2026 ICT Industry Outlook of Korea

KOREA INFORMATION SOCIETY DEVELOPMENT INSTITUTE

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Message from the President

In 2025, the ICT sector served as a powerful engine for Korea's economic growth, building on the export recovery of 2024 and fueled by record-breaking performance in semiconductors amid an explosive surge in demand for AI servers. In 2026, however, the ICT sector stands at a critical inflection point where external threats and technological opportunities intersect sharply, while facing slower growth projections due to the base effect of the previous year's high performance. Key constraints adding to external uncertainty include the Trump administration's tariff policies, intensifying U.S.-China technological rivalry, and escalating geopolitical risks. On the other hand, the broad-based expansion of agentic and physical AI is emerging as a powerful force driving the creation of new markets. To establish effective ICT policies in this period of upheaval, it is imperative to conduct in-depth, comprehensive research aimed at securing future growth engines, grounded in objective indicators that can accurately assess the current status, outlook, and competitiveness of the ICT sector.

Accordingly, this study diagnoses the performance of the Korean ICT sector in 2025 and offers forecasts for 2026, focusing on production and exports. Through an evaluation of the competitiveness of the domestic ICT sector using international ICT benchmarks and an analysis of emerging growth areas, the study intends to derive policy and strategic implications for formulating policies that can lay the foundation for sustainable growth.

To this end, this report examines Korea's ICT sector in three parts. Part I reviews trends and prospects for the Korean ICT sector by classifying it into three broad sub-sectors: ICT and broadcasting equipment, ICT and broadcasting services, and software. Part II identifies structural barriers to the growth of this sector through an international comparison of ICT competitiveness between Korea and OECD member nations. Finally, Part III examines emerging growth areas driven by the transition into the age of "Real-world AI," where AI technologies transcend the boundaries of the virtual world to integrate with physical entities. It diagnoses the dynamic evolution of AI ecosystems both globally and domestically and explores the policy initiatives of major economies and the Korean government in response to these shifts.

The *ICT Outlook of Korea* has been published annually by the Korea Information Society Development Institute (KISDI). This year marks its 25th edition, and we have made every effort to present Korea's ICT sector with more enriched content and a more refined structure. It is my sincere hope that this report will be actively utilized in a wide range of decision-making processes, including government policy and corporate strategy

formulation. We also welcome your candid feedback on how this report may continue to be improved.

Thank you.

Sangkyu Rhee
President
Korea Information Society Development Institute

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Introduction

This report is organized into three main parts. Part I examines trends and prospects for the Korean ICT sector across three sub-sectors: ICT and broadcasting equipment, ICT and broadcasting services, and software. In ICT and broadcasting equipment, production and export forecasts are presented for key products, including semiconductors and display panels under electronic components; mobile handsets within telecommunications and broadcasting equipment; and computers and peripheral devices. ICT and broadcasting services are broadly divided into telecommunications, broadcasting, and information services. For telecommunications services, the report provides revenue forecasts for both fixed-line and wireless services. For broadcasting services, it presents revenue projections for terrestrial and pay-TV services. In information services, the report analyzes current market conditions and forecasts market sizes for information infrastructure, intermediation, and provision services. Finally, for the software sector, production and export outlooks are presented for packaged software, games, and ICT services.

Part II compares Korea's ICT competitiveness with that of OECD countries to assess its international standing across key dimensions closely associated with ICT performance: export competitiveness, R&D investment and innovation levels, human resources environment, financial and startup ecosystems, ICT infrastructure, and pro-industry policies and regulatory frameworks. Based on objective assessments from various international research institutions, this part identifies the strengths and weaknesses commonly pointed out in Korea's ICT sector and explores potential areas for improvement.

Part III examines the rapid proliferation of AI across industries as it advances beyond generative AI into "agentic AI" and "physical AI," transitioning from a productivity-enhancing tool at the industry level to a core strategic asset influencing national economic growth, industrial structure, security, and society as a whole. In this context, Part III analyzes the current states of global AI ecosystems and policy developments at home and abroad, with the aim of deriving actionable policy implications to strengthen Korea's AI competitiveness.

Part I

The ICT Sector in Korea: The Current Status and Outlook[1)]

1. The ICT Sector: Overall Outlook

■ Production

ICT industry production is projected to reach KRW 647.4 trillion in 2026, a 3.2% increase from the previous year. By category, ICT manufacturing is expected to continue benefiting from sustained demand for high-value-added memory and SSDs driven by ongoing AI semiconductor demand, while the display panel market is also likely to achieve a modest recovery. However, overall production growth is forecast to moderate slightly due to stagnating demand in the mobile handset and consumer electronics markets. Second, ICT and broadcasting services are projected to record modest year-on-year growth, supported by stable growth in information services such as mobile advertising and digital content, despite slowing wireless revenues among the three major mobile carriers in the wake of major security incidents as well as declining terrestrial television revenues and weakening performance in the pay-TV market. Lastly, the software market is expected to experience a slight acceleration in growth, boosted by growing demand for AI software and services, continued migration to cloud-based services, stable growth in security software, and revenue diversification by game companies, alongside expansion into overseas markets.

1) Part I summarizes a report published by Jae-Young Lee, et al. (2025).

Table 1-1 Production and Growth Forecasts in the Korean ICT Sector

(In KRW trillions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
ICT total	597.1	627.1	647.4	5.0	3.2
ICT and broadcasting equipment	406.2	433.0	448.7	6.6	3.6
Electronic components	257.4	285.4	302.0	10.9	5.8
Computers and peripherals	19.2	19.8	20.8	3.4	5.0
Communications and broadcasting equipment	41.5	42.5	43.1	2.4	1.3
Video and audio equipment	5.1	5.2	5.2	0.5	1.0
ICT-enabled electrical and electronic equipment	82.9	80.1	77.5	-3.4	-3.2
ICT and broadcasting services	94.6	95.6	97.2	1.1	1.6
Communications services	40.5	40.7	41.0	0.5	0.7
Broadcasting services	20.9	20.7	20.5	-1.0	-0.8
Information services	33.2	34.2	35.7	3.1	4.3
Software	96.3	98.4	101.5	2.1	3.2

Source: The Ministry of Science and ICT (MSIT), the Korea Association of Information and Telecommunications (KAIT), and the Korean Electronics Association (KEA). The source of 2024 data for terrestrial broadcasting, pay-TV, and program providers is the Korea Media and Communications Commission (KMCC), while MSIT, KAIT, and KEA data were used for program production and other broadcasting services. KISDI forecasts for 2025 onward.

■ Exports

ICT manufacturing exports are forecast to total USD 283.3 billion in 2026, a 7.5% increase from the previous year. By product category, exports of electronic components are expected to sustain strong growth momentum, underpinned by continued demand for high value-added server memory and growing demand for premium OLED panels, particularly in the ICT devices market. Although growth may moderate slightly due to base effects, overall performance is expected to remain robust. Next, exports of computers and peripherals are anticipated to record high growth, fueled by increasing data investment associated with the proliferation of generative AI, which will in turn boost demand for enterprise SSDs and HDDs and raise prices for NAND flash memory—a key component. Lastly, communications and broadcasting equipment exports are predicted to increase slightly, as demand for mobile devices—including premium smartphones—gradually recovers, particularly in emerging markets, while network equipment demand remains stable in the United States and Southeast Asia.

Table 1-2 ICT Goods Exports, Imports, and Growth Forecasts

(In USD 100 millions, %)

		2024	2025	2026	Change 2024-2025	Change 2025-2026
ICT total	Exports	2,350	2,636	2,833	12.2	7.5
	Imports	1,429	1,512	1,581	5.8	4.6
Electronic components	Exports	1,737	2,036	2,224	17.2	9.2
	Imports	860	898	939	4.4	4.6
Computers and peripherals	Exports	148	150	168	1.3	12.1
	Imports	144	165	182	15.2	10.1
Communications and broadcasting equipment	Exports	168	168	169	-0.1	0.5
	Imports	129	131	134	2.1	1.9
Video and audio equipment	Exports	19	18	19	-2.8	0.6
	Imports	32	35	35	9.5	1.0
ICT-enabled electrical and electronic equipment	Exports	278	264	254	-5.2	-3.9
	Imports	265	282	291	6.6	2.9

Source: MSIT and the Institute for Information and Communications Technology Promotion (IITP); KISDI forecasts for 2025 onward.

■ Key Drivers and Industry Outlook

The key drivers shaping the 2026 outlook across major ICT manufacturing, ICT services, and software industries are as follows. Within ICT manufacturing, the semiconductor industry is witnessing the emergence of a potential new “semiconductor supercycle” in the short term, fueled by a surge in memory demand from Big Tech firms and new entrants expanding AI infrastructure investment. Over the mid-to-long term, demand is expected to continue rising as semiconductors become increasingly embedded in digital transformation processes across traditional industries, including automotive, consumer electronics, defense, communications, and industrial applications. For display panels, OLED adoption for IT devices such as tablets, laptops, and monitors is increasing, while the market for next-generation panels such as Micro LED and OLEDoS is projected to expand over the medium to long term. Regarding computers and peripherals, recent increases in AI-driven data center investment are expected to boost demand not only for SSDs but also for conventional secondary storage devices such as HDDs. In the mobile handset market, growth in foldable smartphones is expected to continue, while generative AI features are projected to expand beyond premium models into mid-range and entry-level lineups.

Turning to ICT services, communications services are forecast to maintain a growth trajectory in broadband network services, supported by digital transformation trends and rising demand for high-capacity content. Mobile communications services are also expected to see sustained demand driven by the ongoing transition to 5G and the expansion of the Internet of Things (IoT). In broadcasting services, while program sales through OTT and other emerging platforms are projected to remain stable, broadcast advertising revenue is likely to continue its downward trend due to the diminishing influence of linear television and shifting viewing patterns. Pay-TV revenue is also projected to stagnate due to subscriber saturation and the absence of new growth drivers. As for information services, the expanding adoption of generative AI and AI agents in both public and private sectors is expected to drive growth in underlying infrastructure industries such as cloud computing. Structural shifts in the online media landscape are also expected to sustain growth in mobile and video-based online advertising.

Finally, in the software sector, demand for security software will trend upward due to the recent surge in cybersecurity incidents and increasing requirements related to AI platforms and cloud systems. The gaming industry is also anticipated to diversify its revenue models through the broader utilization of intellectual properties (IPs), cloud gaming, subscription-based services, and loot box–type in-game monetization models. The IT services market is projected to expand significantly, propelled by demand for AI transformation (AX) and digital transformation (DX), and the continued development of AI data center infrastructure.

Table 1-3 Key Factors Underlying KISDI's ICT Sector Forecasts

Category		Key forecasting factors
ICT manufacturing	Electronic components	• AI infrastructure investment is poised to drive a significant surge in memory demand, coupled with sustained long-term growth supported by increasing semiconductor content across automotive, consumer electronics, defense, communications, and industrial goods industries undergoing digital transformation. • Rising OLED adoption in ICT devices (tablets, laptops, monitors), alongside medium- to long-term growth in next-generation panels including Micro LED and OLEDoS
	Computers and peripherals	• AI-driven data center investments boost demand for SSDs while revitalizing the conventional HDD market.
	Communications and broadcasting equipment and devices	• Continued growth in foldable smartphones and expanding adoption of generative AI features from high-end to mid-to-low-end smartphone models
ICT services	Communications services	• Sustained growth in ultra-high-speed broadband services owing to digital transformation and increasing demand for high-capacity content • Continued demand in mobile communications due to ongoing 5G transition and IoT expansion
	Broadcasting services	• Stable program sales through new platforms such as OTT • Continued decline in ad revenue caused by the weakening influence of linear TV • Stagnation in pay-TV services resulting from subscriber saturation and limited new growth drivers
	Information services	• Growth in cloud and related infrastructure industries following wider adoption of AI agents • Structural shifts in the online media environment sustaining growth in mobile/video advertising
Software		• The recent surge in widespread hacking incidents is contributing to continued growth in security software demand • Revenue diversification through broader IP utilization, cloud gaming, subscription services, and loot box–type monetization models • IT services: significant expansion of the AI data center construction market as well as growing demand for AX and DX

2.1. ICT and Broadcasting Equipment and Components

2.1.1. Electronic Components

Table 1-4 Electronic Component Production and Exports

(Production in KRW trillions, exports/imports in USD 100 millions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Production	257.4	285.4	302.0	10.9	5.8
Exports	1,737	2,036	2,224	17.2	9.2
Imports	860	898	939	4.4	4.6

Source: MSIT, KAIT, and KEA data for production, MSIT and IITP data for exports and imports, and KISDI forecasts for 2025 onward.

In 2025, electronic component production is estimated to have reached KRW 285.4 trillion, marking a 10.9% year-on-year increase. Despite a decline in display panel output, overall production likely maintained solid growth, although the year-on-year rate appears to have moderated compared with the previous year. This performance reflects sustained demand for high-capacity, high-value-added memory for AI servers and rising average semiconductor prices. This solid growth is largely attributable to sustained demand for high-capacity, high-value-added memory for AI servers and rising average semiconductor prices.

In 2025, electronic component exports are estimated to have totaled USD 203.6 billion, up 17.2% year-on-year. While display panel exports have trended downward due to slowing ICT device growth—compounded by the impact of U.S. tariffs—overall exports likely maintained strong momentum. This performance was largely driven by robust growth in semiconductor exports, supported by continued global demand for AI semiconductors such as high-bandwidth memory (HBM) and rising memory prices.

Looking ahead to 2026, electronic component production is forecast to grow by 5.8% year-on-year to KRW 302.0 trillion. While demand for high-value-added memory—particularly in cloud and data center applications—is expected to remain firm, persistent

global memory supply constraints and limited growth in the display panel market are likely to temper overall growth.

In 2026, electronic component exports are forecast to increase by 9.2% year-on-year to USD 222.4 billion. Demand for high-value-added server memory (HBM and LPDDRx) is expected to remain firm with Big Tech firms ramping up AI investment, while demand for high-value-added OLED panels is also projected to strengthen, bolstered by a shift toward premium panel adoption in IT devices. As a result, overall exports are expected to sustain high growth, although the growth rate may moderate slightly, due in part to base effects from the previous year.

■ Semiconductors

Table 1-5 Semiconductor Production and Exports

(Production in KRW 100 millions, exports/imports in USD millions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Production	1,646,735	1,956,065	2,109,935	18.8	7.9
Exports	142,087	173,200	191,386	21.9	10.5
Imports	72,592	76,200	80,059	5.0	5.1

Source: MSIT, KAIT, and KEA data for production, MSIT and IITP data for exports and imports, and KISDI forecasts for 2025 onward.

In 2025, semiconductor production is estimated at KRW 195,606.5 billion, representing an 18.8% increase from the previous year. This expansion is largely attributable to continued demand for high-capacity, high-value-added memory, particularly for AI servers, along with rising average semiconductor prices. Together, these factors are estimated to have substantially boosted total production value.

In 2025, semiconductor exports are estimated at approximately USD 173.2 billion, up 21.9% year-on-year. Export growth is supported by an upward trend in memory prices and robust demand for high-value-added memory products for AI servers, including HBM and DDR5.

Looking ahead to 2026, semiconductor production is forecast to rise by 7.9% year-on-year to KRW 210,993.5 billion. Demand for high-value-added memory—particularly for

cloud and data center applications—is expected to remain strong. However, competition is likely to intensify as Micron and Chinese semiconductor firms such as CXMT (ChangXin Memory) and YMTC (Yangtze Memory) are poised to reinforce their competitive position in memory with government backing.

In 2026, semiconductor exports are projected to reach USD 191.4 billion, representing a year-on-year growth rate of 10.5%. The continued expansion of the AI market is set to drive growth in data generation, storage, and processing requirements, which in turn will underpin sustained demand for AI server semiconductors and advanced high-value-added memory products.

■ Display Panels

Table 1-6 Display Panel Production and Exports

(Production in KRW 100 millions, exports/imports in USD millions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Production	586,768	531,612	540,117	-9.4	1.6
Exports	21,095	19,088	19,326	-9.5	1.2
Imports	5,065	4,555	4,615	-10.1	1.3

Source: MSIT, KAIT, and KEA data for production, MSIT and IITP data for exports and imports, and KISDI forecasts for 2025 onward.

In 2025, display panel production is estimated at KRW 53.2 trillion, recording a 9.4% decrease from the previous year. The contraction reflects supply chain restructuring and inventory adjustments triggered by U.S. tariff measures, coupled with a delayed recovery in demand. Despite increases in OLED panel shipments for smartphones and IT devices, the pace of growth is estimated to have slowed down due to intensifying price competition. Meanwhile, LCD panel production likely continued its downward trend as domestic firms scaled back operations in the face of weakening global demand.

In 2025, display panel exports are estimated at USD 19.1 billion, down 9.5% from the previous year. The decline reflects the impact of inventory adjustments stemming from tariff-related uncertainty in the U.S., as well as sluggish downstream demand for LCD panels.

In 2026, display panel production is forecast to grow by 1.6% year-on-year to KRW 54.0 trillion. While the full-scale operation of 8.6-generation OLED production lines will expand production capacity, overall growth is likely to remain modest due to continued reductions in LCD output and intensifying competition with Chinese manufacturers. In the OLED segment, growth in TV panels is expected to remain constrained by stagnant global demand and increasing large-sized LCD TV production in China. Nevertheless, production is projected to rise as OLED adoption accelerates in mobile PCs, including laptops and tablets.

In 2026, display panel exports are projected to increase by 1.2% year-on-year to USD 19.3 billion. Overall LCD exports are likely to face downward pressure due to weakened price competitiveness amid aggressive pricing strategies by Chinese panel makers, although LCD exports may hold relatively steady in certain segments, particularly ICT devices and premium automotive applications. For OLEDs, although demand for high-value-added panels for ICT devices is growing, fiercer competition from Chinese manufacturers—bolstered by large-scale capital investments and expanding production capacities—is likely to limit overall growth. In response, Samsung Display and LG Display are expected to focus on developing high-brightness, low-power panel technologies tailored to the expanding on-device AI market to strengthen their export competitiveness.

2.1.2. Computers and Peripherals

Table 1-7 Computers and Peripherals Production and Exports

(Production in KRW 100 millions, exports/imports in USD millions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Production	191,935	198,412	208,333	3.4	5.0
Exports	14,787	14,976	16,788	1.3	12.1
Imports	14,362	16,538	18,212	15.2	10.1

Source: MSIT, KAIT, and KEA data for production, MSIT and IITP data for exports and imports, and KISDI forecasts for 2025 onward.

In 2025, computer and peripheral production is estimated to have risen 3.4% year-on-year to KRW 19,841.2 billion. Compared with the strong 22.0% expansion recorded in 2024, production growth is expected to remain relatively subdued, reflecting base effects

and heightened external uncertainties.

In 2025, computer and peripheral exports are estimated to have edged up 1.3% year-on-year to USD 14.98 billion. Export growth remained relatively modest, largely due to base effects following the sharp 62.9% increase in 2024 as well as deteriorating external conditions, including uncertainty surrounding U.S. tariff policies. As with production, overall export performance appears to have been driven by storage devices, particularly enterprise SSDs, which served as the primary engine of growth.

In 2026, production is forecast to increase by 5.0% year-on-year to KRW 20,833.3 billion. Investment in data centers, both domestically and internationally, is expected to grow alongside the expansion of generative AI, fueling demand for computers and peripherals, particularly enterprise SSDs. Furthermore, the proliferation of AI PCs and replacement demand associated with the Windows 11 update are likely to boost production in the computer segment. However, the limited global competitiveness of domestic firms may constrain the pace of growth.

In 2026, exports are projected to climb by 12.1% year-on-year to USD 16.79 billion. The expansion of data center investment, reinforced by the growing adoption of generative AI, is expected to sustain demand for enterprise SSDs. Rising prices for NAND flash memory, a core component of computers and peripherals, are also likely to have a positive impact on total export value. Major domestic storage device manufacturers are increasingly stepping up investment and new product development efforts to secure a competitive edge, which may contribute to an expansion of their global market share.

2.1.3. Communications and Broadcasting Equipment

Table 1-8 Communications and Broadcasting Equipment Production and Exports/Imports

(Production in KRW 100 millions, exports/imports in USD millions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Production	415,328	425,296	430,824	2.4	1.3
Exports	16,795	16,780	16,864	-0.1	0.5
Imports	12,862	13,132	13,382	2.1	1.9

Source: MSIT, KAIT, and KEA data for production, MSIT and IITP data for exports and imports, and KISDI forecasts for 2025 onward.

In 2025, communications and broadcasting equipment production is estimated at KRW 42,529.6 billion, showing a year-on-year increase of 2.4%. Production growth is expected to remain modest, reflecting a turnaround in global telecommunications network infrastructure spending amid improving global economic conditions, along with a continued recovery in mobile handset demand.

In 2025, communications and broadcasting equipment exports are estimated at USD 16.8 billion, a slight decrease of 0.1% from the previous year. While declining exports of mobile handsets exerted downward pressure on overall export performance, rising demand for components—particularly premium components—is likely to have partially offset the decline.

