



## Entangled: Southeast Asia and the Geopolitics of Undersea Cables

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### Abstract

This article demonstrates that Southeast Asia has been involved in undersea cable networks since the 19th century and that these cables are increasingly valuable to regional countries—but also increasingly vulnerable. It argues that US-China competition is resulting in a fragmentation of cable networks, and consequently, Southeast Asian countries are increasingly being forced to choose between infrastructure provided by China and infrastructure provided by the US and its partners. This article also argues that the region has been remiss in not taking a more comprehensive approach to the construction, routing, and protection of undersea cables. It concludes with recommendations for the creation of a new multi-stakeholder council of interagency officials, industry captains, and foreign policy and security practitioners to discuss cross-cutting technological issues, including undersea cables.

## INTRODUCTION

Southeast Asia, by virtue of its geographical location, is a key node in the web of undersea cables around the world. Flanked by the Pacific and Indian oceans, as well as the continental land masses of Asia and Australia, Southeast Asia acts as a communications gateway to North America and Africa. Singapore alone is a hub for nearly 40 undersea cables connecting the region both east- and westward. By 2025, approximately 10 major cable projects in and around Southeast Asia—including those that span between 10,000 to 20,000 km in length directly across the Pacific Ocean—are due to come online to meet surging bandwidth demand [1].

For the member-states of the Association of Southeast Asian Nations (ASEAN), ensuring secure, uninterrupted access to these cables is a function of their individual and collective drive to leverage digitalization for development. The digital agenda is driven predominantly by economic priorities at the domestic level and by the ASEAN Economic Community pillar at the regional level. As a result, despite Southeast Asia's central position amid the undersea communications infrastructure, relatively little attention has been paid to how government and non-government stakeholders have become increasingly enmeshed in the unfolding geopolitics of technology. How are the region's countries and companies navigating these tensions, and how can they move forward in the future to ensure the best outcomes for their societies?

This article demonstrates that Southeast Asia has been involved in undersea cable networks since the 19th century and that these cables are increasingly valuable to regional countries—but also increasingly vulnerable. It argues that US-China competition is resulting in a fragmentation of cable networks, and consequently, Southeast Asian countries are increasingly being forced to

choose between infrastructure provided by China and infrastructure provided by the US and its partners. This article also argues that the region has been remiss in not taking a more comprehensive approach to the construction, routing, and protection of undersea cables. It concludes with recommendations for the creation of a new multi-stakeholder council of interagency officials, industry captains, and foreign policy and security practitioners to discuss cross-cutting technological issues, including undersea cables.

## FIRST-MOVER NON-ADVANTAGE

Given how young Southeast Asia's post-colonial states are, it may seem as if the region's stakes in the global network of undersea cables cohered only a few decades ago. In fact, Southeast Asia's interests in these cables date back to the 19th century when the region's resources helped build the very first telegraphic cables during what might be considered the era's revolution in communications technology [2]. Cables were to the Victorians what the internet was to people in the 1990s: they shortened communication times between the imperial capitals of Britain and Europe, on the one hand, and their distant colonies, on the other. Messages that took months to convey by ship were telegraphed with near instantaneity.

Crucially, the cables relied heavily on the insulation capabilities of resin from a specific crop of trees native to Southeast Asia. Gutta percha trees produced a type of latex that was nature's precursor to plastic; "gutta" is derived from the Malay word for rubber, "getah." It acted as a sealant for the hundreds of thousands of miles of cable laid above ground, underground, and on the ocean floor. This "gum" itself was derived from the labor of local, imported, and indigenous workers who felled whole trees then toiled to draw the slow-oozing latex in disproportionately low yields.



Nevertheless, British and European demand for gutta percha exploded for industrial and other purposes, and supply struggled to keep up. A shocking number of trees were dispatched then left to rot with much of their sap intact. This reckless and unsustainable rate of harvest led to the extinction of gutta percha in various parts of Southeast Asia within a short time [3]. It elicited a crisis in the colonial capitals of the Old World, particularly because what had started off as private ventures morphed into strategic and military interest as the business of empire expanded. The British government heavily—and sometimes, permanently—subsidized telegraph companies to build and lay cables in order to administer its outposts in India and Africa [4]. Without quality gutta percha, empire’s dominion stood at risk. And yet, even as trade of this Southeast Asian commodity was controlled by industrialists and political leaders in foreign capitals, some suppliers in the region were still able to capitalize in entrepreneurial and opportunistic ways [5].

