CLEAN PROSPERITY

Chain Reactions

How to address constraints on Canada's nuclear supply chain

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Contents

Acknowledgments

We would like to thank all of the survey participants that contributed their knowledge and expertise to this report. The authors retain responsibility for any errors.

About us

Clean Prosperity is a Canadian climate policy organization that advocates for pragmatic solutions to grow the low-carbon economy. Visit CleanProsperity.ca and contact us at info@CleanProsperity.ca.

Abbreviations

CANDU	Canada Deuterium Uranium
CNL	Canadian Nuclear Laboratories
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
DGR	deep geological repository
EIPA	Export and Import Permits Act
IAAC	Impact Assessment Agency of Canada
IAEA	International Atomic Energy Agency
IP	intellectual property
ISO	International Organization for Standardization
ITC	investment tax credit
LEU	low enriched uranium
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NSG	Nuclear Suppliers Group
NWMO	Nuclear Waste Management Organization
PHWR	pressurized heavy water reactor
QA	quality assurance
R&D	research and development
SME	small and medium-sized enterprise
SMR	small modular reactor

Executive summary

Canada is entering a decisive moment for nuclear power: federal and provincial governments are aligned in their ambitions to build new nuclear reactors. The economic and climate case for firm, low-carbon power sources is strengthening. A major expansion is possible, but only if challenges like costs, coordination, and regulation are handled with care. As part of Canada's broader effort to electrify its economy and become an energy superpower, new reactors could help advance economic, security, and climate goals.

Several near-term decisions will determine whether provincial nuclear ambitions can translate into an orderly, coordinated expansion. Recent modelling from Clean Prosperity and Navius Research shows that **there is room to more than triple Canada's nuclear generating capacity by 2050.** This is the best-case scenario, free of real-world frictions, bottlenecks, and market and policy failures that could prevent nuclear power from scaling across Canada.

Despite nuclear power's potential, public support for nuclear projects is contingent on affordability. Recent developments in Ontario — where nuclear refurbishment and expansion are contributing to increases in electricity rates — highlight the urgency of addressing bottlenecks that could increase project costs.

The federal government's goal of adding "tens of gigawatts" of nuclear capacity requires simultaneous progression of multiple projects within and beyond Ontario. Building this much generating capacity would place new pressures on supply chains.

Since 2023, Clean Prosperity has engaged hundreds of experts across the nuclear ecosystem — regulators, policymakers, suppliers, construction companies, academics, and Indigenous organizations — to assess Canada's readiness for expansion.

This report synthesizes results from a long-form survey with 43 expert participants, conducted between May and October 2025. New geopolitical risks, rising cost pressures, and emerging supply-chain bottlenecks identified in our survey underscore the need for a reset that prioritizes effective execution while balancing ambition, affordability, and public confidence. As provinces compete for the same pools of labour, expertise, and capital, our survey results show that these challenges are best addressed cooperatively across orders of government.

Based on our results, **we recommend the federal government and nuclear-ambitious provinces collaboratively develop a new pan-Canadian nuclear power strategy** that builds on Canada's Small Modular Reactor (SMR) Action Plan and the provincial Strategic Plan to Advance SMRs. To enable responsible, efficient, and cost-effective scaling of nuclear power across Canada, we recommend the strategy address the following seven elements:

1. CABINET-LEVEL LEADERSHIP WITH SINGLE-POINT ACCOUNTABILITY

Canada should establish clear, cabinet-level leadership with single-point accountability for nuclear fleet deployment and supply-chain planning. Nuclear expansion is a multi-decade, nation-building effort that requires sustained political leadership and coordination.

To deliver this, the federal government should create a dedicated, nuclear-specific cabinet role — either a minister or a secretary of state. This role should complement, not displace, provincial authority, and carry a defined mandate to:

- own and update a pan-Canadian nuclear strategy;
- coordinate federal departments whose decisions impact nuclear project and supply chain planning, in collaboration with an assistant deputy minister-level, federal-provincial working group;
- align federal incentives and regulatory processes;
- safeguard Canadian intellectual property developed through new nuclear projects and ensure Canada captures the benefits of this intellectual property in foreign markets; and
- manage issues with geopolitical dimensions (e.g. fuel security, exports, and non-proliferation).

All provinces should designate senior officials to participate in a federal-provincial working group focused on fleet deployment and supply-chain planning.

Saskatchewan and Alberta should align their nuclear strategies and procurement decisions in coordination with Ontario while retaining control over project ownership and delivery.

2. INTERPROVINCIAL WORKFORCE STANDARDS PLANNING

Apprenticeship programs and certification requirements should be aligned across provinces and in coordination with the federal government to ensure workforce readiness and interprovincial labour mobility. Better alignment would reduce interprovincial competition, expand Canada's supplier base beyond Ontario, and support the safe and efficient delivery of nuclear projects at scale.

Governments should jointly assess the application of Canadian Standards Association (CSA) N-series standards across the nuclear supply chain. This assessment should determine whether N-series standards are required for all components, and where they are not, identify products, components, or categories of components that could be procured using equivalent, internationally recognized standards.

3. INDIGENOUS PARTICIPATION

All orders of government must treat Indigenous participation as a core enabling condition for nuclear expansion and embed it early in project planning. Industry and project proponents must retain primary responsibility for building long-term partnerships, investing in community capacity, and achieving free, prior, and informed consent.

Provincial governments should enable Indigenous participation by leading the establishment of clear, co-developed performance indicators for equity ownership, employment, apprenticeships, and contracting in nuclear projects. This can enable meaningful participation in project planning, workforce development, and economic opportunities across the supply chain.

4. A COMMITMENT TO FLEET-BASED DEPLOYMENT

Fleet-based deployment should be formally adopted as the default approach for new reactor builds, recognizing that repeat construction of standardized designs offers the most plausible path to cost reductions.

The federal government should offer incentives to support fleet-based deployment if needed. Federal support could be limited to projects that are consistent with a fleet-based approach.

Provinces, working with utilities, should converge on a limited portfolio of reactor designs — one large, one small, and one micro reactor — to maximize economies of scale, learning by doing, and certainty across the supply chain.

5. ASSESSMENT OF CANADA'S LONG-TERM FUEL STRATEGY

The federal-provincial working group should lead a structured, evidence-based assessment of Canada's long-term fuel strategy. This work should be explicitly tied to projected fleet requirements and reactor technology choices, with a focus on:

1. enriched fuel procurement, including geopolitical, diplomatic, security, and non-proliferation considerations; and
2. the need for domestic enrichment capacity, including technical feasibility, costs, timelines, and commercial viability, underpinned by: (a) a thorough risk analysis; and (b)

a cost-benefit analysis of deploying new commercial reactors that require enriched fuel that Canada cannot currently produce.

Provincial governments should align reactor choices and deployment timelines with national fuel-cycle planning to avoid locking in long-term dependencies before enrichment decisions.

6. ROLE CLARIFICATION AND ELIMINATION OF REGULATORY OVERLAP

Regulatory roles and responsibilities should be clarified and rationalized to eliminate duplication and parallel processes. The roles of the Canadian Nuclear Safety Commission (CNSC), the Impact Assessment Agency of Canada, and the Major Projects Office should be clearly defined through the federal-provincial working group.

Regulatory authority should remain with the CNSC wherever possible, reflecting its long-standing role as Canada's nuclear regulator, provided it is adequately resourced to oversee nuclear build-out.

Provincial governments should align mandates, regulatory frameworks, and free, prior, and informed consent standards to facilitate accelerated CNSC decisions.

