AI in South Korea

OpenAI’s Economic Blueprint

23 October 2025

Foreword

At OpenAI, our mission is to ensure that artificial intelligence benefits everyone. We are building AI that helps people and governments solve hard problems—accelerating scientific discovery; improving healthcare, education, and public services; and boosting productivity across industries and communities. We believe that when AI is used to help with the hardest challenges, it has the potential to make life better for the greatest number of people.

South Korea exemplifies that potential. With its world-class technology ecosystem, strong industrial and digital infrastructure, and globally respected talent, Korea has all the foundations to become one of the next great AI powerhouses. The Korean government's strong commitment to AI-driven growth, combined with its vibrant private sector, positions the country to lead not only in innovation but also in ensuring that the benefits of AI are inclusive and sustainable.

This *Economic Blueprint for Korea* reflects that ambition. It outlines how Korea can pair its remarkable technological capabilities with global collaboration to drive a new era of AI-powered progress. Building on our recent partnerships with Samsung, SK, and the Ministry of Science and ICT (MSIT) under the *Stargate* initiative, and our collaboration with Seoul National University, we see Korea as a cornerstone in advancing frontier AI infrastructure, research, and talent development in the Asia-Pacific region.

Korea's approach—balancing its own sovereign AI ecosystem with active frontier partnerships—is both pragmatic and visionary. It recognizes that AI is a transformative general-purpose technology, much like electricity or the internet, that will redefine how people live and work. Developing the infrastructure, data frameworks, and policy environment to scale AI responsibly will be critical to unlocking the next generation of productivity and innovation.

We believe that the story of AI in Korea will also be a story of global collaboration. As Korea invests in the foundations of AI—chips, compute, and talent—it will simultaneously export its values of openness, creativity, and excellence. OpenAI is honored to be a partner in this journey. Together, we can help ensure that AI becomes a driver of shared prosperity and a trusted force for good—not just in Korea, but around the world.

Chris Lehane, Chief Global Affairs Officer

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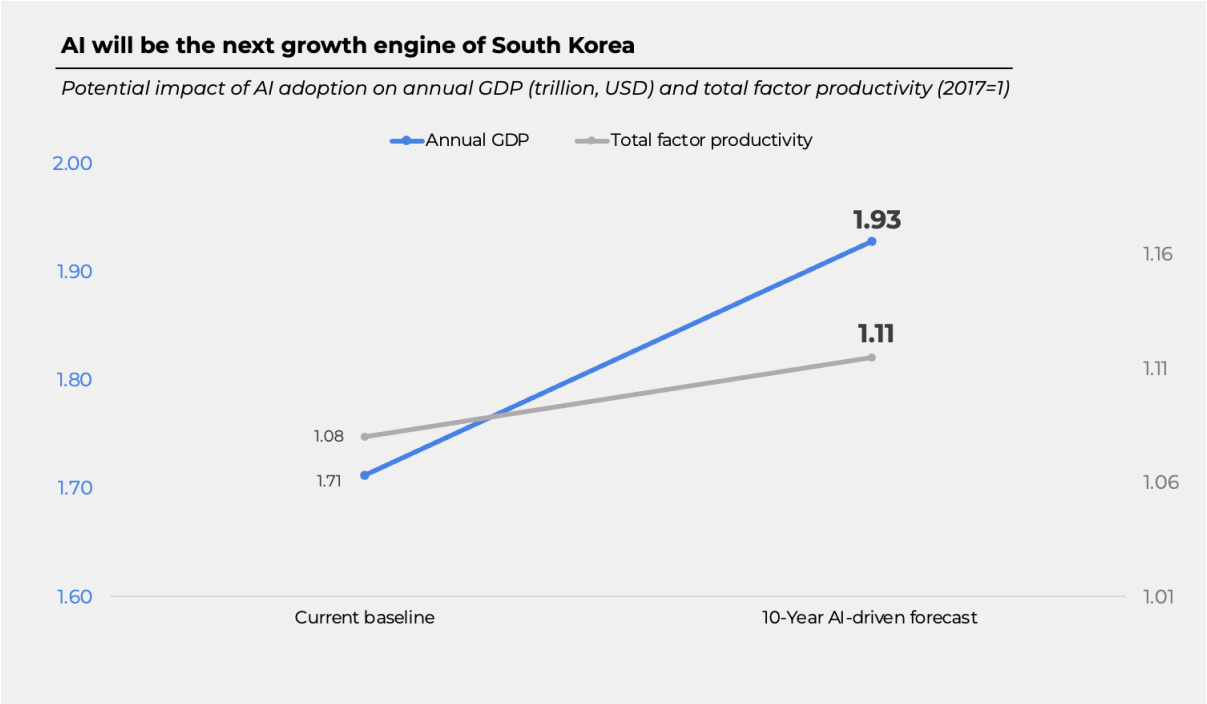
Introduction

South Korea to become the next AI powerhouse

South Korea fully recognizes the significant growth potential of artificial intelligence (AI). The Bank of Korea (BoK) projects that AI could raise the nation's total factor productivity by 3.2%, which in turn could boost GDP growth by 12.6% at most.[1] Given the structural slowdown in Korea's economy, reflected in its annual GDP growth of around 2% in 2024,[2] the projected upward shift in the economic trajectory driven by AI is substantial.



The Lee Jae-myung administration has geared up to harness AI as Korea's next growth engine. Building on the enactment of the *AI Basic Act* in December 2024, which establishes a legal framework to enhance national competitiveness while ensuring public trust, the administration has identified AI innovation as one of the core initiatives in its *Five-Year Policy Blueprint*.[3] During its term, the government has pledged KRW 150 trillion (over USD 115 billion) in AI investment through public–private collaboration.

A hallmark announcement of Korea's AI ambitions came on 1 October, when the leaders of Samsung, SK, and OpenAI met with President Lee at the Presidential Office in Seoul. Samsung and SK have joined OpenAI's *Stargate* initiative aimed at

[1] 한국은행. "AI와 한국경제." 2025.
[2] 지표누리. "국내총생산 및 경제성장률(GDP)."
[3] 대한민국 정책브리핑. "이재명정부 123대 국정과제." 16 Sept. 2025.

expanding AI infrastructure globally including Korea. [4] The strategic partnership, positioning Samsung and SK as key contributors to global AI infrastructure, supports Korea's commitment to becoming a top-three global AI powerhouse. [5]

South Korea's presence in the AI landscape is already strong. According to Stanford's *Global AI Vibrancy Tool,*[6] Korea ranked 7th out of 36 countries in 2024 across 42 AI-related indicators, a notable improvement from 14th in 2017. Similarly, the IMF's *AI Preparedness Index* (AIPI)[7] in 2023 ranked Korea 15th worldwide. If Korea's robust foundation in AI is matched by effective government policy and strategic partnerships, the nation is poised to emerge as one of the leaders in AI.

Objectives

There is an emerging preference for strategies asserting digital sovereignty. Digital sovereignty in the world of AI can be loosely defined as a nation's ability to control its own data, technology, and infrastructure. South Korea's vision for "sovereign AI ecosystem" is to build globally competitive models that are trained on domestic data, supported by local infrastructure, and grounded in the nation's unique institutions and values.[8]

The challenge lies in ensuring that these models keep pace with the rapidly evolving frontier of AI technology. Between 2013 and 2023, the total number of AI publications nearly tripled, from approximately 102,000 to more than 242,000.[9] While South Korea has recently launched an AI foundation model project to strengthen AI development and establish governance for the broader ecosystem, this represents only the tip of the iceberg. More discussion is needed on how nations can effectively and efficiently build the operational readiness and infrastructure necessary for businesses to fully capitalize on AI. Without sufficient deployment experience, the transition from development to real-world operation and AI adoption is highly challenging.

