Executive Summary

Artificial intelligence (AI) is rapidly reshaping global economies, public institutions, and the delivery of essential services. As governments race to harness AI's benefits while safeguarding democratic values, privacy, and public trust, national AI policies have become a strategic priority. Countries such as the United States, United Kingdom, Singapore, South Korea, Japan, France, and Australia are advancing comprehensive AI frameworks that combine governance, investment, innovation, and workforce development at a large scale. Their approaches offer valuable insights into how nations can responsibly accelerate AI adoption while mitigating societal, ethical, and economic risks.

For Canada, the stakes are particularly high. The country is home to world-class AI research institutions and has historically held a leadership position in responsible AI principles. Yet, rapid global advancements and the emergence of more prescriptive regulatory regimes highlight a need for a more coordinated, future-ready national strategy. Ensuring that Canada remains globally competitive requires a balanced approach that fosters innovation, protects citizens, and positions the federal government as both a regulator and a model user of trustworthy AI.

This project examines how the Government of Canada can strengthen its AI policies and strategies with a two-step approach. First, different AI feature metrics from 193 countries are collected and analyzed alongside corresponding AI Innovation scores from established indices to study AI feature importance. Afterwards, Canada's AI performance will be benchmarked against the top ten countries with the most advanced AI frameworks, to identify areas of improvement for Canada. Through feature importance and comparative analysis, the project aims to identify global best practices in governance, risk management, computer infrastructure, public-sector adoption, industrial incentives, and workforce development. The goal is to provide evidence-based recommendations tailored to Canada's context by highlighting opportunities to enhance regulatory clarity, scale responsible AI implementation, and support Canadian industry in an increasingly competitive global landscape.

Synthesizing international lessons and evaluating Canada's current position, this project contributes to a broader understanding of how the federal government can strategically adapt to the accelerating pace of AI innovation. Ultimately, the findings aim to support the development of a robust, coherent, and future-oriented Canadian AI strategy that maximizes public value while upholding the nation's commitment to ethical and human-centred technology.

Our interim analysis establishes the baseline for Canada's AI position among 10 peer nations. The next phase translates these findings into a data-backed strategy and a chatbot-enabled policy interface demonstrating how specific initiatives could raise Canada's AI competitiveness score by 2030.

1. Context and Scope

Goal

The objective of this project is to conduct a systematic analysis of leading global AI policies and strategies, focusing on advanced and well-defined national AI frameworks across a diverse set of countries. Through a comparative assessment, international best practices will be identified to highlight policy and performance gaps in Canada's current approach, forming the basis for evidence-informed recommendations. The resulting insights aim to strengthen Canada's federal AI strategy by enhancing regulatory clarity, fostering innovation, supporting responsible public-sector adoption, and reinforcing Canada's global competitiveness in AI.

Scope

As this strategy is intended for the federal Government of Canada, provincial and municipal AI policies fall outside the scope of this project, and will not be considered for analysis or comparison. Likewise, private-sector organizational AI strategies are excluded from consideration, although some aspects of private-sector AI strategies may be referred to when relevant for benchmarking purposes.

2. AI Innovation measurement methodology

2.1. Methodology of work

This project uses a comparative policy analysis methodology to evaluate AI strategies from the world's top ten leading AI nations, and compare them against Canada's current AI strategy to assess gaps and propose potential solutions. These top ten AI nations were identified using Oxford's 2023 AI Readiness Index, and include the USA, the UK, Singapore, South Korea, Japan, France, China and Australia (Hankins et al. 2023).

First, each country's official AI strategy, regulatory framework, and government-issued policy documents were collected from publicly available government portals, international organizations, and reputable research institutions such as Stanford via its HAI AI Index (Stanford Institute for Human-Centered AI, 2025). These documents included governance models, risk-based regulatory structures, national compute initiatives, public-sector adoption frameworks, and industry incentives.

Once collected, key AI metrics, such as the number of AI startups in a country, were then extracted from these documents as features for analysis and comparison. These metrics can be categorized roughly into 5 main areas of AI Innovation for organization and discussion purposes, those being Infrastructure, Research Investment & Innovation, Human Capital & Talent, Adoption & Economy, and Governance & Trust. A structured benchmarking matrix was created to compare countries by these metrics and identify patterns, strengths, and unique approaches. Canada's current and proposed AI policies were assessed using the same framework to ensure consistency.