7. USED-FUEL MANAGEMENT AND LONG-TERM STEWARDSHIP PLANNING

Federal and provincial governments should integrate used-fuel management into nuclear expansion planning from the outset, advancing long-term stewardship plans alongside reactor deployment decisions.

Governments should work with the Nuclear Waste Management Organization (NWMO) to develop and communicate a clear national framework for used-fuel management that covers the implications of expanded nuclear deployment. This should include early, transparent communication on impacts to Canada's first deep geological repository (DGR), including changes in volume, fuel types, timelines, and potential need for additional DGRs.

The NWMO, governments, and project proponents should apply the first-of-a-kind DGR consultation process as a template for future engagement, ensuring Indigenous and host communities are meaningfully involved from the outset through transparent, sustained, and well-resourced dialogue.

Introduction: Canada's nuclear supply chain

As provinces prepare for significant demand growth on their grids, nuclear reactors offer a distinct and valuable package of attributes: long-lived, large-scale, high-capacity, zero-carbon, baseload generating assets with low land-use requirements and manageable risks related to safety, waste, and security. Energy-dense and high-capacity projects like nuclear are a valuable hedge against future constraints on the grid.

Public support for nuclear power is contingent on affordability. To preserve affordability and maintain public support for both nuclear power and electrification overall, it is vital that policymakers and project proponents proactively address supply-chain bottlenecks and other risks that could result in cost overruns and therefore higher electricity prices. Failure to do so could irreparably damage public confidence in and enthusiasm for new projects.

Canada already has a robust supply chain concentrated in Ontario. In April 2025, Ontario approved a final construction decision for the Darlington New Nuclear Project. The four BWRX-300 reactors there will be Canada's first new nuclear project in more than three decades. Several other projects are in various stages of development across Ontario and New Brunswick, both of which have operational reactors, as well as Saskatchewan and Alberta, which do not. These levels of ambition are aligned with recent modelling from Clean Prosperity and Navius Research, which shows **there is room to more than triple Canada's nuclear capacity by 2050. It remains unclear whether Canada's nuclear sector, supply chains, and policy frameworks are capable of supporting expansion across multiple sites and provinces simultaneously.**

To identify potential bottlenecks and vulnerabilities, Clean Prosperity conducted interviews with experts representing the full nuclear sector including utilities, regulators, suppliers, labour, construction, academia, policymakers, and Indigenous organizations. We used a semi-structured format, asking the same questions of all participants, but leaving room for follow-up questions and tangents. This report summarizes survey results from 43 interviews. The quotations highlighted throughout this report are all from our survey respondents, and are presented without attribution. We offered participants anonymity to encourage candid responses.

Imperatives for nuclear expansion

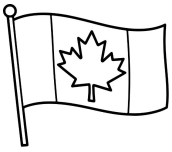
The sections that follow synthesize results from Clean Prosperity's long-form, qualitative survey of 43 expert participants across the nuclear supply chain, as part of a broader program of engagement with hundreds of experts across the nuclear ecosystem. Our first questions gauged the imperatives and rationales for nuclear expansion. Asked why they support nuclear expansion, survey participants identified multiple, overlapping drivers:

Decarbonization and climate

A significant majority — 91% of participants — emphasized that Canada cannot achieve net-zero emissions without nuclear power, citing its scale and unique generation profile as essential for providing stable, non-emitting baseload electricity to complement renewables, support industrial decarbonization, and enable electrification across sectors, such as transportation and heavy industry.

"Nuclear is the only scalable, dispatchable clean-energy source that provides fixed-price electricity, long-term reliability, and strong local job creation."

Energy security and sovereignty



Four out of five participants (81%) pointed to nuclear as a foundation for long-term energy sovereignty. Many pointed to the CANDU reactor design as a hedge against geopolitical risk. Participants cited Canada's vertically-integrated fuel chain as a strategic advantage. Few countries can mine, refine, fabricate fuel, operate reactors, and manage nuclear waste entirely within their own borders.

"If fossil fuels are the tools of geopolitics, nuclear is our insurance policy."

Domestic economic growth

Nuclear power has the potential to be a driver and enabler of long-term growth, said 70% of participants. Many pointed to nuclear's current contributions, including $22 billion in gross domestic product, and approximately 89,000 high-skill jobs spanning engineering, construction, manufacturing, and operations.

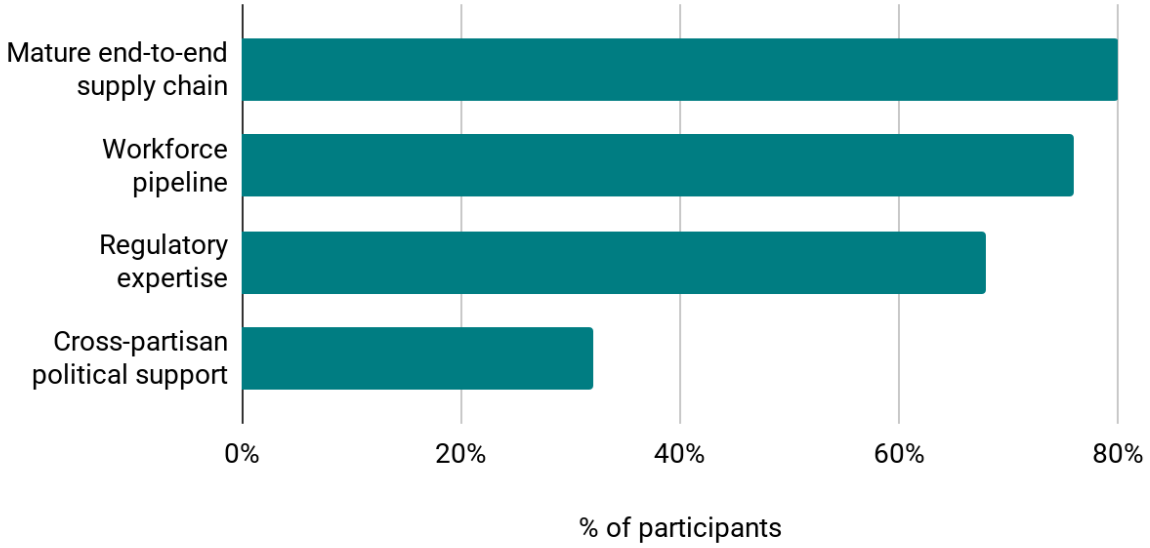
"The parking lot at a nuclear plant tells the story — people work there every day, year after year."

Enabling conditions for expansion

Participants pointed to multiple strengths across the supply chain that have positioned Canada well for nuclear expansion. A majority of participants emphasized Canada's end-to-end nuclear supply chain as a strength, describing it as one of the most mature, vertically integrated, and technically robust in the world — a product of six decades of operation, refurbishment, and innovation. A mostly domesticated supply chain that does not require enriched fuel has helped insulate Ontario in particular from price and geopolitical risks seen in fossil fuel markets. Unprompted, a majority of participants also highlighted Canada's workforce and regulatory expertise as strengths.

"Canada is one of the rare countries that has an end-to-end supply chain. That's a strength because we didn't need to rely on foreign states to sustain our nuclear industry."

Figure 1: Top strengths of Canada's nuclear sector (unprompted)



Mature and vertically-integrated supply chain

Four out of five participants (80%) described Canada's nuclear supply chain as one of the most mature and vertically integrated in the world — a product of six decades of construction and operation experience. This has produced standardized project delivery models and trusted supplier networks capable of meeting nuclear standards. Participants emphasized Canada's end-to-end domestic capability, spanning uranium mining, fuel fabrication, component manufacturing,

engineering, construction, and waste management. This integrated structure reduces reliance on foreign inputs and retains most of the economic value within Canada, and supports predictable cost and schedule performance.

