

The Strategic Future of Subsea Cables:

Japan Case Study

By Erin Murphy and Thomas Bryja

Introduction

Given its geography as an island nation, **99 percent of Japan's communications** depend on subsea cables. Perhaps as a natural consequence, Japan is a significant player in the subsea cable industry, both as a manufacturer and as a connectivity hub between North America and Asia. Japanese companies Nippon Telegraph and Telephone (NTT) and KDDI Corporation, for **example**, own cable-laying and repair ships, and the Nippon Electric Company (NEC) alone is one of the **largest** subsea cable builders in the world.

Japan is home to at least 20 **international submarine cable landing stations** that connect to the United States, Australia, South Korea, Southeast Asia, Russia, and the Mediterranean. These cables are primarily located off the cities of Minamiboso in Chiba Prefecture and Shima in Mie Prefecture. Other cables are located off the northernmost and southernmost main islands of Hokkaido and Kyushu (Figure 1). Most cable landing stations also connect to Internet exchanges in Tokyo or Osaka, where more than 80 percent of the country's data centers are **concentrated**.

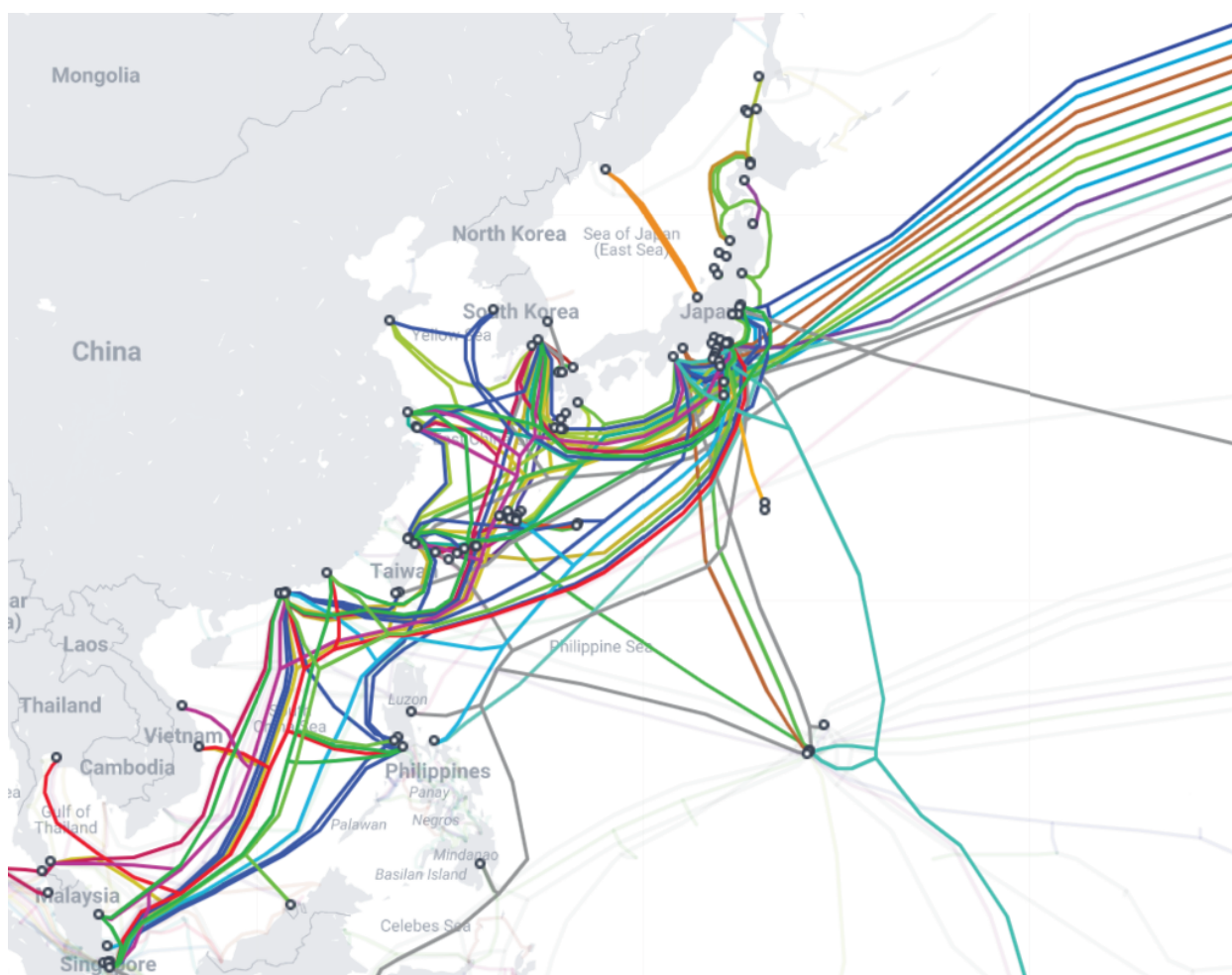
In 2022, then-Prime Minister Fumio Kishida recognized the vulnerabilities of Japan's subsea internet cables and established a \$440 million fund to incentivize companies to build more stations along the Pacific Ocean coastlines and near Tokyo. The initiative also included a push to construct data centers in rural areas that have been impacted by demographic issues as an attempt to boost these regional **economies**. In addition, Japan's Ministry of Economy, Trade, and Industry (METI) and Ministry of Internal Affairs and Communications (MIC) have designated the cable industry as a national security **priority** and "are looking to support capital investment to boost production and installation of cables."