This report outlines an AI development strategy that distinguishes areas for partnerships with frontier AI providers from sovereign domains requiring technological independence. It draws on global case studies of partnerships and broad collaborations, illustrated as the primary means of keeping pace with rapid AI advancements. While asserting technology sovereignty in domains tied to national security for strategic concerns, the Korean government should create an environment where businesses requiring cutting-edge technologies can fully benefit from the applications of frontier AI. The ultimate goal is to not only secure the global competitiveness of South Korea's leading industries at the forefront of AI innovation, but also channel the resulting positive spillovers into strengthening the nation's overall AI capabilities.

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[4] OpenAI. "Samsung and SK join OpenAI's Stargate initiative to advance global AI infrastructure." 1 Oct. 2025.
[5] 대한민국 정책브리핑. "이재명정부 123대 국정과제." 16 Sept. 2025.
[6] Stanford University Institute for Human-Centered AI. "The Global AI Vibrancy Tool." 2025.
[7] International Monetary Fund. "AI Preparedness Index." 2025.
[8] 머니투데이. "이재명 매료시킨 '소버린 AI' 뭐길래…하정우와 네이버가 그려온 미래." 16 June 2025.
[9] Stanford University Institute for Human-Centered AI. "The 2025 AI Index Report." 2025.

Global Trends in AI Developments

A closer look at global AI development strategies illustrates some key considerations and concerns critical to advancing the overall AI capabilities. They provide a guide for effectively shaping policy and investment priorities.

Scaling and adapting faster than ever

The investment into scaling AI is unprecedented, accelerating the advancement of AI at an exponential pace. The U.S. government alone spent an estimated USD 328 billion on AI technologies from 2019 to 2023. The European Union's Digital Europe program is set to allocate EUR 2.1 billion (more than USD 2.4 billion) for AI until 2027.[10] Private-sector commitments are even larger. The big tech firms, namely Amazon, Alphabet, Microsoft, and Meta, have committed to spend as much as USD 364 billion on AI in fiscal year 2025 alone.[11]

The sheer scale of AI investment worldwide is moving up the tipping point in the AI competition. PwC projects that the winners of the AI competition will emerge within the next few years and could persist for decades.[12] Businesses are already feeling this lightning-fast pace of AI development. According to KPMG's *AI Quarterly Pulse Survey* (2025),[13] 67% of corporate leaders expect AI to fundamentally change the nature of their business in two years. In the same survey, 88% of the respondents identify macroeconomic conditions as the most significant factor shaping AI strategies.

To keep pace, expediting AI adoption has become a new business priority. According to the latest report by the U.S. Census Bureau, the AI adoption rate in the second quarter of 2025 was 9.2%, soon to cross the 10% threshold which took 24 years for US e-commerce penetration.[14] In the 27 member states of the European Union, the share of enterprises with ten or more employees using AI grew at an annual rate 60% higher in 2024 than in previous years, according to the OECD's *ICT Access and Usage by Businesses*.[15]

Korean companies have joined OpenAI's *Stargate* initiative, strengthening their role in global AI infrastructure development. Through this partnership, Samsung Electronics and SK have positioned themselves as key contributors to the next generation of AI capabilities. The collaboration includes plans to scale up advanced memory chip production to 900,000 DRAM wafer starts per month, a significant expansion supporting the computational demands of OpenAI's advanced AI models.[16] In parallel, ongoing partnerships aim to enhance data center capacity in Korea, reinforcing the nation's strategic position in the global AI ecosystem. In South Korea,

[10] Projects for Europe. "Digital Europe Programme." 24 Apr. 2021.
[11] Yahoo Finance. "Big Tech's AI Investments Set to Spike to $364 Billion in 2025 as Bubble Fears Ease." Aug. 2025.
[12] PricewaterhouseCoopers. "In The Age of AI: Speed Matters More, Scale Matters Less, Innovation Matters Most."
[13] KPMG. "KPMG AI Quarterly Pulse Survey: From Agent Experimentation to Rapid Scale and Deployment." 2025.
[14] UBS. "Tech rally has legs amid rising AI adoption." 2025.
[15] OECD. "ICT Access and Usage by Businesses."
[16] OpenAI. "Samsung and SK join OpenAI's Stargate initiative to advance global AI infrastructure." 1 Oct. 2025.

global partnership efforts to integrate AI into business workflows are currently driven predominantly by the private sector.

Pursuing frontier AI adoption

Keeping up with the pace is one challenge; meeting rising expectations for novel technologies and their capabilities is another. For businesses, the ability to access and harness the full potential of frontier AI models will be critical for driving growth through AI. The most effective strategy for gaining a competitive edge in the AI race lies in forging partnerships with global players at the frontier of innovation.

Governments worldwide are moving proactively to lay the foundation for quality collaborations, ensuring that domestic businesses are not left behind in the race to integrate cutting-edge AI. The UK Council for Science and Technology described collaboration to leverage frontier AI technology as the most feasible path toward gaining a strategic advantage in AI. It recently advised the UK government to "explore UK access to the leading-edge technology required by UK startups" when negotiating international trade agreements.[17] This led to an MOU signed between the UK government and OpenAI in July 2025 in support of its *AI Opportunities Action Plan*, which lays out a roadmap for realizing the economic gains of deploying sovereign AI.[18]

As part of its *Tourism 2040* roadmap, the Singapore Tourism Board (STB) signed an MOU with OpenAI to "advance Singapore's tourism sector for a future driven by advanced AI."[19] The joint effort centers on deploying advanced AI in the country's tourism sector to enhance operational efficiency, personalize experiences, develop robotic use cases, and drive other future-oriented growth initiatives.[20] In doing so, the STB has set and pursued policy initiatives that will position private enterprises in the country's key sector at the forefront of digital transformation.

South Korea has recently announced a major partnership with a leading frontier AI provider. At the presidential office, OpenAI CEO Sam Altman unveiled a collaboration with Samsung Electronics and SK, marking a significant step in advancing the nation's AI capabilities. Through this partnership, Samsung and SK will serve as key partners in powering OpenAI's frontier models. The initiative aligns closely with Science Minister Bae Kyung-hoon's previous remarks, emphasizing the importance of developing AI technologies that global businesses and users will actively adopt.[21]

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[17] GOV.UK. "Council for Science and Technology: Advice on Building a Sovereign AI Chip Design Industry in the UK." 21 Aug. 2025.
[18] OpenAI. "OpenAI and UK Government announce strategic partnership to deliver AI-driven growth." 21 Jul. 2025.
[19] Singapore Tourism Board. "STB And OpenAI Sign First-of-its-kind MOU to Prepare Tourism Sector for AI-Driven Future." 23 Jul. 2025.
[20] Singapore Tourism Board. "STB And OpenAI Sign First-of-its-kind MOU to Prepare Tourism Sector for AI-Driven Future." 23 Jul. 2025.
[21] CBC News. "배경훈 장관, AI 독자 모델로 글로벌 3대 강국 노린다." 14 Sept. 2025.

Partnering to bolster AI infrastructure

The task of scaling and adopting frontier AI doesn't happen in a vacuum. Infrastructure forms the backbone of successful AI deployment. Without vast computing power, high-speed networking, and robust data systems, even the most advanced AI algorithms cannot be trained and deployed effectively.

