

Lawrence National Centre for Policy and Management
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Unlocking Canadian Competitive Advantage:

A system-of-systems approach to policymaking
for steering Canada's economic path to long-term,
inclusive growth in the aftermath of COVID-19



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Executive Summary

As Canada's economy transitions into a recovery phase, the challenge policymakers face is two-fold: They must manage the health crisis, while also focusing on longer-term policy issues to ensure future prosperity. But how should Canada approach policymaking to steer its economic path to long-term, inclusive growth in the aftermath of COVID-19? This brief will discuss key insights from a framework developed by Lawrence National Centre to guide such policymaking. The framework builds on the concept of unlocking Canadian competitive advantage by leveraging Canada's existing strengths and addressing key gaps in certain socio-economic pillars. Because of the interconnectedness of the pillars, the framework recommends a system-of-systems approach to policymaking to set the stage for robust, inclusive growth.

Canada at a Crossroads

Canada continues to grapple with the socio-economic fallout from the pandemic.

However, pre-Covid indicators pointed to Canada's eroding competitiveness levels, suggesting that its long-term growth potential was already declining.ⁱ Exacerbating economic conditions created by COVID-19 have further threatened Canada's future prosperity and elevated the need for developing policy for improving its long-term growth potential. Such policy must also ensure inclusive growth, especially considering the rising inequality due to the pandemic's disproportionate effects on low-income and female workers.ⁱⁱ

The government has taken various support measures to cushion the blow of the pandemic. These measures have also added to mounting fiscal debt—in particular federal debt. On one hand, if the ongoing health crisis abates and prospects for inclusive growth are improved, businesses and labor markets will recover and grow. This, in turn, will set the stage for fiscal revenue recovery and reduce fiscal outlays, thereby improving fiscal position. If the health crisis is not adequately managed and economic recovery remains muted, fiscal position will only worsen, limiting the scope for further fiscal stimulus in the medium and long term.

Additionally, countries that fail to focus on long-term policy risk lower growth potential and associated macro-economic challenges, and also a loss of competitiveness on the global stage.

Indeed, Canada is at a crossroads. Policymakers must meet the immediate challenges of abating the health crisis, and also be laser focused on policy that paves the way for a robust recovery, by putting the economy on a path of sustained, inclusive growth. To guide recovery policymaking, the Lawrence National Centre has developed a framework, which builds on the concept of unlocking Canadian competitive advantage by leveraging Canada's existing strengths in certain socio-economic pillars and addressing key gaps in other pillars.

Pillars for Prosperity

Every country relies on a combination of socio-economic pillars that contributes to its national competitiveness and long-term prosperity.

According to the World Economic Forum, Canada ranks high in a number of such pillars, including macro-economic stability (ranked 1st), financial systems (ranked 9th), and institutions (ranked 14th).ⁱⁱⁱ Institutions comprise legal systems as well as norms that set the rules of the game among economic actors and create incentives for investments towards productive capacity.^{iv} Macro-economic stability and strong financial systems facilitate investment and growth.^v These strengths are some of the key foundations on which we want to build.

Yet, Canada remains behind in some other pillars, including in the adoption information and communication technology (ICT) (ranked 35th), market access for trade (ranked 24th on product market and 16th in market size), as well as physical infrastructure (26th). Additionally, the pandemic has laid bare some important gaps within Canada's social infrastructure. Gaps in socio-economic pillars dampen technological progress, capital accumulation and human capital development, dragging down long-term growth prospects. By addressing the gaps, Canada can realize its innate strengths and secure its path to prosperity, thereby unlocking its competitive advantage.



Gaps in Pillars

Digital Infrastructure

Canada trails behind its peers in digital technology adoption.

In recent years, ICT investment per job in the US increased by 10 per cent, while in Canada this ratio declined by 10 per cent. The latest data available indicates that ICT investment per job in Canada was 56.3 per cent of U.S. investment.

^{vi} Canada's historical low investment in ICT is concerning, especially considering important trends—including the advent of 5G networks, as well as revolutionary advancements in AI and Big Data—that are influencing rapid adoption of digital technologies around the world. Additionally, the pandemic has demonstrated that digital infrastructure is critical to societal resilience and business continuity in times of crisis, and accelerated the need to upgrade digital technologies, services and corresponding infrastructure. Furthermore, within Canada, there is substantial variation in access and usage of basic digital infrastructure based on location, income, age and education—a phenomenon known as digital divide. ^{vii} Thus, upgrading digital infrastructure has to be done responsibly, to address the divide and not widen it.

