BUILDING THE FUTURE ECONOMY

Securing Canada's Competitiveness and Autonomy in a Changing World

The Transition Accelerator
L'Accélérateur de transition

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About the Transition Accelerator

Our Objective

The Transition Accelerator is putting Canada on a path to a strong competitive economy in a world driving to reduce emissions to carbon neutrality.

Our Work

The Transition Accelerator drives projects, partnerships, and strategies to ensure Canada is competitive in a carbon-neutral world. We're harnessing the global shift towards clean growth to secure permanent jobs, abundant energy, and strong regional economies across the country.

We work with 300+ partner organizations to build out pathways to a prosperous low-carbon economy and avoid costly dead-ends along the way. By connecting systems-level thinking with real-world analysis, we're enabling a more affordable, competitive, and resilient future for all Canadians.

Our Unique Approach

- We **understand the current system in practice**, not just in theory, identifying barriers to innovation and opportunities for change.
- We bring together industry, labour, government, Indigenous and other leaders to **define shared visions of success** for their sectors, regions, or communities.
- We mobilize partners to **develop pathways to get there**, understanding and refining them to ensure they are credible, capable, and compelling.
- We turn ideas into action and **take steps down those pathways** by launching projects and partnerships to build a more competitive future.

Introduction: Building the Future Economy

Securing Canada's Competitiveness and Autonomy in a Changing World

Canada faces an economic and security crisis. Trump's tariff threats have exposed the country's dependence on the United States. With our border and economy dangerously vulnerable to the whims of American power politics, we must act.

Still, every crisis is also an opportunity. Here the opportunity is to respond boldly with a program of nation-building that seeks to do ambitious things. By strengthening the energy system, developing natural resources, invigorating the manufacturing base, and diversifying trade, Canada can come out stronger. We can enhance productivity, add value to our resources and promote the welfare of citizens while securing sovereignty and improving Canada's geopolitical standing.

The good news is that the country's political and economic leaders are now considering an array of reforms and initiatives that would have been unimaginable six months ago. The focus on eliminating inter-provincial trade barriers, selecting a list of projects of national significance, and streamlining assessments and approvals is encouraging.

But building a future economy that can assure the country's independence, prosperity and competitiveness requires something more. It requires an integrated strategy that can focus policy and investment and coordinate activities on multiple fronts. Getting big things done involves a complex interweaving of technology, institutions, markets, finance, policy, regulation, politics and communities. This weaving depends on relationships: individuals and institutions must learn to work together.

Right now, there is a risk that we undertake projects that add up to less than the sum of their parts. That we build infrastructure without enough attention to the industrial linkages that can secure competitiveness, capture export markets and lay the foundations for prosperity in coming decades. That we continue to employ a policy mix biased towards supply-side measures rather than also including demand-side initiatives. Or that we fail to build the collaborative government-industry-community partnerships necessary to sustain the strategic vision, priority setting, investment mobilization, and on-the-ground implementation required to get big things done. Indigenous partnership is a foundational prerequisite to success.

Against this backdrop, this white paper aims to do three things:

1. First, it lays out the opportunity which Canada has to achieve big things. And it seeks to support strategic focus by suggesting a limited number of no-regrets priorities.
2. Second, it argues that strategically oriented industrial strategy is critical to achieving the long-term goals of economic regeneration. To meet our ambitions, we need to do multiple things: strategize, focus, mobilize capital, improve project review and implementation, and build regional collaboration into national vision. Specific actions to help realize success in each of these categories are presented.
3. Third, it suggests that to increase our collaborative and strategic capacity we must reimagine the roles and responsibilities of governments (at all levels, including Indigenous institutions), firms, and communities.

This white paper draws on in-depth conversations at our June 2025 Getting it Done Summit and interviews with leaders from across the country who have had direct experience of trying to move the dial in their sector. It also synthesizes research on modern industrial strategy and a number of recent Canadian reports including: Electrons Rocks and Brains: Canada's Power in the New Geopolitical Order (The Transition Accelerator, February 2024); How to Prioritize Strategic Projects for Better Net-Zero Industrial Policy (MacDonald Laurier Institute and the Transition Accelerator, December 2024); The Right Move at the Right Time: A New Canadian Industrial Strategy (Commission on Carbon Competitiveness and the Transition Accelerator, June 2025); and The Productivity Benefits of High Value, Low Carbon Investment (The Transition Accelerator, June 2025).

1. Identifying the Opportunities

The Trump tariff and security shock has brought to the fore weaknesses in the Canadian economy which have been discussed in economic and policy circles for many years. In addition to excessive trade dependence on the United States, which absorbed approximately 77% of exports in 2023, these include:

- **Poor record on productivity growth** as compared to our peers and a **limited ability to capture value-added** in natural resource sectors. From 2007-2022 Canadian productivity growth was just 0.8% compared to 1.5% in the US.
- **A weak innovation system**, manifest particularly in low levels of company R&D investment (about 1% of GDP compared to nearly 3% in the US) and the inability to convert domestic start-ups into Canadian-based multi-national firms. Most start-ups are sold to US companies as they prepare to scale up. And since large firms typically concentrate R&D at home, and many of the biggest companies in our economy are foreign-multinationals, private sector R&D in Canada is chronically underfunded.
- **Trade risks in a decarbonizing world**. Canada's two largest export sectors are vulnerable: oil and gas which comprises about 20% of export earnings, and automobiles and auto parts at 10%. The predominance of oil and gas exports makes us the third most exposed carbon-economy in the world (after Russia and Saudi Arabia), while the Canadian auto industry is at risk if it fails to secure timely conversion to the EV value chain.
- **Difficulty realizing major projects** (mines, power and transmission, housing, transit, etc.) on time and on budget. Multiple causes including poor regulatory policy, jurisdictional tangles, lack of urgency, resistance from special interest groups, difficulties engaging Indigenous title and reconciliation.
- **Geopolitical challenges**. The United States' relative decoupling from existing alliances has exposed Canada's geopolitical weakness. China's dominance of clean technology and critical mineral supply chains threatens new dependencies. The failure to prioritize security (defence expenditure, Arctic sovereignty, immigration) and lack of attentions to other international relationships has led to a relative loss of influence.

To effectively respond to these challenges Canada needs to pursue three interlinked goals.

- **Economic sovereignty**: creating linkages between our natural resources, advanced manufacturing, clean technology, and consumers by building Canadian supply chains. For example, we must complete the battery supply chain and maximize the auto sector domestically. An economic sovereignty agenda must also include building the defence manufacturing base and exploring potential linkages between defence and clean energy manufacturing. We need to incentivize innovative start-ups to remain Canada-based, as they scale and cultivate home-grown IP. A push for economic sovereignty is also a push for geopolitical leverage in a dangerous world.
- **Climate action**: Canada still has an imperative to help build the clean energy supply chains that the world needs to deeply decarbonize. If we don't, we will be left out of the world's future economy. Canada can pursue opportunities that reduce emissions, position us in global value chains, and help to build the circular economy all while rebuilding our sovereignty and diversifying trade.

- **Trade diversification**: reduce reliance on exports to the U.S. by identifying and supporting fast growing trade opportunities with the rest of the world. Efforts to build trade infrastructure must be designed to maximize this diversification which require international partnerships. Canada must work with the EU, UK, Australia, Japan, South Korea, Mexico and other potential allies to strengthen defence and economic ties through industrial cooperation. Concretely, this means renewed collaboration on critical minerals, clean energy, and defence through co-investment, reciprocal policy, and R&D cooperation. Done right, this will help build our industrial base while we diversify trade.

1.1 Priority opportunities for Canada

The highest priority opportunities lie at the intersection of the three overarching goals: economic sovereignty, climate action, and trade diversification. Prime Minister Carney's government has laid out five clean growth priorities that can help achieve all three:[1]

- A made-in-Canada electric vehicle sector
- Delivering on the Canadian Critical Minerals Strategy
- An industrial strategy for housing
- Investing in cheap, clean power
- A defence industrial strategy

The remainder of this section presents these opportunities from a strategic perspective. Much of this analysis draws on the Transition Accelerator's work on low-carbon productivity,[2] as well as its industry-co-created roadmaps: *Mass Timber Roadmap* (2024) with The Forest Products Association of Canada and the Canadian Wood Council[3]; *Canadian Battery Innovation Roadmap* (2024) with Accelerate[4]; and *Roadmap for Canada's Battery Value Chain* (2022) with the Battery Metals Association of Canada.[5]

Section 2 of this white paper will revisit these opportunities as it lays out industrial strategy considerations on how policy can best unlock each technology's potential by aligning supply and demand.

1.1.1 A made-in-Canada electric vehicle sector

Trump's auto tariff threats have exposed Canadian dependency on trade and economic integration with the United States. Even if the current exemptions on auto tariffs remain place, allowing Canada-United States-Mexico Agreement (CUSMA) compliant goods to travel unscathed, there is a strong argument for revamping our automotive supply chains.

The opportunity is to increase the made-in-Canada content in our auto sector while doubling down on the electric vehicle transition—while the United States slow plays the inevitable. Demand for electric vehicles in Canada and the United States has moderated over the past 6 months but the long-term trend is clear: EVs will be cheaper and more reliable than internal combustion engines. Canadian consumers will not want to sit behind tariff walls driving ICE cars while the rest of the world benefits from the transition.

The Trudeau government went all-in on the electric vehicle transition with major investments in EV assembly and battery manufacturing. This was an investment in Canada's long-term future and the efficiency and productivity gains that the electrification of the transport sector will deliver. But it was also an opportunity, one that few countries have, to build an end-to-end battery supply chain with huge upstream and midstream value-added here in Canada. Around 40% of the value of an EV lies in the battery and we could capture all of that.

Right now, in the context of a trade war, Canada can lay the groundwork for capturing more value-added by incentivizing Canadian content in cars and doubling down on the EV transition.