Today, the story of gutta percha is largely confined to the annals of history with synthetics having replaced its use in undersea cables. But for Southeast Asia, the story remains an important reminder of the region’s entanglement in the geopolitical contestation of undersea cables from the very beginning.

### **TELECOMMUNICATION CABLES IN SOUTHEAST ASIA: VALUE AND VULNERABILITIES**

The context for technological competition is different now. Southeast Asian countries are themselves beneficiaries of the communications infrastructure they invest in. Yet, as US-China tensions spill over into the technological architecture of undersea cables, Southeast Asia’s players will have to tread cautiously as geopolitical considerations increasingly overlap

with—and complicate—commercial decisions.

With internet penetration rates of over 50 percent in nearly all the ASEAN member states and the region’s digital economy projected to reach US \$100 billion in revenue in 2023, demand for faster connection speeds and greater bandwidth capacity afforded by new-generation undersea cables will continue to grow [6]. Countries are betting big on digital transformation policies, strategies, and blueprints for greater efficiency in public services. 99 percent of Singapore’s government services are end-to-end digital as part of its Smart Nation initiative, and at least five of ASEAN’s 10 member states have an artificial intelligence framework in place [7]. Analysts project the region’s digital economy to grow by 6 percent annually towards a US \$1 trillion gross merchandise value mark,

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buoyed by industries such as e-commerce and digital financial services [8]. These upward-trending numbers will require ever greater bandwidth capacity. Technological advances in fiber optic undersea cables have begun to, and will continue to, fulfil much of this demand. The Southeast Asia-Japan cable (SJC) built in 2013 had the design capacity of 28 Tbps. SJC 2—the second iteration of the SJC—is scheduled for completion at the end of 2024 and expected to carry an expanded capacity of 144 Tbps. Meta’s and Google’s Apricot cable, also to be launched in 2024, has an initial design capacity of over 190 Tbps [9]. This far overshadows the Asia-America Cable Gateway System, for example, which was

the first undersea cable system directly linking Southeast Asia with the United States. Ready for service in 2009, it had a minimum capacity of 1.92 Tbps.

Given the depths at which undersea cables are laid and the ocean terrains through which they traverse, earthquakes, underwater volcanic activity, maritime activities, and theft can cause substantial damage to their operations [10]. With some of the world's busiest shipping lanes in Southeast Asia, there is a high risk of cable damage from vessels, especially fishing trawlers transiting the region's waters [11].

Geography also matters. The location of Indonesia and the Philippines within the Ring of Fire—the tectonic belt of seismic activity spanning geological fault lines and volcanoes—renders both countries especially susceptible to natural disasters underwater and above ground. Sand dredging further poses a risk to undersea cables being damaged. The frequency and magnitude of regional mining of this natural resource steadily grew from the 1970s and peaked at the turn of the millennium as Singapore imported millions of tons of sand from its neighbors. This may rise again as Indonesia recently lifted its 20-year-old ban on sea sand exports [12].

Additionally, there is the issue of repair capability and availability. Although there are cable-laying and repair ships owned, registered, and operated by Southeast Asian players—11 of the 60 major undersea cable ships listed by the International Cable Protection Committee in February 2022—speedy repairs are not always forthcoming or cheap [13]. The average repair time in 2023 was 40 days, an improvement over previous years [14]. However, this window not only depends on vessel and crew availability but also on weather and conditions at sea. It is also impacted by the difficulty of obtaining the requisite permits or licenses and by national

cabotage requirements [15].

The cost of repairs can range between US \$1 million and \$3 million, but extra costs may be incurred to reroute and restore communications using undamaged cables. This, of course, assumes that there is cable redundancy [16]. In 2022 and 2023, all five of Vietnam's undersea internet cables malfunctioned; four of them simultaneously, impairing 75 percent of the country's data flow and forcing telecom firms to purchase an extra 3 Tbps of data for overland transportation to ensure stable connections [17]. All five cables were fully repaired in November, months after initial problems were detected in February.

In 2019, ASEAN released its Guidelines for Strengthening Resilience and Repair of Submarine Cables, a necessary and encouraging initiative to streamline regulations among member-states. These guidelines, however, are non-binding in nature and meant to offer a selection of best practices to simplify member-states' processes, procedures, and policies for cable ships.

