designed to act as a catalyst to stimulate new partnerships; since it did not provide ongoing operating funding, the program encouraged self-sustaining projects that attracted considerable private investment.

An evaluation by KPMG in 2004 found that the program was effective at enhancing capacity for skills training in Ontario. SSI funded projects across a wide range of sectors, including aerospace, microelectronics, automotive, forestry, and rural wastewater management. Funding was used to modernize training equipment, adopt new software, and develop new programs.

By catalyzing partnerships between industry and training providers, SSI was an affordable and sustainable investment for the Province. According to KPMG: "Without the program, industry and training providers might still collaborate, but most likely on an ad hoc basis... On a long-term basis, some interviewees reported that the relationships facilitated by SSI have evolved into further collaboration opportunities." 93

government took steps to speed up development with its *More Homes, More Choice Act, 2019*, which streamlines planning approvals, provides developers with more certainty around what they can build and how much it will cost, and reduces the costs of building second units. Although this Act is expected to increase supply, municipalities and the Province will need to continue working with stakeholders to design better land use policies that can accommodate economic growth while protecting Ontario's environmental resources and farmland.

RECOMMENDATION 7:

Prioritize infrastructure investments that unlock regional economic growth.

With limited resources at its disposal, the Government of Ontario will inevitably need to make decisions about where to prioritize its infrastructure spending. Projected long-term impacts on regional economic development should guide these decisions.

Where possible, the Government of Ontario should carry out infrastructure projects in collaboration with businesses, post-secondary institutions, and other stakeholders to pool resources and share risk. Infrastructure Ontario's use of alternative financing and procurement models has allowed the organization to execute hundreds of cost-effective projects, but provincial and municipal projects elsewhere continue to rely on outdated models. More can be done to leverage partners, including the Canada Infrastructure Bank (CIB), a Crown corporation mandated to fund revenue-generating infrastructure projects that are in the public interest. The CIB uses federal supports to attract private and institutional investment while also playing an advisory role. Ontario should work through the CIB to fund projects that are especially important for its regional development.

Further, the Government of Canada should consider implementing a federal program, similar to Quebec's Immigrant Investor Program, to attract foreign investment in Ontario's infrastructure projects. Through this scheme, the federal government would offer foreign investors permanent residence in exchange for substantive investments in certain regionally significant infrastructure projects. A similar program in Malta has been instrumental in driving that country's economic growth since 2014.

While assessing the merits of all potential infrastructure projects is beyond the scope of this report, it is worth highlighting the value of strategically investing in transportation and energy systems. Broadband is discussed in more detail in Chapter 3.

Transportation*

Ontario's expansive network of roads, rail, ports, and airports is essential to moving both goods and people through the province. Unfortunately, due to decades of underinvestment and poor planning, businesses face gross inefficiencies shipping their goods across the province. For some companies located in the North, moving goods to and from hubs in the South costs as much as importing goods from China.⁹⁶ Part of the challenge is a lack of integration across transportation systems. Ontario needs a multi-modal approach to transportation planning to ensure seamless movement across the province.

Another major issue is the inadequacy of rural roads. Consider the agri-food sector as an example. Many of Ontario's roads are not designed for tractors and other large equipment that the sector uses to carry its products to market, and congestion limits productivity. The Ministry of Transportation should prioritize upgrades to rural transportation networks, with investments informed by industry representatives such as the Durham Agricultural Advisory Committee.

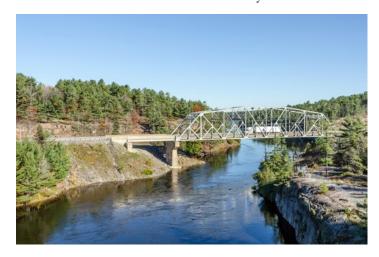


Most of Ontario's roads serve multiple purposes, making them sound investments in the industrial commons. For example, access roads within Crown forest areas are used for forestry, mining, trapping, and tourism, while simultaneously allowing for efficient maintenance of power grids, telephone lines, railways, and pipelines. Many of Ontario's Indigenous communities rely exclusively on forest roads to access

^{*}For more detailed commentary and recommendations regarding Ontario's transportation infrastructure, see: Catrina Kronfli. 2018. Moving Forward: Towards a Strategic Approach to Ontario's Transportation Needs (Part I). OCC. https://occ.ca/wp-content/ uploads/Moving-Forward-Transportation-Report.pdf.

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goods and services such as health care and education. The Forest Access Roads Funding Program is a cost-sharing program between government and industry that supports their construction and maintenance. In 2018, Ontario's Ministry of Natural Resources and Forestry reduced annual funding to \$54 million. In future years, government should reinstate the original funding level of \$75 million to ensure these roads can continue to facilitate economic activity in the North.



Another good example of a multi-use road is Highway 69. As the main connective route between Northern and Southern Ontario, it allows businesses to connect to markets and supply chains, communities to attract and retain workers, and tourists and residents to travel across the province. A prolonged lack of investment in the highway has resulted in fatal collisions, road closures, and unnecessary congestion. The Province should expedite the four-laning of Highway 69 to support economic activity within the many regions along its route.

Similar economic impacts are expected with the construction of an all-season access road to the Ring of Fire. Once completed, the road will serve an industrial purpose (providing access to the mining district) as well as a social one (connecting remote communities to other regions). Marten Falls and Webequie First Nations are acting as proponents for the environmental assessments of two sections of the road, working together with industry to improve economic development opportunities in Northwestern Ontario.

Energy Systems

Access to a reliable, affordable, and readily available supply of energy is fundamental to Ontario's business competitiveness. Investments in generation such as nuclear refurbishment will provide the

province with stable energy sources and ensure it can accommodate new economic activity. In the coming years, as long-term generation contracts expire, Ontario will need to consider what kinds of electricity infrastructure investments are needed to continue guaranteeing a reliable supply of power under different demand scenarios.

Much of Ontario's electricity system was built in the 1950s and prudent investments are needed to keep the public safe, reduce power outages, offset the need for more expensive emergency repairs and modernize systems for the future. For example, Hydro One, which manages 98 percent of Ontario's transmission system, has identified that one in four transformers need to be replaced, 10,000 towers are 80 years of age or older, and 1,400 kilometres of transmission lines are nearly 100 years old. In addition to replacing aging infrastructure, Ontario's electricity system must keep up with the overall transformation of the generation resource mix, the introduction of major continent-wide cybersecurity standards, technological developments, and climate change adaptation efforts.

A reliable, safe, and high-quality transmission system is essential to powering Ontario's economy. Building new transmission lines will be necessary to support the growth of industries that are heavily dependent on energy, such as cannabis, and unlock economic development opportunities such as the Ring of Fire chromium deposits in Northern Ontario.

POWERING LEAMINGTON

In June 2019, Hydro One announced that it will continue to support the expansion of the greenhouse industry through the development and construction of a new 230-kilovolt transmission line from Chatham to Kingsville. This substantial investment in electricity infrastructure will increase the availability of power by 400 megawatts to allow for an additional forty medium-sized greenhouses in the area. While the greenhouse industry has been growing steadily for decades, Canada's recent legalization of recreational cannabis has very quickly created new economic opportunities in communities like Leamington.

At present, the high costs of building electricity infrastructure in Ontario can send businesses elsewhere

in search of more affordable opportunities. When a business looking to invest in rural Ontario requests to be connected to the electricity system, it must bear the construction costs of expanding transmission lines, even when such an expansion enables new economic development. Simply put, the original investor is forced to pay for the entirety of the transmission line expansion regardless of benefits that may be accrued by other residential and industrial consumers over time.



The Government of Ontario should direct the Ontario Energy Board to consider restructuring the Transmission System Code to enable transmitters to distribute infrastructure costs across more ratepayers over time. This approach is currently used for natural gas infrastructure in Ontario, and a similar approach is used in California to bring more renewable energy sources onto the grid. Distributing electricity infrastructure costs would make it more affordable for businesses to invest in rural Ontario, paving the way for new job creation and regional development.

RECOMMENDATION 8:

Modernize regulations that inhibit economic development.

Regulatory complexity continues to be one of the biggest barriers to unlocking Ontario's economic potential, adding unnecessary uncertainty, costs, and delays that limit business competitiveness and discourage new investment. The Province took an important step in 2018 when it committed to reducing the regulatory burden on business by 25 percent by 2022. In doing so, it should prioritize reforms that will stimulate regional economic growth.

In early 2019, Ontario's Ministry of Energy, Northern Development and Mines established a Mining Working Group composed of industry leaders to reduce red tape faced by the mining sector. Government should build on the successes of this model to promptly address

major barriers to economic development in other sectors and regions.

Since many of the problematic regulations exist at the municipal level, the Ontario government will need to clearly identify and communicate the economic and social rationales for reform to local governments and the public. Consensus-building will be necessary to speed up urban land development and to remove impediments to private sector investment in broadband (discussed further in Chapter 3), both of which are needed to accommodate new economic growth.

In the future, the Government of Ontario should commit to only introducing new regulations after undertaking appropriate socioeconomic impact analyses. Regardless of the intentions behind a new regulation, it should be evaluated based on it how it would impact other sectors and regions. *The Far North Act, 2010* and the Aichi Biodiversity Target are two examples of regulations that have restricted economic development in Ontario based on arbitrary, non-evidence-based targets.

Further, competitiveness in today's economy stems from the capacity for continuous innovation. Disruptive technologies, the sharing economy, and the gig economy all have the potential to create new employment opportunities for Ontarians. To capitalize on these opportunities, governments will need to develop regulatory frameworks that support emerging sectors and new types of employeremployee relationships. In order to keep pace, the Ministry of Economic Development, Job Creation and Trade should establish permanent advisory panels to regularly review regulations that may limit the implementation of innovative business models across different sectors.

Enabling the private sector to keep pace with rapid change demands a non-prescriptive approach to regulation. Typically, regulators set requirements and also prescribe how those requirements must be met, limiting the private sector's ability to come up with more cost-effective solutions. Instead, Ontario should adopt non-prescriptive regulations where possible, using both outcome-based approaches (that mandate outcomes without constraining how subjects achieve compliance) and risk-based approaches (that prioritize regulatory activities where the risk of non-compliance is the highest). The proposed to the prioritize regulatory activities where the risk of non-compliance is the highest).

RECOMMENDATION 9: Champion Ontario's brand.

As disposable incomes rise and countries sign new trade agreements, global demand for high quality, ethically sourced products will continue growing and Ontario-based industries stand to benefit. Global firms are increasingly looking to more ethical and environmentally sustainable suppliers for nickel, steel, and other materials. The same trend is seen among consumers, and data suggests it will only continue as it is more pronounced among younger generations; 78 percent of people between the ages of 18 and 24 are willing to spend more on a product or service that is more ethical than a cheaper option, compared to 57 percent of people ages 65 and over.¹⁰⁰

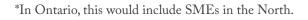
As part of its 2019 Canadian Minerals and Metals Plan, the Government of Canada committed to collaborating with provincial governments and industry to establish a Canada Brand for Mining. In a similar effort, the governments of Ontario and Canada should work with businesses to establish clear value propositions for different sectors and regions, and promote these coordinated messages through trade missions around the world.

