

2025

Intelligence Report

Economic Opportunities Between Industries Through AI

Strategies for Bilateral Cooperation Between Korea and Canada

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Institutional and Project Overview

About

STEPI



The Science and Technology Policy Institute (STEPI), established in 1987, is a national research institute dedicated to advancing Korea's science, technology, and innovation policy. With decades of accumulated research expertise, STEPI has played a central role in formulating policies that enhance national competitiveness and address critical societal and economic challenges.

As science and technology become increasingly critical in driving transformative change—from digital transformation and bio-health to climate resilience and public safety—STEPI provides evidence-based insights and practical policy recommendations. The institute works closely with government, industry, and global partners to develop strategies that foster innovation and deliver broad public value.

Guided by a commitment to research excellence and public impact, STEPI supports policy development across areas such as industrial innovation, R&D governance, and regional and global cooperation.

About

APF Canada



The Asia Pacific Foundation of Canada (APF Canada), established as a not-for-profit, non-government public institution by an Act of Canada's Parliament in 1984, is Canada's leading institution dedicated to policy research and dialogue on Asia. For over four decades, APF Canada has provided trusted, evidence-based research and actionable policy advice to governments, businesses, academics, and civil society, advancing Canadian understanding of the region's evolving dynamics. With offices in Vancouver and Toronto, and a newly opened regional office in Singapore (2025), the Foundation delivers national reach and a strong presence in Asia.

APF Canada's work spans key policy areas including trade and investment, innovation, climate change, security, and digital governance. We produce reports, policy briefs, case studies, surveys, multimedia content, and our flagship Asia Watch newsletter, to offer timely insights on developments across the region. Our North Asia team produces in-depth analysis of China, Japan, Mongolia, North Korea, South Korea, and Taiwan.

the Project

Launched in 2025, the Establishing a Global Intelligence Network for Critical and Emerging Technologies (CETs) project was initiated by the Science and Technology Policy Institute (STEPI) in South Korea. The project aims to meet the growing need for international collaboration and information exchange in the rapidly evolving landscape of strategic technologies. Against a backdrop of increasing geopolitical competition and the imperative for value-aligned cooperation, the project aims to build a global network with the think tanks on STI (Science, Technology, and Innovation), diplomacy, and national security, committed to advancing shared understanding, joint research, and strategic foresights. The project envisions a dual-track network: On the one hand focused on creating regular collaborative mechanisms among participating think tanks, and on the other hand centered on conducting joint research and expert-driven initiatives. The participating institutes span a wide range of countries, including Korea, the United Kingdom, Japan, Australia, Canada, and Taiwan. Notable think tanks engaged in the initiative include the Alan Turing Institute (ATI, U.K.), the Asia and Pacific Research Center (APRC, Japan) at the Japan Science and Technology Agency (JST), the Australian Strategic Policy Institute (ASPI, Australia), the International Observatory on the Societal Impacts of AI and Digital Technologies (OBVIA, Canada), the Industry, Science and Technology International Center (ISTISC, Taiwan), and others. Through activities such as cooperative research and multilateral events like the Intelligence Dialogue 2025, the project seeks to build a robust knowledge-sharing ecosystem among partner institutes, enabling them to pursue shared strategies for CETs. It also aims to promote joint research that advances global innovation and strengthens technological and economic security.

About

the Report

Artificial intelligence (AI) is emerging as a core technology reshaping industrial structures and driving economic growth, functioning as a strategic asset across national policy—raising productivity, improving public services, and reinforcing technology sovereignty—while its effects diffuse across the economy and society. In response, leading economies are realigning industrial policy, infrastructure strategy, and human capital development around AI.

Within this shift, Korea and Canada possess complementary comparative advantages that create a strong basis for deeper cooperation: Canada brings world class capabilities in foundational research, ethics, and governance; Korea excels in application and industrialization, underpinned by semiconductors, telecommunications infrastructure, and rapid commercialization.

This report proposes a strategic direction for AI enabled, cross industry economic cooperation between the two countries and articulates a concrete policy roadmap. It examines how national AI strategies and governance architectures can interlock; identifies shared technological and economic challenges and the corresponding opportunities for collaboration; and develops policy approaches to institutionalize bilateral cooperation within the Indo Pacific and scale it into multilateral frameworks.

The analysis argues that cooperation should extend beyond traditional R&D exchange to the construction of an integrated ecosystem spanning energy, computing infrastructure (AI industrial infrastructure), semiconductors—especially high bandwidth memory (HBM) and neural processing units (NPUs)—and data governance. Given accelerating energy demand, compute bottlenecks, and tightening data regulation associated with AI diffusion, a joint infrastructure strategy and coordinated governance mechanisms are both timely and necessary.

Drawing on discussions from the Korea–Canada Track 1.5 Dialogue convened in Seoul in 2025 and synthesizing insights from policy, industry, and academia, the report compares national strategies and governance, maps challenges and industrial–technological linkages, outlines pathways to deepen Indo Pacific cooperation, and proposes a stepwise roadmap for a Korea–Canada strategic partnership.

By translating complementary strengths into a coherent, rules based ecosystem, the study offers a practical blueprint to accelerate AI driven productivity, strengthen technological competitiveness and sovereignty, and position both countries as innovative partners and responsible digital leaders in the Indo Pacific.

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Lastly, we recognize the contributions of our colleagues at both institutions—**STEPI** and **APFC**—for their reviews, translations, coordination, and editorial input during the course of the project. Their dedication ensured the rigor and clarity of this report.

Executive Summary

Strategic Imperative

This report presents a policy roadmap for deepening bilateral cooperation between Canada and South Korea on artificial intelligence, grounded in a recent Track 1.5 Dialogue in Seoul. Both nations recognize AI as fundamental to economic competitiveness, public sector modernization, and strategic autonomy. The countries possess complementary strengths—Canada excels in foundational research and governance frameworks, while South Korea demonstrates leadership in advanced hardware, telecommunications infrastructure, and rapid technological deployment. Integrated cooperation amplifies these capabilities beyond what either nation could achieve independently.

Rationale for Coordination

Three factors make deepened cooperation both timely and necessary. First, rapid technological diffusion outpaces uneven governance frameworks; early alignment of standards will influence how AI is deployed across sensitive sectors including health, energy, and critical infrastructure. Second, the computational, data, and energy requirements of advanced systems exceed traditional planning horizons, necessitating coordinated infrastructure strategies and market access arrangements. Third, the Indo-Pacific regional environment creates opportunities for credible, rules-based middle power coordination in digital development and AI capacity building.

