

# Protection of Critical Underwater Infrastructure (CUI): Challenges and the Way Forward for ASEAN

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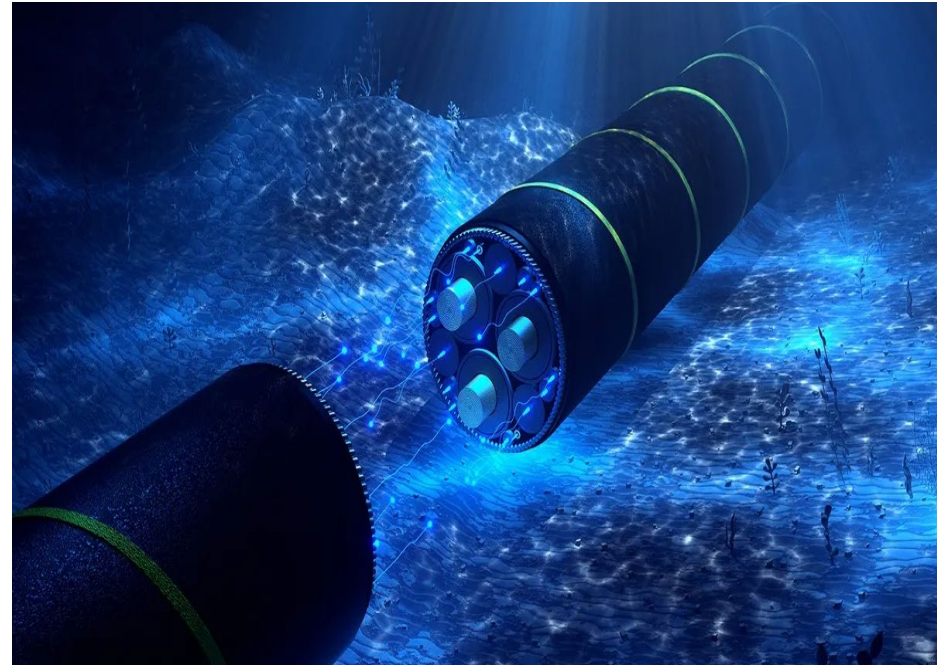
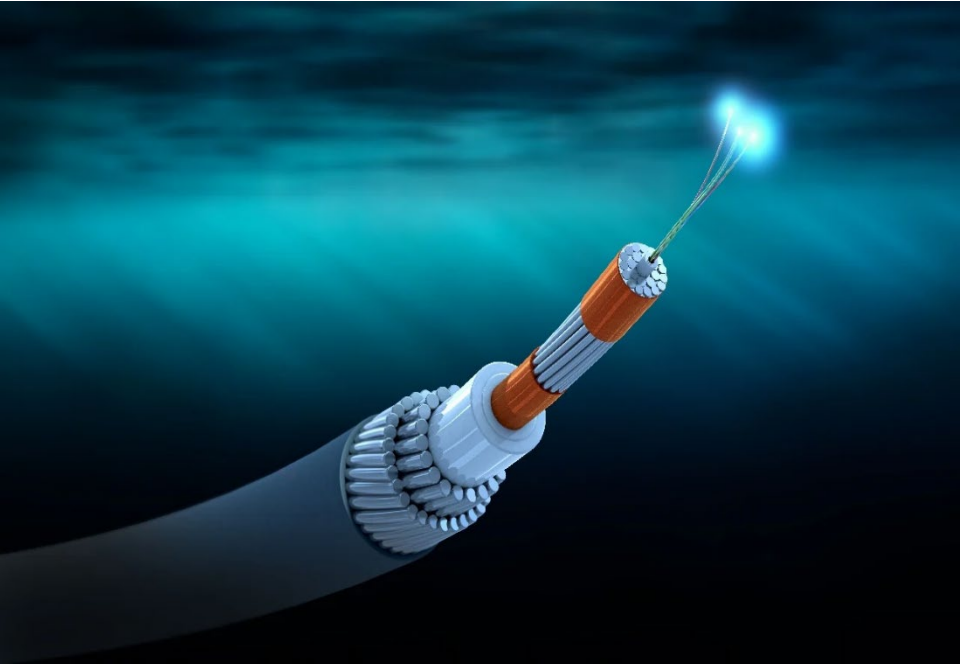
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# Key Outlines

