

WHY DOES CANADA DEVELOP MEGAPROJECTS INSTEAD OF INNOVATION SYSTEMS?

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Prime Minister Mark Carney's "nation-building" agenda has thus far largely focused on resource megaprojects. This is not a new thing for Canada, but the policy agenda risks repeating a very old Canadian development pitfall that created the dependence on the world's larger empires that leaves us vulnerable today. Rather than repeating the pattern of seeking salvation in megaprojects, the current moment calls for a public-sector-led agenda to develop diverse, multi-sector economies that can adapt to changing economic circumstances.





THE STAPLE TRAP

Canada's political economy is characterized by a longstanding struggle to develop systems of complementary technology and industries against the pull of resource extraction lock-in, referred to as the "staple trap".¹

The trap is set by resource extraction developments that require large, fixed-cost infrastructure and the installation of other "rigidities" such as monopolies and political interests with influence over regional economies and political decision-making.

The dependent situation of regional economies on globally traded resources leaves them particularly vulnerable to shifts in international commodity prices or the political decisions made by empires in the world. External events create periods of crisis, and these crises often appear particularly unexpected and severe.

The trap is tightened because of the way political leaders react during these crisis periods. The private sector seeks state protection, and the state and entrepreneurs respond by increasing resource exploitation. This means seeking new staple exports near at hand, with the state often playing the role of developing new "nation-building" infrastructure with the narrow purpose of exporting these staples.

This reaction further strengthens the conditions for the staple trap — more large, fixed-cost infrastructure that must be paid off, the creation of monopoly interests, and dependencies on global empires to buy raw material exports.²

THERE IS NOTHING NEW ABOUT MEGAPROJECTS

Canada's current focus on resource megaprojects is repeating a very old pattern. In 1957, economic historian W.T. Easterbrook said there was a "high premium on bigness in entrepreneurship"³ in Canada, describing how governments and capitalists alike sought protection in megaprojects rather than a more evolutionary development pattern that uses innovative technologies to develop diverse economies.

Throughout Canada's history, government decisions in reaction to external economic and military threats have often led to reinforcing dependency on resources. Canada has become a rich country and a middle power, but one with consistent underlying vulnerability and lack of sovereignty.

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A rapid review of Canadian economic history is enough to demonstrate that there is nothing new about the Carney government's boosting of megaprojects:

The first European-based economy in Canada was the cod fisheries. It was highly extractive and produced few developmental spin-offs, as fish harvesters only went on shore to salt and dry their catches before crossing the Atlantic.⁴ The pattern was decentralized and flexible, and thus it did not install the rigidities associated with the staple trap.

The fur trade was also characterized by high extraction and limited settlement. Yet the staple trap was being set because of the high fixed costs related to military agreements with First Nations and inter-colonial warfare. These burdens increased as trade expanded westward, and the trade expanded westward to help pay these costs. Managing trade and violent economic competition over a long geography led to the forced merger of the North West Company and the Hudson's Bay Company in the early 1800s, introducing a tendency to manage large-scale resource exploitation via large, centralized organizations answerable to private shareholders.⁵

By the mid-1840s, the Canadian colonies were oriented towards wheat and lumber exports to the British Empire. When Britain abolished trade preferences, there was a general feeling of "abandonment and disorientation".⁶ Domestic lumber interests showed little support for Canadian independence, calling for annexation to the U.S. — a situation that sounds familiar to today, both in our policymakers' unpreparedness for a predictable situation and in the leaders of the most resource-dependent provinces expressing the lowest level of support for an "elbows up" stance in the face of Trump's threats.⁷



Not wanting to have anything to do with the American Civil War reinforced Canada's resolve to remain independent. American internal politics also protected Canada because Southern states did not want non-slave Canadian colonies joining the states, yet both Southern state and Canadian corporate interests supported free trade.

Canada's 1867 confederation was spurred by the continued threat of American attack, the loss of trade reciprocity with the U.S. in the wake of the Northern state victory in the Civil War, as well as the debt burden of railroad and canal construction. After Prime Minister Alexander Mackenzie's failed attempt to renegotiate free trade with the U.S., John A. Macdonald was re-elected to introduce the National Policy of tariffs to promote manufacturing and western expansion.⁸

Canada's industrialization was led by foreign investors and manufacturing was dominated by foreign branch plants.

