



# Japan's Resilience: Toward a New Tech Policy for the Age of Economic and National Security

Kazuto Suzuki | 13 February 2023

## Key Issues

- Japan's new economic security law is designed to make Japan more resilient from economic coercion.
- Supply chain resilience is the primary focus because of the experience of China's ban on the export of rare earth minerals in 2010.
- The protection of critical infrastructure should be carefully calibrated because it can be used as a protectionist measure.
- The hidden agenda of the promotion of cutting-edge technology is to provide communication channels between military authorities and academia.
- The economic security law aims to reduce dependence on China by promoting industrial competitiveness.

Against the backdrop of globalised supply chains, rising international tensions and the COVID-19 pandemic, leading politicians in Japan are increasingly alarmed about the nation's economic and technological vulnerability. In response to these concerns, the cabinet of Prime Minister Fumio Kishida has proposed a major package of economic security bills, which the National Diet passed in May 2022 to enter into force in April 2023. The purpose of the legislation is fourfold: 1) strengthen supply chains; 2) ensure the safety and reliability of critical infrastructure; 3) promote public-private cooperation to develop key cutting-edge technologies; and 4) provide for non-disclosure of sensitive patents.

This Policy Brief puts the components of the emerging economic security framework into the context of Japan's policies for the promotion of science

and technology. It explores the impact of these policies on the government's economic security objectives, and answers the question of what role technology policy should play in bolstering economic security.

### Strengthening the supply chain

Strengthening supply chains to reduce Japan's dependence on critical imports from China, and other potentially hostile countries, is the core of the first pillar of Kishida's economic security policy. This reflects changes in global trade. The World Trade Organization (WTO) and regional frameworks such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) have helped lower barriers to trade and investment and internationalised supply chains in many industries. After having joined the WTO in 2001, China quickly emerged as a

pivotal link in these supply chains, earning the sobriquet of “the world’s factory”. Today, most countries depend on China to keep their economies running smoothly. However, although economic relations with China have deepened, ideological, political and military frictions have not abated as originally expected. China has instead shown no compunction in using trade as a weapon in diplomatic disputes. An example of such “economic statecraft” occurred in 2010, during the height of Japan-China tensions over the Senkaku Islands, when China halted shipments of rare earth minerals on which Japanese industry depends. Reducing dependency on China and other countries is the best defence against economic statecraft.

Japan depends on the import of a whole range of strategically important products, and many incorporate cutting-edge technologies. Green products like storage batteries and solar panels, which are essential to be able to phase out fossil fuels in combatting climate change, figure prominently. In pursuing its policy of decarbonisation, China has positioned itself as a top competitor in this green industry and has rapidly expanded its global market share. Japan is currently a major importer of Chinese solar panels and storage batteries. It would not want to be endangered by an unreliable supply chain as international demand for these low-carbon products surges. This highlights the need for a coordinated technology policy to bolster Japan’s economic security.

### **Protecting critical infrastructure**

The need to reduce Japan’s dependence on Chinese imports has also influenced the second pillar of Kishida’s economic security policy; namely, to ensure the safety and reliability of critical infrastructure. This is an issue that has come into sharp focus of attention in the context of the next generation of mobile communications – 5G. The use of Chinese equipment in 5G networks has prompted concerns over the potential for Chinese authorities to intercept communications or, even worse, disrupt or shut down this critical sector in the event of a conflict. In 2019, citing such concerns, the administration of President Donald Trump banned United States (US) carriers from purchasing 5G equipment from Huawei and other Chinese firms. In November 2021, President Joe Biden signed the Secure Equipment Act. It prohibits US regulators from issuing new equipment licenses to Chinese companies deemed to be security threats.

