

Rebuilding Canada

A New Framework for Renewing Canada's Infrastructure

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I. Introduction

A strong, competitive economy and high quality of life depend on public infrastructure. Strategic infrastructure investment underpins Canada's long-term economic growth and prosperity, and ensures that our communities are livable and sustainable for generations.

Modern Canada has been defined by the nation-building projects undertaken at the right place and time in our history. Since Confederation, far-sighted investments in highways and transit, the Canadian Pacific Railway, the St. Lawrence Seaway, and the electricity projects, pipelines, airports, seaports and canals that dot our landscape laid the foundation for our prosperity.

It is now the time to renew our commitment to building Canada. The country's aging infrastructure needs repair and refurbishment. New challenges from climate change, the internet of things and rapid urbanization require new national commitments to infrastructure development and integrated approaches to planning and delivery across sectors, departments and governments.

The case is very clear, from the critical need to replace our aging sewer systems and waste water treatment facilities in the face of more extreme weather events, to the possibility of investing in new place-defining infrastructure for a 21st century Canada.

Canadian governments at all levels understand the challenge and have started on plans to address Canada's infrastructure needs. Earlier this year, the federal government provided details on its 10-year Building Canada Plan. Canada's premiers will be discussing infrastructure priorities with ministers and stakeholders at a summit in Toronto this summer, and again at the Council of the Federation when it meets in Charlottetown this year. And while the national focus on Canada's long-term infrastructure challenge is welcome, an important conversation is also needed about the best way to approach the issue. What mix of approaches to funding, financing, delivery, governance and coordination among different levels of government will achieve the greatest impact?

Modern Canada has been defined by the nation-building projects undertaken at the right place and time in our history.

This *Mowat Note* considers the current state of public infrastructure investment in Canada. Viewing the challenge as an historic opportunity, we argue that a new framework is required, built upon a broader range of considerations relevant to today's Canada:

- » The relationship of infrastructure to important public policy considerations that include congestion, productivity, the environment, climate change, human health, demographics, economic transformation, employment, digitization and community development.
- » The opportunity to use different models and financing mechanisms to deliver infrastructure more efficiently and effectively, and that take advantage of the increased willingness and capacity of private sector and non-profit community partners to deliver on public infrastructure developments, including a willingness to assume risk and to share dividends with government.
- » The need for intergovernmental arrangements and partnerships that establish clear shared priorities and have appropriate policy, funding, and delivery roles for federal, provincial and local governments.

To take full advantage of the opportunity presented by a renewed commitment to significant infrastructure investment, governments will need an effective framework that reflects each of the above considerations. On the other hand, if we proceed with an ambitious round of infrastructure projects that are based on current models, we risk reinforcing the shortcomings of those approaches—shortcomings that have led to underinvestment, higher transaction and operational costs, and uncertainty about priorities.

With this research note we hope to support policymakers in their ongoing discussions that will shape the next generation of infrastructure investments in Canada.

II. The Historic Opportunity

Making up for lost time

After four decades of underinvestment, much of Canada’s infrastructure is aging, in urgent need of repair or replacement, and expansion.

During the 1960s post-war infrastructure boom, combined total government investment in public infrastructure was 5 per cent of GDP. A long period of slow decline marked the following period until the mid-2000s when investment hovered between 3-4 per cent of GDP.¹

The low levels of public capital investment were also matched by low levels of private investment. As Figure 1 shows, during the 1990s Canada fell behind nearly all of its OECD peer countries in the capital investments that enhance productivity and economic growth.

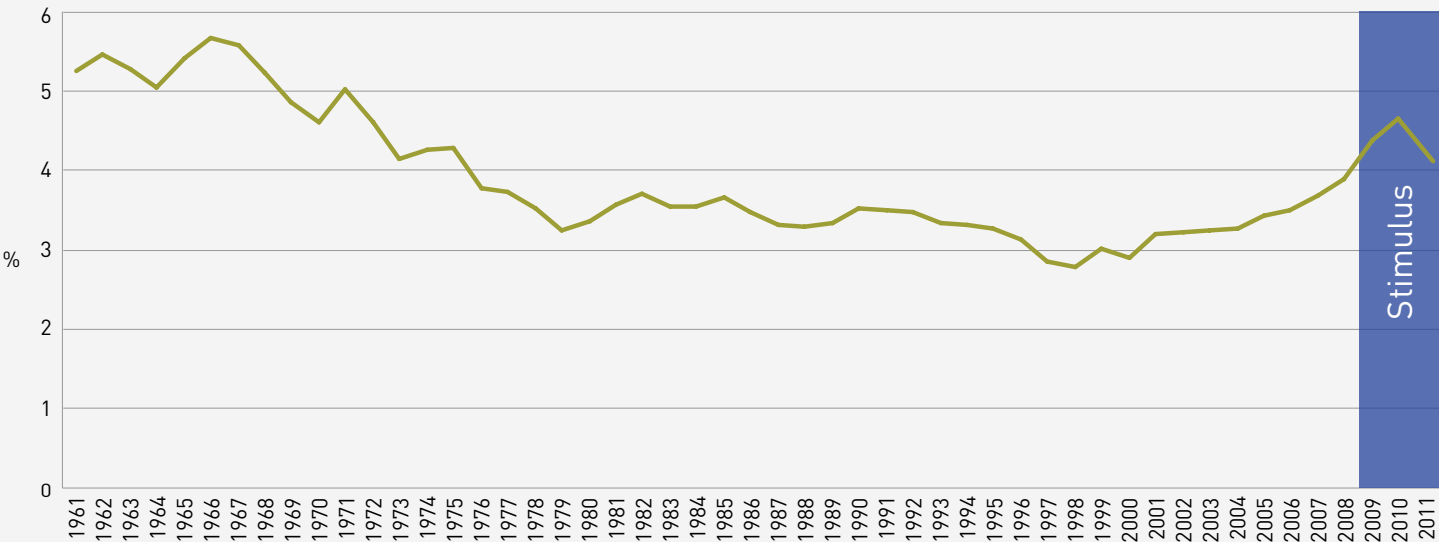
New federal, provincial and municipal infrastructure programs and an influx spending as part of the stimulus packages of 2009-11 have helped Canada turn the corner. Over the last

decade we have made headway in overcoming our decades of relative neglect, but the legacy of underinvestment in new infrastructure and deferred maintenance repairs has left a significant backlog.

