POLICY PAPER

Jiyeun Chang

# The Lee Jae-myung Administration's Artificial Intelligence Promotion Policy





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## Changes and Opportunities in Industries and Occupations, and Policy Challenges

Ji-yeon Jang (Korea Labor Institute)

**<Summary>**

**Current Status**

- South Korea shows a significant gap with the United States and China in the development of core artificial intelligence (AI) technologies. While in 2024, the United States developed forty "notable AI models," and China developed fifteen, South Korea had only one. Private AI investment in South Korea amounts to USD 1.3 billion, which is approximately one-eightieth of that of the United States and one-seventh of China.

- Looking at the adoption of AI in industrial settings, 51.8% of domestic workers have used generative AI for work purposes, approximately twice the rate of workers in the United States (26.5%). In the OECD Digital Economy Outlook, South Korea ranked first among OECD member countries with a 28% AI adoption rate among companies with ten or more employees.

- In South Korea, 15.9% of all employed people have potential for augmentation through the use of generative AI, while 9.8% have automation potential.

**Policy**

- AI policy is being positioned as the first strategy to realize a so-called innovation economy, one of the incumbent government's five national policy objectives. The innovation economy consists of four major categories: establishment of AI infrastructure, AI education and AI transformation across all industries, implementation of AI government, and securing AI safety and trust. The National AI Strategy Committee which launched in September 2025 serves as the top-level AI policy control tower under the direct authority of the president, leading government-wide AI strategy.

- The government is promoting a National AI Foundation Model Development Program, through which approximately KRW 530 billion will be invested by 2027, and will create a national growth fund of more than KRW 100 trillion over the next five years to carry out large-scale investments in advanced strategic industries. With a particular focus on the manufacturing AI sector, it leverages South Korea's broad manufacturing portfolio, experience in factory automation, and world-leading robot density. In 2024, the AI Autonomous Manufacturing Anchor Project was launched, with a goal of deploying 500 AI factories by 2030.

**Implications**

- South Korea is facing a dual transition, with both an aging population and an AI transformation (AX). Given the country's rapidly aging society, in the long term the AX may serve as a solution to mitigate labor market challenges arising from the aging population through productivity improvement.

- However, the immediate reality is a severe employment crisis among young people. Companies anticipating advancements in AI technology are reducing new hiring, making it increasingly difficult for youth to find jobs. This has emerged as an urgent social issue that must be addressed now, regardless of the mid- to long-term benefits AI may bring. Accordingly, policies are needed to create an environment in which young people can take risks and pursue new challenges despite an uncertain future, and to support them in adapting to the changing labor market through vocational competency development.

# I.
# Introduction

The rapid development and proliferation of AI technology are driving fundamental economic and social structural changes worldwide. Amid this prevailing trend, the Lee Jae-myung administration designated AI as a core driving force of national development upon its inauguration and presented an ambitious goal of becoming one of the world's top three AI powerhouses. From the 2024 presidential campaign stage, the Lee administration explicitly pledged to invest KRW 100 trillion in AI-related policies, and the president demonstrated a strong commitment to an AI-centered policy agenda through key appointments.

Immediately after taking office, President Lee appointed the Director of the LG AI Research Institute as Minister of Science and ICT and the Head of the Naver Cloud AI Innovation Center as Senior Secretary for AI and Future Planning. This was a symbolic move demonstrating the administration's firm commitment to making AI technology development a core driver of economic growth by placing top private-sector AI experts in key government positions. In fact, in the 2026 government budget proposal, KRW 10.1 trillion was allocated to AI-related initiatives alone, representing a significant increase from the previous year. This has been regarded as a defining characteristic of the first budget proposal prepared by the Lee administration.

The adoption of AI technology clearly offers new opportunities for our society, namely, innovative improvements in productivity and efficiency, the creation of new high value-added industries, and enhanced competitiveness in global markets. Across nearly all sectors—including manufacturing, services, healthcare, and education—the adoption of AI is expected to drive innovation in working processes and generate new sources of value.

At the same time, however, concerns are growing over the potential negative impacts of advances in AI. The most immediate issue is labor displacement. As AI and automation technologies rapidly replace existing jobs, fears of mass unemployment and structural changes in the labor market are increasing. Major challenges are also emerging, including technology gaps resulting from differences in access to and proficiency in AI technologies, fairness undermined by algorithmic bias, and the further intensification of socioeconomic inequality caused by the interaction of these factors.

Against this backdrop, this report aims to systematically examine and analyze the implications of the Lee administration's AI policy for the labor market. Furthermore, it seeks to assess the impact of the government's AI transformation policy on real-world workplaces from multiple perspectives and thereby derive implications for the direction of labor policy in the era of AI.