Key Findings and Recommendations

The Dialogue identified three critical areas for joint action. Policy and regulatory frameworks require formal alignment to transition from aspiration to execution. Economic collaboration should prioritize energy and compute infrastructure, hardware-software co-design, and talent mobility as primary value creation mechanisms. Regionally, both nations should develop trusted infrastructure and tailored capacity-building initiatives for Southeast Asian partners, leveraging Canadian expertise in software and research alongside South Korean capabilities in manufacturing and systems engineering.

Conclusion

Canada–South Korea cooperation on AI represents a pragmatic response to shared structural challenges rather than optional policy enhancement. Implementation of this coordinated agenda will accelerate innovation adoption, preserve shared values, and expand opportunities domestically and throughout the Indo-Pacific region.

Key Findings Intelligence Report

1 Energy as the Core Enabler of the AI Economy

AI expansion is constrained by physical energy limits rather than digital capacity. By 2030, AI-intensive data centers are projected to quadruple global power demand, underscoring the need for firm, low-carbon supply. Korea's rapid GPU-based compute build-out requires reliable inputs, which can be met through Canadian LNG and SMR-based nuclear energy. A bilateral "energy-for-AI pact" can integrate grid planning, carbon accounting, and data-center siting for sustainable scalability.

2 Shared Standards for a Vertically Integrated AI Ecosystem

Complementarity between Canada's foundational AI research (Mila, Vector, Amii) and Korea's semiconductor and system-integration strength (HBM, NPU, packaging) can only be realized through aligned governance. Joint frameworks for IP protection, cross-border data use, and technical interoperability would allow co-design of hardware–software architectures and transparent data pipelines. Institutionalizing these standards via GPAI, HAIP, and APEC would enable joint commercialization and resilient value-chain formation.

3 Middle-Power Partnership as a Global Governance Lever

Canada's G7 presidency and Korea's APEC chairmanship in 2025 position both nations to define pragmatic AI governance between the U.S. and China. By aligning ethical-AI guidelines with industrial policy, they can promote "responsible adoption" across energy, health, and manufacturing sectors. A coordinated diplomatic strategy linking GPAI norms to Indo-Pacific minilateral platforms will extend their joint influence to ASEAN and Global South digital-capacity programs.

4 Bilateral Innovation Loops Driving Market Expansion

Economic collaboration should evolve from R&D exchange to co-industrialization. Korean AI-chip manufacturing and edge-system design can power Canadian sovereign data centers and HPC clusters, while Canadian algorithms and software can be licensed and globally scaled through Korean production networks. Establishing joint demonstration sites and a Canada–Korea AI-Semiconductor Consortium would create measurable gains in compute efficiency, energy intensity, and cross-market exports—turning cooperation into a self-reinforcing innovation loop.



Chapter

1.

The State of Canada–South Korea Co-operation on AI

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1.

The State of Canada–South Korea Co-operation on AI

1.1. Key Issues

Artificial intelligence (AI) stands as a top-tier strategic priority for both Canada and South Korea, reflecting each country's recognition of AI's transformative potential for their economies and societies. Canada became the first country in the world to adopt a national AI strategy in 2017, establishing a foundation for research excellence, innovation, and ethical governance. South Korea followed a complementary path, and in 2024 it became the first nation in Asia to enact a comprehensive AI Basic Act, creating a legal framework for the development, deployment, and oversight of AI technologies.

In 2025, with Canada assuming the G7 Presidency and South Korea chairing APEC, both governments are in a unique position to lead the international conversation on how to balance innovation, competitiveness, and responsible regulation in the AI sector. Their leadership is reinforced by robust institutional commitments and significant public investment aimed at ensuring that AI contributes to sustainable growth, security, and societal well-being.

Canada has dedicated over C\$2 billion to enhance domestic access to AI infrastructure, particularly for startups and scale-ups, and up to C\$300 million to accelerate innovation and commercialization within the sector. Complementing these financial measures, the appointment of a new federal Minister for AI and Digital Innovation signals the government's determination to treat AI not merely as a technological field, but as a pillar of economic strategy, digital sovereignty, and national resilience.

South Korea has articulated an equally ambitious vision—aiming to position itself among the world's top three AI powers under President Lee Jae-myung's 100 trillion Korean Won (approximately US \$75 billion) national AI investment strategy. The plan rests on four strategic pillars: (1) expanding domestic AI computing capacity through the installation of more than 10,000 high-performance graphics

processing units (GPUs) by the end of 2025; (2) developing world-leading, next-generation large language models (LLMs); (3) attracting, cultivating, and retaining top-tier AI talent; and (4) enabling a comprehensive, society-wide digital transformation driven by AI integration.

To deliver on this agenda, President Lee has appointed the nation's first-ever senior presidential secretary for AI policy, supported by a newly established AI coordination unit within the Office of the President. This new governance structure underscores the administration's commitment to embedding AI leadership at the highest level of government.

At the core of South Korea's approach is the principle of "sovereign AI," framed around the vision of "AI for all." This concept emphasizes achieving national self-reliance across the entire AI value chain—from data access and algorithm design to computing infrastructure, ethical governance, and public trust. Ultimately, the model aspires to create an open, domestically developed AI platform that is widely accessible to all South Korean citizens, reinforcing both digital inclusion and technological sovereignty.

The dialogue examined the shared challenge of balancing the rapid adoption of artificial intelligence (AI) with the imperative for strong and adaptive governance frameworks. Concerns over technological sovereignty—including issues of computing capacity, intellectual property rights, data collaboration, and supply chain resilience—are increasingly influenced by the broader U.S.–China strategic competition.

Despite operating within this complex global environment, Canada and South Korea each bring distinctive strengths to the AI landscape. Canada maintains a global reputation for excellence in foundational AI research and ethical innovation, while South Korea leads in hardware development, advanced ICT infrastructure, and commercial-scale applications of AI technologies.

For Canada, enhancing economic productivity remains the central objective of its AI strategy, particularly amid rising defence expenditures and persistent concerns about national competitiveness. Policy recommendations discussed included the introduction of a 20 percent tax credit for micro, small, and medium-sized enterprises (MSMEs) adopting AI solutions; increased funding for workforce training and reskilling; and sustained investment in critical innovation infrastructure—such as BOREALIS (the Bureau of Research, Engineering, and Advanced Leadership in Innovation and Science), Canada's emerging national platform for dual-use research and frontier technologies.

South Korea, for its part, has deepened its engagement with Canadian AI institutions. Since 2022, leading Korean technology companies—including Naver, KT, and Samsung—have signed MoUs with key Canadian partners such as the Vector Institute and the University of Toronto. Through these collaborations, South Korea seeks to draw on Canada's expertise in early-stage AI research and data governance, while Canada looks to learn from South Korea's experience in applying AI across the public sector to enhance service delivery, efficiency, and institutional performance.