In addition to comparing Canada against the top ten leading AI nations, a feature importance analysis was also done on a set of AI metrics spanning all 193 countries in the UN. Notably, the exact set of metrics used for this analysis varies slightly, but it still represents the same 5 areas of AI Innovation. While sources differ slightly, the methodology for finding and using them remains the same as well.

Finally, findings from both benchmarking and feature analysis were synthesized to highlight gaps, opportunities, and actionable recommendations for the Government of Canada, which would constitute the proposed AI strategy. This methodological approach ensures a transparent, repeatable, and evidence-based assessment grounded in internationally recognized best practices.

2.2. Established Indices and Data Streams

As reputable and centralized sources of information on many different countries, established AI indices were key sources of data for both the top-10 benchmarking analysis and AI feature analysis performed in Section 3. Notable AI indices used include Tortoise Media's 2024 global AI index, Stanford's 2025 HAI AI index, and Oxford's 2023 AI Readiness Index. This section aims to briefly describe what these indexes

are, what information was used from them for top-10 benchmarking and feature analysis, and summarize key takeaways from the data presented. Another notable data source was the AI topic page of Our World in Data.[1] A more detailed summary of the data sources used can be found in Tables 7 and 8 in the Appendix.

Tortoise Media's global AI index was used to provide a quick preliminary understanding of the current global AI ecosystem. It benchmarks nations by their level of investment, innovation, and implementation of AI by measuring 122 different metrics, aggregating them into different subscores for each country, and then combining those into a final AI index score for each country (White and Cesareo, 2024). These subscores are Talent, Infrastructure, Operating Environment, Research, Development, Government Strategy, and Commercial. The Research, Development, and Talent subscores are used in the top-10 benchmarking analysis, while all of Tortoise Media's index subscores were used in the feature importance analysis.

Tortoise Media's article on this index makes special note of the fact that Canada's AI index score has been steadily increasing since 2021, and Canada's ranking has dropped from 4th place to 8th as a result. Analysis of the full table of subscores suggests that Canada's low Infrastructure and Operating Environment scores are likely to blame, with Canada ranked 18th in Infrastructure, which measures a country's reliability and scale of AI-related infrastructure (including digital connectivity, GPU use, semiconductor manufacturing, and supercomputing capabilities), and 16th in Operating Environment, which measures a country's AI regulation and public opinion on AI.[2]

Stanford's HAI AI Index is a rigorous compilation of many different AI metrics of different countries around the world collected through validated globally sourced data, rather than a singular AI index metric. It is recognized globally as one of the most authoritative resources on AI, being designed to guide any AI stakeholders, notably including government agencies and policymakers, by providing detailed data tables and highlighting key trends which shape the modern AI ecosystem, so that stakeholders can make well-informed decisions (Stanford Institute for Human-Centered AI, 2025). In the context of this project, the HAI AI Index was used as a key source of data for the top-10 benchmarking analysis, with 75% of the dataset used consisting of metrics from this index. Notably, the benchmarking analysis used data taken from Chapters 1, 4, 6, 7, and 8 of this index. The HAI AI Index was not directly sourced for feature analysis, though data on AI-related bills taken from Our World in Data does originate from the HAI AI Index, as noted in Table 7. One key takeaway for Canada from the HAI AI Index is that Canada was found to be performing adequately in AI Research compared to other countries, but struggles with commercializing AI research results, evidenced by comparatively lower levels of AI adoption in industry. A similar sentiment regarding Canada's inadequate AI commercialization is also observed in many professional analyses[] and news media articles[] with Canada's "Brain Drain" problem even becoming a hotly debated topic during Canada's recent election.[]

Oxford's AI Readiness index aims to measure how prepared governments around the world are for the deployment of AI in public services for citizens, with the 2023 edition expanding scope to a significantly larger data set of all 193 UN countries (Hankins et al. 2023). Oxford models AI Readiness as a metric that encompasses 39 indicator metrics of AI readiness, which are reported as three aggregate scores which the report refers to as the "three AI pillars". These pillars are Government, which describes a country's government's ability to adapt to new AI technologies and regulate it, Technology, which describes a country's level of AI research and development, and Data & Infrastructure, which describe a country's

[1] Our World in Data is a website featuring many large data models for various topics. These models are built on other publicly available datasets, such as Stanford's HAI, with some minor data processing applied.