Including this overview, this report consists of six chapters. Chapter 2 briefly discusses the state of AI technology development and utilization in South Korea. Chapter 3 describes the current status of AI adoption by Korean businesses and the resulting changes in work processes. Chapter 4 examines prospects for changes in employment driven by advances in AI technology. Chapter 5 summarizes the Lee administration's AI-related policies, providing an overview of the overall policy framework, areas of emphasis, and particularly industry-linked applications. Finally, Chapter 6 addresses labor and social policies that will be necessary in the short- and mid-term

# II.
# South Korea's AI Technology and Utilization Capabilities

In the development of foundation models, the core AI technologies, the United States and China have established a firm duopoly structure, and the gap between these two countries and South Korea is very large. According to the Stanford AI Index 2025, in 2024, the United States developed forty "notable AI models" and China fifteen, while South Korea recorded only one.[1] Among the 271 super-large-scale AI models released between 2020 and 2024, the United States and China developed 128 and 95, respectively, accounting for an overwhelming share, whereas South Korea developed just fourteen, showing a significantly widening gap (Software Policy Research Institute, SPRi, 2025). This gap is also evident in terms of AI infrastructure. As of 2024, the United States possessed approximately 4,049 data centers, accounting for about 75% of global AI computing power, while China operates 379 data centers with roughly 15% of computing power. In terms of private AI investment, the United States has invested USD 109.1 billion—approximately twelve times that of China's USD 9.3 billion. South Korea's private AI investment in 2024 stood at USD 1.3 billion, about one-eightieth that of the United States and one-seventh of China.[2] These indicators show that the United States and China maintain an overwhelming lead in the development and investment of core AI technologies, and that South Korea's gap with them remains substantial.

AI utilization is another factor that must be examined separately from AI technology development. Although results vary slightly depending on survey timing, surveying institutions, and statistical indicators, Koreans have been assessed as among the most active users of AI. According to a comparative analysis conducted by the National Information Society Agency (NIA) and the U.S. Pew Research Center from August to October 2024, the usage experience rate of generative AI in both South Korea and the United States was found to be identical at 33%. However, according to the results of another study in an issue note released by the Bank of Korea (BOK) in August 2025 (Dong-hyun Seo et al., 2025), 51.8% of Korean workers reported having used generative AI for work purposes—approximately twice the rate of the United States (26.5%). The average weekly usage among Korean workers stood at 5–7 hours, significantly longer than in the United States (0.5–2.2 hours). OpenAI CEO Sam Altman's comment during his visit to South Korea that the country is their second-largest market after the United States also supports a high level of AI utilization. Corporate-level AI adoption is also relatively high. According to the OECD Digital Economy Outlook published in 2024, South Korea ranked first among OECD member countries with a 28% adoption rate of AI technologies among companies with ten or more employees. The fact that the country also rank first in the adoption rates of IoT (53%) and big data analytics (40%) indicates that South Korea is applying digital and emerging technologies across industries at the fastest pace (OECD, 2024).

# III.
# Current Status of AI Adoption and Changes in Labor Processes

## 1. AI Technology Adoption in Industrial Settings

To what extent has AI actually been adopted in industrial settings? While it is difficult to determine an exact adoption rate, multiple survey results indicate rapid adoption. According to the 2022 Informatization Statistics Survey conducted by the Ministry of Science and ICT and the NIA, the AI utilization rate among Korean businesses stood at

1 https://hai.stanford.edu/ai-index/2025-ai-index-report
2 https://www.federalreserve.gov/econres/notes/feds-notes/the-state-of-ai-competition-in-advanced-economies-20251006.html

28%, with an even higher rate of 31% in the manufacturing sector. However, it should be noted that this survey was conducted for companies with ten or more employees and included not only official corporate-level adoption but also personal usage of individual employees, suggesting that the actual corporate-level adoption rate may be exaggerated.

In a Business Activity Survey applying stricter criteria—targeting approximately 15,000 firms with 50 or more employees and capital of at least KRW 300 million—the AI adoption rate showed a steady increase from 1.4% in 2017 to 4.17% in 2022 and 6% in 2023. Another study that considered firms to have adopted AI if their online job postings included AI-related positions produced similar results. As of 2023, approximately 4% of all businesses had introduced AI in their operations, while more than 40% of companies with 500 or more employees had adopted it (Ji-yeon Jang et al., 2024).

Looking at AI adoption rates by industry, the information and communications sector recorded the highest rate at 32.4%, followed by finance and insurance at 17.8%, while manufacturing stood at 3.8%, and education at 2.3%. As for the areas in which companies utilize AI, product (service) development accounted for a dominant 61.4%, followed by production process improvement at 12.8%, and organizational management at 7.8%.

In the manufacturing sector, AI is being actively utilized for predictive maintenance, quality control, and process optimization. In practice, as collaboration with AI expands, simple repetitive tasks on production lines are expected to decrease, while the importance of technical roles that manage and operate AI systems will grow. In the service sector, personalized services are drawing attention, and customer service automation, recommendation systems, and process automation are expected to be key areas. There have been reports of performance improvement through AI-based service personalization. Interestingly, as AI increasingly handles basic tasks, the value of in-person interactions is being re-evaluated. This is because the role of human employees remains important in complex and emotionally charged customer situations. In the financial services sector, AI is actively applied to fraud detection and credit evaluation. In addition, examples of automation and human-AI collaboration are expanding in legal services and creative industries.

## 2. Changes in Work Processes

How do labor processes evolve when AI is introduced into industry? The following summarizes industry-specific characteristics identified in a study by Se-ri Noh et al. (2024).

### (1) Manufacturing

The introduction of AI technology in manufacturing is bringing fundamental changes to traditional labor processes. In particular, as AI is introduced primarily into human attributable processes (highly human-dependent ones), it helps narrow productivity gaps between skilled and unskilled workers and compensates for limitations such as worker fatigue and areas that are impossible to observe. For example, Company A in the steel industry minimized waiting time and stabilized quality through the optimization of molten iron supply systems and automated tapping systems, while Company B in the electronic components industry was reported to have overcome the limitations of conventional visual inspections by introducing deep learning AI for MLCC quality inspections. These changes illustrate that the transformation is evolving beyond the simple replacement of humans by machines, toward leveraging AI's core functions—image recognition and data analytics—to compensate for human cognitive limitations.

