SOUTH KOREA'S STRATEGIC SHORTFALL IN THE SEMICONDUCTOR AND AI RACE

by

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In the rapidly evolving landscapes of geopolitics and technology, global powerhouses are making substantial strides to secure their dominance in these emerging technologies. Amidst the intense U.S.-China competition to become leaders in science and technology, South Korea has heavily invested in strategic technologies, driven by the government's ambition to become a 'global pivotal state' in these fields. The Yoon administration has made considerable efforts to maintain and enhance South Korea's leadership through various AI initiatives and regulations and semiconductor industry support packages aimed at ramping up its competitiveness. South Korea's legislative efforts suggest that the country is not doing enough to remain competitive in this critical international power game.

Global Legislative Initiatives

Many technology and economic powerhouses are presenting active collaboration with the legislature and the government. The United States has been aggressively investing in its semiconductor and AI sectors facilitated through executive orders and legislative support. The CHIPS and Science Act, signed into law in August 2022, allocated over $50 billion to bolster domestic semiconductor research, development, and manufacturing. Additionally, the U.S. has committed substantial resources to AI, with federal funding and strategic partnerships aimed at maintaining its technological edge. At the same time, the U.S. has its own AI Bill of Rights along with state bills that foster and regulate AI. This underscores the country's commitment to leading in AI innovation and framework creation, providing a strong foundation for sustained growth and leadership in these critical sectors.

China too has identified semiconductors and AI as national priorities, embedding them within its broader strategic goals. The Chinese government has been pouring billions into these industries through initiatives like the National Integrated Circuit Plan and the New Generation Artificial Intelligence Development Plan for self-sufficiency and competitiveness. At the same time, the Chinese government enforced a law regulating generative AI in August 2023, making it the first legislation of its kind globally. This law was part of a broader regulatory framework aimed at different aspects of AI, and included new restrictions on companies providing generative AI services, focusing on both the training data and the outputs produced for consumers. This demonstrates China's active role in leading the development of cutting-edge technology industries and establishing the regulatory frameworks necessary for the international community.

Japan has been leveraging its technological expertise and strategic partnerships to bolster its semiconductor and AI sectors. The Japanese government has been actively fostering collaborations between domestic companies and multinational corporations. Notable examples include the partnership between TSMC and Sony, as well as inviting Samsung and Micron to establish advanced semiconductor fabs in Japan through the provision of generous subsidies. Additionally, Japan's AI strategy focuses on integrating AI across various industries, supported by substantial government funding and a comprehensive policy framework, along with the legislature's push for generative AI regulation within 2024. This proactive approach ensures that Japan remains a key player in the global tech arena and become the vanguard in Northeast Asia.

Taiwan, home to semiconductor giant TSMC, has been at the forefront of the global semiconductor industry. The Taiwanese government has been actively supporting its semiconductor sector through favorable policies, significant funding, and initiatives to attract global value chains for semiconductors. For example, Taiwan introduced the Statute for Industrial Innovation in January 2023, granting tax credits to domestic semiconductor companies. The act enabled these companies to deduct 25 percent of their annual research and development costs and 5 percent of their expenditures on new equipment for advanced processes from their corporate income tax. Thus, Taiwan's strategic focus and support on maintaining its leadership in semiconductor manufacturing,

coupled with a burgeoning AI sector, positions it as a critical player in the international tech landscape.

South Korea's Legislative Inertia

While these nations provide substantial support and establish frameworks for cutting-edge technologies, South Korea's progress, especially in the legislature, has stagnated. The 21st National Assembly concluded on May 29, leaving behind a notable gap in legislative support for South Korea's emerging technology industry. Several influential laws that could have significantly boosted the country's technological advancement failed to pass, highlighting a crucial missed opportunity for Korea's semiconductor and AI sectors. The Special Act on Expanding the National Power Grid is a notable example. This act aimed to enhance power supply for the semiconductor industry by establishing a National Power Grid Expansion Committee led by the Prime Minister. The committee was designed to expedite the approval process handled by various ministries and directly mediate with residents in areas affected by the transmission grid. The act was expected to reduce the construction period of key infrastructure by 30 percent and reduce the scale of transmission line construction by 10 percent. However, it ultimately failed to pass the National Assembly's plenary session, hindering essential infrastructure support for semiconductor industries and AI datacenters that require vast amounts of water and electricity for large-scale production and storage.

Similarly, the K-Chips Act, which sought to extend tax credit for semiconductor investments until 2030, did not pass either. The tax credit is set to expire at the end of this year. Additionally, the AI Basic Act (Act on the Promotion and Establishment of Trust in the Artificial Intelligence Industry), which was pending in the National Assembly's Science, ICT, Broadcasting, and Communications Committee, also failed to pass. Despite bipartisan support for the advancement of the AI industry, the bill, which included support measures such as the adoption of AI technology and the formulation of policies based on AI ethical principles, was not processed.

This legislative inertia places South Korea at a strategic disadvantage. Despite having leading companies like Samsung and SK Hynix in the semiconductor industry, the lack of robust legislative support hampers the country's ability to compete on a global scale. The absence of these critical laws indicates a significant gap in South Korea's strategy. Legislative support is crucial for providing the necessary funding, creating a favorable policy environment, and fostering innovation. Without these elements, South Korea risks falling behind in the fiercely competitive semiconductor and AI markets. At the same time, the lack of legislative support significantly hampers South Korea's potential to lead in global governance in these emerging technology sectors, especially in AI.

South Korea has been proactive in the international arena, exemplified by its hosting of the 2024 AI Summit and agreeing on the Seoul Declaration for Safe, Innovative, and Inclusive AI. These initiatives have positioned South Korea as a facilitator and a thought leader in the responsible advancement of AI. However, the inability to translate this international leadership into robust domestic legislation undermines its credibility and effectiveness on the global stage. Without the legislative support to back its ambitions, South Korea will experience diminished international influence in shaping the future of these critical industries.

In conclusion, while the United States, China, Japan, and Taiwan have been making concerted efforts to strengthen their semiconductor and AI industries through robust legislative support and strategic investments, South Korea's stalled legislative initiatives signal a lack of urgency and commitment. To avoid being left behind, South Korea must swiftly address this legislative gap and bolster its support for these critical sectors. It is essential that legislators, regardless of their political affiliation, show bipartisanship and collaborate on initiatives that align with the nation's technological vision. Failure to do so could result in South Korea losing its competitive edge, with long-term implications for its technological and economic future.

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