Table 1.1. AI-Related National Policy Agenda of the Lee Jae-myung Administration

National Goal		Building an Innovative Economy that Leads the World	
Strategy		Advancing Korea into the World's Top Three AI Nations	
National Policy Agenda			
NO.	Title	Lead Ministry	Key Details
20	Building the "AI Superhighway" to Become a Global Top-Three AI Power	Ministry of Science and ICT (MSIT)	- Expand national AI computing infrastructure (e.g., early procurement of 50,000 GPUs) - Build a hyper-intelligent network - Develop and open large-scale datasets (e.g., Integrated AI Training Data Platform) - Strengthen the role of the National AI Committee
21	Becoming the World's Leading Nation in AI Utilization	Ministry of Science and ICT (MSIT)	- Support development of proprietary AI models - Build the "AI for All" foundation for inclusive adoption - Promote AI-driven industrial transformation - Support regional AI innovation - Foster innovative AI startups
22	Securing World-Class AI Technologies and Top Talent	Ministry of Science and ICT (MSIT)	- Train and attract world-class AI talent - Train interdisciplinary and convergence-oriented talent - Develop next-generation AI core technologies (e.g., through National AI Research Institutes) - Build a robust AI semiconductor ecosystem - Accelerate application of physical AI technologies
23	Realizing an "AI Basic Society" for Public Safety and Quality of Life	Ministry of Science and ICT (MSIT)	- Realize an AI Basic Society - Promote global AI initiatives - Strengthen AI ethics, safety, and trust - Ensure digital security and safety
24	Establishing the World's Most Advanced AI Democratic Government	Ministry of the Interior and Safety (MOIS)	- Implement 30 key initiatives for an AI-powered government - Build core public-sector AI infrastructure - Create a dynamic public AI market - Expand public data openness - Ensure safety and reliability in public-sector AI systems
25	Establishing a Reliable Personal Data Protection System for Citizens	Personal Information Protection Commission (PIPC)	- Ensure swift and strict response to personal data breaches - Strengthen protection of data subjects' rights - Expand proactive and preventive protection measures - Establish clear legal and regulatory standards - Promote secure and privacy-enhancing use of personal data

Source: Republic of Korea Government. (2025, September), pp. 43-48.

Republic of Korea Government. (2025, September). 123 National Policy Agenda Items of the Lee Jae-myung Administration.

1.2. G7 and APEC Platforms

As Chair of the 2025 G7, Canada spearheaded the adoption of the “AI for Prosperity” Leaders’ Statement, marking a strategic shift from a primary focus on regulation and risk mitigation toward accelerating AI adoption, particularly within governments and small- and medium-sized enterprises (SMEs). The statement also underscored AI’s potential to address global energy challenges and advance inclusive digital growth across the Global South.

In parallel, South Korea, serving as Chair of APEC in 2025, has elevated AI co-operation to a central priority of the APEC Economic Leaders’ Meeting in November. Under the theme “Building a Sustainable Tomorrow: Connect, Innovate, Prosper,” South Korea is advancing concrete proposals on AI-driven transformation, regional capacity building, and the development of sustainable AI infrastructure across the Asia-Pacific.

Participants agreed on the importance of institutionalizing bilateral AI collaboration, beginning with targeted initiatives in the public sector and platforms supporting SME adoption. They also stressed the need for greater regulatory alignment—particularly in areas such as intellectual property rights, cross-border data governance, and digital trade norms—to better navigate an increasingly intangible-asset-driven global economy.

The discussion identified existing multilateral frameworks as valuable foundations for enhanced cooperation. The Hiroshima AI Process (HAIP) and the OECD’s Global Partnership on AI (GPAI) were cited as key mechanisms. HAIP’s voluntary code of conduct provides a flexible, interoperable model for public-private partnerships, while Canada’s AI Adoption Initiative (CAIAI) offers a practical policy toolkit closely aligned with South Korea’s evolving national AI strategy.

1.3. Recommendations

To enhance strategic coherence and deepen long-term collaboration, Canada and South Korea could establish a structured mechanism for regular policy exchange focused on science, technology, and innovation governance. Such a framework would enable both countries to align their national AI and digital strategies, share lessons learned from implementation, and coordinate approaches to issues such as data governance, AI ethics, and innovation financing. As part of this effort, Canada could consider establishing a dedicated science and technology policy think tank, modeled on South Korea’s Science and Technology Policy Institute (STEPI), which has played a pivotal role in providing evidence-based policy analysis and long-term strategic planning for Seoul’s innovation agenda.

Canada and South Korea share a common interest in harnessing artificial intelligence (AI) and digital technologies to improve public-sector performance, service delivery, and policy innovation. Building on this shared vision, both countries could expand bilateral capacity-building initiatives that focus on training public officials, sharing implementation best practices, and developing interoperable digital governance tools. Canada’s experience in ethical AI policy design, data stewardship, and open-

government practices could complement South Korea's strengths in AI deployment for administrative efficiency, smart-city management, and citizen-facing digital platforms. Joint initiatives—such as staff exchanges, co-training programs, and applied policy labs—would help embed AI literacy and digital transformation skills across public institutions. Over time, such cooperation could evolve into a Canada–Korea Public Sector Innovation Partnership, designed to foster mutual learning and pilot cross-border applications of responsible AI in areas such as health, climate resilience, and digital public services.

Explore joint participation in the GPAI, Hiroshima AI Process, and CAIAI platforms. To build on their shared leadership roles in global AI governance, Canada and South Korea should explore joint participation and coordination across multilateral AI platforms such as the Global Partnership on AI (GPAI), the Hiroshima AI Process (HAIP), and Canada's AI Adoption Initiative (CAIAI). These mechanisms offer complementary strengths: GPAI provides a forum for advancing responsible AI principles, inclusive governance, and policy experimentation; HAIP promotes voluntary, interoperable codes of conduct that bridge public and private sectors; and CAIAI serves as a practical model for accelerating AI adoption by governments and SMEs. Collaborative engagement through these platforms would allow both countries to align standards, share policy insights, and demonstrate global leadership in shaping an open and trustworthy AI ecosystem.

To encourage partnership in dual-use AI technology, consider upgrading the current defence-industrial MoU to a higher-level reciprocal defence procurement agreement. As artificial intelligence increasingly shapes both civilian innovation and defence capabilities, Canada and South Korea have a strategic opportunity to deepen collaboration in dual-use AI technologies that advance security, resilience, and industrial competitiveness. The existing MoU on Defence Industrial Cooperation provides a valuable foundation, but an upgrade to a reciprocal defence procurement agreement would significantly expand the scope for joint R&D, technology transfer, and co-production initiatives. In parallel, establishing a Canada–Korea Defence Innovation Dialogue focused on dual-use AI research could help connect industry, academia, and government agencies, ensuring that emerging technologies are developed in line with ethical standards, strategic interoperability, and shared democratic values.