The impact of AI adoption on employment involves not only job displacement but also qualitative changes in job content. As illustrated by Company B's case—where the quality inspection workforce was reduced from 20–30 workers to just 2–3 workers—routine, repetitive tasks are being replaced by AI. However, the existing workers are taking on highly skilled, engineer-level duties such as AI management and data analysis, requiring existing production workers to undergo a transition that demands significant upskilling. Currently, AI is used primarily as a reference tool for workers, but as its reliability increases, structural changes in employment are expected to occur in earnest. This represents a shift toward a new form of skilled labor that requires deep understanding of work processes and expertise in data analytics, beyond simple oversight and supervision.

### (2) ICT Industry

Developers in the ICT industry are experiencing innovative changes in work productivity centered on AI coding tools. Tools such as GitHub Copilot, Amazon CodeWhisperer, and OpenAI Codex are used most intensively during the coding phase of development cycles. According to one survey, GitHub Copilot—which is used by more than one million users worldwide—showed that 70% of users feel more productive, 73% complete tasks more quickly, and 68% report improved output quality. Notably, 77% of respondents stated that they do not want to work without AI assistance, demonstrating a high level of reliance. These AI tools are also expanding beyond coding into documentation work, which developers tend to avoid due to its repetitive nature.

However, it is also important to note that AI adoption exhibits what has been referred to as a "jagged technological frontier," producing different effects across job types. Because AI demonstrates uneven task-level performance, careful assessment is required to determine which tasks are suitable for AI. Even within developer roles, AI is most heavily utilized in coding, compared with architecture, design, and deployment tasks. It is particularly effective in enhancing the productivity of lower-skilled professionals, raising concerns about polarization between highly skilled and mid- to low-skilled developers. Meanwhile, developers

are acquiring AI-related skills through horizontal and informal peer-to-peer learning methods—such as internal chat rooms and forums—rather than through formal corporate training. Leading firms are promoting organization-wide productivity through policies that actively encourage and support AI usage.

**(3) Content Creation Sector**

In the content creation sector, AI technology is also driving fundamental changes in working methods and skills requirements. Image-generation AI such as Novel AI, Midjourney, and Stable Diffusion, which began seeing widespread use starting in 2023, are applied extensively in game and advertising production, and are being adopted even more actively by small-scale businesses. As workflows have shifted from hand-drawing or manually operating digital tools to generating and modifying images through text prompts, character design cycles have been shortened from 7–10 days to just 1 day, and production costs have been reduced by up to KRW 1 million, yielding dramatic efficiency gains. While these changes lower the barrier of required drawing skills and enable new creators without technical abilities to enter creative work, they also demand new forms of skills such as prompt writing, AI program parameter adjustment, and model training methods.

The introduction of AI is also driving rapid changes in workforce structures and job boundaries within the content creation sector. In game and webtoon production, the use of image-generation AI is reducing the number of designers—particularly mid-career designers with three to six years of experience. There is a growing trend in which lead designers directly utilize AI or outsource work to students proficient in AI tools. As production teams shrink, individuals are taking on multiple tasks and job boundaries are becoming blurred, ultimately, raising the possibility of a transition toward a single-person production model. Additionally, as planners can now generate images directly using AI, errors and delays in communicating planning intent to designers are being reduced, thereby significantly improving communication efficiency.

AI is having multifaceted effects on the work performance and occupational identity of creators. AI-generated output is widely regarded as high-quality and consistent, and business owners strongly perceive productivity gains through cost reduction from shortened production periods. However, workers are spending more time fine-tuning AI-generated results due to market resistance, and the effort required to learn and operate AI programs is increasing, contributing to greater mental labor intensity. Perhaps surprisingly, creators have expressed that they view AI as a useful tool similar to Photoshop, report high satisfaction levels with their work, and maintain their professional identity by recognizing that the core role of planning remains theirs. While creators feared job loss before actually using AI, after becoming familiar with it, they tend to gain the confidence that they can expand their capabilities and work more efficiently.

# IV.
# Employment Prospects in the AI Era

## 1. What Kind of Technology Is AI?

The advancement of AI technology has a dual nature. On the positive side, AI can significantly reduce industrial accidents by performing hazardous and monotonous tasks in place of human workers. In fact, workplace accidents have declined noticeably since the introduction of AI safety systems in manufacturing settings.

Baily et al. (2025) note that generative AI simultaneously possesses two distinct characteristics. The first is its nature as a general-purpose technology, referring to technologies—such as electricity or computers—that diffuse widely across society and influence many fields. Generative AI is used in an increasing number of areas, serves as a foundation for creating other new technologies, and continues to evolve and improve. The second is its nature as an invention of invention methods, meaning it is a technology that changes the way research and development are conducted.

Evidence that generative AI is changing research methods is emerging across multiple fields. As an observation tool, just as a microscope reveals small objects, AI can fill in missing parts of images or data, enabling researchers to obtain more accurate information. As an analytical tool, it can identify human biases and patterns within vast text databases, assisting research in the social sciences. From an organizational innovation perspective, digital twin technology enables drug development and materials research through computer simulations rather than physical experiments. As a communication tool, AI assists with writing papers and preparing presentation materials. Companies such as Google and Sakana are attempting to build systems in which AI is able to conduct full research studies, but errors remain frequent and the limitations have been made clear.

