CIO View

APAC CIO View

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Is Asia Self-sufficient in Times of Deglobalization?



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IN A NUTSHELL -

- After years of globalization, supply chains across sectors are intertwined internationally. No country seems to be completely self-sufficient throughout the whole supply chain.
- Food: Australia is the only self-sufficient country in APAC, while the rest of the region are more dependent on trade due to resources constraints or insufficient supply chain infrastructure.
- Energy: No one is really self-sufficient in APAC. Australia and Indonesia are relatively more self-reliant in energy with positive net export. Countries have been investing in energy transition to reduce reliance on imported fuels, but sourcing investment has been difficult.
- Technology: the supply chain is highly globalized, with countries relying on each other as
 division of labour. Only China seems to be attempting to completing its own supply chain.

It does not take a mastermind to notice that our world seems more uncertain than ever. One month ago, we witnessed the largest tariff increase in modern economic history on the so-called Liberation Day. The following week, the U.S. president announced a 90-day pause on tariff hikes for every country except China and escalated tariffs on China to 145%. Now, the stock market is rallying in the wake of a trade deal between the U.S. and the U.K., alongside substantial progress in U.S.-China negotiations. While the market has been on a rollercoaster ride, it is evident that global uncertainty is rising, and the level of protectionism has surged under Trump's presidency. In a world of global protectionism, where there are no true winners, self-sufficiency has become critical for many countries to reduce vulnerability to external shocks. To assess which countries are more resilient, this article explores the self-sufficiency of Asian nations in food, energy and technology.

Food: Australia is an all-rounder in both raw material and supply chain self-sufficiency

Australia is the only country in APAC that demonstrates a high food self-sufficiency ratio (SSR), driven by abundant resources and advanced infrastructure. Its vast arable land, large labor force, and sophisticated mechanization enable near self-sufficiency in most essential foods. As a net food exporter, Australia's food imports, primarily non-essential processed foods, beverages, seafood, and dairy, accounted for only 2 – 3% of total imports from 2020 to 2022.¹ Additionally, its sophisticated downstream supply chains, featuring advanced cold chain systems, extensive bulk storage, modern processing and packaging, and efficient distribution, ensure effective food storage and transportation.

In contrast, other Asia-Pacific (APAC) countries are more trade-dependent. At the production level, developed markets such as Japan and South Korea face limited arable land, compounded by a severe shortage of agricultural labor and reliance on foreign workers. Consequently, they prioritize rice self-sufficiency while importing most cereals (e.g., wheat, corn, and soybeans), meat, vegetables, and seafood from the United States, Canada, Australia, Brazil, and China².

Similarly, Southeast Asia (SEA), despite abundant land and human resources for agriculture, focuses on rice production (e.g., Thailand and Vietnam) and select agricultural products such as fruits, coffee, and rubber. The rest of their food supply relies heavily on imports.

¹ Australian Bureau of Statistics, 2022

² Ministry of Food and Rural Affairs and Ministry of Finance, 2024

China faces similar challenges. While its grain SSR reached 95% in 2023, its overall food SSR remains around 60%, indicating significant reliance on imported soybeans, vegetable oils, and oilseeds³. However, China is less vulnerable than SEA countries due to its wider range of food production and massive import volumes, which provide substantial bargaining power. Moreover, with over 131 million m³ of cold storage capacity built in 2020⁴, China's downstream infrastructure is robust, though rural-urban disparities persist. Conversely, SEA faces challenges in food quality and preservation due to traditional handling and storage methods, as well as fragmented and inefficient distribution, particularly in rural areas with limited transport infrastructure. Significant investment in food processing is needed to upgrade SEA's food supply chain.

India presents a mixed food self-sufficiency profile. As one of the world's largest producers of grains, poultry, fish, and pulses⁵, it ranks 105th out of 127 countries in the 2024 Global Hunger Index⁶, indicating severe food insecurity. Poor infrastructure causes significant food waste, with inadequate cold storage leading to spoilage of perishable goods and poor rural road networks causing delays. It is estimated that about 40% of the food produced in India is wasted due to inefficiencies in the supply chain⁷. Both public and private investment is needed to address these infrastructure gaps in India.