"Our energy choices are also economic development choices — with nuclear, a large majority of the supply chain spend stays in Canada."

Many participants noted that the repeat execution of large-scale refurbishments at Bruce and Darlington has strengthened supplier discipline, tooling specialization, and quality assurance (QA) systems, setting the foundation for first-of-a-kind small modular reactor (SMR) deployment.

Workforce pipeline

More than three quarters (76%) of participants identified Canada's nuclear workforce and talent pipeline as a strength. Decades of continuous CANDU operation and refurbishment have sustained an intergenerational talent base, trained under rigorous safety and quality regimes.

While Canada's nuclear workforce is a strength, participants see risks on the horizon. Many question whether the outgoing generation has time to transfer institutional knowledge and experience to the incoming generation as new nuclear projects get underway. "There's a massive gap in the skilled trades world," one respondent said. "I'm in my early 50s, and I'd be considered a young skilled tradesman."

Retirements among senior trades and engineers, combined with competition for skilled labour from other sectors, could strain capacity as multiple provinces pursue new projects. To guard against attrition risk, many called for coordinated national action on training and certification to ensure workforce growth keeps pace — particularly for nuclear engineers, pressure-boundary welders, electricians, and specialized technicians. As one respondent told us, "we need a national training strategy, not 10 provincial programs competing for the same people."

World-class regulator

Unprompted, 68% of participants highlighted that Canada's nuclear regulatory system, led by the Canadian Nuclear Safety Commission (CNSC), is recognized internationally for its technical competence. The CNSC was described as a gold-standard regulator whose credibility underpins both public confidence and investor trust in Canada's nuclear sector.

"Canada's regulator is respected around the world. You can't buy that kind of credibility."

Participants also highlighted Canada's nuclear QA framework, developed under the Canadian Standards Association (CSA) and International Organization for Standardization (ISO) 9001 series, as

a competitive advantage. As one respondent put it: "the N299 is the backbone of Canada's supplier discipline, ensuring consistency from concept to commissioning." Canada's nuclear QA framework is anchored by CSA N299 and N286, which together are the basis for supplier controls and organization-wide safety systems across the nuclear lifecycle (see box below).

N-Standard suppliers and quality assurance in the nuclear sector

The Canadian Standards Association (CSA) is a non-profit standards organization that develops consensus standards for dozens of sectors, including nuclear. Its international counterpart is the International Organization for Standardization (ISO). CSA N-standard suppliers adhere to several series or standards, most notably the CSA N299, which defines graded levels of quality assurance program requirements for suppliers of items and services to nuclear facilities, to ensure they meet nuclear safety and reliability requirements. All three major nuclear utilities in Canada, Bruce Power, Ontario Power Generation, and New Brunswick Power, require suppliers to implement CSA N299 at the appropriate category level, though this is not mandated by the CNSC. The nuclear industry also uses other CSA standards, most notably CSA N286, which governs management systems in nuclear facilities.

CSA N299 originates from an earlier standard series known as CSA Z299, adopted by Ontario Hydro and Atomic Energy of Canada Limited in the 1970s for quality assurance in procurement of goods and services in Canada's first commercial nuclear plants. They eventually became embedded in the design of all nuclear power stations in Canada, and stations abroad that use CANDU reactors. International nuclear industries took varied approaches, some relying on the ISO 9001 series (influenced by CSA Z299), others creating new standards. CSA Z299 was revamped as CSA N299 in 2016 to reflect modern best practices.

Participants also noted that CSA N285 QA standards are stricter than typical industrial codes. In particular, zirconium pressure tubes must have their metallurgy verified, undergo precise heat treatment (annealing), and pass nondestructive tests to ensure they maintain structural integrity and allow neutrons to pass through as needed (neutron transparency). This standard was viewed by respondents as a technical differentiator, ensuring safety, consistency, and readiness for next-generation deployment.

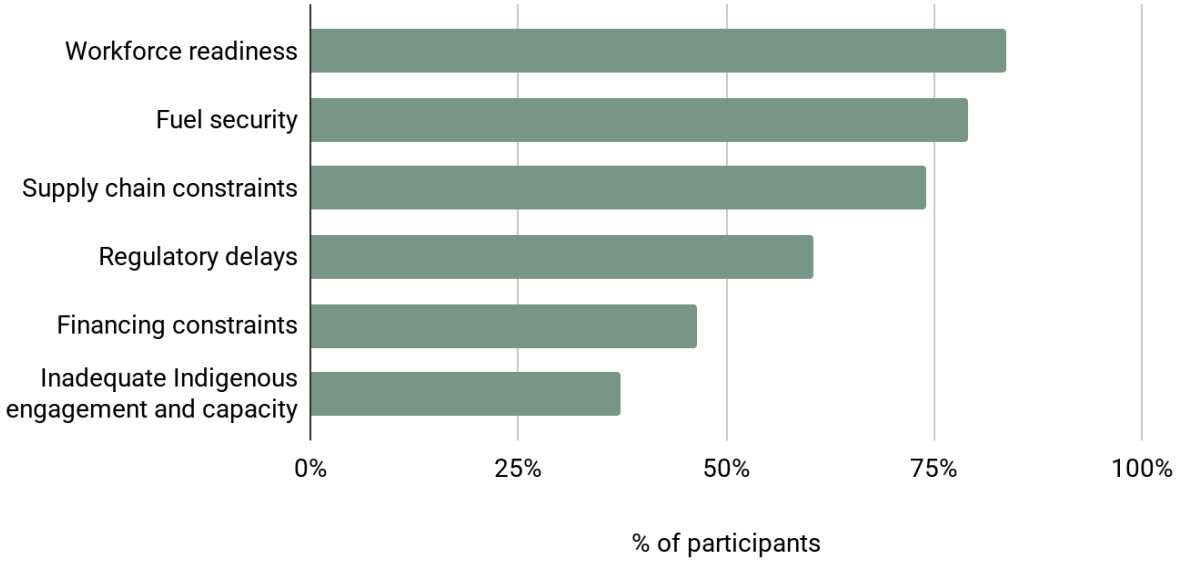
Cross-partisan political support

Sustained political commitment is vital for scaling nuclear power, given its long project timelines. At both the federal and provincial levels, nuclear expansion enjoys the support of both right-of-centre and left-of-centre parties, which was not always the case. Unprompted, **32% of participants cited cross-partisan support as an advantage for Canada as it seeks to scale nuclear power.** As one participant noted: "the Liberal government under Trudeau, first, and now Carney, really came around to supporting nuclear after a long period of disinterest… I mean the [provincial] SMR Action Plan really was more a sort of collection of offerings. It really didn't add up to a plan."

What could hold nuclear expansion back?

Our data also reveals clear and recurring concerns about whether Canada's nuclear supply chain is capable of equipping itself to deliver at the pace required to meaningfully contribute to Canada's economic, security, and climate goals. This section summarizes participant responses on what could hold nuclear expansion back, including workforce requirements, fuel security, supply chain constraints, risk of regulatory delays, financing constraints, and inadequate Indigenous consultation and capacity.

Figure 2: Top challenges that could slow nuclear expansion



Workforce readiness

Canada's productivity problems and skills shortages are well documented. Planned and pending nuclear projects will not just be competing with one another for the necessary engineers, project managers, and skilled tradespeople; they will be competing with other sectors and national projects. It is important to differentiate between the workforce required for project development and execution, versus the workforce required for operational work, with provinces generally better equipped to handle the latter.

The nuclear sector also faces acute shortages in skilled trades. A large share of both trades and engineering professionals is nearing retirement, widening the gap. Competition for talent is intensifying as U.S. firms attract Canadian workers with higher wages and incentives. And

nuclear-specific education and training programs remain uneven across provinces, leaving persistent regional gaps in workforce readiness.

