

# Critical Maritime Infrastructure Protection

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## Background

- 📌 Observations:
  - 📌 Rising attention to maritime infrastructures on political agenda
  - 📌 2022 Nord Stream sabotage as catalyst
  - 📌 Lack of public awareness (Seablindness)
  - 📌 Dialogue and mutual understanding between industry and different agencies needed
- 📌 Ocean Infrastructures Research Group
  - 📌 What are CMI's?
  - 📌 How can they be protected?



## What are critical infrastructures?

- 📌 Weakly defined concept
- 📌 “essential to functioning of societies”
- 📌 Designation based on
  - 📌 Technical risk analysis and stress tests
  - 📌 Security analysis (symbolic value)
  - 📌 Political preferences
- 📌 Criticality differs across countries and regions
- 📌 Often based on terrestrial thinking








## How does the maritime differ?

- 📌 Go beyond terrestrial thinking
- 📌 Complex jurisdictionality
  - 📌 Limited regulatory power
  - 📌 UNCLOS, EEZ, and regime complexity
- 📌 Materiality of the sea
  - 📌 Harsh conditions
  - 📌 Surveillance difficult
- 📌 Transnationality
  - 📌 Diplomacy needed
- 📌 But cyber security is cross-cutting



## What are Maritime Infrastructures (MI)?

		On the sea	In the sea	On land
	<b>Transport</b>	Ships, shipping lanes,	Emissions	Ports
	<b>Energy</b>	Platforms	Platforms, electricity cables, pipelines	Ports, landing stations, repair facilities
	<b>Communication</b>	Repair ships	Data Cables	Landing stations, repair facilities
	<b>Fishery</b>	Ships, fishing zones	Fishing gear, aquaculture	Ports, aquaculture
	<b>Eco-systems</b>	Biodiversity	Biodiversity, carbon sink, carbon storage	Coastal areas, beaches

Source: Bueger, Christian & Tobias Liebetrau. Critical Maritime Infrastructure Protection: What's the trouble, *Marine Policy*, forthcoming 2023



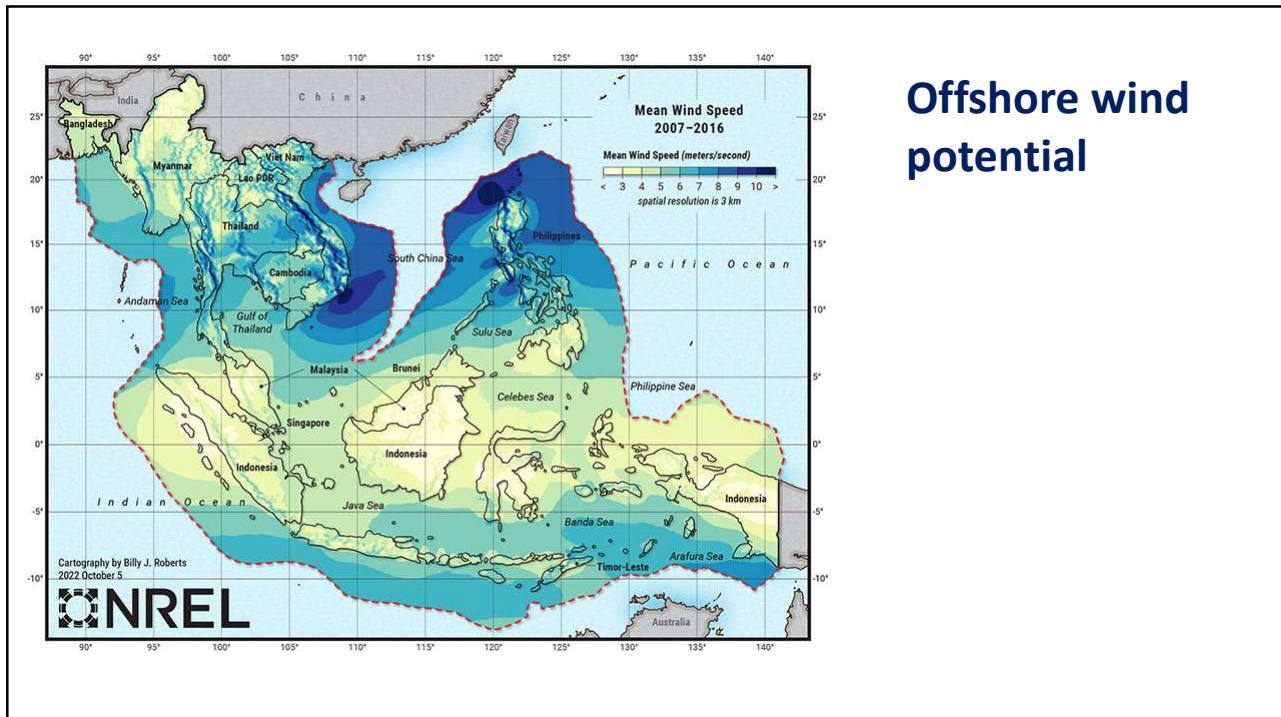
## Why do MI matter?