Energy: Australia and Indonesia are self-sufficient now but unlikely in the future with their energy transition goals

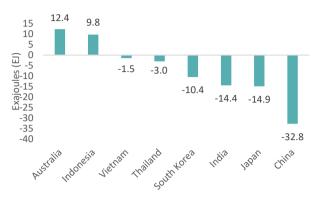
No Asian country is fully self-sufficient in energy, with the region relying heavily on fossil fuels, which account for 82% of energy consumption on average (Figure 2). Only Australia and Indonesia, net exporters of coal and highly self-sufficient in liquefied natural gas (LNG) (Figure 1), achieve relative energy independence⁸. Other Asian countries depend on imports, including crude oil from the Middle East and Southeast Asia, petroleum products from within Asia, and renewable energy systems from China, Germany, and the United States⁹.

Several factors limit energy self-sufficiency. First, some countries lack sufficient raw material reserves. For instance, South Korea and Japan have minimal coal reserves. Second, domestic reserves often fail to meet local demand. Despite being the world's largest coal producer, China, along with India (the second-largest) and Vietnam, imported 8–22% of their coal consumption in 2022¹⁰, particularly high-quality coking coal for steel production. Third, refining capacity is often limited. While Thailand, India, China, Indonesia and Vietnam have proven oil reserves¹¹, there are gaps in their refining capacity. For example, China requires specialized infrastructure upgrades if they would like to process high-sulfur or heavy crude¹². In Vietnam and Indonesia, refining capacity is insufficient, and facilities are not fully optimized. While investment in Southeast Asian oil refining could help, high sunk costs, anticipated oil price declines due to OPEC+ output increases, and operational challenges pose obstacles.

To reduce reliance on imported energy, Asia-Pacific (APAC) countries are investing in energy transitions to renewables and nuclear power. This has proven to be challenging even for countries like Australia and Indonesia that seem to be more self-reliant at the moment. Australia's net-zero target by 2050 requires accelerated renewable energy adoption, as renewable energy accounted for only 12.32% of Australian final energy consumption in 2021, ranking 10th in APAC¹³. Substantial investment is needed to meet interim 2030 and 2050 targets. Similarly, Indonesia, with nearly 40% coal reliance (Figure 2), may face increasing renewable energy demand as its economy grows. These challenges affect all APAC countries. While shifting to renewables be an answer to achieve greater energy self-sufficiency, securing sufficient investment for energy transition remains a key obstacle.

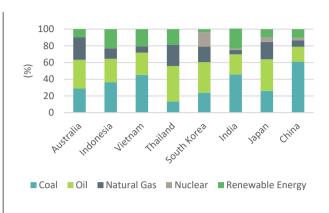
- ³ ARMS, October 2024
- ⁴ JARN, February 2022
- ⁵ Food and Agricultural Organization, 2024
- ⁶ Global Hunger Index, 2024.
- $^{7}\,\mbox{FAO}$ and Ministry of Food Processing Industries, 2022
- ⁸ Australian Bureau of Statistics and Indonesian Ministry of Energy and Mineral Resources (ESDM), 2024
- ⁹ Australian Bureau of Statistics and Indonesian Ministry of Energy and Mineral Resources (ESDM), 2024
- 10 World's Top Exports and IEA, 2024
- ¹¹ U.S. Energy Information Administration, 2023
- ¹² S&P Global, 2023
- ¹³ IEA, 2025

Chart 1: Net Export of Energy by Selected APAC Countries 2021-22



Source: IRENA, 2024

Chart 2: Energy Mix by Selected APAC Countries 2022 – 2023



Source: International Energy Agency, 2025

Technology: A highly globalized supply chain which no one is truly self-sufficient

Long-term readers may recall our previous CIO View on the semiconductor supply chain. In that article, we highlighted APAC's critical role in the global semiconductor supply chain. Silicon wafers, the raw material for chips, and semiconductor manufacturing equipment are produced in Japan. Leading fabless companies in the U.S. design chips, including central processing units and graphics processing units, and send these designs to top foundries in Taiwan for production. The chips are then assembled and tested in Taiwan or China. South Korea specializes in memory production. This illustrates a high degree of division of labor within Asia, with each country relying on the others.

Chart 3: Mapping the Semiconductor Supply Chain in Asia



Source: DWS Investment GmbH, as of September 6, 2024.

Chart 4: Technology Roadmap of Leading Global Foundry vs. Leading Chinese Foundry

TSMC	SMIC
20nm	28nm
16nm	
10nm	
7nm	14nm
5nm	
	8nm
3nm	7nm
2nm	
	5nm
	16nm 10nm 7nm 5nm

Source: TSMC and SMIC website, as of May 2025.