Japan also harbors concerns regarding China's growing presence in the subsea cable industry, including its capabilities and resources in manufacturing, laying, and repairing cables. While the risk of espionage remains low, China could sabotage Japanese cables through intentional cuts, for example, or deny permits for repairs and maintenance on Japanese cables running through China's maritime domain.

Recent incidents in the region illustrate these concerns. In February 2025, Taiwanese authorities charged a Chinese ship captain for **allegedly damaging** a subsea cable off its southern coast. In addition, Chinese authorities have sought to hinder network connectivity through the South China Sea by delaying or denying approvals for new projects. These actions underscore the strategic leverage China holds over this critical digital infrastructure and the need for Japan—with its unique private sector capabilities in domestic shipbuilding and cable manufacturing, as well as strong alliances with the United States and Europe—to serve as a regional bulwark against burgeoning Chinese sabotage.

The following country case study provides an overview of Japan's subsea cable network, highlighting key risks and presenting strategic recommendations to expand and protect this critical infrastructure.

Figure 1: Map of Submarine Cables Connecting to Japan



Source: TeleGeography, "Submarine Cable Map," <https://www.submarinecablemap.com/country/japan>.

Overview of Subsea Cable Infrastructure in Japan

Japan is the telecommunications hub responsible for nearly all of the U.S.-Asia bandwidth and for connectivity across maritime and mainland Asia. There are more than 20 **international submarine cable landing stations** across Japan and around 30 active or announced international cable systems, including but not limited to:

- Twelve transpacific cables connecting to the United States and Canada: **Pacific Crossing-1**, **TGN-Pacific**, **Trans-Pacific Express (TPE)**, **Unity**, **FASTER**, **New Cross Pacific (NCP)**, **JUPITER**, **Topaz**, **JUNO**, **Proa**, **Taihei**, and **E2A**.
- Two cables connecting to Russia: the **Russia-Japan Cable Network (RJCN)** and **Hokkaido-Sakhalin Cable System (HSCS)**.
- Fifteen intra-Asia cables: **APCN-2**, **EAC-C2C**, **Asia Pacific Gateway (APG)**, **Asia Submarine-cable Express (ASE)**, **FLAG Europe-Asia (FEA)**, **FLAG North Asia Loop/REACH North Asia Loop (FNAL/RNAL)**, **Southeast Asia-Japan Cable (SJC)**, **Southeast Asia-Japan Cable (SJC2)**, **Asia Direct Cable (ADC)**, **Southeast Asia-Japan Cable 2 (SJC2)**, **Korea-Japan Cable Network (KJCN)**, **Bridge One**, **Japan-Korea (JAKO)**, **Guam Okinawa Kyushu Incheon (GOKI)**, and **Apricot**. Of the trans-Pacific cables, TPE, NCP, FASTER, JUPITER, and E2A also offer intra-Asia connectivity.
- Two cables connecting Australia and Guam: the **Australia-Japan Cable (AJC)** and **Japan-Guam-Australia (JGA)**. Of the trans-Pacific cables, TGN-Pacific and Proa also **connect** to Guam, as do the inter-Asia Guam Okinawa Kyushu Incheon (GOKI) and Apricot.

