THE CANADIAN NORTHERN CORRIDOR SPECIAL SERIES

THE CANADIAN NORTHERN CORRIDOR: PLANNING FOR NATIONAL PROSPERITY

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FOREWORD

THE CANADIAN NORTHERN CORRIDOR RESEARCH PROGRAM PAPER SERIES

This paper is part of a special series in The School of Public Policy Publications, examining the potential for economic corridors in Canada. This paper is an output of the Canadian Northern Corridor Research Program.

The Canadian Northern Corridor Research Program at The School of Public Policy, University of Calgary is the leading platform for providing information and analysis necessary to establish the feasibility and desirability of a network of multi-modal rights-of-way across middle and northern Canada. Endorsed by the Senate of Canada, this work responds to the Council of the Federation’s July 2019 call for informed discussion of pan-Canadian economic corridors as a key input to strengthening growth across Canada and “a strong, sustainable and environmentally responsible economy.” This Research Program will help all Canadians benefit from improved infrastructure development in Canada.

This paper, The Canadian Northern Corridor: Planning for National Prosperity, is a Foundational Study, integrating several themes for the purpose of providing a holistic assessment of the corridor concept. Other studies conducted by the Research Program fall under one of the program’s eight research themes:

- Strategic and Trade Dimensions
- Funding and Financing Dimensions
- Legal and Regulatory Dimensions
- Organization and Governance
- Geography and Engineering
- Economic Outcomes
- Social Benefits and Costs
- Environmental Impacts

All publications can be found at https://www.canadiancorridor.ca/the-research-program/research-publications/.

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THE CANADIAN NORTHERN CORRIDOR:
PLANNING FOR NATIONAL PROSPERITY*

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KEY MESSAGES

• Canada’s current infrastructure approach is ineffective and piecemeal; projects are planned and implemented in isolation from one another and regulatory and governance frameworks are specifically designed for individual projects and their purposes. This reliance on one-off projects comes with little or no consideration of a long-term national strategy or integration with other infrastructure initiatives. It can also lead to uncertain outcomes for proponents and extended timelines for applications and approvals, deterring private investors and potentially reducing public infrastructure investment.

• Absent comprehensive and integrated planning, the future of Canada’s North and near-North will most likely follow the pattern of the last 50 years: a lack of project certainty and continued proposals for one-off investments in roads to service the needs of individual projects or goals without concern for the positive spillovers that could accrue to communities or other users.

• As a concept, the Canadian Northern Corridor (CNC) is multi-modal and involves a set of pre-approved and administered rights-of-way, combined with an institutional framework for its development and operation, improving the economics and decreasing the environmental footprint of infrastructure investments that cross regional boundaries. It allows for integration across multiple infrastructure initiatives, facilitating a long-term national strategy for inter-regional infrastructure.

• By facilitating international market growth and diversification, reducing barriers to interregional trade and improving access to resources the potential benefits to Canadians are large and wide ranging. These include job and income creation, decreases in the cost of living, better accessibility to goods and services, and an overall improvement to Canadians’ well-being associated with higher real incomes.

• The establishment of a single comprehensive and integrated body for corridor regulation and operation under a CNC concept could enhance the capacity of local communities to plan and participate in long-term infrastructure projects.

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• The CNC aims to deliver new economic benefits and participation opportunities for Indigenous communities.

• Even regions with high degrees of existing transportation infrastructure connectivity will benefit from reduced congestion and linkages to new regions.

• The purpose of the CNC research program is to provide information and analysis necessary to establish feasibility, desirability and the most advantageous choices for implementation of the corridor concept. The program takes the form of original peer-reviewed academic studies; formal engagement with potentially affected communities, businesses and governments and an accompanying research dissemination strategy.

• The School of Public Policy’s CNC research program provides the information base, analysis and evaluation required to assess the feasibility and desirability of establishing permissible corridors in Canada. Integrating formal academic research and a strategy of engagement with potentially impacted communities, the program is working to address key issues such as geographic and engineering feasibility, legal and governance issues, and financial and economic viability.
SUMMARY

This paper is a follow-up to the School of Public Policy’s initial publication on the corridor concept published by Sulzenko and Fellows (2016). In it, we give a summary of the broad scope of the Canadian Northern Corridor (CNC) concept and The School of Public Policy’s CNC research program.

Canada has benefited immensely from major national infrastructure projects; however, there remain significant constraints in the Canadian transportation grid that must be addressed to seize opportunities for shared prosperity and security now and into the future. Addressing these constraints requires substantive investments by the private and public sectors to grow and diversify Canada’s domestic and international markets, support northern and Indigenous community development, fulfil commitments to reconciliation, reduce environmental footprints, strengthen the national infrastructure grid, enhance northern security and sovereignty and address barriers to inter-regional trade. Current approaches to national infrastructure planning and development are wanting, putting the achievement of these important objectives at risk.

Canada’s current infrastructure approach is piecemeal; projects are planned and implemented in isolation from one another and regulatory and governance frameworks are specifically designed for individual projects and their specific purposes. This reliance on one-off projects comes with little or no consideration of a long-term national strategy or integration with other infrastructure initiatives. Project investors must address all environmental, Indigenous and intergovernmental concerns, shoulder all costs and be able to survive an uncertain approval process lasting a decade or more. Further, there is no opportunity for sharing the approval and construction costs with other infrastructure projects by integrating and co-ordinating their planning and implementation processes. These characteristics translate into high costs and uncertainty with the result that, increasingly, major private investors may choose to go elsewhere, taking with them potential associated benefits.