With the rapid development of artificial intelligence, technological self-sufficiency has become more critical than ever. In 2014, China established that China Integrated Circuit Industry Investment Fund to provide state-backed capital for its semiconductor industry, aiming for self-sufficiency. As a result, numerous semiconductor companies have emerged or expanded in China across various segments of the value chain, from upstream fabless companies designing central processing units (CPUs) and graphics processing units (GPUs) to downstream foundries and outsourced semiconductor assembly and testing (OSAT) providers. While China has made significant progress in CPU and GPU design capabilities, the technological gap in other parts of the supply chain appears to be widening. For example, the technology node gap between China's leading foundry and the world's top foundry has increased from four years in 2022 to five years in 2025. Similarly, China's leading memory integrated device manufacturer (IDM) only began mass production of high-bandwidth memory 2 (HBM2) last year, a milestone South Korean IDMs achieved a decade ago.

The success of leading technology companies stems not only from superior manufacturing capabilities but also from the robust ecosystems built around their offerings. For example, Nvidia's proprietary CUDA programming interface enables developers to program GPUs to accelerate applications, allowing Nvidia chips to outperform competing architectures, even when competitor chips offer higher floating-point operations per second (FLOPS). Any attempt to achieve technological self-sufficiency must be supported by a sufficiently large ecosystem, which represents a significant barrier for any company to overcome.

Hence it is unsurprising that the market share of the leaders in the global technology supply chain has been increasing over time, and the consolidation is expected to continue. The global technology supply chain has become highly specialized across different countries after years of globalization. No single country dominates the entire supply chain, and thus, no nation is truly self-sufficient. While efforts to achieve self sufficiency on critical technology could present interesting investment themes in some countries, these efforts would require significant time to materialize and become competitive in the global market.





 $Source: Counter\ Point,\ as\ of\ December\ 31,\ 2024.$

Source: TrendForce, as of December 31, 2024.

Conclusion: Is there true self-sufficiency?

Decades of globalization have deeply integrated the supply chains of Asian countries across food, energy, technology and defense sectors. Apart from China, which prioritizes self-sufficiency very early on due to national security concerns, other nations are often better off integrating with the global supply as achieving full self-reliance is often unattainable due to resources constraints. Having said that, some countries have achieved self-sufficiency partially in selected areas. For instance, Australia has attained a high extent of self-sufficiency in food and energy through the corresponding supply chain, and China has gathered its efforts in completing its technological self-sufficiency. Given heightening uncertainty in the global tensions, more countries may try to reduce its external dependence, possibly prompting the market to interesting investment themes such as food processing in Southeast Asia, renewable capacity in Australia and semi-conductors in China.

Glossary

Globalization: The process of increased interconnectedness and integration of economies, cultures, and societies worldwide through trade, communication, and technology.

Liberation Day: On April 2, 2025, President Trump announced "Liberation Day" tariffs, imposing 10% on all imports and higher reciprocal tariffs on ~60 countries to boost U.S. manufacturing, risking higher prices and trade tensions.

Protectionism: Economic policies that restrict imports through tariffs, quotas, or regulations to shield domestic industries from foreign competition.

Self-Sufficiency Ratio: The percentage of a country's food or resource needs met by domestic production, indicating reliance on local supply.

Cold Chain: A temperature-controlled supply chain for perishable goods, ensuring products like food or vaccines remain fresh or effective.

Bulk Storage: Large-scale storage of goods, typically commodities like grains or liquids, in facilities like silos or tanks.

Global Hunger Index: A tool measuring and ranking countries' hunger levels based on undernourishment, child mortality, and nutritional deficiencies.

High Sulfur Crude: Crude oil with high sulfur content, often cheaper but requiring more refining to meet environmental standards.

Heavy Crude: Dense, viscous crude oil that is harder and costlier to extract and refine compared to light crude.

OPEC+: An alliance of OPEC member countries and non-OPEC oil-producing nations, like Russia, coordinating oil production policies.

Net-Zero: Achieving a balance between greenhouse gas emissions produced and removed, typically to combat climate change.

Silicon Wafers: Thin slices of silicon used as the foundation for manufacturing integrated circuits and microelectronic devices.

Fabless: A fabless company designs and markets hardware while outsourcing its manufacture to a third-party partner.

Foundries: A semiconductor manufacturer that makes chips for other companies.

Critical Technology: Technologies deemed essential for economic or security interests, such as AI, semiconductors, or quantum computing.

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