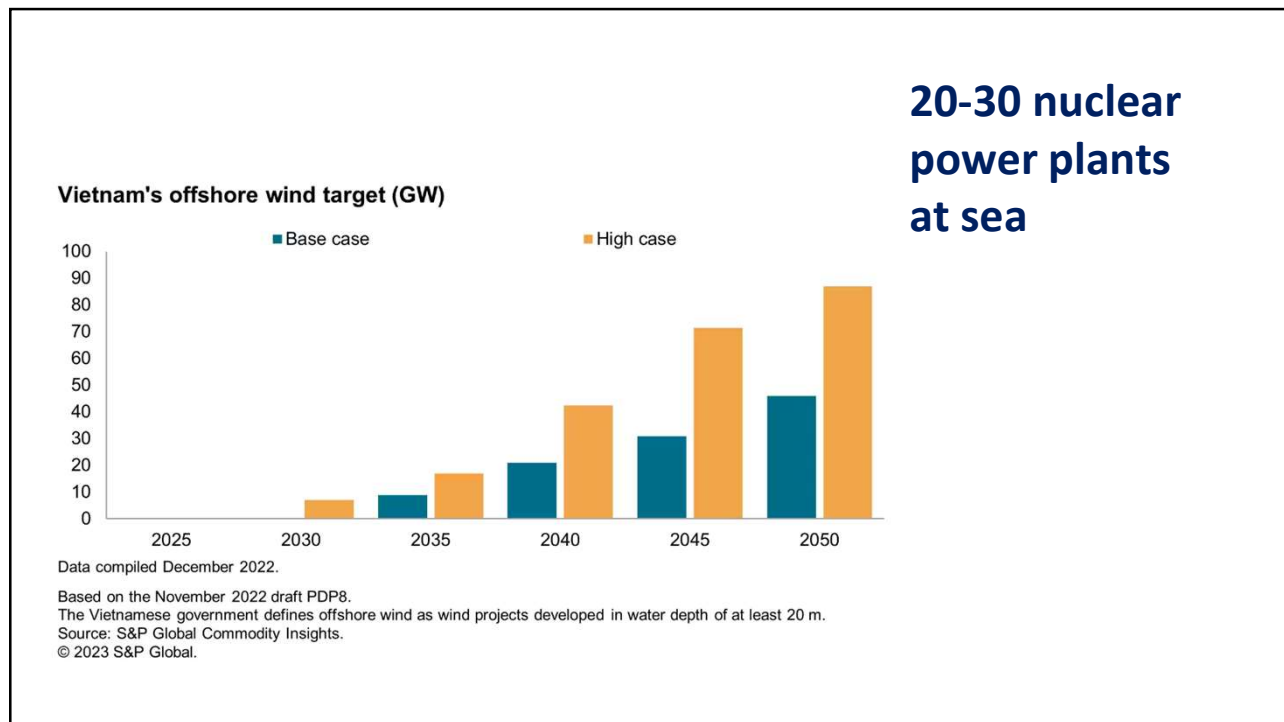
- ✚ Energy
  - ✚ fossil fuels
  - ✚ green energy
- ✚ Marine transport (short-shipping, global)
  - ✚ 90% of everything
  - ✚ Most energy efficient means
- ✚ Digital connectivity
  - ✚ 95% of trans-regional communications
- ✚ Climate change response
  - ✚ Carbon sink
  - ✚ Carbon storage
- ✚ Biodiversity
  - ✚ Genetic resources
  - ✚ Food
  - ✚ Recreation



