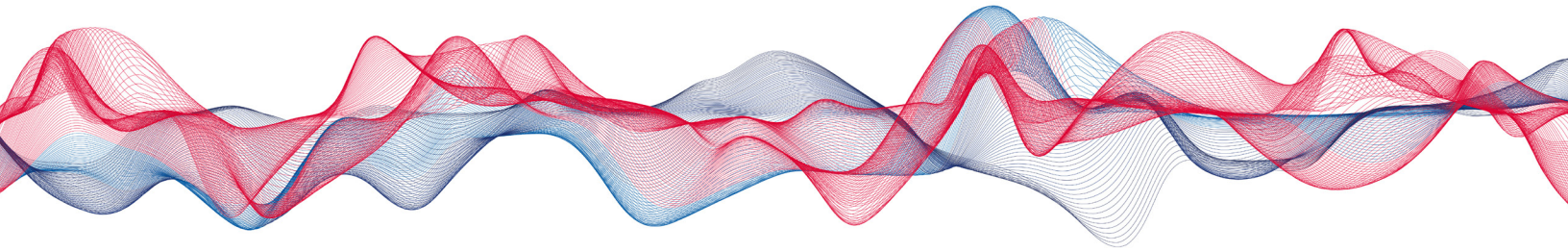


THE ECONOMIC SHIFT

Embracing Emerging Technology Opportunities



In the face of shifting global supply chains, rising geopolitical tensions, and the rapid pace of technological innovation, Japan's technology sector is seizing a wealth of new opportunities. With the country's economic rebound, Japan is doubling down on investments in high-stakes industries such as semiconductors and artificial intelligence (AI). The strategic push aims to cement Japan's role as a leader in critical technologies that will shape the next global economic order.

New industrial dreams

As the global semiconductor race intensifies, Japan is positioning itself for a major comeback in the semiconductor sector. To secure its place in this fiercely competitive and capital-heavy industry, the government has committed to a bold plan, earmarking ¥10 trillion (\$65 billion) in subsidies and other incentives.¹

The domestic semiconductor industry already has an advantageous starting point. For example, Japanese manufacturers lead the global market for NAND and discrete, analog and other wafer fabrication.² Japanese companies are also deeply entrenched in the semiconductor production equipment (SPE) market, where they hold a 92% global market share for photoresists and 64% for manufacturing automation equipment.³

Japan's homegrown semiconductor company Rapidus, financed in part by billions of dollars of government money, partnered with IBM to produce N2 (2-nanometer) chips critical to the development of AI technologies spanning sectors such as electric vehicles, data centers and smartphones and devices.⁴

At the same time, leading semiconductor companies are turning to Japan as a stable and secure hub with the turnkey infrastructure they need to expand production. TSMC, the world's largest contract chipmaker, opened its first plant in the country in 2024 and plans to build more.⁵

BofA Global Research Analysts Mikio Hirakawa and Mayako Ouchi say the Japanese semiconductor industry is well-placed to take advantage of this trend for years to come:

"We see the broadening in semiconductor applications as a long-term theme in structural growth for the semiconductor and SPE markets."

Our Global Research analysts see two key drivers fueling sustained growth in the SPE market. The first is the increased demand for SPE as semiconductor manufacturers expand production capacity to meet rising volumes. The second is the growing complexity of chips as miniaturization progresses from N3 to N2 and N1.4 nodes, requiring next-generation SPE to support the creation of more intricate and advanced chip architectures. These trends are expected to keep the SPE market on a strong growth trajectory, driven by the evolving needs of semiconductor production.

Aging population drives innovation

Aging demographics is also another structural driver for the technology sector as industries in developed economies transition to automation and robotics to make up for labor shortages. This is already happening at home — Japan is third highest in the world in robot

¹ <https://www.reuters.com/world/japan/japan-propose-65-bltn-plan-aid-domestic-chip-industry-draft-shows-2024-11-11>

² <https://www.bcg.com/publications/2024/japanese-semiconductor-renaissance>

³ <https://www.bcg.com/publications/2024/japanese-semiconductor-renaissance>

⁴ <https://english.kyodonews.net/news/2022/12/34b94335aee6-urgent-rapidus-ibm-sign-development-partnership-on-next-generation-chips.html>

⁵ <https://www.reuters.com/technology/tsmc-build-second-japan-chip-factory-raising-investment-20-bltn-2024-02-06>

⁶ <https://ifr.org/wr-industrial-robots/>

density (or the number of industrial robots per 10,000 persons employed in the manufacturing industry).⁶ Almost half the world’s installed robots are designed or manufactured in Japan,⁷ while at the same time, it is the world’s second-largest market for robots behind China.⁸

With the next generation of robots using AI to improve their dexterity and imitation learning capabilities,⁹ Japan’s electronic components sector is also poised to prosper from the next phase of this technology boom.

“We expect a growing focus on electronic component manufacturers that are readily able to generate volume benefits driven by growth in edge devices and the increasing impact of the AI server business,” says BofA Global Research Analyst Masashi Kubota.

“We also see progress with vehicle electrification, including electric vehicle market growth, and the resulting growth in electronic component demand as attractive longer-term themes for component firms,” he adds.

Shifting global trade dynamics

By leaning into its core industrial strengths, Japan is confidently asserting its position in the fast-growing tech sectors, adopting a collaborative approach that taps into its strong ties with the United States. However, as Japan works to strengthen its domestic industries, global trade dynamics are continuing to evolve, introducing a degree of uncertainty into the mix.

“Globalization is morphing. The relocation of supply chains will continue based not on cost efficiency consideration but on risk management consideration,” notes Claudio Irigoyen, head of Global Economics Research, BofA Global Research.

How Japan adapts to this new reality will likely drive the success of its tech renaissance. For a nation known for industrial and technological innovation along with long-term strategic vision, the momentum of this transformation has only just begun.

⁷ International Trade Administration: Japan Advanced Manufacturing and Robotics, June 2023
⁸ International Federation of Robotics: Record of 4 Million Robots in Factories Worldwide, September 2024
⁹ Google DeepMind: Our latest advances in robot dexterity, September 2024

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