In 2026, production is projected to reach KRW 43,082.4 billion, up 1.3% year-on-year. Continued growth in global network infrastructure spending, together with the growing adoption of generative AI-enabled smartphones, is expected to sustain and gradually increase demand for premium mobile devices, resulting in a modest upward trend in production.

In 2026, exports are projected to edge up by 0.5% year-on-year to USD 16.9 billion. A gradual recovery in handset demand—including premium smartphones—largely in emerging markets such as India and Latin America, combined with steady demand for network equipment in the U.S. and Southeast Asia, is expected to support modest export growth.

■ Mobile Handsets

Table 1-9 Mobile Handset Production and Exports

(Production in KRW 100 millions, exports/imports in USD millions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Production	233,233	238,359	241,416	2.2	1.3
Exports	14,422	14,357	14,436	-0.5	0.5
Imports	8,067	8,872	9,096	10.0	2.5

Source: MSIT, KAIT, and KEA data for production, MSIT and IITP data for exports and imports, and KISDI forecasts for 2025 onward.

In 2025, mobile handset production is estimated to have grown 2.2% year-on-year to KRW 23,835.9 billion. While part of handset demand was front-loaded in the first half of the year due to uncertainty surrounding U.S. tariff policies under the Trump administration, production is estimated to have increased, backed up by robust sales of premium foldable models and the broader integration of AI features into mid-to-low-end budget series.

In 2026, mobile handset production is forecast to increase 1.3% year-on-year to KRW 24,141.6 billion. Replacement demand for premium smartphones—fueled by the proliferation of generative AI-enabled devices—is expected to underpin production. Overall, the production value is projected to record modest growth owing to rising average selling prices (ASP), although volume growth may be limited by DRAM supply constraints.

In 2025, mobile handset exports are estimated to have edged down by 0.5% year-on-year to approximately USD 14.4 billion. Although shipments increased through the third quarter—partly reflecting early shipments in response to heightened global trade uncertainty—total exports for the year appear to have been weighed down by weaker finished goods exports and intensifying competition in the budget smartphone segment. Samsung Electronics maintained its strength in both shipment volume and market share within the premium segment, whereas its budget models faced a downward movement in shipments while holding a steady market share.

In 2026, mobile handset exports are projected to edge up by 0.5% year-on-year to approximately USD 14.4 billion. Against a backdrop of limited growth in global smartphone shipments, exports are expected to show a gradual upward trend as the share of high-ASP products, particularly premium smartphones, remains steady or expands. In

addition, upward pressures on global smartphone prices will likely persist due to mounting cost burdens stemming from the increased use of high-specification components associated with generative AI as well as ongoing trade uncertainty and supply chain restructuring. Meanwhile, tightening DRAM supply for smartphones driven by surging demand for server-side memory may pose an even greater challenge to Chinese competitors with a higher reliance on mid-to-lower-range models. In contrast, Samsung Electronics, with its in-house memory sourcing capabilities, appears to be better positioned to gain a relative competitive advantage in certain markets.

2.2. Communications/Broadcasting/Information Services

2.2.1 Communications Services

Table 1-10 Communications Services Revenue Forecasts

(In KRW trillions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Fixed communications	10.7	10.8	10.8	0.5	0.5
Wireless communications	26.7	26.7	26.8	0.0	0.2
Others	3.1	3.2	3.4	4.9	5.0
Total	40.5	40.7	41.0	0.5	0.7

Source: MSIT, KAIT, and KEA data; KISDI forecasts for 2025 onward.

Revenue from communication services in 2025 is estimated to have grown marginally by 0.5% from the previous year to KRW 40.7 trillion. For 2026, revenue is forecast to grow by 0.7% to KRW 41.0 trillion. The communication services market is expected to maintain a steady growth trajectory, supported by generational upgrades in fixed and mobile Internet access services and expanding demand associated with the diffusion of AI technologies. Fixed communications services are projected to remain on a modest upward path, driven by the ongoing transition to gigabit broadband and increasing data demand in the enterprise leased-line segment, which effectively offset the persistent decline in the fixed-line telephony industry. While no immediate or distinct risks are apparent, the market is subject to several potential constraints. These include persistent downward pressure on service

prices and a possible delay in next-generation network transitions due to a lack of momentum in developing new business models.

2.2.1.1. Fixed Communications Services

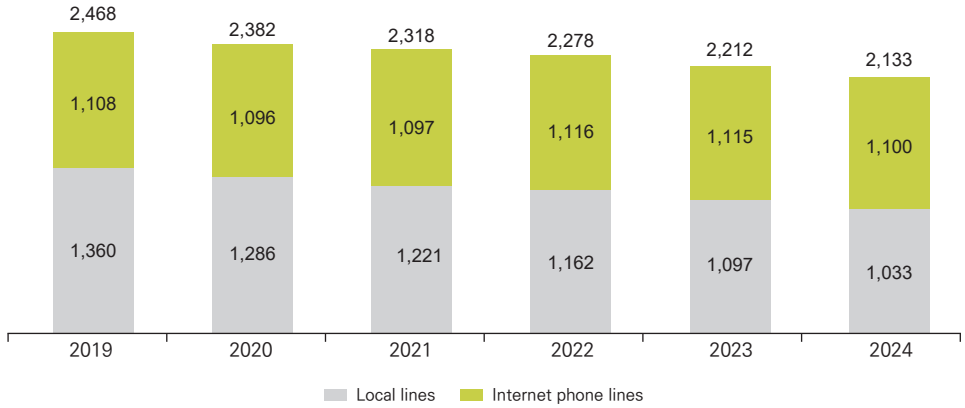
Revenue from fixed communications services in 2025 is estimated at approximately KRW 10.8 trillion, up around 0.5% year-on-year. For 2026, revenue is forecast to increase by around 0.5%, remaining broadly in line with the previous year at KRW 10.8 trillion. The persistent decline in fixed-line telephony revenue appears to have been offset by rising revenues from high-speed broadband and enterprise leased-line services, resulting in a modest but sustained upward trend in overall fixed communications revenue.

■ Fixed Telephony Services

The fixed telephony industry remains on a downward trajectory in subscriptions and revenue, amid ongoing fixed-mobile substitution and the widespread adoption of unlimited mobile voice plans. The number of local telephone subscribers recorded an average annual decline of 5.3% between 2020 and 2024, a trend that persisted throughout 2024. Internet telephony subscriptions, which had been in decline since 2014, briefly returned to growth in 2021 (0.1%) and 2022 (1.8%) before resuming their downward trajectory from 2023 onward. Consequently, retail revenue from fixed-line telephony continued to decrease, reaching approximately KRW 1,161.6 billion in 2024, down 5.4% from the previous year.

Figure 1-1 Fixed-Line Telephony Subscription Trends

(In 10 thousand subscribers)



Source: MSIT, *Wired Communications Services Statistics*, yearly issues, https://www.msit.go.kr/bbs/list.do?sCode=user&mPid=74&mId=99.

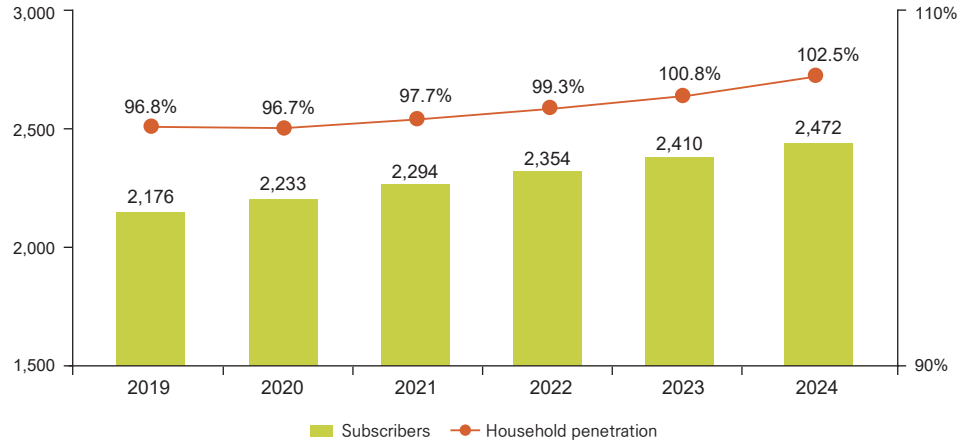
■ Broadband Network Services

Despite market saturation, with the household penetration rate exceeding 100%, broadband network services continue to post modest annual growth in both subscriptions and revenue. As of the end of 2024, the penetration rate reached 102.5% relative to the number of households, causing the growth rate to plateau. Subscriber growth has largely leveled off, although a slight upward trajectory has been maintained, supported by the revitalization of Internet-based services such as IPTV and the continued rollout of gigabit broadband. In 2024, retail revenue from broadband network services climbed 4.2% year-on-year to approximately KRW 5,758.5 billion.

Looking ahead, broadband services are expected to maintain their mid-to-long-term growth trajectory, driven by ongoing digital transformation and rising demand for high-capacity content. Continued household fragmentation, the steady increase in SOHO (small office/home office) units, and the enduring vitality of Internet-based services are likely to contribute to modest increases in the subscriber base going forward.

Figure 1-2 Broadband Subscriptions and Penetration Rates

(In 10,000 subscribers, %)

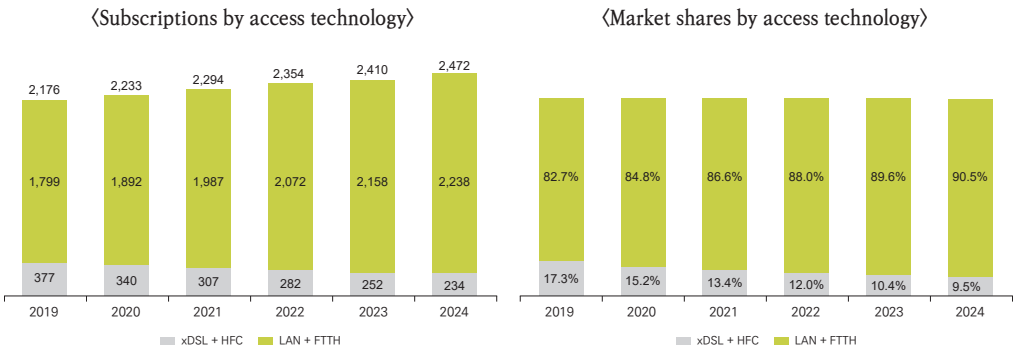


Source: (Number of subscribers) MSIT, *Wired Communications Service Statistics*, yearly issues, https://www.msit.go.kr/bbs/list.do?sCode=user&mPid=74&mId=99.

(Number of households) Ministry of the Interior and Safety, number of resident-registered households by administrative division (city, county, district) in Resident-Registered Population Statistics, https://jumin.mois.go.kr/#.

Figure 1-3 Broadband Subscriptions and Shares by Technology

(In 10 thousand subscribers, %)

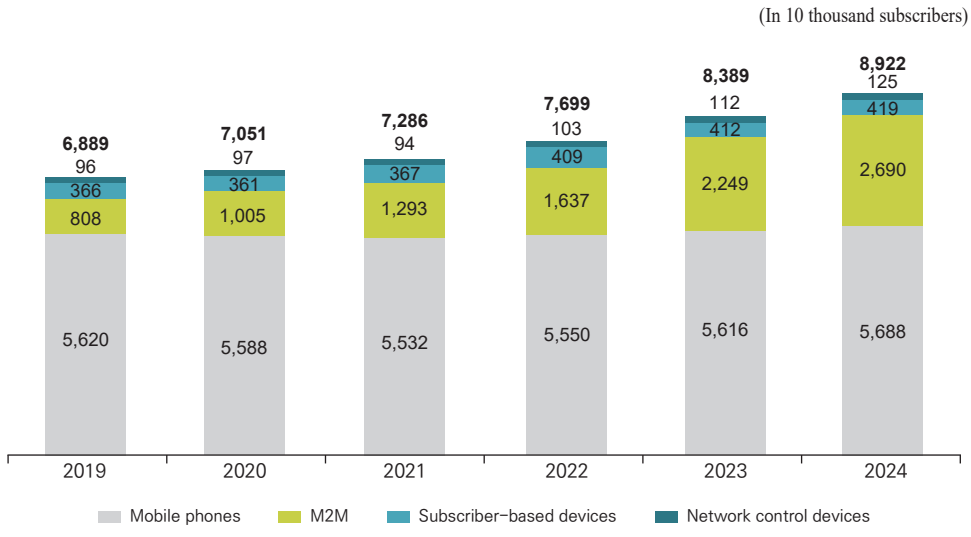


Source: MSIT, *Wired Communications Services Statistics*, yearly issues, https://www.msit.go.kr/bbs/list.do?sCode=user&mPid=74&mId=99.

2.2.1.2. Wireless Communications Services

In 2025, revenue from wireless communications services, including mobile communications, is estimated to have remained unchanged from the previous year at KRW 26.7 trillion. Revenue in 2026 is forecast to rise slightly by 0.2% year-on-year to KRW 26.8 trillion. Underpinned by accelerating digital transformation, demand for high-quality services such as 5G remained firm, accompanied by continuous growth in machine-to-machine (M2M) connections, primarily within the business-to-business (B2B) segment. Since its commercial launch in April 2019, 5G has expanded rapidly. As of October 2025, 5G subscriptions accounted for 66.2% of total mobile handset subscriptions, while M2M connections reached 30.92 million, up 14.0% year-on-year and representing 33.3% of total mobile connections. However, the recent deceleration in 5G migration and mounting downward pressure on pricing may act as constraining factors on the growth of the communications services market.

Figure 1-4 Mobile Phone Service Subscription Trends



Source: MSIT, *Wireless Communications Services Statistics*, yearly issues, https://www.msit.go.kr/bbs/list.do?sCode=user&mPid=74&mId=99.

2.2.2. Broadcasting Services

Table 1-11 Broadcasting Services Revenue Forecasts

(In KRW trillions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Terrestrial broadcasting	3.5	3.5	3.4	-2.0	-1.2
Pay-TV	7.2	7.2	7.2	-0.2	-0.3
Program providers	7.1	7.1	7.0	-1.0	-0.7
Program production and other broadcasting services*	3.0	3.0	2.9	-1.9	-1.9
Total	20.9	20.7	20.5	-1.0	-0.8

Note: 1) Pay-TV includes cable television, satellite TV, IPTV services, and relay cable broadcasting.

2) IPTV content providers (CPs) in the *2025 Broadcasting Industry Survey Report* published by the KMCC are excluded to avoid double-counting with program producers.

Source: For 2024, data are drawn from the *2025 Broadcasting Industry Survey Report* published by the KMCC. Data for *program production and other broadcasting services are based on the *Survey on Key ICT Product Trends* by the MSIT, KAIT, and KEA (2025). KISDI forecasts for 2025 onward.

Revenue from broadcasting services in 2025 is estimated to total KRW 20.7 trillion, down 1.0% from the previous year. Terrestrial broadcasters likely saw negative growth due to the waning influence of linear television, subdued private consumption, and a shift toward efficiency-oriented targeted advertising, all of which have weighed on broadcast advertising revenue. Furthermore, retransmission fee revenue has plateaued as pay-TV subscriptions have lost momentum. For pay-TV operators, overall revenue is estimated to have contracted by 0.2%, as cable and satellite broadcasters continued to cope with a shrinking subscriber base while IPTV revenue remained largely flat. Program providers (PP), which have grown in recent years primarily through content licensing revenue, are likely to see a 1.0% revenue decline for 2025 due to falling advertising and home-shopping revenues.

Revenue from broadcasting services in 2026 is forecast to generate KRW 20.5 trillion, down 0.8% compared with the previous year. For terrestrial broadcasters, program sales to domestic and global OTT platforms are expected to remain stable; however, the dwindling audience shares of terrestrial channels are likely to continue weighing on advertising revenue, resulting in another year of negative growth. Cable television services will likely see further declines in subscription fee revenue due to subscriber attrition, accompanied by reduced income from device installation and rental services. Meanwhile, IPTV revenue is projected to post only marginal growth amid sluggish subscriber expansion. Program

providers will likely face continued negative growth due to declining advertising revenue and shrinking home-shopping sales amid intensifying competition with e-commerce platforms, although revenues from content licensing and sales via pay-TV are expected to remain stable.

■ Terrestrial Broadcasting Services

Revenue from terrestrial broadcasting services in 2025 is estimated to have declined by 2.0% year-on-year to KRW 3.5 trillion. Advertising revenue, which accounts for the largest share of terrestrial broadcasters' income, has seen an accelerating decline due to the fading influence of linear television. While program sales through OTT and pay-TV platforms are estimated to have provided some positive support, the growing shift toward OTT-based viewing has likely exerted further downward pressure on terrestrial advertising revenue.

Terrestrial broadcasting revenue in 2026 is forecast at KRW 3.4 trillion, representing a 1.2% year-on-year decrease. As the content production market continues to shift from terrestrial broadcasters toward OTT platforms, the relative competitiveness of terrestrial content has significantly weakened, negatively affecting both advertising revenue and program sales. On the other hand, retransmission fee revenue—charged based on the number of digital pay-TV subscribers—is expected to remain stable.

Table 1-12 Terrestrial Broadcasting Revenues by Category, 2022~2024

(In KRW 100 millions, %)

	2022	2023	2024	Change 2022-2023	Change 2023-2024
TV license fees	7,128	7,043	6,694	-1.2	-5.0
Retransmission fees	4,090	4,551	4,607	11.3	1.2
Content licensing	125	128	129	2.4	1.3
Advertising	12,091	9,273	8,357	-23.3	-9.9
Sponsorship	4,260	4,030	3,995	-5.4	-0.9
Program sales/distribution	10,662	9,357	8,355	-12.2	-10.7
Other broadcasting businesses	3,198	2,928	3,171	-8.4	8.3
Total	41,552	37,309	35,307	-10.2	-5.4

Note: This table is based on revenues earned by terrestrial broadcasters, excluding the three terrestrial DMB broadcasters.

Source: KMCC (2025).

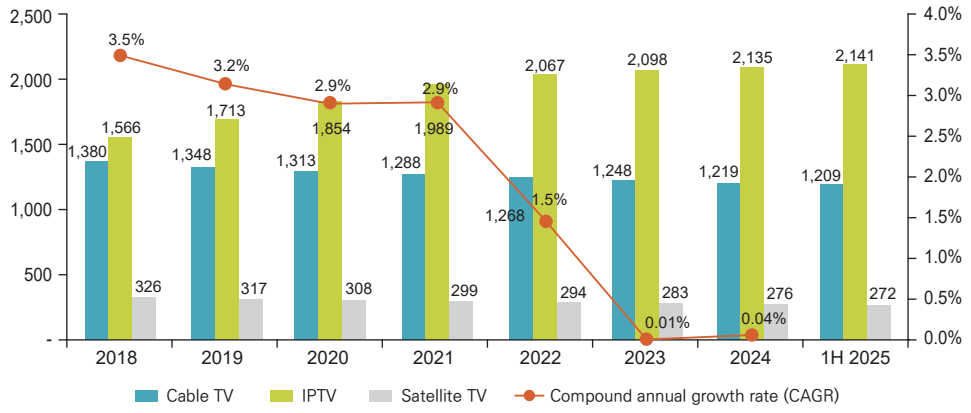
■ Pay-TV Services

Revenue from pay-TV services in 2025 is estimated to have fallen by 0.2% year-on-year to KRW 7.2 trillion. Total pay-TV subscriptions—including IPTV, cable television (SO, system operator), and satellite broadcasting—surpassed 36 million in 2022, effectively reaching market saturation. The figure remained largely unchanged at approximately 36.3 million in 2024. Subscriptions to cable and satellite services have been in steady decline since peaking at 14 million in 2017, as subscriber migration to IPTV has accelerated. As a result, revenues from these segments are likely to have remained in negative growth territory. IPTV subscriptions have continued to increase on the strength of bundled fixed-mobile service offerings, integration with OTT platforms such as Netflix and Disney+, and subscriber migration from cable, although the pace of growth has slowed markedly.

Revenue from pay-TV services in 2026 is forecast to decrease by 0.3% year-on-year, remaining at around KRW 7.2 trillion. Cable TV operators will continue facing declining subscription revenue due to ongoing subscriber attrition. In addition, intensifying competition from wired and wireless Internet platforms and social commerce channels is likely to limit the prospects for high growth in the home-shopping market. This, combined with a shrinking subscriber base, has weakened cable operators' bargaining power in negotiating home-shopping carriage fees, suggesting that the overall decline in cable TV revenue will persist.

Figure 1-5 Pay-TV Subscription Trends

(In 10 thousand subscribers)



Source: KMCC (November 24, 2025).