There is also potential to progressively integrate digital technologies with physical structures of cities and regions, and in the process, improve efficiency, reduce environmental footprint and enhance quality of life. Already smart electricity meters are being deployed across Europe to deliver usage insights to consumers and optimize micro-generation. ^{viii} In San Diego, the city's smart street lighting program delivers a host of benefits, including aiding city planners in identifying and redesigning unsafe intersections, and notifying drivers of parking spots. ^{ix} Unfortunately, Canada has been slow to develop smart infrastructure. One survey suggests the leading Canadian city of Toronto is behind many of its North American peers (e.g. New York, Chicago and San Francisco), and other global cities (like Barcelona, Stockholm, Singapore and Shanghai). ^x

ICT is characterized as a General Purpose Technology with the potential to spur innovation and productivity growth across a wide range of private and public sectors. Effective adoption of digital and communications technologies influences growth in the economy primarily through two interrelated channels, improving labor skills and business productivity. ^{xi}

Trade Infrastructure

Generating sustained growth, however, also requires ensuring market access.

Greater access to markets induces firms to increase their productive capacity, taking advantage of economies of scale and scope. Given its relatively small market size, the Canadian economy has relied heavily on trade for the growth of its productive sectors, and imports of products and services where it does not have a comparative or absolute advantage. According to Statistics Canada, one in six jobs in the country is directly or indirectly linked to exports.^{xii}

However, in the recent years, trade relations with Canada's two leading partners, the U.S. and China, have deteriorated. Political tensions between Canada and China have raised concerns around Canadian exports to Chinese markets, with China putting limits on imports of Canadian soy and meat products. Canadian exporters to the U.S. and Mexico have also faced substantial uncertainty leading up to the ratification of NAFTA to USMCA, the effect of which remains to be seen. Furthermore, following the pandemic, several Western leaders have raised concerns about vulnerabilities in global supply chains and announced potential re-shoring strategies, stoking fears of further trade disputes. Research shows that uncertainty induced by trade policy shocks can considerably reduce investments by firms, putting a drag on long-term growth potentials.^{xiii}

Facilitating trade also requires robust transportation corridors and ports. However, over the years, investment in trade-related physical infrastructure has not kept up with the pace of growth in trade. Capacity constraints and high costs of freight transportation (especially domestic freight transportation) have suppressed industrial investment.^{xiv} Additionally, there are significant barriers to trade across Canadian provinces. The regulatory distortions—mostly in the form of non-tariff trade barriers, from dairy quotas to the patchwork of regulations on trucking, business registration and professional licensing—have stifled competition, hindered labour mobility and limited the effective scale of production. One estimate suggests that such provincial regulations cost the economy as much as \$130 billion a year in lost trade opportunities.^{xv}

Social Infrastructure

The development of human capital enables citizens to realize their potential to become productive members of society over their lifetime.

Investing in people through healthcare, jobs and skills contributes to human capital. Over time, skill demand is expected to change with structural changes in the economy, and many trends that were already underway—such as growing digital transformation and automation—are being accelerated by the impact of the pandemic.^{xvi} Consequently, there is expected to be an even higher demand for skills in digital technologies and STEM fields, where Canada traditionally has had an acute shortage.^{xvii}

While Canada's universal healthcare delivered through its provincial and territorial systems has been a source of national pride, the system is not without its limitations, which the pandemic has laid bare. Constraints within Canada's healthcare systems include comparatively low doctors per capita, low beds per capita, as well as long wait times in emergency rooms and elective surgery. Among its peers, Canada ranks low in delivery of healthcare services.^{xviii} The tragedy that unfolded in Canada's long-term care facilities has been attributed to lack of preparedness of continuing care, lack of coordination and collaboration between acute health care and continuing care, and lack of equity in pay of caregivers.^{xix}

The economic fallout from the pandemic also has important implications for Canada's human capital. With their disproportionate representation in the most affected sectors, low-income and female populations have been particularly exposed to job and income losses.^{xx} The drop in participation rate is also attributed to working mothers quitting in the face of untenable caregiving responsibilities. Left unabated, these trends will contribute to greater income inequality.



Interconnectedness and System-of-Systems Approach

The policy issues surrounding the socio-economic pillars should not be viewed in isolation as they influence each other and jointly contribute to Canada's competitive advantage.