Strike a middle ground between regulation and enablement, or AI safety and AI adoption. As global debates over artificial intelligence intensify, Canada and South Korea are both seeking to navigate the delicate balance between ensuring AI safety and promoting AI adoption. Overly restrictive regulation risks slowing innovation and limiting competitiveness, while insufficient oversight could undermine public trust and exacerbate ethical and security risks. Both countries are well positioned to champion a balanced, pragmatic model—one that safeguards against misuse without stifling responsible development. Drawing on Canada's experience in ethical AI governance and responsible innovation and South Korea's leadership in AI infrastructure, public-sector deployment, and commercialization, a joint approach could help define a "middle path" framework emphasizing risk-based, proportionate regulation coupled with incentives for adoption in strategic sectors such as healthcare, manufacturing, and public services.

Chapter

2.

Challenges and opportunities for Canada and South Korea in AI

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2.

Challenges and opportunities for Canada and South Korea in AI

2.1. Background and Key Issues

1) Background

Artificial intelligence has moved from a generic innovation tool to a system-shaping technology that affects energy systems, supply chains, labor markets, and industrial governance. Among advanced economies, there is growing emphasis on international cooperation to drive responsible adoption—not just frontier model development. The G7's 2025 Leaders' Statement on AI for Prosperity explicitly prioritizes SME adoption and sectoral productivity uses, and it links AI agendas to energy policy via a dedicated Energy-and-AI work plan.¹

Canada and Korea bring highly complementary assets. Canada's Pan-Canadian AI Strategy (Phase II) keeps a deep bench in foundational research (Mila, Vector, Amii) and national-scale talent programs. Korea has unmatched strengths in advanced memory/HBM and power-electronic manufacturing that anchor the hardware side of AI. Together, these enable vertically integrated AI (algorithms, systems, and fabs) mapped onto clean-power build-outs.²

Both governments also tie AI growth to decarbonization. Canada is moving toward a net-zero grid by 2035 via Clean Electricity Regulations³; Korea's Carbon Neutrality and Green Growth Framework Act⁴ codifies a 2050 target and an updated 2030 NDC. Meanwhile, the IEA projects steep growth in data-center electricity demand without aggressive efficiency and clean-power measures—making

¹ <https://www.pm.gc.ca/en/news/statements/2025/06/17/g7-leaders-statement-ai-prosperity>

² <https://ised-isde.canada.ca/site/ai-strategy/en>

³ <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/clean-electricity.html>

⁴ https://elaw.klri.re.kr/kor_service/lawView.do?hseq=68875&lang=KOR

energy policy integral to AI policy.

Korea's recent industrial trajectory reflects a shift from AI policy rhetoric to the physical realization of an AI economy through compute, energy, and semiconductor infrastructure. This transformation is exemplified by announcements to deploy over 260,000 NVIDIA GPUs⁵ across sovereign cloud platforms, AI manufacturing hubs, and smart-industry applications—an investment signaling Korea's intent to anchor national competitiveness in tangible compute capacity.

For Canada, this presents both a research and policy opportunity. Korea's rapid build-out of AI compute aligns with Canada's strengths in responsible-AI research, clean-energy systems, and next-generation data-center efficiency—creating a pathway for structured bilateral collaboration that pairs Korea's hardware-driven scale-up with Canada's energy and algorithmic expertise.

2) Key Issues

A. Fundamental Infrastructural Imbalance

The current global discourse around artificial intelligence (AI) remains disproportionately focused on software which is, in particular, algorithmic innovation and large language model (LLM) development. Yet, meaningful industrial adoption and systemic innovation in AI are impossible without the underlying hardware infrastructure: high-performance semiconductors, edge computing platforms, AI accelerators, advanced packaging and interconnects⁶. Based on the projection⁷, the global AI-hardware market will grow from USD 59.3 billion in 2024 to USD 296.3 billion by 2034, underscoring the sheer magnitude of the hardware base required.

This matters because algorithmic advancements alone do not produce economic value without their translation into industrial systems. Big tech firms invest heavily in training ever-larger models, but the real economic leverage lies in AI's integration into manufacturing, healthcare, energy and other "traditional/legacy" industries (which industries need AI and DX). Governments and other stakeholders frequently prioritize the "tool production" phase, focusing on models, algorithms, and code. This overlooks the entire value chain, including hardware, systems, and industrial integration, a bias that disproportionately impacts smaller and mid-sized economies.

Insisting on a software-centric AI narrative obscures the fact that the ecosystem's bottleneck may lie in hardware supply chains, manufacturing capabilities, packaging/interconnect technologies, and infrastructure deployment, rather than in incremental algorithmic gains alone. The imbalance between attention and actual infrastructural requirements threatens to entrench dependencies and lock-in disadvantage for countries without robust hardware-production ecosystems.

⁵ <https://www.koreaherald.com/article/10606193>

⁶ <https://www.deloitte.com/us/en/insights/topics/technology-management/tech-trends/2025/tech-trends-ai-hardware-and-computation-leading-ai-revolution.html>

⁷ <https://www.gminsights.com/industry-analysis/ai-hardware-market>

B. Temporal and Institutional Gaps Between Policy and Technology

The rapid evolution of AI hardware and infrastructure is outpacing the development of effective policy and governance frameworks. This growing gap between technological advancement and the slower pace of policy creation and implementation is a significant concern. ITU's 2025 Annual AI Governance Report⁸ also stresses the need for "adaptive, proactive and inclusive governance" to keep up with AI's acceleration, yet many current frameworks remain rigid, reactive, and primarily focused on regulation⁹. Furthermore, international cooperation mechanisms in AI remain underdeveloped. While current collaborations often involve bilateral R&D, talent exchange, and research partnerships, they fall short in supporting the later stages of industrialization. This includes a lack of joint procurement platforms, international standards for hardware and systems, cross-border industrial networks, and shared manufacturing/assembly ecosystems. Without a deliberate effort to establish these frameworks, countries risk being excluded from future hardware supply chains, regardless of their algorithmic capabilities.

This institutional delay means that a country's policy ecosystem—encompassing investment incentives, regulatory clarity, supply-chain localization, and participation in standard-setting—may not align with the speed and direction of AI hardware development, even when ambitious goals are set. For economies heavily reliant on policy, there is a danger that governance could hinder, rather than facilitate, the growth of hardware-led AI value chains.

2.2. Key takeaways

First Insight: The sustainability of the AI economy is determined not by the volume of technology supply, but by energy efficiency and demand-driven industrial application.