## Case: Wind farming

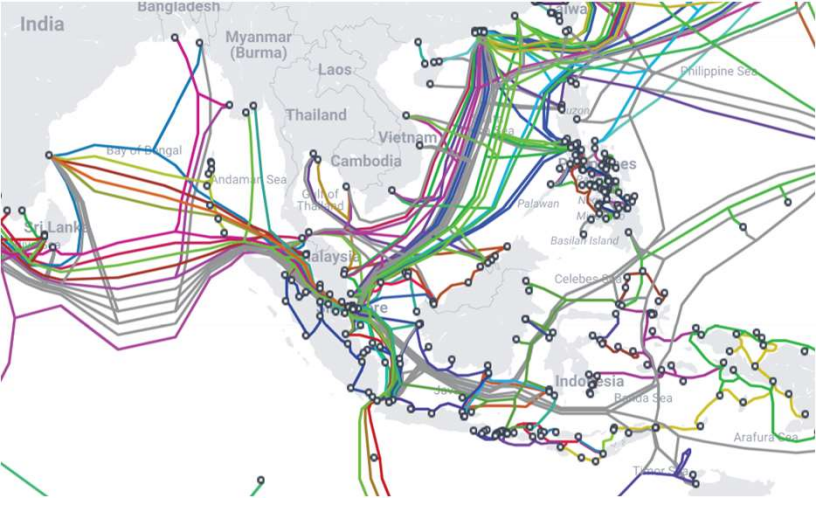
- 🚧 Key for decarbonization
- 🚧 Green fuels for shipping (blue hydrogen)
- 🚧 Offshore is 1.5 times more efficient
- 🚧 Territorial waters & EEZ
- 🚧 Bottom-fixed vs. floating
- 🚧 Subsea power cable connections (national and international)
- 🚧 Planned energy islands





### Case: optic fiber data cables

- 📌 Most efficient for large scale data transmission
- 📌 95% of trans-regional communication
- 📌 Transnational, cut across multiple jurisdictions
- 📌 Growing levels of redundancy, but weak spots remain
- 📌 Growing demands, dependency increases



**Regional cable system**

Source: Telegeography 2023



**Regional fears**

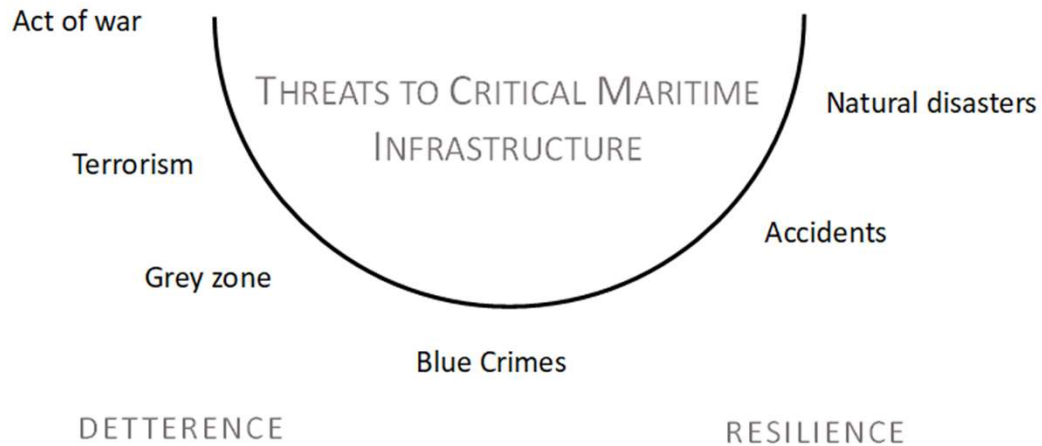
**Taiwan blames Chinese ships for cut internet cables**

**Taiwan suspects Chinese ships cut islands' internet cables**

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**'A Warning Sign': Chinese Ships Accused of Cutting Off Internet to a Taiwanese Island**

## What are the threats?



Source: Bueger, Christian & Tobias Liebetrau. Critical Maritime Infrastructure Protection: What's the trouble, *Marine Policy*, forthcoming 2023



## Key responses (current)

- 🚢 **Nautical charts** to avoid accidents
- 🚢 **Marine Spatial Planning** to avoid multi-use conflicts
- 🚢 **Protection Zones** (under UNCLOS)
- 🚢 **Surveillance and threat detection** for early warning, rapid response and attribution
- 🚢 **Redundancy and repair**
  - 🚢 Deterrence by denial
  - 🚢 Reduce Impact of attack