[2] For comparison, Canada is noticeably more competitive in other subscores, such as Research, where Canada is ranked 9th place, and Commercial, where Canada is ranked 6th place.

level of infrastructure for powering AI tools, and the accessibility of data to develop AI tools. This report uses the AI Readiness index itself as an overall AI competitiveness metric to rank countries with.

Interestingly, this index presents Canada with a very competitive data & infrastructure pillar score of 81.17 out of a max of 100, which contrasts from findings in the Tortoise Media index report. One explanation for this discrepancy could be differing definitions of AI infrastructure. For example, Oxford's data & infrastructure score places very little importance on computing power, with only 1 out of the 5 total infrastructure indicator metrics (number of supercomputers) referenced being related to computing power. In comparison, computing capabilities take up 75% of Tortoise Media's infrastructure score. Oxford's small representation of computing power is then further diluted by Oxford bundling infrastructure indicators with data availability and data representativeness indicators into a single reported score, meaning the actual impact of Canada's poor computing capabilities is then further masked by Canada's increased data availability compared to less technologically advanced UN nations. Since Oxford's AI Readiness index only reports aggregate pillar scores as seen with the data & infrastructure pillar, these pillar scores will not be used for feature importance analysis.

3. National AI competitiveness

3.1. Determinants of national AI competitiveness

To identify the main drivers of national AI competitiveness, the analysis models the 2023 Government AI Readiness score for 193 countries as a function of a set of external AI ecosystem indicators. The target variable is the overall AI readiness index, while explanatory variables are drawn from the Tortoise AI Index and Our World in Data: AI talent, infrastructure, operating environment, research, development, government strategy, commercial ecosystem, AI publications per million people, cumulative AI-related legislation, and an indicator of whether a country reports any large-scale AI systems. Variables that directly enter the construction of the readiness index itself (such as pillar or dimension sub-scores) are deliberately excluded to avoid target leakage.

The right panel of Figure 2 summarizes the pairwise relationships between these indicators and AI readiness. Across multiple approaches, computing infrastructure emerges as the single strongest driver of a country's AI readiness score. A nation's AI infrastructure index (reflecting high-performance computing capacity) shows an exceptionally high Pearson correlation with the overall readiness ranking ($r \approx 0.85$, with a 95 percent confidence interval roughly 0.78 - 0.91) (White and Cesareo, 2024). This correlation is substantially higher than that of any other factor. The next-best predictors, such as research output (measured by AI publications per capita) and a composite research quality index, reach correlations on the order of 0.70, indicating that while these are important, they lag behind infrastructure in explanatory power. Other contributors, including national AI strategy commitment and talent availability, also show strong positive associations with readiness (r in the 0.66–0.69 range). Taken together, the correlations in Figure 2 indicate that countries excelling in compute capacity and research capabilities tend to lead in AI readiness overall.

To test the robustness of this pattern, a paired bootstrap analysis was conducted, directly comparing the top correlation against its nearest competitor. The result confirms the primacy of infrastructure, the correlation of readiness with the infrastructure index is significantly higher than that of any other feature. Quantitatively, the infrastructure-readiness correlation exceeds the next strongest correlation by about 0.14 in absolute terms (mean difference ~0.136), with a 95% confidence interval of approximately [0.01, 0.28]. This confidence interval does not cross zero, indicating a statistically significant gap. In practical terms, national compute capacity stands out as a robust predictor of AI preparedness, a conclusion reinforced by both the direct correlation rankings and the bootstrap significance test. By contrast, the remaining factors exhibit more moderate correlations: for example, the development environment index and the commercial ecosystem index show only modest relationships with readiness (correlations

dropping to ~0.5 or below). The alignment of these results across methods provides a clear narrative, that investments in infrastructure and research capacity consistently correlate with higher national AI readiness, whereas other dimensions play supporting but comparatively lesser roles.

