

FINANCING & FUNDING

Primer

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The Urban Mobility Task Force, under the **Council of Ministers Responsible for Transportation and Highway Safety**, developed this document as part of a series of Primers looking at current mobility issues affecting the Canadian urban landscape today. The Primers examine the current state of these issues and have identified associated trends, challenges, and opportunities. They are short overviews and are designed to initiate a discussion on urban mobility issues intended for transportation policy professionals, planners, and decision makers.

INTRODUCTION

Transportation infrastructure is the backbone of urban economies. It allows cities to manage growth and compete in the global market place. Without adequate funding or financing to support transportation infrastructure, Canadian cities will lag behind other global cities and become less attractive to immigrants, tourists, and investments, and become less functional for Canadians. This Primer examines the challenges with infrastructure funding and financing, highlighting the opportunities and constraints with various financial models. While there are some innovative practices, most options require significant use of tax payer dollars or new public revenue streams to fund infrastructure to improve urban mobility in a sustainable way. This is the reality of public goods – it is difficult to seek private sector involvement if revenue-generating opportunities are limited or unavailable.

CURRENT STATE

Governments across Canada are currently grappling with an aging transportation infrastructure stock, increasing transportation demand, and sustained concerns around growing public debt. Urban centres, where usage and growth are greater, present particular funding challenges. Based on publicly available data from 2016, over one-third (36 per cent) of publicly owned bridge and tunnel assets¹ and nearly one-fifth (18 per cent) of publicly owned public transit infrastructure² in Canada is in fair, poor or very poor condition. At the same time, the population of Canada's largest urban areas continues to grow, and at a higher rate than in the rest of the country.

Over the past 10 years, the value of Canada's international trade has increased by 65%, placing accrued pressure on the transportation systems, particularly in urban areas where a significant portion of goods originates, flows through, and ends.

WHAT IS FINANCING & FUNDING?

In general, there are two ways to pay for transportation infrastructure: funding and financing. **Funding** is capital allocated to a project that is not expected to be recovered. This money often comes from the public sector through general funds or taxation but could also come in the form of donations from the private sector. **Financing** is typically a short- or long-term loan often from the private sector, where capital recovery is expected. Governments can take out low-interest, long-term loans to pay for major infrastructure projects. The public sector has also created infrastructure financing programs, where governments will set aside large amounts of capital in the form of low-interest loans for other lower-tier governments or even private sector companies to access for infrastructure projects. Developing extensive business cases and reporting mechanisms are often required to obtain this capital.



Overarching Transportation Infrastructure Ownership Models in Canada

<p>Roads Owned and maintained (directly or under contract) by combination of federal, provincial, municipal. Limited use of tolls in some parts of the country to recoup costs of road use.</p>	<p>Passenger Railways Owned and maintained by federal (VIA Rail), provincial (e.g., GO Transit, Ontario Northland) and municipal (e.g. commuter / transit systems).</p>	<p>Ports Combination of public and private ownership, with terminals operated by private entities (especially at Canada's largest ports).</p>	<p>Airports Largely publicly owned, operated on a commercial basis for the largest airports.</p>
	<p>Freight Railways Owned and maintained overwhelmingly by private sector. Private debt / equity used for expansion and improvements.</p>	<p>Transit Owned by municipal and provincial.</p>	<p>Intermodal Facilities Privately owned and operated.</p>

Evidence demonstrates that transport costs tend to be higher in the first and last mile, which is often within urban centres.³ Thus, urban infrastructure challenges, including insufficient funding/financing, could undermine domestic efforts to improve competitiveness and grow trade.

Transportation infrastructure usually has a significant level of public involvement ranging from direct ownership and management to a regulatory framework that defines operational standards even for dominantly privately-owned infrastructure. A similar arrangement traditionally applied to ports and airports, which were typically placed under the management of public authorities. In recent years, this structure has been changing with the private sector taking on a larger role in funding and financing, designing, building and managing transportation infrastructure.

Over the last few decades, the use of public-private partnerships (P3s) has become a common way to build large infrastructure projects. P3s are contractual agreements between a public agency (federal, provincial, or municipal) and a private sector entity that allow for the design, building, operation or financing of transportation infrastructure. They provide a range of options in terms of capital allocation and levels of participation, ranging from a standard design / build contracting process common in many road projects, to more innovative approaches where a private operator takes charge of the design, build, financing, operations and maintenance of a transport infrastructure project over the long term through a concession.