An assessment of municipal infrastructure stock by the Federation of Canadian Municipalities found that 30 per cent was in “fair” or “very poor” condition; and the Association of Consulting Engineers of Canada estimated that 50 per cent of public infrastructure will have reached the end of its service life by 2027.³

A significant level of new investment will be needed to address the challenge. One recent estimate of demand for infrastructure in Canada pegged infrastructure repair needs at \$123 billion and new infrastructure needs at \$110 billion.⁴ Nationally, annual investment amounting to 2.9 per cent of GDP is required just to maintain the current infrastructure stock, and a total annual investment of 5.1% of GDP is necessary to promote prosperity and improved productivity.⁵

FIGURE 1
Total Public Infrastructure Investment in Canada as a Share of GDP



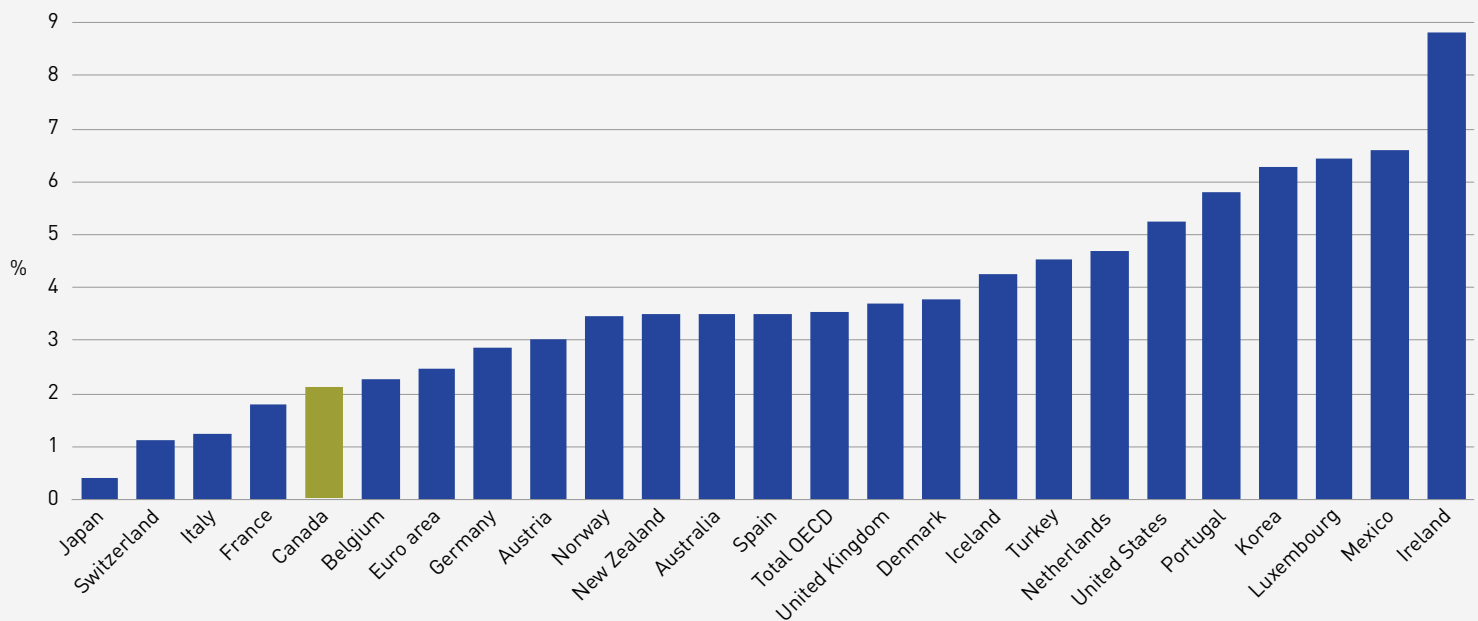
Source: Statistics Canada²

1 Canada West Foundation. 2013. “At the Intersection. The Case for Sustained and Strategic Public Infrastructure Investment.” <http://cwf.ca/publications-1/at-the-intersection>
 2 Based on Statistics Canada. Table 380-0017 - Gross domestic product (GDP), expenditure-based, annual; Statistics Canada and Table 031-0002 - Flows and stocks of fixed non-residential capital, by North American Industry Classification System (NAICS) and asset, Canada, provinces and territories, annual (dollars)

3 Association of Consulting Engineers of Canada, 2004. Brief to the Standing Committee on Finance Regarding the Federal Government’s Pre-Budget Consultation Process
 4 Flemming, Brian. 2014. “Catching up: The Case for Infrastructure Banks in Canada.” Van Horne Institute. <http://vanhorne.info/files/vanhorne/CatchingUpTheCaseforInfrastructureBanksin-Canada.pdf>
 5 Residential and Civil Construction Alliance of Ontario. 2014. “Ontario Infrastructure Investment: Federal and Provincial Risks and Rewards.”

FIGURE 2

During the 1990s, Capital Investment from all sources in Canada lagged OECD peers. Real total gross fixed capital formation 1989-99 (percentage change from previous year)



Source: OECD

Addressing emerging challenges

Short-term savings from lower infrastructure spending can create significant long-term costs to health and productivity. The most striking (and distressing) example of this can be seen in some First Nations communities, where substandard housing, inadequate water systems, and a shortage of social infrastructure (like schools) undermines quality of life and economic opportunity.⁶ Likewise, short-term savings on maintenance leads to higher costs down the road.

While examples of Canada’s failure to keep pace with our infrastructure needs abound in our growing (and increasingly congested) cities, rural communities likewise have huge need, and infrastructure—from highways to broadband—can connect smaller communities to economic opportunities that support their growth. This is also the case for resource development, with the Ring of Fire in northern Ontario providing a clear example of opportunity hinging on the necessary infrastructure investments that will quite literally pave the way for significant economic benefits.

As we build the next generation of infrastructure, we will need to respond proactively to the environmental challenges we face over the coming decades. On the one hand, we need to build infrastructure that supports a more sustainable economy, reducing GHG emissions and mitigating the stress on water, energy and land resources. On the other hand, we must take into account the climate change pressures already underway to ensure that our infrastructure is sufficiently resilient to stand up to the extreme weather events, temperatures and water levels that are now predicted to emerge over the life of the asset.