Given the urgency, partnerships that pool resources from multiple stakeholders have become the norm. Beyond financial reasons, public–private partnerships bring together the policy support and regulatory expertise of the public sector with the technical innovation and operational experience of private companies. Countries such as the United Kingdom and Singapore exemplify this approach where AI development is pursued by coordinated investment and collaboration for infrastructure development.

The UK government's *AI Opportunities Action Plan*[22] introduces the concept of AI Growth Zones, which are designated areas optimized to host AI data centers with enhanced power access and streamlined planning processes. The first pilot zone at Culham, Oxfordshire, was established through a public–private partnership led by the UK Atomic Energy Authority. The partnership aims to develop one of the largest AI data centers in the country, beginning with 100 MW of capacity and scaling up to 500 MW.[23]

Singapore has created a comprehensive public-private AI partnership ecosystem, notably through its collaboration between Enterprise Singapore and Microsoft. With a mission to support SME growth, Enterprise Singapore subsidizes over 1,000 SMEs to access Microsoft's AI tools.[24] Enterprise Singapore aims to help local SMEs build AI capabilities by expanding access to resources such as Microsoft Copilot, AI capability-building workshops, and collaboration opportunities.

Modernizing the legal framework

While regulations typically lag behind evolving technology for understandable reasons, modernizing regulatory frameworks is crucial for fostering AI innovation. The potential of new technology can be fully realized only if unnecessary barriers that stifle technological advancement and private investment are removed.

The first pillar of President Trump's *AI Action Plan* announced in July 2025 chooses broad deregulatory efforts and open-source support as the main tool to steer AI development.[25] Under the plan, federal funding for AI-related projects will be exempt from cumbersome AI regulations. At the AI Summit in Paris in February 2025, U.S.

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[22] GOV.UK. "AI Opportunities Action Plan." 13 Jan. 2025.
[23] GOV.UK. "AI Opportunities Action Plan: Government Response." 13 Jan. 2025.
[24] Enterprise Singapore. "Enterprise Singapore partners tech industry to expand resources to help more local SMEs build AI capabilities." 2024.
[25] Skadden Publication. "White House Releases AI Action Plan: Key Legal and Strategic Takeaways for Industry." 30 Jul. 2025.

Vice President J.D. Vance emphasized that "excessive regulation of the AI sector could kill a transformative industry just as it's taking off."[26] Based on this vision, the development and use of open-source and open-weight AI models are highly encouraged in the United States to bolster the value of AI for startups, academic research, and government use.

Similarly, Singapore strives to foster an open and innovation-friendly environment for AI development through comprehensive open data initiatives. Singapore launched a data portal in 2011 that provides access to over 4,000 datasets from over 65 agencies.[27] It covers sectors such as healthcare, transportation, urban planning, and financial services. In 2019, Singapore became the first country to introduce a *Model AI Governance Framework*, marking the culmination of its commitment to fostering an environment conducive to responsible and transparent AI adoption.[28]

South Korea's national framework of AI development and regulation centers on its first major AI legislation, known as the *AI Basic Act*.[29] The legislation was signed into law in January 2025 and will take effect one year later. The clarity and relevance of upcoming policy guidelines and implementation plans will determine how effective they are in fostering the AI industry while mitigating potential risks. In the *Challenges and Policy Recommendations* section, the report identifies existing policy gaps and provides targeted guidelines for how the policy framework should evolve.

[26] The American Presidency Project. "Remarks by the Vice President at the Artificial Intelligence Action Summit in Paris, France." 11 Feb. 2025.
[27] Government Technology Agency (GovTech). "Data.gov.sg." 8 Jul. 2025.
[28] PDPC. "Singapore's Approach to AI Governance."
[29] Ministry of Science and ICT. "A New Chapter in the Age of AI: Basic Act on AI Passed at the National Assembly's Plenary Session." 26 Dec. 2024.

Frontier AI Application for South Korea

Frontier AI technologies offer possibilities that extend beyond imagination. A review of existing business use cases provides valuable insights into how South Korea's key industries can benefit. Drawing on the national policy agendas, three domains stand out as critical priorities for the Korean economy: key export industries in manufacturing, social welfare, and education.

AI for *$1 trillion export goals*

Opportunities

South Korea is an export-driven economy, with exports accounting for almost half of GDP in 2024.[30] This reliance is the highest among major economies in G7.[31] Among South Korea's export sectors, manufacturing is the principal engine of the economy. In 2023, the sector accounted for 27.6% of GDP, ranking second globally after Ireland,[32] with a strong concentration in semiconductors[33], automotives[34], and ships.[35] To further strengthen competitiveness, the current administration has announced a USD 1 trillion export target and launched a dedicated task force to achieve this goal.[36]

Smart Factories	Semiconductors	Autonomous ships
Enhance manufacturing efficiency and overall productivity This will enhance productivity and operational efficiency across industrial processes.	Meet rising demand for high-bandwidth memory used in AI accelerators This will accelerate innovation in high-performance computing and advanced chip production.	Improve navigation safety and fuel efficiency in maritime operations This will strengthen Korea's competitiveness in smart shipping and autonomous navigation.
15% annual growth in the global AI smart factory market, expanding from USD 154.9 billion to 726.4 billion by 2030.	24% growth in the AI driven memory segment, led by demand for HBM3 and HBM3e chips used in GPUs.	9.1% annual growth in the global autonomous ship market from 2025 to 2032.

Globally, AI adoption in South Korea's key export industries is highly active. The global market for AI-enabled smart factories in manufacturing is projected to grow at an average annual rate of 10%, rising from USD 154.9 billion today to USD 726.4 billion by 2030.[37] A similarly strong AI-driven growth rate is evident in the semiconductor market, where the memory segment is expected to surge by more than 24%. This

[30] 국회예산정책처, "2025 대한민국 경제." 2025.
[31] 국회예산정책처, "2025 대한민국 경제." 2025.
[32] 국회예산정책처, "2025 대한민국 경제." 2025.
[33] 한국은행. "AI와 한국경제." 2025.
[34] 한국금융연구원. "최근 수출 증가의 특징과 유의점." 2024.
[35] 한국무역협회. "수출의 국민경제 기여효과 분석." 2021.
[36] KOTRA. "KOTRA, 수출 1조 달러 준비를 위한 '무역구조 혁신 TF' 발족." 11 Jun. 2025.
[37] Gra
nd View Research. "Smart Factory Market." 2025.

growth is driven largely by rising demand for high-bandwidth memory chips such as HBM3 and HBM3e, which are required for AI accelerators like GPUs. The market for autonomous ships, a key application of AI at sea, is projected to grow at a compound annual growth rate of 9.1% from 2025 to 2032, underscoring the growing importance of AI in South Korea's core industries.[38]

Global AI applications

In the semiconductor industry, AI is transforming the speed and efficiency of advanced chip production. Taiwan-based TSMC, the world's largest contract chipmaker, applies AI and accelerated computing to computational lithography—the process of designing and optimizing microscopic patterns on silicon chips. Traditionally, this process consumed tens of billions of CPU hours each year and required massive in-house data centers, with a single chip mask set taking more than 30 million CPU hours to complete. By deploying AI systems powered by advanced GPUs, TSMC has accelerated production times by up to 40-fold while reducing costs and energy use by 75% and 90%, respectively.[39]

The transformative power of AI is also evident in the automotive sector, where it is driving greater efficiency, lower costs, and stronger compliance. Electra, a U.S. startup specializing in electric vehicle (EV) battery optimization, applies AI to improve battery utilization and extend battery life, delivering up to 15% more revenue per mile and a 5–10% increase in annual return on investment for EV makers.[40] Toyota and Honda, two of Japan's leading automakers, use large language models (LLMs) to optimize inventory levels and delivery schedules, achieving a 15–20% reduction in supply chain costs.[41] Mercedes-Benz, the German premium automaker, employs LLMs to analyze regulatory changes related to vehicle safety and emissions, cutting compliance costs by 10–15% while enabling faster adaptation to evolving rules.[42]

At sea, AI is enabling safer and more efficient maritime transport through the development of autonomous ships. Nippon Yusen, one of Japan's largest shipping companies, has begun testing autonomous cargo vessels.[43] These AI-powered fleets are expected to cut fuel costs and emissions by about 20% while also improving safety and reliability along global shipping routes.[44]

[38] Fortune Business Insights. "Autonomous Ships Market Size, Share, Industry Analysis." 2025.