The CNC concept addresses these issues. The CNC is multi-modal, capable of accommodating infrastructure in the form of roads, rail, power lines, communications cables and transmission equipment, commodity pipelines and other future linear infrastructure modes. The CNC involves a set of pre-approved and administered rights-of-way, combined with an institutional framework for its development and operation, improving the economics and decreasing the environmental footprint of infrastructure investments that cross regional boundaries.

The establishment of a single comprehensive and integrated body for corridor regulation and operation could enhance the capacity of local communities to plan and participate in long-term infrastructure projects. Further, the CNC could deliver economic opportunities and participation for Indigenous communities. Even regions with high degrees of existing transportation infrastructure connectivity will benefit from reduced congestion and linkages to new regions.
The School of Public Policy’s CNC research program provides the information base, analysis and evaluation required to assess the feasibility and desirability of establishing permissible corridors in Canada. Integrating formal academic research and a strategy of engagement with potentially impacted communities, the program is working to address key issues such as geographic and engineering feasibility, legal and governance issues, and financial and economic viability. It is a collaborative venture involving experts from multiple Canadian and international research institutions, as well as outside consultants and community stakeholders. The goal is to generate a comprehensive and inclusive picture of the implications and impacts of a corridor network of multi-modal rights-of-way across Canada, along with an accompanying governance framework.

The potential benefits of the corridor concept can be broadly categorized across five topics:

- **Streamlining Environmental Protection**
  The corridor concept allows for multiple linear infrastructure projects to be located along a single right-of-way. This implies less land-use disturbance compared to multiple one-off projects. Done correctly, it would reduce habitat fragmentation and allow for better cumulative effects management. The corridor would also allow for more centralized, integrated monitoring of infrastructure and its impact on the environment, enabling better data collection, emergency response and adaptive management.

  The corridor would also allow for improved climate-resilience planning and adaptation to climate change. To plan effectively, anticipated changes to climatic conditions must be integrated into infrastructure planning in all stages. The corridor would provide for a central institution to better co-ordinate and plan climate-resilient infrastructure.

- **Improving Standards of Living in Canada’s North and Near-North**
  Canada’s Arctic and Northern Policy Framework (Government of Canada 2019b) asserts that, “insufficient physical and social infrastructure has hindered opportunities for growth and prosperity in the region.”

  For goods movements, northern communities face particularly acute bottlenecks since they largely rely on seasonal winter roads built across frozen waterbodies and permafrost. Due to climate change, the season for these roads is becoming unpredictable and shorter. For telecommunications, a lack of stable connectivity also presents significant challenges.

- **Improving Economic Outcomes**
  Improvements in infrastructure can lead to lower trade costs and improved gains from trade for all regions. Potential benefits would be wide-ranging: job and income creation, decreases in the cost of living, better accessibility to goods and services, and an implied overall improvement to Canadians’ well-being associated with higher real incomes. The implied GDP impact is significant.
• Safeguarding Indigenous Agency
A key objective of the CNC is the inclusion of Indigenous communities and businesses who will potentially comprise a significant portion of project proponents.

Historically, major national infrastructure projects have had highly unequal impacts in terms of benefits and costs, particularly with respect to disenfranchised Indigenous Peoples and other marginalized members of Canadian society. The CNC is an opportunity for inclusive growth and reconciliation. The federal government has already identified reconciliation with Indigenous communities as a key consideration in planning, executing and operating future large-scale infrastructure investments.

• Promoting Canada’s Global and Strategic Significance
Canada has renewed its focus on its northern and Arctic regions due to a combination of a north-south divide impeding trade flow between the provinces and territories, climate change concerns and untapped natural resource potential. Underdeveloped infrastructure in the North and Arctic also poses a risk to Canada’s sovereignty. Multiple countries have interests in the Arctic and the political and legal status of the Northwest Passage has long been disputed. The current underdeveloped state of infrastructure in the North significantly impedes Canada’s ability to consolidate its Arctic territorial claims of water straits and passages, especially regarding the aspirations of other circumpolar states, most notably Russia and China.

Absent comprehensive and integrated planning, the future of Canada’s North and near-North will most likely follow the pattern of the last 50 years: a lack of project certainty and continued proposals for one-off investments in roads to service the needs of individual projects or goals without concern for the positive spillovers that could accrue to communities or other users.

Deserved or not, Canada is building a reputation for paralysis in linear infrastructure projects based on a combination of publicized delays in deep-water ports, oil and gas pipelines and other resource projects. Regulations are necessary for the protection of the environment and society and eliminating or reducing regulatory standards is not a reasonable reaction to this paralysis. Balancing the necessary integrity of Canada’s regulatory structure against the desire to facilitate private and public linear infrastructure development requires a new approach, one that promotes regulatory efficiency and economizes on investments in regulatory review and impact assessment.

The purpose of the CNC research program is to provide information and analysis necessary to establish feasibility, desirability and the most advantageous choices for implementation of the corridor concept. The program takes the form of original peer-reviewed academic study; formal engagement with potentially affected communities, businesses and governments and an accompanying research dissemination strategy.
INTRODUCTION

Canada has benefited immensely from major national infrastructure projects, most of which were constructed in the 1950s and 1960s. The TransCanada main line,\(^1\) St. Lawrence Seaway, Trans-Canada Skyway and Trans-Canada Highway have all played critical roles in creating prosperity by facilitating communication, transport, resource development and market access. However, there remain significant constraints in the Canadian transportation grid that must be addressed in order to seize opportunities for shared prosperity and security now and into the future (Rodrigue forthcoming).