As with most international cables, each system is owned, built, and operated by a consortium of domestic carriers, specialist cable vendors, infrastructure investors, and hyperscaler cloud providers. In Japan's case, this includes but is not limited to NTT, KDDI, Google, ARTERIA Networks Corporation, SoftBank, and Citadel Pacific. Many of these companies receive their subsea cables from NEC, the largest supplier of subsea cables in Japan and **one of the largest** in the world. For example, the **Topaz** cable system between Japan and Canada, consisting of 16 fiber pairs that give it a total capacity of 240 Terabits per second, was developed by Google and supplied by NEC.

GOVERNANCE

The permitting, repairs, and implementation of subsea cables are overseen by a mix of ministries, local governments, and the private sector.

MIC is the primary stakeholder on subsea cables, approving policy and engaging with foreign governments on cooperation and security. For instance, in 2022, MIC and the European Commission signed a memorandum of cooperation on submarine cables for secure, resilient, and sustainable global connectivity. This **agreement** covers areas such as strengthening “trusted, multi-layered global connectivity that provides data route diversity and redundancies,” working jointly on a system for detecting and reporting cable outages, facilitating “relevant administrative processes,” and collaborating in general on the deployment of subsea cables.

In addition, METI announced in April 2025 that it planned to bring subsea cables under its purview as part of its economic security policy. As part of its mandate under the Economic Security Promotion Act

to implement measures to secure critical infrastructure and protect advanced technologies, METI wants Japan to **expand** its capability to lay undersea cables on its own, not just manufacture them.

The Ministry of Foreign Affairs, particularly through its embassies and at regional and high-level global summits, also **engages** with international governments on subsea cable systems and projects. In addition, the National Security Secretariat (NSS) within the Cabinet Secretariat oversees national security matters that pertain to this critical infrastructure.

In terms of financing and technical support, the Japan International Cooperation Agency offers assistance and training for cable maintenance, as it did for Nauru and Kiribati in support of the **East Micronesia Cable** project connecting these countries to the Federated States of Micronesia.¹ The Japan Bank for International Cooperation (JBIC) provides loans and other financial services to support the development of subsea cable infrastructure globally, including in **Latin America, Southeast Asia**, and the Pacific Islands. JBIC also has a bilateral **memorandum** of understanding with the U.S. International Development Finance Corporation to collaborate on critical infrastructure, including subsea cables, as well as a trilateral one with Australia's Department of Foreign Affairs and Trade and Export Finance Australia. Japan, Australia, and the United States have further discussed partnering on digital communication infrastructure in the context of the Quadrilateral Security Dialogue, which would include engagement with India, as outlined in the **2023 Quad Partnership for Cable Connectivity and Resilience**. Nippon Export and Investment Insurance (NEXI) can also provide insurance and export credit **financing** for companies working on international cables.

For the most part, the private sector handles negotiations with other countries to get permits for laying cables in their territorial waters. Companies are also responsible for negotiating with Japan's fishing unions, whose livelihoods may be impacted by cable laying and repair.² In addition, Japan's cable manufacturers and telecom companies are part of the International Cable Protection Committee (ICPC), an **organization** that works with its members (both government and private sector) to:

mitigate risks of natural and human damage to cables; develop recommendations and best practices for industry and governments throughout the cable project life cycle; promote scientific research addressing how cables exist in the marine environment; and promote the rule of law for the oceans.

