GR Korea newsletter

Korea's Quantum Leap: Building an AI-Era "Indispensable Nation"

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Source: Kukmin Ilbo

On 29 June, President Lee Jae-myung presided over a Blue House briefing on the government's Three Megaprojects plan, joined by senior ministers, Samsung's Lee Jae-yong, SK's Chey Tae-won, and other corporate leaders. Trade and Science ministers presented the core semiconductor, physical AI, and data-center plans, while Environment and Land ministers outlined power, water, and site-development support.

The plan centers on roughly $520B for a southwest semiconductor cluster in Jeonnam-Gwangju, roughly $50B–$55B for a Chungcheong HBM/packaging hub, and roughly $350B–$370B for first-phase AI data centers. This edition covers what the megaprojects mean for Korea's industrial strategy.

WHY IT MATTERS

A national bet to stay indispensable in the AI age

Korea's potential growth rate has fallen from 3.4% in 2013 to 1.9% in 2025, per OECD estimates, despite continuous policy effort. An aging and shrinking working-age population and rising welfare costs are compounding the drag. The government frames the megaprojects as a way to create new growth rather than manage decline.

It casts the AI transition as a shift on the scale of the agricultural, industrial, and internet revolutions, with the US and China racing for dominance and the global economy moving toward a free-for-all. Korea's stated aim is to build the future it wants rather than wait to react to it.

The strategy rests on three linked pillars: 1) semiconductors as the core component, 2) physical AI as the point of diffusion into industry, and 3) AI data centers as the foundation. The pillars are meant to reinforce each other: semiconductors supply the computing base, data centers provide the infrastructure to run AI at scale, and physical AI carries the technology into factories and regional industry. Each also depends on talent, a materials, parts, and equipment base, and power infrastructure. A central goal is to move past Seoul-centered growth and turn the whole country into a production and innovation base. The plan is therefore less a single-sector support package than an attempt to connect chips, computing infrastructure, robotics, power, and regional development into one AI-era growth model.

President Lee said a new post reporting directly to him will oversee delivery and pledged to push whatever policy and legislative changes the blueprint requires. On the budget side, the 2025-2029 national fiscal plan concentrates spending on R&D, industry and energy, and regional administration as part of a stated "great transition to AI."