Figure 1: Notional Route Considered for Canadian Northern Corridor Placement

\(^1\) A natural gas pipeline completed in 1958 to move natural gas from Western Canada to Toronto and Montreal and points in between. Numerous extensions were later added.
Addressing the constraints in Canada's transportation infrastructure grid requires substantive investments by the private and public sectors to grow and diversify Canada’s international markets, support northern and Indigenous community development, fulfil commitments to reconciliation, reduce environmental footprints, strengthen the national infrastructure grid, enhance northern security and sovereignty and address barriers to inter-regional trade.

Current approaches to national infrastructure planning and development are wanting, putting the achievement of these important objectives at risk. Today, infrastructure development is typically accomplished in a piecemeal manner in which projects are planned and implemented in isolation from one another and regulatory and governance frameworks are specifically designed for individual projects and their purposes. This reliance on one-off projects comes with little or no consideration of a long-term national strategy or integration with other infrastructure initiatives. Project investors must address all environmental, Indigenous and intergovernmental concerns, shoulder all costs and have the capacity to survive an uncertain approval process of a decade or more. Further, there is no opportunity for sharing the approval and construction costs with other infrastructure projects by integrating and co-ordinating their planning and execution processes. These characteristics translate into high costs and uncertainty with the result that, increasingly, major private investors may choose to go elsewhere, taking along with them potential associated benefits.

The Canadian Northern Corridor (CNC) concept, as notionally depicted in Figure 1, addresses these issues. The CNC is multi-modal, capable of accommodating infrastructure in the form of roads, rail, power lines, communications cables and transmission equipment, commodity pipelines (see Figure 2) and other future linear infrastructure modes. While there are multi-modal corridors developed or underway in other countries, no similar large-scale corridor project has been successfully realized in Canada. The CNC involves a set of pre-approved and administered rights-of-way, combined with an institutional framework for its development and operation, improving the economics and decreasing the environmental footprint of infrastructure investments that cross regional boundaries.

The CNC concept is intended to provide a long-term solution to the geographic, political and regional challenges that threaten the economic competitiveness, diversification and prosperity of Canada and its regions. Potential advantages include:

- Greater integration of individual infrastructure projects and long-term infrastructure planning, with attendant savings through corridor sharing, a smaller environmental footprint and better integration with the southern infrastructure networks to improve efficiency, reduce bottlenecks and enhance resilience;

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2 In the late 1960s, Richard Rohmer proposed the ambitious mid-Canada corridor, a plan for a transportation and development corridor within the wide swath of land between the Canadian North and the concentration of settlement along the country’s southern border. However, that plan was never implemented.
- Increased responsiveness to opportunities for Indigenous and northern development, and to infrastructure requirements for northern security and sovereignty objectives;
- Significantly improved economics and incentives for national infrastructure development;
- An enhanced ability to take advantage of windows of opportunity for growth and stability, including opportunities associated with international market growth and diversification, resource development and reduced barriers to inter-regional trade;
- Reduced project approval costs and delays, combined with lesser regulatory, approval and governance uncertainty;
- Enhanced inter-regional trade; and
- Adaptation to the effects of climate change on existing infrastructure with flexibility to accommodate new types of infrastructure.

Figure 2: Conceptual Rendering: Multi-Modal Corridor

The establishment of a single comprehensive and integrated body for corridor regulation and operation could enhance the capacity of local communities to plan and participate in long-term infrastructure projects. Further, the CNC could deliver economic opportunities and participation for Indigenous communities.\(^3\) Even regions with high degrees of existing transportation infrastructure connectivity will benefit from reduced congestion and linkages to new regions.

\(^3\) For example, organizations such as the First Nations Major Projects Coalition (2020) can motivate First Nations planning and ownership interests in resource projects and infrastructure on First Nations lands. An example of this type of Indigenous participation is the Tlicho all-season road (in NWT) which is being constructed and will be operated by a P3 between the Kiewit Canada Development Corp. and the Tłı̨chǫ government (operating together through a consortium called North Star Infrastructure (CBC News 2019).
The CNC research program provides the information base, analysis and evaluation required to assess the feasibility and desirability of establishing permissible corridors in Canada by exploring both the potential benefits and consequences of the factors discussed above. Integrating more formal academic research and a strategy of engagement with potentially impacted communities, the program is working to address key issues such as geographic and engineering feasibility, legal and governance issues, and financial and economic viability. It is a collaborative venture involving experts from multiple Canadian and international research institutions, as well as outside consultants and community stakeholders. The goal is to generate a comprehensive and inclusive picture of the implications and impacts of a corridor network of multi-modal rights-of-way across Canada, along with an accompanying governance framework.

In this paper, we briefly scope out some of the most prominent potential benefits of implementing the corridor concept in Canada to motivate and facilitate the discussion on inter-regional Canadian infrastructure investments. We also describe The School of Public Policy’s Canadian Northern Corridor Research Program which has a mandate to assess the feasibility, desirability and most advantageous implementation of the concept. The paper offers an overview of some of the key opportunities, challenges and benefits that the CNC addresses, such as protecting the environment, safeguarding Indigenous agency, improving economic outcomes in the North and promoting Canada’s global and strategic significance. Each of these sections will detail how the CNC can contribute to these goals while recognizing possible constraints.

HISTORICAL CONTEXT AND CONTEMPORARY NEEDS

Canada’s economic and social history is punctuated by large-scale national infrastructure projects, perhaps most notably the completion of the Canadian Pacific Railway in 1885.

“Here [in 1871] is a country of only three and a half million people, not yet four years old, pledged to construct the greatest of all railways” (Berton 1970).

The late 1950s and early 1960s saw dramatic inter-regional infrastructure investment in Canada. This period of public and private infrastructure investment acts as a precedent for present investigations into the corridor concept.