[39] NVIDIA. "Sustainable Chip Making: Accelerate computational lithography with NVIDIA cuLitho." 2023.
[40] Electra. "Electra Launches the First AI Agent with PhD-Level Intelligence for Battery Management." 19 Mar. 2025.
[41] Raza et al. "Industrial applications of large language models." 2025.
[42] Raza et al. "Industrial applications of large language models." 2025.
[43] International Finance Corporation. "How Artificial Intelligence is Making Trasport Safer, Cleaner, More Reliable and Efficient in Emerging Markets." 2019.
[44] Marino Magus. "How AI is Revolutionizing Shipbuilding: The Future of Smart Maritime Engineering."

Ongoing initiatives in South Korea

SK Group, the parent company of SK hynix, which is one of the world's largest memory chipmakers, has been accelerating its transition to AI. In June 2025, it announced plans for large-scale investments in AI and advanced semiconductors. As part of its enterprise-wide innovation strategy, SK Group partnered with the city of Ulsan and Amazon Web Services (AWS) to build a large-scale AI-dedicated data center.[45] In October 2025, the SK Group announced a strategic partnership with OpenAI. The collaboration involves several of its subsidiary firms, including SK hynix, which plans to ramp up production of advanced memory chips to power OpenAI's frontier AI models. Additionally, SK Telecom will explore the development of an AI data center in Korea as part of the partnership.

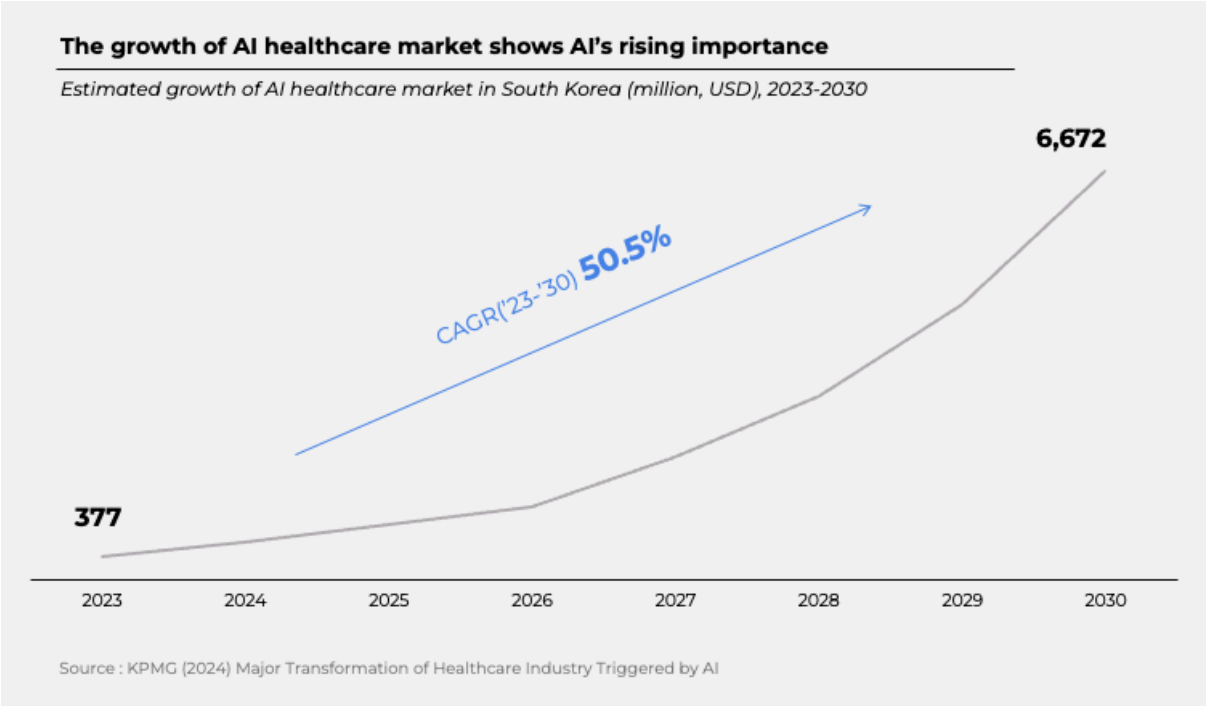
AI for *basic social welfare*

Opportunities

South Korea's healthcare system faces mounting strain from its aging population and the nation's unusually high frequency of hospital visits. By 2024, those aged 65 and above are projected to make up 24.4% of the total population.[46] Compounding this challenge, Koreans visit clinics at a rate three times higher than the OECD average,[47] underscoring the heavy reliance on outpatient care and the urgent need to strengthen the healthcare system. In response, a core pillar of South Korea's basic social welfare vision is the expansion of public and regional medical services to ensure they are readily accessible to all.

AI technology is recognized as a key enabler for scaling South Korea's healthcare system in line with its social welfare vision. The domestic AI healthcare market in Korea is projected to grow at an average annual rate of 50.8 percent, expanding from USD 377 million in 2023 to USD 6.67 billion by 2030.[48] This growth is supported by Korea's strong digital infrastructure, including advanced telecommunications networks, a single payer insurance system, and a high adoption rate of electronic medical records. Public confidence also supports this trend. 70.6% of Koreans expressed satisfaction with AI-enabled healthcare services, while 81.9% believed digital healthcare would improve personal health.[49] The widespread deployment of AI further reinforces the strong AI application in healthcare.

[45] SK telecom. "SK-AWS Ulsan AI Data Center to be Key Hub of AI Superhighway." 4 Jul. 2025.
[46] National Statistics. "Population Projections for Korea (2020~2070)."
[47] OECD. "OECD Health Statistics."
[48] KPMG. "AI로 촉발된 헬스케어 산업의 대전환." 2024.
[49] KDI. "디지털 헬스케어에 대한 국민 인식조사." 2021.



Global AI applications

Research has demonstrated the value of a leading frontier AI model for clinical decision-making. A study published in the *Journal of Medical Internet Research* (2023)[50] tested ChatGPT using 36 clinical vignettes from the Merck Sharp & Dohme (MSD) Clinical Manual, assessing its performance across four stages: differential diagnosis, diagnostic testing, final diagnosis, and care management. ChatGPT achieved an overall accuracy of approximately 72%, which improved to 76.9% for final diagnoses when additional clinical context was provided.

Real-world evidence from Penda Health, a healthcare provider in Kenya, shows how AI-assisted tools can significantly reduce diagnostic and treatment errors. Its *AI Consult* tool illustrates the practical integration of AI into everyday clinical practice.[51] Clinicians using the tool made 16% fewer diagnostic errors and 13% fewer treatment errors—equivalent to preventing 22,000 diagnostic mistakes and 29,000 treatment mistakes annually. In a survey, all participating clinicians reported that the tool improved care quality, with 75% describing the impact as substantial.[52]

[50] Rao et al. "Assessing the Utility of ChatGPT Throughout the Entire Clinical Workflow: Development and Usability Study." 2023.
[51] OpenAI. "Pioneering an AI clinical copilot with Penda Health." 22 Jul. 2025.
[52] Penda Health et al. "AI-based Clinical Decision Support for Primary Care: A Real-World Study." 2025.