Many AI industry policies have historically focused on supporting technology development. What is needed now is a fundamental shift toward demand creation—promoting AI adoption in industry. The increase in electricity demand from AI deployment raises energy costs and environmental burdens, threatening the long-term viability of the AI industry. To quantify this, the Burn-to-Earn Index developed by Oxford University and PwC (2023) enables objective measurement of how much economic value digital industries produce per unit of energy consumed.¹⁰ Using such an energy-to-economic-value metric is crucial for judging the sustainability of AI diffusion and should serve as the basis for future policy design.

Moreover, the principle is: the success of the AI economy depends on demand, not supply. Large foundational model development by companies such as OpenAI and Google is extremely resource-intensive, and countries like Korea or Canada face practical limits to competing directly in that domain.

⁸ <https://www.itu.int/epublications/publication/the-annual-ai-governance-report-2025-steering-the-future-of-ai>

⁹ <https://www.anecdotes.ai/learn/ai-regulations-in-2025-us-eu-uk-japan-china-and-more>

¹⁰ <https://digitalplanet.tufts.edu/wp-content/uploads/2025/07/The-Burn-to-Earn-Index-2025.pdf>

Instead, a more strategic and effective path is to increase the number of enterprises and institutions in traditional sectors—manufacturing, healthcare, energy, finance—that actually adopt and use AI. Canada’s AI Adoption Pilot Program¹¹ (for SMEs) illustrates such an approach.

In other words: the real value in AI ecosystems lies not in technology supply (development) but in adoption, procurement, and deployment—real use in industry and governance unlocks economic and diplomatic synergies.

Second Insight: The competitive edge of Korea–Canada AI cooperation lies in creating a vertically-integrated, complementary technology ecosystem across AI, semiconductors, and energy.

A noteworthy consensus is that bilateral cooperation should go beyond mere technology exchange or policy alignment to aim for integrated value-chain construction grounded in each country’s strengths. Korea possesses semiconductor technology capabilities, especially around NPUs (neural processing units), with start-ups and research institutes preparing for commercialization across high-compute domains (weather prediction, scientific simulation, autonomous driving) and moving toward neuromorphic (brain-inspired) chips for edge computing, on-device AI, and robotics.

Canada, for its part, has world-class AI research institutions (such as Mila and Vector Institute), AI research excellence and its support program¹², and strong technology bases in clean energy and nuclear. A convergence of these strengths enables collaboration not only in raising algorithmic performance, but in optimizing energy-efficient AI data-centers, building carbon-neutral AI infrastructure, and securing supply-chain transparency.

Thus, AI innovation must be tightly linked not only to algorithmic breakthroughs, but to resolving infrastructure bottlenecks in energy, compute, and semiconductors. Canada offers advantage in clean energy, data-centres, and algorithms; Korea offers strength in semiconductor design, manufacturing, and system integration.

Technology and industry cooperation should be designed on an ecosystemic complementarity basis—not competition in single domains. Co-design of hardware/software, international talent exchange, coordinated procurement, standards and data governance are central. Through this, Korea and Canada can position themselves as joint leaders in a global AI–hardware–energy convergence ecosystem.

¹¹ <https://www.canada.ca/en/innovation-science-economic-development/news/2024/10/federal-government-launches-programs-to-help-small-and-medium-sized-enterprises-adopt-and-adapt-artificial-intelligence-solutions.html>

¹² <https://ised-isde.canada.ca/site/ised/en/public-consultations/securing-canadas-ai-advantage-foundational-blueprint>

2.3. Recommendations

1) Establish an integrated energy–compute infrastructure cooperation framework.

To ensure sustainable AI diffusion, policymakers must quantitatively measure the economic value generated per unit of energy consumed by the digital industry. Korea and Canada should take immediate action through the following steps:

Joint Infrastructure Cooperation Platform: Establish a platform combining clean and reliable power, high-efficiency data centers, and AI-specialized hardware. This could involve leveraging Canada's expertise in renewable and nuclear energy with Korea's strengths in high-density AI chip (NPU and ASIC) design and manufacturing.

Shared Performance Indicators: Define common metrics such as power demand, carbon emissions, and data-center operations efficiency. These indicators should then be linked to joint pilot projects.

2) Launch a “Korea–Canada Innovation Exchange Platform” for AI adoption and public procurement, and enhance policy adaptability.

Given that the core of AI industry scaling lies in industrial and public-sector application rather than pure technology R&D, Korea and Canada should jointly operate a “Korea–Canada AI Demonstration-Procurement Platform”. Key elements are explained below.

Streamlined Government Engagement: Implement a matching system that connects startups and SMEs directly with government agency demands from the initial stages.

Accelerated Adoption Pathway: Establish a “Fast-Track Adoption Pathway” to reduce the average government entry cycle (currently 2 years in Canada) to under 6 months by running pilot testing and procurement in parallel.

Agile Policy Framework: Transition the government's role from regulator to market enabler, ensuring policies can rapidly adapt to technological advancements. This includes jointly developing AI Adoption Guidelines that encompass technical standards, organizational change management, workforce reskilling, and data governance.

Annual AI Solutions & Procurement Summit: Host an annual summit, alternating between Korea and Canada, to enhance governance related to AI commercialization, public procurement, and energy-efficiency initiatives.

3) Form a Korea–Canada joint R&D consortium on AI semiconductors and energy efficiency

By implementing a co-design model and establishing an integrated technological ecosystem, we can harness Korea's expertise in semiconductor R&D and Canada's excellence in AI research. This collaborative effort will create a joint ecosystem focused on achieving high compute efficiency, reducing energy consumption, and mitigating carbon emissions. Specific actions to achieve these goals are outlined below.

Formally launch an “AI-Semiconductor Joint Research Consortium” including Korean semiconductor firms/research institutes and Canadian AI research institutions (Mila, Vector Institute). Prioritise high-efficiency AI computing architectures, low-power neuromorphic chips, and on-device AI optimisation. Introduce hardware–software co-design: chip designers and AI software developers collaborate from day one rather than in sequence, maximising efficiency gains.

Establish technology-transfer programs for spreading the research outcomes to on-premises servers, data-centres, edge-computing devices, and on-device environments—facilitating broader AI access by SMEs rather than only large tech firms. Create a “Technology Transfer & Commercialisation Working Group” comprising companies, research institutes and governments from both countries to support the full path from research to market. Encourage bilateral cooperation in data, supply-chain, and governance standard-setting—in 2023 Korea and Canada already signed an MOU on critical minerals and energy transition¹³.

¹³ https://www.international.gc.ca/country_news-pays_nouvelles/2023-05-16-korea-coree.aspx?lang=eng



Chapter

3.

Deeping Partnerships in the Indo-Pacific Region

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3.