- ✓ What are CUIs?
  - ✓ Security Risks and the need to protect them
  - ✓ Existing International Legal Framework
  - ✓ Strengthening national laws: Implementing Article 113 of the UNCLOS 1982
  - ✓ Best Practices or recent developments?
  - ✓ Recommendations for ASEAN
-

# CUI: Subsea Cables & Pipelines

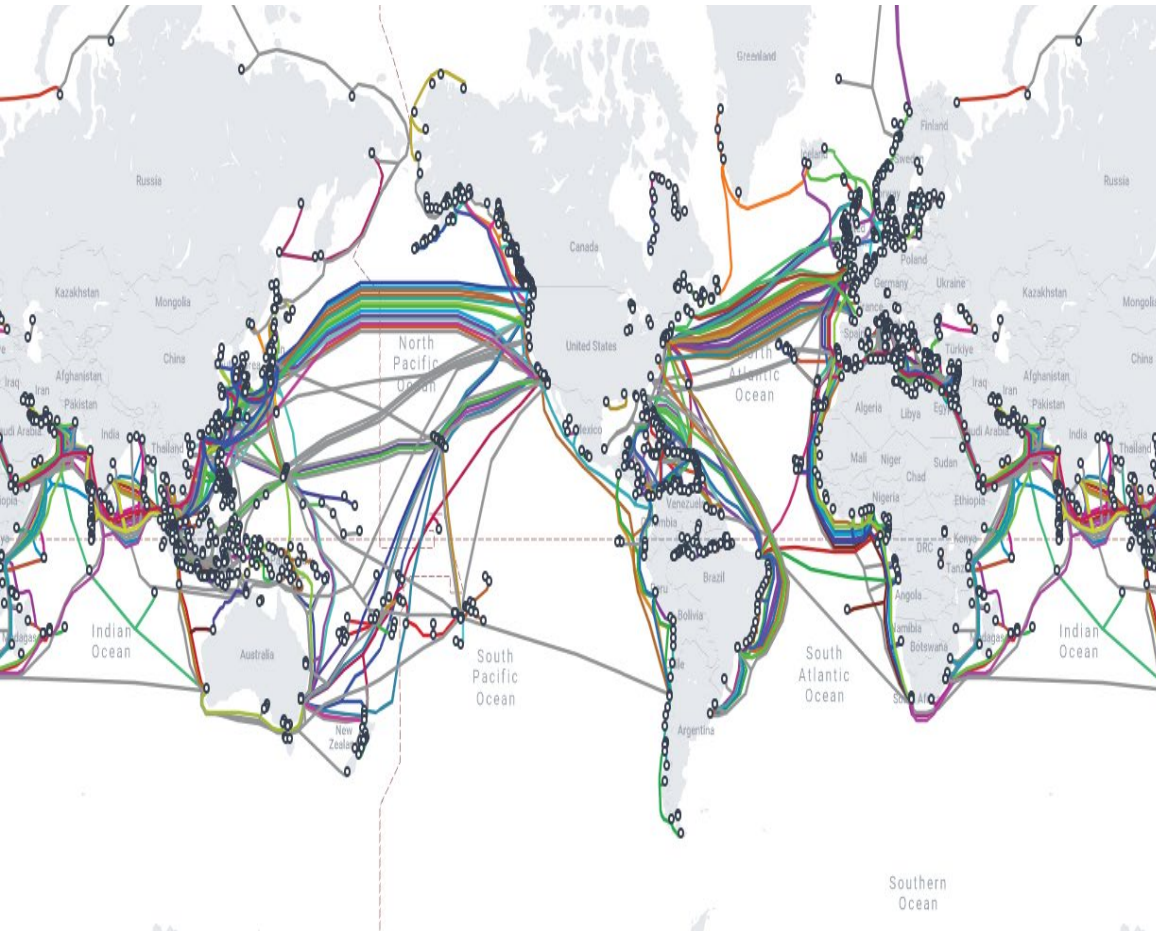
CIL



- approximately 95% of the world's communications are provided by such subsea cables
- more than 600 active and planned submarine cables.