Notable projects undertaken during this period include:

- The TransCanada Mainline, constructed in the 1950s, facilitates interprovincial trade of natural gas across Canada along with access to U.S. markets. The Mainline benefits Western Canadian suppliers, who are able to sell a valuable product, and Eastern Canadian consumers, who are able to secure a stable, low-cost supply of natural gas. The pipeline also allows Canadian producers access to the U.S. market as it allows for export as well as interprovincial flows. Regulatory and political difficulties associated with development and approval of the Mainline led to the establishment of the National Energy Board (now the Canada Energy Regulator).
This agency plays a key role in the assessment and regulation of interprovincial and international energy transportation infrastructure (among other responsibilities).

- The St. Lawrence Seaway, completed in 1959, permits oceangoing vessels from the Atlantic Ocean to travel as far inland as Thunder Bay, Ontario (Canada) and Duluth, Minnesota (U.S.). The canal and lock system enhances Canada-U.S. trade and allows these inland regions to access international markets via a gateway to the Atlantic. This benefits manufacturing, agriculture and myriad other sectors, enhancing Prairie and Eastern Canadian economies.

- The Trans-Canada Skyway was completed in 1958 following a public tender issued by a Crown corporation (the Canadian Broadcasting Corporation) in 1954. When completed, the Skyway was the first domestic, and the world’s longest, microwave transmission network. It allowed the country to talk to itself, transmitting telephone conversations, Teletype messages and television signals from coast to coast (6,275 kilometres) in milliseconds. Perhaps most importantly for the cultural and social identity of Canada, the Trans-Canada Skyway initiated the tradition of nation-wide broadcasts such as Hockey Night in Canada, contributing to a shared national identity (CBC Digital Archives 1956).

- Most visible to Canadians, the Trans-Canada Highway, completed in 1962, allows for the improved movement of people and goods, similarly contributing to the country’s economic and social prosperity.

Since the late 1960s, there appears to have been little or no government interest in large-scale pan-Canadian infrastructure projects. This suggests a shift in federal infrastructure policy toward a more localized strategy which, as emphasized in the recent Canada Infrastructure Bank’s mandate, also focuses on attracting private investment (Infrastructure Canada 2018).

Geopolitical shifts and crises such as the COVID-19 pandemic underpin the need for strategic national independence for critical industries and supply chains in sectors such as energy, medical supplies, agriculture and food. The desire and need to diversify the Canadian economy in order to become more stable and resilient will require an increased focus on internal trade and on access to shifting international markets.
Canada’s goal of net zero emissions by 2050 also raises long-term planning considerations for the future of our transportation and energy infrastructure. As an example, Canada’s unique and diverse geography means that renewable energy resources are varied across the country, with strong hydroelectric resources in provinces such as Quebec, Ontario, British Columbia, Manitoba and the Atlantic Provinces, and significant wind and solar energy in the Prairies. This implies the need for the strategic planning of electricity transmission infrastructure like the TransCanada natural gas main line in the 1950s, but with a new focus on fostering interprovincial trade in lower or zero emissions energy.

The high Arctic is also presently of concern for national security reasons. The potential for commercial navigation of the Arctic, resulting from climate change and technological innovation, implies increased international attention to this region. Canada needs an improved presence in the North to enhance security, monitor climate change impacts, manage environmental risks and substantiate sovereignty claims.

Existing transportation technologies, particularly rail and road, will likely be a part of the physical corridor, but there is also scope to innovate. As with the Trans-Canada Skyway in 1958, Canada has a demonstrated history of successful widespread implementation of new technologies, particularly telecommunications. But facilitating this development has required the creation and use of formal institutions. Due to its multi-modality, the corridor concept therefore has significant potential to drive the commercialization of the transportation and communications technologies of the next century.

“A national corridor is a key requirement for economic development in the 21st century. It will provide pipeline, rail, road and telecommunication connections from Labrador to Prince Rupert. It will link major resource developments and provide access to world markets for Canadian resources.”
Senator Doug Black (Senate of Canada 2017a)

**STREAMLINING ENVIRONMENTAL PROTECTION**

The corridor concept allows for multiple linear infrastructure projects to be located along a single right-of-way. This implies less land-use disturbance compared to multiple one-off projects. Done correctly, it would reduce habitat fragmentation and allow for better cumulative effects management. The corridor would also allow for more centralized, integrated monitoring of infrastructure and its impact on the environment, enabling better data collection, emergency response and adaptive management.

In order to offer a long-lasting Northern Corridor regulatory framework that withstands political and socio-economic paradigm changes, the initial framework must gain
widespread political and public support. The corridor would allow for co-ordinated, rigorous impact assessment of linear infrastructure projects. Route-planning, incorporating consultations with impacted communities and stakeholders along the proposed route, is a major component of project design and impact assessment. The corridor would provide an established pathway already rigorously assessed by the relevant regulatory authorities and trialed with stakeholders.

This would significantly reduce up-front regulatory burden on project proponents without adverse impact on environmental standards. The new federal impact assessment regime provides for regional assessments to assist in better cumulative effects assessment and management. Therefore, if a project is proposed in an area for which a regional assessment has already been conducted, the impact assessment requirements for that project are significantly reduced. In theory, specific portions of the corridor could be suitable to a regional assessment, improving the mitigation and management of broader impacts while further streamlining the assessment process.

The corridor would also allow for improved climate-resilience planning and adaptation to climate change. To plan effectively, anticipated changes to climatic conditions must be integrated into infrastructure planning in all stages including “regulations, codes and standards, design, and route” (Pearce, Ford and Fawcett 2020). The corridor would provide for a central institution to better co-ordinate and plan climate-resilient infrastructure.