A significant majority — 83% of survey participants — cited shortages of skilled tradespeople as the greatest risk to nuclear deployment across Canada. Several participants emphasized the need for a "brand overhaul" to attract a new generation of tradespeople into nuclear careers and to position the sector as a central pillar of Canada's low-carbon workforce. "We need to make trades cool again — the same way tech made programming exciting," one respondent said.

The shortage is concentrated within a few disciplines: pressure-boundary welders, pipefitters, boilermakers, and specialized electricians for reactor assembly and maintenance. These bottlenecks could threaten construction sequencing, fabrication capacity, and project timelines, which could slow a multi-decade buildout.

Up to 30% of Canada's nuclear engineering workforce is expected to retire by 2030, a transition identified by 74% of respondents as a significant risk to Canada's operational and regulatory capacity. As one expert observed: "it takes as long to train a reactor operator as it does to build the plant."

More than a quarter (27%) of participants identified competition from other major national build-outs as a material bottleneck for execution of nuclear deployment, pointing specifically to projects advanced through the Major Projects Office and other major national projects — including liquified natural gas terminals, critical mineral mines, transmission corridors, and other large-scale infrastructure builds.

Cross-border competition for talent has intensified the risk of future labour shortages. A quarter of participants warned that the United States is increasingly attracting Canadian engineers and tradespeople with higher wages, faster project permitting, and lower income taxes. Similar gaps are emerging in project management and quality assurance, particularly in roles that require nuclear-specific expertise. Without complementary measures — including predictable project pipelines, competitive compensation, and structured knowledge transfer to retain institutional memory — Canada risks both immediate capacity constraints and a gradual erosion of nuclear-specific expertise.

Canada lacks a unifying national direction on research and development (R&D), say 32% of our survey respondents. While organizations like Canadian Nuclear Laboratories (CNL) and McMaster University provide world-class expertise, participants stressed that R&D priorities are often siloed, driven by individual mandates, rather than a coordinated strategy tied to deployment needs. Several participants observed that without clearer alignment, promising research can stall and industry struggles to access the testing facilities and applied research pathways needed to bring technologies to commercial projects. Many argued that a more integrated R&D system could help Canada maintain competitiveness and support a scaled nuclear build-out. "There's world-class expertise at CNL, McMaster, Ontario Tech," one respondent told us, "but the system is so siloed that promising work stalls between technology readiness levels."

Participants also pointed to a lack of nuclear-specific training programs across Canada's post-secondary system, particularly in Saskatchewan and Alberta, which would be building their first reactors. Some early partnerships and programs are beginning to close this gap, including SaskPower's nuclear research chairs initiative, the University Network of Excellence in Nuclear Engineering and its Master of Engineering and Graduate Diploma in Nuclear Engineering programs, and Ontario Tech University's Nuclear Career Accelerator program.

Participants from academia specifically referenced their ability to respond quickly to industry demands, if industry expressed the need. "We could train 200 engineers within a year or two, I think. It may require a more business-like approach from universities and a more coordinated approach from the industry," one respondent said. "But we could do it."

"The Major Projects Office and Carney's national projects list show the scale of what's coming. If we don't coordinate labour planning, these megaprojects will cannibalize each other."

Participants emphasized the importance of expanding education and certification programs aligned with CSA N299 quality-assurance standards. This is particularly important for preparing new jurisdictions for licensed nuclear work and to promote national consistency in workforce readiness.

"We have the uranium and the ambition — now we need the skills and supply chain to match."

Participants highlighted that each province currently operates separate apprenticeship and credentialing systems, creating inconsistencies in curriculum content, certification standards, and recognition of nuclear-specific qualifications. While labour supply presents a systemic challenge for all projects, this issue presents greater risks for provinces looking to build their first reactors.

This fragmentation extends to industrial trades covered by the Red Seal Program, Canada's national standard for ensuring consistent skills and knowledge and supporting labour mobility. While the Red Seal certifies core trade skills (such as welding or electrical work), it does not cover the specialized nuclear regulatory requirements set by the CNSC or by nuclear plant operators. Consequently, skilled workers trained at one nuclear site will need to retrain or recertify to meet nuclear requirements elsewhere. Committing to standardized nuclear reactor designs, with standardized approaches to construction and operation, could offer a potential solution to this challenge over the long term.

The challenge, therefore, is not a lack of technical competence, but the absence of an integrated pipeline that enables skilled industrial workers to transition efficiently into nuclear-qualified roles. "We're the Tiffany of welders," one respondent said, "but we need a way into the nuclear tent."

Establishing standardized pathways — covering curriculum design, accreditation, certification, and on-the-job safety training — would create a portable workforce capable of supporting concurrent builds across multiple provinces.

Nearly half (48%) of survey participants warned that without stronger coordination, regional disparities could escalate into direct interprovincial competition for skilled talent and R&D resources.

"We can't afford an East-West talent war; nuclear success requires a Canada-wide plan."

This warning reflects broader concern that nuclear, renewable energy, and infrastructure projects are now competing for the same limited pool of qualified tradespeople, engineers, and project managers. As one participant characterized it: "you'll see wage inflation and project delays if the nuclear builds, SMRs, and other clean projects all chase the same welders and engineers."

Participants underscored that resolving this challenge requires a coherent workforce strategy with a national lens, embedded within a broader approach to labour development. Participants highlighted that such a framework must align provincial training systems, standardize nuclear certifications, and ensure that human-capital development can scale in step with deployment timelines.

Fuel security

Canada's nuclear sector has long been synonymous with the CANDU reactor. This domestically developed, pressurized heavy-water reactor (PHWR) design uses fissile uranium-235 at its natural concentration level of 0.7%, avoiding the need for enrichment. Most pressurized water reactors and light water reactors require low enriched uranium (LEU) concentrated to 3-5%. All of Canada's 17 operational nuclear reactors are CANDUs. By relying on natural uranium, Canada decoupled its civilian nuclear program from enrichment and reprocessing activities, which are covered by the Treaty on the Non-Proliferation of Nuclear Weapons (NPT; see box below).

Canada's obligations under the NPT and the Nuclear Suppliers Group (NSG)

Canada is a signatory to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and a participant nation in the Nuclear Suppliers Group (NSG). Its commitments govern how Canada develops, safeguards, and exports nuclear materials, technologies, and fuel-cycle capabilities.

Under the NPT, which went into effect in 1970, non-nuclear-weapon states agree never to acquire nuclear weapons and place all nuclear material and activities under International Atomic Energy Agency (IAEA) safeguards. Canada fulfills these obligations through a comprehensive safeguards agreement with the IAEA (1972) and the Additional Protocol (2000), which provides the IAEA with expanded inspection rights and access to nuclear-related information. The CNSC implements these commitments domestically under the Nuclear Safety and Control Act, maintaining national systems for nuclear material accounting and requiring operators to report inventories, allow inspections, and apply safeguard measures.

Canada is also a member of the NSG and the Zangger Committee, which are multilateral export-control regimes that help ensure that transfers of nuclear material, equipment, and dual-use technologies are supplied only for peaceful purposes and do not contribute to weapons programs. As part of this framework, any export of controlled nuclear substances, equipment, or information requires a CNSC licence under the Nuclear Non-proliferation Import and Export Control Regulations, and major transfers may proceed only if a legally binding Nuclear Cooperation Agreement exists with the recipient country.