3.1.1. Limitations of this Analysis

These findings must be interpreted with caution due to several data limitations. First, the coverage of key indicators is incomplete. Many countries lack data for advanced AI metrics, which restricts the analysis to a subset of mostly high-income or data-rich nations. For instance, more than two-thirds of countries in the dataset have no reported values for indices like AI talent or infrastructure (133 out of 193 entries missing), underscoring the sparsity of the data. Moreover, the definition of "AI infrastructure" used here is still relatively narrow, since it follows the Tortoise Global AI Index infrastructure sub‑pillar that combines indicators on internet connectivity, Top500 non‑distributed supercomputers, semiconductor trade, and citation‑based measures of access to advanced GPUs, and it does not directly capture cloud computing resources or private‑sector compute capacity that many countries rely on. This means the infrastructure score may underestimate the true computing resources available in countries with significant cloud infrastructure or unreported corporate AI clusters. Such gaps in feature coverage and the emphasis on a limited compute metric could bias the results, highlighting the need for careful interpretation. In sum, while the correlation patterns in Figure 2 are informative, they rely on imperfect proxies and should be seen as indicative of broad trends rather than precise causal determinants of AI readiness.

3.2. Canada's Position Relative to Global AI Leaders

The left panel of Figure 2 zooms in on Canada's performance relative to the world's AI leaders and exposes Canada's specific strengths and weaknesses. Using standardized scores (z-scores) for each indicator, Canada's profile was benchmarked against the average of the top three AI-ready countries (the United States, Singapore, and the United Kingdom). This assessment reveals that Canada lags significantly in several critical dimensions. The most pronounced gap is in the commercial AI ecosystem: Canada's score on the commercial index is roughly 2.1 standard deviations below the top-three average. In practical terms, this suggests that Canada's private sector is not as developed or scaled in AI adoption, startup activity, and industry investment as those of the leading nations. A similarly large shortfall is evident in AI talent - Canada is about 1.8 standard deviations behind the leaders in measures of talent availability and skills. This points to a relative deficiency in the domestic AI workforce, which could stem from smaller talent pools or brain drain to other tech hubs such as ones in the United States. Together, these two areas (commercial ecosystem and talent) appear to be Canada's most binding constraints in advancing its AI readiness, as they represent the largest deviations from the benchmark and are foundational to sustaining an AI-driven economy.

Other gaps, while slightly smaller, are still noteworthy. Canada trails the top-tier countries in research output and in the development environment (which encompasses R&D funding and industry development conditions) by roughly 1.1 to 1.6 standard deviations. These deficits imply that, relative to the world's AI leaders, Canada produces fewer AI research publications per capita and may have a less mature environment for AI development and innovation. Such gaps are meaningful, as they suggest that despite Canada's respectable research community, it is not achieving the same level of output or translating innovations to the market at the rate of the leading countries. Contrastingly, Canada matches or even exceeds the top-three benchmark in a couple of domains. Notably, Canada scores above the leaders' average in government strategy (+0.75 SD on the national AI strategy index), reflecting strong federal commitment and policy frameworks supporting AI. Canada is also only marginally behind in compute infrastructure (about -0.3 SD, a relatively small gap), indicating that access to high-end computing resources is not a severe limiting factor compared to the top nations. These positive or near-parity

findings suggest that Canada has laid much of the groundwork in terms of government support and hardware capacity.

A closer examination of Canada's performance relative to the world's AI leaders reveals a mixed profile, with notable strengths in government strategy but pronounced weaknesses in talent and the commercial AI ecosystem. Canada's government has been proactive in AI strategy and the country possesses decent computing facilities, yet these have not translated into commensurate performance in talent development or commercial AI activity. Such misalignments point to strategic bottlenecks, a cutting-edge national AI plan and ample compute power cannot fully drive progress if there are too few skilled AI professionals or an underdeveloped industry to utilize them. Addressing these binding constraints will be crucial for Canada. In practical terms, this means intensifying efforts to grow and retain AI talent, and fostering a more vibrant AI commercial sector, for example, through incentives for startups, industry-academia partnerships, and investment in scaling companies. By closing the gaps in talent and commercial capacity shown in the left panel of Figure 2, Canada would be better positioned to leverage its strong policy support and infrastructure, thereby narrowing the overall readiness gap between itself and the global AI leaders.