- carry electricity, typically from offshore renewable energy sources like wind farms to the mainland, and;
- connect countries or regions to share power, acting as electricity inter-connectors.

# Subsea Communication Cables Map (TeleGeography)



- As of September 2024, there are 570 active submarine cables and 80 planned.
- Highest number of in service cables any other year within the last two decades.

*(number of the cables keeps changing as new cables enter service and older cables are decommissioned)*

# CUI: Subsea Pipelines



- Energy pipelines are primarily used to transport crude oil and natural gas .
- At least 2,381 operational oil and gas pipelines around the World distributed across 162 countries with a combined length of 1.18 million km-enough to circle the Earth 30 times. (2020, Global Energy Monitor)



# Relevance for AMS: Subsea Cables



ASEAN Member States	No. of Cables	Risks to cables
Brunei	4	<b>Intentional:</b> <ul style="list-style-type: none"><li>• Sabotage (State-sponsored operations)</li><li>• Terrorism</li><li>• Espionage/Data interception</li><li>• Theft</li><li>• Hybrid Warfare</li></ul> <b>Unintentional:</b> <ul style="list-style-type: none"><li>• Fishing activities,</li><li>• Natural hazards,</li><li>• Anchoring,</li><li>• Construction/seabed works,</li><li>• Operational error etc.)</li></ul>
Cambodia	2	
Indonesia	22	
Philippines	11 in-service ;and another 6 under construction	
Myanmar	3	
Malaysia	29 including those under construction	
Singapore	26, to double the capacity for landings within a decade	
Thailand	8 and 2 new under construction	
Vietnam	5 in service; aiming for 15 by 2030	

# Relevance for AMS: Subsea Gas Pipelines

- Currently, there are eight cross-border natural gas pipelines that are operating, with a total length of over 2,500 km
- Peninsular Malaysia- Singapore
- Myanmar- Thailand
- Indonesia- Singapore (with two pipelines)
- Thailand- Malaysia
- An estimated **US\$14.2 billion** has already been invested in some 3,900 km of bilateral pipelines in 2008.
- The Trans ASEAN Gas Pipeline aims to interconnect existing and planned gas pipeline infrastructure within ASEAN, to transport gas across borders to ensure greater security of gas supply.

# Past Incidents: Damage to Cables and Pipelines

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## Three of Vietnam's five undersea internet cables are down

By Reuters

June 17, 2024 3:56 PM GMT+8 · Updated June 17, 2024

HANOI, June 17 (Reuters) - Three out of Vietnam's five active international undersea internet cables are down, state media said over the weekend, the second major round of outages in the country in just over a year.

The problems with the three cables, which connect Vietnam with the United States, Europe and Asia, have "significantly affected Vietnam Agency.