The popularity of P3s across the world resides in their capacity to transfer some risks from the public purse to the private sector and to establish some level of accountability for delivering infrastructure cheaper and faster. Jurisdictions are constantly improving their P3 models, so that they are internationally competitive, transparent and flexible. Most provinces and territories have used or are currently using P3s for large infrastructure projects, and, in Québec, legislation regulates the terms of P3 agreements. Some provinces have created infrastructure entities to advance the use of P3s, such as Partnerships BC and Infrastructure Ontario.

Funding and Financing Mechanisms for Transportation

<p>User fees Tolling, congestion pricing, mileage fees, vehicle registration, transit fares</p>	<p>Taxation Fuel tax, dedicated tax, tax increment financing, development charges</p>
<p>Direct loans and lines of credit</p>	<p>Alternative approaches Privatization, public-private partnerships, commercial value capture</p>



In addition to P3s, the federal government along with a majority of provinces and territories employ alternative funding and financing practices to help support the development and maintenance of transportation infrastructure. Examples in use or being considered by jurisdictions include road or bridge tolls (Nova Scotia, Québec, Ontario), tax increment financing (Manitoba), fuel tax (Canada), and transit fares. In most jurisdictions, transportation infrastructure investment and asset management are guided by established policy and / or government platform commitments, and in some cases overarching legislation (e.g., Legislation in Ontario and Québec mandates the development of multi-year infrastructure plans and associated rules on the management of public infrastructure assets).

CHALLENGES

The largest challenge facing governments in funding and financing transportation is fiscal constraints. Governments across Canada are trying to find cost efficient ways of providing the necessary infrastructure to effectively move people and goods. Transportation funding initiatives are generally not enough to maintain and improve the performance of transportation systems over the long term.

Furthermore, climate change mitigation and adaptation strategies are now required protocol in plans for new infrastructure projects, which may create additional costs.⁴ It should be noted that while the cost of climate adaptation may be high, the costs of not preparing are estimated to be much higher – climate change could cost Canada \$21 to \$43 billion per year by 2050.⁵ In fact, a U.S study estimates that every dollar invested in building resilient infrastructure will save \$6 in future costs.⁶ Funding and financing transportation involves other challenges, which will be discussed below.

Capital, operational and maintenance costs

Transportation is made up of two funding categories: capital and operating. Capital funding is money earmarked to build, expand, or alter infrastructure. Whereas operating funding is the money used to provide continued access to the infrastructure, such as transit operations and road maintenance. In Canada, some orders of government provide capital funding on a cost-shared basis with other orders of government. Capital investment in transportation services entails an increase in operating funds that is not always accounted for when capital funding is made available. Ongoing maintenance costs must also be properly planned, as long-term, predictable funding is necessary to ensure the sustainability of the transportation network. According to a 2015 report by the House of Commons Standing Committee on Transport, Infrastructure, and Communities, future operation and maintenance costs of a new infrastructure asset can reach up to 80 per cent of the total lifetime cost.⁷ For transit, operating costs can be recouped once ridership has grown enough, however, the economic benefits from investing in public transportation often lag behind the costs by a decade or more.⁸ Thus, decisions to spend on infrastructure today should take into account future costs required to operate and maintain the infrastructure.

Magnitude and coordination

Transportation projects are sometimes very large and complex, which often take many years to complete, spanning several government mandates, across many orders of government. Governments at all levels also face long-term planning challenges for infrastructure maintenance and consideration of life-cycle costing. Consequently, funding and financing of these projects must endure these long-term



horizons in order to realize successful completion of the transportation project.

Revenue Generation

Revenue-generation, such as fares, tolls or taxes, tend to be contentious and are generally unpopular among users and taxpayers. Imposing a toll on a particular road can have uneven effects across a region. For example, a toll may reduce congestion on that road, but displace traffic, including freight transport, to nearby streets. Furthermore, a toll could negatively affect low-income rural communities and commuters in certain regions who depend on that road to access their jobs and community networks.