RECOMMENDATION 10:

Focus business supports on enhancing productivity and accelerating growth.

Offering financial support directly to businesses can play a valuable role in economic development when funding is targeted at productivity enhancers such as skills training and technology adoption. The Government of Ontario recognized this in Budget 2019 by announcing its intention to modernize business support programs to focus on four key outcomes: talent, research and commercialization, entrepreneurship and growth, and investment attraction. The government should rely on business expertise to understand what forms of support have been most productive and establish an ongoing evaluation framework to ensure programs continue to make the best use of public dollars.

In some cases, Ontario may benefit from replacing grants with other financial instruments such as loans, guarantees, and equity. On Such instruments are best suited to support activities that have the potential to generate revenue but tend to lack sufficient market funding, such as innovation within SMEs.





Harvest Operations, Pineland Forest, Ontario, 2018, EACOM Timber Corporation, Timmins Chamber member.

Compared to grants, they are often more cost-effective uses of public funds because they are repaid and can be recycled, but also because they can attract more private sector capital. ¹⁰³ Indeed, there is some evidence to suggest that access to financing can be more effective at increasing firm outputs than grants. ¹⁰⁴

For example, many US states have seen great results by implementing a Rural Investment Tax Credit (RITC). Through this program, investment companies create Rural Business Investment Funds, which must raise 100 percent of their capital from private sources and invest in rural* SMEs with high growth potential located in rural regions of Ontario, including in the North. If the funds receive a target return on investment, their investors receive tax credits from the government.

The RITC is designed to fill gaps in access to capital for rural SMEs. With private firms managing the investments, the program ensures that objectives are not political, money is directed at accelerating growth, and administrative burdens are minimal. An evaluation of Connecticut's RITC (Invest CT) found the initiative generated \$5 in revenue to the state government for every \$1 of tax credits issued between 2010 and 2016. While Ontario's context is unique, a similar program could help rural communities create and retain jobs, retrain workers, and attract new talent.

HUMAN CAPITAL

One of the most important ways government can invest in the industrial commons is by supporting a thriving pipeline of talent, from early childhood education to workforce development opportunities for adults. In the OCC's 2019 Business Confidence Survey, 75 percent of respondents agreed that the ability to attract and retain talent was critical to their competitiveness. 105 For manufacturers, the availability of skilled labour is a top factor determining investment location. 106

While Ontario has one of the best workforces in the world, employers are finding it increasingly difficult to locate enough candidates with the right skillsets - especially in smaller and more remote communities. 107 The rapid pace of change within the modern economy necessitates constant upskilling and reskilling. Industry's adoption of artificial intelligence and other emerging technologies is adding to demand for data science and engineering, and not only in specialized fields. In fact, research by the Royal Bank of Canada suggests that, within the next decade, half of all jobs in Canada will require very different skills than they do now. 108 Job training will likely become a lifelong process, and partnerships between industry and post-secondary institutions

SUCCESSION MATCHING

SuccessionMatching is a Canadian organization that helps match potential entrepreneurs and investors with business owners looking to transition out of their roles. The company offers a suite of services to buyers and sellers, including workshops and webinars, information about taxes and loans, and personalized support.

The SuccessionMatching Community Project (SMCP) uses a community-wide approach to achieve its mandate. For example, economic development offices help identify businesses in need of succession planning, financial institutions provide information to entrepreneurs on financing options, and immigration lawyers at Fragomen Worldwide connect new and prospective immigrants with business ownership options. Since 2017, SuccessionMatching has also worked with universities and colleges across Canada to expand opportunities for students and alumni.

SMPC's impact on regional development is widereaching. It has allowed SMEs to remain within their communities and continue contributing to local tax bases, while improving labour market outcomes for underrepresented groups such as women, youth, Indigenous peoples, newly arrived immigrants, and military veterans.

will play a growing role in supporting an increasingly dynamic workforce. 109



Demand for talent is also tied to Ontario's aging population. In regions of the province with high shares of manufacturing (such as Windsor, Kitchener-Waterloo-Guelph, and Peel-Halton), more than a quarter of the workforce is expected to retire within the next ten years. 110 As more and more business owners leave the workforce, there will be a growing need to fill their roles and succession planning will become necessary to keep small businesses from shutting their doors.

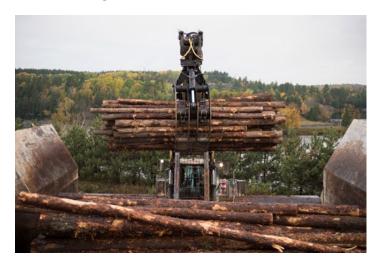
Indigenous peoples are essential partners in addressing Ontario's skills needs. Not only are they one of the youngest and fastest-growing populations in the province, but a large proportion live in northern and remote communities where outmigration and the aging population are most acute. According to one study, closing existing gaps in educational and labour market outcomes between the Indigenous and non-Indigenous populations would increase Canada's GDP by up to \$36 billion per year by 2026.111 Several businesses have taken the lead, with initiatives like Bruce Power's Indigenous Relations Supplier Network and Hydro One's Indigenous Business Directory. Aside from businesses, key stakeholders include nine Indigenous Institutes that partner with colleges and universities to offer accredited diploma, degree, certificate, and apprenticeship programs to Indigenous students through culturally responsive delivery models.

Diversity and inclusion within the workforce also enhance an economy's capacity for innovation, lead to higher rates of talent retention within firms, and result in superior financial performance.¹¹² Improved skills

Chapter Two: Opportunity

training for underrepresented segments of the labour market – including Indigenous peoples but also women, recent immigrants, and people with disabilities – is an economic development opportunity that Ontario has yet to fully execute.

While necessary, training programs can take years to develop and many businesses need access to talent immediately. This makes immigration a partial but essential solution to the skills mismatches and declining workforce populations seen in some parts of the province. Ontario is undoubtedly an attractive destination for newcomers, yet its immigration system makes it difficult to retain talent with layers of bureaucracy between the provincial and federal government adding years to the settlement process. Though both the provincial and federal governments have taken steps to simplify the process for entrepreneurs and other groups in recent years, more can be done to help immigrants remain in Ontario and to establish their livelihoods within regions facing worker shortages.



Harvest Operations, Pineland Forest, Ontario, 2018, EACOM Timber Corporation, Timmins Chamber member.

Beyond addressing the demand for skills, Ontario must confront certain undeniable shifts in its labour market. The future of work is one in which contract and independent work (including freelancing self-employment) are expected to become increasingly common. The share of Canadian workers in temporary and part-time positions has also risen over the past two decades. Hexible work arrangements can spur economic development by creating new jobs and engaging underemployed populations, especially in regions that are dominated by industries in decline.

However, Ontario's labour laws, institutions, and support systems are still built around an outdated model of employment. To capitalize on the opportunities of non-standard employment, governments around the world will need to create systems and regulatory frameworks that support new types of employeremployee relationships.

RECOMMENDATION 11:

Cultivate a dynamic and inclusive ecosystem for workforce and talent development.

The Canadian and Ontario governments support an array of initiatives designed to build a robust talent pool. In addition to funding universities and colleges, they offer grants and loans for apprentices, employee training programs, information sharing, and services for job seekers. These programs and services are critical to Ontario's economic development, and both governments should continue to work with businesses and post-secondary institutions to facilitate dynamic, lifelong learning.

At the provincial level, Ontario's Ministry of Training, Colleges and Universities should structure its programs in a way that supports regional economic development. In particular, it should

- Establish formal mechanisms to feed local labour market information into program designs.
 Workforce planning boards survey employers in their areas, while the Ontario Centre for Workforce Innovation evaluates the effectiveness of different workforce development solutions. The Province should mobilize their data and expertise to structure initiatives that better reflect regional labour market needs and trends.
- Target programs based on anticipated short-term employment disruptions to local labour markets – such as plant closures – that may result from global trade agreements or automation, among other things. The provincial government should use data and analytics provided by research partners to map those risks.
- Partner with post-secondary institutions and SMEs to offer work-integrated learning programs, particularly in regions where businesses have the most difficulty accessing the skillsets they need.
 While such programs do exist, few are available outside the GTA.
- Develop a new seed funding program, similar to

SSI, to support projects that develop the skills deemed most critical to the competitiveness of growing industries, and allocate funding on a regional basis.

- Offer training in skills that enable remote work such as accounting, computer programming, and graphic design to residents outside large urban centres. 116 This reduces the need for relocation and creates new job opportunities in communities with lower levels of employment growth.
- Improve access to experiential learning and other training opportunities for underrepresented segments of the labour market, including recent immigrants, Indigenous peoples, women, veterans, and people with disabilities. Current funding for skills training tends to benefit workers that are already more skilled than the average population, limiting their impact.
- Identify and earmark the financial resources needed to ensure consistent operation and long-term sustainability of Ontario's Indigenous Institutes.
- Ensure that employers across all regions are aware of the availability and benefits of existing programs and tools. Chambers of commerce/ boards of trade and other community organizations can help communicate these opportunities to local businesses.

While delivering training programs online can allow for more flexibility and expand their reach, the government should consider who may be excluded as a result. Programs delivered over the internet will remain inaccessible to Ontarians without reliable access to broadband, which may coincidentally be those who would derive the greatest value.

RECOMMENDATION 12:

Address regional labour market needs by reforming immigration systems and encouraging worker mobility.

Many of Ontario's regional challenges stem from an uneven distribution of the population. The concentration of residents in large metropolises like Toronto creates pressure on infrastructure and affordability, while many smaller communities lack access to the talent they need to grow.

Immigration can be a powerful tool to mitigate these challenges. The governments of Ontario and Canada have both taken positive steps to make it easier for newcomers to work in the province. For example, in

Budget 2019, the Province announced changes to the Ontario Immigration Nominee Program (OINP) to create a new technology-focused stream and expand the in-demand and entrepreneur streams.

Still, it remains burdensome for newcomers looking to remain in Ontario by obtaining permanent residency status. The process for employers to hire international students after graduation is similarly time-consuming and expensive. The two governments should coordinate their immigration procedures to streamline requirements and reduce wait times. Additionally, they should make it easier for foreign talent to obtain accreditation and add more National Occupational Classification skill categories to the OINP and the Global Talent Stream program.



The other challenge is encouraging workers to move to communities with labour shortages. In 2018, the federal government announced a Rural and Northern Immigration Pilot to bring more economic immigrants to certain communities (in Ontario, these are North Bay, Thunder Bay, Sault Ste. Marie, Sudbury, and Timmins). The Government of Ontario took a similar step in the 2019 Ontario Budget, where it committed to establishing a pilot initiative to explore innovative approaches to connect highly skilled immigrants with smaller communities. Both governments should evaluate the results of these pilots and, if successful, establish them as permanent programs. Additionally, the federal government should increase Ontario's allocation of 6,900 OINP spots and Ontario should allocate a portion of these spots on a regional basis.