An important aspect of infrastructure need is the demographic shift to an aging population and the seismic impact this will have on our communities. By 2041, one quarter of Canadians will be over 65.⁷ Meeting the needs of this significant population will require different types of investments, for instance to allow seniors to age at home and continue to participate socially and economically in their communities. Re-engineering existing infrastructure to meet these needs—especially in low-density communities—will require creative solutions.

6 Statsna, Kazi. Nov. 26, 2011. CBC News online. “Shacks and sloop pails: infrastructure crisis on native reserve. Accessed online at <http://www.cbc.ca/news/canada/shacks-and-sloop-pails-infrastructure-crisis-on-native-reserves-1.1004957>

7 The number of working age Canadians for every senior is expected to fall from roughly 5% to about 2.5% in less than 20 years and health care expenditure is set to rise from its current levels of 3% to more than triple that of 10% over the next 25 years. The aging demographic will result in a shrinking labour force and an increase strain on health care costs. Statistics Canada.2008. “Population Growth in Canada.” <http://www.statcan.gc.ca/pub/91-003-x/2007001/4129907-eng.htm>

The economic opportunity of infrastructure investment is not just about what happens within our borders. A well-developed cluster of industries with sophisticated expertise in infrastructure design, delivery, management and finance positions Canada to compete in a global marketplace, exporting services to our peers similarly facing the pressures of urbanization, climate change, and demographic shifts, as well as to rapidly growing emerging markets. Opportunities are emerging for neighbouring jurisdictions to work together on infrastructure that take advantage of best-practices and economies of scale.

In the short-term, financial conditions provide a window of opportunity for infrastructure investments. Historically low interest rates and high levels of corporate cash reserves⁸ provide a significant pool of capital available to finance infrastructure projects. With the right design, these could significantly reduce the cost of capital for public investments in the near term. The same factors hold the promise of historically high valuations if governments choose to finance some new projects by seeking investments in existing assets.

Given the challenges and opportunities, it is in the public interest to invest in infrastructure now. Not only to address the legacy of underinvestment, but to set the foundation for future economic growth in a way that supports these opportunities. This will likely require investing more, and in different ways, than current approaches to public infrastructure allow.

Short-term savings from lower infrastructure spending can create significant long-term costs to health and productivity.

III. Current state of investment

So how does current public investment measure up to the current need? According to a study by the Canadian Centre for Economic Analysis, current levels of total public investment in infrastructure in Ontario (by federal, provincial and local governments) fall short by a substantial two per cent of the province's GDP.⁹

When it comes to infrastructure investment, Canada's performance has vastly improved in recent years from the low rates of the 1990s compared to peer countries in the OECD. In the early part of the 2000s, Canadian investment was at about the OECD average. Then, over the 2007-2012 period, partly as a result of short-term economic stimulus spending, Canada's level of public investment as a share of GDP has increased significantly, reaching 5th in the OECD,¹⁰ and a major change from the first half of the same decade when Canada fell well below the OECD average.¹¹ The improvements over the last decade have also included some improvement in the planning and prioritization of capital investments and better coordination of infrastructure planning with land use planning and economic development policies.

With the end of stimulus spending, our national investment in infrastructure is set to decline as a share of GDP. Because it was designed to stimulate economic demand in response to the recession, rather than address infrastructure requirements specifically, it is an open question whether stimulus spending was sufficiently aligned with strategic national priorities or whether we maximized the benefits of our collective investment as a nation. Going forward, we need to ensure that our investment is focused on projects that have a compelling business and public policy case in light of future needs.

⁸ According to an estimate quoted in January by RBC Global Asset Management chief economist Eric Lascelles. <http://www.canadianbusiness.com/economy/dead-money/>, 32% of Canada's GDP

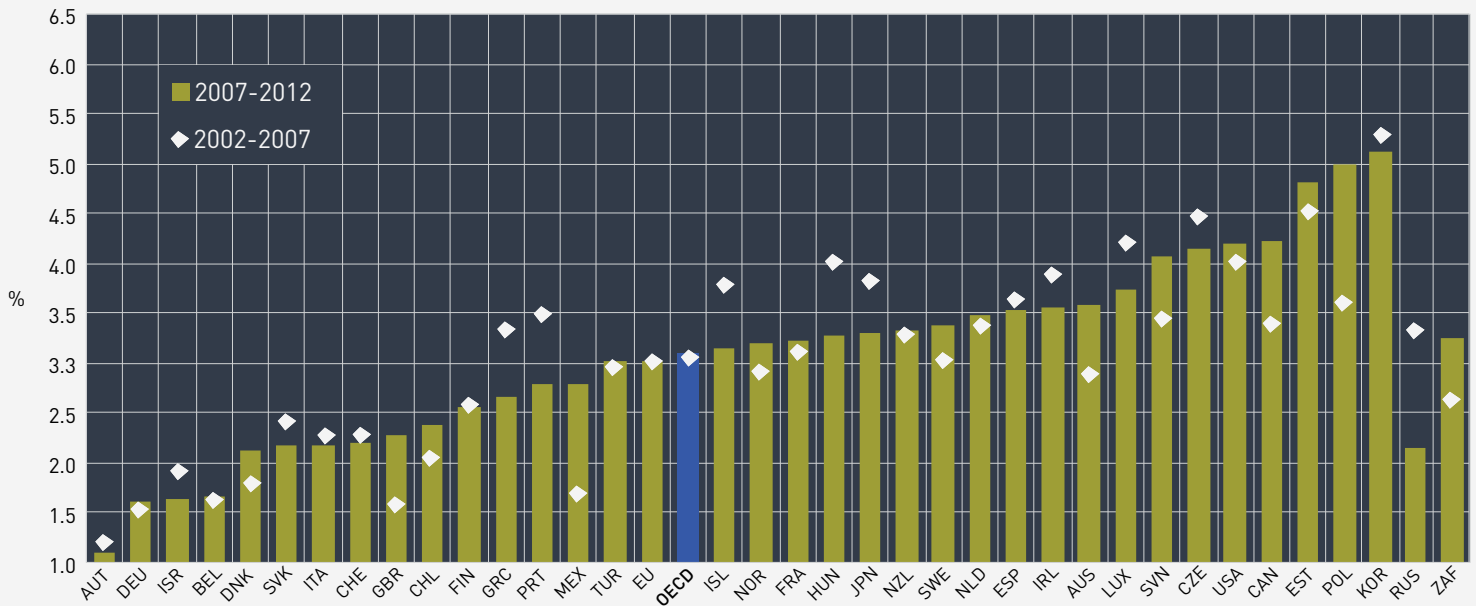
⁹ Smetanin, P., Stiff, D., and Kobak, P., Ontario Infrastructure Investment: Federal and Provincial Risks & Rewards. The Canadian Centre for Economic Analysis. 2014. http://www.rccao.com/news/files/RCCAO_Ontario-Infrastructure-Investment_July2014-WEB.pdf, pg. 5. Although the study focused on Ontario only, the overall conclusion is similar nationally.