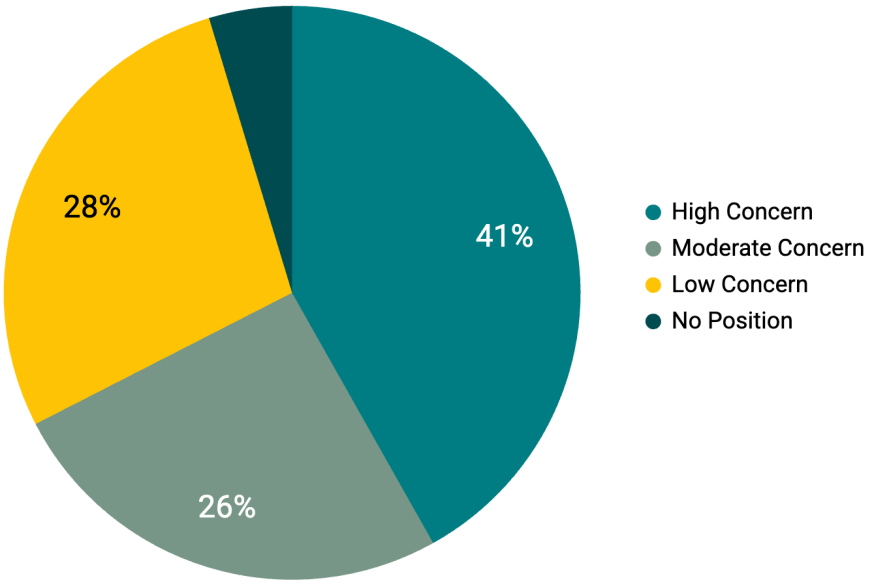
Together, the NPT and NSG obligations have shaped Canada's decisions on reactor technology, uranium exports, and potential domestic enrichment. They do not prevent Canada from developing advanced fuel-cycle capabilities, but they require that any such activities remain fully transparent, safeguarded, and compliant with international non-proliferation norms.

While not prohibited under the NPT, the development of domestic enrichment capability has historically faced political and economic barriers, including competition from nations with established enrichment capacity and sensitivity around the risks of proliferation.

The Darlington New Nuclear Project is Canada's first commercial nuclear project that will require low enriched uranium. Canada lacks domestic enrichment capability, leaving the country dependent on imports. Participants were divided on their level of concern about the lack of domestic enrichment capacity. Those who expressed high levels of concern argued that relying on imported fuels is a serious strategic vulnerability, given that nearly half (about 44%) of global capacity is located in Russia. Western facilities (collectively holding about 40% capacity), concentrated primarily in European facilities operated by Urenco and Orano, are already booked through the early 2030s.

Participants who expressed low concern pointed to the multi-billion dollar price tag to develop domestic capacity, with estimates reaching as high as $100 billion. These participants argued that current domestic demand does not justify such an investment and noted that existing supply chains are stable and cost-effective, making domestic enrichment unnecessary.

Figure 3: Respondents were split in their levels of concern about Canada's lack of enrichment capacity



The survey responses show that Canada needs clear federal direction on our long-term fuel needs.

The decision to develop domestic enrichment capacity would be a significant undertaking. It would require involvement from nuclear-ambitious provinces, private firms such as Cameco, and numerous federal departments, including Global Affairs Canada; Natural Resources Canada; Innovation, Science and Economic Development Canada; Public Safety Canada; and the Canada Development Investment Corporation.

At a technical level, such a review must consider long-term requirements, conversion constraints, feedstock availability, build-out rates, and technology choices for the reactor-fleet. It must then determine whether domestic demand and potential export opportunities can justify building capital-intensive enrichment infrastructure. Enrichment is not a narrow procurement question, but a strategic choice that requires careful and coordinated technical, economic, and geopolitical analysis before Canada can set its long-term approach to the nuclear fuel-cycle.

The quotations below illustrate the spectrum of opinion:

"No one should be 100% dependent on another country for energy security — Canada should be at the table as an enricher."
"Canada can avoid enrichment altogether by leveraging its CANDU fleet and fuel recycling capabilities."
"We can't be a fully sovereign nuclear nation if we can't fuel our own reactors."
"Canada doesn't need enrichment tomorrow but it does need a plan that ensures predictable access through trusted partners."
"The risk isn't supply today — it's being unprepared when the advanced-reactor market tightens."
"No single entity has a stranglehold on LEU supply… LEU is not where the risk lies."

Limits to scaling with a geographically concentrated supply chain

Canada's highly concentrated, Ontario-centric nuclear supply chain is an asset; it is anchored by established utilities, research institutions, and a deep network of CSA N-series-compliant suppliers. Even so, **74% of participants said that this geographic concentration in Ontario is a potential impediment to scaling nuclear nationally.**

Many noted that Ontario suppliers are already consumed with refurbishments and SMR first-of-a-kind builds. As a result, delays or capacity crunches at an Ontario vendor could ripple across projects in other provinces, which currently lack local CSA N-series-compliant suppliers and would be fully dependent on an already stretched ecosystem. A coordinated pipeline of projects that are national in scope and sequenced deliberately can allow the supply base to effectively plan and commit to expansion efforts.

"Ontario's supply chain is world-class, but it's running hot. If we don't build capacity outside the province, every other jurisdiction will be stuck waiting in line."

Licensing and regulatory timelines

Overlapping regulatory roles are already costing Canada valuable time, say 60% of participants. "The impact assessment process is too slow, too complicated, and too risk-averse for what Canada needs to build," one respondent said. The length and complexity of federal impact assessments and the duplicative roles of the Impact Assessment Agency of Canada (IAAC) and the CNSC remain a major barrier to timely project approvals, with processes often described by respondents as risk-averse and duplicative across federal and provincial jurisdictions.

A majority of participants (69%) identified intergovernmental coordination as a core enabling factor for scaling nuclear deployment. On this front, the role of the new Major Projects Office, and how it will interact with the IAAC and CNSC, is unclear. Coordination is needed to provide the clarity, sequencing, and risk-sharing necessary to advance these capital-intensive projects.

Participants noted that the absence of predictable federal signals to provinces around permitting could have an adverse impact on nuclear development. "We haven't seen this scale of nuclear buildout in over three decades," one respondent said. "It's going to take full collaboration across utilities, Indigenous communities, and all levels of government to get it right." A critical test for Canada's nuclear expansion, and the ability to address workforce and training choke points described above, will hinge on coordination.

"Alignment between orders of government isn't just good politics — it's what unlocks capital. Investors and utilities need clarity on who pays, who permits, and who guarantees long-term returns before projects can move forward."

Fragmented planning across provinces could slow deployment

Federal, provincial, and Indigenous partners are advancing on separate tracks, with Western provinces currently left to develop nuclear strategies in relative isolation. This fragmented planning was identified by 68% of participants as an obstacle to nuclear deployment. "We see parallel effort rather than joint execution," one respondent told us.

Many participants cited Ontario as a reference case for intergovernmental collaboration and coordination; decades of CANDU development and refurbishment have cultivated a stable institutional framework underpinned by clear regulatory roles.

"The advantage in Ontario isn't just the supply chain — it's the coordination. Everyone knows who's responsible for what, and that predictability de-risks everything from contracting to community engagement."

Several participants from the private sector suggested that CSA N299-certification can be overly onerous and an unnecessary barrier to entry in the nuclear supply chain. "Rather than making it easier for a company to manufacture under an ISO program, they've made it more restrictive," one respondent said. Nearly half (49% of participants) identified potential misalignments across jurisdictions — including certification recognition and regulatory frameworks — as a growing risk to Canada's ability to expand nuclear generation beyond Ontario, as other provinces seek to build their own supply chains.