Ongoing initiatives in South Korea

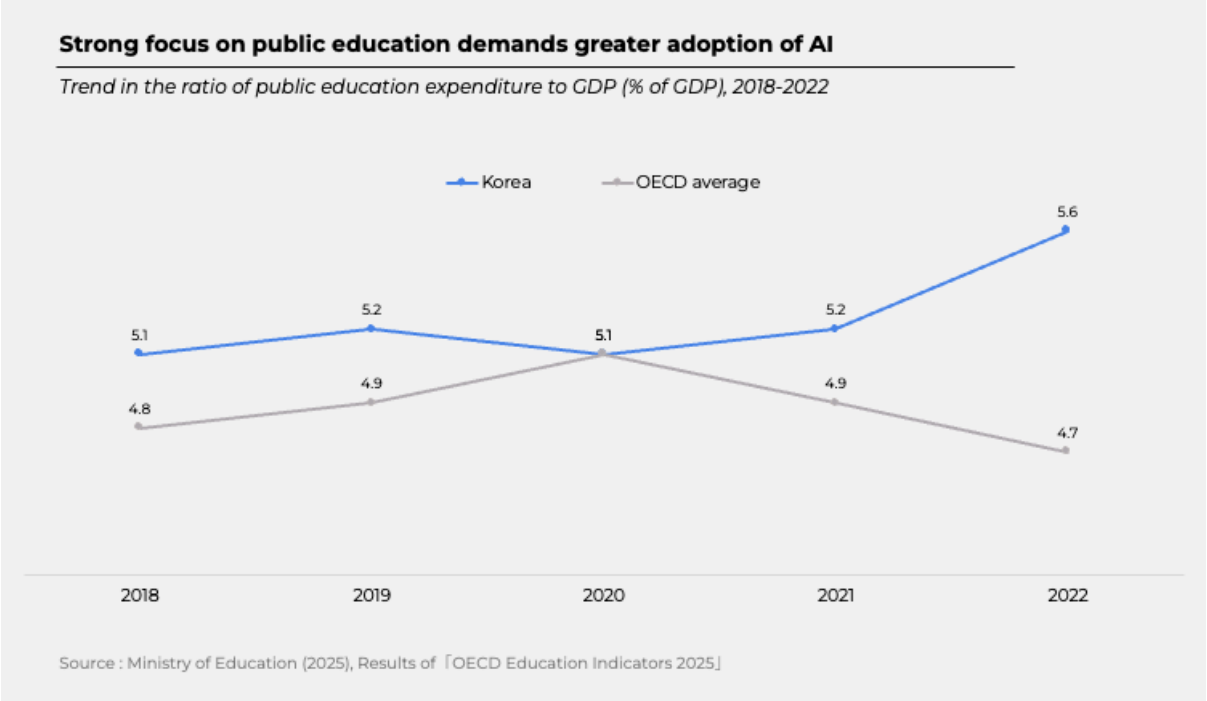
In March 2025, the Ministry of Science and ICT announced a new government initiative to leverage AI solutions for post-treatment care services.[53] Called Dr. Answer 3.0, the program is being developed in partnership with the National IT Industry Promotion Agency (NIPA) and targets conditions that require long-term rehabilitation or daily self-care, such as cancer, fractures, skin diseases, and obesity. The KRW 2.2 billion (USD 1.5 million) valued project is pending the establishment of a consortium in 2025 for implementation.

In the following month, Asan Medical Center integrated an AI-powered medical voice recognition system into its medical information system.[54] The tool summarizes conversations between staff and patients, automatically formats the data, and stores it in electronic medical records and other databases for easy retrieval. The system is now operational across various clinical settings.

AI for *progress of all*

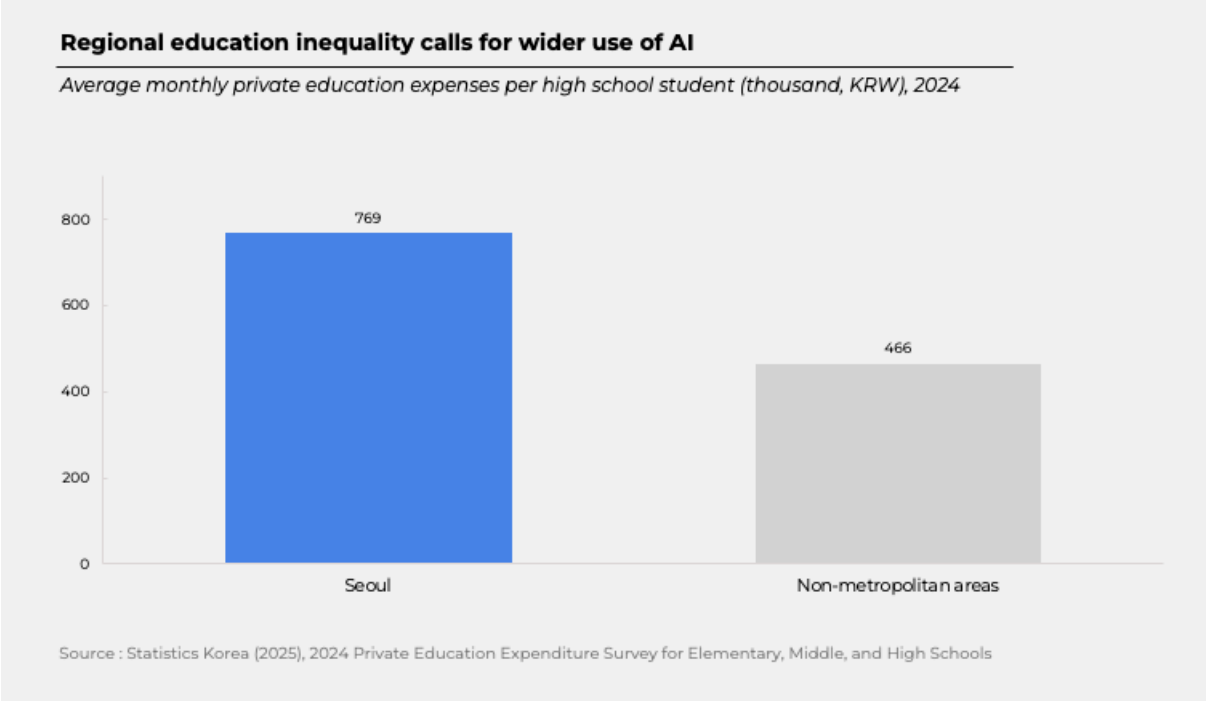
Opportunities

Education has long been at the heart of Korean society. This dedication is reflected in both its high education spending of 5.6% of GDP[55] and public education expenditure per student, which has consistently surpassed the OECD average.[56]



[53] Maeil Business News Korea. "Korea invites proposals for AI-based post-treatment care project." 31 Mar. 2025.
[54] Healthcare Asia. "South Korea's AMC unveils AI voice recognition system for recording." Apr. 2025.
[55] OECD. "Education at a Glance 2025." 2025.
[56] 국회도서관. 「Data & Law」 (2025-6호, 통권 제31호). 2025.