Internationally, gaps in the United Nations Convention on the Law of the Sea with regard to the protection of underwater cables may obscure effective enforcement of the legal regime [18]. Differing interpretations among Southeast Asian states of UNCLOS provisions related to the laying and repair of undersea cables in territorial waters, the exclusive economic zone, and the continental shelf have resulted in a patchwork of

“Differing interpretations among Southeast Asian states of UNCLOS provisions related to the laying and repair of undersea cables in territorial waters, the exclusive economic zone, and the continental shelf have resulted in a patchwork of approaches to cable protection.”



approaches to cable protection [19]. This is, in part, a function of unresolved maritime delimitation exercises and territorial disputes in a crowded coastal region.

Simmering tensions in the South China Sea among the six littoral claimants—Brunei, China, Malaysia, the Philippines, Taiwan, and Vietnam—and the interest of extra-regional powers in the area have complicated negotiations. China’s claims in the South China Sea have resulted in delays of projects like SJC 2 because Beijing has been slow to grant the necessary permits. In some cases, the Chinese government has asked for cables to be rerouted even before consortiums submitted their applications for authorization. There has been speculation that these delays have been part of China’s tit-for-tat retaliatory measures towards US allies and partners in response to US actions against it [20].

### GEOPOLITICAL PRESSURES ON PUBLIC-PRIVATE PARTNERSHIPS

For Southeast Asian stakeholders more comfortable with sequestering commercial calculations from strategic ones, the increasingly blurred line between technology, cross-border business, and geopolitics on national security grounds presents difficult choices even as it raises new opportunities for them. This dilemma stretches back at least two decades with undersea fiber optic cable company Global Crossing’s network security agreement with the United States. The company connected more than 200

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major cities in 27 nations across five continents through its cable network [21]. When Global Crossing filed for bankruptcy in 2002, a Singaporean company and a Hong Kong company sought a joint buyout of the business. Singapore Technologies Telemedia (STT) eventually took a 61.5 percent stake in Global Crossing after Hong Kong-based Hutchison Telecommunications withdrew its interest because the US Committee for Foreign Investment had objected over concerns of Hutchison’s links to mainland China.

STT’s takeover of Global Crossing, however, was subjected to a number of security requirements including establishing a “network operations center” on US territory that could be visited by US officials with a 30-minute notice [22]. There was also to be a new subsidiary managing the undersea cable network under the oversight of a board of directors, half of whom had to comprise US citizens with a security clearance (“security directors”). The Federal Bureau of Investigation and the departments of defense, justice, and homeland security could

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object to any security director proposed. Washington’s ongoing derisking efforts from Beijing, already rippling through the entire technology value chain worldwide, are further upending conventional commercial practices related to undersea cables. The Southeast Asia-Middle East-Western Europe 6 (SeaMeWe 6) cable will connect 15 countries in the three regions when completed in 2025. A consortium of telecommunication and technology

companies including Microsoft, China Mobile, China Unicom, China Telecom, and SingTel committed funding for the project. Bids to construct the cable came from HMN Technologies, which was previously majority-owned by Huawei, and US-based SubCom. When the former emerged as the leading contender because of its significantly cheaper bid compared to SubCom's, Washington worked hard behind the scenes to change the equation out of concerns over national security [23]. A US interagency task force ("Team Telecom") reportedly offered the consortium a combination of incentives and warnings of sanctions that eventually led to SubCom's selection as the main contractor. This resulted in China Telecom and China Mobile withdrawing from the consortium, Telekom Malaysia and PT Telekomunikasi Indonesia International (Telin) later joining the project, and other members raising the stakes to compensate for the funding shortfall.

Relatively new players in the undersea cable industry such as Google and Meta have also entered into agreements with the US government to diversify their cable connections on US national security grounds [24]. As part of the agreement on the Pacific Light Cable Network connecting the United States, Taiwan, and the Philippines, the tech companies will reroute their interconnection points "including but not limited to Indonesia, Philippines, Thailand, Singapore and Vietnam" [25].

This creates the opportunity for Southeast Asian countries to leverage US decoupling for their own domestic economic interests. However, if the protections afforded by agreements of this nature are to apply to only "US persons' privacy and security" and the nature of these agreements is to protect US interests, first and foremost, then the question arises as to whether the data of Southeast Asian citizens will be left susceptible to compromise without recourse if their national

governments do not build in adequate safeguards [26]. Although the US has initiated legal reform of warrantless surveillance since Edward Snowden's revelations of the National Security Agency's mass espionage programs, "Upstream" (accessing data through fiber optic cables), and PRISM (collecting data from technology companies) over a decade ago, those changes have applied to only US citizens [27]. At the time of writing, section 702 of the US Foreign Intelligence Surveillance Act still permits US intelligence agencies to conduct surveillance activities on foreigners abroad for national security purposes [28].