Ultimately, people will settle where it is desirable to live and work, but they may not always be aware of the merits of communities outside Toronto and Ottawa.

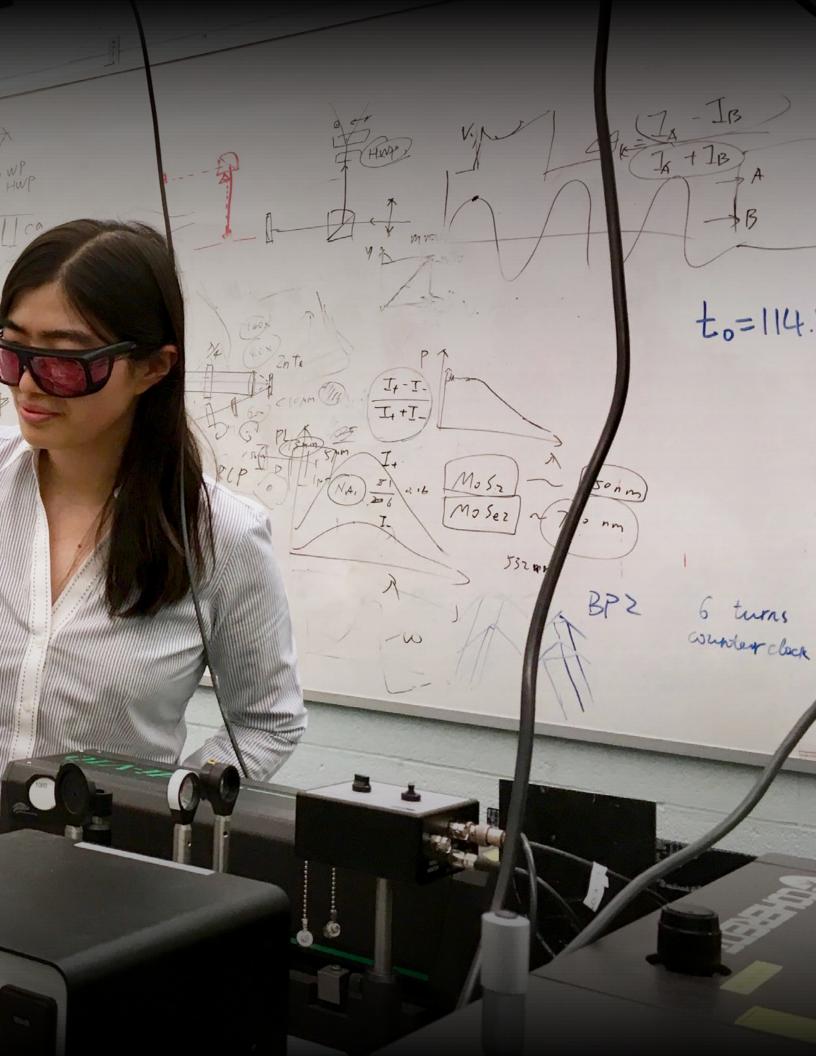
Chapter Two: Opportunity

Many local workforce planning boards have successful outreach initiatives aimed at attracting people to their regions. The Ontario government and municipalities should partner with post-secondary institutions to inform students about employment opportunities in smaller communities, particularly where there are jobs relevant to the skills they graduate with. Similarly, the Government of Ontario should provide immigrants with more information upon arrival about communities in rural and Northern Ontario to encourage more regional dispersion. At present, newcomers are rarely informed about opportunities to live and work outside the GTA.

Succession matching is another practical solution to regional workforce and demographic challenges. Ontario's Ministry of Agriculture, Food and Rural Affairs offers programs to support succession planning for agri-food businesses, but fewer resources are available to other sectors. The Ministry of Economic Development, Job Creation and Trade should become a formal community partner with SuccessionMatching to expand access to succession planning services across the province. Priority should be given to sectors and types of businesses with the greatest need – namely small and family-owned firms, hospitality firms, manufacturing firms, and service-based businesses. 117 Further, to improve program reach, the Ministry should communicate information about these programs to SMEs through regional contact points, as discussed in Chapter 1.







is incomplete without acknowledging the pivotal role of *innovation* – defined as new processes, products, or services that add economic and/ or social value. Innovation can be both disruptive and incremental. Though it may involve new technology, it can also consist of simple business model upgrades that enable an organization to do more with less.

Given rapid transformations in the ways people live and work, innovation is a necessity for any economy or individual firm looking to remain competitive. Innovation is also tied to productivity, especially for countries like Canada that neither can nor should seek to compete in the global marketplace exclusively based on low input costs and regulatory standards.

Capacity for innovation is tied to elements within the industrial commons such as talent, infrastructure, and enabling regulatory frameworks. However, these factors alone may not be sufficient. Without deliberate efforts to drive innovation, Ontario risks becoming a victim rather than an agent of change.

THE BUSINESS CASE FOR NEW TECHNOLOGY

Regions that embrace innovation are able to raise living standards, attract workers, and retain high-quality jobs. From a business perspective, technologies such as artificial intelligence (AI), virtual and augmented reality (VR/AR), and the Internet of Things (IoT) are continuously improving efficiency and redefining what it takes to compete.

Consider the manufacturing sector, where AI-assisted robots are optimizing assembly processes to enable producers to keep pace with shorter demand cycles and higher-quality standards. Manufacturers are also using digital technologies to enhance predictive and preventive maintenance at their facilities. Meanwhile, mobile and cloud systems are advancing e-commerce, inventory control, and supply chain management. Recent research suggests that the next wave of productivity gains in factories, estimated at 20 to 40 percent, will come from digitization.

For the agri-food sector, the advent of precision agriculture has made technology adoption critical to

profitability and competitiveness. Applications such as auto-steer technology on tractors and GPS-enabled yield monitors can vastly improve resource allocation, productivity, and crop yields within the sector, and agrifood businesses increasingly rely on high-speed internet connections to interact with new customer channels.¹²²

Mining is seeing similar trends, with companies using supercomputers, automation, monitoring sensors, and AI to create a new system of 'smart mines'. ¹²⁷ In addition to making the industry safer and creating higher quality jobs, these technologies are vastly improving the cost-efficiency of mining operations and making it more profitable for companies to invest in the discovery and development of new mining sites.

EXPLAINING THE TECHNOLOGY

- Automation uses technology to perform tasks that would otherwise be carried out by humans.
- AI enables computers and other machines to simulate the behaviour of humans. AI encompasses a range of technologies, including machine learning, robotics, and facial recognition, each of which has the potential to transform industry.¹²³ By 2030, AI could add \$20 trillion to global GDP.¹²⁴
- AR overlays virtual objects onto real-world environments.
- VR immerses users in a fully artificial digital environment.
- The *IoT* connects objects, devices, and spaces to the internet.¹²⁵ This includes industrial and farming equipment, allowing business to collect data and use it to improve the efficiency of their operations.¹²⁶

In the construction sector, internet-connected temperature probes have enabled real-time monitoring of concrete maturity, a method that is considerably faster, safer, cheaper, and more reliable than physical monitoring. Ultimately, this increases the number of projects delivered on time and on budget, freeing up resources for more contracts and

positioning local firms as global leaders. Drones and nano-sensors can also make it more cost-efficient to maintain existing infrastructure. 129

Further, technology is creating new jobs in regions that are facing out-migration and an aging workforce. ¹³⁰ In rural and Northern Ontario, youth that previously left home for post-secondary education are returning to fill new, high-paying roles created by technology – such as remote mining operators. ¹³¹ Many of the new jobs allow for telecommuting, with technology making it easier than ever for people to perform jobs at a physical distance from their employer. ¹³² This has helped to compensate for the loss of major industrial and service employers, and to attract top-tier talent to traditional industries. Several other job opportunities are emerging in these regions related to the gig economy, which is also enabled by technology.

RESEARCH AND DEVELOPMENT (R&D) VS. COMMERCIALIZATION

Businesses do what they can to innovate. For instance, in 2018, the mining industry made capital investments equivalent to more than \$77,500 per employee. The federal and provincial governments have also invested considerably in Ontario's capacity for innovation through their many partnerships with industry, universities, colleges, and other stakeholders.

According to the Conference Board of Canada, Ontario performs exceptionally well relative to international peers when it comes to *public* R&D, a testament to its first-rate post-secondary institutions and highly skilled pool of entrepreneurial talent. ¹³⁴ In fact, some of the world's best AI researchers are based at the University of Toronto. ¹³⁵

However, compared to its competitors, the province falls behind when it comes to commercializing and adopting innovation within industry, as evidenced by low rankings on *business* R&D, patents, and labour productivity. Canadian business expenditure on R&D as a percentage of GDP is 143 percent lower than it is in the United States and half the average among members of the Organization for Economic Development and Cooperation. Among Canadian manufacturers, only 40 percent are leveraging the benefits of advanced manufacturing technologies such as three-dimensional (3D) printers, advanced robotics, and IoT. 138

The gap in technology adoption is alarming. The barriers vary by industry, but overall include a lack of qualified staff, resistance within organizational cultures, high costs, and difficulty integrating new technologies with existing systems. ¹³⁹ Each of Ontario's regions has specific areas of research expertise that give them a unique edge in the changing economy. These include, but are not limited to, advanced health technologies in Thunder Bay, telecommunications in the Ottawa region, precision agriculture in Guelph, digital media in Sault Ste. Marie, and advanced manufacturing around Windsor. It is incumbent upon all stakeholders to translate those capabilities into tangible economic results.



Chemistry Class-UTSC, University of Toronto. Photographer: Ken Jones, Jan 17, 2017

RECOMMENDATION 13:

Work through post-secondary institutions and innovation centres to improve technology transfer.

A strong capacity to generate basic research is one of Ontario's greatest assets, providing the necessary foundation for innovation. However, the province can do better to use existing research capabilities to reinforce its regional economic development.



True Blue Expo 2019, University of Toronto. Photographer: Nicholas Iwanyshyn, March 21, 2019

To that end, industry partnerships with universities and colleges are critical. Within the past ten years, the University of Toronto has worked with over 600 companies to help move research from the lab to the real world. Now, the university is building Canada's largest university-based innovation hub – the Schwartz Reisman Innovation Centre. 141 The 750,000 square foot complex will anchor and strengthen Ontario's AI cluster, hosting thousands of researchers, investors, industry partners, and international visitors each year. 142

Given their vast networks and depth of research expertise, post-secondary institutions are well positioned to improve pathways for technology transfer in Ontario. One of the main challenges they face is finding domestic industry partners to move inventions through the commercialization process. The Government of Ontario has a valuable role to play in strengthening collaboration between post-secondaries and industry. By first taking stock of existing initiatives, the government can then identify strategies to reinforce what is working well and act as a catalyst for collaboration where there are geographic and/or sectoral gaps.

In that spirit, the Province should build on the many successes of Ontario's *innovation centres* – facilities that are designed to strengthen research capabilities and technology adoption. Innovation centres give technology companies access to markets, funding, and advisory services to support commercialization of their products, while helping industry integrate new tools to boost their productivity. For sectors with high levels of risk, such as mining, these centres derisk new technologies to make implementation easier for industry. In the productivity.