Technology adoption influences business dynamism and productivity growth, which enable firms' abilities to compete in national and international markets. Access to national and international markets induces firms to invest in technology and expand their productive capacity. Social Infrastructure provides the foundation for the other pillars, contributing to the quality of life and overall well-being for citizens in their communities, regions and cities.

Successful policy, particularly in the interest of unlocking Canada's competitive advantage, acknowledges the inherent interconnectedness across pillars and policy issues. The traditional strategy of isolated, siloed policy debates and decision making will be insufficient to make progress in critical policy areas. Research by the Lawrence National Centre suggests a system-of-systems approach to policymaking, viewing issues of infrastructure development in tandem instead of in isolation.

The necessity of swift, hasty decision making during the pandemic has highlighted the tendency to focus narrowly on one specific policy issue at a time. For example, in the aftermath of COVID-19, many western governments doubled down on their efforts to improve digital connectivity. However, this is merely one piece of a very large and intricate puzzle. Research suggests that investment in machinery or networks alone is not sufficient to increase long-term productivity growth. The big welfare gains are attained when there are complementary investments in applications and requisite skills.^{xxi} Consequently, a system-of-systems approach suggests that, in addition to focusing on connectivity efforts, policymaking should consider the development of applications that enhance quality of life and productivity, as well as improvements in skills to wield those applications.

A glass globe is placed on a laptop keyboard. The globe is transparent, showing the continents and latitude/longitude lines. The background is a blurred image of the laptop keyboard and the globe's reflection on the keys.

Policy drivers of digital and trade infrastructures must also consider the linkages to social infrastructure.

Specifically, we must consider concerns related to inclusivity. For example, the pandemic has pushed many governments globally to consider rolling out various smart services—including tele-health services. To have the desired impact, policymakers must ensure accessibility, literacy and awareness for wide adoption of the smart services they promote. Without applying this important lens, policymakers risk widening the digital divide instead of narrowing it.

A successful inclusive growth strategy acknowledges continued socio-economic challenges, such as sustainable child care support, allowing parents who are missing out on job opportunities to accumulate skills for the future, overcome barriers to gainful employment and avoid wage penalties and income inequality. Further, putting additional resources into skills for tomorrow can address changing labour market trends, labour deficiencies in growing industries, and encourage a focused, trained work force.

Importance of System- of-Systems Approach: Two Illustrations

Policymakers often look at global trends and jurisdictions to gain insights on policy issues and corresponding strategies used to tackle them.

The following illustrations lay out some emerging policy issues and how the Lawrence National Centre's framework could be used to develop successful policymaking strategies.



Illustration #1:

Smart Public Infrastructure

Communities, cities and provinces compete nationally and internationally to attract talents and investments.

The wellbeing of citizens and the productivity of firms are inextricably linked to the competitiveness of the communities where they reside. On a macro level, a country's competitiveness is reflected in the competitiveness of its regions combined.

With the development of new digital technologies and their convergence, there are opportunities for creating novel solutions to urban and rural challenges. Globally, large urban centres have turned to smart city solutions to address their biggest challenges. Barcelona partnered with technology firms to implement smart digital infrastructures aimed at increasing efficiencies in areas of waste management, water irrigation, smart living and transit; Singapore launched a Smart Nation initiative to promote sustainable development, digital governance and urban planning; and London, UK, has undertaken initiatives to connect citizens to smart solutions, such as open data projects, digital talent programs for upskilling, and increased investments in fibre internet access.

However, in the past, there has been limited investment in smart infrastructure programs across Canada. A few municipalities, on their own, have started developing smart solutions on a limited basis. Through its Smart Cities Challenge, the federal government has provided some grants to a few cities and communities for smart programs.^{xxii} Yet, this policy approach to developing public digital infrastructure has so far been unsystematic at best. A piecemeal

approach neglects the larger challenges faced by municipalities and regions when developing broader smart solutions.

To fully realize the opportunities that present themselves through investments in smart public infrastructure, a system-of systems policy framework that supports communities, municipalities and provinces is needed to roll out smart programs on a greater scale. Such a framework would have to consider several important, interrelated challenges, including 1) addressing concerns regarding ownership, privacy and security of public data; 2) creating and managing an effective platform that enables solution providers to develop smart programs for the communities; 3) striking a balance between entrepreneurial incentives for developing smart solutions and the interest of the public; and, 4) ensuring accessibility, literacy and awareness to ensure wide adoption of smart programs.