Without coordinated frameworks, provinces risk duplicating efforts, underutilizing industrial capacity, and delaying nuclear project timelines. Replicating the spirit of federal–provincial collaboration seen in Ontario will be key to transform Canada's parallel efforts into a unified national strategy for nuclear growth.

Capital requirements

Participants that discussed cost (47%) were unanimous that high upfront capital requirements of nuclear projects remain a major barrier to deployment. This challenge is more pronounced in provinces with smaller ratepayer bases, which lack the fiscal capacity to absorb full project costs. To take just one example, Saskatchewan's annual budget is approximately equal to the estimated cost for the Darlington New Nuclear Project ($21 billion).

Participants stressed that risk is driven both by the sheer scale of overnight capital costs and by execution. Labour shortages and supply-chain bottlenecks can materially increase financing costs, extend construction timelines, and shift more of the burden of cost recovery on to ratepayers. Recent rate applications in Ontario underscore how capital cost pressures can show up in higher electricity prices if projects are not sequenced appropriately across the entire grid.

Most of our respondents (90%) emphasized the importance of the federal investment tax credits (ITCs) in reducing upfront capital costs and enabling investment decisions — particularly in provinces with smaller ratepayer bases. Canada's 2025 budget reaffirmed the federal government's commitment to enacting the Clean Electricity ITCs and its continued support for the 30% Clean Technology ITC, as well as measures to improve investment certainty and streamline access for major low-carbon energy projects.

A full 79% of participants called for fleet-based approaches to reactor deployment.

Fleet-based planning, whereby governments commit to standardized nuclear reactor designs in each size category,

enables cost efficiencies, repeatability, and shared training across provinces (see box below). "Fleet planning has to start at the federal level," one respondent said. "Otherwise, each province will reinvent the wheel."

One-off projects increase costs and delay the development of learning curves that can drive costs down from construction of one reactor to the next. "A fleet approach only works if ITCs are predictable over a decade, not recalibrated every budget cycle," one respondent told us.

A full 79% of participants called for fleet-based approaches to reactor deployment.

Fleet-based approaches to reactor deployment

Nuclear expansion works best when countries focus on a single reactor design and build it repeatedly; this is known as a fleet-based approach. Using the same design over and over is the most reliable way to bring costs down over time, as builders gain experience and apply lessons from earlier projects. There are many ways that reactor construction can achieve cost reductions from one project to the next. The U.S. Department of Energy's Liftoff Report for Advanced Reactors, for example, points to modular construction as one factor that will bring the cost of advanced reactors down over time, with up to 80% of cost reductions driven by consistent application of best practices and learning by doing. Canada has followed this model to date with its CANDU reactor fleet.

Clean Prosperity continues to recommend that provinces embrace fleet-based planning. Provinces and the federal government should pursue, coordinate, and standardize a single design choice for each reactor size category: large (700MW or more), small (20MW to 300MW), and micro (20MW or less). There are several candidates in the large reactor class, including the AP1000 and CANDU Monark. In the small category, the BWRX-300 under construction at Darlington has a large headstart. If Canada is to build tens of gigawatts of new nuclear capacity, new reactors in each size category should look alike to optimize cost-effectiveness and affordability. To get the most out of fleet-based planning, provinces should commit to a minimum order book (e.g. one large unit or three or more SMRs) with staggered starts, to ensure workforce availability, prioritization of brownfield nuclear sites to maximize shared infrastructure savings, and open-book cost reporting (e.g. schedule, change orders, and realized learning).

"Fleet thinking means planning for 10 units, not one, and that changes everything about financing, training, and supply-chain design."

Ontario has chosen the GE Hitachi BWRX-300 SMR design, developed in the U.S. and Japan. To maximize the benefits of this technology choice beyond the Darlington New Nuclear Project, Canada must coordinate the development and accumulation of related intellectual property (IP) to secure a true first-mover advantage. If the BWRX-300 scales globally, the partners in the Darlington project — Ontario Power Generation, AtkinsRéalis, and Aecon — have opportunities to develop reactor-specific IP, individual supply chain vendors, academic institutions, commercial labs, and consultancies. There

would also be the opportunity to create a durable institutional home , such as in Canadian Nuclear Laboratories (CNL), where reactor-specific knowledge and IP could be retained.[1] Canada has taken the risk of building the first-of-a-kind. It must make itself an indispensable partner in the global deployment of this reactor. If Canada does not retain reactor-specific knowledge and intellectual property, it risks absorbing first-of-a-kind costs without capturing lasting domestic value, which would undermine the case for scaling a U.S.-origin design across a Canadian fleet.

Finally, 62% of participants cited the need for "patient capital" and long-term financing, aligned with nuclear payback periods. Smaller provinces cannot absorb the full costs and public-sector participation is needed to attract private investors.

"Without patient capital, SMRs will remain prototypes. You need investors who think in decades, not fiscal quarters."

Rethinking export-related financing[2] could help crowd in more patient capital, strengthening Canada's domestic supply chain and creating new export opportunities. Reforms to Canada's Export and Import Permits Act (EIPA) regime are needed. The EIPA currently focuses on dual-use goods and non-proliferation in the nuclear sector. In contrast, under U.S. Export Controls, the U.S. government has a broader mandate to maintain American technology leadership and economic security. Adding an economic security lens to the EIPA's scope could help ensure that when Canadian nuclear technology is used abroad, Canadian companies are better positioned to participate in those projects. The option to participate in future international projects could make domestic investment more attractive.

Uneven provincial readiness, quality assurance, and digital resilience

Western provinces face significant challenges in building the regional supply chains needed to support new nuclear development. CSA N-series quality requirements (CSA N286 and N299) can pose challenges for emerging suppliers. For smaller companies that supply parts or services indirectly, the cost and effort required for certification can limit participation in nuclear projects.

Survey participants suggested a more tailored approach. "We need a fit-for-purpose approach, collaborating with regulators to classify components appropriately, so that not everything needs to be nuclear-class or gold-plated," a respondent told us. "This streamlining can reduce extensive testing and material purity requirements for non-critical components, leading to faster and cheaper construction without compromising safety."

[1] While Canada owns IP generated at CNL through Atomic Energy of Canada Ltd., the involvement of U.S. firms in CNL's management means that any use of U.S.-origin technology, data, or technical assistance could trigger U.S. export control rules. Canada should proactively assess and manage the risk to protect commercialization and third-country deployment opportunities.

[2] e.g. from Export Development Canada.

Small and medium-sized enterprises (SMEs) seeking to supply non-critical components can help broaden the supply base. “The N299 process is expensive and complex. SMEs need help just to get through the certification gate,” one respondent said. Domestic manufacturing capacity for key components and materials is limited, increasing reliance on imports and constraining the growth of regional nuclear industries. “You can’t build a national program if half the country can’t bid on nuclear work,” one respondent told us.

As reactor control and monitoring systems become more digitally integrated, cybersecurity has become a growing regulatory focus. Canada’s nuclear cybersecurity standards are articulated in CSA N290.7, Cyber Security for Nuclear Power Plants and Small Reactor Facilities. **Several participants (20%) called for a unified Canadian nuclear cybersecurity standard**, aligned with CNSC regulatory documents and CSA N-Series. These participants said stronger cybersecurity and QA compliance is critical to protecting digital systems, intellectual property, and the integrity of Canada’s growing nuclear supply chain.[3] “We don't even have cybersecurity legislation for critical infrastructure in Canada yet,” one respondent said. “So we also need to take into consideration what are these SMRs going to be powering? Are they small towns, are they military bases? Because if they're military bases, China and Russia would be really interested in those.”

One participant also noted that cybersecurity oversight within Canada’s nuclear framework remains limited. Current regulations focus primarily on reactor operations, leaving much of the broader nuclear supply chain outside formal protection standards.