Much of the focus of such efforts is on the large foreign original equipment manufacturers (OEMs). But Canada has its own OEMs in the electric bus and trucking space. Expanding transit is an opportunity to decarbonize urban mobility while scaling innovative Canadian suppliers of electric buses into world leaders. Building on Canada's electric bus supply chain bolsters economic sovereignty. Importantly, unlike the much larger passenger car segment ($38.1B exports in 2023), Canada's manufacturing base in buses ($749 M exports in 2023) is not tied to the decision-making of large American companies. Canada has prominent global firms in electric buses, including New Flyer (Manitoba headquartered), Lion Electric (Quebec headquartered), and Nova Bus (Volvo-owned but Quebec footprint). New Flyer is the largest North American supplier of electric and hydrogen buses, with 2024 revenues of US $3.1 billion, 9,000 employees in 10 countries, and 35-40% of manufacturing sales coming from zero-emission buses.[6] Lion Electric's recent bankruptcy and subsequent restructuring cannot be ignored, but can be considered a common phase through which companies advancing technologies seeking to disrupt very mature supply and value chains progress on the way to long-term success.

The automotive sector is strategically important for related value-added manufacturing. Industrial capabilities link with plastics, glass, electronic components, and autonomous vehicle capabilities. Furthermore, a strong electric bus manufacturing base has potential synergies with strengthening Canada's position in next generation battery technology. This linkage was key to China's rise to dominance in battery technology, as electric bus procurement provided BYD and CATL with significant early revenue to scale Canadian-invented lithium iron phosphate battery technology in the early 2010s (see Box 1).[7]

1.1.2 Process critical minerals for value-added export and domestic use

Boosting domestic processing of critical minerals would advance economic sovereignty by diversifying our trade into more value-added national resources, forging new international partnerships to lessen overreliance on China, and reinforcing linkages to downstream domestic manufacturing in automotive, defence and energy technologies.

Critical minerals will continue to be in high demand as the world (led by Asia and Europe) transitions to low-carbon energy systems. BloombergNEF expects the energy storage market to be 10 times larger in 2035 than it is today, at 228 gigawatts (965 gigawatt-hours) cumulatively.[8] Canada possesses rich deposits of most of the critical minerals needed for EVs (we are the 5th largest global nickel producer, with some of the largest known rare earth reserves).[9]

Focusing on the refining and semi-fabricated products stages is the best strategy for maximizing value-add. For example, moving from spodumene lithium ore to lithium hydroxide or lithium carbonate increases the value by 4 or 5 times.[10] Unfortunately, Canada's critical mineral exports are heavily skewed toward upstream primary products (CAD 19.5 billion in 2023) and smelting and refining products (CAD 21.6 billion) compared to downstream semi-fabricated products (CAD 10 billion).[11]

Downstream manufacturing of battery cell packs represents a smaller value capture opportunity than processing critical minerals into battery material.[12] Bolstering critical mineral processing will facilitate Canadian innovation in next generation battery technology. This will help offset some of the risk posed by American tariffs on Canada's EV sector, which is currently skewed towards attracting foreign firms to assemble current generation technology. Canada has many innovative critical mineral processing and battery material firms, such as Nano One and Frontier Lithium, as well as global leaders like Rio Tinto with significant Canadian operations.

Regarding trade diversification, midstream battery materials may be more resilient to U.S. tariffs than downstream automotive assembly, given strong international demand and fewer U.S. cross-border inputs. Bilateral trade in critical minerals between Canada and the United States is worth CAD 38.2 billion annually, representing 59% of Canada's total critical mineral exports in 2023.[13] More international partnerships can help Canada lessen its reliance on the US.

1.1.3 Mass timber building materials in modular, prefabricated housing

Canada needs to rapidly expand homebuilding to address the affordable housing crisis. Mass timber construction materials enable buildings to be built up to 25% faster, while lowering embodied carbon up to 40%.[14] This presents an industrial strategy opportunity to scale innovative Canadian suppliers of mass timber and other prefabricated/modular building techniques into world leaders. Canada has innovative suppliers of mass timber, including Kalesnikoff (BC), Intelligent Cities (BC), Element 5 (ON), and Nordic Structures (QC).

Mass timber is a promising growth market, with a current global valuation (as of 2023) estimated to be USD 1.6 billion–2.3 billion.[15] The global and North American market is projected to grow 13%–14% a year through 2030, representing an increase of approximately 150%.[16] Canada's current share is estimated at USD 379 million, which corresponds to about 20% of a central estimate of the global market.

Expanding mass timber would advance economic sovereignty by diversifying our trade into more value-added national resources and increasing productivity. Today the bulk of Canada's wood exports are relatively low value-added destined for the US market. For example, sawn wood, Canada's largest wood product export, represents a significant share (1.2%) of all Canadian exports, with 84% going to the US.[17] Mass timber has potential to help address low R&D[18] and productivity[19] in the forestry and construction sectors.

1.1.4 Build clean power while maximizing Canadian content

Canada needs to rapidly expand its electricity grid to decarbonize and increase access to reliable, affordable power. Access to clean power is a crucial ingredient of economic competitiveness. Expanding

the grid also presents an industrial strategy opportunity to create demand for Canadian suppliers of electrical equipment, such as transformers, wire, and smart grid technology.

US trade tensions will likely spur more buy-Canadian approaches to building out the grid, as seen in the Ontario Energy Minister's letter to utilities asking them to increase Canadian (or at least non-US) content in their procurements.[20] This creates an opportunity for Canadian firms who are global leaders in fabricating grid equipment – particularly transformers and switchgear. For example, Guelph Ontario-headquartered Hammond Power Solutions is North America's leading dry-type transformer producer.[21] The firm has annual revenue of over $788 million and approximately 2,121 employees globally.[22]

Transformers are one of Canada's most rapidly growing export categories in recent years, growing 203% from 2022-2024.[23] Record global demand for transformers and switchgear is driven by renewables, electrification of transportation and heating systems, and data centres.[24] Different uses require a different number of transformers, with a solar/wind farm with storage requiring more than a gas or nuclear plant. Further demand pressure is created by the recent expansion of data centres, with a hyperscale data centre requiring far more transformers. Often data centres will pay a premium to secure access, exacerbating the supply availability issues for renewable generation and grid expansion.

Expanding the grid will mean strategic investments in renewable generation that uses Canadian supply chains. Hydro, geothermal, and nuclear can all utilize Canadian manufacturing and expertise while creating the energy abundance we need to lead in a new world energy system.[25] The supply chain for the new Ontario SMR plant is 80% Canadian, representing a significant local economic impact. Hydro is already a Québecois speciality. Geothermal offers the particularly tantalizing possibility of creating cheap baseload power that can be deployed easily in both population dense and remote areas.[26] The supply chain for geothermal projects could effectively deploy assets from Canada's oil and gas supply chain, generating significant local benefits as well. As such, geothermal presents a key opportunity for Canadian clean energy industrial strategy. There is also a nuclear and geothermal export play: the expertise we build in deployment can form the basis of international engineering and project development services.

Grid expansion can also mean strategic investments in upstream critical minerals and advanced materials. One supply-side bottleneck is a North American shortage of amorphous steel, which is a key input required to make next-generation transformers that operate at a high efficiency level. Amorphous steel, like other less efficient electrical grade steel, is in chronic shortage, with North America reliant on Russian, Chinese, and Japanese producers.[27] An opportunity exists to address this bottleneck through an integrated 'invest upstream' approach to industrial strategy for the steel and electricity sectors.

The government has also expressed support for conventional energy, especially liquified natural gas (LNG) and the oil sands Pathways Alliance's carbon, capture, utilization, and storage project. These opportunities could produce short-term economic gains, but they present two longer-term risks. The first is that LNG exports could raise domestic gas prices, as they did in Australia.[28] The second is that these investments will flow into weakening markets as renewables spread rapidly throughout the very emerging market and developing economies that were supposed to drive increased LNG demand through mid-century.[29]

1.1.5 Building the Defence Industrial Base

The government of Canada has recently announced a commitment to spend 5% of GDP on defence. While the headline numbers are eye-watering—$150 billion annually—defence spending can further economic sovereignty, trade diversification and international partnerships. The new 5% NATO commitment is split into 3.5% for core defence spending and 1.5% for civilian infrastructure and the defence industrial base. There is considerable scope in both pots to invest in Canada under the committed funds.

Defence-related critical mineral mining and processing can lessen strategic reliance on other countries while providing industrial benefits to non-military sectors as well. While American experts have emphasized the strategic value for US defence interests of Canadian partnership on critical minerals,[23] Canada can also strengthen ties with trusted allies in Europe and other like-minded nations. Canada has reserves of minerals whose supply chain remains dangerously concentrated in adversarial jurisdictions, particularly China. For instance, China dominates global production and refining of **rare earth elements**—such as neodymium and dysprosium—used in magnets for precision-guided missiles and fighter jets; **graphite**, critical for lithium-ion batteries and stealth systems; **antimony**, used in flame retardants; and **gallium**, used for radar and defence electronics.[30] In each case, China controls between 70% to over 90% of the global supply chain, including downstream processing.[31] By investing in refining and advanced manufacturing infrastructure, Canada can unlock more economic value from its own geological wealth and position itself as a secure, ethical supplier of processed materials for NATO partners.

Defence and security spending can also further the goal of expanding power generation, transmission and smart grid/cybersecurity technology. Canada could follow the example of the US, where policymakers have long considered grid expansion as a security issue. Former Chair of the US House Armed Services Committee Adam Smith summarized the security imperative of grid expansion as follows: "In terms of geopolitical issues and cybersecurity issues, the more resilient our electrical system is the less vulnerable we are to world events. In the Department of Defense (DOD), we are making sure that every place in the system has a micro-grid so it can self-generate electricity if the larger grid goes down."[21] Similarly, the US National Defense Strategy emphasizes "deterrence by resilience" to protect critical infrastructure from foreign attacks by strengthening systems so that they are less attractive targets.[22]

Canada has a strategic opportunity to pivot segments of its automotive manufacturing sector toward defence vehicle production to mitigate some of the economic impact of American tariffs on Canadian-made civilian vehicles. Canadian autoworkers have expertise in complex vehicle assembly that is well-suited to production of light armoured vehicles, tactical transport, and hybrid-electric military vehicles. Companies like General Dynamics Land Systems-Canada in London, Ontario have a long history of exporting light armored vehicles to allied nations. Minister of Innovation, Science and Industry Canada, Mélanie Joly recently emphasized that Canada's auto-making sector can play a key role in the federal government's plan to bolster the country's defence.[32] This would strengthen economic sovereignty and defence industrial capacity while also deepening integration with procurement programs of NATO allies as they increase defence spending.