However, such policies by themselves fail to address the root cause of the 5G problem. Chinese mobile communications equipment and devices have made major inroads world-wide as it offers high quality products at competitive low prices. Conversely, 5G technology provided by American and Japanese companies is considerably more expensive. 5G networks require a huge amount of special equipment in the form of antennae, switches and other components which would drive up the costs for infrastructure development if only Japanese and American goods were used. As a consequence, the nationwide roll out of the 5G infrastructure needed to support a new generation of telecommunications businesses and digital industries would slow down considerably. Thus, shutting out cheap Chinese equipment would create high costs which is not an economically rational choice.

Therefore, Japan needs to implement policies designed to boost the cost-competitiveness of Japanese 5G equipment to build its critical 5G infrastructure. This will necessitate a reorientation of Japan’s basic science and technology policy. Until now, science and technology policy has been driven by the assumption that economic competitiveness stems from the development of new technologies. But this is not the only form innovation can take. Cost reduction in order to be able to provide infrastructure at a socially acceptable price would boost the competitiveness of strategically important industries. This leads to the third pillar of Kishida’s economic security policy.

### **Promoting the development of cutting-edge technology**

Of the four stated objectives of the government’s forthcoming economic security package, promoting public-private cooperation in order to develop key cutting-edge technologies has the closest link to science and technology. At this point, it appears as though the government intends to identify priority research fields and to draw up guidelines for government-supported research, all while emphasising Japan’s competitiveness and reducing dependence on imports. In September 2022, the government announced the first research and development (R&D) vision for maritime, space, cyber and bio-technologies as the primary research field, and issued guidelines on Artificial Intelligence (AI), robotics, advanced sensors and advanced energy technologies. The new economic

security office, which is to be created within the Cabinet Office, might use these guidelines to influence decision-making within the various government units currently responsible for technology policy, including the Ministry of Education and the Council for Science, Technology and Innovation.

In addition, the government will actively provide researchers in industry and academia with information relating to the development of advanced technology, and most likely include guidance pertaining to security concerns. Academic and corporate researchers are not, or at best only insufficiently, aware of the danger that

additional regulations could also inhibit innovation.

Rules designed to prevent leakage of sensitive information (including proposed restrictions on the participation of certain foreign students and researchers in sensitive programmes) are likely to negatively impact scientific research. Research benefits from diverse inputs and the free flow of ideas. Restrictions on the sourcing of materials, equipment and devices could also impede R&D. On the other hand, supply-chain reform presents an opportunity for the development of home-grown technologies. However, attention has to be paid that these policies

## “Japan’s new economic security package is a response to the challenges of the new global economic order.”

certain sensitive technologies can be appropriated by foreign governments for military purposes. Therefore, the new economic security legislation will also create a system to prevent disclosure of patents involving sensitive technology.

The dispersion of jurisdiction over technology policy among numerous ministries, agencies and government panels is a major administrative obstacle in the way of revamping technology policy with economic security in mind. Without streamlining competences, any new framework is likely to compound the duplications and inefficiencies of the current system. As the government opted to speedily submit a package of bills, it avoided the onerous task of administrative reform. Under these circumstances, the pursuit of a coherent, strategic policy is unlikely to progress in the short term.

### The impact on Japanese technology

Although the Kishida cabinet’s economic security policy remains somewhat amorphous, outlines of a defence-oriented game plan have emerged. The plan aims at reducing Japan’s supply-chain and infrastructure vulnerabilities and preventing sensitive technologies from falling into the wrong hands. Risk mitigation is an important element of security policy. From the standpoint of technology policy, however, this risk mitigation could prove to be a double-edged sword: while it may create new R&D opportunities, the

do not lead to a mere transfer of the dependency from one to another foreign country, which would reduce the benefits of such a policy. Inviting foreign manufacturers to build production facilities in Japan, as in the case of the Taiwan Semiconductor Manufacturing Company (TSMC) reduces dependencies.