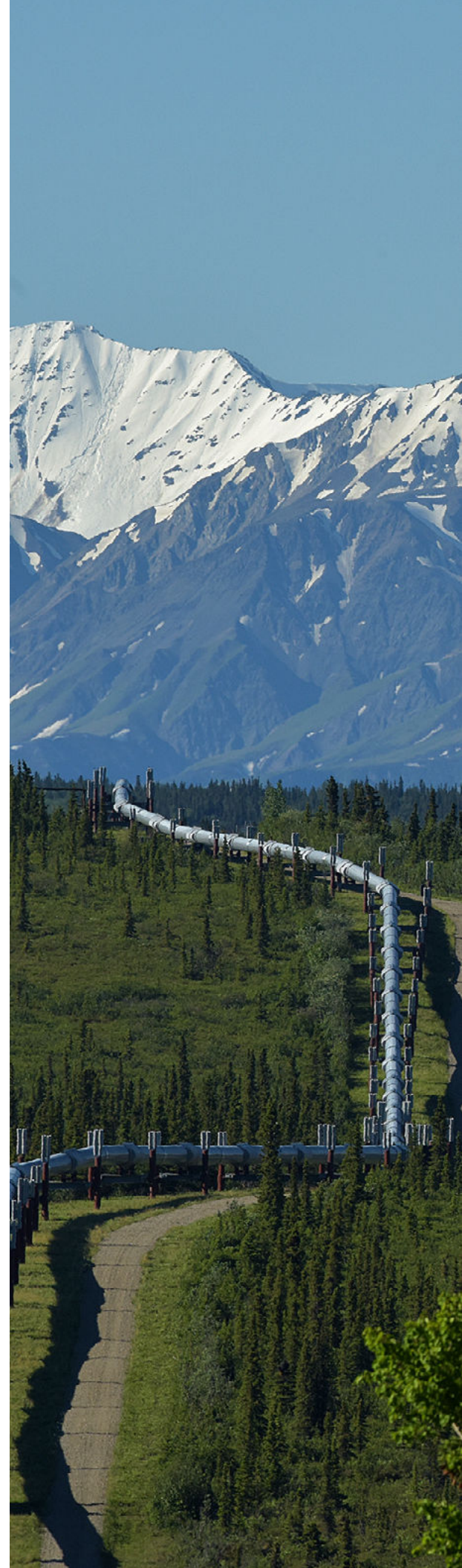
The railway expansion within Canada's first provinces and then westward is often heralded as Canada's first "nation-building" project. It surely supported Canadian territorial independence, but it was also characterized by a truncated form of development because it was a megaproject strategy rather than one to build a domestic innovation system. Policymakers were focused on building infrastructure and managing

associated debts, with several private sector bailouts along the way.⁹ Canada's banking system was focused on financing railways, utilities, and price arbitrage opportunities in resource rents, transportation, and tariff prices rather than supplying patient capital for industrial development.¹⁰ Thus, Canada's industrialization was led by foreign investors and manufacturing was dominated by foreign branch plants.

During this period, Germany and the U.S. became leaders in the new technologies of steam, railways, precision engineering, and management of large corporate systems with policies such as industrial research programs and modern education systems in engineering and management.¹¹ Canada's National Policy did not build up the same institutions for technological and corporate leadership.

The National Policy led Canada's economic strategy until the Second World War introduced a mission too important to be left to the market, at which point Canada's federal government led industrial development through public enterprise and economic planning.¹² This period represents a brief break from the staple trap pattern, where the Canadian state reacted to a crisis by directing the economy towards military-industrial development, rather than resource-based development.

Renewal of the staple export model was challenged in the post-war period because exports to Europe did not immediately revive to traditional levels. Instead of learning from the wartime planning experience, Canada opted to renew a staple export strategy. Canadian policymakers negotiated preferential access to the American market, cementing a deeper dependency on the United States. A 1945 White Paper outlined a strategy to build a welfare state by continuing to export staple products to the U.S. and additional markets. In the 1950s, the federal government led the development of the TransCanada pipeline and the St. Lawrence Seaway. Both projects spurred nationalist sentiment, yet they were not coupled with a more ambitious industrial development agenda beyond the export of staples. Canada still had no government agency to lead industrial policy. A federal Department of Industry was eventually created in the 1960s, yet the primary strategy was one of export-led development.¹³



The Canadian economy remained vulnerable to external decisions, as highlighted in the 1971 “Nixon Shock”, which included a 10% tariff on all imports. Nixon had also encouraged foreign branch plants to return home.¹⁴ In response, the Trudeau government announced a strategy to diversify Canada’s trade.