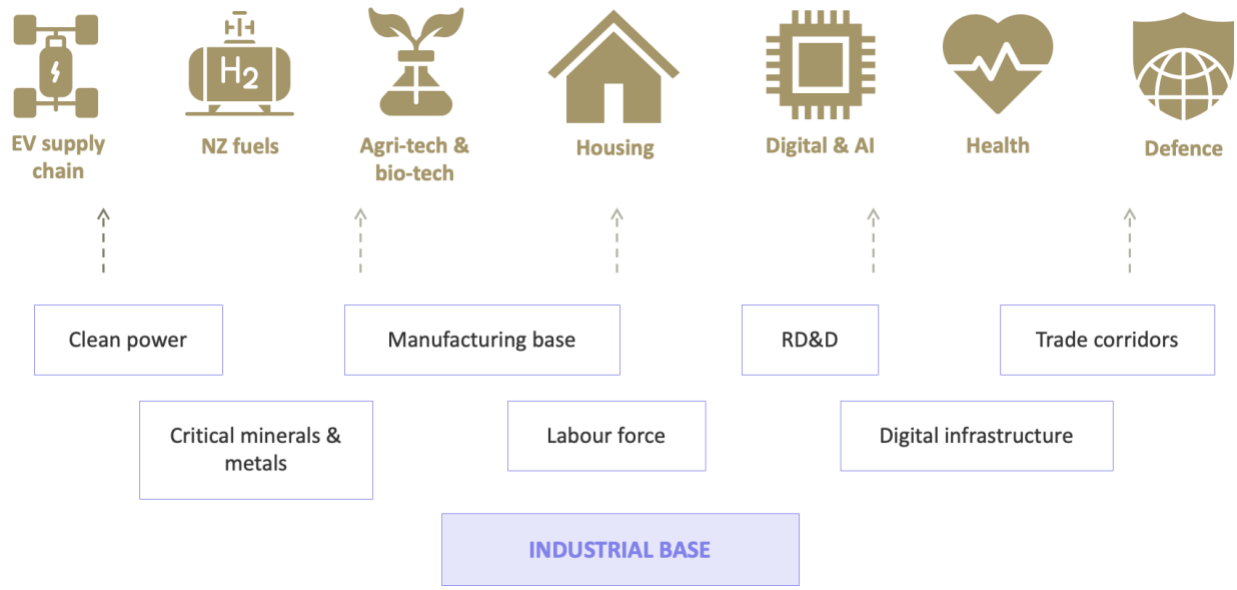
In addition, Canada can create sovereign capability through dual use infrastructure. A political consensus is forming around the notion that developing trade infrastructure and security infrastructure often go hand-

in-hand. Former Conservative Party Leader Erin O'Toole has emphasized the need to build sovereign capabilities in the Arctic[33], as has Prime Minister Carney.[34] For example, ports are essential for getting critical minerals to market; however, without a modern icebreaking fleet, the construction window for building northern ports is too short (4-5 months) to get them online quickly. This case highlights the system level considerations that come to the fore once security and industrial strategies are considered together: ice breakers enable ports, which in turn enable critical minerals.

1.1.6 Cross-cutting Opportunity: Invest Upstream

These five opportunities are not the only places where Canada can compete globally. Nor are they the only areas the Carney government campaigned on. The Carney campaign also made the case for investments in AI and carbon, capture, utilization and storage. Canada has real strengths in medical products and technologies, which comprise 9% of global trade. Canada has a range of opportunities in growing global markets.

Figure 1. Building Canada's Industrial Base



A key lesson from the recent literature on industrial strategy is that effective policy targets investment in upstream inputs that increase the quality and reduce the costs of inputs for the rest of the economy. From this vantage point, clean power, critical minerals, efficient infrastructure, and manufacturing capabilities are all broad-based functions that support a wide range of downstream sectors. A skilled labour force capable of operating modern assembly lines, and research and development plus demonstration (R&D&D) capacity that combines financial resources with institutional knowledge for effective technology scaling are also critical. A crucial question is whether Canadian post-secondary institutions are graduating enough students with the skills needed to plan, develop, and deploy technology, systems, and processes in new supply and value chains, along with the right investment, policy, and regulatory frameworks, to realize

Canada's full potential. While sector-by-sector planning efforts have been supported, the new global trade and competitiveness paradigm driven by the United States may render past skills planning efforts obsolete.

Artificial intelligence and quantum computing are both downstream growth opportunities in their own right, but they are also a key piece of the digital infrastructure that can help unlock clean growth opportunities discussed elsewhere in this paper. AI has the potential to boost efficiencies in architectural design for prefabricated and modular buildings as well as the manufacturing of mass timber building materials. Similarly, AI and quantum computing can be applied to the critical mineral processing and battery manufacturing value chain, as demonstrated by Toronto-based quantum computing company Xanadu's partnership with University of Toronto and the National Research Council to develop novel battery chemistries.[35] Finally, expanding the electricity grid can be bolstered by the application of AI to smart grid technologies for monitoring and efficiency gains.

Canada's industrial strategy must be grounded in this fundamental reality: the government's current sectoral priorities all depend on an underlying set of foundational capabilities. Investments in this upstream industrial base will determine whether downstream industries succeed or fail.

Korea's experience following the Nixon shock provides compelling historical precedent. In 1971, President Nixon unilaterally ended the US dollar's convertibility to gold and imposed tariffs without consulting allies, signaling to countries like South Korea that American economic and security commitment could shift abruptly. Faced with potential abandonment by their security guarantor, Korea made strategic investments in heavy manufacturing, chemicals, machinery, and minerals processing. Today, these are precisely the companies that Canada and its allies are incentivizing to establish operations globally. Korea's strategic response to geopolitical pressure created the industrial champions that now define their economic success.

While upstream investments should be comprehensive and foundational, downstream targeting must be disciplined by clear outcome measures. Every targeted support should demonstrate measurable contributions to productivity increases, innovation advancement, scaling of homegrown firms, and value-addition within Canada. These meso-level goals – operating between broad macroeconomic policy and individual firm intervention – provide the disciplinary mechanisms that prevent industrial policy from becoming unfocused spending.

The strategic development of Canada's upstream industrial base, combined with disciplined downstream targeting, creates a coherent industrial strategy that leverages Canada's unique advantages while building the foundational capabilities that all successful industries require. This approach transforms Canada from a resource exporter into an integrated industrial economy capable of competing globally across complete value chains.

2. Conditions for Success

Many things must come together if Canada is to capitalize on opportunities such as those discussed above. The most important thing to catalyse this process is government deployment of an industrial strategy which articulates a strategic vision, establishes priorities, and focuses resources in specific areas to secure well defined objectives.

What this entails will be examined in the next four sections of this white paper. First, what do we mean by industrial strategy and what are the conditions for its successful deployment? Second, how can we select projects that are most likely to contribute to advancing the overall goal of revitalizing the economy? Third, how can we secure the practical build out of these projects on the ground? And fourth, what would industrial strategy look like in the four technology/sector opportunities identified in the previous part of this report?

2.1 Doing industrial strategy

Industrial strategy is a deliberate effort by government to orient the development of the national economy. Typically, it focuses on areas deemed essential for a country's long-term prosperity and security. Although, the term itself has sometimes been shunned because of misplaced assumptions that 'markets always know best,' or that industrial strategy implies protectionism. Governments have always made efforts to shape the path of economic development. Some of most successful modern economies such as South Korea, Taiwan and China have pursed comprehensive plans to develop national industrial capacity. And while the United States is often considered the poster child for a market-friendly policy environment, the federal government has consistently deployed policy levers to ensure US leadership in key technological areas, particularly related to energy, IT and national defence.

Industrial strategy is **typically technology and/or sector-focused**: prioritizing the development and deployment of advanced technologies in strategically significant sectors. Technology is the most dynamic factor influencing production today. Technological advances promote efficiency and productivity, provide cheaper and higher quality products and satisfy demand for new services. This boosts competitiveness, productivity, economic growth, and enhanced citizen welfare. Moreover, technological change is integral to the transition away from fossil fuel dependence as witnessed by the increasing capability and falling costs of renewable power, electric vehicles and batteries.

International experience, as well as successful examples here in Canada (oil sands, the development of Canola oil, or the satellite industry), suggest there are three critical conditions for successful industrial strategy:

- A clear articulation of goals, priorities and targets as well as a sustained commitment to their realization.
- Close working partnerships between government, industry and societal actors to coordinate action
- A mix of policy measures adapted to the needs of each technology/sector, that can evolve over time as requirements of industrial expansion mature.

Let us look at each of these in turn.

2.1.1 Goals, priorities, targets and sustained commitment

Successful industrial strategy requires a clear articulation of **high-level goals** which the programs are intended to serve. These will be linked to the country's level of economic development, geopolitical situation, existing economic strengths and weaknesses, and trade opportunities. In Canada today the Trump tariff and security shock, weak productivity and innovation performance, and prospects of a decarbonizing world provide the context for formulating high level goals related to economic sovereignty, trade diversification and international partnerships. These relate to additional goals of raising productivity, increasing innovation, retaining start-ups, creating jobs, securing regional economic development, and so on.

Today there is relatively robust agreement among Canada's political and business leaders about such higher-level goals, and the new Carney government has placed many of them at the centre of its efforts.