## Finland investigates suspected sabotage of Baltic-connector gas pipeline

11 October 2023

Kathryn Armstrong & Vishala Sri-Pathma BBC News



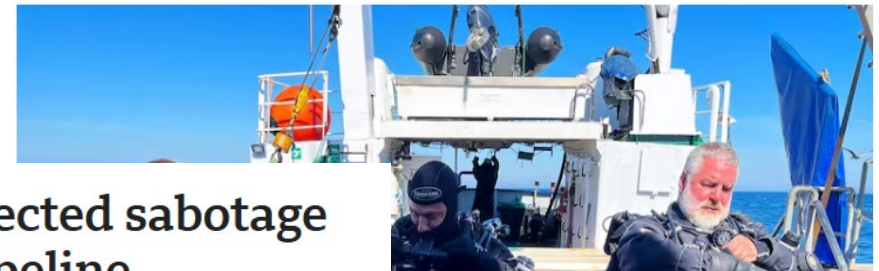
News

## How did divers manage to blow up the Nord Stream pipeline? We went down to the spot to find out

German network ARD chartered yacht and divers to see how sabotage occurred



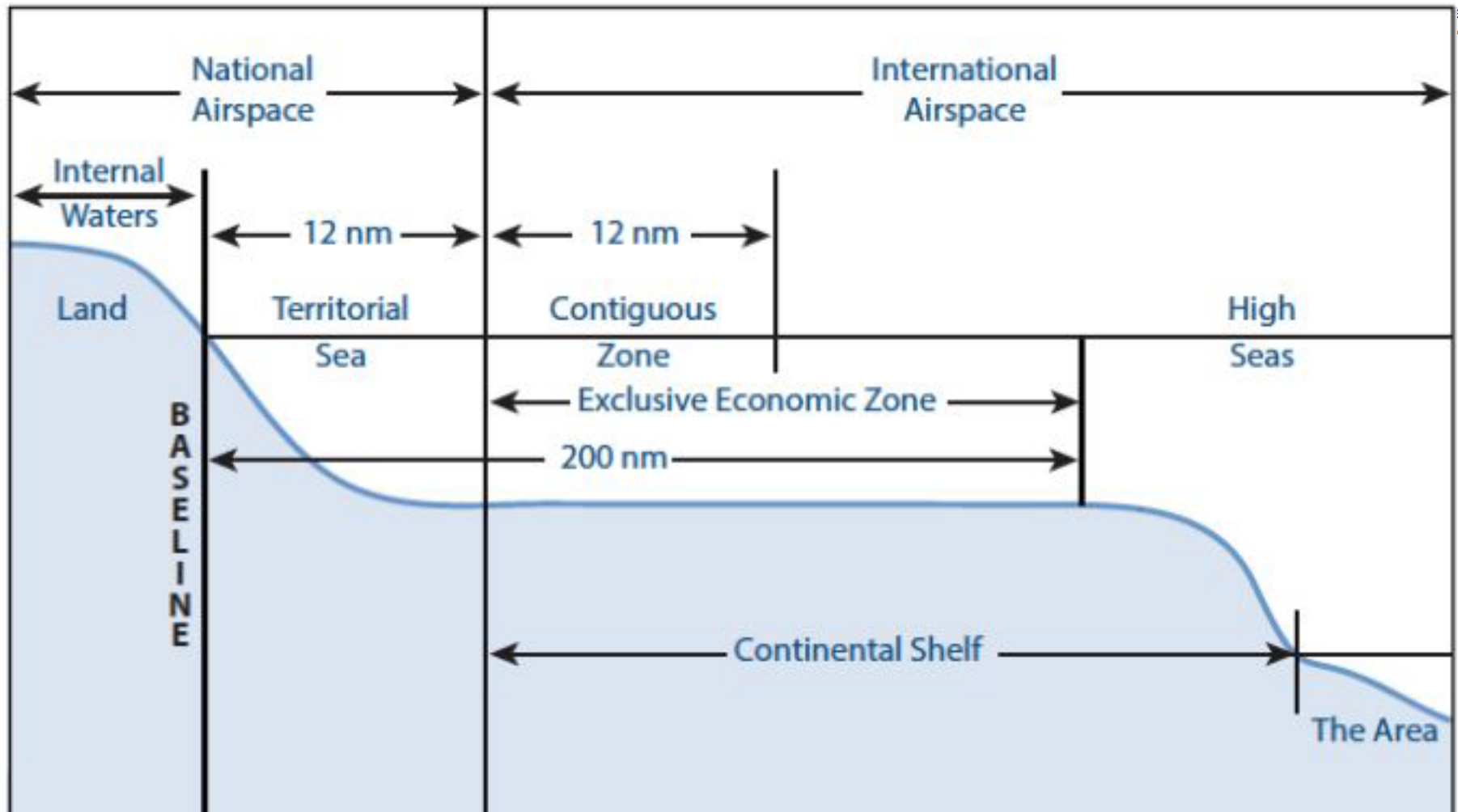
Lea Struckmeier · CBC News · Posted: Aug 18, 2024 4:00 AM EDT | Last Updated: August 19, 2024



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# Maritime Zones Illustration



# Relevant Provisions of UNCLOS on Subsea Cables and Pipelines

- Coastal States' *rights* to regulate cables and pipelines, and the *obligation* of States to protect cables, depend on where they are located:
  - Maritime zones subject to sovereignty – territorial sea and archipelagic waters
  - Maritime zones outside sovereignty – EEZ, continental shelf, high seas, and deep seabed