Table 1-13 Pay-TV Subscriptions and Market Share by Operator (Six-Month Average, First Half)

(Unit: subscriptions)

Classification	Operator	H1 2024		H1 2025	
		Number of subscriptions	Market share	Number of subscriptions	Market share
IPTV	KT	8,987,351	24.71%	9,028,900	24.92%
	SK Broadband	6,781,381	18.65%	6,768,835	18.68%
	LG Uplus	5,541,519	15.24%	5,616,786	15.50%
	(Subtotal)	21,310,251	58.60%	21,414,521	59.11%
SO (system operator)	LG HelloVision	3,510,840	9.65%	3,435,058	9.48%
	SK Broadband	2,814,584	7.74%	2,785,114	7.69%
	D'LIVE	1,905,353	5.24%	1,866,786	5.15%
	CMB	1,362,321	3.75%	1,347,943	3.72%
	Hyundai HCN	1,257,655	3.46%	1,250,225	3.45%
	Individual SOs* (nine operators)	1,422,347	3.91%	1,405,930	3.88%
	(Subtotal)	12,273,100	33.75%	12,091,056	33.38%
Satellite TV	KT Skylife	2,781,295	7.65%	2,720,523	7.51%
Grand total		36,364,646	100.0%	36,226,100	100.0%

Note: * Independent SOs refer to the nine locally operated cable system operators (cable TV operators).
Source: KMCC (November 24, 2025).

■ Program Providers (PPs)

Program providers (PPs) are estimated to have generated KRW 7.1 trillion in revenue in 2025, marking a 1.0% year-on-year decline. After reaching the KRW 7 trillion level in 2019 supported by the expansion of home-shopping channels and general programming channels, further growth has become increasingly constrained due to stagnating home-shopping sales and sluggish advertising performance.

Total PP revenue in 2026 is forecast to decline by 0.7% year-on-year to KRW 7.0 trillion. Home shopping broadcasting revenue, the largest component of PP sales, has been sustained to some extent by the growth of T-commerce (interactive TV commerce) operators. However, as consumers are increasingly shifting from traditional TV home shopping to alternative shopping platforms such as online and mobile platforms and social commerce, overall TV home-shopping revenue will likely remain on a downward track.

While program sales revenue from OTT and VOD platforms is expected to grow for major PPs with strong content competitiveness, advertising revenue is projected to decline across the PP industry as content consumption via linear TV viewing gradually diminishes. At the same time, despite efforts to strengthen K-content competitiveness and diversify distribution channels, program sales revenue is anticipated to remain broadly at its current level.

Table 1-14 Program Provider Revenue Trends

(In KRW 100 millions, %)

	2021		2022		2023		2024		Change 2023-2024
	Revenue	Share	Revenue	Share	Revenue	Share	Revenue	Share	
Content licensing	9,390	12.4%	9,996	13.1%	10,615	15.0%	11,186	15.7%	5.4
Advertising	16,912	22.4%	16,363	21.5%	13,522	19.1%	12,666	17.8%	-6.3
Sponsorship	5,258	7.0%	5,167	6.8%	5,018	7.1%	5,304	7.4%	5.7
Program sales	3,077	4.1%	4,132	5.4%	3,267	4.6%	3,500	4.9%	7.2
Facility leasing	112	0.1%	158	0.2%	230	0.3%	269	0.4%	16.9
Events	413	0.5%	938	1.2%	1,213	1.7%	1,123	1.6%	-7.4
Home-shopping channels	38,193	50.6%	37,095	48.7%	34,903	49.2%	34,166	47.9%	-2.1
Other broadcasting businesses	2,165	2.9%	2,247	3.0%	2,157	3.0%	3,141	4.4%	45.6
Total	75,520	100%	76,096	100%	70,924	100%	71,356	100%	0.6

Source: KMCC (2025).

2.2.3. Information Services

Table 1-15 Information Services Revenue Forecasts

(In KRW trillions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Information services	33.2	34.2	35.7	3.1	4.3

Note: Information services are categorized into information infrastructure services, information intermediation services (web search portals), and information provision services.

Source: MSIT, KAIT, and KEA data; KISDI forecasts for 2025 onward.

Information services revenue in 2025 is estimated at KRW 34.2 trillion, rising by 3.1% from the previous year. Information infrastructure services have emerged as a key foundation for the digital economy following the rapid advancement of AI technologies. Growing demand for AI computing and data processing has supported stable growth in cloud infrastructure, particularly in infrastructure-as-a-service (IaaS) and storage services. Revenue from content provision services—including digital music, movies, publishing, and animation—also headed upward. The adoption of AI-based services has triggered structural changes across the information services field, enhancing productivity and service sophistication. The online advertising market remains robust, although its composition is evolving: traditional advertising formats are gradually giving way to personalized AI-driven advertising on retail platforms. Meanwhile, the continued expansion of online shopping, prompted by the growth of retail platforms and the adoption of AI recommendation solutions, has led to increased use of digital payment and electronic payment services, sustaining growth in both electronic payment services and online reservation services.

For 2026, revenue from information services is projected to reach KRW 35.7 trillion, a 4.3% increase year-on-year. In the information infrastructure segment, the domestic Internet Data Center (IDC) and cloud markets, particularly the Infrastructure-as-a-Service (IaaS) market, are expected to expand, propelled by the advancement of AI services and their underlying industries. Moreover, as the global popularity of K-pop and broader K-content continues to spread, overall revenue from content provision services, including digital music and OTT services, is forecast to continue growing across the content provision services industry over the mid-to-long term.

2.3. Software

Table 1-16 Software Production and Exports—Current State and Outlook

(Production in KRW 100 millions, exports in USD millions, %)

	2024	2025	2026	Change 2024-2025	Change 2025-2026
Packaged software	204,792	206,561	211,037	0.9	2.2
Game software	201,606	207,990	216,228	3.2	4.0
IT services	556,741	569,246	587,732	2.2	3.2
Total software production	963,139	983,797	1,014,996	2.1	3.2
Total software exports	14,032	14,451	15,136	3.0	4.7

Source: MSIT, KAIT, and KEA data; KISDI forecasts for 2025 onward.

The production value of software in 2025 is estimated at KRW 98,379.7 billion, representing a 2.1% increase from the previous year. By industry, packaged software is estimated to have recorded a modest year-on-year growth of 0.9%, as corporate software investment and demand for public-sector projects have weakened due to the economic slowdown, while the security software segment—previously a key growth driver—recorded only marginal gains. Game software production is estimated to have grown by 3.2%. Despite generally sluggish conditions across the gaming industry, major players showed mixed results: Krafton recorded growth, whereas Netmarble and Nexon maintained performance at roughly the previous year's level, and NCSoft and Kakao Games experienced declines. For IT services, the year-on-year growth rate is estimated at 2.2%. Demand for new system integration (SI) projects decreased due to the domestic economic downturn, but was offset by increases in cloud services and AI Transformation (AX) projects.

Software exports in 2025 are estimated at approximately USD 14.5 billion, up 3.0% year-on-year, driven by growing exports of security software, game software, and AX-related IT services. Despite the overseas expansion of security software, packaged software exports likely remained flat due to the sluggish export performance of enterprise software, including ERP solutions. In the game software market, listed gaming companies struggled through the third quarter; however, a slight recovery in the fourth quarter likely allowed them to maintain results close to the previous year's level. Meanwhile, major IT service providers are expected to accelerate export growth by expanding their presence in the Americas, Southeast Asia, and the Middle East, leveraging AX and smart city solutions.

Software production in 2026 is forecast to generate KRW 101,499.6 billion at a year-on-year growth rate of 3.2%. In the packaged software industry, rising demand for AI software, combined with stable growth in cloud-based software-as-a-service (SaaS) and security software, is expected to support a 2.2% increase. Regarding game software, the industry is expected to grow by 4.0%, supported by new title launches by major developers, increasingly diversifying revenue streams, and improved access to the Chinese market through the expansion of game publishing licenses (Banho). IT services are forecast to grow by 3.2% year-on-year as AX demand accelerates across all industries and the transition to cloud infrastructure services continues.

Software exports in 2026 are projected to achieve a year-on-year growth of 4.7%, reaching USD 15.1 billion. Growth will be supported by increasing overseas AX and cloud-based projects led by large IT service providers, as well as rising game exports, particularly to the Greater China region. In the packaged software industry, the security software segment will likely achieve modest growth through strategies focused on advancing security with AI-enabled security solutions and integrated security platforms in regions such as Southeast Asia and the Middle East. However, overall growth is likely to remain moderate due to slowing demand for enterprise SaaS amid global AI software innovation. Game software exports are expected to maintain stable growth by expanding popular IPs across multiple platforms and releasing multiple new titles; in particular, exports to the Greater China region, a major game export destination, are forecast to expand following the resumption of game licenses in China. Lastly, in the IT services industry, major providers are expected to sustain steady export growth by focusing on AX, AI data centers, smart cities, and smart factories while diversifying their geographic footprint beyond existing subsidiary markets.

Part II

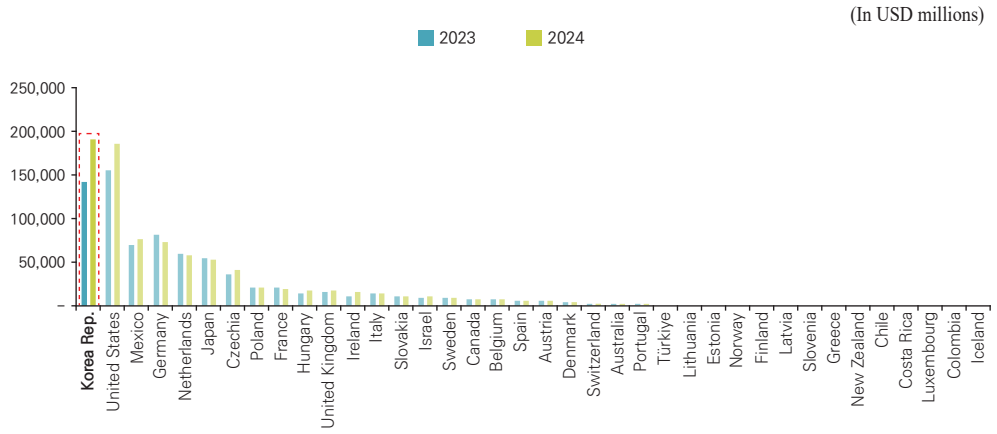
The International Competitiveness of the Korean ICT Sector: A Comparative Analysis

Part II evaluates the competitiveness of Korea's ICT sector in comparison with other OECD members across six key pillars: export competitiveness, R&D investment and innovation levels, the human resources environment, the financial and entrepreneurial environment, ICT infrastructure levels, and pro-industry policies and legal frameworks.

1. ICT Export Competitiveness

Following a contraction in 2023 due to adverse external conditions, the Korean ICT sector regained its top-tier export competitiveness within the OECD in 2024, bolstered by the burgeoning global AI market and the semiconductor market upturn. Fueled by the rapid adoption of generative AI, high-value-added products such as high bandwidth memory (HBM) and high-capacity SSDs achieved record-breaking performance, while the growing shares of OLED panels and other high-end products contributed to the qualitative advancement of Korea's export structure. Korea also demonstrated resilience in response to global supply chain restructuring by reducing dependence on the Chinese market and diversifying its export destinations. This was particularly evident in the U.S. and Vietnamese markets, with exports to the United States reaching an all-time high. As a result, Korea has emerged as a pivotal hub in the global AI hardware supply chain. In 2024, Korea's total ICT goods exports rebounded from a 23.7% downturn (USD 144,249.2 million) in 2023 to a strong double-digit growth of 34.1% (USD 193,509 million) in 2024. With this rebound, Korea reclaimed the top position among OECD countries—a ranking it has held since 2000 but temporarily conceded to the U.S. in 2023. Meanwhile, China retained its position as the global leader in ICT goods exports in 2024, recording a modest single-digit growth rate of 5.7% year-on-year. Korea's exports relative to China's rose from 20.0% in 2023 to 25.4% in 2024, narrowing the gap with the world's largest exporter.

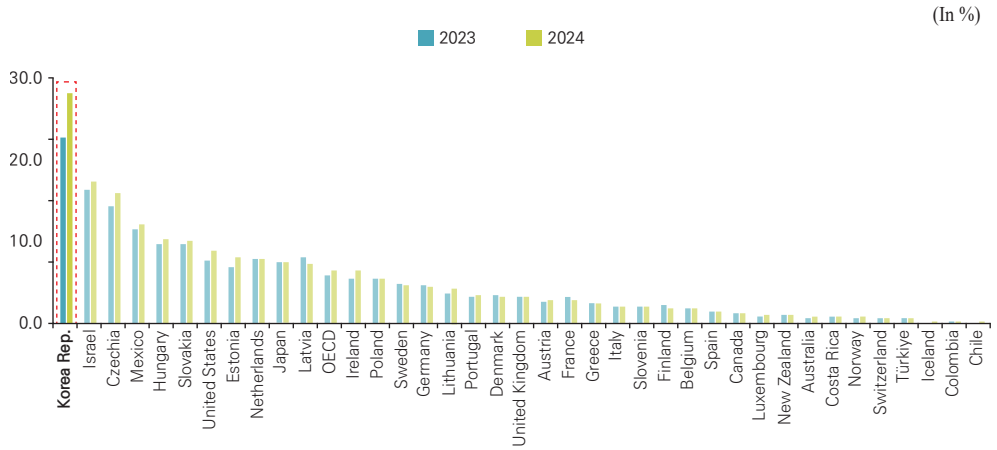
Figure 2-1 Total ICT Goods Exports, 2023 and 2024



Source: UNCTAD, Information Economy (database), https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx (accessed December 2025).

In 2024, ICT goods accounted for 28.3% of Korea's total exports, up 5.5 percentage points from the previous year. This figure represents the highest level among OECD members and a significant lead over the OECD average (6.7%) and the second-ranked Israel (17.7%). Compared with the U.S. (9.1%), one of the major exporters, Korea's share is approximately three times higher. It even exceeds that of China (21.3%), the world's largest exporter, indicating the Korean economy's persistent high dependence on ICT goods exports.

Figure 2-2 Share of ICT Goods as Percentage of Total Trade, 2023 and 2024

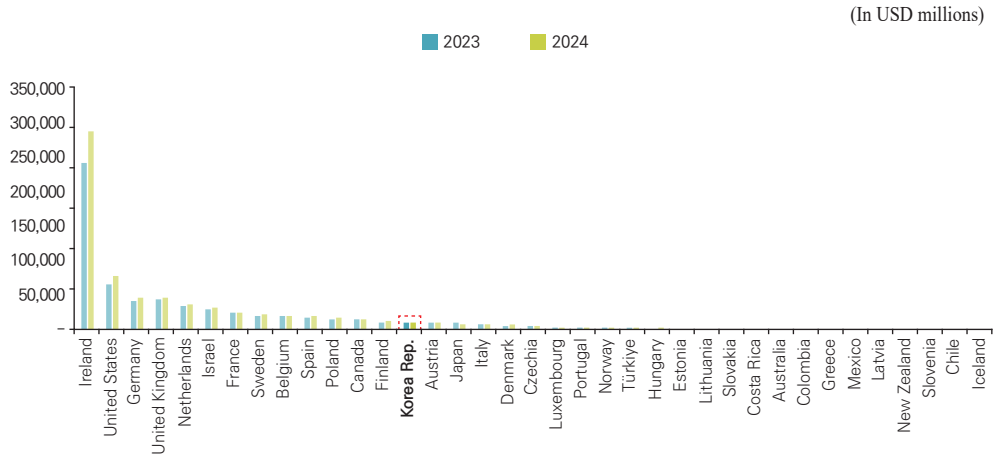


Source: UNCTAD, Information Economy (database), https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx (accessed December 2025).

In the meantime, Korea's ICT services exports continued to grow in 2024 following the upward trend from 2023, driven by the expansion of generative-AI-enabled services and the acceleration of digital transformation (DX); yet this growth still trails behind the average OECD performance. Total ICT services exports across the OECD increased by 12.2%, rising from USD 718,944 million in 2023 to USD 806,309.4 million in 2024. In contrast, those of Korea grew by 6.6%, from USD 11,500 million in 2023 to USD 12,260 million in 2024. In terms of export value, Korea remained in the mid-tier, ranking 14th among 37 OECD countries and standing only at 4.2% of Ireland—the top exporter with USD 292,235 million.

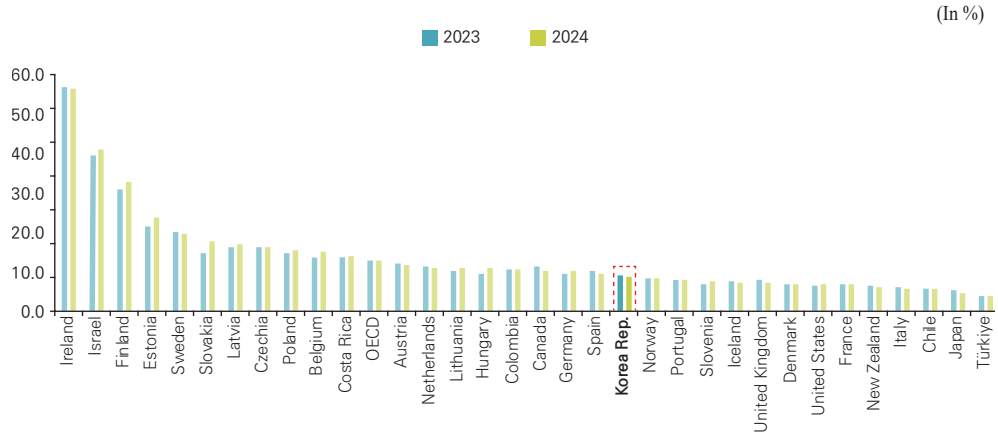
The share of ICT services in Korea's total service exports is estimated to have declined by more than 0.3 pp, falling from 9.2% in 2023 to 8.8% in 2024. This sits well below the OECD average of 12.1%, placing Korea in the lower tier at 20th among 37 countries. While Ireland topped the list at 56.3%, second-ranked Israel (41.0%)—much like Korea—also reported a high share of ICT goods exports, demonstrating a well-balanced export structure between hardware and services.

Figure 2-3 Total ICT Services Exports, 2023 and 2024



Source: UNCTAD, Information Economy (database), https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx (accessed December 2025).

Figure 2-4 Share of ICT Services in Total Exports of Services, 2023 and 2024

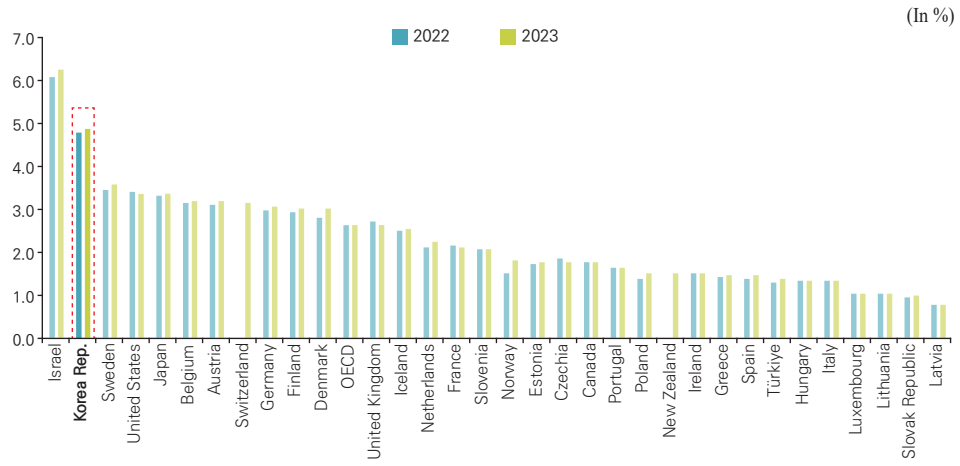


Source: UNCTAD, Information Economy (database), https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx (accessed December 2025).

2. R&D Investment and Innovation Levels

According to recently released OECD R&D indicators, Korea continues to maintain one of the highest levels of investment in technological development among member states, with R&D activity remaining strongly concentrated in the ICT hardware sector. As of 2023, Korea's gross domestic expenditure on R&D (GERD) as a percentage of GDP increased by 0.1 percentage points year-on-year to 5.0%, ranking second after Israel (6.3%) among 33 OECD countries for the second consecutive year.