The 1970s witnessed provincial and federal governments creating crown corporations to promote Canadian control of industries such as aerospace and potash. A comprehensive discussion of industrial policy took place within the federal bureaucracy and advisory bodies, producing a vision of “technological sovereignty”.¹⁵ However, attempts to formulate and implement industrial policy were vetoed by the Department of Finance, and the government failed to produce a coherent policy direction.¹⁶

When Canada negotiated free trade with the U.S., it created a new form of dependency in the emerging digital economy. The agreements had little to do with tariffs. They ensured that Canada supported American protectionism and dominance in intellectual property.

The Trudeau government was ill-prepared for a new crisis in the early 1980s when high interest rates slowed economic activity and oil prices fell from their previous spikes. The federal government responded with a “megaproject” strategy, with lists of major capital projects that are eerily similar to the Carney government’s strategy today. Public policy scholar Bruce Doern wrote that the policy was largely performative because the government had to be seen to do something yet had no coherent industrial policy in place.¹⁷ Political economist Duncan Cameron argues that the strategy failed because it relied on attracting private capital rather than using public investment to spur industrial development through linkages with supplying sectors.¹⁸ The failure of this approach led to a retreat towards free trade with the United States, which was recommended by the Macdonald Commission in 1984.

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The rise of digital technologies in the 1990s produced Canadian technology leadership through companies like Nortel and BlackBerry, yet also engrained new dependencies. Federal policy focused on R&D and tax credits over more direct support for Canadian entrepreneurs in new economic sectors. In the 21st century Canada witnessed a pattern of Canadian technology start-ups being acquired by United States firms before they grow within Canada.²⁰ Foreign technology companies located in Canada also benefit from highly skilled researchers, yet intellectual property is owned by foreigners, creating a pattern of R&D extraction.²¹

These innovation system weaknesses were masked by high oil prices in the 2000s, with primary resource products making up a growing share of exports.²² Mark Carney was not the first to declare Canada an “energy superpower”: it was Stephen Harper, who followed a policy of resource extraction over domestic innovation system building.²³

The term “industrial policy” became popular in Justin Trudeau’s government, yet it failed to produce the institutions that could implement such a policy. For example, its “supercluster” initiative focused on appeasing regional interests rather than strategically shaping the geographically concentrated nature of innovation. The Strategic Innovation Fund passively invited applications instead of developing the capacity within the public sector to lead a vision for industrial productivity and decarbonization. What the Justin Trudeau government called industrial policy was often a defensive reaction to events in the United States. When the Biden administration released its Inflation Reduction Act, Canada reacted with a similar tax credit policy rather than a strategy based on an analysis of Canada’s context.²⁴



MEGAPROJECTS VERSUS SYSTEMS OF INNOVATION

This brings us to the current reaction to the Trump administration’s threats and tariffs, with Prime Minister Carney’s call for “nation-building” megaprojects. From a historical perspective this is not a new thing. Most concerning is that this strategy has not produced a sovereign Canadian economy in the past, and it creates the danger of installing new rigidities that create new dependencies on resource products that leave Canada vulnerable to decisions made elsewhere and to global economic instabilities.

The pitfall Canada might be falling into again results from a failure to implement a strategy to build up multiple sectors and new technologies for public benefit.

The primary concern is not with megaprojects or infrastructure. The pitfall Canada might be falling into again results from a failure to implement a strategy to build up multiple sectors and new technologies for public benefit — where infrastructure is one component, but not the primary focus.

The current “nation-building” strategy is closely tied to resource dependency. The primary policy is a Major Projects Office that seeks to remove environmental and other public protections, or at least help the private sector navigate them. Reacting to economic threats by speeding up megaproject approvals suggests policymakers think it is possible to short-circuit an evolutionary development process where technology and organizational innovations are guided through stages of experimentation and growth across multiple sectors.