Ontario is home to 17 regional innovation centres (RICs), where industry, entrepreneurs, and academia develop and test new solutions. Ontario Centres of Excellence (OCE) plays a central role in this network, co-investing in innovation projects deemed to have high potential for Ontario's economy. Several similar centres exist outside the RICs, such as the IBM Innovation Incubator Project with three hubs in Toronto, Ottawa, and Waterloo, where SMEs can access advanced technology platforms, pursue new markets, and receive services to help them scale up. 145

Though some are more effective than others, innovation centres have a wide-reaching impact on Ontario's economic development. Between 2015 and 2018, OCE's projects attracted \$354 million in coinvestments by industry and resulted in \$1.7 billion in follow-on investments by participating firms and \$518 million in incremental sales. ¹⁴⁶ Peterborough's Innovation Cluster (a non-RIC hub) generated an estimated \$15.4 million for the local economy in 2018 alone. ¹⁴⁷

NORCAT

NORCAT is a Sudbury-based RIC that has successfully transformed itself into a global company providing innovation services to clients across a variety of economic sectors. Since its founding in 1995, the company has come up with several creative ways to leverage community partnerships and diversify its revenue sources.

For example, NORCAT is the only non-profit innovation centre in the world to own and operate its own underground mine, known as the Underground Centre. The Centre allows technology firms to develop, test, and demonstrate new applications, while giving global mining companies a real-world setting in which to evaluate them before procurement. NORCAT also uses its mine to offer specialized skills training programs in partnership with businesses and post-secondary institutions.

Recently, seeing that businesses within its community have difficulty accessing earlystage capital, NORCAT has partnered with other organizations to launch a seed-stage venture capital fund to co-invest with local angel investors across Northern Ontario. Additionally, NORCAT operates an advisory services group to support the development of innovation ecosystems in international markets, with recent projects in Saudi Arabia, Ecuador, Chile, and elsewhere.

NORCAT sees itself as a platform for innovation. Its business model, which it calls 'the Platform Effect', is heavily rooted in collaboration strategically leveraging the expertise and financial resources of the private sector - with relatively modest funding from the government.

All orders of government should continue to support platforms that build bridges between researchers and businesses. However, to improve their viability, governments should encourage centres to make good use of partnerships and private investment in addition to government funding, where appropriate, like NORCAT. Ontario's Ministry of Economic Development, Job Creation and Trade is well placed to help identify channels to share best practices, learnings, and other knowledge across regions to ensure innovation centres are performing optimally.

Finally, in much of rural and Northern Ontario, access to innovation centres is limited by the large distances between them. The provincial government should map regional gaps in access to existing hubs and develop strategies to improve their reach. Sectors with generally lower technology adoption rates, like health care and construction, may also benefit from more focused engagement with innovation centres. 148



Hard-Line Solutions Demonstration at NORCAT Underground Centre, NORCAT, June 2018.

RECOMMENDATION 14:

Develop policies to fill the gaps in Ontario's innovation capacity.

Beyond supporting the work of post-secondary institutions and innovation centres, governments can use a variety of policy mechanisms to strengthen innovation outcomes. The Ontario government is currently exploring some of these avenues. In December 2019, an expert panel will present a report focused on strategies to maximize commercialization opportunities, with an action plan for a provincial intellectual property (IP) framework. A strong IP regime is essential to encouraging private investment in commercialization, and the provincial government should ensure its action plan aligns with measures the federal government is already taking through its Canadian IP Strategy. Robust federal competition policy and its enforcement are similarly important, as competition within the economy has been described as the "mother" of innovation. 149

Another option is to use the tax system to encourage businesses to invest more in their own innovation. A patent box system (also known as an innovation box system) reduces corporate taxes on

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earnings from new products. ¹⁵⁰ Several countries have had success with this approach, including the United Kingdom, Belgium, France, the Netherlands, Switzerland, and China. The Government of Ontario should perform a cost-benefit analysis to decide whether an innovation box system would work in the local context and review the experiences of different jurisdictions with different rate structures and types of profits that could qualify.



Rotary Milking System, Elora Dairy Research and Innovation Centre, University of Guelph.

To the extent that any order of government offers direct financial support for innovation, it should focus on segments of the economy in which the market typically underinvests in innovation. This includes SMEs, such as family farms, that lack the necessary capital to invest in new technologies. With better data – as discussed in Chapter 1 – governments can identify industries and regions in Ontario most susceptible to disruption and thereby target their support more effectively. It is worth noting that multiple studies have shown funding to be most effective when combined with mentorship and business advisory services. ¹⁵¹

BROADBAND FOR ALL

It would be difficult to overstate the importance of high-speed internet access for Ontario's regional economic development. Broadband is a basic infrastructure requirement in today's economy, one that enables businesses to connect to supply chain networks, sell their products, access financial and legal services, and implement many of the technologies discussed above. The availability of broadband infrastructure is a major consideration for large companies deciding where to invest. It gives residents

access to services like health care and education. For government, it facilitates better and more efficient administration, data collection, and programming. In regions with large seasonal workforces, access to high-speed internet allows workers to access reskilling opportunities during downtimes.

Evidence shows that investing in broadband acts as a catalyst for economic development and helps bridge the digital divide between rural and urban regions. Likewise, the consequences of underinvestment are higher for rural and remote communities where broadband is the best option for accessing many services.

In 1992, the Government of Ontario first introduced a vision to expand telecommunications infrastructure to all parts of the province. Since then, the provincial and federal governments have invested substantially in Ontario's broadband infrastructure through initiatives like Connect to Innovate and two main public-private partnerships: Southwestern Integrated Fibre Technology (SWIFT) and Eastern Ontario Regional Network (EORN).

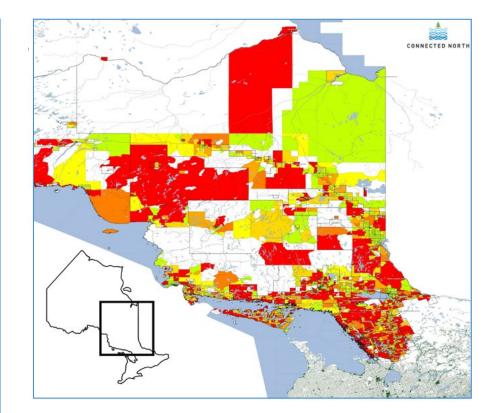
Over time, the need for fast, reliable internet connectivity has only increased. In 2016, the Canadian Radio-television and Telecommunications Commission (CRTC) declared broadband internet to be a basic service that should be available to all Canadians by 2031, and it set new speed targets at 50 megabits per second for downloads and 10 megabits per second for uploads. The federal Budget 2019 announced \$5 billion to \$6 billion in new investments towards nationwide rural broadband over the next ten years, while Ontario's Budget 2019 committed another \$315 million over the next five years to expand broadband and cellular infrastructure across the province.

Meanwhile, facilities-based carriers have spent over \$86 billion over the past ten years to build wireline network infrastructure across Canada, ¹⁵³ and an additional \$13 billion on wireless networks over the past five years. ¹⁵⁴ Beginning in 2019, the federal government's Accelerated Investment Incentive for telecommunications equipment has made it more financially attractive for regional providers to install new broadband in rural regions. ¹⁵⁵ Further, the federal government announced in July 2019 that it would create 654 smaller spectrum licensing areas across the country to enable smaller providers to compete in auctions. ¹⁵⁶

Figure 5: Number of Housholds Remaining Underserved by a 5Mbps Broadband Connection

These maps represent the number of shouseholds per Dissemination Block* that currently cannot access a broadband connection of at least 5Mbps download speed. On an ongoing basis, Internet Services Providers are asked to provide their current coverage footprint and performance statistics to the Broadband and Associated Infrastructure Analysis Project. This map was created by comparing known service areas as reported by ISPs and the most recent Canadian Census data. Satellite and Cellularbased high speed services may also be available in these areas but are not included in this analysis. Map users are encouraged to help improve accuracy through participating in various internet service reporting features on www.connectednorth.ca.

*A dissemination block (DB) is an area bounded on all sides by roads and/ or boundaries of standard geographic areas. The dissemination block is the smallest geographic area for which population and dwelling counts are disseminated.



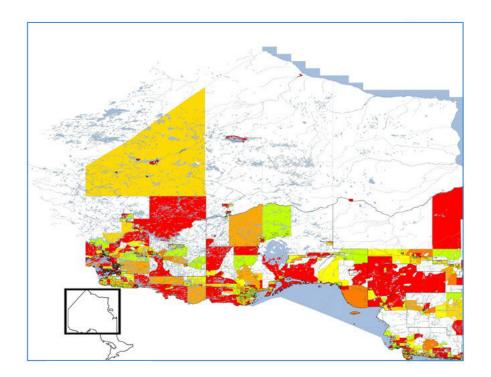
Legend

Census Subdivision† main roads

Households Underserved



†A Census subdivision is an area that is deemed to be equivalent to a municipality for statistical reporting purposes.



Source: Connected North. http://www.connectednorth.ca/learn.

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Despite sizable investments from public and private sources, thousands of businesses and households still lack reliable access to high-speed internet (see Figure 5). Where there is connectivity, it is often too slow to accommodate cloud-based software, telehealth, online learning, or other modern use cases. A 2018 survey by the Ontario Federation of Agriculture found that approximately half of Ontario's farmers have concerns about the speed and/or reliability of rural internet access. But the problem is not exclusively a rural one, as coverage within Ontario's largest cities is also far from universal.



In the meantime, a race has emerged to develop *fifth-generation (5G)* wireless networks. In 2035, 5G is projected to enable \$17 trillion of global economic output by supporting advanced applications across a wide spectrum of industries. ¹⁵⁸ Regions that move quickly to implement 5G technologies will have a critical advantage over those that wait. Rural communities are expected to benefit extensively from 5G as it revitalizes agri-food, forestry, and other sectors with large footprints in those areas.

Recognizing the opportunity that 5G promises to deliver, five leading multinational firms* joined forces with the governments of Canada, Ontario, and Quebec to establish ENCQOR – a 5G testbed that allows SMEs in Ontario and Quebec to test, validate, and adopt emerging technologies in a low-cost, low-risk environment. The \$400 million project has three physical hubs within Ontario (in Ottawa, Toronto, and Waterloo), but the testbed can be accessed from anywhere in the province. ENCQOR also provides SMEs with access to business advisory services.

RECOMMENDATION 15

Remove regulatory barriers that deter private sector investments in broadband.

Sustained investments are needed to expand, maintain, and upgrade broadband infrastructure across Ontario. Overregulation makes this more expensive and disincentivizes telecommunications providers from making those investments.

There are many examples of provincial regulatory barriers that make it more expensive than necessary for providers to install new broadband. Some of these barriers relate to providers' ability to access passive infrastructure, such as hydro poles. Hydro One's distribution network spans 123,000 circuit kilometers, serving 1.4 million customers in Ontario, many in rural areas of the province. This offers a unique opportunity to leverage existing infrastructure to deliver broadband services.