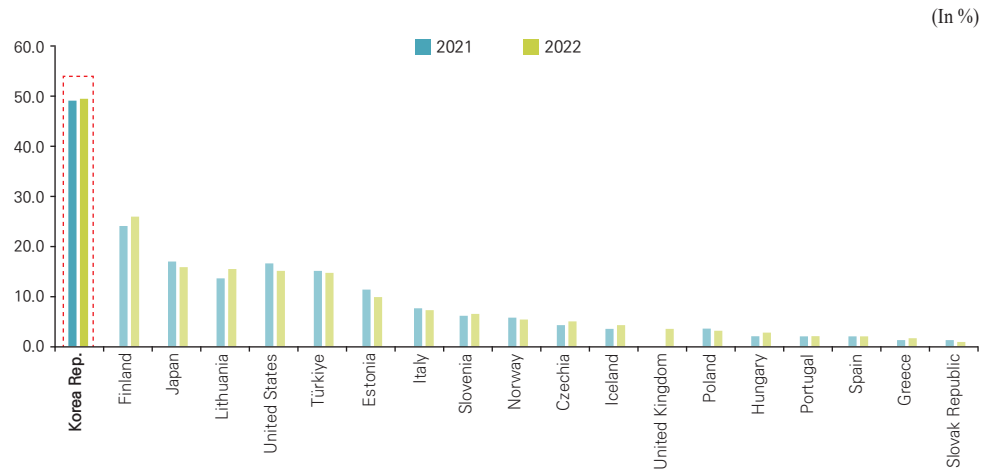
Figure 2-5 GERD as a Percentage of GDP, 2022 and 2023



Source: OECD, Main Science and Technology Indicators (database), https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB (accessed November 2025).

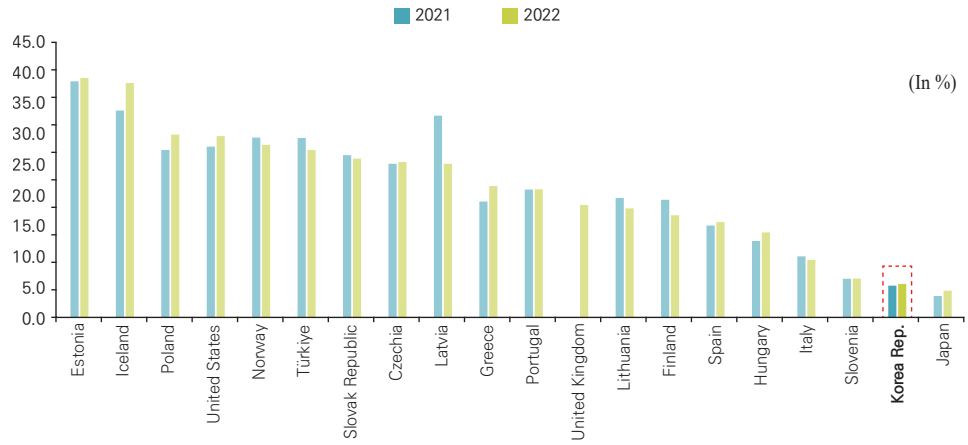
In terms of R&D investment by industry, the computer, electronic, and optical products industry accounted for 49.5% of Korea's business enterprise research and development (BERD) in 2022, a 0.1 percentage-point increase from the previous year—the highest share among 19 OECD countries. This concentration is substantially higher than that of Finland, which ranked second with 26.1%. By contrast, R&D investment in information and communication services remained in the lower tier among OECD countries. As of 2022, the industry accounted for only 5.4% of BERD, placing Korea 19th out of 20 OECD nations.

Figure 2-6 Percentage of BERD Performed in the Computer, Electronic and Optical Industry, 2021 and 2022



Source: OECD, Main Science and Technology Indicators (database), https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB (accessed November 2025).

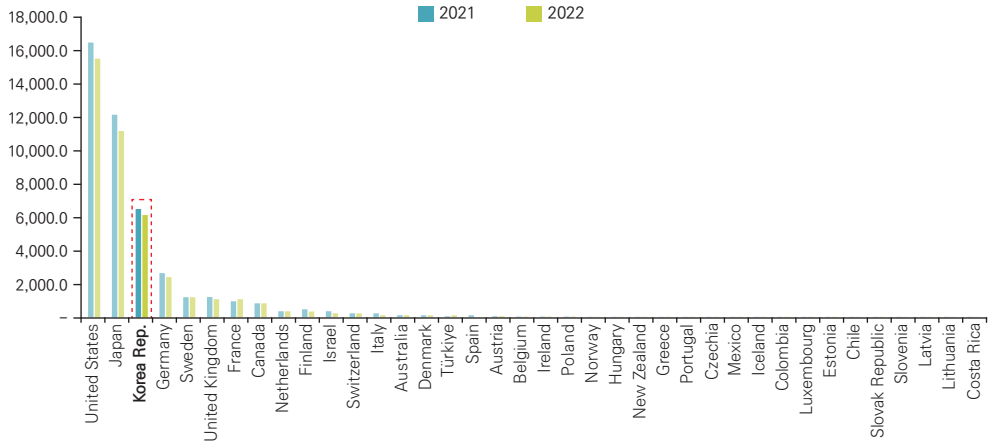
Figure 2-7 Percentage of BERD Performed in Information and Communication Services, 2021 and 2022



Source: OECD, Main Science and Technology Indicators (database), https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB (accessed November 2025).

Turning to R&D investment outcomes, Korea's quantitative performance in ICT R&D as measured by patents and scientific publications remains world-class. Regarding patents, Korea filed 6,336 ICT patent applications under the Patent Cooperation Treaty (PCT) in 2022, a 4.7% decline from the previous year. This accounts for 14.4% of total ICT patent applications across all 38 OECD countries (43,996), allowing Korea to maintain its position as the world's third-largest filer, following the U.S. (35.9%) and Japan (25.9%). In absolute terms, however, Korea's patent volume corresponds to 40.2% of that of the U.S. (the OECD leader with 15,776 applications) and 24.0% of China's (the global leader with 26,383). While these gaps narrowed slightly compared to the previous year (39.6% and 24.4%, respectively), Korea still faces a significant gap in patent output compared with leading countries. In AI-related patenting, Korea recorded 8,213 patents in 2023, ranking second among 34 OECD countries, trailing only the U.S. (15,389). However, relative to the global AI "Top 2" – the U.S. and China (25,701) – Korea's AI patent output stands at 53.4% and 32.0% of their respective levels, representing a persistent quantitative gap with these leading countries.

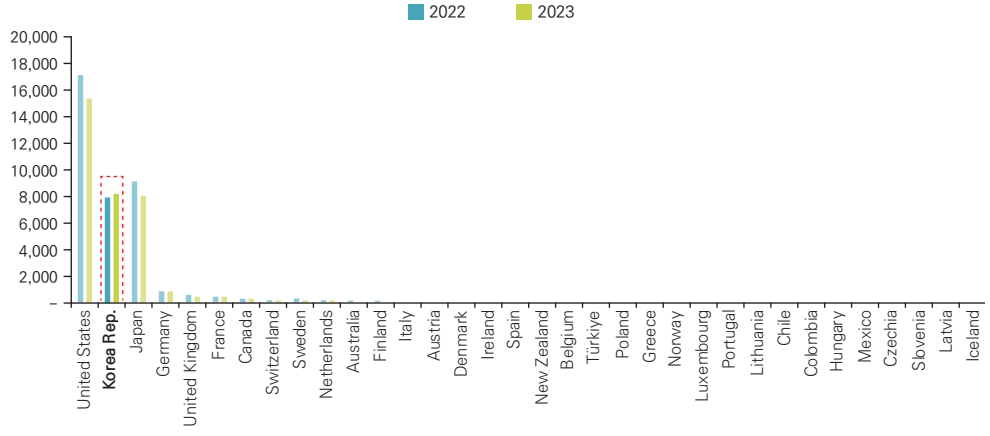
Figure 2-8 Number of Patents in the ICT Sector, 2021 and 2022



Note: Patent applications filed under the PCT (priority year)

Source: OECD, Main Science and Technology Indicators, https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB (accessed November 2025).

Figure 2-9 AI-Related Patent Publications, 2022 and 2023



Note: Number of patent publications

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/custom-search/KR/wcy/ (accessed December 2025).

Next, looking at the performance of scientific publications, Korea produced 75,325 papers in 2023. While Korea's output decreased by 4.6% from the previous year, its global share remained broadly stable, edging up from 2.33% in 2022 to 2.35% in 2023. Korea also maintained its 12th position, a rank it has held consistently since 2007. China and the U.S. led the field with shares of 22.8% and 13.5%, respectively. Together, the two countries account for roughly one-third of all SCI publications, highlighting a persistent quantitative gap between Korea and the global leaders.

As for qualitative performance in scientific publications, it is commonly assessed through research impact, as measured by citation counts. Korea recorded 135,875 citations in 2023, with a global share of 2.23%—a figure that remains substantially lower than that of the two global leaders, China (1,442,190 citations) and the U.S. (737,103). Korea also produced 967 highly cited papers (HCPs)—defined as publications within the top 1% globally by citation—in 2023, accounting for 1.28% of its total publications (75,325). Although this share increased from 0.83% in 2014, it remains relatively modest.

Table 2-1 Korea's Rank by Number of SCI-Indexed Papers, 2021-2023

Country	Number of Papers			Share of the World's Total (%)			Rank		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
China	644,387	745,917	730,477	18.68	22.06	22.83	1	1	1
US	536,027	472,982	432,589	15.17	13.93	13.52	2	2	2
Korea Rep.	84,125	78,956	75,325	2.41	2.33	2.35	12	12	12

Note: Analysis performed based on Clarivate Analytics' Web of Science Core Collection (which includes the Science Citation Index Expanded (SCIE) database)

Source: Korea Institute of S&T Evaluation and Planning (KISTEP) (2025).

Table 2-2 Korea's Rank by Citation Counts of Scientific Publications, 2021-2023

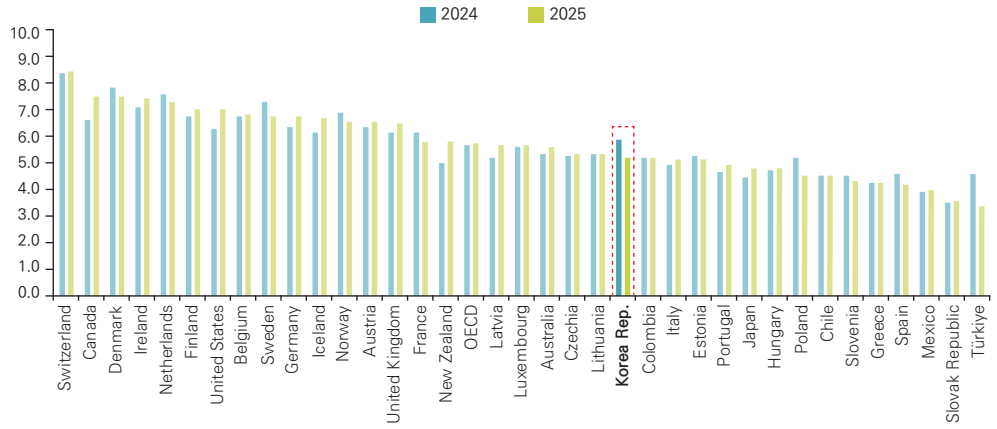
Country	2021		2022		2023		
	Citations	Rank	Citations	Rank	Citations	Rank	Share (%)
China	8,501,319	1	5,014,014	1	1,442,190	1	23.68
US	6,286,787	2	2,762,670	2	737,103	2	12.10
Korea Rep.	953,907	11	474,783	11	135,875	11	2.23

Note: Total citation counts represent the cumulative number of citations received up to the end of 2023 by papers published in each respective year. The global share (%) is calculated as each country's citations to papers published in 2023 relative to the global total (6,090,388)

Source: KISTEP (2025).

Next, regarding collaboration among R&D actors as a key driver for sustaining innovation, IMD survey results show that Korea remained in the lower-middle group in 2025, following a similar trend in 2024. The survey measuring the extent of knowledge transfer between universities and industry (on a 10-point scale) shows that Korea scored 5.3, below the OECD average of 5.8, ranking 22nd among 36 OECD countries (excluding Costa Rica and Israel for which data were unavailable). Similarly, in terms of collaboration between the public sector and private venture firms, Korea scored 4.9—well below the OECD average of 6.0—ranking 33rd among 36 member nations. Both indicators declined compared with the previous year, suggesting that R&D stakeholders perceive weaknesses in the ecosystem translating industry-academia-research collaboration into the commercialization of research outcomes.

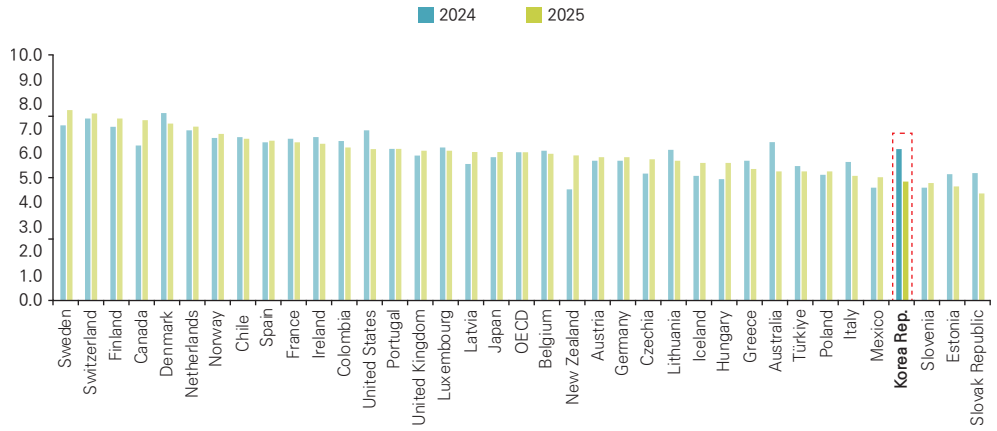
Figure 2-10 Knowledge Transfer, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (knowledge transfer is highly developed between companies and universities)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

Figure 2-11 Public and Private Sector Ventures, 2024 and 2025



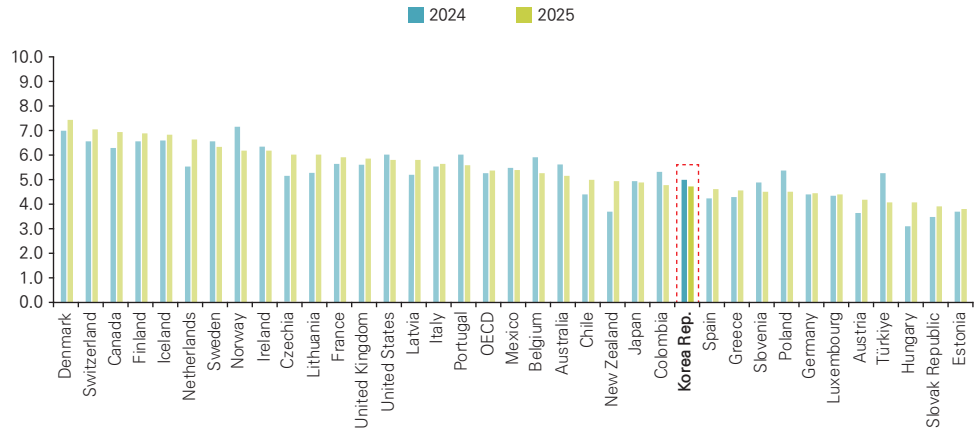
Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (public and private sector ventures are supporting technological development)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

3. The Human Resources Environment

Amid intensifying global competition for talent in AI and other advanced technology fields, Korea's human capital environment deteriorated from the previous year in 2025, regressing to the lower tier. According to IMD survey indicators measuring the availability of ICT manpower—specifically skilled labor, qualified engineers, and digital/technological skills—Korea's rankings among 36 OECD countries slipped from 24th to 25th, from 14th to 24th, and from 16th to 33rd, respectively. Furthermore, on an indicator assessing the retention of talent (the risk of brain drain), Korea ranked 26th among the 36 OECD members surveyed in 2025, falling seven places from 19th in the previous year. Korea's business environment also experienced a notable decline in its attractiveness to foreign skilled workers, dropping 12 places from 21st in 2024 to 33rd in 2025.

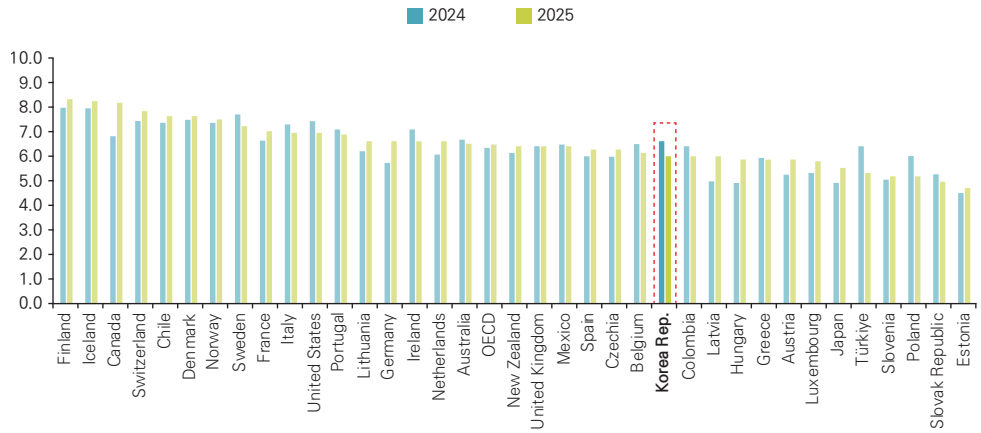
Figure 2-12 Skilled Labor, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (skilled labor is readily available)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

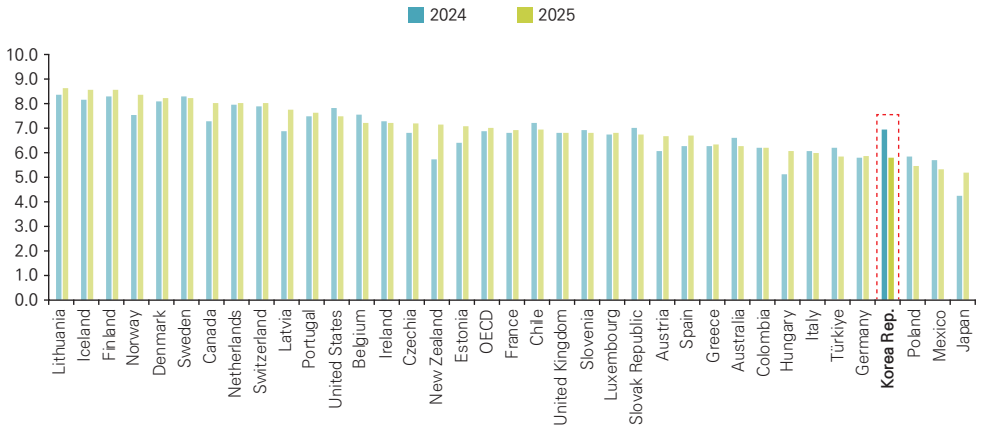
Figure 2-13 Qualified Engineers, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (qualified engineers are available in your labor market)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

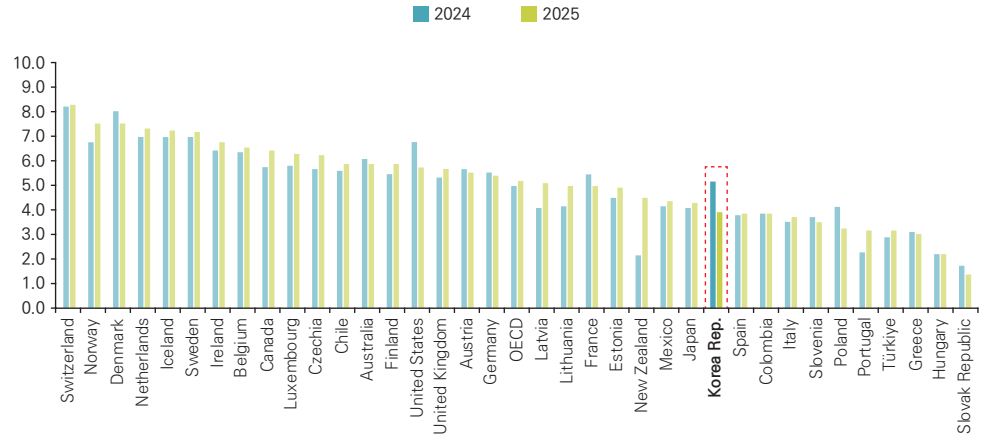
Figure 2-14 Digital/Technological Skills, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (digital/technological skills are readily available)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

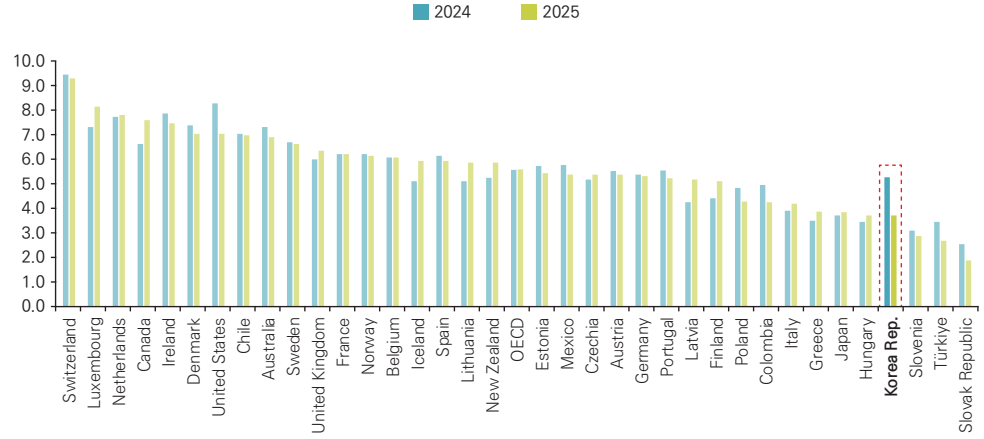
Figure 2-15 Brain Drain, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (brain drain (well-educated and skilled people) does not hinder competitiveness in your economy)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

Figure 2-16 Foreign Skilled Labor, 2024 and 2025

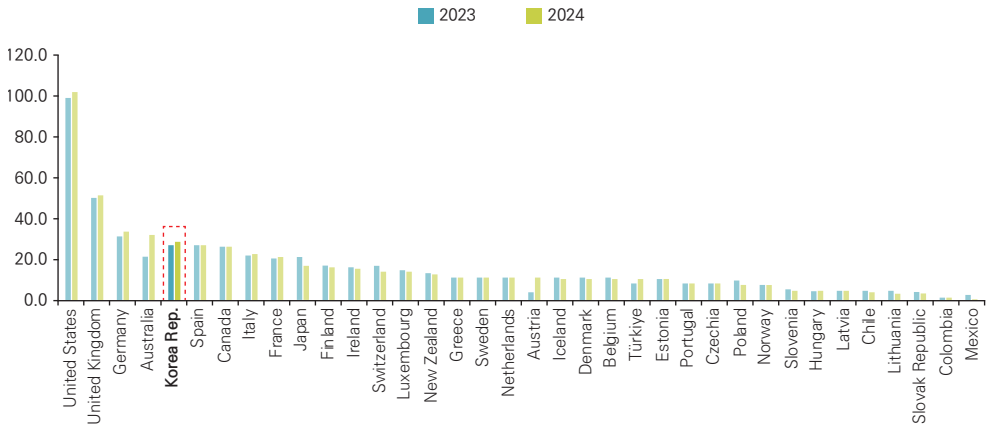


Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (foreign highly-skilled personnel are attracted to your country's business environment)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

With regard to the infrastructure for nurturing future talent through education and training, recent evaluations also indicate a deterioration in Korea's competitiveness, although the country remains relatively active in talent development, staying in the higher tier among OECD countries. According to an IMD indicator based on the Times Higher Education (THE) World University Rankings for computer science, Korea's rank among 36 OECD countries edged down from 4th in 2023 to 5th in 2024. More notably, a survey on whether companies prioritize employee training revealed a sharp decline, with Korea plunging 15 places from 6th in 2024 to 21st in 2025 among the 36 countries surveyed.