These points may be best exemplified by the idea of a national renewable energy grid, allowing for clean energy transmission from regions with rich renewables potential, such as hydro in B.C., Manitoba and Quebec, and wind and solar in the west, to the rest of Canada. Another prominent example is Canada’s national hydrogen strategy (Government of Canada 2019a). Many consider structured hydrogen production and distribution to be an effective means for decarbonizing several sectors currently reliant on traditional fossil fuels (heavy transport, steel-making and other industrial processes, and space and water heating). But successful implementation of any hydrogen strategy will require a planned approach to supply chain networks and national transportation infrastructure. Environmental stewardship and a need for sustainable infrastructure are paramount in the development of a Northern Corridor.

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4 This is a critical component of streamlining environmental protection. For a set of regulatory and review standards to be effective they need to be consistent, not only across jurisdictions (where possible) but also with respect to changes in government administrations.

5 See, for example, Dolter and Rivers (2018).
IMPROVING STANDARDS OF LIVING IN CANADA’S NORTH AND NEAR-NORTH

Canada’s Arctic and Northern Policy Framework (Government of Canada 2019b) asserts that, “insufficient physical and social infrastructure has hindered opportunities for growth and prosperity in the region.” The federal government has responded to this infrastructure deficit with the recent establishment of the Canada Infrastructure Bank (CIB), which carries the mandate to attract private and public funding for infrastructure projects. However, as highlighted by the COVID-19 pandemic, Canadian infrastructure is insufficient to maintain uninterrupted flow of goods and services or access to reliable and fast broadband internet, particularly in rural northern and Indigenous communities.

For goods movements, northern communities face particularly acute bottlenecks since they largely rely on seasonal winter roads built across frozen water bodies and permafrost. Due to climate change, the season for these roads is becoming more unpredictable and shorter (Pearce et al. 2020). For telecommunications, connectivity presents significant challenges as well. In the Northwest Territories, only 69 per cent of communities have access to terrestrial telecommunications connections; the rest rely on slower, more expensive and less reliable satellite uplinks. In Nunavut, no communities have access to terrestrial telecommunications connections (National Aboriginal Economic Development Board 2016).

Depending on the specifics of the community examined, a reduction in infrastructure deficit would mean securing improved access to fundamentals like clean water, food security, health care, education and emergency management and response. These goods and services all require some combination of all-weather road access, high-speed (terrestrial) internet connectivity and reliable energy supply.

There is considerable potential value in connecting communities, particularly in the North. Substantial social and economic costs derive from isolation and accompanying social dysfunction and economic marginalization. Sound analysis of these costs, such as that being conducted at The School of Public Policy, helps to overcome infrastructure prioritization prejudice, which tends to focus on alleviating newly identified congestion rather than overcoming entrenched regional disadvantages. Previous studies have demonstrated that investment in and maintenance of transportation infrastructure supports can significantly improve Canada’s economic productivity and, by extension, Canadians’ quality of life (Fellows et. al. 2018; Fellows and Tombe 2018; Fellows et. al. forthcoming).

IMPROVING ECONOMIC OUTCOMES

Canada ranks about average in terms of imports and exports as a share of overall GDP compared to other G7 nations; domestic regional economies are heavily reliant on internal (i.e., intra-national) and international trade. At a regional level, trade as a share of GDP ranges from lows of 20 per cent to 30 per cent to highs of over 80 per cent. Improvements in infrastructure can lead to lower trade costs and improved gains
from trade for all regions. Potential benefits would be wide-ranging: job and income creation, decreases in the cost of living, better accessibility to goods and services and an implied overall improvement to Canadians’ well-being associated with higher real incomes. Canada-wide improvements in infrastructure and the concurrent reduction in interprovincial trade costs stand to generate as much as $130 billion annually, equivalent to a seven per cent increase in annual GDP (Albrecht and Tombe 2016; Senate of Canada 2017b).

One of the Northern Corridor’s primary roles would be to serve as a bottleneck co-ordination mechanism. Through sufficient planning and analysis, corridor development would identify and mitigate systemic congestion and obstruction in the current infrastructure grid. Currently, Canadian transportation infrastructure does not represent a fully integrated system, due to Canada’s inherent geographical and economic characteristics, combined with a lack of planning and co-ordination. As such, corridor identification, planning and development should involve a strategy to co-ordinate infrastructure investment (Rodrigue forthcoming). Consider for example the port of metro Vancouver: expansions of this port are very costly and face significant physical constraints given land management issues in B.C.’s Lower Mainland (Sulzenko and Fellows 2016). Effectively planning for future infrastructure means recognizing this limitation and considering other options for West Coast port expansion.

The current unco-ordinated approach to interprovincial transportation infrastructure is flawed and limiting in several ways. Consider the potential first-mover disadvantage for new large-scale infrastructure. Project proponents attempting to co-ordinate new rights of way bear a higher cost for infrastructure, planning and regulatory compliance than if these costs were shared between several projects. This can also disadvantage later-stage proponents, since a first mover (if successful) may seek to extract excessive rent for use of infrastructure or deny third-party use altogether. On the opposite side, there is also potential for free-riding or an economic hold-up problem by subsequent project proponents. Later-stage projects may seek to pay less than their fair share for the use of existing infrastructure since the costs of that infrastructure are already sunk. Companies often find it difficult to reach out to others and/or to share their commercial development plans with a view to co-ordinating infrastructure. If firms are in the same industry, such co-operation can run the risk of violating competition regulation. If firms are in different industries, disparate goals, standards and industrial organization make co-ordination failure very likely. Again, governments are best placed to address these issues.

