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Securing Singapore's Undersea Cables

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SYNOPSIS

Undersea cables play a crucial role in transcontinental telecommunications. Our dependence on undersea cables is driven by the growth of our collective digital economies and Singapore's aim to become a regional undersea cable hub. In addition, the recent spate of seemingly geopolitically motivated cable cuts has drawn attention to the need to protect these cables. Amongst the steps taken to address this need, Singapore has endorsed The New York Principles, a multilateral statement on the security of the installation, repair, and maintenance of cables and related infrastructure.

COMMENTARY

In September 2024, the "Security and Resilience of Undersea Cables" multilateral meeting was held on the sidelines of the 78th United Nations General Assembly. Singapore's Ministry of Foreign Affairs issued a press statement entitled the *Joint Statement on the Security and Resilience of Undersea Cables in a Globally Digitalized World* (aka *The New York Principles*), the output of that multilateral meeting.

Seventeen countries and organisations, including Singapore, Australia, Canada, the Republic of Korea, the United Kingdom, the United States, Japan, New Zealand, Finland, France, the Netherlands, and the European Union, have so far endorsed this joint statement.

Telegeography 2024 Submarine Cable Map depicting submarine cables landing in Singapore.
Credit: TeleGeography and submarinecablemap.com

Why Focus on the Security of Undersea Cables?

The ease of international communications via the Internet is easy to take for granted. We are accustomed to instantly logging on to e-commerce websites hosted overseas, sending emails overseas, and posting on social media platforms hosted on computer servers all over the world.

An indication of our heavy reliance on international communications can be seen from the fact that SWIFT, the world's leading provider of secure financial messaging services for cross-border fund transfers, recorded an average of 44.8 million messages daily in 2022, transmitting the data via undersea cables.

Few of us think about the global circuitry enabling these internet connections, namely, the many cables lying across the seafloor worldwide that carry over 99 per cent of all international internet traffic. As of September 2024, there are more than 600 active and planned undersea cables globally.

Increasing Dependence on Undersea Cables

Our dependence on undersea cables continues to increase because the communications that these cables carry have surged for two main reasons.

The first is the growth of our collective digital economies. ASEAN's economic growth, for example, has been mainly driven by a rising middle class and a growing number of new internet users who have changed the way they communicate, work, buy, sell, and consume goods and services.

ASEAN's digital economy is expected to grow to almost US$1 trillion by 2030. When the *Digital Economy Framework Agreement* (DEFA) is in place, the progressive rules in DEFA will double this to US$2 trillion of value to the ASEAN economy. DEFA's main goal is to accelerate trade growth by focusing on digital trade, digital identity and digital payments – all of which depend on communications carried by undersea cables.

The second reason is the AI boom. The global nature of AI development demands seamless communication between researchers, developers, and businesses everywhere. Undersea cables will enable real-time collaboration and knowledge sharing, accelerating the pace of AI innovation.

The increasing complexity and computational demands of AI algorithms require access to massive datasets. Hence, there will be significant data transfers from diverse sources, such as sensors or social media platforms, to data centres for processing.

Data centres – the physical infrastructure where AI models are trained and deployed – rely heavily on undersea cables for connectivity. As AI continues to evolve and penetrate new industries globally, the importance of robust undersea cable infrastructure will only grow.

Safety and Security of Undersea Cables is Vital to Singapore

The safety and security of undersea cables is critical to Singapore for two reasons.

Firstly, Singapore is an open economy and is highly connected to the rest of the world. It aims to expand its digital connectivity further and become a regional undersea cable hub. In 2023, the Singapore Government launched the Digital Connectivity Blueprint. Significant additional submarine cable investments have been announced that will strengthen digital connectivity between Singapore, Southeast Asia, and the world.

Secondly, a significant number of cable faults around the world (see below) have caused severe disruptions to citizens' lives and national economic and political security.

Undersea Cable Fault Incidents

According to a UN and International Cable Protection Committee (ICPC) report, 150 to 200 undersea cable faults occur annually (whether accidentally or deliberately caused) on average.

Some examples include the recent cable cuts in the Red Sea, a prime route for East-West connectivity. Three submarine cables were cut in March 2024, affecting 25 per cent of the communication routes from Asia to Europe.

The island of Tonga had its only cable damaged due to a volcanic eruption, which caused significant internet disruption and impact. At one point, most of Vietnam's cables were damaged.

The Baltic Sea region has suffered a string of telecommunications and other cable/pipe cuts ever since Russia's invasion of Ukraine, mainly by Chinese and Russian-flagged vessels. Some have proven to be accidental, and others are still under investigation.

One of the Baltic Sea cable cuts was attributed to a China-flagged vessel, the *Newnew Polar Bear*. Investigations into the vessel's ownership uncovered a convoluted network of both legitimate and "on-paper" Chinese and Russian enterprises designed to obscure transparency.

No matter the cause, cable cuts can seriously disrupt a nation's economic and political security. If done deliberately, cable cuts could be considered as one of the many forms of grey zone operations Professor Geoffrey Till recently discussed at an RSIS Distinguished Public Lecture. If a state can covertly damage the cables of another, it can inflict severe economic damage relatively cheaply and quickly, with a good chance of avoiding culpability.

Singapore's Way Forward

In 2024, an RSIS policy paper recommended some measures that Singapore can adopt to enhance the security of undersea cables. These include "strengthening criminal penalties for damage to submarine cables, designating undersea cables as critical infrastructure, enhancing cooperation and coordination between relevant government agencies and enhancing public-private partnerships". In addition to these measures, Singapore has participated in international cooperation initiatives to address the issue.

For instance, Singapore has endorsed the *New York Principles*, which cover the safe and secure design of the cable infrastructure, international cooperation, best practices, and compliance with the United Nations Convention on the Law of the Sea (UNCLOS). It also recommends the selection of "reliable and trusted cable components and services" and "undersea cable network service providers and operations and maintenance providers [who should] have transparent ownership, partnerships, and corporate governance structures".

In addition, Singapore is represented in the *International Advisory Body for Submarine Cable Resilience*, which was established in November 2024 jointly by the UN International Telecommunications Union (ITU) and the ICPC. The advisory body comprises diverse global representatives from industry, government agencies, maritime authorities, and relevant UN agencies. The advisory body will discuss methods to enhance cable maintenance, mitigate damage from natural hazards and inadvertent human actions, and ensure expedited recovery following disruptions, including by improving redundancy.

Conclusion

Industry (such as cable and data centre operators and cable and infrastructure vendors), governments, and policymakers all have an important role in keeping

abreast of the complex technical, economic, and geopolitical landscape of undersea cables and continuing to look at ways to protect our infrastructure.

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