# Key Actors under UNCLOS

- ✓ Coastal State
- ✓ Other States (cable laying States)
- In practice: Private companies (Consortium of private companies lay the cables, Not the States)



# Territorial Sea and Archipelagic Waters

- ***Territorial Sea***

A coastal State **may adopt laws and regulations** in conformity with UNCLOS and other rules of international law relating to innocent passage through the territorial sea with respect to such matters relating **to the protection of cables and pipelines**. (Article 21)

- ***Archipelagic Waters***

An archipelagic State shall respect **existing submarine cables** laid by other States and passing through its waters and shall permit the **maintenance and replacement of such cables** upon receiving due notice of their location and the intention to repair or replace them. (Article 51)

# Exclusive Economic Zone (Article 58)

- In the exclusive economic zone, all States, whether coastal or land-locked, enjoy, subject to the relevant provisions of this Convention, the freedom .....the laying of submarine cables and pipelines, and other internationally lawful uses of the sea..... such as those associated with the operation of.....submarine cables and pipelines, and compatible with the other provisions of this Convention.
- This freedom of laying submarine cables in the EEZ also includes the right to maintain and repair such cables.
- In exercising their rights and freedoms in the EEZ, States shall have due regard to the rights and duties of the coastal State and shall comply with the laws and regulations adopted by the latter in accordance with UNCLOS



# Continental Shelf (Art 79)

- All States are entitled to lay submarine cables and pipelines on the continental shelf.
- Subject to the right to take reasonable measures for the exploration of the continental shelf and the exploitation of its natural resources, the coastal State may not impede the laying or maintenance of cables.
- The delineation of the course for the laying of such pipelines on the continental shelf is subject to the consent of the Coastal State.
- When laying submarine cables or pipelines, States shall have due regard to cables or pipelines already in position. In particular, possibilities of repairing existing cables or pipelines shall not be prejudiced.

# Article 79: Cables and Pipelines on the Continental Shelf

- All States are entitled to lay submarine cables and pipelines on the continental shelf, in accordance with the provisions of this article.
- The delineation of the course for the laying of such *pipelines* on the continental shelf is subject to the consent of the coastal State.
- When laying submarine cables or pipelines, States shall have due regard to cables or pipelines already in position. In particular, possibilities of repairing existing cables or pipelines shall not be prejudiced.

# Article 79: Cables and Pipelines on the Continental Shelf

- The coastal State has the right to establish conditions for cables or pipelines entering its territory or territorial sea, or its jurisdiction over cables and pipelines constructed or used in connection with the exploration of its continental shelf or exploitation of its resources or the operations of artificial islands, installations, and structures under its jurisdiction.

# High Seas (Article 87)

- The high seas are open to all States, whether coastal or land-locked.
- Freedom of the high seas is exercised under the conditions laid down by this Convention and by other rules of international law including **freedom to lay submarine cables and pipelines**

# Article 113: Breaking or injury of a submarine cable or pipeline

- Every State shall adopt the laws and regulations necessary to provide that the breaking or injury by a ship flying its flag or by a person subject to its jurisdiction of a submarine cable beneath the high seas done wilfully or through culpable negligence, in such a manner as to be liable to interrupt or obstruct telegraphic or telephonic communications, and similarly the breaking or injury of a submarine pipeline or high-voltage power cable, shall be a punishable offence.
- This provision shall apply also to conduct calculated or likely to result in such breaking or injury. (This reflected concerns with fishing vessels anchoring & exploration by researchers around cables, etc) Proles's commentary



# Does article 113 applicable to EEZ?

- Yes
- Article 58 (2): Articles 88 to 115 and other pertinent rules of international law apply to the exclusive economic zone in so far as they are not incompatible with this Part



# Implementation of Article 113: Prescriptive and Enforcement Jurisdiction

Article 113	Exclusive Economic Zone	High Seas
Prescriptive Jurisdiction (Adopt national legislation)	laws and regulations that make the breaking or injury beneath the high seas or in the EEZ <u>by vessels flying their flag or their nationals a punishable offence.</u>	laws and regulations that make the breaking or injury beneath the high seas or in the EEZ <u>by vessels flying their flag or their nationals a punishable offence.</u>
Enforcement Jurisdiction (Stop, Board, Investigate and seizure/arrest/convict/sentence)	<ul style="list-style-type: none"> <li>• Flag State</li> <li>• States where perpetrators are the Nationals of that State</li> </ul>	<ul style="list-style-type: none"> <li>• Flag State</li> <li>• States where perpetrators are the Nationals of that State</li> </ul>

# Territorial Sea

- Coastal State can enforce existing relevant national laws (telecommunication or oil and gas laws) or criminal laws within the Territorial Sea.