Yet establishing clear **sector and technical priorities** (which should follow logically from the definition of higher-level goals) has often been a challenge for Canadian governments. Typically, the federal government ends up giving a smidgeon of support to every technological play and spreads investment dollars across every region. But a middle level power like Canada with a relatively small population and limited fiscal resources must decide where to focus its attention.

Sometimes the failure to make choices is justified on the grounds that governments cannot (or should not) 'pick winners.' Of course, no one wants the government to allocate contracts to ministers' friends and family! But we do need to be able to prioritize technologies, industries and sectors for large scale public investment and support. Had governments not done so in the past we would today have no oil sands in Alberta, nuclear industry in Ontario, or aerospace in Quebec.

However, as we noted above, the Carney government has listed a number of sector/technology priorities including a made-in-Canada auto sector, an industrial strategy for housing, clean power and interprovincial transmission, investment in critical minerals, and bolstering defence companies while leveraging Canadian technology and materials. This is an excellent short-list of priorities.

The challenge will be to maintain these priorities in the face of multiple electoral commitments, pressure from special interests, input from a federal bureaucracy who can do as much to frustrate a government

agenda as to enable it, as well as the continuing flow of events that can so easily blow governments off course.

Determining priorities does not stop at the technology/sector level. Developing strategy requires deciding where in a supply chain attention should be focused and identifying the obstacles that are holding back development. It involves answering questions about where Canada has a potential comparative advantage, at which stages in the supply chain most value is added, and which forward and backward linkages can build a resilient industry. Developing such deep sector-understanding is not a trivial task. It requires government to have substantial independent analytical capacities and to collaborate closely with those outside government with relevant technical and economic expertise. We will return later in this paper to consider how this is best accomplished.

Another feature of effective industrial strategy is the formulation of **explicit targets** for technology/sector growth. Targets focus the attention of government and industry partners. They allow producers and consumers to anticipate the scale of change, reduce the perception of risk, provide a benchmark against which progress can be evaluated, and provide a basis for mid-course corrections. Depending on the context, targets can be formulated in terms of market share to be captured, production or export volumes to be secured, or other metrics. The co-development of these targets by policy makers and industry players is critical.

Finally, experience shows that **sustained intervention for a decade or more** is typically required for successful industrial strategy outcomes. This is another area where Canada often comes up short. Programs are scrapped and priorities shift when a new government takes power; over time officials in charge of initiatives move on to other files and knowledge is lost; and resources are siphoned away to other projects. Often there is a misperception that once initial R&D challenges have been resolved and a demonstration secured, the market should be able to handle it from there. In fact, Canada has lost countless opportunities by failing to follow through on publicly financed R&D. For example, government labs played a critical role in developing residential heat exchangers but pulled support just when the technology was nearing commercialization. The market for millions of these appliances was captured by other countries. This risk is one of the reasons that industrial strategy governance, and mechanisms to ensure the durability of viable public-private partnerships, are so important.

2.1.2 Effective partnerships to ensure coordination

Successful industrial strategy requires close working relationships between government, industry and societal partners to coordinate action. Each party holds some of the knowledge and resources required to establish priorities, identify obstacles, agree targets and sustain the effort over time. By continuously interacting, integrating initiatives, assessing progress and revising interventions as necessary, the collective result can be much greater than the individual inputs.

Although classic writing on industrial strategy focuses on the state/industry nexus, in a Canadian context the community dimension is also important. This reflects the significance of Indigenous rights holders (who have title or claims over large areas that could be implicated in resource or energy plays), the imperative of reconciliation, and of incorporating Indigenous partnerships and equity in Canada's economic regeneration.

More generally, community involvement is important for public buy-in related to facility siting, construction of transportation corridors, and so on. We discuss these governance and participation related issues in more detail in the Part 3 of this white paper, 'Reimagining roles and responsibilities'.

2.1.3 Expanding the menu of policy instruments

Effective industrial strategy requires integration of an array of policy instruments to nurture emerging technologies and encourage development in priority areas. While industrial strategy is sometimes mistakenly reduced to government disbursement of cash and tax incentives, at its core it involves **conscious coordination** among multiple partners and specific interventions to address obstacles and accelerate scale-up.

Canadian governments have often fallen into the trap of thinking they can simply set broad, framework-level policies, such as investment tax credits or support for university-based research, and then the private sector will do the rest. The problem with sector or technology neutral, passive instruments like tax credits is that they leave the initiative largely in the hands of private firms. These firms may not see an immediate benefit from investing in a specific technology or project which might nevertheless be of critical importance to the industrial ecosystem and domestic supply chains.

Interviews with Canadian scale-up entrepreneurs lament Canada's reactive, non-strategic reliance on supply-side grants to firms and the lack of demand-side policy tools that can catalyse market demand for innovative products.[36] Such demand-side policy instruments include public procurement by all levels of government, standards, regulations, export support, and protection of Canadian-generated intellectual property. Entrepreneurs emphasize that a dollar of revenue is worth far more than a dollar of grant or tax incentive in terms of attracting further investment and future customers.

Industrial strategy scholars and industry groups have also criticized Canada's underutilization of demand-side policy instruments. For example, Canada does a poor job deploying procurement and infrastructure spending as demand-side tools in its innovation/industrial strategy. Supply-side supports such as R&D tax credits must be augmented with demand-side measures, such as first-of-a-kind (FOAK) demonstration financing, procurement, and regulations. These generate market pull to help technologies reach scale. The result of this demand-side neglect is that start-ups are often forced to conduct early demonstrations outside Canada and ultimately to relocate or seek acquisition by foreign firms, pursuing the scale-up phase of their growth abroad (for example, Carbon Engineering, and Hydrogenics). See Box 1 for additional examples.

Box 1. Losing winners: The case of battery innovation

Canada's supply-side policy mix facilitates the 'invented here, scaled elsewhere' problem

China used municipal bus procurement in the 2010s to provide steady revenue to Chinese battery firms as they scaled Canadian-invented lithium-iron-phosphate (LFP) battery technology. LFP had low conductivity until a Quebec-based consortium of the Université de Montréal and Hydro-Québec invented coating technology in the 2000s.

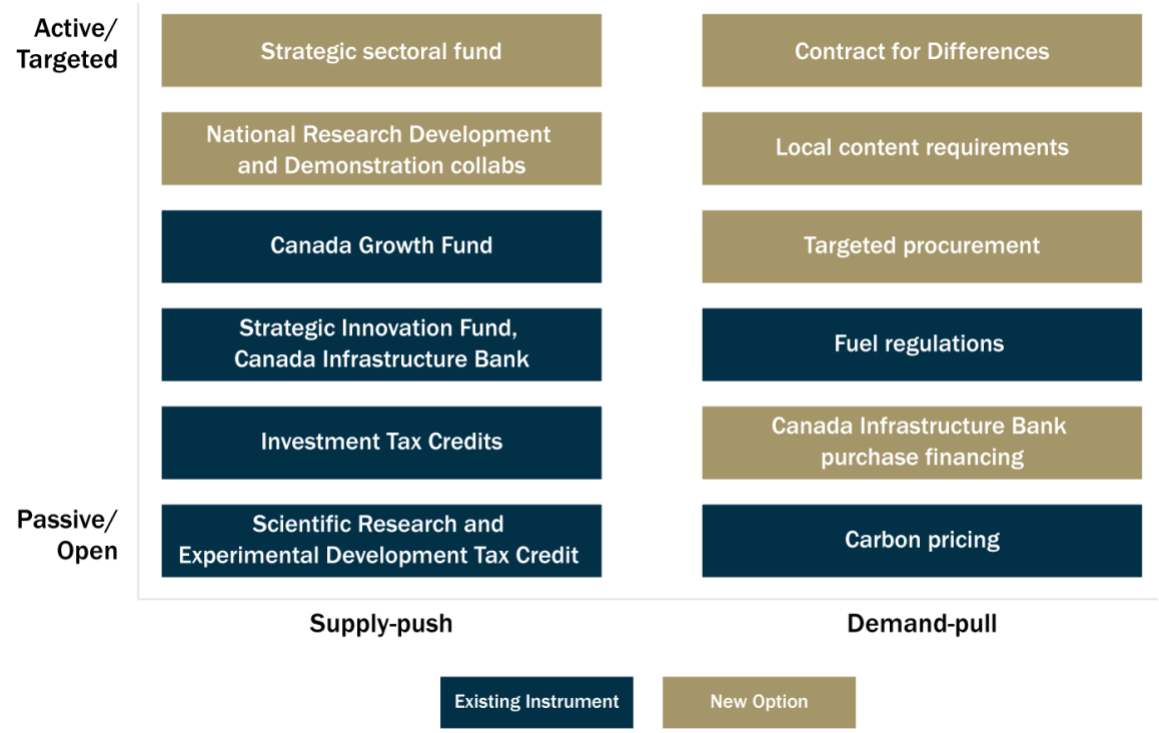
In the absence of a broader Canadian battery industrial strategy, the consortium allowed its patent to be used in China *without licensing fees* so long as the batteries were not sold outside of China.[37] Chinese industrial strategy (particularly procurement) scaled LFP at CATL and BYD, which are now the world's largest battery producers.[7] For example, BYD "rose up by keeping a close relationship with the southern city of Shenzhen and making it the first city in the world to completely electrify its public bus fleet."[38] Similarly, a 2018 interview with CATL CTO Bob Gaylen noted that an estimated half of CATL sales on a pack basis were to Chinese bus makers and that in 2016, "CATL delivered more battery packs to one customer, Zhengzhou Yutong Bus, than Tesla had used in all of its cars since the U.S. EV maker's inception."[39] The Québec-based consortium's patent expired in 2022, enabling Chinese firms to export the technology globally.