Figure 2-17 Computer Science Education Index, 2023 and 2024

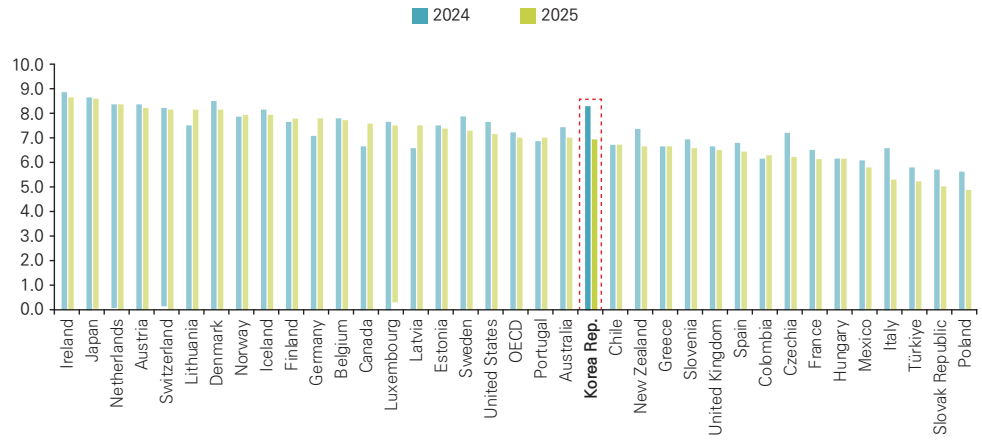


Note: Country score calculated from Times Higher Education university ranking[1)]

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

1) IMD developed index calculated from the Times Higher Education ranking of the top 1,000 university computer science courses, measuring the quantity and quality of the universities in each economy. 33% weighting is the number of universities in THES ranking for each country, 33% weighting is the total score, 33% weighting is the total score per capita.

Figure 2-18 Attracting and Retaining Talents, 2024 and 2025



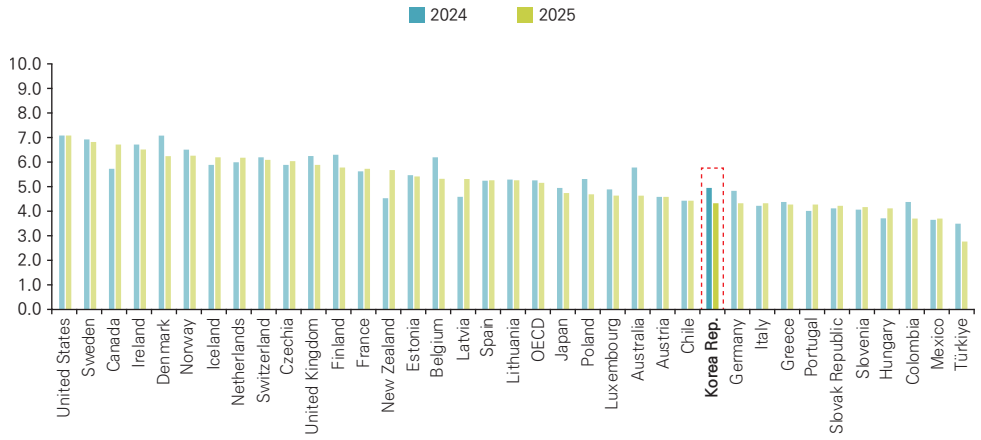
Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (attracting and retaining talent is a priority for companies)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

4. The Financial and Entrepreneurial Environment

An analysis of the 2025 IMD survey results indicates that Korea's financial and entrepreneurial environment has weakened, failing to break out of the lower-middle tier. In terms of general financing conditions, Korea's rankings for access to venture capital and credit slipped from 21st in 2024 to 26th in 2025 among 36 OECD countries. Nevertheless, Korea demonstrated relative strength in AI investment. In 2024, Korea's private-sector investment in AI reached USD 1.3 billion, placing the country 8th among 35 OECD nations. Despite this solid ranking, Korea remains far behind global AI leaders in absolute scale: its investment accounts for only 1.2% of the U.S. total (USD 109.1 billion) and 14.3% of China's (USD 9.3 billion).

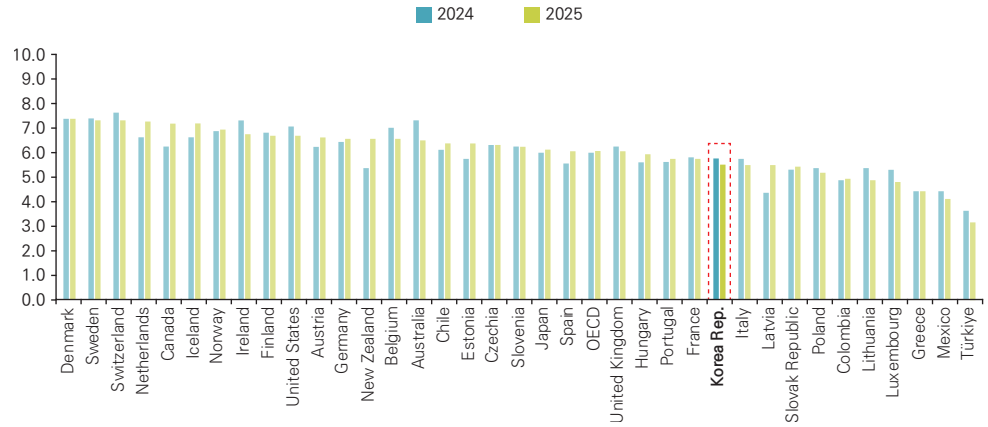
Figure 2-19 Venture Capital, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (venture capital is easily available for business)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

Figure 2-20 Credit Availability, 2024 and 2025

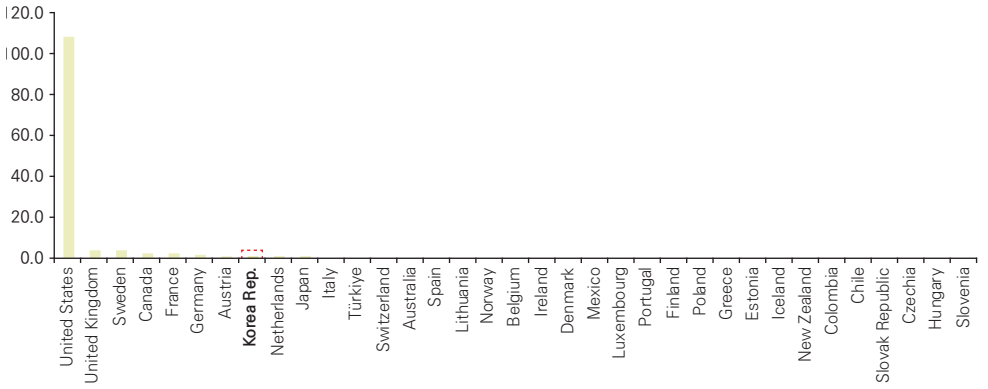


Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (credit is easily available for business)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

Figure 2-21 AI Private Investment, 2024

(In USD billions)



Note: Annual private investment in artificial intelligence. Includes companies that received more than $1.5 million in investment

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

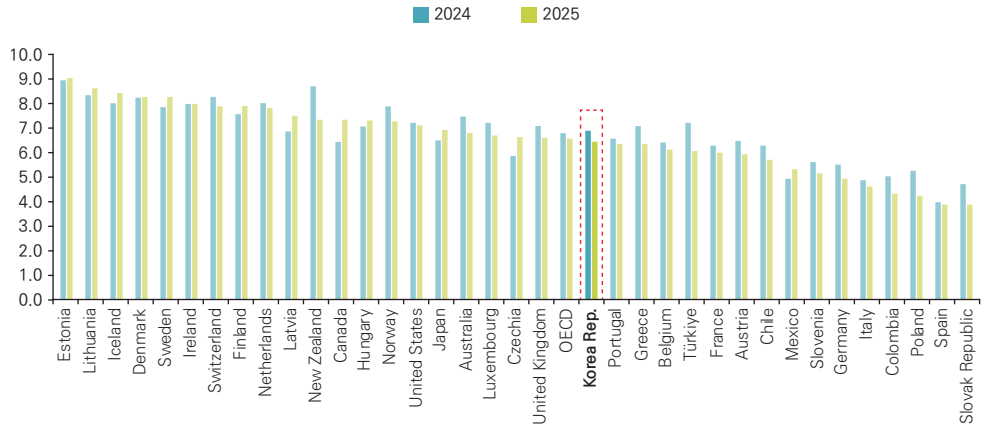
Next, IMD survey indicators assessing financial support for technology development and the legal and regulatory environment supporting entrepreneurship also showed declines in Korea's rankings, falling from 18th to 30th and 19th to 21st, respectively, among 36 OECD countries. Meanwhile, the level of business support provided by the banking and financial services industries edged down one spot to 31st in 2025, indicating that Korea still remains in the lower tier in this category.

Figure 2-22 Funding for Technological Development, 2024 and 2025

Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (funding for technological development is readily available)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/custom-search/KR/wcy/ (accessed December 2025).

Figure 2-23 Legislative Support for Business Startups, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (creation of firms is supported by legislation)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

Figure 2-24 Support for Business Activities by Banking and Financial Services, 2024 and 2025

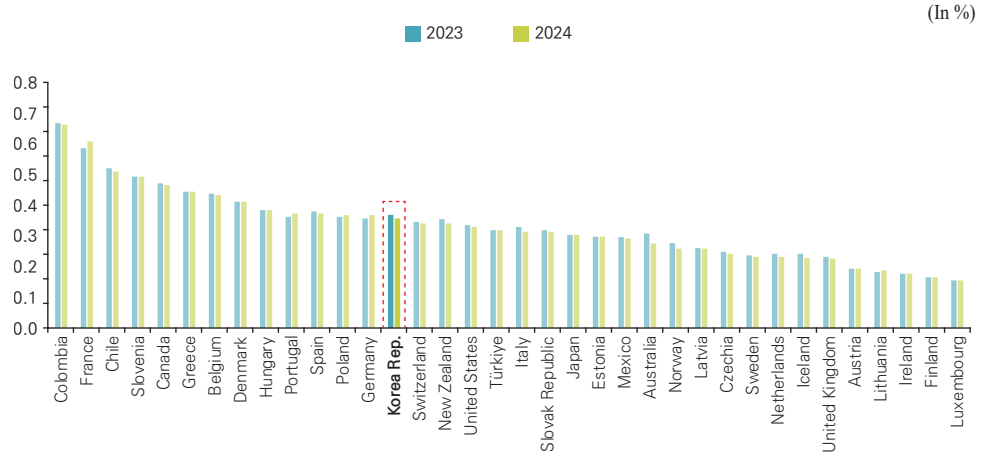
Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (banking and financial services do support business activities efficiently)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

5. ICT Infrastructure and Utilization

Based on the latest data, a comparative analysis of the deployment, penetration, and utilization of communications networks—core infrastructure for AI—across the OECD shows that although Korea's rankings declined on some indicators amid intensified competition among OECD countries, the country continues to maintain its position in the upper tier of overall ICT infrastructure. First, Korea's investment in telecommunications as a percentage of GDP fell from 11th in 2023 to 14th in 2024 among 36 OECD countries. Second, an IMD survey assessing whether communications technology (voice and data) meets business requirements found that Korea's ranking dropped from 6th in 2024 to 15th in 2025.

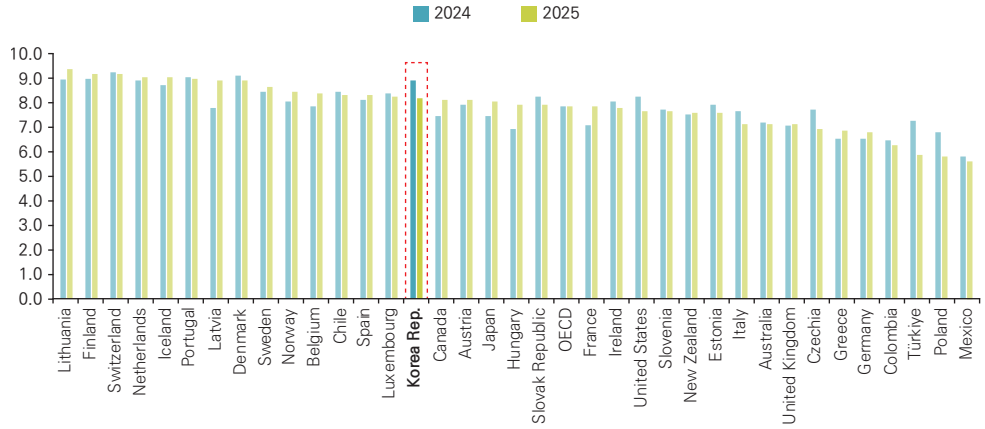
Figure 2-25 Investment in Telecommunications, 2023 and 2024



Note: Percentage of GDP

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

Figure 2-26 Communications Technology, 2024 and 2025

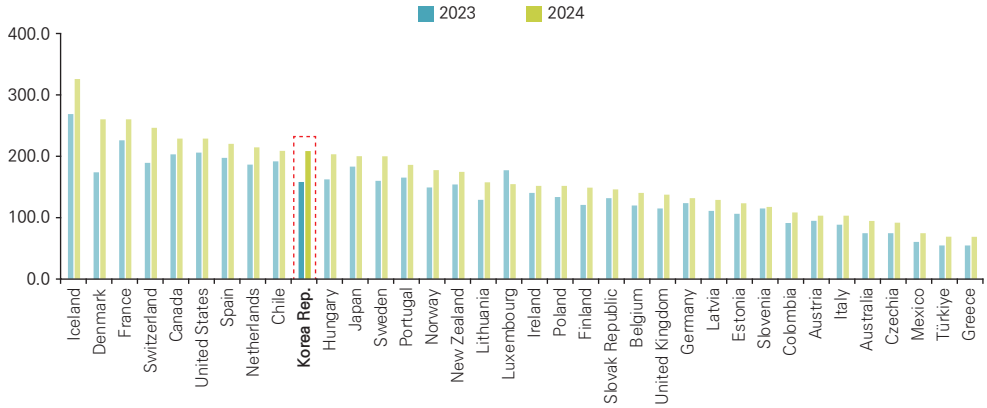


Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (communications technology (voice and data) meets business requirements)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

By contrast, connectivity and access indicators improved or remained steady, enabling Korea to maintain its upper-tier standing among OECD countries. Among 36 OECD countries, Internet speed improved from 15th in 2023 to 10th in 2024, while fixed broadband penetration rose from 3rd to 2nd over the same period. Mobile broadband penetration remained unchanged at 14th. Meanwhile, the percentage of Internet users increased from 4th in 2023 to 3rd in 2024 among 21 OECD countries.

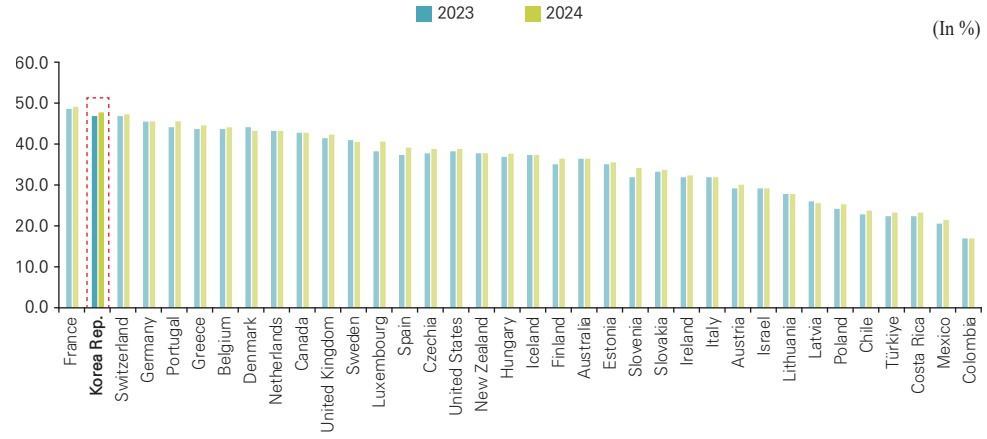
Figure 2-27 Internet Bandwidth Speed, 2023 and 2024



Note: Average speed

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

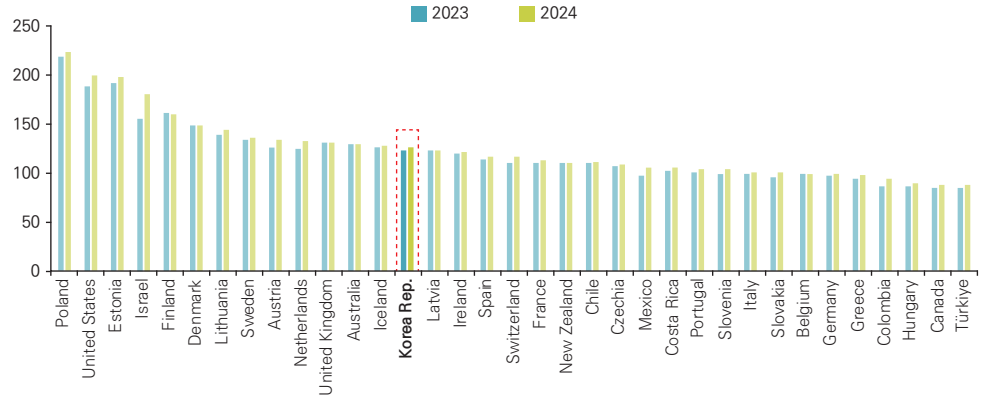
Figure 2-28 Fixed Broadband Subscriptions, 2023 and 2024



Note: Penetration rate (per 100 people)

Source: Author's calculations based on ITU World Telecommunication/ICT Indicators database (database), https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx (accessed September 2025).

Figure 2-29 Active Mobile-Broadband Subscriptions, 2023 and 2024



Note: 1) Active mobile-broadband subscriptions refers to the sum of standard mobile-broadband and dedicated mobile-broadband subscriptions to the public Internet

2) Active mobile-broadband subscriptions per 100 inhabitants

Source: Author's calculations based on ITU World Telecommunication/ICT Indicators database (database), https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx (accessed September 2025).