The way to escape the staple trap pattern is to develop systems of innovation — which describe diverse economies where multiple sectors interact to develop, use, and expand technology.²⁵ These systems of innovation can be directed to develop Canadian technology, used to solve Canadian problems. They can be built from local community assets, knowledge, and novel inter-sectoral combinations, and thus do not have to be based on natural resource exploitation. Government plays a role in actively monitoring and building up these systems over time; thus, it is a consistent development policy rather than a short-term reaction to a crisis.

A system of innovation agenda would not stop natural resource development or neglect infrastructure building, but the agenda’s primary focus would be on analyzing the opportunity to build up related sectors instead of expanding export of raw or semi-processed resources. A relevant historical example is how the development of large hydroelectric projects in Québec spurred innovation in long-distance transmission, and was coupled with creation of a public utility, a research institute, and a societal goal of technological sovereignty. Québec used hydroelectricity to build a relatively more diverse inter-sectoral system, which included the growth of aluminum and chemicals, procurement policies that facilitated the engineering consulting sector, and a research infrastructure responsible for early development of the lithium iron phosphate battery.²⁶

Looking beyond resources and infrastructure demonstrates new development pathways. A good example is Verafin, a Newfoundland company that used artificial intelligence to guide underground mining vehicles and then applied the same technology to bank security fraud detection.²⁷ A system of innovation agenda would seek out more of these surprising linkages with resource sectors and develop the adjacent economic development pathways, growing Canadian companies and giving them the ability to remain in Canada instead of being acquired by foreign companies.

Systems of innovation could be guided by public purpose missions because it is possible to create economic opportunities from numerous publicly coordinated projects, not just natural resource exploitation projects.²⁸ To truly protect Canadians from the uncertain new world order, “nation-building” should focus on securing basic human needs such as affordable and healthy homes capable of withstanding power outages, as well as food sovereignty and digital sovereignty. It is possible to create Canadian jobs and businesses by producing and saving energy in homes, agriculture and food disruption, clean energy, and transportation. These initiatives need public sector organizations to establish missions, create partnerships, and support promising Canadian solutions.

Such an agenda could also be guided by Bentley Allan’s Framework for Industrial Policy, based on the three facets of what governments seek to achieve (long-term societal goals), what they do (activities), and what they realize (measurable outcomes).²⁹ Such a framework would ask what megaproject “building” is actually seeking to achieve rather than seeing such projects as ends in themselves. It would continuously assess if and how such projects are growing Canada’s strength and resilience, or if they are leading the country towards a new staple trap.

The irony is that many of these innovation-system-building strategies could start to deliver results sooner than megaprojects.

The irony is that many of these innovation-system-building strategies could start to deliver results sooner than megaprojects. What Canada lacks is the institutional infrastructure and related policy focus. The staple trap pattern means that Canada fails to develop these institutions in good times because of reliance on resources, and then also retreats to resource exploitation during crises. Institutions to build a different economy need to be supported over the long term, so they are in place in time to have a different reaction when the next crisis occurs.

Other nations have developed lead institutions like Japan’s MITI, Germany’s Fraunhofer Institute, Sweden’s Vinnova, or the U.S. DARPA, which guide innovation and economic system building efforts. Canada has not developed or adequately supported similar institutions — with some important exceptions, such as the Industrial Research Assistance Program.

FROM REACTIVE "NATION-BUILDING" TO CONSISTENT ECONOMIC DEVELOPMENT

An agenda to truly strengthen Canada's economy would build systems of innovation instead of megaprojects. The focus on megaprojects in a "nation-building" agenda is Canada's traditional reactive response, stemming from the inadequacies of previous policy agendas and the perception that there is nowhere else to maneuver other than doubling down on resource dependency. If history is a guide, this reactive response is unlikely to produce an independent and resilient Canadian economy.

An alternative agenda would recognize that the state must play a consistent and long-term role in economic development. It is a task too important to be left to the private sector. Nation-building would focus on meeting the core needs of Canadians to weather future economic and political storms and actively use public purpose missions to develop a diverse set of Canadian technologies, businesses, and worker skills.



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