Deeping Partnerships in the Indo-Pacific Region

3.1. Key Issues

1) Shared Priorities in Canada and South Korea's Indo-Pacific Strategies

Canada and South Korea share aligned objectives within their respective Indo-Pacific strategies, particularly in advancing AI infrastructure, fostering early-stage R&D collaboration, and shaping international standards. Both nations are also adopting a more proactive and strategic approach in the region, moving beyond traditional soft power toward targeted, results-oriented partnerships.

Canada's G7 membership and role as a global "rule-setter" positions it to help amplify South Korea's influence in international governance, while South Korea's extensive experience in minilateral cooperation—especially with the U.S. and Japan—offers a valuable model for Canada as it seeks deeper Indo-Pacific engagement. Practical joint initiatives, such as shared AI data centres and computing infrastructure, were highlighted as ways to translate this alignment into concrete action.

Participants emphasized the importance of prioritizing tangible, near-term outcomes and cautioned against viewing every initiative solely through the lens of U.S.-China competition. A Canada-South Korea AI partnership should be grounded in mutual recognition, complementary strengths, and a shared commitment to building regional capacity. They also stressed the need to strengthen broader diplomatic cooperation to support each other's engagement in international forums, including the G7 (for South Korea) and Indo-Pacific minilateral groupings (for Canada).

2) Opportunities for Canada–South Korea Leadership in ASEAN

The discussion underscored the considerable potential for Canada and South Korea to assume a joint leadership role in AI engagement with ASEAN member states. This could involve supporting locally driven AI innovation, bolstering regional AI infrastructure, and ensuring emerging technologies align with global ethical and technical standards.

Canada's AI development programs, which have already extended from Africa into parts of the Indo-Pacific, provide a strong foundation for future initiatives. In light of the growing global presence of subsidized Chinese data centres, such as those deployed by Huawei, Canada and South Korea could jointly offer an alternative by leveraging Canada's expertise in AI software and governance alongside South Korea's strengths in AI hardware and manufacturing.

Participants emphasized the importance of tailoring engagement to local conditions and disparities, and recommended deeper collaboration through embassies, cybersecurity attachés, and other in-country partnerships.

3) Digital-only Frameworks as Enablers of Secure AI Collaboration

Digital economy frameworks, such as the Digital Economy Partnership Agreement (DEPA)—of which South Korea is a member and Canada is seeking to join—offer promising avenues for advancing secure, rules-based AI cooperation. Participants suggested beginning by mapping the AI ecosystems of both countries, encompassing government, academia, industry, and think-tanks, to lay the groundwork for trusted and interoperable frameworks.

There was strong support for Canada to more actively endorse South Korea's bids for G7/G8 and CPTPP membership, and for South Korea to reciprocate by supporting Canada's deeper engagement in regional multilateral structures. Such reciprocal backing would not only reinforce bilateral trust but also amplify shared influence across the Indo-Pacific.

The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), particularly Chapter 14 on e-commerce, could serve as a neutral, institutionalized platform for advancing AI norms and regulatory cooperation. South Korea's accession to the CPTPP would further expand opportunities for embedding digital and AI-related collaboration between the two countries within a trusted multilateral framework.

3.2. Recommendations

Explore the potential of joint Canada–South Korea AI initiatives in third countries. There is significant potential for Canada and South Korea to pursue joint AI initiatives in third countries, leveraging their complementary strengths to foster innovation, capacity-building, and rules-based governance abroad. Such initiatives could include establishing shared AI research centres, deploying compute

infrastructure, or supporting locally driven AI development in regions such as Southeast Asia, the Indo-Pacific, or Africa, where both countries already have development footprints. Tailoring initiatives to local contexts, and coordinating through embassies, cybersecurity attachés, and on-the-ground partnerships, would further ensure that these efforts are both effective and sustainable, while also advancing broader diplomatic and multilateral objectives.

Deepen AI collaboration through regional minilateral platforms and working groups. Canada and South Korea have an opportunity to deepen their AI collaboration through engagement in regional minilateral platforms and specialized working groups. By participating jointly in these forums, the two countries can shape shared norms, advance interoperable technical standards, and coordinate on responsible AI deployment across the Indo-Pacific. Such engagement would allow them to pool expertise—Canada’s strengths in AI governance and policy frameworks with South Korea’s capabilities in hardware development and minilateral diplomacy—to address common regional challenges. Practical initiatives could include joint research projects, shared data infrastructure, and coordinated capacity-building programs, all tailored to the needs of participating countries. Strengthening collaboration in these multilateral and minilateral settings would not only enhance bilateral trust but also amplify their collective influence, providing a structured and institutionalized way to promote secure, rules-based, and outcomes-focused AI cooperation in the region.

Support mutual accession and integration efforts in the CPTPP, DEPA, and G7/G8 processes. Canada and South Korea can reinforce their strategic partnership by supporting each other’s accession and deeper integration into key international economic and governance frameworks, including the CPTPP, DEPA, and G7/G8 processes. Such reciprocal support would enhance bilateral trust while creating opportunities to embed AI and digital economy collaboration within established multilateral rules and standards. Canada’s endorsement of South Korea’s bids for G7/G8 membership and CPTPP accession, paired with South Korea’s backing of Canada’s integration into regional minilateral structures, would strengthen both countries’ influence in shaping global norms. Leveraging frameworks like DEPA and the CPTPP, particularly Chapter 14 on e-commerce, could provide institutionalized platforms to advance interoperable AI standards, foster secure digital trade, and promote rules-based cooperation in the Indo-Pacific and beyond. Coordinating these efforts through embassies, working groups, and policy exchanges would ensure that mutual accession is not only symbolic but also operationally meaningful for shared strategic objectives.

Map and connect AI policy ecosystems across government, academia, and industry. Canada and South Korea can strengthen their AI partnership by systematically mapping and connecting their respective AI policy ecosystems across government, academia, and industry. This process would help identify key institutions, research centres, think tanks, and private sector actors, creating a clearer picture of each country’s strengths, priorities, and ongoing initiatives. By establishing structured channels for dialogue and collaboration between these actors, the two countries can build trusted, interoperable frameworks for AI development, regulation, and deployment. Coordinated engagement

across these networks would facilitate joint research projects, harmonized standards, and shared infrastructure, while also enhancing the capacity to support regional AI initiatives in third countries. Institutionalize the Canada-South Korea bilateral partnership similar to the Canada-U.K. AI agreement, such as joint statements in [2024](#) and [2025](#), and the recent [MoU](#) to strengthen semiconductor supply chains. Canada and South Korea can institutionalize their bilateral AI partnership by establishing structured, high-level mechanisms similar to the Canada-U.K. AI agreement. This could include coordinated joint statements to signal shared priorities and to deepen collaboration in strategic areas such as semiconductor supply chains, AI infrastructure, and research. Such a formalized approach would also enable both countries to align their efforts in multilateral and minilateral platforms, embed AI and digital cooperation in broader regional strategies, and reinforce their collective influence in shaping global norms, standards, and governance for emerging technologies.