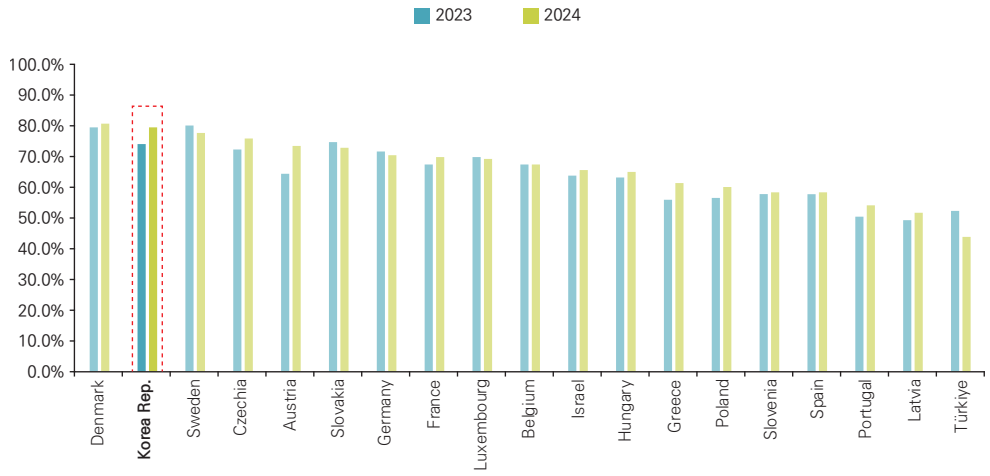
Figure 2-30 Individuals Using the Internet, 2023 and 2024

Note: Refers to individuals 12 years and older

Source: Author's calculations based on ITU World Telecommunication/ICT Indicators database (database), https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx (accessed September 2025).

Turning to how effectively Korea leverages its advanced ICT infrastructure, comparisons with other OECD nations reveal diverging trends between individuals and businesses. While individual utilization remained at the highest level, corporate utilization fell into the lower-middle tier. As a key metric of ICT infrastructure utilization by individuals, e-commerce data show that the share of Internet users ordering or purchasing goods or services reached 80.4% in 2024, placing Korea 2nd among 19 OECD countries—a two-spot rise from 4th in 2023. Additionally, Korea maintained its position as the second-largest market among 34 OECD countries in terms of online purchase value in 2024, behind only the U.S.

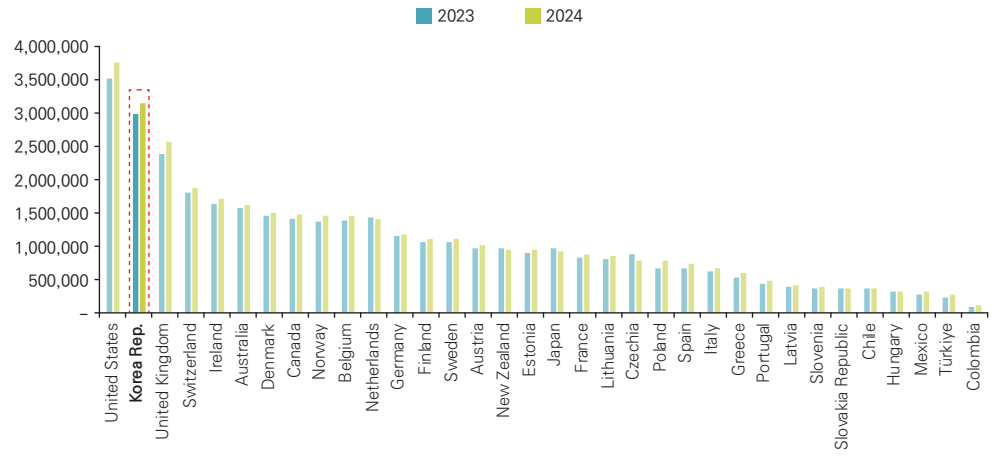
Figure 2-31 Internet Users Purchasing or Ordering Goods or Services, 2023 and 2024



Note: Proportion of individuals using the Internet who undertook activities for private (non-work) purposes from any location in the last three months

Source: Author's calculations based on ITU World Telecommunication/ICT Indicators database (database), https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx (accessed September 2025).

Figure 2-32 Internet Retailing, 2023 and 2024

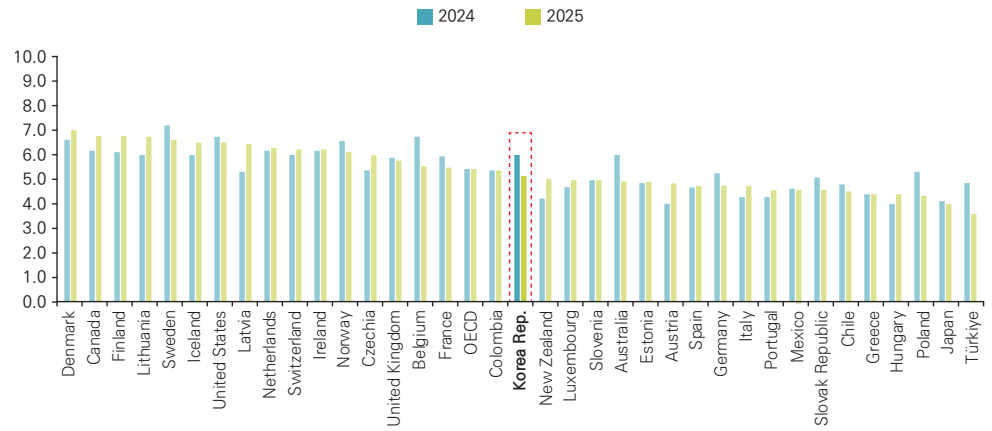


Note: USD per 1,000 people

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

However, indicators reflecting the progress of digital transformation in the corporate sector—key metrics of corporate ICT utilization—deteriorated in the 2025 IMD survey results. Specifically, Korea's rankings for the use of big data in management, the adoption of digital technologies for performance improvement, and the implementation of digital transformation strategies declined compared with the previous year, falling from 10th to 18th, from 8th to 14th, and from 4th to 13th, respectively, among 36 OECD countries. Furthermore, Korea's ranking in corporate cybersecurity resilience dropped sharply from 9th to 24th, falling below the OECD average in the wake of major security incidents in 2025.

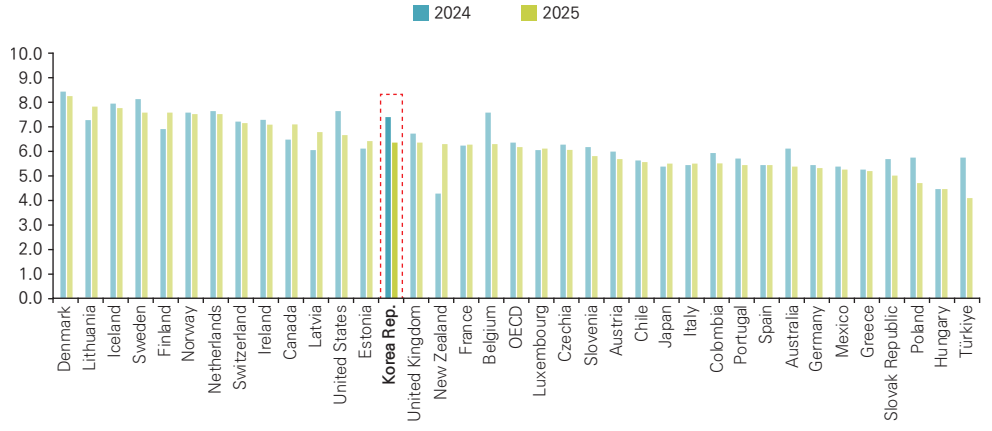
Figure 2-33 Use of Big Data and Analytics, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (companies are very good at using big data and analytics to support decision-making)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

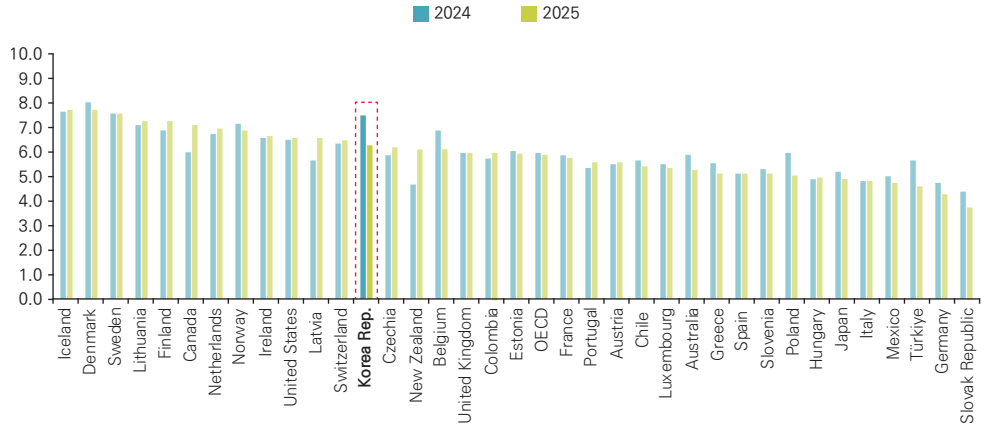
Figure 2-34 Use of Digital Tools and Technologies, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (companies are very good at using digital tools and technologies to improve performance)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

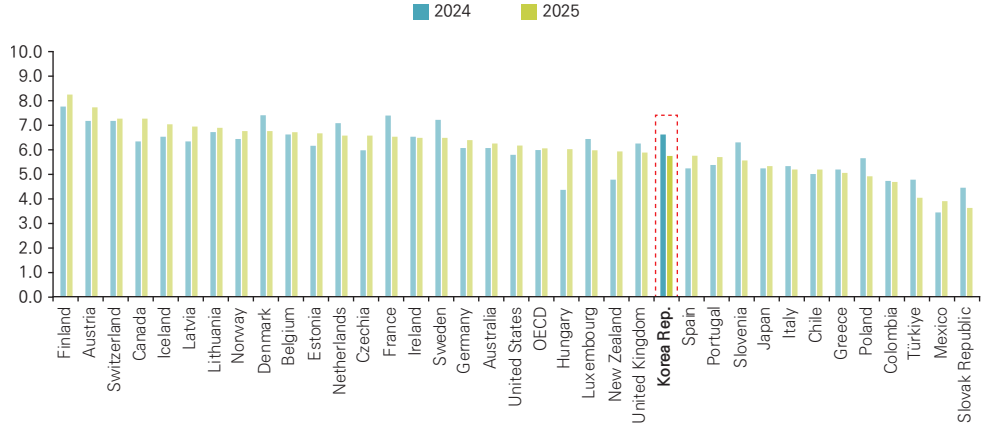
Figure 2-35 Digital Transformation in Companies, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (digital transformation in companies is generally well implemented)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

Figure 2-36 Corporate Resilience against Cybersecurity Threats, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (cyber security is being adequately addressed by corporations)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

6. Industry-Friendly Policies and Legislation[2)]

According to key indicators providing cross-country comparisons of ICT promotion policies and their implementation outcomes, Korea performs at the highest level in the OECD, particularly in digital government and regulatory policy. Most notably, the OECD Digital Government Index (DGI), which measures the outcomes of member states' digital transformation policies, ranked Korea first in both its 2019 and 2023 editions. Korea also placed 4th overall in the 2024 United Nations E-Government Survey, which evaluates policy engagement and service efficiency across 193 countries.

Turning to regulatory policy, which serves as a key institutional foundation for advancing the ICT sector, Korea likewise demonstrated strong performance. In the 2024 OECD Indicators of Regulatory Policy and Governance (iREG), conducted every three years since 2015, Korea secured the top position among the 38 members in regulatory impact assessment (RIA) and ex-post evaluation for both primary laws and subordinate regulations. In stakeholder engagement, Korea ranked 3rd for primary laws and 5th for subordinate regulations. Furthermore, in transparency—a new composite indicator designed to cross-cut the existing three areas—Korea ranked first in both primary and subordinate regulations.

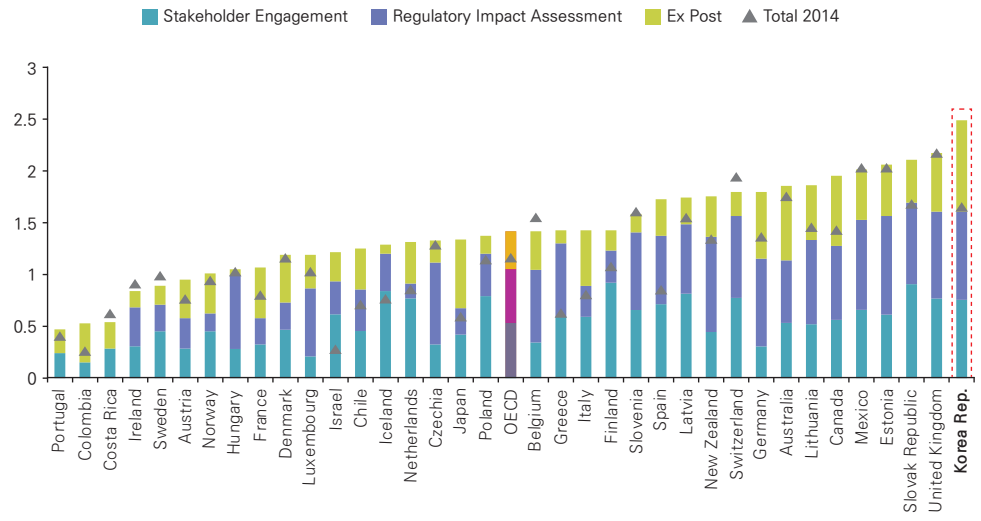
Table 2-3 Korea's Rankings by Area in the OECD Indicators of Regulatory Policy and Governance (iREG), 2015-2024

Area		2015	2018	2021	2024
❶ Regulatory Impact Assessment	Primary laws	13	3	2	1
	Subordinate regulations	12	4	2	1
❷ Ex-post Evaluation	Primary laws	13	3	5	1
	Subordinate regulations	14	3	7	1
❸ Stakeholder Engagement	Primary laws	9	4	3	3
	Subordinate regulations	15	6	4	5

Source: Office for Government Policy Coordination (November 2024).

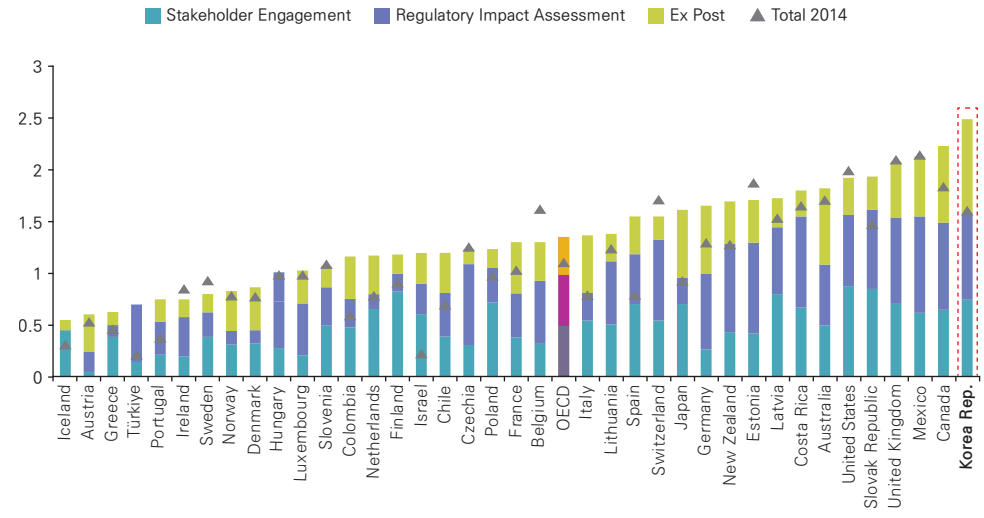
2) While evaluating the quality of policy across countries is inherently challenging, achieving a truly objective comparison is practically impossible. This is largely due to the limited availability of objective and quantifiable indicators for assessing policy formulation, implementation, and ex post evaluation. In addition, evaluation criteria may vary significantly depending on policy objectives and underlying value judgments. Against this backdrop, this report also draws on IMD survey results to assess the extent of policy and legislative support for strengthening ICT industrial competitiveness. Given the survey-based nature of this assessment, its interpretation requires greater caution than other analytical dimensions.

Figure 2-37 Composite Indicators: Transparency of Primary Laws, 2024



Source: OECD (2025).

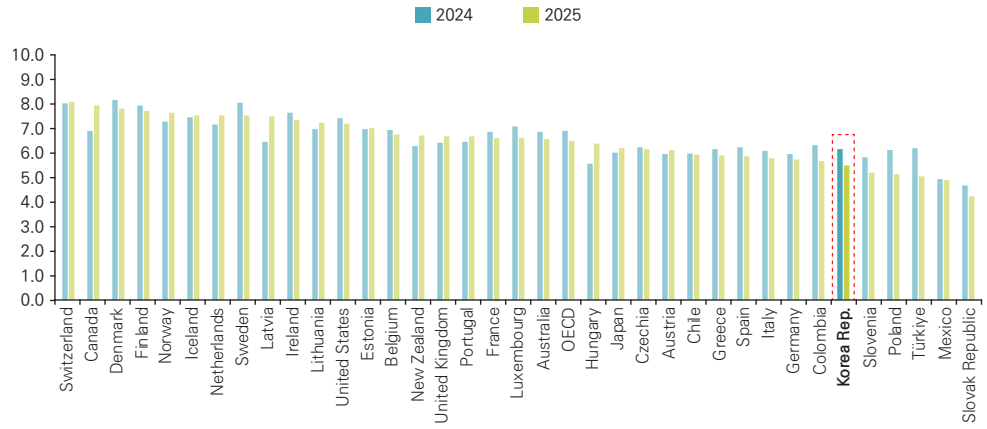
Figure 2-38 Composite Indicators: Transparency of Subordinate Regulations, 2024



Source: OECD (2025).

However, findings from the 2025 IMD survey indicate that market participants do not perceive Korea's ICT policy and regulatory environment as sufficiently industry-friendly. Survey indicators examining whether legal and regulatory frameworks support technological development and application, as well as whether laws adequately encourage innovation in science and technology, placed Korea in the lower-middle-ranking group—31st and 24th, respectively, among 36 OECD countries. Additionally, Korea ranked 31st out of 36 OECD countries in perceptions of the effective enforcement of intellectual property rights (IPR), reflecting limited satisfaction among market participants with the country's institutional foundation.

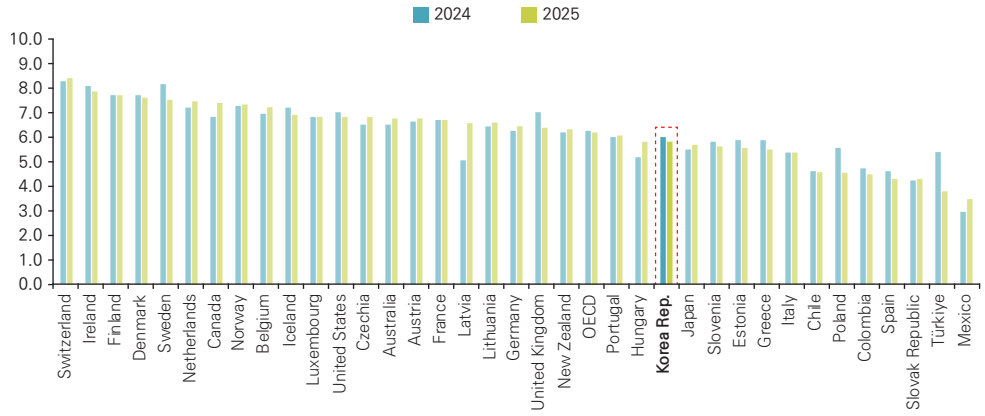
Figure 2-39 Development and Application of Technology, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (development and application of technology are supported by the legal environment)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

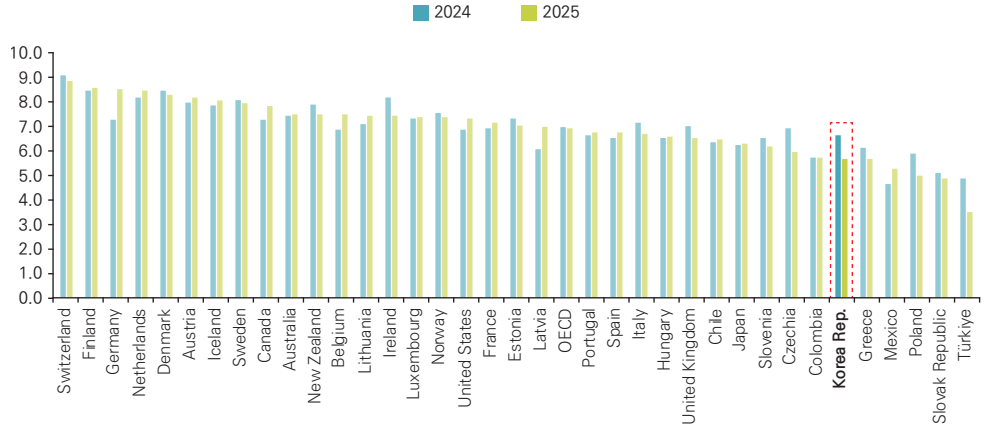
Figure 2-40 Scientific Research Legislation, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (laws relating to scientific research do encourage innovation)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

Figure 2-41 Intellectual Property Rights, 2024 and 2025



Note: IMD WCY Executive Opinion Survey based on an index from 0 to 10 (intellectual property rights are adequately enforced)

Source: Author's calculations based on IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ (accessed December 2025).