# Case Studies: Enforcement Jurisdiction based on Article 113

**Coastal State Jurisdiction:** A Chinese National, the captain of Hong Tai 58, a Tongolese- flagged vessel was sentenced to three years in prison for damaging an undersea cable connecting Taiwan's main island and the Penghu islands in the Taiwan Strait.

**National Jurisdiction** (beyond Territorial Sea): Cable Theft: Vietnam's Submarine Cables lost and found 2007 ; Total of 10 ppl were arrested, and the ringleader (Vietnamese national) was sentenced 12 years imprisonment.

**Flag State Jurisdiction:** The captain is Chinese, but the trial is taking place in Hong Kong as the New New Polar Bear was sailing under the Hong Kong flag. The man has been held in pretrial detention in Hong Kong since May. Prosecutors consider the captain responsible for damaging the Balticconnector gas pipeline (Between Finland and Estonia) in October 2023. In addition to the criminal charge, he is also accused of violating maritime safety regulations.

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# Practices of the ASEAN member States: Existing Position

- None of the AMS have adopted dedicated legislation on protection of subsea cables and pipelines
- **Example 1:** Some AMS have national legislation criminalizing damage to submarine cables in their internal waters, TS and archipelagic waters. (E.g., Section 209 and 210 of Navigation in Thai Water Act)
- **Example 2:** Several AMS have adopted legislation either under their applicable telecommunication law or oil and gas law or criminal law which penalizes damage to infrastructure used for communication (E.g., Singapore Section 427 of Penal Code)



# Example 1: Section 209 of Navigation in Thai Water Act (No Anchor Zone)

- Where there is a telegram cable, telephone cable or electric cable or any other cable or pipe or structure laid under water in any river, canal, marsh, reservoir or lake that is used as a public travelling route or for common use, or any sea within the Thai waters, **the Harbour Master shall place the mark at the spot where such cable, pipe or structure is laid into water.**
- **Such mark shall be made in the form of high pole with large, round, white board at the top containing the text ‘Submarine Cables, Pipelines or Structures. No anchoring or dredging of anchor’ in Thai and English.** Where the Harbour Master deems it appropriate, he or she may also place the buoy or any other marks.
- **No vessel shall anchor within the distance of one hundred metres from both sides of the place where such cable, pipeline or structure that is laid** under water or dredge the anchor across such cable, pipeline or structure laid under water.

## Example 1: Section 210 of Navigation in Thai Water Act: Penalty for anchoring in Prohibited Zone

- The master or controller of any vessel who anchors in the prohibited zones under this chapter or dredge the anchor or fishing nets, seine, fishing appliance or any equipment across such zones shall be liable to a fine of three hundred to three thousand baht.
- If such act causes damage to any cable, pipe or structure that is laid under water, such person shall be liable to imprisonment for a term of not exceeding six months or to a fine of one thousand to ten thousand baht or to both, and shall make compensation or reimburse the expenses for repairing the cable, pipe or structure under water that has been damaged by such anchoring, anchor dredging or dragging of objects across such cable, pipe or structure.

## Example 2: Singapore Penal Code

Punishment for committing mischief causing disruption to key service, etc.

427.—(1) Whoever commits mischief by *doing any act which causes, or which he knows is likely to cause*, a disruption to —

- (a) the provision of any key service; or
- (b) the performance of ...

*shall be punished with imprisonment for a term which may extend to 10 years*, or with fine, or with both.