However, the inequitable access to quality education between urban and rural areas remains a pressing challenge. In 2024, high school students in Seoul who received private tutoring spent nearly twice as much as students in rural areas.[57] To address this gap, one of the key national agendas is to reduce educational inequality as part of a broader mission for balanced national development.[58]



The challenges in Korea's education sector also present opportunities that AI can help address. AI-powered virtual teaching assistants can help ease teacher shortages in rural areas, narrowing regional disparities in access to quality education. At the same time, AI services can deliver more customized learning experiences, better accommodating diverse student needs. By automating routine, labor-intensive administrative tasks, AI can also allow teachers to focus more on their core responsibility of providing tailored educational support to students.[59]

Global AI applications

Educational institutions across the globe have already adopted AI technology at scale to enhance education quality. The California State University (CSU) has rolled out ChatGPT Edu,[60] providing 460,000 students and more than 63,000 staff and faculty with access to a version of ChatGPT customized for educational institutions across 23 campuses. The frontier deployment has proven value in just two years after its launch. Students have gained access to customized tutoring, study aids, interactive learning,

[57] 교육부. "2024년 초중고 사교육비 조사 결과." 2024.
[58] 대한민국 정책브리핑. "5대 국정목표 123대 국정과제 추진." 19 Aug. 2025.
[59] OECD. "Trustworthy artificial intelligence (AI) in education: Promises and challenges." 2020.
[60] OpenAI "OpenAI and the California State University system bring AI to 500,000 students and faculty." 4 Feb. 2025.

and AI-supported research. Faculty and staff benefit from streamlined administrative tasks, enhanced curriculum development, and expanded research support.

In partnership with Azure OpenAI Service. Cognizant released a math tutor bot as a minimum viable product (MVP) to support its core business of education.[61] Designed as a conversational assistant providing 24/7 student support, the bot was piloted with 5,000 students. The service received an 85% accuracy rating and achieved 90% student satisfaction for accuracy in surveys. For educators, AI automation increased content development efficiency by 300%, enabling faster creation of study materials, quizzes, and courses while freeing up time for higher-value teaching activities.[62]

Ongoing initiatives in South Korea

Seoul National University (SNU) has taken a major step toward reshaping the future of higher education by signing an MOU with OpenAI. The MOU aims to accelerate the establishment of an AI Native Campus, designed to provide students with an optimized learning experience supported by personalized AI tutors.[63] In addition, the two institutions will work together to explore the use and research of generative AI. As part of the broad collaboration, the university is considering developing the AI Elite Track, a program created to foster talent development and broaden international exposure.

[61] Cognizant. "EdTech giant leverages Azure OpenAI to enable student success." 2025.
[62] Cognizant. "EdTech giant leverages Azure OpenAI to enable student success." 2025.
[63] 서울경제. "서울대 손잡은 오픈AI ..."AI 네이티브 캠퍼스 만들 것." 14 Sept. 2025.

Challenges and Policy Recommendations

Window of opportunity for action

The urgency to adopt AI technology is evident across South Korea's key sectors. Industries face growing pressure to accelerate the AI transition, particularly through the development of scalable data infrastructure. In healthcare, rising demand driven by an aging population underscores the need for faster deployment in critical services, while the sensitive nature of health data discourages the adoption of AI. Education, too, risks falling behind without the rapid integration of AI in classrooms and the provision of structured training for teachers.

The government's role is to expedite the creation of an environment conducive to AI adoption. Successful development and adoption require a set of prerequisite conditions for stakeholders to fully realize AI's potential. Centralized policy planning is particularly effective in establishing these foundations, by aligning national strategies and coordinating resources with the goal of building a broader AI ecosystem.

What follows are recommendations to act on this urgency and secure Korea's position in the global AI race:

Focus	Challenges	Policy recommendations
Industry	Rising business needs for a prompt, AI-driven digitalization	• Expand AI data center infrastructure to support scalable adoption and provide affordable access to high-performance computing resources (e.g., enterprise version of frontier AI) • Digitize non-sensitive public datasets in accessible formats for industries requiring frontier technologies
Healthcare	Aging demographics putting strains on the healthcare system	• Promote sector-specific consortia in advanced sectors to develop fast-track strategies by fusing each firm's technical edges into collective leverage • Form global partnerships to develop international standards for AI healthcare solutions within regulatory sandboxes,

		and accelerate their adoption in clinical practice
Education	Growing demand for AI literacy	• Establish AI teacher academy with workshops and online modules, to equip educators with knowledge of the latest frontier AI technologies • Promote AI-friendly pilot schools where AI is employed as a freely accessible educational assistant for students • Launch an AI Education task force to deliver a nationwide roadmap, consolidate resources, and issue subsidy guidelines within set timelines

Unequal access to AI

AI technology is not equally accessible to all. Large firms and metropolitan regions can develop in-house models and establish data protection frameworks with relative ease. In contrast, SMEs and rural areas are constrained by limited resources, including computing power, funding, talent, and access to information. These disparities risk widening the digital divide, making AI benefits less inclusive across society.

Leveraging existing frontier AI solutions is the most viable option for SMEs and rural areas. By compensating for limited resources, these solutions can accelerate AI transformation across regions and industries regardless of differences in capacity.

The following policy recommendations outline how these barriers can be addressed to lower the entry barrier across sectors:

Focus	**Challenges**	**Policy recommendations**
Industry	Need to broaden SME access to AI	• Provide SMEs with incentives to adopt lightweight generative AI solutions that operate effectively with limited resources • Build AI adoption roadmaps that guide SMEs in effectively and directly utilizing widely used AI tools • Create cross-sector collaboration hubs connecting domain experts, engineers, and AI specialists to accelerate resource sharing

Healthcare	Low acceptance of AI in medical institutions	• Invest in training modules and simulation programs on easily accessible frontier AI models for medical staff to build familiarity in AI use • Launch pilot programs in public hospitals to generate best practices for gradual clinical adoption
Education	Disparities in access to AI learning	• Provide targeted subsidies to bridge gaps in rural school networks and AI hardware (e.g., Internet Data Centers for education AI) • Expand AI learning spaces in public libraries and community centers to ensure inclusive access beyond schools • Encourage local governments to establish MOUs with frontier AI model providers to jointly explore pathways for educational use

Non-interoperable data

Fragmented and inconsistent data systems remain a critical barrier to AI adoption in South Korea. When datasets are siloed and non-standardized, AI applications are limited to narrow use cases, making it difficult to scale across industries. Ambiguity over data ownership, usage rights, and safeguards further hampers development and undermines trust among both domestic enterprises and international partners.

Overcoming these barriers requires clear and consistent governance frameworks for data use. Establishing standards and open data platforms would enable companies to share datasets securely, reduce duplication, and expand opportunities for collaborative AI development.

The following recommendations seek to reduce barriers caused by fragmented data and support reliable AI deployment:

Focus	**Challenges**	**Policy recommendations**
Industry / Healthcare	Ambiguity in data sharing and protection measures	• Refine existing regulations to provide clear guidance on data usage (e.g.,

		pseudonymization, consent, data sharing, etc.) ● Introduce regulatory sandbox that distinguishes sensitive from non-sensitive data for firms to handle data appropriately ● Publicize successful pilot cases of responsible medical data use under the new framework, ensuring best practices are widely shared
Industry / Heathcare	Fragmented and unstandardized data systems	● Establish interoperable data platforms for each sector that allow firms and research institutions (e.g., common data models (CDM) in healthcare) to share information seamlessly and drive collaboration ● Develop data encryption standards and practices across sectors (e.g., Blockchain techniques)

Inconsistent policy guidelines

While South Korea leads in the number of AI-related laws passed, there remains considerable room for improvement. The lack of coherent policy guidelines is most notable. The current framework reflects a patchwork of legislation and regulations, particularly data protection, that are dispersed across multiple laws. Policies also tend to shift with changing government priorities, adding another layer of uncertainty. This fragmented approach undermines legal clarity, creates compliance burdens, and hinders long-term planning. As a result, even enacted laws struggle to deliver meaningful progress, slowing the pace of AI adoption across industries.