Access to transportation infrastructure can be similarly problematic. Since construction is one of the main cost components involved in expanding fibre networks to rural communities, one option to save on construction is to lay conduits for fibre parallel to highways and railways while they are under construction or maintenance. While this "dig once" approach has been used in some communities within Ontario, it has yet to become standard practice. The Government of Ontario should explore regulations and/or incentives to combine network expansion with transportation infrastructure projects. This strategy offers a promising opportunity for rural communities, most of which are located within a few miles of a major highway or railway.

Another regulatory issue involves the Ontario Traffic Manual, which requires paid duty police officers to control traffic within thirty metres of an intersection in work zones. Other jurisdictions allow the use of third-party traffic controls, which is significantly less costly and allows for more flexibility for scheduling broadband installation and upgrades.

In its 2019 Broadband and Cellular Action Plan, the Government of Ontario took a welcome step by committing to identify and remove regulatory barriers that deter the expansion of broadband and cellular infrastructure, including hydro pole

^{*} The five firms are Ericsson, Ciena Canada Inc., Thales Canada Inc., IBM Canada, and CGI. The project is also supported by Ontario Centres of Excellence, Prompt, and CEFRIO.

attachment rates. 160 The Province should immediately follow through on this commitment by consulting with industry.

At the municipal level, some telecommunications providers have had to contend with intrusive street bylaws, unreasonable terms for roadwork permits, and onerous construction standards. While most of Ontario's municipalities have developed good working relationships with the telecommunications industry, some municipal governments have made it more difficult for providers to expand broadband.

If federal, provincial, and municipal governments are serious about expanding broadband, they must work with businesses to address the regulatory deterrents to new and sustained investment.

RECOMMENDATION 16

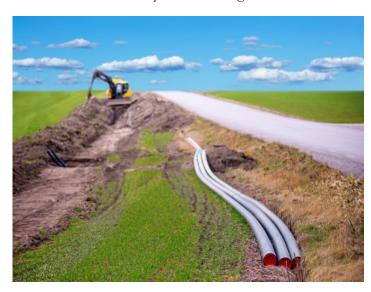
Ensure public funding for broadband is targeted, coordinated, and streamlined.

Though necessary, private sector investments alone will not suffice to deliver high-speed internet to all Ontarians. There are sparsely populated areas in the province in which there is no business case for providers to build broadband and where public funding is necessary to fill gaps in coverage. It is important that the federal and provincial governments continue to plan for substantial spending on broadband, regardless of budgetary constraints.

Beyond ensuring consistent funding, governments should also disburse funds more strategically. In the past, government funding for broadband has incentivized network expansion in areas that were already investment targets for industry. Not only does this undermine the competitiveness of telecommunications firms, but it is also an ineffective use of public monies. Facilities-based providers have offered to share their maps with the government to better coordinate investments. Going forward, public funds should exclusively target gaps in private sector coverage to complement (not compete with) private investments.

To further maximize the value of their programs, federal and provincial agencies should coordinate their efforts with one another to streamline the application and reporting process for participants. These requirements should be proportional to the scope of the project to encourage smaller providers with limited resources to apply for small contracts, and funders should provide as much clarity as possible to local businesses regarding how their funds will be disbursed.

Finally, programs should be technology agnostic; while government should continue to specify targets for broadband speeds, industry is best suited to decide the most cost-effective way of delivering them.



The Governments of Canada's 2019 Connectivity Strategy commits to several of the recommendations made in this section. Among other things, it promises to target investments to areas where there is limited private sector business case, streamline application requirements, coordinate with other orders of government, and provide applicants with predictable and stable timelines. 161 In its own 2019 broadband plan, the Government of Ontario commits to modernizing and streamlining government programs and initiatives.¹⁶² If executed well, these efforts will go a long way to improve broadband access in Ontario.

CLUSTER DEVELOPMENT

Although innovation occurs primarily within companies, the capacity for innovation emerges from the complex interaction of different entities within a system: research institutions, firms, civic organizations, sources of finance, and others. 163 This is why clusters are considered to be enablers of innovation.

Economic *clusters* can be broadly defined as geographic concentrations of interconnected firms and other organizations within a field. 164 Evidence suggests that clusters can increase productivity, as close interaction facilitates innovation and knowledge spillovers at a lower transaction cost, small businesses benefit from economies of scale, and individual firms are more likely to pursue specialization.¹⁶⁵ Successful clusters tend to become globally recognized destinations for

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foreign investment and contribute disproportionately to GDP. Knowledge-based clusters are most beneficial for economic development because they support high-quality jobs with skills that can be easily transferred as economies evolve.

History suggests governments should refrain from creating new clusters, as successful ones emerge organically from existing industrial strengths, specialized talent, and the co-location of suppliers. They should also avoid interfering in cluster management, which is best carried out by a co-production of firms, public sector institutions, and not-for-profits, with strong SME engagement in decision-making structures and an experienced cluster manager to provide leadership and champion the cluster cause. ¹⁶⁶ Instead, governments are best suited to support their development by maintaining an enabling policy environment.

Cluster financing can come from both public and private sources, but the majority should come from the private sector. Membership fees are typically the largest income source among European clusters, followed by sales of service. Government can play a role in facilitating access to sources of financing, including equity financing and venture capital, but the cluster should become self-sufficient in mobilizing these resources. 169

In 2017, the Government of Canada launched the Innovation Superclusters Initiative, a multi-year program designed to accelerate cluster development across the country. Through this initiative, Canada is investing up to \$950 million into five distinct clusters, with funds matched dollar-for-dollar by the private sector. It is too soon to tell what the results will be. While the focus on innovation, skills, partnerships, and industry leadership is positive, the government-led approach to cluster development tends to result in political decision-making and excessive administrative burdens.

Ontario is home to a number of established and emerging clusters. Examples include mining in Sudbury, steel in Hamilton, the digital economy in Ottawa, agri-food in the GGH, Canada's Innovation Corridor, and financial services in Toronto. The federal government's Advanced Manufacturing Supercluster is also based in Ontario. Large cities are not the only beneficiaries of cluster development. Smith Falls, an Ontario town of 9,000 residents, has embraced the

advanced manufacturing supercluster as a strategy for its own economic development.¹⁷⁰

CANADA'S INNOVATION CORRIDOR

Anchored by the GTHA and Kitchener-Waterloo regions, Canada's Innovation Corridor is a dynamic, high-growth economic zone that generates more than 20 percent of Canada's GDP and is second only to Silicon Valley in its number of high-tech start ups.¹⁷¹ The region is home to a unique clustering of expertise in AI, robotics, and data analytics, the specialized know-how behind today's digital transformation.

An early success factor in developing the cluster was the formation of Canada's Innovation Corridor Business Council in 2016, spearheaded by chambers of commerce and boards of trade in Southern Ontario and supported by advanced manufacturers, technology providers, and financial institutions. To date, the Council has helped strengthen regional collaboration and capacity-building through a range of activities, including an annual summit, ongoing advocacy, original research, and special projects. In addition to helping roll out Canada's Advanced Manufacturing Supercluster, the Council continues to tackle significant issues that businesses experience across the corridor, such as traffic congestion, access to talent, and the expansion of global trade.

This promising collaborative is focused on a common goal - to help ensure that Canada's Innovation Corridor continues its rapid ascent among other world-leading hubs for innovation, business competitiveness, and quality of life.

Still, the full potential of clusters in this province has not been realized. Just as emerging clusters have room to grow, existing ones can be deepened. For example, while the Niagara region has a strong food and wine industry, there is room for related industries such as bottle manufacturing and technology to become more developed, enhancing both the cluster's value proposition and the region's economy.

International success stories are a good basis for Ontario to understand its own cluster opportunities. Chile is one relevant case study for Ontario, as its own natural resource cluster connects suppliers across remote regions of the country.¹⁷² The Chilean

government helps SMEs latch onto value chains by offering support for skills training, business advice, guaranteed loans, and matchmaking with industry buyers.¹⁷³ In turn, industry provides guaranteed contracts that encourage suppliers to provide valueadded and technologically sophisticated outputs.¹⁷⁴ The European Union has its own cluster strategy focused on identifying regional strengths and activating partnerships. 175 The European Cluster Observatory provides statistical analysis, networking channels, and policy recommendations to support cluster development.¹⁷⁶

RECOMMENDATION 17 Facilitate value-add cluster development.

The Ontario government has a strategic role to play in supporting regional clusters while allowing them to develop organically. An initial but important step involves mapping existing and emerging clusters to better understand competitive advantages across the province and opportunities for future growth. The World Bank identifies a number of practical tools to map clusters and their interlinkages.¹⁷⁷

Fortunately, a lot of this work has already been done. The federal government's Canadian Cluster Mapping Portal maps clusters across the country, though it lacks the granularity needed for effective analysis. 178 Before its funding was discontinued in the 2019 Ontario Budget, the Institute for Competitiveness and Prosperity managed a Canadian Cluster Data portal with interactive data on employment, wages, and location quotients, as well as linkages across traded clusters.

A more specific mapping exercise is the Agricultural System Portal administered by Ontario's Ministry of Agriculture, Food and Rural Affairs, which identifies clusters of agri-food activity within the GGH. The portal currently contains more than sixty maps on agricultural production, land use, infrastructure, and agri-food services, providing valuable information to guide investments in the sector. The ministry should build on the success of this system further by expanding it across Ontario.

The next step in the mapping process is to identify opportunities to deepen regional clusters, for example via export growth. This will require evaluating the economic potential of existing clusters, using quantitative metrics to measure economic impact

and qualitative metrics to gauge collaboration and other forms of social capital.¹⁷⁹ Regions should be encouraged to identify their unique strengths and develop specialization. For example, rural areas should capitalize on assets that are absent in cities, such as access to natural assets and affordable land. Importantly, Ontario should focus on identifying clusters with strong evidence of economic potential, rather than spreading its attention and resources across all possible targets.

With a better understanding of regional assets, the federal and provincial governments can support Ontario's most promising value-add clusters by prioritizing investments in the industrial commons located in and around them. Policy interventions can target both the supply side and demand side. 180 Supply-side interventions aim to increase the cluster's capacity to generate goods and services, for example through training programs and incubators, as well as strategic investments in trade-enabling infrastructure, such as the major port near Hamilton's steel supply chain cluster. Demand-side interventions seek to grow demand for a cluster's products through tools such as procurement, marketing programs, and regulations. 181 Regulatory reform can be especially powerful, often having more of an impact on cluster outcomes than direct funding.182

Commitment to cluster development should be apolitical, shared by all orders of government and transcending regional boundaries. To that end, the federal government must ensure clusters have efficient access to international export markets and that their needs are well represented in trade agreements. Meanwhile, municipalities should align their individual economic development strategies with cluster objectives. Presently, few municipalities refer to cluster development in their official plans. 183

CONCLUSION

In the early 1900s, industrialization, railway construction, diversification of agri-food, investment booms, and the discovery of minerals in the North propelled Ontario's economic development. Fuelled by unprecedented growth, Toronto surpassed Montreal to become Canada's leading financial centre. Some industries declined, and new ones emerged.