4. International benchmarks

In this part, we benchmark five leading AI nations featured in the Tortoise Index to understand how different policy approaches drive their strengths in research, talent, infrastructure, and governance. These insights help us pinpoint what works, what doesn't, and how countries can shape more effective AI strategies.

Within this comparative landscape, the United States stands out, continuing to lead globally across the most critical dimensions of AI competitiveness, particularly in R&D strength, digital and computer infrastructure, and the scale and quality of AI innovation. These outcomes align closely with the policy directions outlined in Building an AI World (Second Edition), which emphasize sustained federal investment in AI research, talent development, and high-quality data and digital infrastructure. Governance activity has also accelerated sharply: in 2024, U.S. federal agencies issued 59 AI-related regulations and states enacted over 130 AI laws, creating a rapidly adaptive regulatory environment. This is reinforced by the U.S.'s light-regulation, pro-innovation approach, which fuels commercialization, venture-capital investment, and rapid AI deployment in high-risk sectors. In contrast, China's AI leadership is driven by centralized planning, massive infrastructure investments, and comprehensive algorithmic governance under its Next Generation Artificial Intelligence Development Plan, enabling the country to dominate in AI patents, industrial AI adoption, and intelligent computing clusters.

The United Kingdom adopts a hybrid approach, combining a sector-specific, pro-innovation regulatory model with strong public investment in safety research, through institutions like the U.K. AI Safety Institute. The UK emphasizes flexible, principles-based oversight rather than hard law, positioning itself as a global leader in AI assurance and technical safety standards. Singapore, meanwhile, stands out for its highly coordinated, government-led innovation ecosystem, using clear ethical frameworks like the Model AI Governance Framework, regulatory sandboxes, and targeted national AI programs in health, education, and finance. This allows it to maintain one of the world's most advanced AI governance systems despite its smaller scale. France, in contrast, aligns more closely with the European Union's high-regulation, rights-based model, implementing stringent requirements under the EU AI Act while simultaneously expanding national research capacity through initiatives like France 2030. France places strong emphasis on public-sector adoption, AI ethics, and strategic sectors such as health, mobility, and defense, reflecting a more centralized but regulation-heavy approach.

5. Recommendations and Expected Impact

In a complementary analysis, a separate composite dataset focused on AI infrastructure and investment indicators for the top 10 countries was constructed, drawing primarily on the Stanford HAI AI Index and related external sources. Within this dataset, AI infrastructure and private investment emerge as the most robust and statistically significant predictors of national AI performance. As reported in Appendix Table 1, total AI datacentres display the strongest association with performance, exhibiting the highest Spearman correlation (+0.913), the largest mean correlation (+0.893), and the tightest 95% bootstrap confidence interval. Additional high-impact predictors include national AI investment intensity, new AI firm creation, and the production of notable AI models. Canada performs below key peer countries on each of these dimensions, indicating structural weaknesses that directly constrain its ability to translate high AI readiness into durable global AI competitiveness.

In response to these evidence-based findings, this report proposes a strategically aligned and SMART-oriented policy portfolio. The National AI Compute Initiative provides a specific and measurable approach to expanding domestic computer infrastructure, addressing Canada's most urgent bottleneck and enabling scalable capacity improvements across the ecosystem (Table 2). The AI Investment Acceleration Fund offers an achievable and time-bound mechanism to increase capital formation and reduce Canada's persistent gap in private AI investment (Table 3). The Canadian Foundation Model Program outlines a relevant, research-linked pathway for producing nationally supported foundation models that translate scientific excellence into applied impact (Table 4). The National AI Literacy and Trust Mission establishes specific and measurable targets for strengthening public- and public-sector readiness, addressing Canada's principal non-technical adoption barriers (Table 5). Finally, the AI Startup Accelerator Network introduces a targeted and scalable intervention designed to raise Canada's AI startup density and support early-stage venture development within a defined implementation horizon (Table 6). Collectively, these strategies form a coherent, evidence-grounded, and operationally SMART framework for strengthening Canada's position within the global AI landscape.