Norway's forward-thinking approach of linking electric ferry procurement with supply-side innovation[40] lured Canadian marine battery pioneer Corvus to expand there. Formed in British Columbia in 2009, Corvus leveraged public R&D support to become a global leader in electric and hybrid boats. In 2015 it supplied the battery system for the world's first all-electric ferry, Ampere, in Norway. Also in 2015, Corvus opened a Norway branch, "as that is where the main customers are".[41] In 2019, the company moved its corporate office to Bergen, Norway from Vancouver, Canada. While the company has maintained and expanded its Vancouver branch, corporate leadership is Norway-based, and the firm has opened numerous production and sales offices there.

So, Canada needs to broaden its strategic toolkit to include major demand-side levers. Key examples include policy mechanisms that can reduce geopolitically-induced price uncertainty that holds back mining and processing development (such as refined "Contracts for Difference"(CfDs)). Another critical instrument is bulk purchases to advance prefabricated and modular housing solutions. There is also defence procurement, which can be linked to domestic supply chains in multiple sectors (auto manufacturing, IT, steel, critical minerals) to build the domestic industrial base. Both supply and demand side interventions need to be coordinated across departments (and levels of government) to address key barriers to technology deployment and scale-up.

Figure 1 illustrates some of the ways existing federal policies could be complemented with additional supply-push and demand-pull policies to enhance technology and sector specific economic efforts.

Figure 1: Existing and potential instruments for Canadian industrial policy



2.1.4 Industrial strategy in four opportunity areas

This section lays out the supply-side and demand-side elements of industrial strategy needed to unlock four sector opportunity areas described earlier in this paper: mass timber, critical minerals, electricity, and electric buses. Some of these recommendations draw from existing Transition Accelerator roadmaps co-designed with industry actors in mass timber and critical minerals/batteries. These policy actions are not an exhaustive list. Ascertaining a more detailed understanding of the policy gaps is only possible through focused, ongoing state-industry dialogue preferably via independent intermediaries (as outlined in Part 3 of this paper).

1. Mass timber industrial strategy:
Address the housing crisis by scaling up Canadian mass timber building materials in modular, prefabricated housing

While Canada has strong wood resources and innovative producers of mass timber, European firms are still ahead in their ability to harness economies of scale to maintain cost competitiveness in certain mass

timber building components.[42] What is needed is a dedicated industrial strategy utilizing a whole-of-government policy mix (supply-side and demand-side instruments) to achieve industrial strategy goals.

The Carney government is taking this approach, most notably through Build Canada Homes. The May 2025 Mandate Letter to Cabinet highlighted the priority of "Making housing more affordable by unleashing the power of public-private cooperation, *catalysing a modern housing industry*, and creating new careers in the skilled trades" (emphasis added).[43]

Build Canada Homes will simultaneously stimulate supply and demand by: **1)** "providing $25 billion in financing to innovative prefabricated home builders in Canada, including those using Canadian technologies and resources like mass timber and softwood lumber," and **2)** promising that "BCH will also issue bulk orders of units from manufacturers to create sustained demand."[44] Campaign announcements signal that this approach will deploy multiple demand-side policy instruments (procurement and indirect incentives) to build more housing in a manner that also helps Canadian suppliers of mass timber, prefabricated, and modular building materials become leading global suppliers.

Additional demand-side policies have been identified by industry in the *Mass Timber Roadmap*.[45] These include embodied carbon regulations and building code changes (ratcheted up over time), an embodied carbon subsidy through the Canada Infrastructure Bank, calculated per m2, modelled on the Bank's retrofit program, and a 'wood first' procurement requirement to use mass timber in public-sector buildings. Finally, the document called for additional supply-side supports, such as a production or investment tax credit for low carbon intensity building materials. By aligning the policy mix, the roadmap aims to increase mass timber market value to $1.2 billion by 2030 and double that to $2.4 billion by 2035, with Canada's mass timber sector serving 25% of world mass timber market.

2. Critical minerals industrial strategy:
Process critical minerals for value-added export and domestic use

A Canadian target was set in partnership with the Battery Metals Association of Canada, Energy Futures Lab, and Accelerate in *A Roadmap for Canada's Battery Value Chain*: produce 1,300,000 electric vehicles in Canada by 2030 as well as the raw materials, processed metals, and batteries for 100 GWh of battery capacity. This would replicate Canada's current 10% share of North American automotive manufacturing.

Supply-side policy opportunities include de-risking critical mineral mines by expanding funding and eligibility for the Critical Minerals Infrastructure Fund, flow-through shares, export financing through Export Development Canada (EDC), and investment tax credits. However, support for mining alone will not secure the value-added processing Canada needs to bolster its economic sovereignty. A policy opportunity exists for government finance to catalyse the formation of **common user consortiums** for critical mineral processing plants in hubs, where many firms can share the cost and access. This will tilt the economics away from the current situation where it is in each firm's interest to export raw, unprocessed minerals abroad rather than adding value at home.

The most significant demand-side policy gap is the need for governments to intervene to achieve price certainty in critical minerals (such as rare earths) where price volatility is strategically manipulated by China. The Transition Accelerator's *Getting Prices Right* policy brief lays out various options for achieving price

stability, including price floors, Contracts for Difference, and stockpiling initiatives.[46] Other demand-side policies include streamlining regulatory processes for new battery technologies, developing new standards for next-generation battery materials, and embedding them in global standards through international partnerships (such as battery passports).

3. Electricity industrial strategy: Expand the electricity grid while maximizing Canadian content

Canada needs an industrial strategy that includes supply-side supports to help expand Canadian production of transformers to take advantage of rising global demand. This means attracting investment from foreign firms as well as financing the expansion of Canadian producers. Unfortunately, the Government of Canada's Investment Tax Credit for Clean Technology does not apply to the production of transformers and switchgear. This must change, as this equipment is an essential input to enable the transition to a low-carbon economy.

Part of the supply-side bottleneck is exacerbated by a demand-side problem: the need to do custom runs to meet different specifications for different buyers domestically. Every province has different efficiency regulations, which impact the size of transformers, the number of poles required, and other system-level impacts. Additionally, every utility layers on their own unique additional specifications to the orders. Harmonizing Canadian standards for transformers would help maximize the scale efficiencies achievable by Canadian producers. Electro Federation Canada is leading efforts to harmonize standards.[47]

4. Electric vehicles industrial strategy: Transit expansion to scale Canadian electric bus producers

Canada's automotive sector faces dual pressures from Trump's tariff threats and the global transition to electric vehicles. The strategic opportunity is to develop a competitive advantage in the battery supply chain, which will enable Canada to better transform its legacy automotive manufacturing while boosting the electric bus companies where we have established momentum. This "Batteries on Wheels" approach recognizes that building domestic battery manufacturing capability is the key to automotive transformation across all vehicle segments. With domestic battery production capability established, Canada's automotive sector can electrify using Canadian-made batteries, reducing dependence on foreign supply chains while creating integrated value chains from critical minerals through to finished vehicles.

However, to achieve this, Canada will need to rethink the demand-side tools in its EV strategy. Until recently, several demand-side instruments were in place: the Zero Emission Vehicle (ZEV) sales targets, a $5,000 consumer subsidy through the iZEV program, the iMHZEV program to support commercial purchases of medium and heavy-duty vehicles. However, none of these programs were effectively calibrated as demand-side tools to generate meaningful industrial policy effects in support of Canadian production and supply chains. Moreover, the consumer subsidy program expired in January 2025, leaving the ZEV mandate as the primary policy to drive EV adoption.[48] However, the credit program underlying the ZEV mandate requires significant modification to effectively support domestic industrial capacity. Right now, the compliance credit system benefits all-electric producers, such as Tesla, rather than incentivize made-in-Canada vehicles and supply chains.

Canada has existing momentum in the electric bus segment that can anchor a broader battery strategy. There have also been innovative deployments of demand-side tools that benefit Canadian bus producers. As a result, Canada is on track to meet its goal of 5,000 Zero Emission Buses by 2026, potentially reaching 7,000 ZEBs by the end of that year.[18] This goal could be increased as part of a comprehensive strategy to develop strategic advantage in battery manufacturing. Electric buses create large-scale, predictable demand that creates the market conditions needed to justify domestic battery production. This mirrors China's successful approach in the 2010s, when companies like BYD used municipal bus procurement to scale Canadian-invented lithium-iron-phosphate battery technology before expanding to dominate global EV markets.

Canada has world-leading electric bus firms like New Flyer (North America's largest supplier of electric and hydrogen buses, with 2024 revenues of US $3.1 billion and 35-40% of manufacturing sales from zero-emission buses) and Nova Bus. Building domestic battery manufacturing capability strengthens these existing companies while creating the foundation for broader automotive transformation.

On the demand-side, public finance has successfully catalysed market demand for Canadian producers of electric transit buses. Canada Infrastructure Bank's (CIB) Zero-Emission Buses Initiative supports municipal procurement of electric buses by offering concessional financing to cities for fleet electrification.[49] Its financing closes the capital expenditure gap with diesel buses and offers favorable repayment terms geared to the accrual of operational savings due to lower fuel and maintenance costs over the life of the vehicle. In essence, the CIB acts as a market maker, linking industrial strategy with infrastructure deployment and turning public purchasing power into a growth engine for Canadian clean technology firms.

The Canadian Urban Transit Research and Innovation Consortium (CUTRIC) leveraged its independence as an intermediary to align North American charging standards for electric buses with Canadian suppliers' technology (see Part 3 of this paper for elaboration). Despite this early demand-side success, another demand-side issue - lack of coordination in municipal procurement – is risking Canada's lead in this global growth industry. Electric transit buses are facing a supply side bottleneck, not a lack of demand. An order backlog is a great problem to have. But delays in delivery – exacerbated by customized municipal requirements- are threatening to divert municipal demand back to diesel.