Taking these two characteristics together, Baily et al. (2025) project that generative AI will significantly enhance productivity across society. As AI becomes more widespread, it enables existing tasks to be handled more efficiently, while

simultaneously innovating research and development methods, thereby accelerating new discoveries and inventions. They argue that as AI continues to advance, these productivity gains will persist, rather than remain temporary.

On the other hand, concerns are being raised that large-scale job displacement due to the widespread adoption of AI, along with disparities in technological skill acquisition, may further deepen social inequality. This underscores the need to develop social policy measures to minimize such adverse impacts from AI technology advancements.

## 2. Impact on the Economy

AI technology is exerting a far-reaching influence across the economy through several key mechanisms. First, through automation-led cost reduction, companies can drastically reduce operating expenses while maximizing efficiency. Second, AI serves as a complement to human labor rather than fully replacing it, significantly enhancing worker productivity. Third, advances in AI technology are creating new occupational areas and innovative business models that previously did not exist, expanding the economic ecosystem itself. Through these multilayered mechanisms, AI functions not merely as a technical tool but as a new engine of economic growth, making a central contribution to productivity gains across the entire economy.

Although it remains difficult to precisely measure the economic effects of AI technology, economists are employing various methodologies to estimate AI's potential impact. The impact of AI on total factor productivity (TFP), a measure of economic efficiency that reflects how much output can be produced from a given amount of inputs, is determined by three key factors. The first is task-level productivity improvements, which refer to how quickly and accurately work can be processed when AI is applied in real-world workplaces. The second factor is job-level exposure to AI, indicating the proportion of tasks within a job that AI can assist or replace. The third factor is the AI adoption rate, which depends on how rapidly companies and organizations adopt and utilize AI technologies.

However, projections for the economic ripple effects of AI vary widely among experts. Briggs and Kodnani (2023) of Goldman Sachs, taking the most optimistic stance, forecast an additional 1.5 percentage points in annual productivity growth over the next decade. In contrast, Acemoglu (2025) of MIT adopts a much more conservative view, projecting that TFP will increase by a total of 0.66% over the same period, or approximately 0.064% per year. Filippucci et al. (2025) of the OECD, while basing their analysis on Acemoglu's framework, predict annual TFP gains of 0.3–0.7 percentage points in the United States, taking a middle position between these two extremes.

Another important impact of AI on the economy is the change in the income distribution structure. The labor income share refers to the proportion of labor income, such as wages, in total national income. This indicator shows how the gains from economic growth are distributed between workers and capitalists (business owners). Numerous studies project that advances in AI technology may reduce the labor income share and widen the gap between capital and labor income. A particularly noteworthy point is that, unlike past technological advances—which largely increased workers' real income through productivity improvements—AI places greater weight on substitution effects. As Drozd et al. (2024) point out, AI can steer technological innovation toward automating existing human tasks, raising concerns about a structural shift in which workers have a smaller share of the gains from economic growth.

## 3. Impact on Jobs

### (1) Uneven Effects: Which Jobs Are Affected

There is little disagreement that AI will be utilized to automate repetitive and standardized tasks. AI effectively automates rule-based tasks such as data entry, schedule management, and simple report writing. In the past, these tasks were core duties for office workers, but AI can now process them more quickly and accurately. The situation is even more dramatic in manufacturing, where AI-based robots are replacing routine repetitive tasks such as assembly, inspection, and logistics, with significant efficiency gains driven by 24-hour operation. Meanwhile, unlike past automation technologies, AI is replacing certain clerical and professional tasks, a shift that has surprised many. AI can now perform office support functions, handle call center counseling, interpret medical images, draft legal documents, and conduct basic programming. This indicates that AI's influence has expanded into cognitive work domains that traditionally required highly skilled professional expertise.

AI technology can either exacerbate or mitigate inequality, not only by influencing the labor income share but also by affecting different demographic groups unevenly. Some studies argue that AI's negative impacts fall disproportionately on middle-skilled workers and non-STEM occupations. Efficiency gains from the use of generative AI follow a U-shaped pattern, appearing higher at the lower and upper ends of the income distribution. This suggests that AI may produce outcomes similar to routine-biased technological change, which was a major driver of occupational polarization in the 1990s (Hartley et al., 2024; Huang, 2025). During that period, computers and automation technologies replaced mid-level routine tasks, causing a polarization in which only high-wage professional jobs and low-wage service jobs remained. AI may replicate a similar pattern. In contrast, other studies report that generative AI provides greater benefits to inexperienced and low-skilled workers, narrowing productivity gaps. This stands in contrast to previous technological innovations, which tended to advantage highly skilled workers (Brynjolfsson et al., 2025). It remains to be seen which of these conflicting pro-

jections proves accurate.

It is also very important to recognize that technical substitutability and socially acceptable substitutability are not the same. As it has become increasingly clear that the impact of AI on jobs is uneven, research has sought to predict which occupations will be affected. A key concept developed through this work is AI Occupation Exposure (AIOE) (Felten et al., 2019). This indicator reflects the extent to which AI can perform tasks previously carried out by humans and quantitatively measures the maximum degree to which occupations are affected by AI technological advancements. However, not all tasks that AI can technically perform will be replaced in practice. Certain tasks that AI can technically perform are expected to remain human-performed due to considerations such as social repercussions and accountability. Pizzinelli et al. (2023) proposed an adjusted AIOE that incorporates social, cultural, and institutional factors. This reflects the reality that social, cultural, and institutional resistance to substitution by AI exists. Without considering social and institutional factors, exposure scores appear low for service, production, and routine occupations, suggesting low substitutability. However, when these factors are included, adjusted exposure scores appear lower among professional and managerial occupations.