Part Ⅲ

Global AI Ecosystems and Policy Landscape in the Era of Real-World AI Integration[1)]

1. The Evolutionary Direction of AI

Artificial intelligence (AI) is rapidly transitioning beyond the age of generative AI built on large-scale foundation models toward a next-generation paradigm characterized by agentic AI and physical AI. As AI takes on the role of "agents" capable of completing business processes autonomously and evolves into "physical entities" that interact with hardware to perceive and control physical environments in real time, its influence is undergoing a fundamental expansion beyond the virtual domain into practically all aspects of real-world life.

At the core of this transition are AI agents—intelligent, long-running processes that reason, execute, and perform multi-step tasks on behalf of users. They can understand given goals, break tasks down into sub-tasks, interact with both humans and systems to execute those tasks, and adapt to changes in their environment in real time. Notable examples include Google's Project Mariner and Anthropic's Computer Use. These R&D initiatives illustrate how large language models (LLMs) are evolving toward the integration of external tools and environmental interaction to achieve specific goals.

Several key features define agentic AI. First, pre-built modules simplify development by offering selectable building blocks that contain predefined triggers and actions, such as workflow templates and data pattern recognition systems. Second, memory management enables AI agents to maintain context over extended tasks by storing past interactions, user preferences, and previous decisions. Third, multi-agent collaboration enables specialized agents to work together on large-scale projects under the coordination of an orchestrator that manages task distribution. Fourth, planning and reasoning capabilities allow agents to evaluate situations, set goals, and develop strategies that adjust to changing circumstances rather than merely following fixed instructions. Fifth, customized decision-making enables personalized interactions by analyzing user preferences and behavior patterns. Sixth, self-learning allows AI agents to learn from results and feedback, constantly refining their performance. Lastly, contextual awareness enables AI systems to process multiple information streams to understand the current context and priorities and respond appropriately. Taken together, these capabilities allow AI systems to act autonomously in a goal-oriented manner.

1) This part is primarily based on Lee, Kyoungsun et al. (2025).

AI is evolving into a technological paradigm that integrates with physical systems, enabling machines to directly perceive, reason about, and interact with the real world, thereby bridging the gap between digital computation and physical action. Accordingly, AI is poised to bring about transformative changes across trillion-dollar industries. The development of physical AI is being driven by the convergence of foundation models, advanced robotics, and physics-based simulation technologies.

Table 3-1 Core Operational Stages of Physical AI

Stage	Description
Embodiment	• Embedded in physical forms such as robots, autonomous vehicles, and smart devices, AI gains the ability to perform physical actions.
Perception	• Systems collect real-time environmental data through diverse sensor arrays, including cameras (for computer vision), LiDAR/Radar (for 3D mapping), IMUs (inertial measurement units for motion tracking), and diverse temperature and pressure sensors.
Decision-making / reasoning	• AI algorithms process fused sensor data to understand context, make predictions, and determine appropriate courses of action.
Action	• Actuators (motors, grippers, wheels, etc.) execute physical tasks determined by AI, enabling the system to manipulate objects or navigate environments.

Source: Lee Kyoungsun et al. (2025).

Compared with traditional AI (LLMs), physical AI differs fundamentally in how it processes information and generates outcomes. Traditional AI processes text and images from digital environments to produce digital outputs, whereas physical AI processes sensor data from the real world and generates physical actions. While traditional AI operates within discrete and structured digital environments, physical AI must navigate environments that are continuous, uncertain, and governed by the laws of physics. Addressing these challenges requires a comprehensive technology stack ranging from sensor hardware to AI models grounded in the physical world, including sensor fusion, edge computing to overcome latency constraints, and AI models with an inherent understanding of physical properties and dynamics.

Physical AI is sometimes confused with the concepts of robotics and autonomous driving. Traditional robotics refers to machines or rule-based systems designed to perform repetitive, pre-programmed tasks. Physical AI, by contrast, empowers such robots with intelligence, enabling them to perceive, reason, and adapt in real time—thereby transforming them into autonomous agents. Autonomous driving is one of the major

application domains of physical AI: the vehicle equipped with sensors and actuators acts as the “body,” and the AI model capable of environmental perception and vehicle control serves as the “brain.”

Currently, major application areas of physical AI include logistics and warehouse management, healthcare, manufacturing, and automobiles. In logistics and warehouse operations, autonomous mobile robots (AMRs) and intelligent forklifts are increasingly being deployed to optimize inventory management, order fulfillment, and cost savings in last-mile delivery. Amazon has already demonstrated significant supply-chain efficiency gains through AI-driven automation. Healthcare is also among the fastest-growing application domains. Robot-assisted surgical systems can enhance surgeons’ precision and reduce fatigue, while service robots deployed for patient monitoring, rehabilitation, and elderly care help address labor shortages and other challenges associated with aging societies. In manufacturing and the automotive industry, intelligent robots are expected to be deployed for assembly, quality control, and predictive maintenance, helping reduce cycle time and improve operational precision.

2. Global and Domestic AI Ecosystems: Current Landscape

2.1 International Landscape

■ United States

The U.S. AI ecosystem is built on an unparalleled structure that leads global AI innovation through the interaction of four powerful pillars: Big Tech giants, abundant venture capital (VC), world-class universities, and strategic government support.

First and foremost, the U.S. continues to consolidate its influence and control across the global AI ecosystem through industry leaders such as NVIDIA, Google, Microsoft, Meta, and Apple—companies that provide critical infrastructure for the AI ecosystem while driving research and commercialization for fundamental AI technologies. NVIDIA effectively dominates the GPU market, which is indispensable for AI model training, while Google (TPU), Amazon (AWS), and Microsoft (Azure) underpin global AI development with their massive cloud computing resources. In addition, companies like Google (Gemini), Meta (Llama), and Microsoft (through its partnership with OpenAI) are spearheading the race to develop the most advanced foundation models, pushing the boundaries of technology.

Second, the U.S. possesses the world's most dynamic system in which ideas are translated into technology and technology grows into viable businesses through VC, often referred to as "risk capital." As of 2024, the U.S. accounts for approximately 66% of global AI-related VC investment, leading the growing concentration of venture capital investment in AI. This investment culture reflects the characteristics of "patient capital," which tolerates failure and invests in innovation with a long-term perspective. Supported by this vibrant investment ecosystem, America is home to more than 1,000 AI unicorns (privately held companies valued at over USD 1 billion), including OpenAI, Anthropic, and Databricks. While Silicon Valley remains the epicenter of innovation, new hubs are also emerging in cities like New York. These companies play a vital role in energizing the ecosystem by either advancing the technological frontiers opened by Big Tech firms or creating entirely new markets.

Third, world-leading universities, including Stanford, MIT, Carnegie Mellon, and UC Berkeley, function as the "brain" of the U.S. AI ecosystem. These institutions attract the brightest minds from across the globe and train them as AI researchers and developers. Graduates are subsequently absorbed into Big Tech firms or startups as key personnel or launch their own ventures, reinforcing a virtuous cycle of innovation. The foundational technologies of AI, including deep learning, were born in these university labs, where academic publications and open-source research provide the essential nourishment from which the industry continues to draw new ideas and advance technologies.

Fourth, the U.S. government supports the AI ecosystem primarily by fostering private-sector innovation and strengthening national security and competitiveness, rather than through direct market intervention. Institutions like the National Science Foundation (NSF) and the Defense Advanced Research Projects Agency (DARPA) fund basic research and high-risk, high-reward projects at universities and research institutes from a long-term perspective, laying the groundwork for future breakthroughs. Simultaneously, the government focuses on creating an enabling “playing field” where private enterprises can thrive by easing regulations, promoting infrastructure investment, and leading international standardization efforts. This approach aims to cultivate a business-friendly environment and thus strengthen U.S. leadership in AI.

■ China

The Chinese AI ecosystem is evolving rapidly, driven by AI-focused Big Tech giants such as Alibaba, Baidu, Tencent, and Huawei, which have built their own ecosystems while simultaneously pursuing collaborative efforts to establish a robust domestic AI ecosystem by leveraging their respective competitive strengths. Notably, following the success of the DeepSeek R1 engine, China has been advancing both large-scale foundation models and lightweight model innovations in parallel. At the same time, the country has been revitalizing its domestic open-source ecosystem through platforms such as Gitee while actively increasing its participation in the global open-source community to accelerate the international adoption of Chinese-developed models.

From the perspective of AI technology stack, the Chinese ecosystem is being driven by a mixture of Big Tech firms and startups across different layers: semiconductor chips led by Huawei; machine learning frameworks by Huawei and Baidu; and AI models by Alibaba and various startups.

In the semiconductor industry, China has pivoted toward domestic development due to stringent U.S. and allied export controls on cutting-edge GPUs and manufacturing equipment. As noted above, this vulnerability has prompted massive state investment in domestic semiconductor capabilities, with Huawei and China's largest foundry, SMIC, playing a central role in this industry.

In machine learning frameworks, where the global ecosystem relies heavily on open-source software, China's strategy involves nurturing domestic alternatives while actively engaging with the global open-source community. Through this dual approach, China seeks to accelerate technological development and promote the global diffusion of Chinese-developed code, thereby securing leadership in this field.

In the domain of LLMs and applications, major Chinese Big Tech firms and startups are demonstrating rapid progress, bolstered by growth in both China's domestic software ecosystem and the broader global open-source ecosystem. Established tech giants such as Baidu, Alibaba, and Tencent are working to build comprehensive full-stack AI capabilities by not only advancing their own strategies but also promoting rapid industrial applications within the domestic ecosystem.

Furthermore, these companies are integrating LLMs across their entire service portfolios—including chatbots, search engines, voice assistants, and autonomous driving systems. They also share a common strategy of opening or open-sourcing their AI platforms to build collaborative ecosystems with external developers.

In the meantime, startups such as DeepSeek, Moonshot AI, and Zhipu AI are betting on innovative model architectures and open-source strategies as their primary competitive edges. As they grow through strategic partnerships or investments from large corporations, they are emerging as key drivers in broadening the reach of the AI ecosystem and accelerating innovation.

■ European Union

Currently, the EU's AI ecosystem remains heavily dependent on American companies for critical components. For example, European chipmakers lack a competitive advantage strong enough to compete directly with market leaders like NVIDIA in the field of AI accelerators, while Europe's reliance on U.S. cloud service providers—specifically Google, Amazon, and Microsoft—has been gradually increasing. Moreover, a significant share of cutting-edge LLM development still depends on U.S.-based models such as those developed by OpenAI or relies heavily on non-European sources for investment. Together, AWS, Google, and Microsoft account for a 70% share of the European cloud market, compared to a mere 15% for all European cloud providers combined (ITdaily, 2025).[2)]

Against this backdrop, the EU is undertaking multifaceted efforts to reduce these dependencies and build its own full-stack AI capabilities. At the heart of these efforts is the development of multilingual LLMs that respect Europe's linguistic and cultural diversity, along with initiatives to develop homegrown LLMs led particularly by France. The EU also seeks to lower its reliance on U.S. infrastructure by increasing the use of European cloud platforms during the LLM development process. Whereas such efforts in China are largely driven by domestic companies, initiatives in Europe often take the form of projects led by government-affiliated research institutions. For instance, the OpenEuroLLM project is developing a robust multilingual foundation model for all European official languages as well as socially and economically important ones. In Switzerland—although not an EU member—ETH Zurich and EPFL are collaborating to release a multilingual LLM trained on public infrastructure. Leading European AI companies have also gained recognition for developing open-source LLMs and frameworks. Notable examples include France's Mistral AI and Hugging Face, which was founded by European entrepreneurs, though headquartered in New York. Their efforts represent a key pillar in the development of a European full-stack AI ecosystem.

In the area of AI chips and hardware, Europe is home to world-class semiconductor firms such as ASML, Infineon, and STMicroelectronics. However, European firms have yet to emerge as direct competitors to market leaders like NVIDIA in the AI accelerator segment. Nevertheless, an increasing number of European startups, such as SiPearl (France), Fractile (UK), Axelera AI (Netherlands), Semron (Germany), and GreenWaves Technologies (France), are actively participating in AI chip development. As part of

2) ITdaily (July 3, 2025)

Europe's efforts to build hardware capabilities within the region, plans are underway to construct a large-scale AI campus near Paris, combining NVIDIA's GPU technology with European infrastructure and financial support.

2.2 Korea

The Korean AI ecosystem combines globally competitive hardware capabilities, led by semiconductor giants such as Samsung Electronics and SK hynix, with service development capabilities driven by major ICT firms, including Naver and Kakao. Korea possesses domestic companies with end-to-end technological capabilities across the hardware and software stack, maintaining world-leading competitiveness, particularly in AI semiconductors. Key players in the ecosystem include hardware leaders such as Samsung Electronics (AI semiconductors and on-device AI) and SK hynix (AI memory such as HBM), as well as platform companies such as Naver (HyperCLOVA X) and Kakao (KoGPT). Together with these platforms, three major telecommunications carriers—KT, SK Telecom, and LG U+—are spearheading the development of proprietary LLMs and the widespread adoption of AI services. The ecosystem is also supported by several structural strengths, including advanced ICT infrastructure, strong human capital fostered by a highly education-oriented society, and robust government support.

Looking at specific technological domains, the open-source landscape has seen foundation model performance converge toward consistently higher levels as training recipes for leading models become more widely shared. Notably, Chinese open-source models have reached performance levels comparable to those of global Big Tech firms in terms of reasoning capabilities. In Korea, several initiatives have emerged that adopt and further refine these open-source frameworks to develop domestic foundation models. Major Korean open-source LLM models are summarized in the following table:

Table 3-2 Key Korean Open-Source LLMs

Model	Key features
NAVER: HyperCLOVAX-SEED-Think-14B	• Release: July 2025 • Supports reasoning and tool calling for agentic capabilities • The released model is a "student model," distilled from a proprietary hyperscale "teacher model." • Outperforms Alibaba's Qwen3-14B—a model of similar scale (14 billion parameters)—on Korean benchmarks with lower training costs
SKT: A.X-4.0	• Release: July 2025 • Supports tool-calling capability • Built through continual training on large-scale Korean corpora, starting from Alibaba's Qwen2.5 model. Delivers strong performance on Korean benchmarks • The released model is a 72B-parameter version, the largest among Korean open-source LLMs.
KT: Mi:dm 2.0	• Release: July 2025 • Supports reasoning and tool-calling capability • Unlike SKT, KT trained this model from scratch while maintaining Meta's Llama architecture. • Employed depth up-scaling to optimize training on limited infrastructure, scaling from an initial 8B model to 11.5B parameters. • Subsequently released a 2.3B distilled lightweight version.
Kakao: kanana-1.5-8B	• Supports reasoning and tool-calling capability • Based on Meta's Llama architecture • Employed depth up-scaling to derive a 32.5B model from an initial 26.8B version
LG AI Institute: EXAONE-4.0-32B	• Release: July 2025 • Unified reasoning/non-reasoning model with tool-calling capability • Built on its own proprietary architecture optimized at a 32B scale

Note: Company websites and press reports

Source: Lee Kyoungsun et al. (2025).

Next, in the physical AI domain, Korea's major conglomerates have been reshaping the ecosystem by increasing strategic investments in robotics companies. This shift reflects a broader strategic move toward conglomerate-led integration across the physical AI spectrum—from humanoids and service robots to mobility robots. As Korea's leading industrial robotics company, HD Hyundai Robotics offers a full lineup of manufacturing robots, including articulated robots for material handling, machining, and welding as well as flat-panel display (FPD) robots for display production. The company also delivers comprehensive solutions covering factory automation, engineering, commissioning, and after-sales services, while recently extending its portfolio into autonomous mobile service robots.

Samsung Electronics is also accelerating its robotics road map. Following its move to become the largest shareholder of Rainbow Robotics[3] in December 2024, Samsung plans to deploy collaborative robots (cobots), dual-arm mobile manipulators, and AMRs in manufacturing and logistics automation. This initiative was further solidified in August 2025 with the establishment of the InnoX Lab, dedicated to facilitating physical AI-enabled manufacturing automation. Similarly, Hyundai Motor Group is focused on creating a complete robotics value chain through its acquisition of Boston Dynamics, with the ultimate goal of building an end-to-end ecosystem ranging from robot component manufacturing to smart logistics and factory automation solutions. In the cobot market, Doosan Robotics remains a dominant force. As of 2023, the company ranked fourth globally (excluding China) with an approximately 5.4% market share. Notably, Doosan dominates the high-payload (20 kg+) cobot segment with an approximately 72% share, driving the adoption of physical AI in manufacturing and logistics environments. Meanwhile, LG Electronics has been commercializing a range of service robots under its CLOi brand. Designed for various roles, including guiding, delivery, advertising, and security, ServeBots and GuideBots are deployed in hotels, hospitals, cafes, and museums. CLOi ServeBot, for instance, is an autonomous, door-type service robot designed to safely deliver food and supplies in hospitality and healthcare settings.

Beyond these large companies, Korean SMEs specializing in AI, such as MAUM.AI, are actively contributing across the physical AI technology stack. A significant milestone was reached on October 1, 2025, with the launch of the Korea Physical AI Association. Established under the leadership of MAUM.AI, the association brings together a broad range of industry players to lead the advancement of Korea's physical AI industry.

3) Rainbow Robotics is a robotics company specializing in bipedal humanoids and collaborative robots, rooted in the KAIST-developed HUBO series. At the end of 2024, Samsung Electronics became the company's largest shareholder by increasing its stake to 35.0% (Samsung Newsroom, Dec 31, 2024).

Table 3-3 Development Trends in Physical AI Services by Korean Companies

Company	Products/Services	Core strategy and key features
HD Hyundai Robotics[4]	Industrial articulated robots (handling, machining, welding), FPD robots, cobots, mobile service robots	• Korea's leading industrial robotics and factory automation (FA) company • Offers turnkey solutions spanning the entire automation process (engineering–installation–commissioning–servicing) • Plans to extend its portfolio into service and mobile robots
Doosan Robotics[5]	Cobots (M, H, P series), high-payload palletizing cobot (P3020)	• The world's fourth-largest collaborative robot maker with a 5.4% global market share excluding China • Holds a roughly 72% share of the high-payload palletizing cobot segment
Rainbow Robotics[6][7]	Humanoid robots (HUBO2, DRC-HUBO), giant humanoid robots (FX-2), cobots (RB series), quadruped robots (RBQ series)	• Collaborating with Samsung on next-generation humanoids and manufacturing robots following Samsung's acquisition of a controlling stake • Positioned as a strategic partner in Samsung's robotics strategy through the establishment of the Future Robotics Office
LG Electronics[8][9]	Service robot brand LG CLOi series – ServeBot (delivery/serving), GuideBot (guiding/advertising/security), BaristaBot	• Deployed in hotels, hospitals, libraries, and shopping malls for guidance, delivery, advertising, and security services • Recently unveiled GuideBot powered by Google's generative AI, Gemini
Hyundai Motor Group[10]	Boston Dynamics's robots (Spot, Stretch, and future Atlas-series humanoid), proprietary service robots (e.g., DAL-e)	• Piloted Spot and Stretch in factory inspection, logistics, and construction sites and constructed a robot production base in the U.S. after the acquisition of Boston Dynamics • Demonstrating robot-human collaboration models through the DAL-e Delivery service robot across mobility, construction, logistics, and service environments

Note: Company websites and press reports

Source: Lee Kyoungsun et al. (2025).

4) https://www.hd.com/en/business/machine/hyundai-robotics/contents.

5) The Korea Economic Daily Global Edition (September 12, 2025).

6) https://www.rainbow-robotics.com.

7) Samsung Newsroom (December 31, 2024).

8) The Korea Economic Daily Global Edition (July 1, 2024).

9) LG Electronics (June 24, 2024).

10) https://www.hyundai.com/worldwide/en/brand-journal/mobility-solution/hyundai-boston-dynamics.

3. Global and Domestic AI Policies: Current Landscape

3.1 International Landscape

■ United States

The U.S. views AI as a core element of national security and is focused on solidifying its global leadership while maintaining a strategic advantage in the competition with China over AI technologies. This policy stance has become even more pronounced since the inauguration of the second Trump administration. In a departure from the Biden administration, which emphasized AI safety and trustworthiness, alongside market-driven innovation, the Trump administration has placed greater emphasis on accelerating the pace of AI technological development and easing regulations to ensure that American companies maintain a dominant lead in AI model development and deployment.