Today, Ontario's economy is confronted by new winds of change – demographic, technological, and economic – the outcomes of which will depend on whether the province can leverage the assets and growth opportunities of its diverse regions. While there are many factors beyond the Government of Ontario's control, it can empower stakeholders to unlock their economic potential by building governance structures that are responsive to local needs and realities, robust ecosystems of infrastructure and talent, and a province-wide capacity for continuous innovation. Given its historical track-record of resilience, there is no question that Ontario has what it takes to succeed.



APPENDIX 1:

 $Non-Exhaustive\ List\ of\ Federal\ Economic\ Development\ Programs\ in\ Ontario$

GOVERNMENT OF CANADA					
Innovation, Science, and Economic Development Agriculture and Agri-Food Canada					
Federal Economic Development Agency for Southern Ontario (FedDev Ontario)	Federal Economic Development Initiative for Northern Ontario (FedNor)	 Accessible Technology Program Canadian Small Business Financing 	Partnership (Agriculture and Agri-Food Canada) • Industrial Research		
 Accelerated Growth Service Business Scale up and Productivity Stream Regional Innovation Ecosystem Stream Community Economic Development and Diversification Stream 	 Northern Ontario Development Program Economic Development Initiative Targeted Manufacturing Initiative for Northern Ontario Community Futures Program Youth Internship Initiative 	 Program Connect to Innovate Innovation Superclusters Initiative Venture Capital Catalyst Initiative 	Assistance Program (National Research Council Canada) Indigenous Forestry Initiative (Natural Resources Canada)		

APPENDIX 2:

 $Non-Exhaustive\ List\ of\ Provincial\ Economic\ Development\ Programs\ in\ Ontario$

GOVERNMENT OF ONTARIO				
Ministry of Economic Development, Job Creation and Trade	Ministry of Agriculture, Food and Rural Affairs	Ministry of Energy, Northern Development, and Mines	Ministry of Indigenous Affairs	
 Southwestern Ontario Development Fund Eastern Ontario Development Fund 	Retention in Rural Ontario Downtown Revitalization Program Canadian Agricultural Partnership	Northern Ontario Heritage Fund Corporation	 Indigenous Economic Development Fund Indigenous Community Capital Grants Program 	
Business Growth Initiative		 Northern Business Opportunity Program Northern Innovation Program-Northern Community Capacity Building Program Strategic Economic Infrastructure Program Northern Ontario Internship Program Northern Event Partnership Program 	New Relationship Fund	

WORKS CITED

- 1 Nevena Dragicevic. 2015. *Anchor Institutions*. The Mowat Centre and the Atkinson Foundation. https://munkschool.utoronto.ca/mowatcentre/wp-content/uploads/publications/109 anchor institutions.pdf.
- 2 Michael Porter. 1998. "Clusters and the New Economics of Competition." Harvard Business Review. https://hbr.org/1998/11/clusters-and-the-new-economics-of-competition.
- 3 Keith Walley. 2007. "Coopetition: An introduction to the subject and an agenda for research." *International Studies of Management and Organization*, 37(2): 11-31. https://www.jstor.org/stable/40397695?se-q=1#page-scan_tab_contents.
- 4 Cambridge Dictionary. 2019. "Economic Development." https://dictionary.cambridge.org/dictionary/english/economic-development.
- 5 Amy Liu. 2016. Remaking Economic Development: The Markets and Civics of Continuous Growth and Prosperity. The Brookings Institution. https://www.brookings.edu/wp-content/uploads/2016/02/BMPP RemakingEconomicDevelopment Feb25LoRes.pdf.
- 6 Institute for Competitiveness and Prosperity (ICP). 2018a. *The Final Leg: How Ontario Can Win the Innovation Race*. https://www.competeprosper.ca/uploads/ The Final leg How Ontario Can win the innovation race %28Apr 20%29.pdf.
- 7 Organization for Economic Cooperation and Development (OECD). 2019. "Regional Development Policy." http://www.oecd.org/cfe/regional-policy/regionaldevelopment.htm.
- 8 The regional boundaries used in this section of the report are informed by Statistics Canada's economic regions and the following paper: Ben Eisen and Joel Emes. 2016. The Five Solitudes of Ontario: A Regional Analysis of Labour Market Performance in Post-Recession Ontario. The Fraser Institute. https://www.fraserinstitute.org/sites/default/files/five-solitudes-of-ontario.pdf.
- 9 Statistics Canada. 2018a. "Labour force characteristics by province, territory and economic region, annual" (Table 14-10-0090-01). https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410009001; and

- Statistics Canada. 2018b. "Employment by industry, annual, provinces and economic regions" (Table 14-10-0092-01). https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410009201.
- 10 Prism Economics and Analysis. 2017. *The Future of the Manufacturing Labour Force in Canada*. http://cstec.ca/sites/cstec/files/reports/The%20Future%20of%20 http://cstec.ca/sites/cstec/files/reports/The%20Future%20of%20 http://cstec.ca/sites/cstec/files/reports/The%20Future%20of%20 http://cstec.ca/sites/cstec/files/reports/The%20Future%20of%20 http://cstec/files/reports/The%20Future%20of%20 http://cstec/files/reports/The%20Future%20Force%20 http://cstec/files/reports/The%20Future%20Force%20 <a href="http://cstec/files/reports/The%20Future%20
- 11 David Freshwater. 2017. Growth Beyond Cities: Place-Based Rural Development Policy in Ontario. Rural Ontario Institute. http://www.ruralontarioinstitute.ca/uploads/userfiles/files/Rural%20Ontario%20Fore-sight%20Papers%202017 Growth%20beyond%20 cities%20and%20northern%20perspective.pdf; and Kiran Alwani and Andrew Parkin. 2019. Portraits 2017: Regional Differences in Ontario. The Mowat Centre. https://munkschool.utoronto.ca/mowatcentre/wp-content/uploads/publications/184 portraits regional divide.pdf.
- 12 Eisen and Emes. 2016.
- 13 A survey of n=1091 OCC members was conducted online by Navigator between September 26 and November 9, 2018.
- 14 Alwani and Parkin. 2019.
- 15 Deloitte Canada and Human Resources Professionals Association. 2017. *The Intelligence Revolution: Future-proofing Canada's workforce*. https://www2.deloitte.com/content/dam/Deloitte/ca/Documents/human-capital/ca-EN-HC-The-Intelligence-Revolution-FINAL-AODA.pdf.
- 16 Creig Lamb and Matt Lo. 2017. Automation Across the Nation: Understanding the potential impacts of technological trends across Canada. Brookfield Institute. https://brookfieldinstitute.ca/wp-content/uploads/RP BrookfieldInstitute Automation-Across-the-Nation.pdf.

17 Ibid.

18 Canadian Agricultural Human Resource Council. 2016. Ontario Agricultural Labour Market Forecast to 2025. https://cahrc-ccrha.ca/sites/default/files/files/Labour-Employment/ON_reportE.pdf.

19 Global Affairs Canada. 2019. *Canada's State of Trade: Trade and Investment Update – 2018*. https://www.international.gc.ca/economist-economiste/assets/pdfs/performance/state_2018_point/SoT_PsC_2018-Eng.pdf.

20 Christina Zefi. 2018. The Northern Attraction Series: Exploring the Need for a Northern Newcomer Strategy. Northern Policy Institute. https://www.northernpolicy.ca/upload/documents/publications/commentaries-new/zefi northern-attraction-1-en-18.10.09.pdf.

21 James Cuddy. 2015. From Laggard to Leader (Almost): Northeast showing potential for growth. Northern Policy Institute. https://www.northernpolicy.ca/upload/documents/publications/commentaries-new/cuddy_laggard-to-leader-en.pdf.

22 Ibid.

23 Jessica Thornton, Heather Russek, and Tara O'Neil. 2019. *Turn and Face the Strange: Changes impacting the future of employment in Canada*. The Brookfield Institute for Innovation + Entrepreneurship. https://brookfieldinstitute.ca/wp-content/uploads/Turn-and-Face-the-Strange-FINAL-online-1.pdf.

24 CIC News. 2016. "Rural Areas and Small Cities Across Canada Eager to Attract More Newcomers." https://www.cicnews.com/2016/10/rural-areas-and-small-cities-across-canada-eager-to-attract-more-newcomers-108558.html#gs.xtau67T1.

25 ICP. 2019a. "Rural-Urban Divide Part 1: Exploring the Division." https://www.competeprosper.ca/blog/rural-urban-divide-part-1.

26 A survey of n=1091 OCC members was conducted online by Navigator between September 26 and November 9, 2018.

27 Ibid.

28 Alwani and Parkin. 2019.

29 Neil Bradford. 2017. Canadian Regional Development Policy: Flexible Governance and Adaptive Implementation. OECD. http://www.oecd.org/cfe/regional-policy/Bradford Canadian-Regional-Development-Policy.pdf.

30 Liu. 2016.

31 OECD. 2019.

32 Dragicevic. 2015.

33 Ibid.

34 John C. Austin. 2017. "Tale of two Rust Belts: Higher education is driving Rust Belt revival but risks abound." The Brookings Institution. https://www.brookings.edu/blog/the-avenue/2017/12/19/tale-of-two-rust-belts-higher-education-is-driving-rust-belt-revival-but-risks-abound/.

35 Miranda Ebbekink. 2017. "Cluster governance: A practical way out of a congested state of governance plurality." *Environment and Planning C: Politics and Space*, 35(4), 621-639.

36 The external corporation model "allows for faster, more creative, proactive, and nimble decision-making when compared to the more bureaucratic and structured municipalities." In both models, however, certain decisions (e.g. re-zoning) lie with council and depend on the same timelines. Paul Parker and Evonne Donaher. 2013. "Comparing economic development corporation and internal department models: Service delivery in Southern Ontario." *Papers in Canadian Economic Development*, 13.

37 Godwin Arku. 2015. "Economic development practices of cities in Ontario, Canada." *Community Development*, 46(5), 604-615.

David Gray. 2019. "Beyond the Survey: Putting BR+E Results to work in the Almaguin Highlands." (PowerPoint Presentation) Burk's Falls & Area Community Economic Development Committee. https://edco.on.ca/resources/Documents/Dave%20Gray ED-CO-BACED%20Beyond%20the%20Survey.pptx.

38 David Gray. 2019. "Beyond the Survey: Putting BR+E Results to work in the Almaguin Highlands." (PowerPoint Presentation) Burk's Falls & Area Community Economic Development Committee. https://edco.on.ca/resources/Documents/Dave%20Gray_ED-CO-BACED%20Beyond%20the%20Survey.pptx.

39 Brittany Bruce. 2014. "Collaboration and Regional Economic Development: A Comparison of North Country, New York and Four Counties, Ontario" (Thesis). University of Waterloo. https://wwspace.uwaterloo.ca/bitstream/handle/10012/8853/Bruce Brittany.pdf?sequence=3&isAllowed=y.