Infrastructure, even when it is intended for private (rather than public) use, generally carries positive spillovers, especially when considering long-term benefits. This means that if planning and investment are left solely to the private sector, individual firms cannot and should not be expected to build an efficient level of infrastructure. They should only be expected to build for their current needs; however, the option value of
overbuilding capacity is often desirable from a macroeconomic perspective. Therefore, governments may find it desirable to underwrite or otherwise incentivize excess capacity construction up front, especially if this addition capacity carries a modest additional cost, since governments (but not necessarily firms) can recover costs from longer term future revenue streams.

Early planning can identify infrastructure that is critical to the development of a region, and can put in place the technical plans and environmental clearances that will enable infrastructure to be built rapidly when needed and in an ordered way, reducing duplication and increasing efficiency. Proactive construction of infrastructure can also have a basin-opening effect. Often, infrastructure in less-developed regions follows a discovery of resources and accompanies plans for development. But infrastructure can also attract exploration investment such that discovery of resources follows from infrastructure.

Canada also needs a new focus on transportation infrastructure to improve access to shifting international markets. The potential growth opportunities of increased focus on export markets beyond the U.S. is reflected in the federal government’s recent free trade negotiations. The Comprehensive Economic and Trade Agreement (CETA) between Canada and the European Union and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) represent considerable efforts toward free trade between Canada and new international markets. However, Canada cannot fully benefit from this newly won market access unless we overcome our domestic and international transportation bottlenecks (Sulzenko and Fellows 2016).

SAFEGUARDING INDIGENOUS AGENCY

Historically, major national infrastructure projects have had highly unequal impacts in terms of benefits and costs, particularly with respect to disenfranchised Indigenous Peoples and other minorities. The Canadian Northern Corridor is an opportunity for inclusive growth and reconciliation. The federal government has already identified reconciliation with Indigenous communities as a key consideration in planning, executing and operating future large-scale infrastructure investments. This insight is shared by the provincial governments:

“There is a need to increase certainty for investors and help get major infrastructure and transmission projects done in a timely fashion while minimizing environmental impacts, lowering the costs of environmental

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6 Emery and McKenzie (1996) illustrate this point retrospectively, with reference to the Canadian Pacific Rail (CPR) main line construction. They argue that the government subsidy to the CPR was necessary to entice the private sector proponent to exercise its investment option and “build ahead of demand” in the face of considerable uncertainty on the future commercial value of the main line.

7 Note the stated rationale for reorganizing the National Energy Board into the Canada Energy Regulator. As stated, replacing the NEB with the CER would “help restore investor confidence, build public trust and advance Indigenous reconciliation — all while ensuring good projects go ahead and our energy resources get to markets responsibly” (Government of Canada 2019c).
assessments, and maintaining high standards of Indigenous consultation and science-based assessments. These options should include further discussions on pan-Canadian economic corridors, both east-west and north-south, to increase productivity by distributing energy, communications, and economic potential currently locked in a single province or territory to other jurisdictions” (The Council of the Federation 2019).

Canada has taken steps to renew its relationship with Indigenous Peoples through the Truth and Reconciliation Commission (2008-2015) by focusing on reconciliation with the goal not only to acknowledge but to “redress the legacy of residential schools” (Truth and Reconciliation Commission of Canada 2015, 1). The Northern Corridor will create opportunities to fulfil several Calls to Action from the Truth and Reconciliation Commission: improved health outcomes through increased investment in healthcare infrastructure and access to health services; inclusion of UNDRIP principles in governance structures; improved education outcomes through investment in education infrastructure and economic development opportunities respecting the needs of Indigenous Peoples, including long-term sustainable benefits. Particularly relevant are joint governance opportunities that include federal/provincial/territorial as well as Indigenous governments.

Additionally, based on recent court decisions related to the Crown’s duty to consult, changes in the laws respecting consultation with Indigenous Peoples are entirely foreseeable (Wright 2020). Furthermore, given the calls to action resulting from the Truth and Reconciliation Commission as well as Canada being a signatory to the United Nations declaration on the Rights of Indigenous Peoples (UNDRIP), the Crown-Indigenous relationship needs to go far beyond the duty to consult. With relevance to linear infrastructure, the Northern Corridor could provide scope and a formal institution through which this relationship can be rethought and reshaped.

Case law provides precise definitions of what constitutes meaningful consultation and the relationship between the duty to consult and Indigenous consent is paramount. As a signatory to UNDRIP, Canada has committed to recognize the Indigenous right to “free, prior and informed consent” (FPIC) which allows Indigenous Peoples to grant or withhold consent to projects that may affect them or their territories directly (United Nations 2016). Throughout previous infrastructure consultation processes in Canada, scholars have identified significant shortcomings. These include, for example, incomplete information on individual projects presented to Indigenous communities for consideration by industry (Baker and Westman 2018, 15) such as in the case of the Trans Mountain pipeline (Bellrichard 2018). This indicates a significant lack of transparency which can be addressed through an appropriate corridor governance model that safeguards Indigenous rights and fosters an atmosphere of trust between Indigenous communities, industry and government representatives (see Boyd and Lorefice 2017).
Without a doubt, corridor negotiations and consultations will reveal a diversity of interests leading to a challenging consensus-seeking process. Nevertheless, the proposed multi-modal infrastructure corridor offers the chance to recognize this diversity by initiating dialogue on a governance framework that allows full participation of all stake- and rights-holders from the beginning.

“The scope of this project is ambitious and will require years of careful management and stable funding. But the legacy it could leave — a more connected and prosperous Canada as well as lasting partnerships with Indigenous groups — should be reason enough to move ahead.”

- Senator Carolyn Stewart Olsen (Senate of Canada 2017a).

In the case of infrastructure development on Indigenous territories, First Nations, Inuit and Métis peoples in Canada have unique rights that are guaranteed under section 35 of the Constitution Act from 1982 (Government of Canada 1982). Indigenous territorial land rights were also re-affirmed in the Supreme Court of Canada (2014) judgment Tsilhqot’in Nation v. British Columbia to recognize First Nations title and rights.