Chapter

4.

A Roadmap for Strategic Partnership

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4.

A Roadmap for Strategic Partnership

4.1. Strategic Significance of a Deeper Korea–Canada AI Alliance

Korea–Canada AI cooperation should mature from early-stage technology exchange into a strategic partnership that enhances both countries' technological sovereignty while avoiding over-dependence on any single great-power ecosystem. In a period of intensifying U.S.–China technological competition (which is marked by progressively tightened semiconductor-related controls and counters¹⁴) middle powers that coordinate can expand their room for maneuver and preserve voice in rule-making around advanced technologies (standards, safety, and supply chains)¹⁵. Aligning policy and industrial capabilities allows both countries to hedge risk while shaping an open, trusted, and innovation-friendly tech order.

South Korea's national push is explicit: it has set ambitions to be among the world's top three AI powers and has elevated AI to a headline policy priority. Recent moves include an AI Framework (Basic) Act¹⁶ establishing national AI governance and promotive instruments, and large-scale investments in compute and deployment. Notably, the government and leading firms announced plans to add more than 260,000 NVIDIA GPUs to Korea's AI infrastructure¹⁷; an emblematic example of the scale at which Korea is now executing.

¹⁴ <https://www.reuters.com/world/china/tsmc-like-south-korean-rivals-has-us-fast-track-export-status-china-revoked-2025-09-02/>

¹⁵ <https://www.csis.org/analysis/limits-chip-export-controls-meeting-china-challenge>

¹⁶ "Framework Act on the Development of Artificial Intelligence and Establishment of Trust, 인공지능 발전과 신뢰 기반 조성 등에 관한 기본법", https://cset.georgetown.edu/wp-content/uploads/t0625_south_korea_ai_law_EN.pdf

¹⁷ <https://nvidianews.nvidia.com/news/south-korea-ai-infrastructure>

Canada, meanwhile, has placed SME adoption and public-sector uptake of trusted AI at the center of its G7 presidency agenda¹⁸ and is investing in domestic, sovereign AI compute capacity (e.g., the AI Compute Access Fund and a sovereign public AI infrastructure/Sovereign Canadian Cloud which is “Seizing the Full Potential of Artificial Intelligence” at Budget 2025¹⁹) to ensure Canadian innovators can train and deploy at home under secure, energy-efficient conditions. These moves aim to accelerate productivity growth, mitigate dependency risks, and link AI to clean-energy systems.

Bottom line: for two like-minded, middle-power democracies with deep ties to the Indo-Pacific, a Korea–Canada alliance anchored in AI is strategically valuable because it (i) diversifies supply, standards, and compute ecosystems, (ii) channels capital into clean, reliable digital infrastructure, and (iii) scales adoption across SMEs and public services where productivity gains are realized.²⁰

4.2. Key Takeaways for better Korea-Canada Strategic Technology Partnership

1) Geopolitical and Strategic Axis: Establishing a Middle-Power Technology Alliance

Korea and Canada must position themselves as a unified middle-power coalition to shape a new international technology governance framework amid US-China competition. Strategic technologies including AI, semiconductors, energy, biotechnology, quantum computing, and space are no longer mere industrial domains but have become central instruments of economic security and diplomacy. Rather than limiting collaboration to bilateral free trade agreements or research accords, the two nations should establish a comprehensive technology partnership that integrates technological development, policy coordination, and security considerations. Korea's strengths in semiconductors, manufacturing technology, and industrialization capabilities complement Canada's advantages in foundational science, AI, and quantum computing, creating mutually reinforcing technology ecosystems. This foundation enables the development of a Strategic Tech Continuum spanning AI, semiconductors, quantum technology, biotechnology, and space exploration. As independent middle powers, both nations should construct an Independent Tech Alliance model that maintains autonomy from either US or Chinese influence while transforming technological innovation into a diplomatic tool through value-based technology diplomacy.

¹⁸ <https://g7.canada.ca/assets/ea689367/Attachments/NewItems/pdf/g7-summit-statements/ai-en.pdf>

¹⁹ <https://budget.canada.ca/2025/report-rapport/chap1-en.html>

²⁰ “Action Plan: Implementing the Canada-Korea Comprehensive Strategic Partnership”, Global Affairs Canada, <https://www.canada.ca/en/global-affairs/news/2024/07/action-plan-implementing-the-canada-korea-comprehensive-strategic-partnership.html>

2) Policy and Institutional Axis: Institutionalizing Cooperation and Ensuring Policy Alignment

The sustainability of bilateral cooperation depends fundamentally on robust institutional infrastructure rather than technology alone. A permanent Strategic Technology Forum should be established, bringing together government, industry, and research institutions to create an integrated governance structure addressing not only AI but also semiconductors, quantum technology, biotechnology, and space sectors. Policy alignment across AI ethics, data regulation, technology certification, and public procurement procedures is essential, requiring the formation of a Joint Policy Alignment Committee to harmonize regulatory standards and data utilization frameworks. Public procurement should serve as the primary driver of industrial collaboration, with both nations establishing an AI procurement framework that enables cross-border market entry for startups and technology companies, thereby creating public demand-driven market opportunities.

3) Technology and Industry Axis: Building Shared Industrial Ecosystems

Collaboration should be elevated to the industrial ecosystem level, anchored on an AI-semiconductors-energy triangle. Joint development of high-performance, energy-efficient AI semiconductors through consortium arrangements can combine Canada's AI algorithms and data processing capabilities with Korea's chip design and manufacturing expertise. An integrated AI-Energy Roadmap should address data center power consumption through renewable energy infrastructure, smart grid technology, and cooling efficiency innovations. Proof-of-concept (POC) initiatives in three to four critical sectors including energy efficiency, healthcare, and semiconductor design automation should be branded under a unified framework such as the Canada-Korea AI Lighthouse Program. Cooperation should extend beyond AI to encompass biotechnology, quantum technology, space exploration, and advanced materials, creating an AI-anchored technology convergence model that positions AI as the core hub technology while enabling fusion-based collaboration across complementary domains.