¹⁰ OECD. 2014. "Economic Policy Reforms 2014: Going for Growth Interim Report"

¹¹ OECD. 2013. "Economic Policy Reforms 2013: Going for Growth". http://www.oecd-ilibrary.org/economics/economic-policy-reforms-2013_growth-2013-en

FIGURE 3

Public investment as a share of GDP in OECD countries



Source: OECD¹¹

While our overall level of infrastructure spending now compares favourably to other OECD countries, the federal government plays a relatively small role. It is the provinces and local governments that are now carrying most of the freight when it comes to infrastructure investments. This should be of greater concern to Canadians.¹²

For example, the federal government represented roughly 12 per cent of public infrastructure investments in Ontario, with

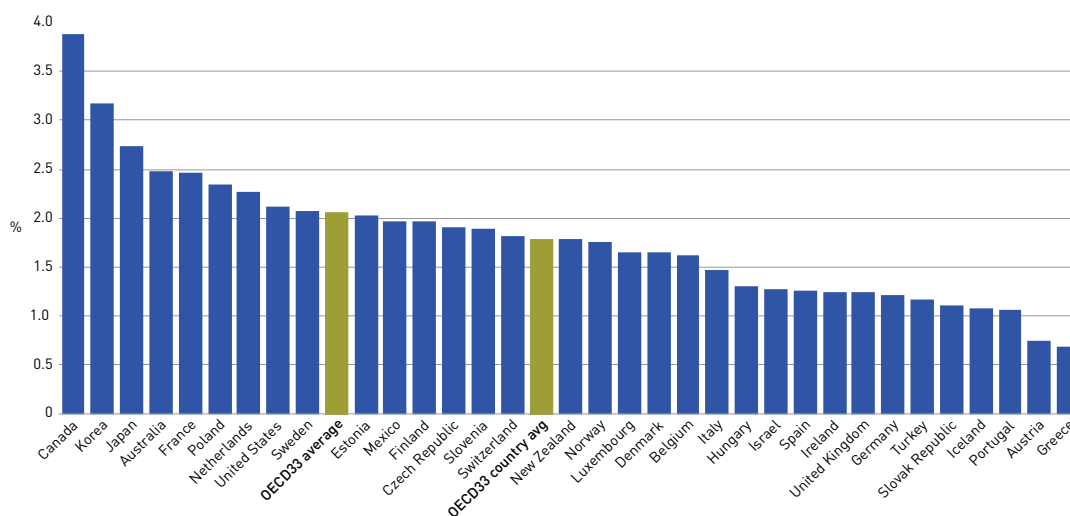
the province and local governments shouldering the rest.¹³ Part of this is explained by the role provinces and territories play in building hospitals and schools.

Sub-national governments in Canada play a larger role relative to the federal government in public infrastructure investment than is the case in other peer federations in the OECD, such as Germany, Australia, and the US.¹⁴ Canadian subnational governments also invest a larger share relative

to GDP than other OECD countries. This places significant pressure on Canada's local governments, which do not have the ability to raise revenue from the same range of sources as their provincial or federal counterparts.

FIGURE 4

Sub national government investment as a share of GDP (2012)



Source: OECD¹⁵

Note: both weighted (OECD33 average) and unweighted (OECD33 country) averages shown.

12 OECD, 2014.

13 Smetanin, Stiff and Kobak, 2014, , pg. 6

14 OECD. 2010. "Multi-level Governance of Public Investment". <http://www.oecd.org/gov/regional-policy/48724540.pdf>

15 OECD. 2013. "Regions at a Glance 2013".

Federal government investment in Canada

At the national level, Federal infrastructure investments in Canada take a number of forms and are delivered through a number of departments and programs. These programs set different criteria for the type of projects funded, the size of the federal contribution, and the eligible recipients. Canada's federal government has just completed a seven

year infrastructure plan (augmented over the course of the plan by stimulus investments and other programs) and will now begin its next phase of investment—a plan to spend \$47 billion over 10 years through the Building Canada Plan, plus \$23 Billion through other programs.

FIGURE 5
Building Canada Plan 2007 and Other Recent Programs

PROGRAM	AMOUNT	DESCRIPTION
Building Canada Plan 2007		
GAS TAX FUND	\$11.8 billion over 7 years	The federal government transfers a portion of its revenue from excise taxes on motor fuels to local governments (through provinces and territories) and First Nations. It is distributed on the basis of population.
MUNICIPAL GST REBATE	\$5.8 billion over 7 years	The federal government increased the share of GST rebates that municipalities could collect from 57% to 100% as a way of providing extra funding for infrastructure. This funding describes the value of the additional 43%.
PROVINCIAL-TERRITORIAL BASE FUNDING	\$2.275 billion over 7 years	Each province and territory received \$25M each year for infrastructure funding.
PUBLIC-PRIVATE PARTNERSHIPS FUND	\$1.25 billion over 7 years (\$859 million reported to 19 projects in 8 provinces and territories)	Managed by P3 Canada for public infrastructure investments on the P3 model. The federal government will commit up to 25% of costs.
BUILDING CANADA FUND	\$8.8 billion over 7 years	Supported projects on an application basis, primarily for water and wastewater, transit, highways and green energy. \$1 billion set aside for projects in smaller communities.
GATEWAYS AND BORDER CROSSINGS FUND	\$2.1 billion over 7 years	Funding for federally-selected projects that connect Canada to the rest of the world (e.g., access roads for Detroit-River International Crossing).
ASIA-PACIFIC GATEWAY AND CORRIDOR INITIATIVE	\$1.8 billion over 7 years. \$1.3 billion worth of projects reported in 4 provinces	Investments in road, rail, port, airport, and border-crossing infrastructure.
Other Recent Programs		
INFRASTRUCTURE STIMULUS FUND	\$4 billion over 2 years (\$3.66 billion spent on 3913 projects)	Federal contributions (up to 50%) to projects including water, transportation, culture, parks and trails and community services.
CANADA STRATEGIC INFRASTRUCTURE FUND	\$4.3 billion over 10 years through 2013 (\$2.86 billion reported invested in 75 projects)	Federal contributions (up to 50%) for federally-selected infrastructure projects like water, transportation and broadband.
GREEN INFRASTRUCTURE FUND	\$1 billion initial allocation over 5 years (\$639 million reported for 18 projects in 5 provinces and territories)	Federally contributions (up to 50%) for federally-selected projects that promote cleaner air and water and reduced GHGs.
STIMULUS INVESTMENTS IN SOCIAL HOUSING	\$2.075 billion over two years through 2011	Funding (mostly on a 50-50 matching basis with provinces and territories) to build and repair social housing units.
MUNICIPAL RURAL INFRASTRUCTURE FUND	\$1.2 billion over 10 years through 2014	Transfer to provinces, territories and First Nations to support smaller scale projects, mostly in smaller communities.
INFRASTRUCTURE CANADA PROGRAM	\$2.05 billion over 11 years through 2011	Funding for infrastructure projects sponsored by local governments.
BORDER INFRASTRUCTURE FUND	\$600 million over 11 years through 2014 (\$542 million ultimately spent in 5 provinces)	Federal contributions (up to 50%) to infrastructure projects that improve the efficiency of the Canada-US border.
G8 LEGACY FUND	\$50 million for 1 year	Funding for infrastructure related to hosting the G8 summit in Huntsville, Ontario in 2010.