As mentioned above, the Crown’s relationship with Indigenous Peoples and the associated interactions between project proponents and Indigenous communities is of particular relevance here. **A key objective of the Northern Corridor is the inclusion of Indigenous communities and businesses that will potentially comprise a significant portion of project proponents.**

Smaller Indigenous communities, with limited resources and capacity to undertake adequate evaluations of project proposals, face significant challenges in engaging with industry and government (Baker and Westman 2018). This highlights another potential aspect of the corridor concept as an institution to facilitate multi-party engagement and negotiation across a variety of stake- and rights-holders. Furthermore, economies of scope in multi-party negotiations mean that the benefit of improved planning efficiency can permit smaller communities to inherit a more significant role during consultations.

**PROMOTING CANADA’S GLOBAL AND STRATEGIC SIGNIFICANCE**

Canada has renewed its focus on its northern and Arctic regions due to a combination of a north-south divide impeding trade flow between the provinces and territories, climate change concerns and untapped natural resource potential. Underdeveloped infrastructure in the North and Arctic also poses a risk to Canada’s sovereignty. Multiple countries have interests in the Arctic and the political and legal status of the Northwest Passage has long been disputed. The current underdeveloped state of infrastructure in the North significantly impedes Canada’s ability to consolidate its Arctic territorial claims of water straits and passages, especially regarding the aspirations of other circumpolar states, most notably Russia and China.
China’s economic and political involvement in the Arctic has increased substantially throughout the last decade, especially as Chinese investors become more involved in economic projects in the Arctic regions, for example in Greenland and Russia. In comparison, Canada has been lagging in terms of infrastructure development in its own Arctic regions. Former prime minister Stephen Harper proposed a deep-water port and military refuelling station in Nunavut in 2007 (to be completed in 2013) which is significantly delayed (Berthiaume 2020). In addition, rising diplomatic tensions between the U.S. and China potentially undermine future co-operation in the Arctic Council due to growing mistrust between the two countries (Kopra 2020). The development of a Northern Corridor would be a significant factor in consolidating Canada’s continued strategic presence in the Arctic, commercially and militarily. This is particularly relevant as the Northwest Passage is still disputed at the international level. Northern infrastructure also contributes to Canada’s prosperity by allowing northern communities to realize the value of their resources while contributing to regional and national economies and by providing improved access to goods and services for all Canadians. Developing infrastructure such as broadband also improves access to health care, facilitates remote work and employment and enables participation in education and training programs. There is some international precedent for the corridor approach based on the idea of multi-modal connections for combined benefit of all residents. The development of corridors in other parts of the world provides valuable information and insights for Canada. A sampling includes:

- Pilbara and Callide multi modal infrastructure corridors in Australia;
- China’s Belt and Road Initiative, consisting of a network of corridors involving over 100 countries;
- Greater Mekong Subregion Program involving three corridors in Southeast Asia;
- International North-South Transport Corridor, a multi-modal multinational corridor from St. Petersburg, Russia to Mumbai, India;
- Channel Tunnel linking England and France;
- Lamu-South Sudan-Ethiopia multi-modal corridor;
- Scandinavian-Mediterranean (Scan-Med) multi-modal corridor.

The Arctic Council, established in 1996, is the leading intergovernmental forum promoting co-operation, co-ordination and interaction among the Arctic states, Arctic Indigenous communities and other Arctic inhabitants on common Arctic issues, such as sustainable development and environmental protection in the Arctic. Member states include Canada, the Kingdom of Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden and the United States (The Arctic Council 2020).
The most comparable infrastructure corridor is located in the Pilbara region of Western Australia. This corridor, developed in the 1960s to facilitate the export of iron ore to Asian markets, faced challenges similar to those of the CNC in terms of remoteness, the uninhabited status of parts of the region, extreme geological and meteorological conditions and concerns regarding the environment, Indigenous rights and community development. The aspects of Indigenous participation and the recognition of treaty rights were singled out as main factors in infrastructure development (Senate of Canada 2016).

The Scandinavian-Mediterranean (ScanMed) corridor in the European Union is a pan-European transport corridor designed in the 1990s to address road and rail infrastructure gaps to ensure a seamless connection from Scandinavia to the Mediterranean Sea for goods and people. The European corridor is being implemented with the support of the European Commission, a supranational institution which received the mandate for corridor development from all affected EU member states. A potential comparison could be made to the role of the federal government in Canada supporting the CNC if it received a similar mandate from provincial and territorial governments.

An example corridor initiative within Northern Canada is the Grays Bay Road and Port Project. This corridor, which runs through parts of the Northwest Territories and Nunavut, will connect the mineral-rich Slave geological province to a deep-water port on the Arctic Ocean with access to Arctic shipping routes (Senate of Canada 2016). The project was initially proposed in 2012 by MMG Limited, a multinational mining corporation whose major shareholder is the Chinese government. However, there are profound concerns among Canadians that this project will mainly benefit MMG and thus the government of China rather than the people of the NWT and Nunavut or the governments of Nunavut, NWT or Canada (Campbell 2019). This example underlines the additional element of international corporate interest in gaining access to natural resources in the Canadian North and thus, such projects also include important implications for Canadian sovereignty as well as commercial control over activities within its territory. Nevertheless, from a global perspective, this project serves to reinforce Canada’s presence in the Arctic and offers significant benefits for domestic suppliers to export their goods to global markets as well as to unlock new shipping routes via the Arctic Ocean to Europe and Asia. The project has faced several challenges but there have been renewed interest and momentum following the federal government’s pledge of $21.5 million to support it in August 2019.
An important aspect included in northern Canadian infrastructure development is the maintenance and development of a strong strategic and global position, especially in the North American Arctic context.