**(2) Automation or Augmentation**

A growing perspective holds that even when AI replaces humans in specific jobs or tasks, this does not necessarily lead to job displacement; rather, it can result in an augmentation effect. Automation means that AI completely substitutes for human labor and the associated jobs disappear, whereas augmentation means that AI complements human work, thereby enhancing productivity. This distinction suggests that the impact of AI technology on the labor market should not be viewed solely as a catalyst of job reduction, but the positive aspects such as changes in work practices and productivity improvements should also be considered.

Researchers at Anthropic analyzed millions of real conversations conducted on the Claude.ai platform to examine how AI is actually used across various tasks (Handa et al., 2025). They distinguished between usage for automation and usage for augmentation. Instances in which users minimized interaction and fully delegated tasks to AI were classified as automation, whereas cases in which AI was used collaboratively to enhance human capabilities were classified as augmentation. Iterative conversations aimed at refining and improving outputs, or the use of AI for learning or verification, fell into the latter category—augmentation. According to the analysis, 43% of tasks were classified as automation and 57% as augmentation.

Several studies attempt to distinguish jobs exposed to AI in ways that drive automation from those exposed in ways that enable augmentation by using a number of operational definitions. Gmyrek et al. (2023) conducted a more sophisticated analysis by noting that occupations are composed of multiple tasks. They measured AI exposure at the task level and calculated occupation-level AI exposure by averaging these values. A key metric is the standard deviation of exposure: a large standard deviation indicates that only some tasks within the occupation can be performed by AI. If the average of the task-level AIOE value is high and the standard deviation is low, the likelihood of automation (substitution) is high. Conversely, a low average and high standard deviation imply complementary use of AI, indicating high augmentation (productivity enhancement) potential. These findings suggest that AI is more likely to substitute for expert-level skills, while service and care-related occupations exhibit higher augmentation potential. Using the method of Gmyrek et al. (2023) and linking generative AI exposure scores to South Korea's Regional Employment Survey, 15.9% of employed workers were found to have augmentation potential when using generative AI, while 9.8% showed automation potential. From an international comparison perspective, South Korea ranks relatively highly in both augmentation and automation potential (Ji-yeon Jang et al., 2024).

Pizzinelli et al. (2023) also employed a slightly different approach to distinguish automation and augmentation. By combining Felten's AIOE with Pizzinelli's complementarity indicator, it becomes possible to differentiate jobs with high automation potential and high augmentation potential. Occupations with high exposure and low complementarity (HELC) are classified as having high automation potential, while those with high exposure and high complementarity (HEHC) are classified as having high augmentation potential. In South Korea, HELC jobs that are predicted to have high automation potential account for approximately 25% of total employment, with clerical and sales particularly concentrated in this category. In contrast, HEHC jobs—those with high augmentation potential—also make up roughly 25%, and are concentrated among professional and management occupations (Ji-yeon Jang et al., 2024).

**(3) Empirical Evidence**

Even if certain jobs disappear due to the emergence of AI technology, whether this necessarily results in a reduction in employment at the societal level remains an open question. Overseas—particularly in the United States—reports frequently suggest that AI-driven job displacement is already occurring. Employment for computer developers declined by 27.5% over the two-year period from 2023 to 2025, and job postings for software developers fell by 35%. Microsoft laid off 18,000 employees, stating that "30% of code is written by AI," while other major companies such as UPS, Meta, Google, and IBM have implemented large-scale workforce reductions citing AI adoption. Shopify even introduced a new hiring policy requiring "proof that AI cannot perform tasks before hiring humans."

However, analyses using Korean data have not yet identified evidence of employment reductions attributable to AI utilization. Expectations that companies adopting AI would contract their workforces and increase worker turnover risk have also not been confirmed in practice. One possible explanation is that newly created occupations and job roles are offsetting those that are disappearing. Alternatively, it may be the case that the substitution of human labor by AI has simply not yet materialized.

Brynjolfsson, E., Chandar, B., & Chen, R. (2025) analyzed data reflecting actual conditions up to July 2025 using records from ADP, the largest payroll processing company in the United States, and found that employment among young workers (ages 22–25) declined noticeably in AI-exposed occupations. While overall employment continues to grow robustly, employment growth among youth has stagnated. In occupations with low AI exposure, the growth rate of youth employment is similar to that of middle-aged workers, whereas in occupations with the highest AI exposure, employment for workers aged 22–25 fell by 6%, while employment for workers aged 35–49 increased by more than 9%. This suggests that employment decreases in AI-exposed occupations constitute a primary factor slowing overall employment growth among workers aged 22–25. Interestingly, youth employment declined in occupations where AI tends to automate labor, but employment generally grew in occupations where AI tends to augment labor. These findings align with the hypothesis that automation-purpose AI uses substitute for labor, whereas augmentation-purpose AI uses do not. The authors titled their paper "Canaries in the Coal Mine" in that the data up to July 2025 revealed employment declines in specific sectors and age groups which could be viewed as indicators of future consequences.