THE PRIVATE SECTOR'S ROLE IN FINANCING AND DEMAND SETTING

Hyperscalers such as Google, Amazon Web Services, Meta, and Microsoft now account for over **two-thirds** of all Internet traffic, and they **manufacture** and lay their own cables to meet this demand. Their traffic forecasts and investment commitments have an outsized role in dictating when and where new cable systems are built.

However, billions of yen in equity are needed to build out this infrastructure. In this context, Japan's trading-house conglomerates play a unique and vital role in logistics, project finance, and long-term risk capital. They can offer an early and patient financing bridge for Japanese projects that is not available among its peers within the Organisation for Economic Co-operation and Development. When these

1. Authors' interview with official from the Japan government, March 2025.

2. Authors' interview with Japanese subsea cable companies, March 2025.

projects prove themselves with contracted revenue, global infrastructure funds can refinance them and provide follow-on capital.

As previously mentioned, the Japanese government complements private sector capital with targeted underwriting that could be harnessed in the context of subsea cables. Amid increasingly uncertain geopolitics, **JBIC** already offers concessional loans and guarantees for strategically important projects across the Indo-Pacific, while **METI** is considering bringing subsea cables under the purview of economic security policy.

Main Risks to Subsea Cable Infrastructure in Japan

Japan's digital connectivity and economic resilience, both of which depend on its subsea cable system, are confronted with an interconnected array of risks, including human accidents from a concentration of fishing and shipping in the region, as well as large-scale natural disasters including earthquakes and tsunamis. Growing geopolitical tensions highlight vulnerabilities and raise tensions, anxieties, and uncertainties. Inefficient regulatory frameworks, especially amid maritime territorial disputes, along with a shortage of specialized repair vessels, threaten timely maintenance and exacerbate the situation. Japan must learn to navigate these turbid waters in order to safeguard its communication lifelines.

ACCIDENTS, FISHING, AND SHIPPING

As is the case globally, accidental cuts are the leading risk to subsea cables. This usually entails commercial or fishing vessels dropping anchor and dragging over the cables, thereby damaging or cutting them.

Accidental cuts are especially relevant in Japan, which is home to over **six thousand** fishing communities. The country ranked **seventh** in tonnage caught in 2018, and was the world's **leading** fishing nation between 1970 and 1991. In the eyes of Japanese fishermen, the subsea cable industry threatens **disruption**; including potentially impacting marine life with **increased** turbidity, noise, disturbance, and habitat loss or damage. Moreover, fishing activity may be restricted near cables to prevent damage, as the vast **majority** of breaks are caused by fishing trawlers, dredging, and ship anchors, along with natural disasters. Consequently, Japanese fishing communities have spoken out **against** the increased laying and regulation of subsea cables and landing stations as well as offshore wind energy development that disrupts their activity and marine life.

In addition to a large domestic fishing industry, Japanese waters are highly trafficked by global shipping routes. These routes are critical for Japanese trading as well as countries such as Taiwan, South Korea, and China, the last of whose economy relies on maritime shipping for **60 percent** of its trade in terms of value. This high traffic and the prevalence of Chinese ships specifically in or around Japanese waters already threaten security due to the potential number of genuine accidents from anchors, and also creates an opportunity for China to conduct intentional damage to cables.

NATURAL DISASTERS

Sitting on the Ring of Fire, Japan faces higher risks of earthquakes, volcanoes, tsunamis, and landslides that could severely damage or cut cables. Though such emergencies do not occur often, they can be quite damaging. **According to MIC**, natural disasters caused two cable breaks in 2023, four in 2022, and six in 2021. Extensive damage was readily apparent after the March 2011 Tohoku earthquake, which

reached a magnitude of 9.1 and created a devastating **tsunami**. At least seven transpacific and intra-Asia cables were **cut**, impacting communications and Internet access, including traffic to the United States. Asian telecom operators were able to partially restore service by rerouting optical communications traffic through undamaged cables and via satellites. Given the frequency of seismic activity in and around Japan and the multiple fault lines the cables cross to reach the United States and Asia, the likelihood of future damage is high.