PLANNING FOR THE FUTURE

What do the next 50 or 100 years in transportation look like in Canada with and without the type of planning implied by the corridor concept?

Absent comprehensive and integrated planning, the future of Canada’s North and near-North will most likely follow the pattern of the last 50 years: a lack of project certainty and continued proposals for one-off investments in roads to service the needs of individual projects or goals without concern for the positive spillovers that could accrue to communities or other users.

Deserved or not, Canada is building a reputation for paralysis in linear infrastructure projects based on a combination of publicized delays in oil and gas pipelines and other resource projects. Regulations are necessary for the protection of environment and society and eliminating or reducing regulatory standards are not reasonable reactions to this paralysis. Balancing the necessary integrity of Canada’s regulatory structure against the desire to facilitate private and public linear infrastructure requires a new approach, one that promotes regulatory efficiency and economizes on investments in regulatory review and impact assessment.

The importance of these investments is also becoming more visible in a post-COVID-19 pandemic world. The importance of stable supply chains, both international and domestic, is underscored by the desire for economic sovereignty. For Canada, continued reliance on and future development of strategic sectors like food, health and data, will require the economy to move goods and services between regions more efficiently.

Even without COVID-19-related concerns, there is likely an oncoming shift in the basket of essential resources required for national and global economic development. Canadian governments need to be cognizant of resources required to support the rise of IT and the related need for telecommunications connectivity, as well as the global need for strategic minerals to support the expected continued trend of electrification. Without co-operation among levels of government, and the federal government’s fulfilment of its constitutional mandate to support transportation, Canada will miss out on these opportunities and be worse off for it.
THE CANADIAN NORTHERN CORRIDOR CONCEPT AND THE ROLE OF THE SCHOOL OF PUBLIC POLICY

The purpose of the Canadian Northern Corridor Research Program is to provide information and analysis necessary to establish feasibility, desirability and the most advantageous choices for implementation of the corridor concept. The program takes the form of original peer-reviewed academic study; formal engagement with potentially affected communities, businesses and governments; and an accompanying research dissemination strategy. While The School of Public Policy hosts and oversees the research program, research inputs have and will continue to come from a diversity of Canadian and international academic experts across many themes detailed below.

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<th>Canadian Northern Corridor Research Program Themes</th>
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<td>• Strategic and Trade Dimensions</td>
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<td>• Legal and Regulatory</td>
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<td>• Geography and Engineering</td>
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<td>• Economic Outcomes</td>
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<td>• Environmental Impacts</td>
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As part of the University of Calgary, The School of Public Policy’s objectivity and academic integrity are critical to this undertaking, given that academic expertise consistently ranks among the general public’s most trusted and credible sources of information and analysis (Edelman 2019).

Research funding for the first three years is secured and a robust research management structure is in place. A scientific advisory committee (SAC) provides guidance and strategic advice to the program director. It is comprised of 12 eminent national and international scholars with research expertise related to the core research themes of the program. The SAC provides scientific expertise and advice, including recommendations in the selection of researcher participants and external reviewers, and ensures research integrity.

An external advisory committee (EAC) provides guidance and strategic advice. It is comprised of 12 distinguished representatives from government, industry, community, Indigenous groups and non-governmental organizations. The EAC provides insights, advice and suggestions regarding the intellectual direction of the research, roundtables and conferences, advises on knowledge mobilization strategies and suggests new partners and stakeholders.
CONCLUDING REMARKS

The School of Public Policy is already undertaking research on the above themes, exploring the benefits, costs and practicality of the corridor concept. New publications regularly appear in the Canadian Northern Corridor paper series which is freely available through the research program’s website.\(^9\)

The research program is a five-and-a-half-year research initiative (from 2019 and into 2025), over which time the goal is to produce a comprehensive knowledge base incorporating guidance on policy options, identification of costs and benefits and an comprehensive assessment of the overall impact that successful implementation of the corridor concept could have on Canada.

Inter-regional transportation infrastructure is critical for the growth and health of the Canadian economy and concurrent improvements in quality of life for all Canadians. The corridor concept stands as a practical approach to facilitate the delivery of that infrastructure; high quality, objective academic research is necessary to compile a foundation on which the physical corridor can be built.

\(^9\) https://www.canadiancorridor.ca/the-research-program/research-publications/.
REFERENCES:


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Dr. Fellows (PhD) is a research associate and the Associate Program Director of The Canadian Northern Corridor research program at The School of Public Policy, University of Calgary. He has a PhD in economics with specializations in industrial organization, regulatory economics, public finance, energy economics and computational economics. Since graduating Kent has also branched out into regional economics and internal trade. In 2016 he provided testimony to the Senate of Canada on the topic of National Transportation Corridors.

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Dr. Forest, (PhD) is the Director of The School of Public Policy and James S. and Barbara A. Palmer Chair in public policy at the University of Calgary. Prior to joining The School of Public Policy, Pierre-Gerlier (PG) Forest was Director of the Institute for Health and Social Policy at Johns Hopkins University and Professor at the Bloomberg School of Public Health. From 2006 to 2013, he was president of the Pierre Elliott Trudeau Foundation, a reputed Canadian institution that encourages innovation in policy research and the dissemination of original and practical solutions to social issues.

PG Forest holds an appointment as Professor of Community Health Science in the Cumming School of Medicine at the University of Calgary. He was elected to the Canadian Academy of Health Sciences in 2008 and to the Alpha Chapter of the Delta Omega public health honor society in 2015.
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