# V.
# The Lee Administration's AI Policy

## 1. The National Standing and Basic Direction of AI Policy

The Lee administration's AI policy is positioned as the primary strategy for realizing the innovation economy, one of the government's five national policy objectives. The administration frames AI policy not merely as a technology policy, but as a core driving force of national development, aiming to build a society in which citizens, government, and businesses can effectively utilize AI and share its benefits equitably. An examination of the Five-Year Plan for State Administration (announced in August 2025) released by the National Planning Committee and the 2025–2029 National Fiscal Management Plan published by the Ministry of Economy and Finance lays out the direction of the Lee administration's AI policy.

### Establishment of AI Infrastructure and Foundation

The first core task of AI policy—establishing AI infrastructure—is implemented centered on the concept of an AI highway. The government will build a system to stably supply GPUs so that academia and small- and mid-sized enterprises can utilize AI technologies smoothly. In terms of expanding data and network connections, government resources will be invested in creating new clusters that integrate and disclose learning data, as well as in establishing new spaces, which are sector-specific platforms for data sharing and transactions. In addition, the government will secure technological sovereignty by supporting the development of proprietary AI models, and lay the foundation for AX across the public, economic, and social spheres by developing world-class proprietary AI foundation models.

### AI Education and AX Across All Industries

The central pillar of the AI diffusion policy is to raise AI literacy among businesses and the public through the implementation of an "AI for All" policy. Tailored AI education will be provided across generations—from primary and secondary education to adult learning—and online and offline education hubs will be established. The Ministry of Employment and Labor's (MOEL) vocational training programs will also be comprehensively restructured to prioritize AI and other new technologies. Targeted investment will accelerate AI transformation across all sectors, including manufacturing and services. To position South Korea as a global leader in physical AI, rapid deployment will be pursued in strategic industries, including robotics, automotive, shipbuilding, home appliances, semiconductors, and factory automation.

### Realization of an AI Government and Innovation in the Public Sector

The realization of an AI government consists of three areas: innovation in public services, improvement of government efficiency, and specialization by sector. AI transformation within each ministry will be supported through the Public AX Program, and the adoption of AI in the public sector will be expanded through three flagship projects in employment and welfare, taxation, and new drug review.

The MOEL is already leveraging AI in employment services through an Employment AI program, and is utilizing an AI Labor Inspector Support System to prevent industrial accidents, support labor inspections, and provide labor law counseling to the public. These efforts will be further developed through the Public Administration AX Project going forward.

### Ensuring AI Safety and Trust

Alongside the proliferation of AI technology, the government is also seeking to establish a foundation that allows the public to use AI with confidence. To strengthen AI ethics, safety, and trust, it will support the development and commercialization of core technologies to counter AI misuse, including deepfake detection tools and pre-screening systems that block the generation of harmful content by AI models. From the perspective of ensuring digital security and safety, information protection systems will be comprehensively reorganized to respond effectively to new forms of cyberthreats made intelligent by AI, and the deployment of AI-based security systems will be promoted.

### National AI Strategy Committee

The direction of the Lee administration's AI-related policies was reaffirmed by the establishment of the National AI Strategy Committee on September 8, 2025. The committee serves as the highest-level AI policy control tower reporting directly to the president, with the goal of advancing South Korea's leap toward becoming an AI leader and joining the world's top three AI powers (G3). The committee functions as a central coordination body for government-wide AI strategies, responsible for establishing a national AI vision and mid- to long-term strategies, as well as coordinating policies and projects across ministries. It has established eight subcommittees covering technology innovation and infrastructure, industrial AI transformation, public AX, data, society, global cooperation, science and talent, and national defense and security. By November, the committee plans to formulate a comprehensive plan encompassing three major policy pillars—building an AI innovation ecosystem, driving a nationwide AI-based transformation, and contributing to a global AI foundational society—together with twelve strategic priority areas.

## 2. AI Technology Development and Industrial Utilization: Focusing on Manufacturing AI

To overcome this technological gap, the Korean government is pursuing a comprehensive national support strategy aimed at achieving self-reliance in core AI technologies. The most central initiative is the National AI Foundation Model Development Project, through which approximately KRW 530 billion will be invested by 2027. Five elite teams representing Korea's best technological capabilities, including Naver, LG, and SK Telecom, have been designated as development teams for the "K-AI Model" and are receiving focused support. On the infrastructure side, a GPU procurement program has been launched to allocate resources across industry, academia, and research institutions. A National AI Computing Center has also been established, and a comprehensive AI infrastructure is being built through the provision of high-quality datasets, the development of an open-source ecosystem, and the attraction and cultivation of overseas and domestic talent. From a financial standpoint, this initiative is linked to plans to create a national growth fund exceeding KRW 100 trillion over the next five years to make large-scale investments in advanced strategic industries such as AI, semiconductors, and biotechnology. Overall, the Korean government's strategy can be characterized as a holistic approach encompassing foundation model development, expansion of computing infrastructure, talent development, and robust financial support.

South Korea is focusing on physical AI—particularly manufacturing AI—as a key application area for AI technologies. Leveraging a broad manufacturing portfolio and extensive experience in factory automation and smart factories, the nation is regarded as having substantial competitiveness in this domain. According to a report published by the BOK, South Korea's major manufacturing sectors consist of eleven industries, including semiconductors and automobiles. This wide-ranging manufacturing base provides a unique testbed for applying AI technologies in a real-world industrial environment.