If implemented, this strategy positions Canada to make substantial gains in national AI competitiveness by 2030. Expanded AI infrastructure - growing from five to ten AI-ready data centres and reaching roughly 20,000 H100-equivalent units - supports researchers, startups, and public-sector teams with domestic capacity. Private AI investment is expected to triple, improving Canada's investment ranking and strengthening the commercialization pipeline, while new regional accelerators help increase annual AI firm creation to over 100 companies per year. Canada also began producing its own foundation models, raising Canada's research visibility and enabling downstream adoption in key sectors such as health, climate, and finance. Finally, a national literacy and trust mission improves workforce readiness and public-sector capability, helping lift Canada's overall AI competitiveness score from 26.4 to roughly 41.4 by 2030, narrowing the gap between Canada and peer countries such as the UK, Singapore, and France.

These initiatives can be funded primarily through existing federal fiscal room, without requiring new deficit spending. The federal government has already committed to refocusing $2.25B in savings next year, rising to $3.6B by 2026-27, creating clear space for strategic reinvestment in AI infrastructure, literacy, and commercialization. Additional support can come from targeted reallocations within existing innovation programs (such as SR&ED and the Strategic Innovation Fund) and from public–private co-funding models, where each public dollar crowds in multiple dollars of private and pension-fund capital. Modest portions of new capital-gains tax revenue introduced in Budget 2024 also provide a stable source of funding. Together, these mechanisms offer a realistic, sustainable funding package sufficient to implement the proposed national AI strategy through to 2030.

6. Implementation Roadmap

The implementation roadmap for Canada's national AI strategy should prioritize a sequenced set of interventions that address structural deficiencies in computational capacity, talent development, and commercialization pathways. The first phase requires targeted investment in high-capacity AI infrastructure - most notably national GPU clusters, expanded data-centre availability, and shared research compute - to mitigate Canada's current performance gap relative to peer economies. Complementary initiatives should strengthen human-capital pipelines through increased graduate training support, industry-linked fellowships, and streamlined immigration pathways for advanced AI practitioners. A parallel commercialization workstream should focus on scale-up mechanisms for domestic AI enterprises, improved access to growth capital, and sector-specific adoption programs in domains such as health, manufacturing, and natural resources. Governance and safety frameworks, including standardized evaluation protocols and public-sector AI modernization, must be embedded across all phases to ensure that capability expansion is aligned with national economic objectives and responsible innovation principles. A high-level proposal is displayed in the below roadmap.

PHASE 1: National Capacity Stabilization (0–18 months)
• Launch National AI Compute Initiative
• Procure sovereign GPU clusters and expand research compute
• Incentivize data-centre construction
• Deploy AI Investment Acceleration Fund
• Establish KPIs: compute capacity, investment uplift, data-centre expansion

PHASE 2: Innovation & Model Development Expansion (18–36 months)
• Activate Canadian Foundation Model Program

PHASE 3: System-Wide Adoption & Public-Sector Modernization (36–60 months)
• Implement National AI Literacy & Trust Mission
• Launch national training, certification, and sector-specific adoption guides
• Modernize public sector with AI-enabled workflows
• Deploy shared registries, evaluation tools, and responsible AI frameworks

PHASE 4: Ecosystem Scaling & Global Competitiveness (60+ months)
• Scale regional innovation hubs and commercialization supports
• Promote Canadian models internationally
• Establish long-term global research partnerships
• Continuous monitoring of model performance

7. Risks and Mitigations

Implementing an ambitious national strategy involving infrastructure expansion and market intervention carries inherent risks. This section categorizes these risks into Infrastructure & Environmental, Human Capital, Economic & Market, and Societal & Execution domains. A simple risk management framework is applied to assess the probability of occurrence and the severity of impact, alongside specific mitigation strategies anchored in the proposed Implementation Roadmap. Qualitative ratings of probability and impact use a Low/Medium/High scale, with "Critical" denoting risks that could fundamentally undermine the overall strategy if left unaddressed.

7.1. Infrastructure and Environmental Constraints

The National AI Compute Initiative targets an increase from approximately five to ten AI-ready data centers and a scale-up to roughly 20,000 H100-equivalent GPUs by 2030. This expansion faces significant physical and regulatory hurdles.