Looking back at federal programs over the last decade, the final decisions regarding which projects to fund have often departed significantly from initial program descriptions (and funding commitments). Lack of transparency and clarity regarding project selection makes it difficult for the public to evaluate how, where, and what projects are being funded. Further complicating matters, some of the areas where the federal government has historically made significant infrastructure investments are now handled by independent agencies, such as airports and ports.

While most of these programs have a considerable degree of reporting and tracking amongst governments and can be tied to specific projects, over one fifth of the investment contained in the new “Building Canada Plan” is accounted for by the Municipal GST rebate.¹⁶ While this policy does provide more funding for municipalities, the rebates (like all other tax rebates) go to municipal general revenues and are not necessarily earmarked for infrastructure spending.

The federal government represented roughly 12 per cent of public infrastructure investments in Ontario, with the province and local governments shouldering the rest.

The federal government’s approach has been to use its leverage to drive investments that align with its policy priorities; for instance Public-Private Partnerships, and borders and gateways.

Such an approach, which uses boutique programs and often requires contributions from various partners, has drawbacks. The enormous number of programs makes it very difficult to track federal infrastructure spending (a challenge made worse by decisions that shift funding between programs or change the guidelines for them). The direct involvement of multiple parties in selecting projects on a case-by-case basis also increases project transaction costs.

The federal government has proposed a smaller number of programs with a nominally lower annual spending commitment. There are fewer niche programs (such as the Green Infrastructure Fund or the Asia-Pacific Gateway and Corridor Initiative) but also narrower criteria. For example, the Building Canada Fund will no longer fund sports and cultural infrastructure, and the federal government will require all projects over \$100 million to go through a screening process for suitability for public-private partnerships administered by P3 Canada (a federal agency), a review expected to take 6-18 months. Given the federal government contributes a smaller share (25 per cent) for P3 infrastructure projects, this will likely place greater pressure on provinces, territories and municipalities.

¹⁶ This was a move made in 2004 by the Canada Revenue Agency to increase the share of the GST paid by municipalities that was eligible for a rebate from 57% to 100%