For Southeast Asian stakeholders, the bargain of access to technological capacity, connectivity, and investment comes without the protections against mass surveillance afforded to US citizens. As the US Department of Justice itself cautions, "changes in the market...have transformed subsea cable infrastructure into increasingly data-rich environments that are vulnerable to exploitation" [29]. This vulnerability is particularly acute as data exits the cables at landing stations in the region. The US-driven arrangement to diversify networks also assumes that only China is capable of and interested in exploiting undersea cables for sensitive purposes.

To buffer against geopolitical uncertainty, the Meta- and Google-owned Echo and Bifrost cables connecting Southeast Asia and North America will cross the Java Sea circumventing the conventional—and most efficient—route of the

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South China Sea due to territorial tensions among states. The companies' Apricot cable between Southeast Asia and Japan will also follow the same route with landing points in Singapore, Indonesia, the Philippines, and Guam heading northwards to Japan and Taiwan.

These longer routes will be more expensive and therefore commercially counter-intuitive, but in an age where economics is national security and the private sector is increasingly an extension of state interests, balance sheets are incorporating different kinds of asset-liability calculations. For some countries such as the Philippines, facing greater confrontations with China in the South China Sea and in need of increased connectivity, plugging into their treaty ally's network has its benefits. PLDT, the Philippines' participant in the Apricot network, chose to build landing stations in the country's southern province of Davao and north-eastern province of Aurora as "alternative sites facing the Pacific" [30]. This not only contributes to the growth of these regions in the Philippines but also mitigates the country's risk of deliberate cable damage by China if frictions worsen.

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### DIVIDENDS OR DIVISION?

To preserve or maximize their own strategic maneuverability, Southeast Asian policymakers could convene a standing multistakeholder council of interagency officials, industry captains, and foreign policy and security practitioners to discuss cross-cutting technological issues. Two related objectives are key: raising awareness and

regularizing information exchange. Within this grouping, closed-door and public exchanges on topics related to the infrastructure, software, and application of technology across sectors would enable a more rounded approach to deliberating geopolitical trends and implications. A focus on the construction, routing, and protection of cables would be better served by integrating it into broader intersectional conversations on technology.

This dialogue should happen at both the national and regional levels. Domestic discussions on the impact and implications of undersea cables could positively expand the conversation beyond states' singular focus on investment and enterprise. Industry, national security leaders, and civil society representatives could benefit from an exchange of perspectives on the importance and implications of undersea cables as well as approaches to securing and protecting the data that flows through them. Current debates shy away from the hazards of surveillance, or cable tapping more specifically, whether by foreign governments, corporations, or a collusion of both [33].

At the regional level, this proposed council could be established at the Track 2 level with recommendations forwarded to official representatives ahead of the regular ASEAN Digital Ministers Meeting. To avoid a duplication of effort or the creation of new mechanisms requiring additional resources, the grouping could even be ensconced within an existing regional framework such as the ASEAN Institutes of Strategic and International Studies network or the Council for Security Cooperation in the Asia-Pacific, which has a wider geographical ambit. These frameworks—by virtue of being unofficial yet having the latitude and track record of engaging with officials—provide a forum for candid, multistakeholder insights and discreet exchanges that are typically absent from Track 1

meetings.

More specifically, a regional council could platform concrete approaches to the monitoring of cable incidents, the sharing of related information, and options for action. Borrowing from the ASEAN Guidelines for Strengthening Resilience and Repair of Submarine Cables, such a council could prompt the identification of lead or coordinating agencies among government players, obtain industry input on good practices for smoother information exchange, and deliberate the viability of an ASEAN-wide cable incident information network modelled after computer emergency response teams for cybersecurity incidents.

A sectoral take on undersea cables in Southeast Asia may be a practical approach in a fast-developing region hungry for digital transformation. But as intensifying geopolitical forces once again bear upon decisions that were mainly the preserve of commercial enterprises, one key lesson from the nineteenth century bears reminding for Southeast Asia's stakeholders. If in the past it was land and gutta percha trees in the region that were stripped bare for the expansion of empire through the laying of telegraphic cables, today, it is data pulsating within communication cables at the bottom of the ocean that are ripe for extraction and exploitation. In Southeast Asia's quest to connect its nations to each other and the world, and to grow its economy in the process, it would do well to bear in mind that cables are but a means—albeit a crucial means—to a strategic end. The region needs a comprehensive, cross-cutting, and contextual treatment of this critical digital infrastructure.

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