## Key responses (planned)

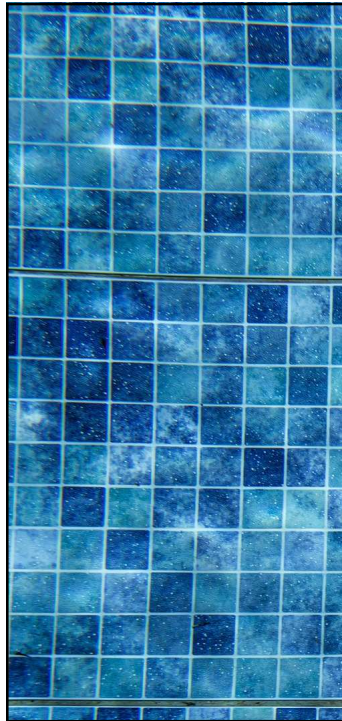
- ✦ **Maritime Security Operations** for surveillance and deterrence (navy/coastguard, inter-agency)
- ✦ **Regional information sharing (MDA)** on incidents, suspicious behavior, evidence (IFC Singapore)
- ✦ **Industry-government cooperation** (dialogues, information sharing, joined-up surveillance)
- ✦ **Industry self protection best practices**
- ✦ **Dedicated CMIP** policies, strategies and regulations, including on costs



## Major challenges

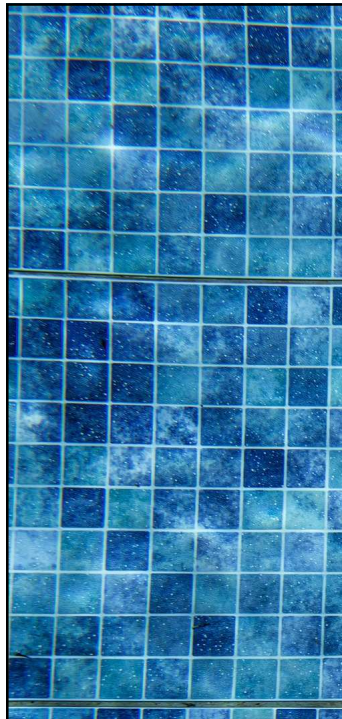
- ✦ Cross sector policy integration (energy, transport, communication, marine)
- ✦ Competing integration strategies (CMIP, maritime security, ocean, cyber)
- ✦ Multiplicity of departments and agencies that need coordination
- ✦ Diplomacy and regional cooperation (baseline: ASEAN, Regional Seas (pollution) treaties)
- ✦ Costs and how to distribute them between tax payers, consumers, and shareholders





## What we need to know

- ✦ How are current and future MI coupled?
- ✦ How to consider human, political and symbolic factors in risk analyses and stress tests?
- ✦ What threat scenarios should we plan for and exercise with?
- ✦ How to ensure coherent strategy, information sharing and interoperability across civil military (CGF-Mil) relations?
- ✦ What degree of regulation is needed for MI industry?
- ✦ How can regulations be harmonized across regions and in ASEAN?
- ✦ What regional arrangements are most effective?
- ✦ Which operational and technological set ups are most cost-efficient?
- ✦ How to split the costs between taxpayers, consumers and MI shareholders?
- ✦ How can we export integrated CMIP solutions together with our technology to ensure global decarbonization?



## Summary

- Designation is a political choice
- Maritime needs specific response
- Repair capacities often the gap
- Coordination with industry is key
- Need for integrated, cross-sectoral response
- Who pays?

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## Background reading

Bueger, Christian & Tim Edmunds. *Understanding Maritime Security*. Oxford: Oxford University Press.

Bueger, Christian & Tobias Liebetrau. Critical Maritime Infrastructure Protection: What's the trouble? *Marine Policy*, forthcoming 2023.

Bueger, Christian. How safe are EU's North Sea wind farms from attack? *EUObserver*, 4.5.2023, <https://euobserver.com/opinion/156982>

Bueger, Christian, Tobias Liebetrau & Jonas Franken. *Security threats to undersea communications cables and infrastructure – consequences for the EU*, In-Depth Analysis for the European Parliament commissioned by the Sub-Committee on Security and Defense, 1.6.2022, [https://www.europarl.europa.eu/thinktank/en/document/EXPO\\_IDA\(2022\)70257](https://www.europarl.europa.eu/thinktank/en/document/EXPO_IDA(2022)70257)