South Korea also possesses extensive experience in factory automation and smart factories. Through digital transformation policies for small- and mid-sized manufacturers, the country had completed a total of 30,000 smart factory conversions by the end of 2022, and is pursuing an additional 3,000 deployments alongside efforts to foster 25,000 digital manufacturing firms by 2027 (Ministry of SMEs and Startups). It also has abundant experience in robot adoption in the manufacturing sector. According to World Robotics 2024 published by the International Federation of Robotics, South Korea has the world's highest robot density with 1,012 robots per 10,000 employees. Decades of accumulated experience in factory automation and smart factories, combined with rich field data from diverse manufacturing—including semiconductors, automotive, shipbuilding, and chemicals—provide an optimal foundation for the advancement of physical AI. Byung-tak Jang, Director of the Seoul National University AI Institute, emphasized, "Korean manufacturing companies possess an inexhaustible amount of data that can be used to develop and deploy AI robots. In physical AI domains such as robotics, data is the most important element, and ultimately, the party holding the most abundant data will lead the market."[3]

3 https://www.sedaily.com/NewsView/2GVFOT7K3Q

The government's commitment to fostering manufacturing AI is also clear at the policy level. In 2024, the Korean government launched the AI Autonomous Manufacturing Anchor Project (26 initiatives) and the AI Autonomous Manufacturing Alliance to accelerate the adoption of manufacturing AI across twelve industries including automotive, electronics, shipbuilding, secondary batteries, steel, semiconductors, biotechnology, and textiles. It also announced a target of deploying 500 AI factories by 2030 (Ministry of Trade, Industry and Energy). The 2026 government budget proposal includes a flagship physical AI initiative allocating a total of KRW 6 trillion over the next five years to major industrial sectors such as robotics, automotive, shipbuilding, home appliances and semiconductors, and factory systems. Regional hubs for physical AI are also under development in alignment with regional industry specializations, including Gwangju (energy and mobility), Gyeongnam (AI-based machinery and parts processing), Jeonbuk (AI factory testbed), Daegu (robotics and biotechnology), Daejeon (vertical AI), and the Busan–Ulsan–Gyeongnam region (marine and port industries).[4]

However, the advancement of physical AI is unlikely to serve as a solution to suppress the offshoring of manufacturing plants or restore manufacturing jobs in South Korea. On the contrary, further sophistication of physical AI and automation technologies can reduce labor cost burdens, thereby increasing the attractiveness of establishing factories overseas. As automation progresses, routine manufacturing jobs are likely to decline. An OECD study on robots and global production organization previously concluded that while the adoption of robots in advanced economies may somewhat slow the pace of offshoring, it is difficult to interpret such adoption as likely to trigger the reshoring of jobs to home countries (De Backer et al., 2018). According to OECD labor market analyses, there is no evidence of a net decline in overall national employment following the technological diffusion; however, employment growth in occupations with high automation risk slows markedly, indicating shifts in job composition (Georgieff & Milanez, 2021). Therefore, rather than viewing physical AI as a means of preventing offshore relocation or restoring aggregate employment levels, it is more realistic to regard it as a defensive or upgrade-oriented strategy that preserves South Korea's comparative advantage in manufacturing by improving quality, production cost, flexibility, and energy efficiency.

## 3. Policy Trends Related to AI in the Labor Sector

The MOEL is presenting two key policy directions in preparation for the advent of the AI era. The first is the strengthening of vocational training in advanced technology fields. In response to a rapidly changing technological environment, it is reshaping the vocational training system so that workers can acquire the capabilities needed to utilize AI technologies. The second is the provision of guidelines that businesses must observe when using AI in hiring processes. To prevent bias or discrimination that may arise from the adoption of AI-based recruitment systems and to foster a fair hiring culture, the ministry has compiled and distributed detailed guidelines. This demonstrates a balanced approach that simultaneously pursues improvements in hiring efficiency through AI adoption while safeguarding workers' rights and interests.

Meanwhile, the Economic, Social and Labor Council—the tripartite body of labor, management, and government—is operating an AI and Labor Study Group to build a social consensus on the impact of AI technology advancements on labor. This study group brings together worker, employer, and government representatives and relevant experts to deepen understanding of the diverse effects that advances in AI technology have on the labor market and working environments. Particularly noteworthy is the drafting of a Green Paper, which identifies agenda items on which society must reach a consensus through broad-based discussion. This Green Paper, scheduled for release around October 2025, will systematically organize issues related to AI and labor and provide a foundation for social deliberation on future policy directions. This approach is highly meaningful in that it aims for policy decisions based on sufficient communication and consensus building among social stakeholders, rather than unilateral government-led implementation.

4 Press release by the Ministry of SMEs and Startups

# VI.
# Labor Market Strategies in the Era of Dual Transformation

## 1. Dual Transformation: Population Aging and AX

South Korea is entering a period of dual transformation driven by an aging population and AX. According to the Ministry of the Interior and Safety, as of December 2024, residents aged 65 and older accounted for 20% of the total registered population, marking South Korea's arrival as a super-aged society. Statistics Korea projects that the working-age population, which stood at 36.57 million in 2023, will decline to 27.17 million by 2044—a decrease of nearly 10 million. By 2058, it is expected that one working-age individual will be required to support one elderly or young dependent. Structural changes are also taking place within the working-age population, as the proportion of young and middle-aged workers declines and that of middle-aged and older adults increases.