South Korea has been actively advancing numerous support programmes for manufacturing AI adoption—including smart factory pilots, DX (digital transformation) and AX ("AI + X") initiatives focused on manufacturing-data domains. For example, the Ministry of SMEs and Startups reports that in 2025 over 1,700 manufacturing SMEs will undergo robot introduction, data-driven smart-factory upgrades and autonomous-factory pilots via AX/DX programmes.²¹ Meanwhile, Canada is likewise elevating SME-AI adoption as a strategic priority: under the G7's *"AI for Prosperity"* agenda, Canada and other member states committed to supporting small and medium-sized enterprises in adopting and developing AI, via greater access to compute infrastructure, digital tools and cross-border talent

²¹ <https://www.mss.go.kr/site/eng/ex/bbs/View.do?cbldx=244&bcldx=1055757>

exchange.²² Together, this suggests fertile ground for a Korea-Canada roadmap focused on industry-sector standards and connected policy-support programmes. Specifically, by aligning Korean manufacturing-data frameworks (DX/AX) with Canada's SME-AI adoption agenda, both countries can design complementary initiatives—such as joint guidelines, interoperable tool-kits, shared pilot platforms, and aligned funding mechanisms—that accelerate AI uptake in manufacturing and services across both economies.

4) Human Capital and Organizational Axis: Ensuring Sustainable Collaboration Through People and Execution

Cooperation sustainability depends ultimately on human capacity and operational execution rather than institutional frameworks alone. New fellowship programs should facilitate talent exchange in AI and semiconductor specialization, enabling researchers to participate in joint projects across public research institutions and private enterprises. Joint professional certification tracks in AI, quantum computing, and semiconductors should be developed through collaborative curriculum design and mutual recognition of qualifications across universities and research institutes. A Joint Implementation Task Force led by industry, science, and technology ministries from both nations should be established to deliver concrete industrialization outcomes and joint projects within twelve months, ensuring that cooperation transcends declarative agreements and produces tangible near-term results alongside medium-term strategic roadmaps.

4.3. Conclusion

1) Execution-Centered Reframing

The central challenge is not invention per se but execution: converting excellent research and policy intent into deployed systems, scaled industries, and exportable solutions. Both governments already have tools to do this. Korea has enacted two complementary legal pillars—the Act on Special Measures for Strengthening the Competitiveness of, and Protecting, National High-Tech Strategic Industries²³ and the Special Act on the Fostering of National Strategic Technology²⁴—to prioritize strategic fields and protect & promote knowhow. Canada has launched a Sovereign AI Compute Strategy, backed by Budget 2024/2025 measures (AI Compute Access Fund²⁵; sovereign public AI infrastructure as a “Building on Canada's AI Advantage”²⁶ strategy), and continues to leverage national strategies in

²² <https://g7.canada.ca/assets/ea689367/Attachments/NewItems/pdf/g7-summit-statements/ai-en.pdf>

²³ https://elaw.klri.re.kr/kor_service/lawView.do?hseq=61855&lang=ENG

²⁴ https://elaw.klri.re.kr/eng_mobile/viewer.do?hseq=62878&type=part&key=18

²⁵ <https://ised-isde.canada.ca/site/ised/en/canadian-sovereign-ai-compute-strategy/ai-compute-access-fund>

²⁶ <https://budget.canada.ca/2024/report-rapport/chap4-en.html>

critical minerals and quantum to underpin downstream AI and semiconductor competitiveness. Executing together—via joint pilots, interoperable standards, and matched incentives—translates policy into market outcomes.

2) Three Strategic Directions

A. Strategic-Technology Alliance & Value-Chain Complementarity

Combine Korea's advanced semiconductor, power-electronics, and systems integration strengths with Canada's upstream assets (critical minerals, clean power, and sovereign compute capacity) to form a resilient, third-path value chain. The export-control environment is tightening, while materials bottlenecks (e.g., gallium, germanium) and license uncertainties for fabs in China complicate legacy and advanced nodes alike²⁷. A Korea–Canada alliance that co-invests in upstream inputs, packaging, trusted foundry services, and energy-efficient data-center builds creates independence and optionality.

- Canadian inputs: Critical Minerals Strategy²⁸ financing and permitting reforms for battery/semiconductor minerals; sovereign compute programs that preference clean-power sites.
- Korean inputs: HBM/advanced memory leadership; strategic-tech master plans and incentives for on-shore AI/semiconductor capabilities.

B. Triple Institutionalization — Policy, Industry, Talent

To ensure durable collaboration, institutionalize programs at three levels, using the Korea–Canada Comprehensive Strategic Partnership Action Plan as a coordination framework. Align these efforts with the G7 AI for Prosperity workstreams, specifically focusing on SME adoption, energy, and AI.

- Industry: Establish interoperable testbeds for manufacturing AI, health AI, and secure cloud. These testbeds should be open to firms from both countries and publish common targets for energy use, carbon intensity, reliability, and productivity impacts. Anchor Canadian testbeds to sovereign compute and Korean testbeds to high-efficiency, grid-aware sites.
- Talent: Combine provisions from Korea's AI Framework Act (e.g., promotion and safety infrastructure) with Canada's Pan Canadian AI Strategy and SME programs. This collaboration will create co-badged fellowships, exchange chairs, and upskilling pipelines directly linked to pilot projects.

²⁷ <https://www.reuters.com/markets/commodities/china-bans-exports-gallium-germanium-antimony-us-2024-12-03/>

²⁸ <https://www.canada.ca/en/campaign/critical-minerals-in-canada/canadas-critical-minerals-strategy.html>

C. AI-Anchored Tech Convergence

Treat AI as the hub that compounds value across semiconductors, energy, bio, and quantum. Below are examples for Advanced Technology Convergence.

- Semiconductors and AI: Co-design for energy-efficient training/inference (e.g., memory-rich architectures) and deploy at sovereign/green data centers. Korea's newly announced GPU scale-up²⁹ plus Canada's sovereign compute make near-term, cross-border load-sharing feasible.
- Energy and AI: Implement the G7 Energy-AI work plan³⁰ through joint pilots on grid optimization, demand response for data centers, and SMR-ready siting studies.
- Bio/Health and AI: Launch a bilateral, evidence-based sandbox for trustworthy clinical AI with shared RWD/RWE (Real World Data/Real World Evidence) methods and aligned approval pathways.

Three Strategic Directions treat technology cooperation as ecosystem design, not just IP transfer or ad-hoc joint labs. It links shared democratic values and open-innovation norms to durable, interoperable institutions spanning ministries, regulators, industry champions, SMEs, thinktanks, and universities. The existing Comprehensive Strategic Partnership and leaders' statements already frame this ambition. The task now is to operationalize it with stable governance, measurable Key Performance Indicator (KPI), and recurring funding cycles that survive political turnover.

²⁹ <https://www.kedglobal.com/tech,-media-telecom/newsView/ked202510310020>

³⁰ <https://g7.canada.ca/en/news-and-media/news/g7-energy-and-ai-work-plan/>

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