This coordination failure represents an industrial strategy opportunity. On the supply-side, policymakers could divert some of the public funds from the cancelled and delayed battery plants and passenger vehicle assembly to immediately scale up production at Nova Bus (Quebec) and New Flyer (Winnipeg). This would build on existing supply-side public investments in leading manufacturers, such as New Flyer's $80 million expansion of its Winnipeg facility to build four to six buses a week in Canada by the time it is fully complete in 2027. This expansion received a $15-million federal loan through Prairies Economic Development Canada in October 2024, along with a $10-million provincial capital contribution and a $13.4 million interest waiver on an existing $50-million provincial loan.[42]

As a demand-side policy, further standardization across municipalities for procurement specifications could streamline production and help Canadian bus makers achieve globally competitive economies of scale.[41] Bridge financing or procurement rule changes could ensure companies don't have to wait until delivery for revenue, as this procurement model does not reflect the up to four times longer production time for electric

versus diesel buses. Additionally, convening municipal buyers and transit unions to harmonize standards for municipal bus procurement could help avoid production delays for custom runs.

All this does not exhaust the potential sectors/technologies where Canada could be competitive, or the areas where creative industrial strategy can advance prosperity. Rather they are critical examples of what an ambitious industrial strategy with a well-balanced and coordinated policy mix could achieve.

2.2 Projects

2.2.1 A project prioritization framework

Even when the broad lines of a technology/sector strategy have been established, there will always be more potential **projects** than can be developed at any given point in time. Private sector proponents and local political leaders will understandably advocate for their own projects. How can governments determine which specific projects are most likely to advance the broad strategic goals of economic renewal?

A new framework developed by the Transition Accelerator and the MacDonald-Laurier Institute outlines five factors that can help governments prioritize the projects that are most likely to contribute to sustainable industries and a competitive economy. An essential feature of the framework is that it does not view projects in isolation but rather as elements that contribute to broader goals. Priority projects should be designed to help scale Canadian firms into leading suppliers of strategic technologies that add value to our natural resources. They should create demand-pull for products from Canadian suppliers in areas where we have, or could build, competitive innovation capabilities.

This framework focuses on the extent to which a proposed project can:

1) Contribute to achieving a target of national significance
2) Catalyse the development of a key supply chain or innovation ecosystem
3) Achieve competitiveness with global peers
4) Foster regional economic transformation and spatially collocated innovation clusters
5) Ensure public funds are well-spent and additive.[50]

The first step is to determine whether a proposed project aligns with overall priorities, with the technologies and sectors critical to Canada's long-term prosperity, and with technology and sector-specific targets and roadmaps. Too often project selection is driven by short-term considerations. For example, with respect to climate mitigation, resources have mainly been allocated to attain short-term emissions reductions rather than to projects that can build high-opportunity net-zero technologies, where smart investments today can secure long-term economic benefits and high-paying jobs.

Second, big projects should be assessed for their potential to help scale innovative firms in strategic supply chains. We should not just be concerned with jobs and spillovers during construction, or the direct economic benefit once the project is operational. Rather, we should also pay attention to whether the project *helps transform markets and add value to our resources*. Often this will mean supporting projects further

upstream - like critical minerals mining and processing - rather than the current emphasis on final assembly (battery factories). Failure to pay attention to this criterion could mean that we build clean energy and infrastructure projects, lower CO2 emissions and create short-term jobs, and yet still not end up with globally competitive firms in the supply chains associated with these projects. The industrial strategy goal of fostering technological sovereignty would not be furthered. For example, the projects could largely involve deploying foreign technology, with minimal upstream linkages with Canadian suppliers, and minimal downstream linkages with domestic value-added manufacturing.

Third, we need to make sure that our investments are in areas where opportunities are real, and that we are not wasting money on industries where Canada cannot compete in the long term. Crucially, Canada must focus on areas where we have a competitive advantage. As a mid-sized economy, we can't afford to invest in everything. But we are resource-rich, with a wealth of critical minerals, clean power potential, and advanced manufacturing capabilities. These are where we should be concentrating our efforts, building on our strengths to carve out a leadership role in the global economy.

Fourth, Canada's investments should prioritize projects that contribute to *regional economic transformation*. Supporting cohorts of related firms in a specific area can help multiply the impact of an investment many times over. International experience confirms the importance of regionally focused industrial clusters (consider Silicon Valley!). Clustering clean energy assets—such as hydrogen production or advanced manufacturing—into regional hubs can foster technological innovation, boost efficiency, and create networks of expertise that will pay dividends for years to come.

Finally, ensuring fiscal responsibility through rigorous project assessment is key. While third-party validation plays an important role, it is vital that *government develops its own tools and capacity for assessing project economics and technological promise*. Where appropriate, market-based solutions and regulatory changes can be more effective and cost-efficient than direct financial support. By taking a disciplined approach to public spending, we can ensure that taxpayer dollars are used efficiently and deliver maximum returns.

2.2.2 Executing critical projects

Successfully realizing big projects is essential if Canada is to remain competitive in the global race for clean energy and economic growth.

Moving from concept through planning and permitting to construction requires the timely performance of multiple tasks. Here we briefly consider five critical dimensions to building out major projects: project review, finance, human capital, power, and Indigenous partnerships.

1. Project Review

Projects like transmission lines, clean energy generation, and housing are critical, but their progress is often delayed by Canada's fragmented, multi-layered project review system. The current system, encompassing environmental assessments and permitting, often duplicates efforts, creating unpredictability and inefficiency. Major infrastructure projects typically undergo a provincial process and often a separate federal assessment through the Impact Assessment Act (IAA). While intended to rigorously safeguard environmental and social outcomes, this complexity frequently results in drawn-out, unpredictable

processes. A streamlined, predictable system is a strategic advantage in attracting investment and scaling clean technologies.

Canada can make significant gains in review efficiency simply by better using the tools at its disposal. The federal Impact Assessment Act (IAA) provides under-used mechanisms for coordination, like substitution or delegation to provincial bodies recognized as having an equivalent system in place. Existing agreements in places like British Columbia show promise and should be expanded nationally to minimize duplication and delay.

The federal approval of the Haisla First Nation's $3 billion Cedar LNG project occurred one day after the B.C. government's approval of the project in March 2023.[51] This speed resulted from using a substitution process, in which the B.C. Environmental Assessment Office was the lead government agency conducting an environmental review. Cases of cooperative approaches like this have enormous potential.

However, we can't rely on better coordination alone. Efficiency starts with focus, and that means designating some projects for accelerated approval. Recent momentum includes legislation that designates certain projects as being of 'national interest'. It specifies such projects should: strengthen Canada's autonomy, resilience, and security; offer undeniable benefits to Canada and support economic growth; have a high likelihood of successful execution; be a high priority for Indigenous leaders; and have clean growth potential.[52]

To solidify this shift, Canada could adopt a framework like the UK's National Policy Statement (NPS), which defines nationally significant infrastructure and outlines streamlined assessment procedures.[53] A Canadian equivalent could take the form of a Strategic Assessment on Clean Growth Infrastructure under the IAA.[54] Strategic assessments help decision-makers assess the impacts of multiple projects at once.[55] This would enable early engagement with Indigenous communities, evaluate cumulative impacts, and embed long-term planning into project assessments.

Leveraging existing legal mechanisms to reduce duplication, such as the substitution tools under the IAA, and setting clear, deliberate priorities for clean growth projects are two critical approaches to deliver timely, trusted, and efficient project reviews.

The need for responsible, expedited approvals is well known, and significant improvement efforts from multiple jurisdictions are advancing quickly with some important progress (such as federal Bill C-5, Government of British Columbia Bills C-14 and C-15).

2. Finance

Mobilizing $500 billion in public and private capital is essential for Canada to build a competitive clean technology economy.[56] Public finance plays a dual role. Supply-side tools like grants, loans, and guarantees help firms grow and avoid foreign takeovers. Demand-side tools like purchase incentives create markets for domestic cleantech products.[57]

Currently, Canada offers robust R&D support but struggles to fund first-of-a-kind (FOAK) demonstration projects. Venture capital pressures often lead to premature exits and foreign acquisition.[58] To fix this,

Canada must activate domestic pools of patient capital. The U.S. demonstrates what's possible: agencies like the Department of Energy's Loan Programs Office and Hydrogen Hubs program have deployed tens of billions in FOAK financing, helping firms like Tesla scale.[59] Canadian pension funds are hopefully poised to play a greater role in providing patient capital because of changes removing limits to the funds' ownership of a Canadian company.[60]

Newly established entities like the Canada Growth Fund (CGF) also have potential to help fill the FOAK gap. Non-dilutive financing options—such as low-interest loans and loan guarantees through the Canada Growth Fund—can reduce capital costs and keep ownership of clean tech innovations within the country. Introduced in Budget 2022 [61] and created in December 2022 via CDEV, the $15-billion Canada Growth Fund was given the broad mandate of making investments that catalyse substantial private sector investment in Canadian businesses and projects to help transform and grow Canada's economy at speed and scale to net zero. In 2023, the Canada Growth Fund engaged the services and expertise of the Public Sector Pension Investment Board in the implementation of its mandate.[62] The Fund's arms-length position enables it to be more flexible and experimental than traditional line departments with regard to its project selection and the financial tools at its disposal (such as equity investments, loans, guarantees, Contracts for Difference, etc.).