In the long term, the AX may serve as a solution to mitigate labor market challenges arising from South Korea's rapidly aging population by improving productivity. The introduction and utilization of AI technologies can supplement a shrinking labor force and enhance productivity, thereby helping to sustain economic vitality. This is regarded as a strategic response to secure the mid- to long-term sustainability of the Korean economy.

Regardless of these mid- to long-term prospects, the immediate reality is a severe employment crisis among young people. As of August 2025, the employment rate for people aged 15–29 stood at 45.1%, a 1.6 percentage point decrease from the previous year, marking sixteen consecutive months of decline. According to the 2024 Recruitment Summary survey conducted by Incruit of 707 businesses, only 64.6% of companies hired full-time, university-graduate entry-level employees last year—the lowest proportion recorded in the same survey over the past four years. According to the 2024 University Student Employment Awareness Survey by the Federation of Korean Industries, young people attributed the youth employment crisis to the decrease in entry-level hiring opportunities (27.5%), the lack of quality jobs that meet desired working conditions (23.3%), and difficulties in securing practical experience opportunities (15.9%). As companies are reducing new hiring in anticipation of advancements in AI technology, employment opportunities for young people are becoming increasingly scarce. This has emerged as an urgent social issue requiring immediate attention, regardless of the mid- to long-term benefits that AI may bring.

There is therefore an urgent need for policies to create an environment in which young people can take risks and challenge themselves despite an uncertain future, and to support their adaptation to a changing labor market through vocational skills development. To address both the structural crisis of population aging and the immediate challenge of youth employment, a balanced policy approach is required—one that enhances productivity through the utilization of AI technologies while strengthening young people's capabilities and expanding opportunities so that they can become key actors in technological change.

## 2. Short-Term Policy: Enhancing Labor Market Monitoring and Forecasting Capabilities

The AI transformation entails fundamental changes in the way people work, as well as large-scale industrial restructuring, making it urgent to establish a labor market monitoring system that accurately identifies labor demand for newly emerging competencies and occupations while simultaneously predicting and tracking existing jobs that may shrink or disappear. However, the current labor market analysis framework fails to adequately reflect these rapid changes, and systematic analyses and forecasting research on the specific capabilities or skills demanded in the labor market remains insufficient. In particular, forecasts of labor demand and supply still operate on an annual cycle, revealing limitations in keeping pace with the dynamic speed of AI technological advancement.

Although diverse studies analyzing and projecting the employment impact of AI technological development are actively underway both domestically and internationally, the forecasts and directions presented by these studies vary considerably and have not reached a clear consensus. This inconsistency vividly illustrates the complexity and uncertainty inherent in predicting AI's impact, posing significant challenges for policymaking. Differences in research methodology, scope of analysis, and temporal horizons interact in complex ways, making it difficult to establish coherent policy directions.

The rapid advancement of big data analytics and machine learning algorithms offers new possibilities for overcoming these limitations. Highly sophisticated forecasting techniques should be fully integrated into employment projection systems to build a framework capable of near–real-time analysis and forecasting. In addition, various unstructured private-sector big data sources—such as recruitment information from online job posting plat-

forms—should be actively utilized rather than relying solely on official administrative statistics produced by Statistics Korea and relevant ministries. By establishing a comprehensive monitoring system that captures more realistic and dynamic labor market conditions, it will be possible to lay the groundwork for policy responses suited for the AI era.

## 3. Mid-Term Policy: Linking Vocational Skills Development and the Social Safety Net

Leading countries around the world are competitively pursuing vocational training enhancement policies of unprecedented scale and scope to respond to the era of AI technological development. This global trend stems from a shared recognition that national competitiveness in the AI era ultimately depends on the quality and adaptability of human resources. Because the speed of technological advancement is rapid and its trajectory continues to evolve, labor policies capable of responding flexibly to these shifts are required. Accordingly, a system must be established in which schools cultivate foundational capabilities, followed by lifelong flexible vocational skills development.

It is increasingly necessary to find a balance in which the gains from productivity enhancements brought by advances in AI technology are shared by all, without hindering corporate innovation. Productivity improvements driven by technological advancement carry a significant risk of worsening the labor income share. However, if appropriate distribution does not take place, productivity enhancement itself may become unsustainable (Acemoglu, 2024). Given the characteristics of this transition era, companies are bearing substantial risks, making it necessary to explore redistribution methods that can create a virtuous cycle with corporate innovation efforts.

In this context, systems that combine vocational competency development with income security may serve as solutions for meeting social needs. Whereas the social safety net has been understood primarily as a mechanism for supporting income during income interruptions, it must now evolve into an integrated approach that includes income support during career transitions, livelihood guarantees during retraining periods, and comprehensive assistance for new career development. This goes beyond simple unemployment benefits to create a virtuous cycle that enhances individuals' employability through proactive workforce redeployment and competency development, while simultaneously contributing to productivity improvement across society as a whole.

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## Author

**Jiyeun Chang, Senior Research Fellow at Korea Labour Institute (KLI)**

Dr. Chang received her Ph.D. in Sociology from the University of Wisconsin–Madison and has been serving as a Research Fellow at the Korea Labor Institute since 1999. Her main research interests include women's labor and social safety nets. More recently, her work has focused on "technology change and labor." Her major co-authored books and research reports include *Globalization and Asian Women* (2007), *Labor Market Structures and the Consistency of Social Protection Systems* (2011), *Employment Safety Nets in the Digital Era* (2020), *The Employment Effects of Artificial Intelligence, and Skills in the Age of Artificial Intelligence* (forthcoming, December 2025).

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