GEOPOLITICAL COMPETITION AND TENSIONS

Tokyo is concerned about intentional sabotage by hostile countries, namely China. Given Japan's role in connecting the United States to Asia and Japan to the region, it is highly **vulnerable** to intentional cuts should geopolitical tensions with China, Russia, or other actors rise to the point of attacking Japan. Members of the ruling Liberal Democratic Party have highlighted the urgency of protecting cables and the need to find ways to address vulnerabilities.

China's rapid emergence as a **leading subsea cable provider and owner** is also concerning. Japan and its allies recognize the risks posed by the prevalence of Chinese hardware in critical infrastructure and have gone so far as to **block** Chinese companies from subsea cable projects that involve U.S. investment and firms due to Washington's concerns about national security. China's HMN Technologies, for example, is a growing force in the manufacturing landscape; it has provided **18 percent** of the subsea cables (in terms of total length) laid worldwide from 2019 to 2023 and is responsible for **repairing** many cable cuts from accidents or other means. The company's built-in backdoors and surveillance tools could allow Beijing to access sensitive domestic and international data flows, Washington and its allies fear. But China's threat is not confined to cyberattacks. Its vast merchant fleet has repeatedly dragged anchors that sliced cables and evaded the automatic identification system used to locate marine vessels. There was widespread concern about the supposed innovation of an **anchor-like** device designed by China, purpose-built to grapnel, sever, and repair subsea cables, although technical experts have argued the device is in fact merely a standard tool that has existed as an old industry mainstay for cable repair. Still, the episode is illustrative of rising anxieties about subsea cables emerging as a theater for geopolitical competition.

Moreover, around 2007, Huawei Marine Networks (the predecessor to HMN) **tried to buy** OCC Corporation, Japan's sole manufacturer of submarine-grade optical cables. NEC and Sumitomo Electric Industries eventually **stepped in** to purchase 100 percent of OCC in 2008, blocking the deal as a last-minute defense. This purchase rebuffed China's attempt to wrest upstream supply-chain control of a strategic asset. For Japan, these multifaceted efforts by China present both economic competition in their backyard as well as pressing national security concerns.

LACK OF SHIPS

Ships are a critical component of subsea cables, and a shortage of them leads to various challenges. NEC, despite being one of the world's main manufacturers of subsea cables, does not have its own cable-laying vessels—unlike its main international competitors, Alcatel Submarine Networks (France) and TE SubCom (United States). To lay and repair cables, NEC must contract with different companies—

such as NTT and KDDI within Japan and others from South Korea and China—and does not necessarily have priority in their queues.³ This delays repairs and adds to the timeline for laying new connections.

In addition, a lack of cable-laying or repair ships necessitates further reliance on those built and operated by China, the world’s largest producer of marine vessels. Not only does this mean China could supplant Japanese dominance in the industry, Chinese shipowners might bar NEC from contracting their ships to lay or repair cables—or, less likely but no less concerning, Chinese ships could sabotage existing infrastructure. Additionally, some experts posit that Chinese vessels are able to conduct topographic surveys of nearshore Japanese cable hubs, **espionage** that could provide China with information about strategic points and future submarine routes it could use to cripple Japanese infrastructure.

Japan’s small repair fleet underscores the region’s vulnerability. As one of the few allied countries able to service subsea cables for repair-starved nations such as **Taiwan**, any regional conflict with China would place acute, simultaneous demand on Japan’s own limited domestic capacity.

GOVERNMENT FOCUS

Despite Japan’s role in global telecom infrastructure, government policy papers rarely mention the nexus of subsea cable networks and national security. Within Japan, the idea of protecting cables and their landing stations only emerged in 2023. Policymakers have also not clarified the **role** of the Japanese Self-Defense Forces in utilizing naval and coast guard resources to patrol, monitor, and protect cable systems.