Interoperability across Canadian safety authorities emerged as another provincial-readiness issue. Ontario has a robust process for granting Certificates of Authorization to nuclear suppliers, both in and out of the province. This process is not yet transferable to other provinces.

As part of the Canadian Free Trade Agreement, all provinces and territories implemented the Reconciliation Agreement for the Canadian Registration Number for Pressure Equipment in 2020, to reduce duplicative design reviews for pressure equipment. Extending mutual inspection recognition agreements (e.g. CSA N285),

[3] Bill C-8, the Critical Cyber Systems Protection Act, is currently working its way through parliament. It proposes a cross-sector framework to strengthen cybersecurity for federally regulated critical infrastructure, including nuclear.

even on a provincial bilateral basis, would help develop a single Canadian nuclear supply chain and leverage existing safety authority technical capacity in provinces that do not currently have operational reactors.

Indigenous partnership and capacity

More than one third of participants (37%) cited inconsistent processes for Indigenous engagement and inconsistent resourcing for community capacity building as vulnerabilities for project proponents. Participants stressed that engaging Indigenous and northern communities at the very start of the project is essential for delivering nuclear projects. "This next wave is an opportunity for increased Indigenous economic participation and community energy sovereignty," one respondent said. Ensuring Indigenous participation across the supply chain supports responsible, cost-effective, and efficient scaling. Meaningful, early, and continuous consultation must go beyond regulatory checklists to include shared decision-making, equity participation, and capacity building.

"The exclusion of First Nations from federal–provincial energy discussions remains a major misalignment. We need to have Indigenous communities at the forefront, so that free, prior, and informed consent can actually be achieved. Those most affected by higher [electricity] rates must have a real seat at the table."

Participants noted that durable partnerships must go beyond consultation or benefit agreements, shifting from a participation mindset to a partnership mindset.[4] This is characterized by early, informed engagement, shared governance, co-investment, and sustained capacity-building. "When, for example, you've got to have Indigenous participation and these communities have one person they can put on the file and there's 16 companies coming at them with binders and binders of requests and deadlines," one respondent noted, "capacity is a big bottleneck that has to be addressed."

"The federal government can make Indigenous participation a reality by setting clear performance indicators for employment, apprenticeships, and contracting in the nuclear supply chain. Economic incentives such as investment tax credits should include mandatory Indigenous participation criteria. That's how we advance economic reconciliation while building the next generation."

Many participants referenced education, partnerships, and co-development as essential components of the path forward. Communities must have a thorough understanding of all aspects of

[4] This shift is particularly important in light of the 2025 Federal Court ruling 2025 FC 319 on the near-surface disposal facility at Chalk River, which found that the CNSC must consider the UN Declaration on the Rights of Indigenous Peoples and ensure robust consultation consistent with free, prior, and informed consent.

nuclear development, including its technical, environmental, and economic dimensions. Participants also highlighted the need for industry and government to provide accessible and transparent information in formats that allow sufficient time for internal community deliberation, rather than pressuring immediate decisions to fit project schedules. Several participants pointed to the importance of engaging Indigenous youth early through exposure to science, technology, engineering, and mathematics.

Participants also called for Indigenous engagement from the provinces that are advancing or interested in scaling nuclear projects. They viewed equity and partnership opportunities as essential to this process. They also point to opportunities in modular construction, deployment, and localized supply-chain development as practical mechanisms to embed equity and community ownership within the broader industrial ecosystem, and offer meaningful entry points for Indigenous education and training.

One respondent linked Indigenous participation to workforce availability: "with immigration tightening, Canada needs to turn inward and support Indigenous participation in the trades," they said.

Indigenous inclusion is a central component of Canada's capacity to deliver complex, socially accepted nuclear projects. This understanding is showing up in new initiatives, such as Ontario Power Generation's Reconciliation Action Plan and SaskPower's 2025 Memorandum of Understanding with the First Nations Centre of Excellence. Federal initiatives, such as the First Nation Infrastructure Fund, can help Indigenous communities gain equity stakes in projects and accelerate development by providing guidance on navigating regulatory approvals.

Waste management and long-term stewardship

Participants noted that nuclear expansion will change both the volume and characteristics of used fuel that Canada must manage. Several participants cautioned that for many communities and Indigenous nations, engagement around new nuclear projects begins with the question of waste management. It is tied up in the conversation on nuclear expansion and cannot be handled as an afterthought.

In November 2024, the Wabigoon Lake Ojibway Nation-Ignace Area was selected to host Canada's first ever deep geological repository (DGR) for used nuclear fuel. Participants highlighted that if governments and the Nuclear Waste Management Organization (NWMO) intend for this DGR to receive larger volumes or new fuel types, or if DGR expansion may be needed, they must communicate this intent early. The NWMO's consultation process for Canada's first-of-a-kind DGR offers a template to follow.

Conclusion and recommendations

Canada already has many of the core building blocks required to scale nuclear power in the coming decades. However, despite this foundation, our survey results point to several potential bottlenecks and vulnerabilities that could increase project costs and prevent nuclear power from making a more meaningful contribution to Canada's economic, security, and climate goals. Translating ambition into delivery will require a clearer division of responsibility and coordination between orders of government.

"We have all of the pieces but no one is conducting the orchestra."

Based on our data and ongoing consultation with experts and policymakers, **we recommend the development of a pan-Canadian nuclear strategy led collaboratively by the federal government, nuclear-ambitious provinces, and Indigenous communities.** This strategy should simultaneously work to update Canada's Small Modular Reactor (SMR) Action Plan and the provincial Strategic Plan to Advance SMRs.

To enable responsible, efficient, and cost-effective scaling of nuclear power across Central and Western Canada, **we recommend the Canadian nuclear strategy contain the following seven elements:**

1. CABINET-LEVEL LEADERSHIP WITH SINGLE-POINT ACCOUNTABILITY

Canada should establish clear, cabinet-level leadership with single-point accountability for nuclear fleet deployment and supply-chain planning. Nuclear expansion is a multi-decade, nation-building effort that requires sustained political leadership and coordination.

To deliver this, the federal government should create a dedicated, nuclear-specific cabinet role — either a minister or a secretary of state. This role should complement, not displace, provincial authority, and carry a defined mandate to:

- owning and updating a pan-Canadian nuclear strategy;
- coordinating federal departments whose decisions impact nuclear project and supply chain planning;
- aligning federal incentives and regulatory processes with provincial delivery
- safeguarding Canadian intellectual property (IP) developed through new nuclear projects and ensure Canada captures the benefits of this IP in foreign markets; and

- managing issues with geopolitical dimensions (e.g. fuel security, exports, and non-proliferation).

Federal leadership should complement, not displace, provincial authority by providing alignment across policy, regulatory, and financial systems that extend beyond provincial boundaries. This should be supported by a standing assistant deputy minister-level, federal-provincial working group focused on fleet and supply-chain planning, project sequencing, workforce development, standards alignment, and early resolution of bottlenecks. Cabinet-level leadership can provide the continuity and accountability required to mobilize capital, expand supply chains, and deliver nuclear projects at scale. Without it, Canada risks parallel efforts, higher-than-necessary costs, and delayed deployment.

All provinces should designate senior officials to participate in this federal-provincial working group focused on fleet deployment and supply-chain planning. This can ensure coordinated and well-sequenced supply-chain buildout that avoids reactive decision making.

Saskatchewan and Alberta should align their nuclear strategies and procurement decisions in coordination with Ontario while retaining control over project ownership and delivery. This will allow them to leverage the benefits of fleet-based deployment, shared supply chains, and greater labour mobility.