40 Arku. 2015.

Works Cited

- 41 Smart Freight Centre. 2019. "About." http://www.smartfreightcentre.ca/about/.
- 42 A survey of n=89 EDOs and CFDCs was conducted online by the OCC between June 4 and July 19, 2019.
- 43 Evan Cleave, Godwin Arku, and Merlin Chatwin. 2017. "Cities' economic development efforts in a changing global economy: content analysis of economic development plans in Ontario, Canada." *Royal Geographical Society*. https://rgs-ibg.onlinelibrary.wiley.com/doi/abs/10.1111/area.12335.
- 44 Walley. 2007.
- 45 The Federation of Canadian Municipalities. "Treaty 2020–Peterborough County." https://fcm.ca/en/programs/first-nation-municipal-collaboration/community-economic-development-initiative/cedi/treaty-20-peterborough-county.
- 46 Godwin Arku and Catherine Oosterbaan. 2015. "Evidence of inter-territorial collaborative economic development strategies in Ontario, Canada." *GeoJournal*, 80(3).
- 47 Bruce. 2014.
- 48 Statistics Canada. 2017. Focus on Geography Series, 2016 Census. https://www12.statcan.gc.ca/census-re-censement/2016/as-sa/fogs-spg/Facts-PR-Eng.cfm?T OPIC=9&LANG=Eng&GK=PR&GC=35.
- 49 Statistics Canada. 2018c. Labour Market Experiences of First Nations people living off reserve: Key findings from the 2017 Aboriginal Peoples Survey. https://www150.statcan.gc.ca/n1/en/pub/89-653-x/89-653-x2018003-eng.pdf?st=RH1Z b87.
- 50 The Conference Board of Canada. 2017. *Aboriginal Entrepreneurship in Canada*. https://nacca.ca/wp-content/uploads/2017/04/Research-Module-1 NAC-CA-BDC Feb14 2017.pdf.
- 51 Statistics Canada. 2018c.
- 52 Hayley Lewis. 2019. "Why reconciliation means supporting Indigenous entrepreneurs." TVO. https://www.tvo.org/article/why-reconciliation-means-sup-porting-indigenous-entrepreneurs.

- 53 Canadian Council for Aboriginal Business. 2013. Community and Commerce: A Survey of Aboriginal Economic Development Corporations. http://www.nadf.org/upload/documents/community-and-commerce-final-report.pdf.
- 54 Ibid.
- 55 Canadian Chamber of Commerce. 2019. Lessons in Reconciliation: What We Heard in Saskatoon. http://www.chamber.ca/media/blog/190620-national-indige-nous-peoples-day/LessonsInReconciliationSaskatoon.pdf
- 56 Lewis. 2019.
- 57 Canadian Chamber of Commerce. 2019.
- 58 Ibid.
- 59 Liu. 2016.
- 60 Sean Speer and Robert Asselin. 2019. "An increasingly intangible economy ruled by the innovation sector requires shifts in determining competitiveness." The Globe and Mail. https://www.theglobeandmail.com/business/commentary/article-an-increasingly-intangible-economy-ruled-by-the-innovation-sector/.
- 61 UK Cabinet Office. "About What Works." https://whatworks.blog.gov.uk/about-the-what-works-net-work/.
- 62 Ibid.
- 63 UK Cabinet Office. 2018. *What Works Network:* Five Years On. https://www.gov.uk/government/publications/the-whatworks-network-five-years-on.
- 64 Lisa Lalande, Joanne Cave, and Adam Jog. 2019. Innovation in Evidence Committing to Action: Next Steps for Canada's Evidence Ecosystem. The Mowat Centre. https://munkschool.utoronto.ca/mowatcentre/wp-content/uploads/publications/188 IinE committing to action.pdf.
- 65 The Municipal Economic Development Index uses software to pull information from multiple sources and allows municipalities to filter results using a dashboard. Public Sector Digest. 2019. "Municipal Economic Development Index." https://publicsectordigest.com/municipal-economic-development-index.

66 TrilliumGIS is a large geo-mapped dataset that contains locations and meta-data for manufacturing firms and educational institutions across Ontario, as well as economic and infrastructure information. Trillium Network for Advanced Manufacturing. 2017. "TRILLIUMGIS." http://trilliummfg.ca/trillium-gis-2/.

67 ConnectON is an asset mapping tool designed to support economic development planning. ConnectON. "About the Program." https://www.connecton.ca/.

68 TVO. 2019. "A Perilous Data Deficit?" The Agenda with Steve Paikin. https://www.tvo.org/video/a-perilous-data-deficit.

69 Ibid.

70 Some of these projects are funded by Ontario's Ministry of Agriculture, Food and Rural Affairs. See, for example: University of Waterloo, School of Environment, Enterprise and Development. "Evaluating regional economic development initiatives: Understanding the challenges for rural regions in Ontario." https://atrium.lib.uoguelph.ca/xmlui/han- <u>dle/10214/10920</u>; and University of Guelph. 2018. "Building the Future: Rural Infrastructure & Regional Economic Development." http://ruraldev.ca/ wp-content/uploads/2019/02/Project-Kickoff-Meeting-Building-the-Future-2018-06.pdf.

71 Ontario Ministry of Tourism, Culture and Sport. 2018. "Tourism Quick Facts 2016." http://www.mtc. gov.on.ca/en/research/quick facts/facts.shtml.

72 Scott Boutilier. 2016. Closing the Tourism Gap: Creating a Long-Term Advantage for Ontario. OCC. https://occ.ca/wp-content/uploads/Report Closingthe-Tourism-Gap.pdf.

73 Ibid.

74 Ontario Mining Association. 2016. *Mining in* Ontario: The Latest Trends and Industry Outlook. https:// www.oma.on.ca/en/resourcesGeneral/OMA-Economic-Report.pdf.

75 Government of Canada. 2019a. The Canadian Minerals and Metals Plan. https://www.nrcan.gc.ca/sites/ www.nrcan.gc.ca/files/CMMP/CMMP The Plan-EN.pdf.

76 Ontario Forest Industries Association. 2016. Forestry Matters: Strengthening Ontario's Foundational Econ– omy. http://www.ofia.com/images/2016OFIA brochure 4p proof04.pdf.

77 Government of Ontario. 2016. State of Ontario's Natural Resources: Forests 2016. https://files.ontario.ca/ forests2016-final-accessible.pdf.

78 Ontario Forest Industries Association. 2016.

79 Ontario Federation of Agriculture. 2018. "Economic Contribution of the Ontario Farm Sector 2013."

80 Ontario Ministry of Agriculture, Food and Rural Affairs. 2018. "Economic Impact of the Ontario Agri-Food Value Chain." http://www.omafra.gov.on.ca/en- glish/stats/economy/Attribution County.xlsx.

81 Hugo Valin et al. 2014. "The future of food demand: understanding differences in global economic models." Agricultural Economics, 45: 51-67. https://onlinelibrary.wiley.com/doi/pdf/10.1111/agec.12089.

82 Mathew Wilson and Alex Greco. 2018. Manufacturing Ontario's Future: Leveraging Ontario's Manufacturing Sector to Drive Ontario's Economic Success. Canadian Manufacturers and Exporters. https://cme-mec. ca/wp-content/uploads/2018/12/CME-ON-Manufacturing-Strategy-Final-compressed.pdf.

83 Scott Boutilier, 2016.

84 Liu. 2016.

85 What Works Centre for Local Economic Growth. "Developing an Effective Local Industrial Strategy." https://whatworksgrowth.org/policy-challenges/industrial-strategy/.

86 Liu. 2016.

87 Arku. 2015; and ICP. 2016. Clusters in Ontario: Creating an Ecosystem for Prosperity. https:// www.competeprosper.ca/work/working-papers/clusters-in-ontario-creating-an-ecosystem-for-prosperity.

88 Catherine Oosterbaan and Stephen Morris. 2017. "Increasing capacity of rural clients to access economic development programs: The Ontario BRE case study." Community Development, 48(2). https://doi.org/10.108 0/15575330.2017.1285796.

89 Ibid.

Works Cited

90 Innovation, Science and Economic Development Canada. 2019. "Key Small Business Statistics - January 2019." https://www.ic.gc.ca/eic/site/061.nsf/en-g/h 03090.html#point2-1.

91 KPMG. 2004. Evaluation of the Strategic Skills Investment Program.

92 Ibid.

93 Ibid.

94 Thornton, Russek, and O'Neil. 2019.

95 Royal Bank of Canada. 2019. *Navigating 2019: 9 big insights for the year ahead*. http://www.rbc.com/economics/economic-reports/pdf/other-reports/RBC-Economics-outlook2019.pdf.

96 Wilson and Greco. 2018.

97 Canadian Chamber of Commerce. 2018. *Death by 130,000 Cuts: Improving Canada's Regulato-ry Competitiveness*. https://static1.squarespace.com/static/5afb304d506fbeacf1448abf/t/5b0ff4c-c2b6a282944f06c80/1527772373167/180531Death-By130000CutsImprovingCanadasRegulatoryCompetitiveness.pdf.

98 Ibid.

99 Ibid.

100 Amanda Silvia. 2018. "Spotlight on CSR: Millennials More Prone to Punish Brands for Scandals." https://application.marketsight.com/app/ItemView.aspx?ID=8f12a57f-172f-4e9e-9387-a8a2010428d8.

101 Fiona Wishlade and Rona Michie. 2017. Financial Instruments in Practice: Uptake and Limitations. OECD. http://www.oecd.org/cfe/regional-policy/Wishlade Michie Financial-Instruments-in-Practice.pdf.

102 Ibid.

103 Ibid.

104 David A. Wolfe. 2017. Impact and Effectiveness of Public Support for Business Innovation. Munk School of Global Affairs, University of Toronto. https://munkschool.utoronto.ca/ipl/files/2017/10/IPL-PA-PER-2017-3.pdf.

105 OCC. Ontario Economic Report 2019. http://occ.ca/wp-content/uploads/2019-Ontario-Economic-Report.pdf.

106 Wilson and Greco. 2018.

107 Government of Canada. 2019b. "Canada's Digital Charter in Action: A Plan by Canadians, for Canadians." https://www.ic.gc.ca/eic/site/062.nsf/eng/h 00109.html.

108 Royal Bank of Canada. 2018. *Humans Wanted: How Canadian youth can thrive in the age of disruption*. https://www.rbc.com/dms/enterprise/futurelaunch/assets-custom/pdf/RBC-Future-Skills-Report-FI-NAL-Singles.pdf.

109 Thornton, Russek, and O'Neil. 2019.

110 Prism Economics and Analysis. 2017.

111 Andrew Sharpe and Jean-Francois Arsenault. 2010. *Investing in Aboriginal Education in Canada: An Economic Perspective*. Centre for the Study of Living Standards. http://www.afn.ca/uploads/files/education2/investinginaboriginaleducation.pdf.