An integrated policy framework for smart public infrastructure will require active participation of key stakeholders—communities, businesses and governments. Federal and provincial governments have to lay the groundwork for local communities and businesses to identify their needs and digital strategies; some of those strategies may be aggregated at the regional level to pool resources and scale up smart programs. Technology solution providers have to work with the local governments to roll out next generation networks and develop smart programs based on the needs of the communities. Federal and provincial governments have to provide necessary regulatory support and, where necessary, seed funding.

Illustration #2:

Balancing National Interests and Gains from Trade

Following the outbreak of the pandemic, some governments have doled out incentives for re-shoring.

For example, in April 2020, Japan announced \$2.2 billion in incentives to bring some manufacturing capacity from China back to Japan. Some companies, including Toyota, did not act upon this incentive as it became evident that dismantling supply chains and moving them back domestically would be impractical, and potentially hurt their commercial interests in the growing Chinese automobile market.^{xxiii} Japanese manufacturing affiliates in China sold \$252 billion in goods, with 73 per cent sold in China and only 17 per cent sold back home.

Re-shoring strategies can also stoke trade disputes, and trade wars can lead to substantial welfare losses.^{xxiv} For a relatively small, open economy, like Canada, trade wars can be particularly damaging. Imagine a scenario where Canada gets entangled in trade wars, leading to wholesale tariffs on its exports and counter-tariffs on its imports. Consequently, export sectors will decline, and the cost of the imports will rise, hurting consumers and fuelling inflation. Additionally, this environment can potentially create incentives to reallocate resources from more productive export sectors to less productive sectors, where Canada traditionally had limited advantage (and therefore relied on imports). As a result, Canada's long-term productivity and growth will suffer. Instead of siloed thinking to meet a narrow economic interest, a system-of-systems approach is needed in the formulation of trade policy, taking into account broader ramifications of barriers to trade on consumer and producer welfare, as well as national strategic interests.

Clearly, Canada must ensure the supply of critical goods. However, any re-shoring strategy should consider whether and how Canada could build competitive advantage around the industry in question. Take, for example, the medical device industry, which has been a prime target for re-shoring. In Canada, the industry enjoys access to strong universities and hospitals to partner on R&D projects. However, the local healthcare market structure governed by a patchwork of regulatory processes across provinces has been attributed to limiting adoption of innovative devices, with local device manufacturers focusing mostly on export markets for their growth.^{xxv} Besides these demand-side challenges, there are also supply-side constraints, including a shortage of workers with the requisite skills and insufficient backward linkages to support the industry.

If Canada is serious about developing a vibrant medical device industry, its policy should address the demand- and supply-side challenges, and, in the process, unlock the competitive advantage of the industry. A system-of-systems approach to re-shoring medical devices would take into account the pre-commercialization advantages that the industry has as well as highlight deficiencies in post-commercialization “systems” (i.e. market/ demand system and supply system). A strategy that relies on incentives for re-shoring or imposing tariffs on medical device imports will not address the underlying challenges. On the contrary, such policy could lead to higher costs of devices and stoke potential retaliatory tariffs on Canadian exports.

Conclusion

Canada's gaps in some key socio-economic pillars have been escalating well before the pandemic began.

While COVID-19 has dealt a severe blow to the economy, policymakers have an opportunity to harness the unprecedented era of collaboration between governments, industries and communities to unlock Canada's competitive advantage. To this end, policies need to be viewed and tackled in tandem, not in isolation; policy challenges should take socio-economic factors into account, ensuring a solution to one issue doesn't exacerbate another; and, achieving long-term, inclusive and sustainable growth requires applying a system-of-systems approach to policymaking.

The road to long-term and inclusive economic growth will be daunting. Policymakers must commit to a holistic, system-of-systems approach ensuring action follows every promise, projects are getting built, and policies are routinely evaluated to ensure ongoing efficacy. Canada won't solve its long-term growth challenges overnight but policy debates and discussion forums are critical to get the ball rolling. As Parliament convenes in 2021, these debates are ever more important as Canada transitions from the pandemic response to the economic recovery.



About Lawrence National Centre

Established in 2002, the Lawrence National Centre has been at the forefront of national policy dialogue in Canada, bridging the gap between academia, business and government to enhance Canada's global competitiveness. It is an independent public policy centre that contributes to policy dialogue and development by producing evidence-based research, providing a convening platform to engage and inform businesses and policymakers, and developing leading educational programs in policy and strategy.

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