2. INTERPROVINCIAL WORKFORCE STANDARDS PLANNING

Apprenticeship programs and certification requirements should be aligned across provinces and in coordination with the federal government to ensure workforce readiness and interprovincial labour mobility. Better alignment would reduce interprovincial competition, expand Canada's supplier base beyond Ontario, and support the safe and efficient delivery of nuclear projects at scale.

Governments should jointly assess the application of Canadian Standards Association (CSA) N-series standards across the nuclear supply chain. This assessment should determine whether N-series standards are required for all components, and where they are not, identify products, components, or categories of components that could be procured using equivalent, internationally recognized standards. CSA N-series quality-assurance standards have served Canada's nuclear sector well, but a more tailored approach should be considered to encourage market entry and enable scaling. Clarifying where alternative or equivalent standards can be used would lower barriers for new suppliers — especially SMEs — without compromising safety. Canadian standards should also be aligned with international best practices to facilitate the expansion of the Canadian nuclear supply chain to international markets.

3. INDIGENOUS PARTICIPATION

All orders of government must treat Indigenous participation as a core enabling condition for nuclear expansion and embed it early in project planning, on a nation-to-nation basis. Industry and project proponents must retain primary responsibility for building long-term partnerships, investing in community capacity, and achieving free, prior, and informed consent through early, continuous engagement with Indigenous communities.

Provincial governments should enable Indigenous participation by leading the establishment of clear, co-developed performance indicators for equity ownership, employment, apprenticeships, and contracting in nuclear projects. This can enable meaningful participation in project planning, workforce development, and economic opportunities across the supply chain.

4. A COMMITMENT TO FLEET-BASED DEPLOYMENT

Fleet-based deployment should be formally adopted as the default approach for new reactor builds, recognizing that repeat construction of standardized designs offers the most plausible path to cost reductions.

The federal government should offer incentives to support fleet-based deployment if necessary. This could include enhancing financial support (e.g. ITCs) for projects that are consistent with fleet-based deployment, or restricting support only to projects that are consistent with fleet-based deployment.

Provinces, working with utilities, should converge on a limited portfolio of reactor designs — one large, one small, and one micro reactor — to maximize economies of scale, learning by doing, and certainty across the supply chain.

5. ASSESSMENT OF CANADA'S LONG-TERM FUEL STRATEGY

The federal-provincial working group should lead a structured, evidence-based assessment of Canada's long-term fuel strategy. This work should be explicitly tied to projected fleet requirements and reactor technology choices, with a focus on:

1. enriched fuel procurement, including geopolitical, diplomatic, security, and non-proliferation considerations; and
2. the need for domestic enrichment capacity, including technical feasibility, costs, timelines, and commercial viability, underpinned by: (a) a thorough risk analysis; and (b)

a cost-benefit analysis of deploying new commercial reactors that require enriched fuel that Canada is not currently capable of producing itself.

It should assess whether domestic enrichment capacity is warranted or whether allied supplies can withstand future changes in government or larger geopolitical shifts.

Provincial governments should align reactor technology choices and deployment timelines with national fuel-cycle planning to avoid locking in long-term dependencies in advance of government decisions on enrichment.

A deliberate, coordinated approach to enrichment will allow Canada to manage emerging risks without prematurely committing capital, while preserving optionality as global fuel markets, reactor technologies, and geopolitical conditions evolve.

6. ROLE CLARIFICATION AND ELIMINATION OF REGULATORY OVERLAP

Regulatory roles and responsibilities should be clarified and rationalized to eliminate duplication and parallel processes. The respective roles of the Canadian Nuclear Safety Commission (CNSC), the Impact Assessment Agency of Canada, and the Major Projects Office should be clearly defined through the federal-provincial working group. Federal nuclear projects should proceed through a predictable, coordinated approval process with clearly defined responsibilities and timelines.

Regulatory authority should remain with the CNSC whenever possible, reflecting the CNSC's long-standing role as Canada's specialized nuclear regulator, provided it is adequately resourced to oversee nuclear build-out.

Provincial governments should align mandates, regulatory frameworks, and free, prior, and informed consent standards to facilitate accelerated CNSC decisions. Clear role definition and single-window licensing are essential to reduce project risk, shorten timelines, and ensure Canada's regulatory system enables — rather than constrains — responsible nuclear expansion at scale.

7. USED-FUEL MANAGEMENT AND LONG-TERM STEWARDSHIP PLANNING

Federal and provincial governments should integrate used-fuel management into nuclear expansion planning from the outset, with long-term stewardship plans advanced in parallel with reactor deployment decisions.

Governments should work with the Nuclear Waste Management Organization (NWMO) to develop and communicate a clear, national framework for used-fuel management that reflects the implications of expanded nuclear deployment. This should include early and

transparent communication on potential impacts to Canada's first deep geological repository (DGR), including changes in volume, fuel types, timelines, and the potential need for additional DGRs.

The NWMO, governments, and project proponents should apply the first-of-a-kind DGR consultation process as a template for future engagement, ensuring Indigenous and host communities are meaningfully involved from the outset through transparent, sustained, and well-resourced dialogue.

A proactive, transparent approach to used-fuel management will reduce uncertainty, build public confidence, and support the timely deployment of new nuclear projects across Canada.

These actions would convert today's more fragmented efforts into a coherent national build program. The goal is not to centralize authority, but synchronize ambition and ensure that each individual investment, project, and program can contribute to responsible and cost-effective deployment of new reactors. Several other components, such as cybersecurity legislation for critical infrastructure, a coherent regulatory environment, and a more competitive tax environment, should be addressed in an overarching manner, not specific to the nuclear sector.

Appendix: Methodology and survey questions

Our semi-structured qualitative survey was administered between May and October 2025. Given the sector's complexity, we opted for qualitative, semi-structured interviews to ensure we captured the specific expertise of all 43 participants. Interviewees included representatives from utilities and nuclear proponents, public service, academia, national security, Indigenous communities, labour, and non-governmental organizations.

All interviews were conducted on a confidential and non-attributable basis. Therefore, the contents of all interviews included in this paper are not linked to individual names or organizations. We used this method to ensure participants were comfortable speaking as freely as possible during interviews.

The participant sample was intentionally diverse but not statistically representative of all stakeholders in Canada's nuclear sector. Perspectives presented in this paper reflect the views of those interviewed and are intended to illuminate recurring themes, strategic priorities, and potential areas for policy focus, rather than to quantify sector-wide opinion. While every effort was made to ensure balanced regional and sectoral representation, certain perspectives may be underrepresented due to the scope of the project and the availability of participants during the research period. Average interview time was approximately 40 minutes and ranged from 25 to 65 minutes.

We designed our interview framework to ensure consistency in core areas of inquiry while allowing participants to expand on issues relevant to their expertise. We posed nine fixed questions to all participants, deviating to related topics where opportunities arose.

Survey Questions:

1. Do you support efforts to scale Canada's nuclear sector and build new reactors? Why/why not?
2. Where do you see Canada's strongest advantages (supply chain or otherwise) in its efforts to scale new reactors?
3. Where do you see the most significant choke points or vulnerabilities in the nuclear supply chain that could prevent the scaling of new reactors?
4. Are you concerned about Canada's current and future access to enriched nuclear fuel for next-generation reactors?
5. Are there specific skills, trades, or workforce gaps that you believe could become bottlenecks for nuclear growth in Canada?

6. Are there misalignments (e.g. federal/provincial relationship) that hinder progress to scale nuclear? What would you like to see improved?
7. Are there additional government policies or investments you believe could help strengthen Canada's nuclear supply chain?
8. Do you have anything else you'd like to add?
9. Is there anyone else we should reach out to for this survey?