(2) In subsection (1) —

“**key service**” means any of the following services:

- (a) a service directly related to the provision to the general public of water, sewerage, drainage, **gas, electricity**, waste collection and disposal, newspapers, broadcasting, **telecommunications** and other traditional forms of mass media communication (including radio and television services);

# Some Existing Challenges

- Fragmented legal framework or lack of legislation implementation Article 113 of the UNCLOS
- No single point of contact for cable damage
- Delay in getting permit for cable repair
- No inter-agency or coordinating agency
- Not sufficient monitoring and surveillance
- Not sufficient cable repair capacity

# Recommendation for AMS: Strengthening existing legal and regulatory framework



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- Explicit provision on criminalizing the act of damaging submarine cables and pipelines (in criminal law);
- To adopt national laws implementing Article 113 of the UNCLOS to criminalize intentional damage to submarine cables and pipelines by their flagged vessels and their nationals. (enforcement beyond territorial sea)
- Best to have a dedicated legislation on the protection of cables and pipelines implementing all relevant provisions of the UNCLOS. (E.g, Australia)
- National Jurisdiction is more feasible approach for enforcement of article 113.
- For effective flag state jurisdiction, there should be a point of contact in every responsible Flag State to facilitate enforcement
- **Policy:** designation of subsea cables and pipelines as critical infrastructure
- **Regulatory:** Establishing an interagency committee or coordinating agency on protection of cables and pipelines
- Cable Protection Zones: Australia, New Zealand

# ASEAN plans to build a new subsea cable system

The Association of Southeast Asian Nations (ASEAN) has agreed to build a new submarine cable network as it seeks to develop interoperable digital public infrastructure to connect people and businesses across Southeast Asia.



Gigi Onag, Senior Editor, APAC, Light Reading  
February 6, 2024

🕒 4 Min Read

## Recommended for you



The 4th ASEAN Digital Ministers Meeting (ADGMIN) was held in Singapore with Josephine Teo, Minister for Communications and Information, Singapore (center), chairing the meeting. (SOURCE: ASEAN)



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02/09/2025





# More investments needed for infrastructure as Asean works towards an interconnected grid

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# Key Stages for Protection of Cables and Pipelines

1. Before laying
  2. During laying
  3. After being laid, monitoring and surveillance
  4. Taking Legal Action
- ✓ Working closely with the industry for stages 1 to 3
  - ✓ Best to prevent damage by taking proactive actions



# Initiatives by European Union



INITIATIVES	NOTES
EU Action Plan on Cable Security: mapping and risk assessment approach agreed by Group of Member States and Commission experts (June 2025)	An EU-wide mapping and coordinated risk assessment of submarine cable infrastructures;
Joint Communication to strengthen the security and resilience of submarine cables  (February 2025)	strong actions in a whole resilience cycle approach: prevent, detect, respond, and repair, and deter.
Recommendation on the security and resilience of submarine cable infrastructures (February 2024)	Provides a set of actions at national and EU level aimed at improving submarine cable security and resilience, through a better coordination across the EU, both in terms of governance and funding.
Connecting Europe Facility (CEF Digital) Work Programme 2024-2027	to co-fund backbone connectivity projects; aim to speed up the deployment of fast, secure, and sustainable advanced infrastructures