The Japanese government has begun to recognize this challenge, perhaps most prominently when Japan’s Prime Minister Fumio Kishida announced in a **speech** at the Diet (Japan’s legislature) that the government would **commit financial support** for the construction of subsea cables. The state minister in charge of economic security has also highlighted the importance of subsea cables. The supplementary **budget** for fiscal year 2022 secured funding “to conduct a study on drawing up assistance measures for Japanese companies to own cable ships,” and the following year’s budget included **\$69.6 million** (¥10 billion) to help diversify cable routes and landing stations. In February 2025, the Japanese press **reported** that the Ministries of Communications and Economy planned “to support investments in cable production and subsidize the construction of cable-laying ships.”

REGULATIONS AND TERRITORIAL WATERS

Several cables originating from Japan go through increasingly contested water in the South China Sea. For projects in these maritime regions, China has **increased** permit processing times and has put up various red tape and bureaucratic obstacles that stall or prevent laying new cables or repairing damaged ones.⁴

In addition, Japanese companies such as NEC and NTT and international hyperscalers such as Google face requirements aimed at conserving protected maritime areas, particularly on the U.S. and Canadian West Coast and around Hawaii. This entails working with **several** U.S. agencies both to lay new cables and to meet standards for repairing ones present prior to the designation of marine sanctuaries.

3. Authors’ interview with Japanese company and government official, March 2025.

4. Authors’ interviews with hyperscalers and telecommunication companies, March 2025.

Working in or near marine sanctuaries requires lengthy environmental impact assessments that delay or prevent the creation of a redundant, resilient network.⁵

Moreover, operators within Japan have to coordinate and negotiate with local fishing unions to ensure that laying or repairing cables does not interrupt fishing vessels' operations during crucial seasons. These negotiations are rarely easy and are often time-consuming. Navigating adherence to multiple industry needs reflects the difficulties of finding additional locations to lay cables and building redundancy into the network.

Policy Recommendations

There are several approaches local and international authorities, as well as private industry, can take to ensure the security and growth of Japan's subsea cable infrastructure.

1. Encourage public-private sector communication.

Across these case studies and in the industry writ large, the public and private sectors should enhance their communication and cooperation. Private sector concerns, which mainly center around permitting and regulatory issues, do not necessarily align with public sector concerns, which focus on sabotage and espionage. The steps the government plans to take may not help private sector companies lay more cables. As bureaucrats are not investors, government-led projects often fail to generate the intended result despite allocating funds to support the industry. The private sector also does not fully appreciate the government's obligation to protect critical infrastructure against an attack, no matter how unlikely. The Japanese government's efforts and funding plans may not help companies lay more cables, but they could support longer-term efforts to prevent catastrophic cuts or related hostile acts.

The public and private sectors should find avenues to improve communication regarding their respective goals and visions on supporting the industry and identifying top security concerns. The latter may require sharing intelligence or confidential information that can provide context for why the government takes steps on the issues it does. Additionally, the private sector can be more open on how the government can better support its needs. In particular, regulatory regimes should allow businesses to lay and repair cables more expeditiously through faster, streamlined permitting processes and subsidized public loans. Such measures would make it more economically feasible for companies to choose vetted, trusted suppliers over lower-cost, state-owned Chinese vendors, who often undercut competitors by large margins. By lowering financing costs and reducing regulatory overhead, private firms can prioritize secure vendors without suffering prohibitive price penalties, furthering the public sector's security objectives.

2. Cooperate on shipbuilding.

Japan is the third-largest shipbuilder in the world, holding roughly 7 percent of the **market** behind South Korea (17 percent) and China (71 percent). One way it could cut into China's **sizeable lead** is to cooperate on building ships with the United States, which has made increasing domestic shipbuilding capacity a priority under the second Trump administration. Such cooperation would address not only industry needs but also shared concerns around national security and geoeconomic competition with China.