Historically, new technologies have flourished under clear policy direction. Establishing internationally aligned, stable guidelines would give domestic businesses and global partners the predictability needed to invest with confidence.

The following proposals are recommended to address the absence of consistent policy guidelines and to create a stable foundation for AI adoption across sectors:

Focus	**Challenges**	**Policy recommendations**
Industry / Heathcare	Uncertainty in defining and	● Establish clear, internationally aligned definitions to give businesses

	regulating advanced AI systems	predictability and support seamless global collaboration ● Provide firms with expert guidance and on-site training on the practical applications of frontier AI technologies
Education	Frequent education policy shifts driven by changes in political leadership[64]	● Establish an independent, bipartisan committee to certify classroom AI tools and set long-term principles for AI in education, ensuring reliability and accountability ● Build a sustainable national platform for AI-enabled learning resources that remains accessible regardless of policy changes

[64] The Korea Times. "AI textbooks targeted for phaseout under new government." 10 Jun. 2025.

Toward Global AI Leadership

A supportive policy environment, though critical, cannot alone ensure global competitiveness in AI leadership. Building on this foundation, the ultimate vision of the national AI strategy should be to build capabilities that ensure domestically developed AI models are globally competitive. At the same time, given the intensifying global competition in AI, the pursuit of AI sovereignty must not come at the expense of South Korea's critical industries, where success will increasingly depend on the effective adoption of frontier AI technologies. This report concludes that South Korea must adopt a dual-track strategy, pursuing two distinct but complementary goals: advancing domestic AI model development and accelerating frontier AI adoption, both essential to strengthening the nation's overall AI capabilities.

Dual-track strategy

In the upcoming *AI Action Plan*[65] of the Ministry of Science and ICT, the Korean government's AI policy will rest on three main pillars: (1) develop an independent sovereign AI ecosystem encompassing foundation models, infrastructure, and GPU supply, (2) catalyze a national AI transformation, and (3) champion the equitable national distribution of AI benefits to ensure technology empowers all. To supplement the vision, the government and the ruling party have additionally agreed to rationalizing unnecessary regulations that stifle AI developments and enhancing public data opening.[66] This reflects our proposed dual-track strategy: while sovereign AI technology continues to advance, expanded public data access will facilitate cooperation with global frontier AI providers in areas where rapid engagement is feasible.

This dual-track vision must fully capitalize on the complementary relationship between developing a sovereign AI ecosystem and building partnerships with frontier AI providers. While strengthening technological sovereignty, the Korean government should establish a clear roadmap that both maximizes the positive spillovers from partnerships with leading global AI developers and mitigates the risks associated with overdependence or strategic vulnerabilities.

A well-designed framework for cooperation presents two strategic opportunities for South Korea. First, as the country strengthens its technological sovereignty, it can also maintain competitiveness in frontier areas of collaboration. Second, positive spillovers from global frontier innovations—particularly in infrastructure, operational expertise, and data utilization—can accelerate the development of the sovereign AI ecosystem, thereby enhancing South Korea's overall competitiveness in the global market.

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[65] 과학기술정보통신부. "국가 최상위 AI 전략 논의기구, 대통령 직속「국가인공지능전략위원회」출범." 8 Sept. 2025.
[66] 동아일보. "당정, 첨단 산업·공공 데이터 활용해 경제 성장 기반 마련." 20 Aug. 2025.

In practice, the strategy calls for a phased approach to collaboration, beginning with partnerships in a few select domains and gradually expanding over time. Rather than focusing on areas integral to national security, global partnerships should target domains with strong potential for rapid, high-impact adoption, or where cutting-edge technology is critical for breakthrough capabilities.

Proposed strategic sectors for frontier AI collaboration are as follows:

Sector	Current status	Key benefits of frontier AI partnerships
Industry / SMEs Support	Labor-intensive and time-consuming tasks like routine paperwork divert businesses from value-creating activities. For SMEs, limited resources make it especially difficult to deploy in-house AI solutions to mitigate these problems.	Adoption of frontier AI would be useful for high-volume productivity tasks. It could support the development of an SME-focused AI assistant in routine workloads such as regulatory guidance, export paperwork, and tax support. This would reduce paperwork time, ensure operational maturity, and efficiently free resources for higher-value activities.
Healthcare	South Korea has issued the world's first generative AI medical device guideline, [67] establishing a regulatory basis while raising the need for validation before clinical deployment.	Frontier collaboration can start with assistive applications—such as clinician copilots, documentation, and administrative support—tested in regulatory sandboxes and advanced once they meet safety standards. With safeguards (e.g., pseudonymization), combined with operational control (e.g., monitoring, human oversight), pilots can gradually transition into the existing clinical process.[68] This would leverage frontier operational know-how to accelerate AI transformation and align with South Korea's medical AI agenda.
Education	South Korea piloted AI digital textbooks, but limited uptake[69] and ongoing policy uncertainties[70] led to their relegation to supplementary materials. [71]	South Korea can take a tailored approach to using frontier AI in education. Tasks such as lesson preparation, documentation, and basic tutoring can be offloaded to frontier endpoints that ensure safe and transparent use. AI can also provide individual student assessments, enabling tailored learning paths and progress based on each student's ability, while allowing teachers to deliver customized instruction.

[67] Chosun Biz. "KFDA sets global standard for generative AI medical device approval guidelines." 24 Jan. 2025.
[68] Digital Medicine Society. "South Korea National Companion Guide." 2025.
[69] 한국대학신문. "AI 디지털교과서, 대부분 학교서 일 평균 접속률 10% 못 미쳐." 25 Apr. 2025.
[70] EBS News. "AI 교과서 석 달 써 보니 "효과 부족"...2만 7천 명 설문 결과는?" 17 Jun. 2025.
[71] The Korea Herald. "South Korea pulls plug on AI textbooks." 4 Aug. 2025.

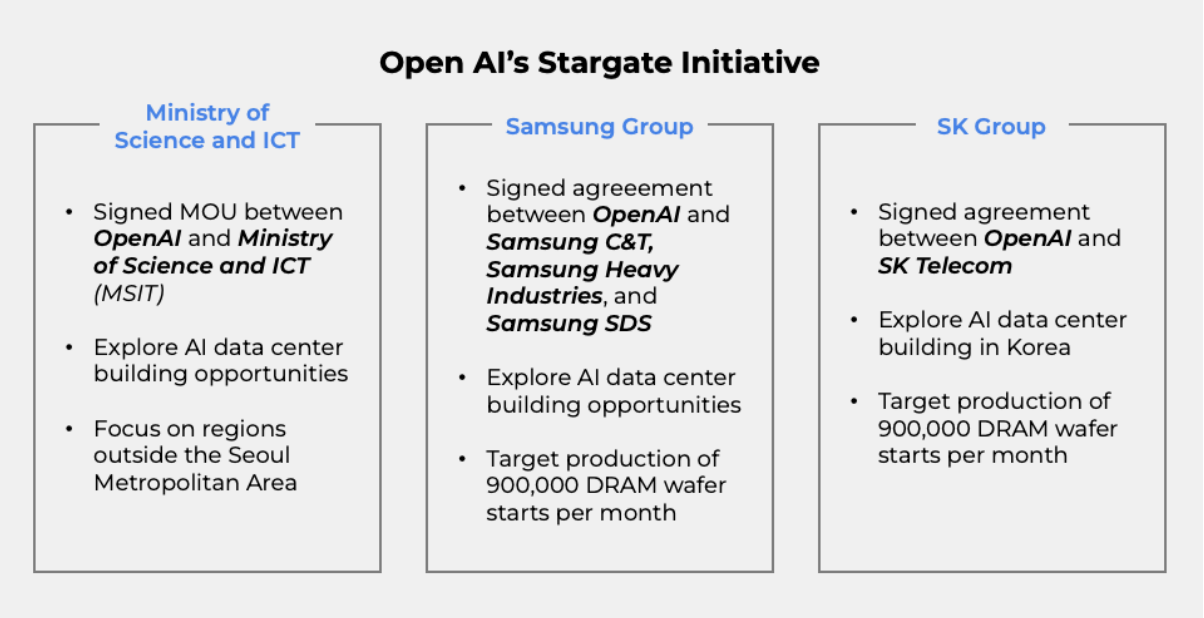
Positive spillovers from global partnerships