Without new forms of revenue, however, urban regions will have a difficult time raising funds for infrastructure. Current sources of funding in Canada come from the general tax base and from fuel. In Canada, a portion of the federal Gas Tax is allocated to provinces and territories, and then flowed to municipalities through the federal Gas Tax Fund. All provinces and territories also use a fuel tax as a funding source.⁹ As improvements are made to vehicle fuel efficiency and as zero-emission vehicles become more common, revenue from these fuel taxes could decline. In addition, unpredictable fluctuations in petroleum prices means that revenues are never guaranteed.

Local governments in Canada are responsible for funding their urban transportation systems. Municipalities continue to face growing demand for services that outstrip their ability to raise revenues. However, they are very limited in the types of direct revenue tools they can use, and municipalities are generally restricted in their ability to run deficits and do not have the same borrowing and amortization capacity as higher-tier governments. Federal and provincial support is often needed for municipalities to take on

significant infrastructure investments, operating expenses and maintenance cost.

Complications with project implementation

Given their large scale, infrastructure projects sometimes go over budget and face significant delays. Explanations for cost overruns include technical challenges, scope changes, project delays (e.g., due to weather events), and ambitious timelines. There is often a misalignment between the time range of the infrastructure project and the time range of the financing.

Despite benefits reaped from the private sector's expertise, innovation, and efficiencies, the increasing reliance on P3s across Canada also presents some challenges and limitations: contractual agreements between the private sector, sometimes a consortium of companies, and the public sector tend to be more complex than in conventional delivery models; risk allocation must strike a balance between transferring risk and compensating the private sector for taking on that risk; and the private sector's capacity to finance projects has limitations and comes at a higher price as it usually borrows at higher cost than the public sector does. Additionally, even if the government enters into a P3 arrangement where the private sector partner is financially accountable in the event of a failure for the project to thrive, for many transportation projects, if the private sector walks away, the government would still be accountable to deliver the service.

TRENDS

The funding and financing of transportation infrastructure is evolving as it is responding to current trends related to preparing and responding to climate change, deployment of new technologies, the progress of data gathering and utilization, and the interest of private capital in public infrastructure.



With temperatures rising around the globe, Canada's climate is changing, causing considerable impacts: the frequency and intensity of extreme weather events, floods and wildfires are increasing; sea levels are rising; and precipitation patterns are changing. Transportation systems are particularly vulnerable to climate change, and governments across Canada are taking adaptation and mitigation actions to reduce climate-related risks that could cause important disruption of services and affect other sectors of the economy. Governments are increasingly building resiliency of infrastructure and assets into system planning and infrastructure development, which may come at a higher upfront capital cost.^{10,11}

Similarly, the uncertain deployment of new technologies and innovations, such as automated and connected vehicles (AV/CVs), is adding pressure on governments to build and adapt current transportation infrastructure for multiple technological futures. The pace of technology and public infrastructure development are sometimes not aligned. While the pace of technology advancement is increasing exponentially, current transportation infrastructure is developed with a lifespan that can reach several decades,¹² and could have limited capacity to integrate new technologies. In order to prevent premature obsolescence, transportation infrastructure needs to be flexible and versatile. In the case of AV/CVs, vehicles would need to be able to interact with existing/new infrastructure, such as roadways and traffic lights. This also raises questions related to infrastructure standards and operability between products and across jurisdictions. Despite the potential of new technologies to improve performance and decrease costs, they may also involve greater capital costs for governments that are already grappling with funding challenges.

New opportunities tied to data and evidence is also altering governments' funding and investments decisions and strategies. As the gathering of transportation and infrastructure data is becoming ubiquitous and their access easier, governments are interested in turning this information into insights. Governments' interest in costs reduction and optimization of investments is a main driver: data can assist in planning and forecasting, improve the oversight of infrastructure delivery, increase the efficiency of transportation networks, and help reduce operating and maintenance costs. As an example, in order to support evidence-based decision making, in 2018, the federal government developed Canada's Core Public Infrastructure Survey,¹³ which provides a first national snapshot of the stock, condition and performance of public infrastructure across Canada. Governments are also looking at the funding of transportation as a way to achieve other policy goals. Not only should infrastructure projects be financially sustainable and support transportation priorities, they also increasingly have to make sense on social and environmental levels.