5. Authors' interviews with subsea cable manufacturers, hyperscalers, and government officials, March 2025.

Japan can improve cooperation through investments in both its own industry and in U.S. efforts **outlined** in the Shipbuilding and Harbor Infrastructure for Prosperity and Security (SHIPS) for America Act, reintroduced in May 2025 with bipartisan support. If the act is passed, Japan's shipyards might take **advantage** of its Vessel Investment Credits and other promised financial incentives by making direct equity investments in revitalizing U.S. shipyards, cofinancing new U.S.-built vessels, building U.S. capacity, and technology sharing. This transpacific collaboration would bolster the countries' maritime industrial capacity and firmly integrate Japanese companies within the U.S. industrial base. It would also strengthen an important bilateral alliance against future Chinese contingencies while driving international market expansion for Japanese corporations.

3. Build redundancy and resiliency into the network.

In partnership with industry, Tokyo should work with local government and fishing unions to identify new landing points for cables, including in the southernmost and northernmost main islands of Kyushu and Hokkaido. In addition, Japan should consider ways to better secure landing stations to protect them from physical and cybersecurity threats. This can be coordinated through the NSS, the Japanese Self-Defense Forces, and the MIC.

Japan should also consider new routes for cables that take into account natural disaster risks, territorial waters, and fishing and commercial vessel interests. There are two schools of thought around identifying new routes for cables: (1) creating a designated cable corridor where multiple cables would be situated, lessening the impact on critical fishing areas and commercial lanes, or (2) selecting multiple new geographic routes to add more cables. The first option may ease regulatory requirements, as it is only one corridor, but it runs the risk of potential saboteurs cutting multiple cables in one go. The second option brings redundancy to the infrastructure, making it easier to reroute traffic should a cable be cut or damaged. However, the greater number of cable routes would make them more susceptible to accidental cuts and may require ensuring regulatory compliance for each new route.

4. Collaborate and cooperate with partners and allies.

Japan should leverage its partnerships and alliances to increase the number of cables built, cooperate on security measures, and ensure greater resiliency in the network. Washington and Tokyo have a long-standing relationship and generally see eye-to-eye on the importance of having a digital network that is safe, secure, and built and operated by trusted partners. The two countries are also increasing economic investment, both bilaterally and multilaterally, in this type of infrastructure in strategic regions. Such financial collaboration should continue.

Japan also has growing cooperation with the European Union on subsea cables. Increasing concerns regarding Russia's actions in the Baltic Sea have raised the urgency for greater security cooperation and for building out a more redundant network. At the **May 2025 meeting** of the EU-Japan Digital Partnership Council in Tokyo, the two sides reinforced their commitment to advancing collaboration on the research and governance of emerging and strategic technologies, confirming their "intention to continue the implementation of the Memorandum of Cooperation on submarine cables through support actions that could include awareness raising, financial support . . . and as appropriate, facilitating relevant administrative processes."

Japan can also build on its existing engagement with Australia, India, and the United States through the Quadrilateral Security Dialogue, which highlighted infrastructure as an area of cooperation in its 2023 **Partnership for Cable Connectivity and Resilience**. The Quad can strengthen cable systems across the Indo-Pacific by leveraging each member's diverse manufacturing, deployment, security, and maintenance expertise. By expanding their information sharing, shared physical and cybersecurity capabilities, and collaborative financing, the Quad will be better prepared to counter the strategic influence of China's Digital Silk Road.

Conclusion

Japan sits at a critical nexus of cable connectivity for North America and Asia. It is also a dominant player in building and laying cables and in constructing the ships that not only lay and repair them, but also patrol the seas. Given its proximity to China and its reliance on cables running through the South China Sea, Japan recognizes the security and permitting challenges firsthand. This means it not only collaborates regularly with its like-minded partners and allies on threats, but it also has experience in repairing multiple cable damages and in bringing networks back online quickly to ensure that the increasingly important global telecommunications infrastructure continues to hum. It can bring all of this expertise to bear in creating a more resilient and secure infrastructure, particularly if it aligns with the private sector and with its global partners. ■

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