The targeted adoption of frontier AI technologies in select domains can accelerate South Korea's sovereign AI ecosystem development by generating positive spillovers across infrastructure operations, deployment practices, data governance, and cost management.

Infrastructure operations

Infrastructure operations refer to the management of large-scale computing resources and data centers needed to run advanced AI models. South Korea, however, currently faces GPU and compute bottlenecks that limit the speed and scale of adoption.

Strategic cooperation can help bridge these gaps. A notable example is OpenAI's *Stargate* project, a massive AI data center initiative with partners such as Oracle. The project will deploy approximately 400,000 of Nvidia's next-generation GPUs and supply over 1.2 GW of power, which is sufficient to run some of the largest AI models, like GPT-5. The project demonstrates how frontier-scale infrastructure can set new standards in energy optimization and site planning.[72] [73]



South Korea has recently announced its first-ever large-scale AI infrastructure partnership, bringing together the government, leading Korean chipmakers, and global AI frontier developers. On 1 October 2025, Samsung, SK, and OpenAI announced new strategic partnerships under OpenAI's Stargate initiative, following a meeting with President Lee at the Presidential Office in Seoul. The partnership

[72] OpenAI. "Announcing the Stargate Project." 21 Jan. 2025.
[73] Financial Times. "Oracle to buy $40bn of Nvidia chips for OpenAI's new US data centre." 24 May 2025.

is “aimed at expanding infrastructure critical to AI development, globally and in Korea.”[74] As part of the agreement, Samsung Electronics and SK hynix will leverage their partnership with OpenAI to expand the production of advanced memory chips, targeting 900,000 DRAM wafer starts per month to power OpenAI’s frontier AI models. In addition, a separate partnership with SK Telecom will explore the establishment of an AI data center in Korea. Further agreements with Samsung C&T, Samsung Heavy Industries, and Samsung SDS will assess opportunities to expand data center capacity across the country.

The strategic partnership extends beyond the corporate sector. Complementing these corporate initiatives, the Ministry of Science and ICT (MSIT) has signed a Memorandum of Understanding (MoU) with OpenAI to explore the development of AI data centers outside the Seoul Metropolitan Area. This initiative aligns with the government’s broader policy objective of promoting balanced regional economic growth and fostering nationwide job creation.

The partnership serves as a powerful illustration of how global collaboration can rapidly expand local players’ advanced memory chip manufacturing capacity while enabling access to global best practices in infrastructure design. With a clearly defined market and a collaboration roadmap, leading Korean chipmakers are well-positioned to ramp up investment and accelerate production scaling beyond what would otherwise be possible. Moreover, if the partnership with OpenAI leads to the establishment of AI data centers in South Korea, these facilities could embed frontier-level expertise in data flow management, cost optimization, and software operations. The Korean government should continue fostering an enabling environment for stronger global partnerships, while ensuring that the positive spillovers of AI infrastructure development are broadly distributed across the country. The success will lay the foundation for building a sustainable AI ecosystem in South Korea.

Operational readiness and deployment

Operational readiness refers to the systems and safeguards that ensure AI models can be deployed at scale in a reliable manner. The IMF has emphasized that the productivity benefits of AI depend not only on research capacity but also on strong operational readiness and governance frameworks.[75] While South Korea’s large-scale models demonstrate strong research results, deployment across public services and industries remains limited. Adoption is concentrated in conglomerates, and fragmented data governance continues to hinder the effective use of large datasets.

Frontier developers such as OpenAI have established disciplined practices that support reliable, large-scale deployment, including standardized testing, staged

[74] Open AI. “Samsung and SK join OpenAI’s Stargate initiative to advance global AI infrastructure.” 1 October. 2025.
[75] International Monetary Fund. “Transforming the Future: The Impact of Artificial Intelligence in Korea.” 2025.

rollouts with rollback options, real-time monitoring, and data-handling controls.[76] By working with frontier AI developers to adopt such methods, South Korea can strengthen governance capacity, reduce deployment risks, and accelerate safe and effective AI adoption.

Data governance and regulatory sandboxes

Data governance establishes the rules that make data both secure and usable, while regulatory sandboxes provide controlled environments to test new technologies with flexibility. The OECD has emphasized that such sandboxes enable safe innovation by allowing AI applications to be trialed under supervisory oversight, offering temporary regulatory flexibility while helping regulators identify risks and adapt rules more quickly. [77]

In South Korea, the government has pledged to expand the opening and sharing of public data as a facilitator of AI adoption. However, without robust data governance frameworks and structured testing mechanisms, these efforts may fall short of driving meaningful innovation. Integrating proven frameworks from frontier AI models into sandbox pilots could help refine practices such as data pseudonymization, federated learning, and secure data sharing—strengthening responsible AI experimentation, building public trust, and opening new avenues for innovation.

[76] OpenAI. "Production Best Practices."

[77] OECD. "Regulatory Sandboxes in Artificial Intelligence." 2023.

Conclusion

South Korea now stands among the world's leading AI powers, backed by strong government commitment and industry readiness. Yet the nation's ability to fully harness AI depends on how successfully it addresses urgent challenges such as scaling adoption, bridging the technology divide, improving data interoperability, and strengthening regulatory frameworks. Without timely action, these obstacles risk eroding South Korea's ability to capture the full benefits of AI-driven transformation.

At this critical juncture, South Korea has a historic opportunity to use AI to usher in a new era of productivity and prosperity. By embedding AI into its core industries, the country stands to gain substantially. AI will boost South Korea's overall competitiveness while advancing inclusive welfare and regional development.

The policy goal is to transform South Korea's existing AI capabilities into scaled, trusted operations as quickly as possible. Achieving this requires a dual-track strategy: asserting Korean digital sovereignty while strategically collaborating with global frontier AI developers to ensure that businesses have access to cutting-edge technology. These partnerships can generate valuable spillovers by contributing to infrastructure development, operational maturity, and data governance. Together, this approach strengthens both sovereignty and competitiveness.

Looking ahead, this strategy lays the groundwork for a robust K-AI ecosystem. Over time, it could evolve into an exportable "AI nation package," a bundled model of technology, financing, and policy support. This would mirror South Korea's proven success in exporting complex projects such as nuclear power plants and smart cities. In doing so, South Korea can position itself not only as a leading user of AI, but also as a global standard-setter and a trusted provider of scalable AI systems.