Example of Canada Growth Fund catalysing the Scaling up of Canadian Cleantech Firms

The Canada Growth Fund invested $100m via convertible notes in Vancouver-based carbon removal company Svante.[63] Svante is a leader in second generation solid sorbent-based carbon capture and removal filters that can capture 95 per cent of CO2 emissions from industrial sites as well as CO2 that's already in the air. This carbon can then be concentrated and used to create sustainable aviation fuel. The CGF funding supports the company's construction of a first-of-a-kind (FOAK), 141,000 sq. ft. facility in Burnaby, BC, Canada, which will produce filters capable of capturing 10 million tonnes of CO2 annually and serve as the company's global headquarters and R&D centre. The funding catalyzes domestic scale-up by delivering the funding in two tranches: "the first tranche of US$50M will be disbursed immediately, and the second tranche of US$50M can be drawn for the development and construction of carbon capture projects with a focus on Canadian projects, subject to approval by both organizations."[64]

In addition to the Canada Growth Fund, cleantech investment will also be bolstered by the government's intention to make flow-through shares available beyond the mining industry - a proposal originally forwarded in the 2021 Conservative Party election platform.[65]

Critical minerals face similar scale-up finance challenges. Small Canadian miners struggle to access capital due to long timelines and market volatility.[66] Export Development Canada is stepping up lending.[67] The Critical Minerals Exploration Tax Credit (and the Mineral Exploration Tax Credit) could be extended by providing longer term certainty. Demand-side price stabilization tools like Contracts for Difference (CfDs) can reduce risk and attract sustained investment.[68]

The Canada Infrastructure Bank's Zero-Emission Bus initiative funds electric buses, creating stable demand for Canadian manufacturers. By offering concessional financing to cities for fleet electrification, the CIB reduces the upfront cost burden faced by municipalities and accelerates adoption of electric transit.[69] Its financing closes the capital expenditure gap with diesel buses and offers favourable repayment terms geared to the accrual of operational savings due to lower fuel and maintenance costs over the life of the vehicle.

Together, such policies can turn Canada's financing system into a launchpad for clean growth—combining early-stage R&D with late-stage deployment support and public procurement to create a thriving domestic cleantech ecosystem.

3. Human capital

Skilled labor is vital for clean growth. Canada's wind, solar, bioenergy, and energy storage sectors employ over 23,000 people, with another 6,000–8,000 needed by 2030.[70] However, 13.1% of renewable energy jobs (such as wind, solar, smart grids, and building retrofits) were unfilled in 2023, significantly higher than the 2.1% shortfall in skilled trades."[71] Young workers are needed, as the average age for certain electrical-related skilled trades is in the 50s.[72] In building decarbonization alone (which involves construction and retrofits), 1.5 million workers will be needed by 2030.[73]

Canada's current approach is fragmented. Funding gaps in post-secondary institutions threaten course offerings, and enrollment in clean trades remains low. Apprenticeships and certification programs must be scaled. Trades like electricians and powerline technicians are in high demand.[74] Industrial strategy for specific growth sectors should be designed and implemented in close collaboration with unions. Leveraging their unique insights on how today's workforce can meet future skills requirements in particular sectors and technologies is essential. Independent intermediaries (discussed in Section 3) are well placed to convene these conversations with industry, government, and other societal actors.

Finally, inter-provincial mobility barriers exacerbate shortages. Harmonizing licensing and credentialing would allow skilled workers to move where needed, especially in power generation and transmission. In short, the clean economy depends on an equally strong workforce strategy that closes the gap between labour market needs and training programs.

4. Power

Reliable and affordable electricity is foundational for economic development. Many industrial projects—like mines and factories—cannot proceed without power, making grid expansion a national priority. The current scarcity of supply slows development, creating uncertainty for investors and leaving viable projects stuck in limbo. The current approach waits for demand to be manifested instead of building proactively in anticipation. This, in concert with long lead times to build new generation and transmission, means that Canada's electricity supply is not responsive to industrial demands.

Provinces like Ontario are taking early steps to prioritize strategic projects for power access, but long-term solutions lie in expanding the grid's overall capacity. Quebec has announced billions in investments to expand generation and promote efficiency. From 2011 to 2022, Canada tripled its renewable power

generation, with wind and solar reaching 7.2% of electricity supply in 2023.[75] This momentum must continue. Over the long-term, inter-provincial transmission can unlock abundant renewable electricity generation potential and get it to demand centres.

First-of-a-Kind Deployment as an Industrial Strategy: Small Modular Reactors by Ontario Power Generation

As part of its refurbishment of the Darlington nuclear site, Ontario Power Generation is adding four SMRs, becoming the first in the G7 to deploy the technology at grid scale. The total output of the Darlington New Nuclear Project would be 1,200 megawatts – enough electricity to reliably and safely power about 1.2 million homes.[76] OPG's contracting model was structured to ensure integrated implementation with construction and hardware partners by aligning shared risks and incentives. While the SMRs are not Canadian-sourced technology, developing the learning-by-doing capabilities for project execution will position OPG and its Canadian supply chain partners to export their services and expertise to assist similar deployments in other jurisdictions. This example highlights how FOAK deployment creates industrial strategy opportunities.

But good projects can wither on the vine waiting in queues to access power. Reliability, affordability, and cleanliness only matter if projects can get power in the first place. It is also important to clarify that access is not just about power supply (generation) but also about the transmission and distribution infrastructure—building more generation alone won't solve the access problem if the poles and wires aren't there.

Grid expansion not only ensures supply but also creates demand for Canadian-made equipment like transformers and smart grid technology. Buy-Canadian policies could help ensure domestic manufacturers benefit from the energy transition. The Ontario government, for instance, is encouraging utilities to source more Canadian content.[77]

Ultimately, expanding the grid enables clean technology investment, supports electrification, and strengthens supply chains—all central to a competitive, sustainable industrial strategy.

5. Indigenous partnerships

Strong projects are rooted in strong collaborations—especially with Indigenous communities. Canada's tradition of post hoc and ad hoc consultations needs to be replaced with a spirit of true nation-to-nation partnership. Indigenous peoples need to be involved from the very beginning of projects and industrial strategy development.

Indigenous-led environmental assessments and equity ownership are emerging as promising paths forward. For example, in 2022, Hydro One announced its Equity Partnership Model that offers First Nations a 50% equity stake in all new, future large-scale capital transmission line projects with a value exceeding $100 million.[78]

Canadian governments have taken steps to enable Indigenous equity participation through tools like Indigenous Loan Guarantees. Ontario's recent expansion of its Indigenous Opportunities Financing Program

and $3 billion commitment signal growing momentum.[79] These programs now include sectors beyond electricity, such as mining and resource development.

But capital alone isn't enough. Indigenous communities need capacity—skills, legal expertise, and planning tools—to participate meaningfully in projects. Ontario's $70 million Indigenous Participation Fund supports communities in mineral development areas, helping them engage effectively in regulatory and economic processes.[80]

Independent intermediaries such as the First Nations Major Projects Coalition (FNMPC)[81] and Raven Outcomes can help build Indigenous capacity needed for true nation-to-nation partnership (see Section 3 of this paper). For example, Raven's Community-Driven Outcomes Contracts let Indigenous communities define their priorities, like home retrofits, and receive funding tied to measurable results.[82] These initiatives promote both technology adoption and the growth of Indigenous cleantech firms.

The Carney government's Bill C-5 does not supplant the need for rigorous consultation. But it, and the nation-building conversation around it, presents an opportunity to talk about the strategic use of advance relationship-building and consultation. Rather than wait for project proponents to initiate the process, the government can identify priorities, build institutional and collaborative capacity with Indigenous communities, and get out ahead of project development.

Federal and provincial governments must provide the necessary resources to build collaborative capacity and platforms. Capacity building in Indigenous communities is important. Not all nations have the resources to engage in detailed consultations. So identifying regions likely to be of strategic economic importance and working in advance to support community-led capacity building is crucial to the long-term relationships that will determine success. A true nation-building strategy must centre Indigenous partnership not as a formality, but as a foundation.

These are not all the factors that determine project success. Effective project management and execution at the firm level is also critical. It is easy to delegate this as a private, firm level matter. But project execution is a generic structural factor that is critical in project success. A platform to collectively improve execution could dramatically improve the probability of success in building complex nation-building projects.

Megaproject proponents need a space to work collaboratively and share best practices.[83] For example, risk-sharing contracting models, such as that deployed by Ontario Power Generation for the SMR build, can incentivize collaboration between the construction firm and the developer. Aligning incentives in this way is critical. But so too are more general lessons, such as investing in detailed upfront planning, planning in an active and iterative way, prioritizing proven methods and managers, and embracing modularity.[84]

Larger, broader conditions for success lie in the background. Investing in upstream sectors, as we argued above, gives all developers and industries access to high-quality inputs that are cost-competitive and locally available. Investing in the ecosystem for building as we build will be key.

3. Reimagining roles and responsibilities

Successful industrial strategy does not have to be expensive. Taiwan's rise to prominence in semiconductor manufacturing cost about $35 million over less than a decade and completely transformed its economy.[85] Rather than spending, *coordination* is the central component of all successful industrial strategy. Harvard industrial strategy expert Dani Rodrik emphasizes that "the right way of thinking about [industrial strategy] is as a process of discovery, by the government no less than the private sector, instead of a list of specific policy instruments".[86]

Without a technology-specific forum for ongoing dialogue between public and private sectors, policymakers are unable to tailor the right mix of supply-side and demand-side instruments to meet the evolving needs of innovative firms. Intermediaries facilitate this information exchange while also assisting the various departments and levels of government to align policy implementation. For example, a low impact fiscal tool such as a regulatory change or export support might be needed most. Without ongoing dialogue, the state might not surface this insight and opt instead for more expensive subsidies. Without access to external expertise, policymakers suffer information asymmetry with industry, creating the conditions for a public-private relationship characterized by individual firms lobbying for their own narrowly defined interests.

The throughline for getting big things done is that Canada has many available tools and policies but lacks the strategic vision and problem-solving capacity to take our economy to the next level. In policy, we continue to add weak, supply-side incentives that do not address fundamental problems. In project review, we fail to get out ahead of firms, clearing the way with pre-assessments in high priority mining and resource development regions. In human capital, infrastructure, and finance, the problem is the same: we have so many entities, programs, and initiatives—but no one is seeking to get them all rowing in the same direction.

The lack of strategic focus and clear intent is holding the country back more than the complexities of consultation or permitting.

But any country that seeks to build a coherent strategy must confront a seeming paradox: that increasing strategic capacity often means *devolving power and doing more with less*. Consider the government's role in nation-building: it must coordinate all the relevant players and get them moving in the right direction. But to make the right decisions and adjust course, when necessary, it needs strong inputs from firms and communities, as well as expertise to identify problems and solutions.