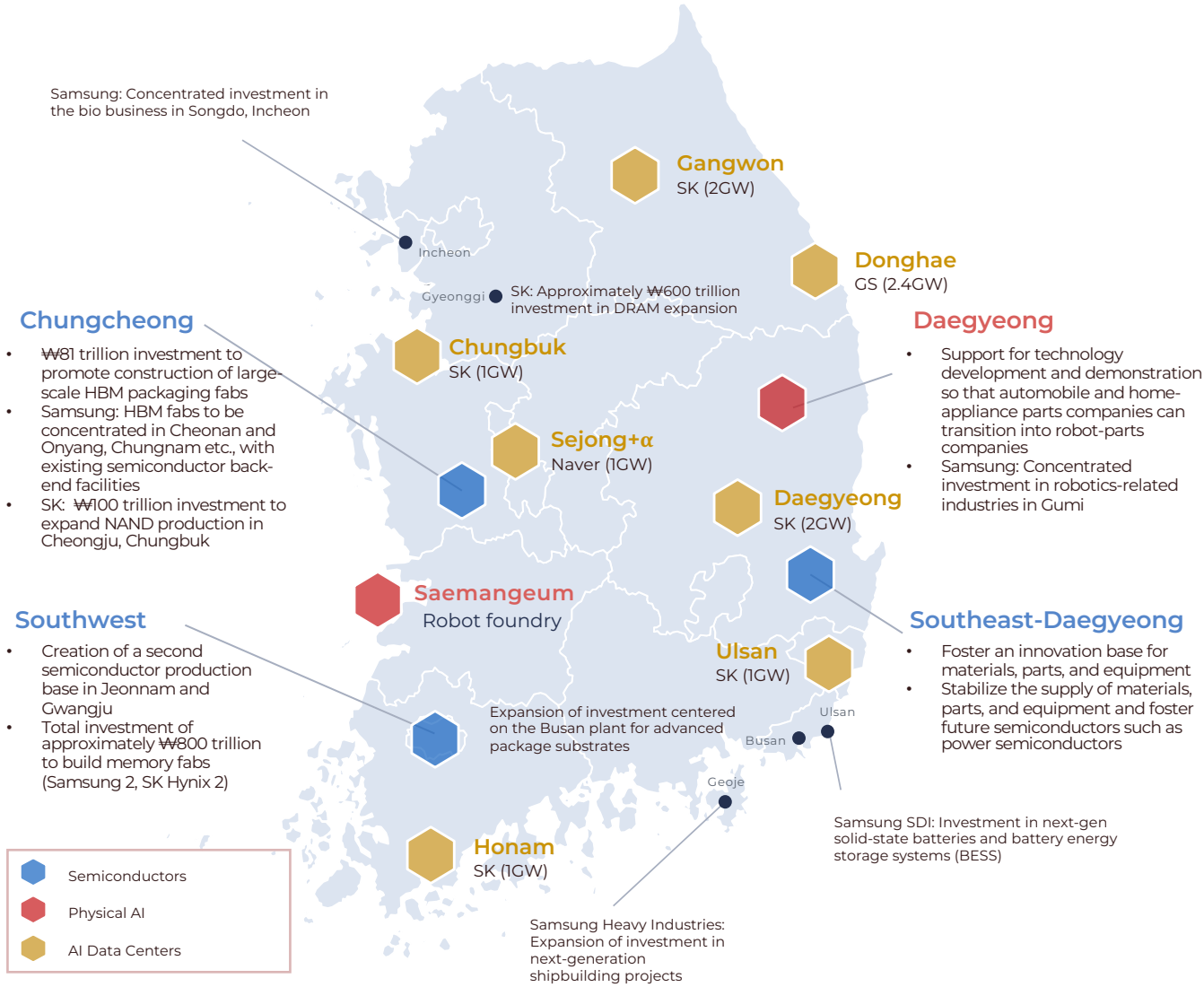
A growth strategy for the AI age

Source: Blue House press pool

THREE MEGAPROJECTS

	Semiconductors	Physical AI	AI Data Centers
Strategic objective	• Establish a nationwide semiconductor ecosystem and secure Korea's global semiconductor leadership and in the AI era.	• Transform Korea into a global Physical AI powerhouse by integrating AI into manufacturing and building domestic AI capabilities.	• Position Korea as the Asia-Pacific's leading AI infrastructure hub through large-scale computing capacity and a competitive AI ecosystem.
Key initiatives	• Expanding semiconductor clusters, and accelarate next-generation AI chip development, aiming to	• Deploy AI across manufacturing, develop a Korean Physical AI foundation model, establish a national AI data ecosystem, and foster robotics talent.	• Develop nationwide AI data centers, establish regional AI clusters, and expand supporting energy and digital infrastructure.
Tangible goals	• Double DRAM production capacity within five years and train 100,000 professionals.	• Deploy AI robots at 1,000 manufacturing sites annually, commercialize industry-specific humanoids by 2028, and train 10,000 specialists.	• Build 18.4 GW of AI computing capacity by 2035, making Korea one of the largest AI infrastructure hubs in the Asia-Pacific.

Investment map: what goes where



Source: News 1

Making Korea's memory lead durable

Source: SBS News

Korea leads global memory production but rivals are closing in, and it remains a follower in foundry and fabless chips. The government casts semiconductors as a determinant of national power in the AI age. The plan, branded 3S+1F, defends the lead where Korea is strong and pushes into areas where it is not, with regions chosen to raise both the speed and the scale of future capacity.

Speed: compress fab construction timelines in the capital region to double DRAM capacity within five years. Concurrent construction at Pyeongtaek and Yongin is meant to cut years off normal build schedules.

Stronghold: a second production cluster in the southwest, in Jeonnam-Gwangju (roughly $520B, four new memory fabs), materials and equipment innovation hubs in Busan and Gumi in the southeast, and an HBM packaging hub in Chungcheong (roughly $50B–$55B). The southwest site is also the plan's most politically sensitive choice, but the government is signaling strong execution intent: at a 6 July joint government-business megaproject review, the Blue House said it aims to complete the Honam semiconductor industrial complex within President Lee's term, with Lee ordering related administrative procedures to move in parallel.

Spearhead: capture next-generation markets, including next-gen memory such as PIM and neuromorphic chips, edge and on-device AI chips, AI server chips, and defense semiconductors.

Full support: strengthen the materials, parts, and equipment supply chain through a "Trinity Fab" modeled on Belgium's imec, train 100,000 workers, back foundries from advanced AI chips down to mid-tier nodes, and set up a presidential committee with a dedicated coordinator and an approximately $1.3B fund from 2027.

From robot user to robot maker

Korea has the world's highest robot density but makes only about 1% of humanoid robots, against roughly 86% in China. The government's diagnosis is that Korea is still only partially prepared for the physical AI transition, with gaps in the core inputs needed for humanoid and AI-robot production, including data, foundation models, components, and full-stack platforms. The aim is therefore to move from using robots to building them, under a 3M plan that focuses on manufacturing deployment, talent and model development, and mass-production bases.

M.AX acceleration: spread AI robots across manufacturing through an "M.AX Alliance," develop industry-specific humanoids targeted for commercialization by 2028, and roll them out at 1,000 sites a year.

Master cultivation: build sector-specific training-data factories, develop a Korean foundation model to avoid reliance on foreign platforms, close gaps in weak components such as actuators, robot hands, and sensors, and train 10,000 specialists.

Mass production: base output around Saemangeum in Jeonbuk, with a robot foundry and auto-parts/components cluster, and the Daegu-Gyeongnam region, with robot testbeds and support for converting auto-parts firms, backed by component standardization and financing.