The U.S. government's AI policy has consistently pursued the overarching goal of "maintaining global leadership," though its approaches have shifted across administrations. While the previous administration emphasized controlling potential risks and establishing ethical norms, the current administration has pivoted toward maximizing private-sector innovation and strengthening market dominance through deregulation and infrastructure expansion. This shift reflects a strategic decision to accelerate the pace of AI development amid the intensifying US-China race for technological leadership.

To safeguard its overwhelming dominance in the AI industry, the U.S. has deployed a range of powerful trade policies against China. First, export controls constitute the most powerful tool in U.S. trade policy—a high-intensity strategy directly targeting the supply chain of advanced semiconductors, which functions as the "engine" of China's AI development. Second, the country employs tariffs and trade blacklists as key instruments. Rather than dealing a direct blow like export controls, tariffs add pressure across the Chinese technology ecosystem while protecting domestic industries. Third, the U.S. has introduced restrictions on outbound investment aimed at preventing American capital and technology from contributing to China's AI development. Through executive orders on outbound investment screening, the government prohibits or restricts American businesses and investors from taking equity stakes in Chinese companies operating in advanced technology industries such as AI, quantum computing, and semiconductors.

At the same time, the American government is consolidating its AI technology leadership through a "two-track" strategy that combines direct R&D funding with industrial policies that incentivize private investment. US government investment in AI is anchored on three major strategic pillars: First, the National AI Initiative Act (2020) lays a long-term, government-wide foundation to accelerate AI research, increasing access to national AI resources, fostering a skilled workforce, and building a trustworthy AI ecosystem. Next, the CHIPS and Science Act (2022) is a landmark industrial promotion law, authorizing roughly $280 billion over the next decade for research into advanced technologies, including semiconductors, AI, and quantum computing. It aims to strengthen the computing power and hardware infrastructure required for AI research at the national level. Lastly, America's AI Action Plan (2025) prioritizes maintaining and reinforcing U.S. global dominance in AI. Beyond direct funding, the plan seeks to maximize private investment by mitigating regulatory barriers, such as streamlining permit procedures for data center construction, and accelerating the buildup of AI infrastructure.

■ China

China's AI policy framework traces back to the Made in China 2025 initiative and the Internet Plus strategy announced in 2015. Made in China 2025 aims to upgrade the industrial structure of the manufacturing sector through intelligentization, digitalization, and networked integration. Meanwhile, the Internet Plus strategy sets out a policy direction aimed at generating new growth engines by integrating information technologies—including the Internet, big data analytics, cloud computing, and AI—with conventional industries. Together, the two policies seek to secure China's global leadership by advancing the country's digital transformation and strengthening domestic capabilities in enabling technologies such as telecommunications networks, semiconductors, cloud platforms, and digital infrastructure.

In 2017, China declared its long-term AI ambitions through the New Generation Artificial Intelligence Development Plan, which set out a three-stage roadmap: achieving world-class AI capabilities by 2020, becoming a leading country by 2025, and securing global AI leadership by 2030. Since the announcement of this plan, China has sought to enhance its AI capabilities, achieve technological self-reliance, and build a robust domestic ecosystem across the board in response to intensifying technological competition with the U.S.

The government work report submitted in March 2024 formally introduced the AI Plus (AI+) initiative, with the objective of achieving the qualitative improvement of productivity through the digital transformation of manufacturing and the active development, opening, and circulation of data. The initiative underscores China's commitment to fostering an independent, domestically-driven AI industry, with key priorities including the localization of AI computing platforms, the improvement of operational efficiency, the strengthening of the industrial competitiveness of China's domestic GPU ecosystem, and the acceleration of AI diffusion across industrial settings.[11] In August 2025, the State Council approved the Opinions on Deeply Implementing the AI+ Action Plan.[12] Emphasizing large-scale industrial applications, this policy recognizes that China's vast domestic market and diverse industrial sectors provide structural advantages by enabling the generation of large-scale datasets for AI model training and facilitating the rapid diffusion of technological innovation.

In particular, semiconductors—the backbone of AI infrastructure—have become a key focus of national support, as the industry is both capital-intensive and directly affected by U.S. export controls. While software frameworks are largely led by major Big Tech firms such as Baidu, the AI model and application layers are expanding rapidly through dynamic private-sector participation, contributing to the rapid expansion of the Chinese AI ecosystem.

Meanwhile, local governments are also actively promoting the development of the AI ecosystem through a range of policy support measures. For example, the Beijing municipal government provides subsidies for companies that purchase domestically controlled GPU chips for "intelligent computing services based on a certain percentage of their investment."[13] Other major cities, including Shanghai, Hangzhou, Shenzhen, and Chengdu have also introduced similar policies, offering comprehensive subsidy packages that include support for AI cloud infrastructure, data collection, and model development.[14]

11) Yoo, Jaeheung (July 30, 2024).
12) Xinhua News Agency (August 1, 2025).
13) Reuters (April 26, 2024).
14) Yonhap News Agency (July 29, 2025).

■ Europe

The European Union's overarching vision for artificial intelligence is articulated as a commitment to "becoming a global AI hub" while ensuring that AI development remains human-centric and trustworthy. This dual-track strategy—emphasizing both technological leadership and ethical governance—is a defining characteristic that differentiates the EU from other global AI powerhouses.

This strategic approach has translated into concrete policy measures and actions, building upon foundational initiatives such as the AI Package announced in April 2021. This package included a Communication outlining Europe's approach to AI, a comprehensive review of the Coordinated Plan on AI (developed jointly with EU member states) and a proposal for a groundbreaking AI regulatory framework, accompanied by relevant impact assessments.

To further reinforce this vision, the AI Continent Action Plan, announced in April 2025, aims to position Europe as a global leader in the AI landscape. At the heart of the plan is the development of trustworthy AI technologies that safeguard and advance democratic values while enhancing Europe's competitiveness across the board.

The EU has identified technological sovereignty in AI as a primary policy objective. With the implementation of the AI Act in 2024, the EU is moving beyond a purely regulatory approach toward a comprehensive strategy aimed at building a self-reliant and competitive AI ecosystem. In particular, efforts are ongoing across the entire technology stack to reduce the EU's heavy reliance on U.S.-based companies within its AI ecosystem.

The EU's AI investment strategy is structured around a comprehensive framework that identifies key priority areas, including strategic investment in AI, the promotion of strong collaboration between research institutions and private enterprises, measures to attract and retain skilled talent, the clarification and facilitation of data protection and sharing frameworks, the establishment of clear ethical guidelines for AI development, and the resolution of security challenges associated with AI.

The principal financial instruments driving these investments are existing R&D programs such as Horizon Europe and Digital Europe. The Digital Europe Programme (2021-2027) allocates more than EUR 8.1 billion to strategically support core capability

areas, including supercomputing, AI, cybersecurity, and advanced digital skills. Between 2021 and 2024, this program committed more than EUR 1 billion to AI development and deployment. Significant funding is also available for AI development and deployment through other initiatives such as the AI Innovation Package, Recovery and Resilience Facility (RRF), and GenAI4EU.

The EU's AI investment strategy extends beyond funding theoretical research projects. Instead, it strongly emphasizes building the physical and digital infrastructure required for large-scale AI development and training. To enhance competitiveness, the EU is also working to expand its data infrastructure—currently lagging behind China—and to directly tackle with the pervasive issues of "fragmentation and insufficient scale" in Europe's innovation landscape.

3.2 Korea

Driven by a strong commitment to leveraging AI as a core engine for national growth, the Korean government is pursuing across-the-board policies to strengthen AI industrial competitiveness and enable a nationwide AI transformation (AX), with the ultimate goal of becoming one of the world's top-3 AI powers ("AI G3"). This policy stance is clearly articulated in the national policy agenda announced by the incumbent administration in September 2025. Under this framework, three overarching strategic objectives have been established for AI: technological sovereignty, technology-driven growth, and AI for All, with corresponding national tasks assigned under each objective.

Table 3-4 Policy Tasks under Korea's National Policy Objectives

Objective	Key policy tasks
Technological sovereignty	① Build an AI Highway to make Korea one of the world's Top 3 AI powerhouses • (Computing infrastructure) Secure GPUs and foster a private-sector AI Data Center (AIDC) ecosystem • (Network) Commercialize 6G and expand intelligent base stations for real-time, ultra-precision AI services • (Data) Establish integrated platforms for public and private AI training data, data spaces, and statistical metadata • (Control tower) Strengthen the role of the National AI Committee as a de-facto control tower
Technological sovereignty	② Support the development of proprietary AI models • Provide concentrated support for elite AI teams through GPU resources, data access, and talent nurturing to develop globally-competitive proprietary models ③ Establish an AI semiconductor ecosystem • Support R&D for NPU and PIM, expand testbeds for domestic NPU+AI service packages, and provide timely support for commercialization
Technology-driven growth	① Cultivate core and convergence talent • Establish AI-focused universities and AI colleges within institutes of science and technology; run fast-track programs between undergraduate and graduate schools; and secure top domestic and global talent • Expand innovation academies and establish AX graduate schools to train AI talent who can meet diverse industrial demands ② Secure next-generation foundational AI technologies with the potential to reshape future AI • Foster national AI research institutes to undertake breakthrough AI research ③ Establish an AI semiconductor ecosystem • Support R&D for NPU and PIM, expand testbeds for domestic NPU+AI service packages, and provide timely support for commercialization ④ Accelerate the adoption of Physical AI • Secure core technologies and accelerate deployment in factories, robots, autonomous vehicles, and autonomous ships ⑤ Expand venture investment and implement the "Next Unicorn" Project • Support AI startups and scale-ups through the AI Innovation Fund, Growth Ladder Fund, and overseas expansion programs • Implement the Next Unicorn Project
AI for All	① Construct the foundation for "AI for All" • Enhance public access to AI through foundation models and promote AX across the public, economic, and social sectors • Develop AI learning platforms and campaigns to enable citizens to develop and experience AI services ② Promote industrial AX • Support AI factory transitions for manufacturing, AI voucher programs for SMEs, and AI adoption in the service sector ③ Promote regional AI transformation • Establish regional AI innovation hubs as AX bases for regionally specialized industries and create AX demonstration industrial complexes

Objective	Key Policy Tasks
AI for All	④ Advance public AI, K-AI Cities, and an AI-enabled society • Execute 30 core tasks for an AI-driven government and initiate AI projects designed to drive comprehensive reforms across social systems • Create cross-government common AI infrastructure and enhance AI competency for all civil servants • Create a public AI market, open public data, and ensure the safety and reliability of public AI deployment • Develop and expand AI-specialized pilot cities (K-AI Cities) serving as living labs for real-world validation • Establish global AI consortiums, joint AI funds, and AI-specialized zones involving multiple countries ⑤ Ensure safety and trust • Develop core technologies to counter AI misuse, ensure digital security and safety, and establish a robust privacy protection system

Source: Lee Kyoungsun et al. (2025).

In line with these priorities, the AI budget has been significantly increased, with a particular focus on R&D, large-scale infrastructure development, and industrial development and talent cultivation. First, AI R&D will concentrate on strengthening independent capabilities across the entire AI ecosystem and advancing full-stack R&D, including initiatives related to artificial general intelligence (AGI), lightweight AI models, and AI-driven socio-economic transformation. Next, Korea plans to initiate large-scale investment projects to build AI infrastructure and promote industrial applications. To secure high-performance computing resources required for AI training and research, the government will establish a national AI computing center valued at up to KRW 2 trillion, through public-private investment partnerships. Also, led by the Ministry of Trade, Industry and Energy (MOTIE), approximately KRW 480 billion[15] will be invested in 2025 to support the development and diffusion of industrial AI and thereby accelerate AI transformation across industries. Finally, investment is also being directed toward securing talent and establishing a legal foundation for AI innovation. To strengthen the pipeline of science and engineering talent, the government is expanding programs such as “Brain to Korea” to attract world-class talent.

15) Ministry of Trade, Industry and Resource (MOTIE) (August 28, 2025).

Conclusion

The year 2026 will be a period of "opportunities and constraints." While the widespread adoption of AI technologies across industries will serve as a core engine for growth in the ICT sector, rising tariffs and protectionist policies—particularly from the United States—will pose significant constraints. Additionally, shifts in the international trade environment and growing supply chain risks will emerge as determining factors shaping the mid-to-long-term growth of the sector. Against this backdrop, a strategic national approach is required to minimize these constraints while maximizing growth drivers. To this end, policy efforts should focus on: first, diversifying export markets and product portfolios; second, strengthening upstream segments of the supply chain from an economic security perspective; third, raising the predictability of the global trade environment and establishing effective buffering mechanisms; fourth, implementing fast-track measures and fostering talent development to expand the AI infrastructure; and fifth, concentrating R&D investment in strategic technologies alongside the development of a robust data ecosystem.

Furthermore, to secure the structural competitiveness of the ICT sector amid intensifying global competition for supremacy, it is imperative to create an ecosystem capable of driving qualitative growth. This begins with expanding Korea's established hardware prowess into the ICT services sector, which requires a shift from the current hardware-centric R&D and export structure. To support this transition, industry-academia-research collaboration models must be solidified to foster a virtuous cycle of innovation in which innovative ideas are rapidly translated into industrial applications. Concurrently, improvements in financial systems and the entrepreneurial environment are required to facilitate the early market entry of AI-based startups. On top of that, a practical and enabling environment must be created to systematically nurture and retain highly skilled talent, which lies at the core of global technological competition. This requires not only reforming the education system for talent development but also introducing exceptional incentives and improving the research environment to attract top-tier talent from abroad while preventing brain drain. Moreover, communications infrastructure—the nervous system of the AI ecosystem—should be upgraded with next-generation technologies and reliably deployed across both industrial sites and everyday life. Simultaneously, efforts must be made to strengthen ICT capabilities across the board at both individual and business levels to ensure the effective utilization of such infrastructure resources. Given the transformative impact of AI, accelerating "AI transformation (AX)" across society and industry is crucial to elevating

it into a core driver of national development. Lastly, user evaluations remain lower than indicated by international benchmark comparisons, underscoring the need for more effective policies and regulatory innovation that can be tangibly felt by stakeholders on the ground.

Finally, to secure AI competitiveness, which has emerged as the bedrock of national competitiveness, it is critical to concentrate resources on core technological domains where Korea holds a competitive advantage. In this regard, the objective of AI sovereignty should not be framed as pursuing the ideal of a fully self-sufficient ecosystem, but rather attaining "minimum dependency and maximum competitiveness," thereby securing strategic autonomy in key technological domains so as to withstand external pressures. Also, to drive economic growth in the era of AI as an industry, Korea must proactively seize strategic choke points within the AI value chain. This requires the development of phased roadmaps, full-stack collaboration models, and support for end-to-end demonstration. These are essential to strengthening the competitiveness of AI as an industry and therefore call for government support. In the current AI ecosystem, it is increasingly difficult for individual enterprises to achieve competitiveness or secure entry into global value chains on their own. Therefore, the government should provide comprehensive, cross-cutting support to help Korean companies enter these chains as core nodes through the formation of corporate alliances and industry-academia-research consortiums for collective response. In the same vein, efforts should be made to achieve regional specialization by strengthening global marketability and leadership. To ensure that AI technology translates into global leadership, the government should support market creation and the development of references through the public sector. Finally, to prevent the next-generation AI ecosystem from being monopolized by certain companies or nations, Korea must actively participate in the establishment of international standards and norms, while promoting global cooperation at the national level to foster an open and inclusive AI ecosystem.

References

〈**Korean**〉

ITdaily (July 3, 2025). “European Cloud Providers See Revenue Growth, but not Market Share”, https://itdaily.com/news/cloud/market-share-european-providers-no-growth/.

KISTEP (2025). 2023 *Publications and Citations of Korean Science and Technology*, KISTEP Brief, https://www.kistep.re.kr/board.es?mid=a10306010000&bid=0031&list_no=94238&act=view.

KMCC (2025). *Broadcasting Industry Survey Report for 2025*, https://www.mediastat.or.kr/kor/board/BoardList.html?rootId=2010002&searchType=subject&srcContDate=SEARCH&pageIndex=1&board_class=BOARD21&menuId=2010118&lastIndex=24&srcContClass=RPT0004.

KMCC (November 24, 2025). “Pay-TV Subscribers Reach 36.23 Million in H1 2025: Market Share Results for IPTV, SO, and Other Platforms”, Press Release, https://www.kmcc.go.kr/user.do?mode=view&page=A05030000&dc=K00000200&boardId=1113&boardSeq=67717.

Lee, Jaeyoung et al. (2005). *ICT Industry Long-Term Forecasts (2026-2030) and the Strategy*, Korea Information Society Development Institute, https://www.kisdi.re.kr/report/view.do?key=m2101113024770&masterId=3934580&arrMasterId=3934580&artId=1943576.

Lee, Kyoungsun et al. (2025). *Research on Enhancing AI Technological Sovereignty and National Competitiveness*, Korea Information Society Development Institute, https://www.kisdi.re.kr/report/view.do?key=m2101113024153&masterId=3934560&arrMasterId=3934560&artId=1936576.

LG Electronics (June 24, 2024). “LG Electronics LG Introduces AI-Powered CLOi ServeBot for Hospitality and Healthcare”, Press Release, https://www.lgcorp.com/media/release/27812.

Ministry of Trade, Industry and Energy (Aug 28, 2025). “Investment of KRW 480 billion in Industrial AI development and expansion in 2025”, Press Release, https//eiec.kdi.re.kr/policy/materialView.do\?num=267085.

MSIT, KAIT, and KEA. *Survey on Key ICT Product Trends*, monthly issues,www.gokea.org/core/?page=1&cid=100&wrd=&field=subject&cate1=ICT주요품목동향조사.

MSIT. *Wired Communications Services Statistics*, yearly issues, https://www.msit.go.kr/bbs/list.do?sCode=user&mPid= 74&mId=99.

MSIT. *Wireless Communications Services Statistics*, yearly issues, https://www.msit.go.kr/bbs/list.do?sCode= user&mPid=74&mId=99.

Office for Government Policy Coordination (November 2024). "2024 OECD Regulatory Policy Outlook: South Korea's Regulatory Policy Rated as World-Class", Press Release, https://www.korea.kr/briefing/pressReleaseView.do?newsId=156661982.

Samsung Newsroom (December 31, 2024). "Samsung Electronics To Become Largest Shareholder in Rainbow Robotics Accelerating Future Robot Development", https://news.samsung.com/global/samsung-electronics-to-become-largest-shareholder-in-rainbow-robotics-accelerating-future-robot-development.

The Korea Economic Daily Global Edition (July 1, 2024). "LG unveils Google's generative AI- powered robot CLOi", https://www.kedglobal.com/artificial-intelligence/newsView/ked202406270007.

The Korea Economic Daily Global Edition (September 12, 2025). "Doosan Robotics aims to draw $ 256 mn in IPO subscriptions", https://www.kedglobal.com/robotics/newsView/ked202309110020.

Yonhap News Agency (July 29, 2025). Shanghai to Provide 200 Billion Won in Subsidies to Foster the AI Industry", https://www.yna.co.kr/view/AKR20250729144300009.

Yoo, Jaeheung (July 30, 2024). *China's "AI+" Action Plan and Industry Trends Observed through the World Artificial Intelligence Conference (WAIC)*, CSF Expert Opinion, Korea Institute for International Economic Policy (KIEP), https://csf.kiep.go.kr/issueInfoView.es?article_id=54576&mid=a20200000000&board_id=4.

〈Overseas〉

CBInsights (July 30, 2024)."State of AI Q2'24 Report", https://www.cbinsights.com/research/report/ai-trends-q2-2024/?utm_source=chatgpt.com.

IMD. IMD World Competitiveness Online (database), https://worldcompetitiveness.imd.org/customsearch/KR/wcy/ .

ITU. World Telecommunication/ICT Indicators Database, https://datahub.itu.int/.

OECD (2025). *OECD Regulatory Policy Outlook 2025*, https://www.oecd.org/en/publications/oecd-regulatory-policy-outlook-2025_56b60e39-en.html.

OECD. Main Science and Technology Indicators (database), https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB.

Reuters (April 26, 2024). "Beijing city to subsidise domestic AI chips, targets self-reliance by 2027", https://www.reuters.com/technology/beijing-city-subsidise-domestic-ai-chips-targets-self-reliance-by-2027-2024-04-26/?utm_source=chatgpt.com.

UNCTAD. Information Economy (database), https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx.

Xinhua News Agency (August 1, 2025). “Interpreting the State Council Executive Meeting: China Deploys Measures to Deeply Implement the AI Plus Action”, http://www.news.cn/government/20250801/11ed8b53dfcb4e5a98c1ea47736b4af8/c.html.

About the Korea Information Society Development Institute

The Korea Information Society Development Institute (KISDI) is a government-affiliated institute established in February 1985, with an aim of developing communications environment by building communications infrastructure as well as modernizing the industry in the ICT wasteland. By collecting, surveying, and researching a variety of data and information about ICT policy, regulation, and business in and out of Korea, KISDI has made a great contribution to the establishment of national ICT policy and, furthermore, the development of national economy.

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