Grid Capacity and Permitting Delays

Risk: High-performance GPUs (e.g., H100s) have massive power-density requirements. Local utility grids may lack the transmission capacity to support five new hyperscale facilities by 2030. Permitting processes in Canada can take 3–5 years, potentially stalling the Phase 1: National Capacity Stabilization timeline.
Mitigation: The federal government should designate AI data centres as critical national infrastructure to fast-track zoning and permitting. The strategy proposes locating new centres in regions with surplus hydroelectric capacity (e.g., Quebec, Manitoba) and engaging utilities during the 0–18 month phase to pre-zone sites and upgrade substations proactively.

Environmental Impact

Risk: Scaling to ~20,000 H100-equivalent GPUs increases Canada's carbon footprint and water consumption for cooling, potentially conflicting with national Net-Zero targets and local environmental constraints.
Mitigation: Mandate heat-reuse systems for all new co-funded centres (e.g., feeding waste heat into district heating or agricultural greenhouse systems). Prioritize liquid cooling technologies that can reduce energy consumption by up to 40% compared to air cooling, aligning with the "Energy Efficiency" metrics tracked in Appendix Table 1. Where feasible, tie public funding to commitments for renewable power procurement and transparent reporting on energy and water use.

7.2. Human Capital and Talent Leakage

As noted in Section 3.2, Canada currently sits approximately 1.8 standard deviations behind leading AI nations in AI talent. Expanding infrastructure and investment without addressing talent dynamics risks amplifying the existing brain-drain problem.

"Brain Drain" of Highly Qualified Personnel (HQP)

Risk: Canada may successfully train talent through the National AI Literacy & Trust Mission and graduate programs, only to see them migrate to the United States or other hubs for higher salaries and better computer access. If the Canadian Foundation Model Program cannot offer competitive resources and compelling research environments, researchers and entrepreneurs will continue to leave.
Mitigation:

- Compute-for-Retention: Tie preferential access to the national GPU cluster (proposed in Table 2) to Canadian residency, Canadian institutional affiliation, and IP retention requirements, while still allowing international collaboration.
- IP-Anchored Fellowships: Offer "Industrial Research Chairs" and fellowships funded by the AI Investment Acceleration Fund that require a 3-year commitment to Canadian institutions or startups, with explicit IP-anchoring clauses that keep core IP in Canada.
- Streamlined Immigration: Create a specific "AI Talent Visa" and accelerate permanent residency pathways for senior technical and product talent, as suggested in the Phase 1 roadmap, to mitigate net talent outflows and attract experienced practitioners into Canadian firms and labs.

7.3. Economic and Market Risks

The strategy relies on "crowding in" private capital to triple annual AI investment to $9B by 2028 and significantly increase the number of newly funded AI firms.

Private Capital Inertia

Risk: Canadian pension funds and venture capital investors are historically risk-averse regarding early-stage technology. There is a risk that the AI Investment Acceleration Fund (Table 3) fails to attract the expected 3:1 ratio of private matching dollars, limiting the scale-up of domestic AI firms and infrastructure projects.

Mitigation: Structure public funds as first-loss capital or utilize a sidecar model to de-risk investments for pension funds. Implement the proposed SR&ED tax credit updates for compute expenditures (not just labour), immediately improving ROI for private firms deploying AI infrastructure and models.

Market Adoption Lag

Risk: Canadian SMEs typically lag in technology adoption (the commercial gap identified in Section 3.2). Creating domestic models (Table 4) and infrastructure is of limited value if Canadian industry does not adopt them at scale.

Mitigation: The AI Startup Accelerator Network should include Demonstration Programs in which the federal government acts as an early or "first" customer via public procurement. This validates the technology in real-world settings and reduces perceived risk for private sector buyers. Complementary sector-specific adoption guides and "AI Clinics" (Section 5 and Table 5) can lower adoption barriers for SMEs.

Table 9 in the Appendix summarizes the most material risks, with their assessed probability, impact, and primary mitigation strategies, tied directly to the proposed policy instruments and roadmap phases.These risks do not negate the strategy's feasibility, but they highlight where implementation discipline and targeted governance will be essential. By embedding these mitigation measures within the National AI Compute Initiative, the AI Investment Acceleration Fund, the Canadian Foundation Model Program, and the National AI Literacy & Trust Mission, the Government of Canada can substantially reduce downside risk while preserving the upside of accelerated AI competitiveness.