112 Deloitte Canada. 2017. Outcomes over optics Building inclusive organizations. https://www.canada175.ca/sites/default/files/download/files/inclusion_aoda_en_0.pdf.

113 World Economic Forum. 2018. *The Future of Jobs Report 2018*. http://www3.weforum.org/docs/WEF
Future of Jobs 2018.pdf.

114 Colin Busby and Ramya Muthukumaran. 2016. *Precarious Positions: Policy Options to Mitigate Risks in Non-standard Employment*. C.D. Howe Institute. https://www.cdhowe.org/sites/default/files/attach-ments/research_papers/mixed/Commentary%20462_0.pdf.

115 Jon Shell and Jack Graham. 2019. "Want to plan for the "future of work"? Help independent workers now." The Brookfield Institute for Innovation and Entrepreneurship. https://brookfieldinstitute.ca/commentary/want-to-plan-for-the-future-of-work-help-independent-workers-now/; and Deloitte Canada and Human Resources Professionals Association. 2017.

116 Canadian Chamber of Commerce. 2011. *The Business Case for Investing in Canada's Remote Communities*. http://www.chamber.ca/download.aspx?t=0&pid=ffc-0b24c-9bae-e211-8bd8-000c291b8abf.

117 David Meyer. 2018. "Study on Succession Planning for SMEs in Ontario." Government of Ontario, Ministry of Economic Development and Growth.

118 Wilson and Greco. 2018; and Jabil. 2019. "How 5G Will Empower a New Era of Manufacturing." IoT for All. https://www.iotforall.com/5g-empower-new-era-manufacturing/.

119 Jabil. 2019.

120 Information and Communications Technology Council. 2014. "Digital Adoption, Advancing Canada's Place in the Global Economy." https://www.ictc-ctic.ca/wp-content/uploads/2014/07/AdoptionRoadmap.pdf.

121 David A. Wolfe. 2018. Creating Digital Opportunity for Canada. Brookfield Institute for Innovation + Entrepreneurship and Innovation Policy Lab, Munk School of Global Affairs. https://munkschool.utoronto.ca/ipl/files/2018/04/UTMK028-Digital-Opps-V5.pdf.

122 United States Department of Agriculture. 2019. *A Case for Rural Broadband*. https://www.usda.gov/sites/default/files/documents/case-for-rural-broadband.pdf.

123 Thornton, Russek, and O'Neil. 2019.

124 Dr. Anand S. Rao and Gerard Verweij. 2017. PwC. Sizing the Prize, PwC's Global Artificial Intelligence Study: Exploiting the AI Revolution. https://www.pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf.

125 SciForce. 2019. "What is the Internet of Things?" IoT for All. https://www.iotforall.com/what-is-the-internet-of-things/.

126 Barbara IoT. 2019. "How IoT Can Improve Industrial Efficiency." IoT for All. https://www.iotforall.com/how-iot-can-improve-industrial-efficiency/.

127 Government of Canada. 2019a.

128 Farai Mazhandu. 2019. "IoT Applications in Construction: Concrete Curing Monitoring." IoT for All. https://www.iotforall.com/iot-applications-construction-concrete-curing-monitoring/.

129 Michael Fenn. 2017. *The Impact of Megatrends on Rural Development in Ontario*. Rural Ontario Institute. http://www.ruralontarioinstitute.ca/uploads/userfiles/

files/Rural%20Ontario%20Foresight%20Papers%20 2017 Impact%20of%20Megatrends%20and%20 Northern%20Perspective.pdf.

130 Fenn. 2017.

131 TVO. 2019. "Ontario Hubs: Repopulating the North." https://www.tvo.org/transcript/2517665/ontario-hubs-repopulating-the-north.

132 Helen Hambly and Jamie (Donghoon) Lee. 2019. "The rural telecommuter surplus in Southwestern Ontario, Canada." *Telecommunications Policy* 43, 278–286. https://www.sciencedirect.com/science/article/pii/S0308596118301046.

133 Statistics Canada. 2019. "Capital and repair expenditures, non-residential tangible assets, by industry and geography (x 1,000,000)" (Table 34-10-0035-01). https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3410003501&pickMembers%5B0%5D=1.7&pickMembers%5B1%5D=2.1; and Statistics Canada. 2018a.

134 The Conference Board of Canada. 2018. "Innovation." https://www.conferenceboard.ca/hcp/provincial/innovation.aspx.

135 ICP. 2018a.

136 The Conference Board of Canada. 2018.

137 Canadian Manufacturers and Exporters. 2018. "CME Welcomes Advanced Manufacturing Innovation Supercluster Announcement." https://cme-mec.ca/blog/cme-welcomes-advanced-manufacturing-in-novation-supercluster-announcement/.

138 Ibid.

139 Statistics Canada. 2014. "Obstacles to the adoption of advanced technologies, by industry and enterprise size" (Table 27-10-0282-01). https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2710028201.

140 University of Toronto. 2019. "What is the value of university IP policy in driving innovation?" https://gro.utoronto.ca/how to measure the success of ip policy.

141 University of Toronto. 2019. "Landmark \$100-million gift to the University of Toronto from Gerald Schwartz and Heather Reisman..." https://www.utoronto.ca/news/landmark-100-million-gift-university-toronto-gerald-schwartz-and-heather-reisman-will-power.

Works Cited

142 Ibid.

143 ICP. 2019b. *The Canadian Cluster Handbook*. https://www.competeprosper.ca/uploads/WP 34
The Canadian Cluster Handbook Final.pdf.
144 Neils Christensen. 2019. "The Biggest Hurdle Mining Companies Face? Implementation, Not Innovation." Kitco News. https://www.kitco.com/news/2019-05-01/The-Biggest-Hurdle-Mining-Companies-Face-Implementation-Not-Innovation-NORCAT-CEO.html/.

145 "IBM Innovation Incubator Project." https://oce-ontario.org/ibm-innovation-incubator-project.

146 Deloitte Canada. 2018. Ontario Centres of Excellence: Economic Contributions Analysis. https://www.oce-ontario.org/docs/default-source/publications/oce-economic-contributions-analysis-final-report -201810.pdf?sfvrsn=6.

147 PTBO Canada. 2019. "Peterborough's Innovation Cluster Creates Whopping \$15 Million Regional Economic Impact in 2018." https://www.ptbocanada.com/journal/2019/1/16/peterboroughs-innovation-cluster-creates-whopping-15-million-region-al-economic-impact-in-2018.

148 James Manyika et al. 2015. Digital America: A Tale of the Haves and Have-Mores. McKinsey & Company. https://www.mckinsey.com/~/media/McKinsey/Industries/High%20Tech/Our%20Insights/Digital%20 America%20A%20tale%20of%20the%20haves%20 and%20have%20mores/Digital%20America%20 Full%20Report%20December%202015.ashx.

149 Government of Canada, Expert Panel on Research and Development. 2011. *Innovation Canada: A Call to Action*. http://rd-review.ca/eic/site/033.nsf/vwapj/R-D_InnovationCanada_Final-eng.pdf.

150 Wilson and Greco. 2018.

151 Wolfe. 2017; and Daniel Schwanen. 2017. *Innovation Policy in Canada: A Holistic Approach*. C.D. Howe Institute. https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/C.D.%20 Howe%20Commentary%20-%20Innovation%20
https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/C.D.%20 Approach_0.pdf.

152 Wendy Cukier. 2019. *Inclusive Innovation: Using Technology to Bridge the Urban–Rural Divide*. Public Policy Forum. https://ppforum.ca/wp-content/uploads/2019/01/Inclusive-Innovation-Us-

ing-Technology-to-Bridge-the-Urban-Rural-Divide-PPF-JAN2019-EN.pdf.

153 Bell Canada. 2018. *Broadband Connectivity in Rural Canada*. https://www.ourcommons.ca/Content/Committee/421/INDU/Brief/BR9618876/br-external/BellCanada-e.pdf.

154 Canadian Wireless Telecommunications Association. 2018. "Investing in Canada's Wireless Future." https://www.builtforcanada.ca/investment/.

155 Xplornet Communications Inc. 2019. "Xplornet launches bold new plan to improve rural broadband." https://www.xplornet.com/about/news/xplornet-launches-bold-new-plan-to-improve-rural-broadband/.

156 The Wire Report. 2019. "ISED Approves Smaller, Tier 5 Spectrum Licence Areas." https://thewire-report.ca/2019/07/24/ised-approves-smaller-tier-5-spectrum-licence-areas/.

157 Ontario Federation of Agriculture. 2018. "2018 OFA Membership Survey." https://ofa.on.ca/wp-content/uploads/2018/08/Member-Survey-by-Kynetec.pptx.

158 Karen Campbell et al. 2017. *The 5G economy: How 5G technology will contribute to the global economy*. IHS Economics. https://cdn.ihs.com/www/pdf/IHS-Technology-5G-Economic-Impact-Study.pdf.

159 Catherine Middleton. 2017. Broadband Infrastructure for the Future: Connecting Rural Ontario to the Digital Economy. Rural Ontario Institute. http://www.ruralontarioinstitute.ca/uploads/userfiles/files/Rural%20Ontario%20Foresight%20Papers%202017Broadband%20Infrastrucure%20and%20Northern%20Perspective.pdf.

160 Government of Ontario. 2019. *Up to Speed: Ontario's Broadband and Cellular Action Plan*. https://www.ontario.ca/page/speed-ontarios-broadband-and-cellular-action-plan.

161 Government of Canada. 2019c. *High-Speed Access for All: Canada's Connectivity Strategy*. http://www.ic.gc.ca/eic/site/139.nsf/eng/h 00002.html/.

162 Government of Ontario, 2019.

163 Wolfe. 2017.

164 Porter. 1998.

165 Matthew Seddon and Saad Usmani. 2017. Superclusters! Lessons and Opportunities for Canada. The Brookfield Institute for Innovation and Entrepreneurship and ICP. https://www.competeprosper.ca/uploads/2017 Cluster Study Superclusters Lessons and opportunities for Canada Final.pdf.

166 Ebbekink. 2017.

167 Seddon and Usmani. 2017.

168 ICP. 2019b.

169 World Bank. 2009. Cluster for Competitiveness: A Practical Guide & Policy Implications for Developing Cluster Initiatives. http://siteresources.worldbank.org/INTRANETTRADE/Resources/cluster-initiative-pub-web-ver.pdf.

170 ICP. 2019a.

171 McKinsey & Company. 2016. *Tech North: Building Canada's first technology supercluster*. https://www.nextcanada.com/images/TechNorth-McKinsey-Report.pdf.

172 Canadian Chamber of Commerce. 2011.

173 Ibid.

174 Ibid.

175 ICP. 2018b. "Clusters and Competitiveness: Episode 3 – Clusters Round Table." https://soundcloud.com/user-363680810.

176 ICP. 2019b.

177 World Bank, 2009.

178 ICP. 2019b.

179 Ibid.

180 Ibid.

181 Ibid.

182 Ibid.

183 Cleave, Arku, and Chatwin. 2017.