Thus, somewhat counterintuitively, to do more the government has to *share strategic capacity* with Indigenous communities, experts, firms, and investors. Right now, we structure collaboration in ad hoc ways across industries. This means we don't inject strategic capacity and a diversity of voices into problem-solving. To make progress, government must do three things:[87]

- Act as a decisive catalyst and locus of distributed strategic capacity by identifying areas of **focus** and laying out public **goals**.
- Organize structured **collaboration**, by which we mean **active problem-solving** in the priority areas.
- Carefully design **policy mixes and strategic investments** that respond to the problems identified in this collaboration.

As the federal government continues to refine its priorities, focus is key. The task now is to ensure that nation-building projects and other initiatives address long-standing problems (productivity, geopolitical dependence, and trade dependence). This is no small task.

The key is to create ***independent intermediaries*** charged with designing a strategy and mobilizing actors to coordinate its implementation. An independent intermediary is a non-profit organization that has strong connections to industry but is not beholden to it. They house strong technical and analytical capabilities, have superior up-to-date, sector-specific strategic insights, and leadership capacity. They are essential to ensuring the flows of objective information between government and firms (e.g. which can feed into strategies and roadmaps). They enable the private sector and other rightsholders and stakeholders to drive the strategy, while maintaining high-paced, open collaboration with governments at multiple levels. Independent intermediaries help drive sectoral progress, but do not replace important direct government to industry association or individual firm or community relationships.

Intermediaries need to bring together an ecosystem in a sector that may include firms, unions, Indigenous communities, regional and municipal governments, finance, local development agencies, national laboratories, universities and colleges, and civil society organizations. They can ensure a wide variety of actors inform and buy-in to the strategies including First Nations, government, industry, finance, universities, and civil society. Collaborative forums should not be talking shops (as so many federal roundtables have been in the past) but active working groups that set and revise targets, create strategy, seed projects, and identify high-priority investments.

Brokers and independent intermediaries are crucial to the success of collaboration. It is important to empower independent voices that can provide expertise and help to develop projects. An independent agency could be in government, so long as it is insulated from politics and free from bureaucratic routines. Alternatively, it could be from civil society. Or they could be true public-private partnerships—organizations built for the purpose of catalyzing strategic collaboration in specific technologies.

For example, in Europe, industrial strategy is led by InnoEnergy, a technology and policy accelerator that is funded by the European Commission, but which is staffed by engineers, MBAs, policy analysts, and individuals from the private sector. It has deep domain expertise and connections to the firms, so it can hold the pen on strategy documents and program implementation (especially R&D and major project development). In the U.S., the national battery strategy was led by a consortium consisting of a publicly funded ecosystem accelerator, an investor hub, and a national lab.

Although independent intermediaries are an underused approach in Canada, good precedents exist. Genome Canada has demonstrable success in harnessing the transformative power of genomics to improve lives and drive economic growth. It is funded by ISED, but has an independent board with industry executives, giving it strong links to firms and independence from government.

So, What Exactly is an Independent Intermediary?

An independent intermediary is a deliberately constructed strategic collaborative designed to understand and support the development and implementation of public policy, economic development, and industrial strategy.

Key characteristics:

- Maintains arms-length relationships with government while providing expert advice
- Bridges diverse stakeholder groups (industry, finance, labour, civil society, Indigenous communities)
- Provides specialized expertise in specific sectors or policy areas
- Facilitates analysis, information sharing, and strategic coordination of effort
- Prioritizes public policy goals over narrow private sector or stakeholder interests
- Operates with transparency and accountability mechanisms

Independent intermediaries are *not* government agencies, industry associations, or individual firms—they are purpose-built organizations that can navigate between these different worlds while maintaining strategic independence.

3.1 Sector-specific intermediaries

Canada's current approach to industrial strategy lacks permanent, technology- or sector-specific forums for information exchange with industry and other experts.[88] This makes it hard to a) identify policy gaps, and b) mobilize the correct mix of policy instruments as the needs of industry evolve.

Case studies of successful industrial strategy show the importance of having technology/sector-specific arms-length organizations with the right mix of embeddedness within private sector networks and

autonomy to resist capture by dominant industrial interests.[89] This ensures that industrial strategy can pursue collective goods for the innovation ecosystem and the broader public interest.

Propulsion Quebec has played a key role in Quebec's success in advancing the Quebec zero-emission ground transportation industry by facilitating public-private information and harmonizing policy with industry needs.[90] The organization's membership of industry and other experts grew from 26 in 2017 to 273 in 2023, with dedicated working groups on institutional reform, batteries, public policy, innovation, demonstration and commercialization, supply chains, workforce, and financing. Insights were collected in a roadmap in 2021 called Ambition 2030 EST, which articulated shared visions and strategies for 2030 with clear targets and timetables.

Several potential independent intermediaries have sprung up in the Canadian clean energy ecosystem including, Accelerate ZEV Alliance, the Building Decarbonization Alliance, and Electrifying Canada.

Mass Timber and the EV/Battery & Supply Chain Examples

The *Mass Timber Roadmap* called for the creation of a "Mass Timber Alliance" to bring together existing leaders like the Canadian Wood Council, FPInnovations, Forestry Innovation Investment, the Forest Products Association of Canada, firms, and government agencies.[91] This public-private coordination body would develop and advance policy and program priorities. Coordination topics would include setting building archetypes to address the housing crisis and shaping policy to stimulate supply and demand for mass timber to scale Canadian industrial capability in every step along the forest-to-construction supply chain.

Similarly, Accelerate's recent *Battery Innovation Roadmap* called for the Government of Canada to establish a National Battery Alliance through a public-private partnership model for strategy development and collaboration.[92] This body would facilitate the exchange of high-quality information, enabling collaborative problem-solving for uncovering problems and solutions to innovation and market barriers. The Alliance would coordinate with funding agencies such as NRC-IRAP and the Office of Energy Research and Development (OERD) to coordinate R&D across the ecosystem. The Alliance could coordinate expert and industry groups to provide inputs into R&D needs, like the approach of the European Battery Alliance, or Li-Bridge in the U.S.

A recent successful example comes from the Canadian Urban Transit Research and Innovation Consortium (CUTRIC), which has played a pivotal role in bringing together the electric bus ecosystem in Canada, which has world-leading firms like Nova Bus (Volvo) and New Flyer. CUTRIC led the creation of a demand-side strategy to scale Canadian electric bus producers by harmonizing standards. CUTRIC's Pan-Canadian Battery Electric Bus Demonstration and Integration Trial (2016 to 2024) helped embed charging technology used by Canadian-made suppliers into the North American standard. There were critical technical elements here that could not be led by government: developing a single protocol, testing chargers, and ensuring interoperability between multiple manufacturers. This eliminated the need for additional customizations and modifications at the factory, enabling standardized production of a critical component.[93]

3.2 Indigenous examples focused on major projects

Independent intermediaries such as the First Nations Major Projects Coalition (FNMPC) and Raven Outcomes can help build Indigenous capacity needed for true nation-to-nation partnership.

FNMPC is a collective group of 170+ First Nations made up of elected councils, hereditary chiefs, tribal councils and development corporations "who have made the decision to come together to advance our shared interests of participating, and where appropriate gaining equity positions in the major projects taking place in our territories."[94] FNMPC is active in 18 major projects collectively worth over $45 billion in total capital cost. Best practices learned through these projects are shared with other First Nations (such as classes on capital markets and reports on clean energy technologies and Indigenous-owned utilities). Their annual conference convenes industry, government, and other actors to advance economic reconciliation. Finally, FNMPC provides technical support to First Nations in conducting impact assessments and environmental reviews in accordance with their laws and values.

Raven Outcomes' community-driven outcomes contracts (CDOC) involve Indigenous communities defining a priority challenge, such as energy efficiency or home retrofits, and government partners providing funding tied to measurable, outcomes-based results.[95] Importantly, these projects track not only the technology deployment outcomes, but also the associated training and capability for Indigenous clean technology firms to replicate the technology deployment in similar communities.

Efficiency Manitoba and Raven Outcomes:
Partnering to Deliver Both Clean Technology and Capacity-building Outcomes[96]

Efficiency Manitoba and Raven Outcomes have launched a landmark partnership to advance energy efficiency, housing improvements, and job creation in First Nations communities, starting with a commitment of up to $18.9 million from Efficiency Manitoba and $50 million in private capital through Raven's Indigenous Outcomes Fund. The collaboration begins with Brokenhead Ojibway Nation, where $1.89 million from Efficiency Manitoba and $7 million from Raven will support the installation of 100 ground source heat pumps, essential home upgrades, and training for 12 community members through BON Energy, a new social enterprise. The funds are further bolstered by the Canada Mortgage and Housing Corporation. This initiative follows Raven's community-driven outcomes contract (CDOC) model, which ties government funding to measurable results defined by Indigenous communities.

3.3 Working together

Firms must adopt new roles too. Firms understand their job is to innovate, produce, and find value. But they need to participate fully in the strategic processes convened around independent intermediaries. Strong ecosystems make strong firms. Firms must invest in their communities—other firms, experts, supply chains, labs, and post-secondary education institutions.

In short, by empowering experts, firms, and communities, the government can enhance its strategic capacity and get more done. By devolving strategic tasks and implementation to intermediaries, it can ensure rapid program delivery and strategic policy design. The government can do more by doing less.

It is not spending and centralized control, but **catalytic coordination** that is the central component of all successful industrial strategy. This means focusing on innovative firms in a strategic technology, establishing ongoing dialogue to determine their evolving needs, and continuously mobilizing a wide range of supply-side and demand-side policy tools to support their growth.

Agile but comprehensive policy mixes ensure that strategies can be updated over time. When policies are no longer working, or not having the intended effect, they must be changed.

The only way to be more agile and move faster is to build collaborative capacity—and then use it to create a common vision, chart a pathway, and focus our energies on implementation.

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