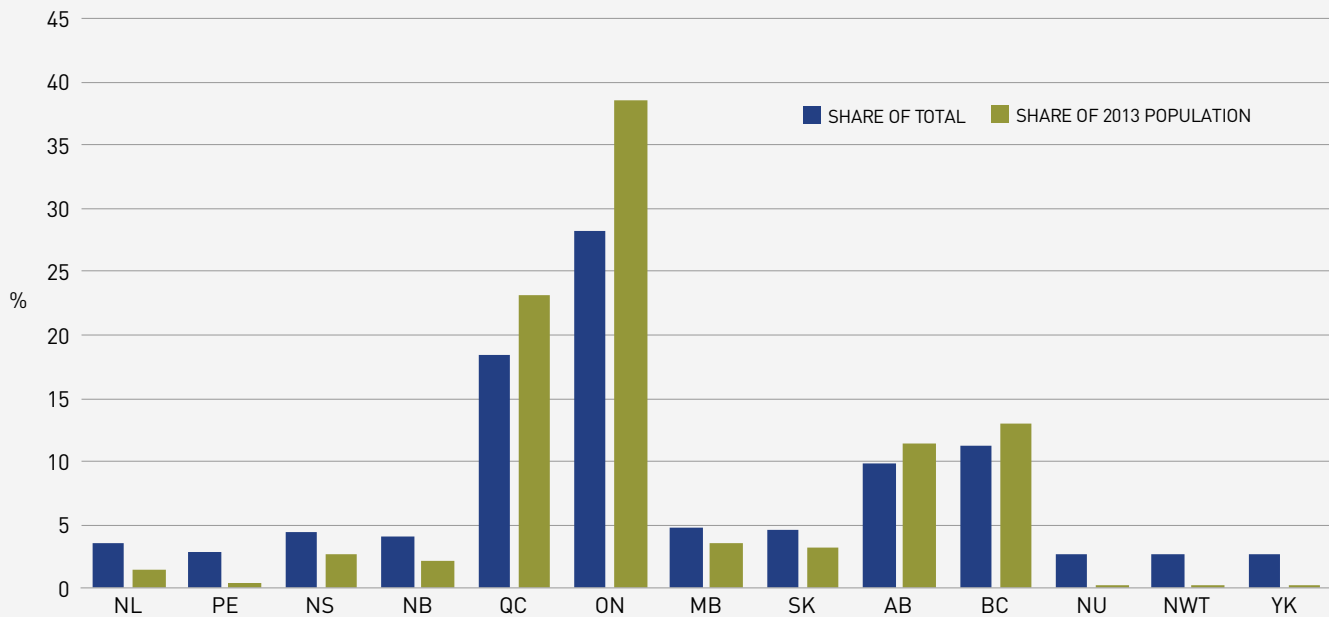
FIGURE 6

Building Canada Plan 2014 and Additional Programs

PROGRAM	AMOUNT	DESCRIPTION
Building Canada Plan 2014 Programs		
GAS TAX FUND	\$22 billion over 10 years.	The federal government transfers a portion of its revenue from excise taxes on motor fuels to local governments (through provinces and territories) and First Nations. It is distributed on the basis of population. Municipalities can no longer use this funding to pay their contributions to other cost-shared projects.
MUNICIPAL GST REBATE	\$10.4 billion over 10 years	The federal government increased the share of GST rebates that municipalities could collect from 57% to 100% as a way of providing extra funding for infrastructure. This funding describes the value of the additional 43%.
BUILDING CANADA FUND-PROVINCIAL-TERRITORIAL INFRASTRUCTURE	\$10 billion over 10 years	Funding transferred to provinces and territories for core infrastructure. \$3.25 billion set aside for “equal per jurisdiction” base funding, and \$1 billion for small communities. Primarily backloaded for later years.
BUILDING CANADA FUND- NATIONAL INFRASTRUCTURE	\$4 billion over 10 years	Funding for federally-selected projects of national significance, with a focus on projects that have broad public benefits, and that contribute to long-term economic growth and prosperity. Primarily backloaded for later years
PUBLIC-PRIVATE PARTNERSHIPS FUND	\$1.25 billion over 10 years	Managed by P3 Canada for public infrastructure investments on the P3 model. The federal government will commit up to 25% of costs. The New Building Canada Plan also requires a 6-18 month “P3” screen for all projects over \$100M in the Building Canada Fund. If it is found to be viable for a P3, the federal government will limit its contribution to 25%.
Additional Ongoing Programs		
INVESTMENTS IN FEDERAL INFRASTRUCTURE ASSETS	\$10 billion over 5 years	Investment in repairing, expanding and replacing federal infrastructure such as bridges and ports.
CAPITAL REPAIR AND MAINTENANCE FOR FIRST NATIONS ON RESERVE	\$7 billion over 10 years	Federal capital investments with respect to obligations to First Nations communities
INVESTMENT IN AFFORDABLE HOUSING PROGRAM	\$1.25 billion over 5 years	Federal contribution (50%) to programs delivered by provinces and territories to build and repair affordable housing units.
FEDERAL ECONOMIC DEVELOPMENT AGENCIES	\$1.18 billion in annual funding (a portion of which goes to infrastructure programs)	Federal regional economic development agencies deliver programs (ranging between regions) that include infrastructure investments.

FIGURE 7

Total Public Infrastructure Investment in Canada as a Share of GDP



Source: Mowat Centre, based on Infrastructure Canada and Statistics Canada

Federal programs have recently placed more emphasis on leverage requirements for additional funding from sub-national governments or from the private sector, with the federal government picking up a smaller share of the tab. The federal government presents this as improving the return on taxpayer investment, but it means provincial/territorial and local government decisions regarding project funding are increasingly based on the degree to which they meet federal criteria rather than whether they meet local criteria for social and economic impact. The efficiency of federal spending is also affected by skewed allocations that come with no explanation from the federal government and penalize larger provinces.¹⁷

¹⁷ Zon, Noah. 2014. "Slicing the Pie: Principles for Allocating Transfer Payments in the Canadian Federation." Mowat Centre. mowatcentre.ca/slicing-the-pie.

IV. The importance of infrastructure for a broad range of public policy goals

Smart infrastructure investment is an economic driver, a contributor to our social wellbeing and a nation-building tool. In economic terms, there is increased employment in the short-term, along with higher incomes and higher tax revenue for governments.¹⁸ The ratio of return on investment is estimated to be from 1.14¹⁹ to 1.78²⁰ for every dollar spent.²¹ These rates of return for public infrastructure investments outperform nearly any other investment, including personal or business income tax measures.²²

While these short-term returns are important, the gains from infrastructure investment extend well beyond the construction phase, increasing the overall productive capacity of the economy. Canada's productivity gap with the US and other peer jurisdictions has frustrated policy makers and business leaders for years. A growing body of research connects infrastructure investment to increased productivity. Statistics Canada attributes half of multifactor productivity growth between 1962 and 2006 to public infrastructure investments,²³ and a more recent assessment attributes one quarter of productivity growth to capital investment between 2000 and 2008.²⁴

Public infrastructure increases productivity generally by reducing the costs of business,²⁵ for example by reducing the costs of moving people and goods. It is worth noting that although Canadian and U.S. manufacturing productivity levels were almost identical in the mid-1990s, Canadian levels were 20 per cent lower by 2006; a trend that corresponds with a 24 per cent increase in infrastructure investment in the U.S. versus a 3.5 per cent decline in Canada over the same period.²⁶ Infrastructure investments

have a high potential for spinoff benefits through a vast array of high tech sectors, including science and technology, environmental remediation, materials engineering, network infrastructure, transportation systems and ICT. Efficient infrastructure stimulates technological advancement and innovation.²⁷ Conversely, under-performing infrastructure, resulting in congestion or unreliable broadband or electricity, can drive firms to move elsewhere.

The way we build and design our communities can have a material impact on public health

Of course, infrastructure is about more than short- and long-term economic growth. Smart infrastructure choices support other policy goals.

The way we build and design our communities can have a material impact on public health. Our investments can make cities more livable, vibrant, diverse, and accessible. The right planning can make our communities more sustainable and resistant to extreme weather events from flooding to drought. Far-sighted design can help us take advantage of the opportunities presented from the internet of things and new technologies, like driverless cars. And integrated planning across energy, transportation, water, buildings and other essential infrastructure can bring down costs, ensure sustainability and contribute to more well-designed communities.