The private sector is now going beyond its established P3 involvement for the construction, maintenance and operations of transportation infrastructure. For over a decade, there has been an increase in investment of private capital in infrastructure as an asset class. According to Inframation, since 2006, over \$200 billion USD has been invested by specialized funds into public infrastructure, and it is estimated that the same amount has been invested directly by investors, such as pension funds, insurers, and sovereign wealth funds, looking for predictable, long-term investments.¹⁴ In Canada, some pension plans are investing directly in transportation infrastructure. The Caisse de dépôt et placement du Québec, which manages several public and parapublic pension plans, has an infrastructure portfolio valued at \$22.7 billion in net assets. It is investing almost \$3 billion in the Réseau Express Métropolitain (REM),



a future component of the Greater Montréal area's public transit network. Similarly, as part of its Investing in Canada plan, the federal government established the Canada Infrastructure Bank to attract private sector and institutional investment to new revenue-generating infrastructure projects. The growing desire to invest private capital in public infrastructure could be leveraged by governments to alleviate costs to the public purse.

OPPORTUNITIES

In order to address their transportation funding and financing needs, governments are presented with opportunities to explore the potential of funding alternatives, including renewed pricing models, land value-capture techniques and private capital investments in public infrastructure assets.

In Canada, pricing models for the usage of transportation infrastructure are usually based on charges that are subsidized in part or in totality by governments, which poses financial sustainability questions. Governments have the opportunity to explore the potential of emerging pricing models, such as dynamic pricing charges, which could help raise additional revenue. Dynamic pricing has been used by private transportation operators, such as airline, railway, and ride-sourcing companies, for years. It is based on actual infrastructure usage and responds in real time to supply and demand of transportation networks. The potential of dynamic user-based charges is particularly relevant in urban centres where it could support efficient travel choices, which in turn could reduce congestion and greenhouse gas emissions and improve economic performance. However, dynamic pricing comes with a number of caveats. Implementation costs are often higher both for the infrastructure needed to be built (e.g., highway tolls) and for the technology necessary to monitor and determine the capacity of transportation networks at all

time. It also poses social equity issues, where it may limit access for users who are unable to pay higher prices during peak hours, in particular if their working hours are not flexible.

Land value capture (LVC) techniques have been an efficient way to fund urban transit systems in certain parts of the world. LVC mechanisms allow governments to capture a portion of the additional value it creates (i.e., increased property values in close proximity to transit stations) through investments in new/enhanced transportation infrastructure, such as transit stations. Some of the LVC revenue-generating mechanisms include imposing a land value tax on properties surrounding stations, development charges, and requesting contributions to public infrastructure from private developers in exchange for the opportunity to construct a development that is integrated or connected to a transit station (i.e., negotiated exaction).¹⁵ In Québec, as part of work related to the Réseau express métropolitain (REM) in Montréal, a mechanism was established to raise funds for its construction without taking away potential additional revenue from land-value capture for municipalities. It was decided to introduce, through regulation, a charge of \$107.64 per square metre to land developers for new buildings in proximity to the REM. The regulation entered into force on May 1, 2018, and this amount increases annually on January 1. The areas targeted by this charge are located within 500 metres of REM stations in proximity to existing Métro stations, and within one kilometre of the other REM stations. The amounts collected by this charge are capped at \$600 million on a period not exceeding 50 years.

While LVC techniques could contribute to raising additional government funds, LVC tools presents implementation challenges. First, these mechanisms would likely be applied to geographically narrow tax bases, limiting their capacity to raise funds. Second, although provincial governments are



responsible for outlining municipal roles and responsibilities, including taxation collection and remittance, implementing any combination of mechanisms could benefit from close coordination between these two levels of governments. Finally, despite existing technical tax and economic skills among provinces and municipalities that could be applied to an LVC framework, governments may need to build additional capacity given the specialized skills required to implement LVC.

The public sector continues to look at alternative ways of addressing infrastructure needs, including through increased private sector involvement in public infrastructure. Some evidence points towards benefits of private investment linked to performance. A research study conducted by PwC found that

the performance of some infrastructure facilities in the United Kingdom increased after a shift toward greater private ownership.¹⁶ Factors associated with private ownership, such as long-term value creation, could explain this improvement in performance. After reviewing evidence from the transportation and infrastructure sectors, the International Transport Forum concluded that while private investments can have an impact, the organizational, institutional, and regulatory frameworks are instrumental in determining if this impact will be positive or negative.¹⁷ Any strategy to attract private investments would first require governments to carefully review evidence on best practices and consider robust, flexible frameworks to engage with the private sector.



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