Underpinning all three is a national data strategy, covering synthetic data from world models and digital twins, real-data collection, and a shared government data library, plus an independent physical-AI foundation model and a full domestic stack of devices, NPUs, low-latency networks, and security. This makes physical AI the application layer of the megaprojects: the point at which computing power and AI models are meant to translate into factory automation, robotics, logistics, and productivity gains across Korea's manufacturing base.

Scaling Korea's physical AI stack

Source: The Korea Times

8.4 GW first phase; 18.4 GW by 2035

Source: ServerTheHome via AIPOST

Building one of Asia-Pacific's largest AI infrastructure hubs

A public-private buildout of roughly $350B–$370B targets about 8.4 GW of first-phase AI data-center capacity, led by SK, GS, and Naver. The broader roadmap would expand total capacity to roughly 18.4 GW by 2035, positioning Korea to compete as one of Asia-Pacific's leading AI infrastructure hubs. The use of gigawatts as the headline metric reflects the central constraint for AI infrastructure: GPU-heavy data centers are limited as much by power supply, cooling, and grid access as by floor space or server count.

Phase 1 totals 8.4 GW, including 1 GW in Ulsan by SK, 2.4 GW in Donghae by GS, and 1 GW in Sejong by Naver, with additional SK capacity and sites accounting for the remainder. Construction is expected to begin in 2028, with phased operations from 2029. **The Phase 2** would add roughly 10 GW, including an expansion of SK's site to 15 GW by 2035.

Export focus: build domestic reference cases in servers, networking, and storage to partner with Nvidia, AWS, Microsoft, and Equinix, develop an open-standard ecosystem of DPUs, optical modules, and domestic NPUs, strengthen cloud and GPU orchestration and AI operations tools, scale up power and cooling equipment, and form an "AIDC Alliance" of domestic firms.

Cluster strategy: a pending law effective March 2027 would designate AIDC special clusters, with a hybrid testbed pairing a 5MW test center and a 5MW commercial center for equipment certification, university-led training, and finance, tax, and export support.

Each gigawatt is estimated to draw $40-47B in investment and create about 5,000 construction and 1,000 operations jobs. The government is also trying to make the buildout an industrial export platform, using domestic reference sites to support Korean suppliers in servers, networking, cooling, NPUs, and cloud operations.

Power and cities to make it work

Two support pillars underpin the projects. The first, an "Electric Nation" push, aims to deliver power and water to chip complexes, factories, and data centers nationwide without disruption. The government has committed at least 650,000 tons of water a day to the southwest cluster, a scale comparable to the roughly 1.5 million tons a day required for the existing metropolitan-area semiconductor cluster.

On supply: target 100GW of renewable capacity by 2030 (56GW solar, 7GW wind), maintain nuclear as part of the power mix while considering accelerated new-build capacity under the 12th power plan, pursue SMRs, and add flexible resources such as battery storage and pumped hydro.

On the grid: expand transmission lines, substations, and HVDC components, introduce regional electricity pricing to make non-metropolitan sites more competitive, set a new rate structure for large data centers, and open markets for corporate renewable trading and virtual power plants. The longer-term aim is to build renewable generation, including SMRs, into a "second semiconductor industry."

A 6 July joint government-business project review meeting sharpened the execution message, with President Lee ordering ministries to run permitting, land acquisition, environmental review, and infrastructure preparation in parallel so administrative delays do not slow investment.

The second pillar, "Advanced Corporate Cities," addresses the gap between industrial sites spread nationwide and talent concentrated in Seoul. Proposed "corridor cities" would link an industrial complex, a downtown innovation district, and housing by high-speed transport, acting as corporate second headquarters.

Anchor firms would help develop demand-led sites, with deregulation and long-term public leases. Targets include mixed-use towns with housing, culture, and education near the sites, university R&D partnerships, 30-minute commutes to homes and an hour to airports and ports, and a fast-track that shortens the usual 10-year path from planning to operation.

Power, water, and cities for the AI buildout

Source: Joint Press Corps

Political test ahead

The location of the second semiconductor cluster in the southwest drew the sharpest domestic reaction, over whether the choice reflected industrial logic or political favoritism. The DP defended it on land, water, and power grounds and moved to add legislative and budget support, including a special act for the new zones. The PPP called the plan interventionist, floor leader Jeong Jeom-sik raised the prospect of a National Assembly inquiry into whether Samsung and SK Hynix were pressured into their pledges, and lawmakers from Daegu and North Gyeongsang protested their region's exclusion.

Editorials were mixed, with several outlets backing the state-led approach as consistent with US, Chinese, and Japanese industrial policy while flagging labor, water, and power risks. International coverage focused on scale: Bloomberg noted the projects tie President Lee's legacy to the chip boom and the southwest's development, and the AP highlighted the region as a DP stronghold with little industrial history. Samsung and SK Hynix shares fell on the announcement day, as investors weighed the scale of the pledges and possible oversupply risk. We will provide updates as policies and corporate plans take shape.

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