18 Antunes, P., & Palladini, J. 2013. "The Economic Impact of Ontario's Infrastructure Investment Program." The Conference Board of Canada. <http://www.conferenceboard.ca/e-library/abstract.aspx?did=5425>

19 Ibid.

20 Yalnizyan, A. & Macdonald, D. 2009. "Leadership for Tough Times: Alternative Federal Budget Fiscal Stimulus Plan." Canadian Centre for Policy Alternatives. http://www.policyalternatives.ca/sites/default/files/uploads/publications/National_Office_Pubs/2009/Leadership_For_Tough_Times_AFB_Fiscal_Stimulus_Plan.pdf

21 Brox, J. A. 2008. "Infrastructure Investment: The Foundation of Canadian Competitiveness." IRPP Policy Matters <http://archive.irpp.org/pm/archive/pmv09no2.pdf>

22 Yalnizyan and Macdonald, 2009.

23 On average, 50% of Canada's productivity growth between 1962 and 2006 was due to public infrastructure Statistics Canada, Wulong Gu and Ryan Macdonald. 2009. "The Impact of Public Infrastructure on Canadian Multifactor Productivity Estimates." <http://www.statcan.gc.ca/pub/15-206-x/15-206-x2008021-eng.pdf>

24 Antunes and Palladini, 2013.,

25 Brox, 2008; Sonnen, Carl. 2008. "Municipal Infrastructure. Macroeconomic Impacts of Spending and Level-of-Government Financing". Federation of Canadian Municipalities.

http://www.fcm.ca/Documents/reports/Municipal_Infrastructure_Macroeconomic_Impacts_of_Spending_and_Level_of_Government_Financing_EN.pdf

26 Brox, 2008.

27 World Economic Forum. "Global Competitiveness Report, 2013-2014" <http://www.weforum.org/reports/global-competitiveness-report-2013-2014>

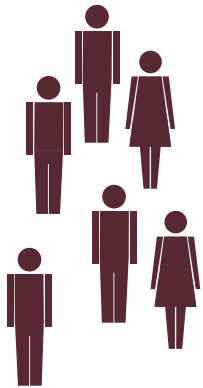


INVESTMENT BENEFITS



Public infrastructure is important for a wide range of policy areas.

Smart investments can lead to a **healthier population**, a more **resilient built environment**, **increased trade** and more **inclusive communities**.



1/2
of Canada's increases
in productivity
between 1962-2006
CAN BE EXPLAINED BY
INVESTMENTS IN PUBLIC
INFRASTRUCTURE.²⁸



ECONOMIC PRODUCTIVITY



Every \$1 million that is invested in infrastructure creates an average of **16 person-years of employment**.²⁹

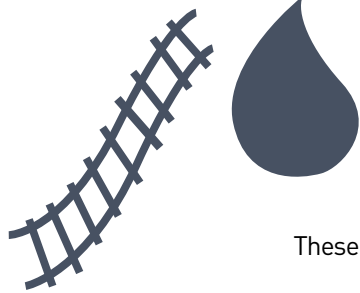
Investment in public infrastructure improves the productivity of our economy.



PUBLIC INFRASTRUCTURE

Every \$1 million that is invested in infrastructure increases **GDP by about \$1.6 million**.³⁰

These rates of return of outperform nearly any other public investment, as well as cuts to personal or business income taxes.



\$
1 Million
DOLLARS
INVESTED

28 Wulong Gu and Ryan Macdonald. 2009. "The Impact of Public Infrastructure on Canadian Multifactor Productivity Estimates"
29 Antunes, P., & Palladini, J. 2013. The Economic Impact of Ontario's Infrastructure Investment Program. The Conference Board of Canada; Yalnizyan, A. & Macdonald, D. 2009. Leadership for Tough Times: Alternative Federal Budget Fiscal Stimulus Plan. Canadian Centre for Policy Alternatives.
30 Wulong Gu and Ryan Macdonald. 2009. "The Impact of Public Infrastructure on Canadian Multifactor Productivity Estimates"

V. Alternative Approaches and Delivery Models

Building the right kind of infrastructure at the necessary scale for 21st century Canada may require new approaches to financing, managing, and delivering public infrastructure:

Infrastructure Banks

Infrastructure banks (or ‘iBanks’) are dedicated agencies focused on infrastructure finance, often operating at arms-length from government. They raise capital from public and private sources to lend to infrastructure projects over long-term time frames. Infrastructure banks have been established in Europe, Africa, Latin America and the US in various forms. While they vary in structure, they share in common the ability to combine specialized infrastructure expertise with the ability to raise very large sums of capital from private and public sources for large-scale infrastructure projects.

Federal and provincial governments are often able to finance public infrastructure at lower cost than municipalities. Thus the benefits of a national or provincial infrastructure bank could include effective prioritization and coordination of infrastructure projects and capital spending among agencies and authorities, as well as enabling more creative and lower cost financing for projects.

Public-Private-Partnership models

Canada is a world leader in developing Public-Private-Partnerships (P3s), and due to the standardized approaches to P3 delivery undertaken by Canadian provinces, today the Canadian P3 market is known as among the most stable in the world.³¹ The infrastructure delivered through well-designed P3s maximizes outcomes by combining strong public-sector governance with private sector capital.

P3s provide better value for money (VfM) compared to conventional procurement, and these projects mitigate the risk to government of cost overruns often associated with public projects.³² Because they are designed to ensure financial transparency, and that asset management is measurable and enforceable, Canadian governments should continue to utilize these partnerships to support efficient and cost-effective infrastructure projects.

Asset Recycling

Another effective option available for generating funds to pay for infrastructure is asset recycling.³³ A practice already being used by governments in the US, UK and Australia, asset recycling disposes outdated or legacy assets in order to generate the capital needed to invest in new public projects or refurbish existing infrastructure. Asset-recycling is not a case of selling capital assets to defray current costs, but rather trading one long-term asset for a different one better suited to future needs.

This approach to asset management has succeeded in raising billions in revenue that has been re-invested for public use. Asset recycling provides the potential for governments to unlock value from their existing assets, strategically selling or allowing investment in those where there is no longer a clear policy rationale for full public ownership and operation. The Ontario government’s experience with Teranet provides a good example of a phased approach that offered strong returns to the public. The participation of labour unions (as in the case with Bruce Power) can lead to better partnerships and more successful transitions to new models.

Green Bonds

As governments, the private sector and non-governmental organizations seek to reduce environmental impact and prepare to adapt to the anticipated effects of climate change, there has been significant activity in developing new markets to finance the considerable cost of this activity. One of the most common of these instruments are Green Bonds—debt instruments tied specifically to projects with environmental benefits.