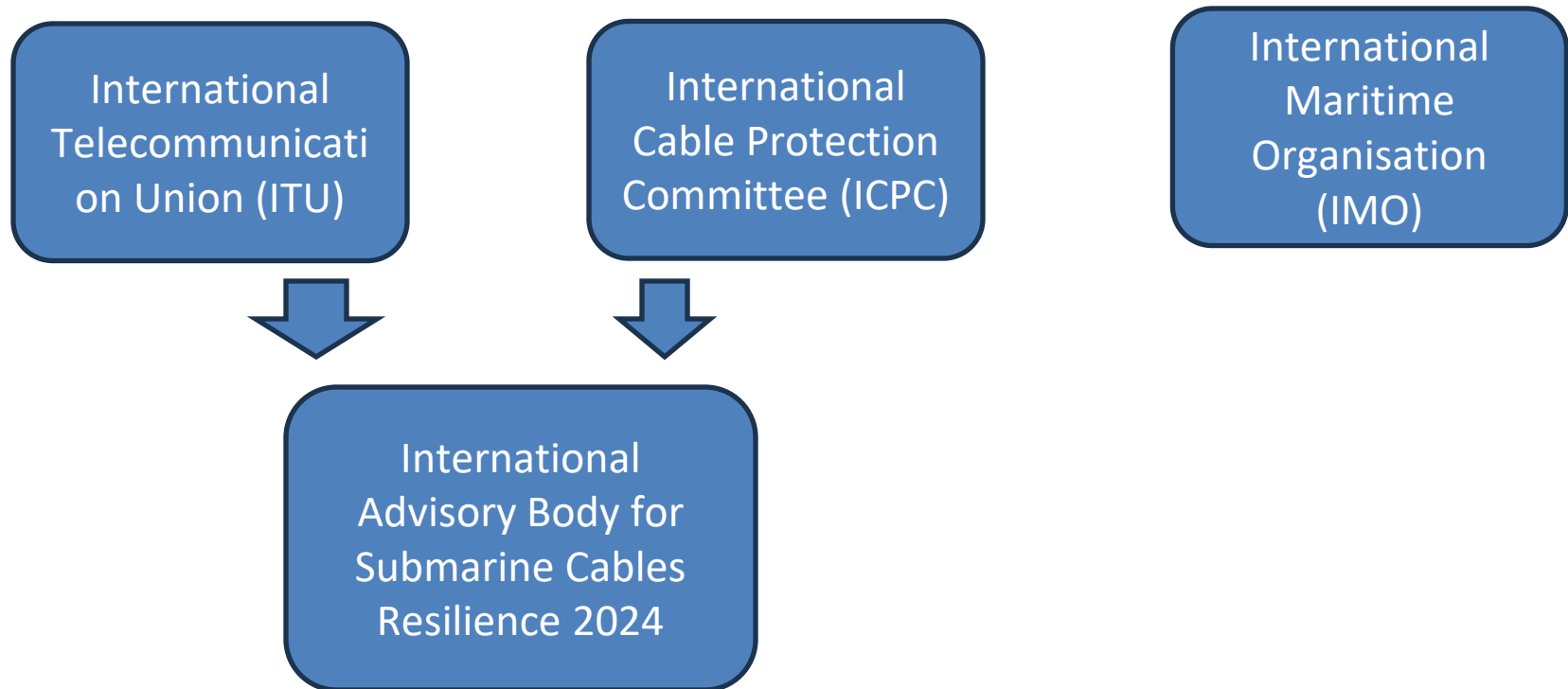
# Initiatives by NATO



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INITIATIVES	NOTES
Baltic Sentry operation (January 2025)	enhance NATO's military presence in the Baltic Sea and improve Allies' ability to respond to destabilizing act; involve a range of assets, including frigates and maritime patrol aircraft; deploy new technologies for surveillance
The NATO Critical Undersea Infrastructure Network (February 2024)	established by NATO Defence Ministers in February 2024 to address the rising threats to critical undersea infrastructure; bring together civilian and military authorities, industry partners and experts across the Alliance
Critical Undersea Infrastructure Coordination Cell (February 2023)	the centre will facilitate engagement with industry and bring key military and civilian stakeholders together; share best practices, leverage innovative technologies, and boost the security of Allied undersea infrastructure.

# Relevant International Organisations



# Recommendation: ASEAN

- **ASEAN recognizes submarine cables as critical infrastructure**, ASEAN Guidelines for Strengthening Resilience and Repair of Submarine Cables in 2019. (*Keynote by Secretary General of ASEAN at AOIP Seminar Series: Submarine Cable*)
  - In 2024, established the **Working Group on Submarine-Cables** to facilitate regular exchanges and promote cooperation among ASEAN Member States. The Working Group is currently enhancing the 2019 Guidelines.
  - ASEAN could create a model provision (implementing Article 113 of the UNCLOS) to harmonize national legislation for AMS.
  - ASEAN could develop an agreement (legally binding) for cooperation for strengthening law enforcement for the protection of submarine cables and pipelines between AMS, e.g, coordinated patrol, surveillance, and monitoring
  - Information Sharing
  - Establish cooperative mechanisms on monitoring and surveillance
  - ASEAN Subsea Cables Association (Public+ Private Partnership)
-

# THANK YOU