### Tech policy strengthens economic security

Given these considerations, what is the best way to leverage tech policy to bolster Japan’s economic security? First, technical superiority in itself does not ensure economic security. The key is competitiveness. Even if Japan is able to produce the most technologically advanced products in a critical sector, this will not contribute to economic security if those goods are not internationally competitive. The logic of economics will compel businesses to purchase their components and equipment elsewhere. In order to avoid this outcome, R&D policies cannot only bolster the development of innovative, high-quality products – they must also be able to sell.

It will be challenging for Japanese industry to gain a competitive edge over countries with lower production costs. In instances where Japan is unable to produce competitive goods in a critical area, and the security risks are deemed unacceptable, the government should reserve the right to intervene to restructure a supply chain, even at high cost. The government has

announced 11 important domains for securing supply chains: semiconductors, cloud services, batteries, permanent magnets, machining tools/industrial robots, aircraft parts, critical minerals, LNG, maritime components, antibiotics and materials for fertilisers. These domains were selected with the following four conditions in mind: 1) whether they are critical for the survival of the nation; 2) if they create an over-dependency on outside sources; 3) if any possible disruption of supply could occur; and 4) whether they are deemed critically important to secure supply. However, the authorities need to weigh the risks and costs and remain open to finding an economically rational option where the security risk is deemed acceptable. Competitiveness, cost reduction and lower economic dependencies are the main objectives.

### Implications for military capabilities

Historically, the cooperation between military and academia still bears the legacy of the Pacific War, when scientists used the pretext of war as an opportunity to conduct extreme experiments, such as testing risky medicines or developing nerve gases. Based on this historical experience, academia in Japan set a high moral bar to collaborate in projects organised and funded by the Ministry of Defence. As Japan's defence posture was strictly limited to self-defence, so without research for long-range offensive capabilities, technology development programmes were limited to traditional conventional weapons. These areas require only the limited involvement of academic research, contrary to aerospace or maritime technologies. Furthermore, military technology programmes conducted by the Ministry of Defence, with support from the US, were more advanced than civilian technologies, which reduced the necessity for the military to collaborate with academia.

However, current military technologies require incorporation of technologies based on cutting-edge research. New weapon systems incorporate emerging technologies such as AI or robotics, areas where civilian research outperforms the military. Thus, the economic security law provides an alternative route for the government to collaborate with academia by promoting dual-use technologies without the involvement of the Ministry of Defence. Thereby, the Japanese Self-Defence Forces may improve their technological capabilities indirectly, as academia can

cooperate with civilian agencies which are funded through this law to develop dual-use technologies.

At this stage, the technologies that the economic security law will focus on are not yet clearly defined, but biotechnology, semiconductors, maritime (engines, sonars and propellers) and space (especially sensors and constellation technologies), cyber and electromagnetic technology are presumed to be part of them. The manner of incorporating these technologies into the research projects of the Self-Defence Forces needs to be fixed. However, there is a good chance that this law will provide opportunities for Japan to develop the modern weapon systems needed to counter the threat emanating from China.

### Japan's economic resilience

Japan's new economic security package is a response to the challenges of the new global economic order. US-China rivalry has undermined the basic principle of free trade, and they exercise state power over the market economy. US policies of reshoring critical industries by providing huge subsidies and preventing the transfer of critical technologies to China are changing the relationship between state power and the market. By the same token, China exercises its state power to prevent imports from countries that are hostile against it. The Russian invasion of Ukraine and subsequent economic sanctions has led to Moscow using natural gas as a "weapon" against the West. These situations create anxiety for countries like Japan that depend on free trade.

Although the Japanese business community understands the importance and necessity of the economic security package, it will have a certain impact on their activities. Diverting the supply chain or building up stockpiles would increase the cost of running their businesses. However, the Japanese business community have begun to consider such geopolitical or geoeconomic risks as the part of their costs, and they realise the seriousness of the danger that trade may be "weaponised". Thus, they were asking the government to limit the application of the law to the narrow scope of critical items. The government took a long time to communicate with the business community on limiting the impact of the law. This was the most important key element of the success of Kishida's economic security package.



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