To date, this market has included experiments by governments, private corporations, commercial banks and international finance institutions, primarily in rail and renewable energy. The combined value of this market is expected to reach close to \$50 billion by the end of 2014.³⁴ Canadian firms, banks, and government institutions are among those that have been gaining experience in the Green Bond market.³⁵

31 The Canadian Chamber of Commerce. 2013. “The Foundations of a Competitive Canada: The need for strategic Infrastructure Investment”. The Canadian Chamber of Commerce. http://www.chamber.ca/media/blog/131218-The-Foundations-of-a-Competitive-Canada/131218-The-Foundations_of_a_Competitive_Canada.pdf

32 Studies have found that average P3 project savings are near 17% and Canadian P3s provide a 10%-15% VfM benefit. Ibid.

33 Fenn, Michael. 2014. “Recycling Ontario’s Assets: A New Framework for Managing Public Finances”. Mowat Centre. <http://mowatcentre.ca/recycling-ontarios-assets/>

34 TD Economics. 2013. “Green Bonds: Victory for the Environment”. http://www.td.com/document/PDF/economics/special/GreenBonds_Canada.pdf

The Economist. “Green grows the market, O”. July 5th, 2014. <http://www.economist.com/news/finance-and-economics/21606326-market-green-bonds-booming-what-makes-bond-green-green-grow>

35 Ibid.

While the growth of Green Bonds is promising, it is not clear whether these instruments will offer a financial advantage to governments in financing public infrastructure. As the market matures, the environmental certification of these investments may make it a less costly way to raise capital for environmental projects. The use of Green Bonds is part of an evolving trend to use financing instruments, like Property Assessed Clean Energy (PACE) bonds to transition our built environment to more sustainable, energy efficient models and design.

Community Benefits Agreements

Community Benefits Agreements (CBAs) are a specialized partnership between project proponents and community groups, where developers of a major infrastructure project commit to investing in benefits for the local community in exchange for community support. CBAs have the potential to capitalize on private investment in a way that enhances community development by ensuring that infrastructure projects serve local community needs. While this model is still relatively new, it merits government consideration as part of the delivery toolkit for the next phase of government infrastructure development.

Regardless of the delivery model, successful outcomes will depend on effective infrastructure governance models. In a 2013 report on successful global governance models, McKinsey recommended they feature close coordination between infrastructure authorities, a clear separation of political and technical responsibilities for infrastructure, clear divisions between public and private responsibilities, and reliable data.³⁶

VI. Intergovernmental Arrangements

As Canadian governments look at the best ways to move forward with a new generation of infrastructure investments, it is worth examining whether existing arrangements among federal, provincial and local governments are well-suited to deliver on our infrastructure needs efficiently and effectively.

There are some clear drawbacks with the status quo. Current arrangements feature various distinct (but overlapping) programs that bring high transaction costs and limit the flexibility of provincial, territorial and local governments. The opaque nature of project selection also makes it difficult to track spending, measure results or ensure funds are focused on strategic objectives and well-thought out plans. Funding allocation based on equal distribution by jurisdiction (rather than on principles such as population) badly skews the Building Canada Fund.³⁷

There are a number of options that could streamline federal infrastructure funding as the basis for a renewed partnership. A single block transfer with some basic principles attached (the way the Canada Health Transfer is grounded in the Canada Health Act) would be the simplest approach, although such an approach is unlikely to find a wide consensus, given the role of infrastructure in connecting the country and its importance to national economic and environmental objectives. Alternatively, bundling the various infrastructure transfers into one comprehensive program, coupled with detailed negotiations between governments, might deliver the simplicity of a block transfer without sacrificing the crucial leadership and strategic role of the federal government. It would allow the federal, provincial, and municipal governments to each focus on what they do best in a manner consistent with federal goals, provincial priorities and the day-to-day realities faced by municipalities.

A renewed approach to intergovernmental partnerships on infrastructure should reconsider whether the current approach to cost sharing serves Canadians well. A straight one-third share from each of the federal, provincial/territorial, and local governments has the benefit of simplicity but it has no relationship to economic efficiency

³⁶ McKinsey Global Institute. 2013. "Infrastructure productivity: How to save \$1 trillion a year." http://www.mckinsey.com/insights/engineering_construction/infrastructure_productivity

³⁷ Zon, Noah. 2014. "Slicing the Pie: Principles for Allocating Transfer Payments in the Canadian Federation." Mowat Centre. mowatcentre.ca/slicing-the-pie.

or the fiscal reality facing each government (the same is true when the federal government's share is set at 25 per cent for P3 projects or 50 per cent when only federal and provincial/territorial governments are involved.) This places undue pressure on property tax bases in cities, and is not the most efficient way of raising the significant funds necessary to invest in place-defining and nation-defining 21st century infrastructure projects.

Critical, large-scale infrastructure projects can take many years to plan, approve, finance and build. Funding arrangements should acknowledge this reality and provide adequate predictability to governments, especially provincial and municipal ones. The ten-year time frame for the Provincial/Territorial transfers through the Building Canada Fund and the now permanent Gas Tax Fund are important steps in the right direction. However, a large portion of total public infrastructure spending remains ad hoc or is done through 'merit-based' and boutique funds with opaque and shifting selection criteria, and unnecessarily high transaction costs. This, coupled with uncertainty about allocation principles, makes planning for the scale of infrastructure renewal more difficult than it should be.

VII Conclusion

Canada's prosperity in the 19th and 20th centuries was built on a foundation of both visionary as well as day-to-day investments in infrastructure. The goal was often nation-building, in big and small ways.

For much of the past forty years, we have spent less on infrastructure compared to peer jurisdictions. Although Canada's overall investment has increased since 2000, this has been insufficient to overcome decades of under-investment. The increase that has occurred has been boosted by short-term stimulus spending that is coming to an end and was often uncoordinated and lacking overall strategic clarity.

The evidence is also clear that federal spending still represents a very small percentage of overall infrastructure spending when compared to provinces and municipalities. For example, the federal government's 10-year \$70 billion program is smaller than Ontario's 10-year \$130 billion program and Quebec 10-year \$90 billion program. Other provinces' investments are similarly dwarfing the federal investment.

Today we face a different set of challenges than we faced in the post-war period, our last great period of infrastructure investment. Rapid urbanization, climate change and extreme weather events, the internet of things, global economic and technological integration and changing demographics call upon us to undertake a new round of infrastructure development. To establish a foundation for prosperity and sustainability in the 21st century requires us to make the kinds of investments we need in an integrated way with a sense of Canada's opportunities and challenges 20 and 50 years from now.

While we know a great deal about what that future will look like, we also know we operate in an environment of significant uncertainty and imperfect information. But we must nonetheless make decisions about how to invest. These choices are more likely to be the right ones if undertaken in a coordinated manner with the goal of significantly increasing our investment and using new innovative ways to unleash more capital. A new framework for infrastructure in Canada is more likely to enable prosperity and sustainability if it assumes that integrated planning across sectors and governments is the right path forward in an increasingly connected, digitized and resource-stressed world.

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