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What the Indo-Pacific means to Europe

Trade Value, Chokepoints, and Security Risks

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Executive Summary

Trade between Europe and the Indo-Pacific states is crucial to the prosperity of both regions and largely conducted over water. Threats of varying intensity exist in multiple chokepoints on the maritime transport routes that connect Europe to Asia. Europeans should therefore invest more in maritime security along the routes linking Europe to the Indo-Pacific but, given their limited naval capabilities, they need to adapt their ambitions for each subregion.

Maritime trade continues to offer the most economically efficient, effective, and cheapest means of transport of commercial and military goods and people. Maritime trade routes hold an immense strategic and economic value, as an estimated 80% of global trade by volume and 70% by value moves via cargo ships. However, producers and consumers live on land, and trade therefore passes close to shores and through narrow passages, canals, and straits, so-called chokepoints. These maritime chokepoints are vulnerable to geopolitical risks like piracy, blockades, international warfare, and maritime disputes, and difficult and costly to circumvent, giving states (and sometimes non-state actors) that control or are located near these zones considerable coercive power.

In this brief, we look at the maritime trade between Europe and the Indo-Pacific region, paying particular attention to the following passageways: the Suez Canal, Strait of Hormuz, Bab el Mandeb Strait, Strait of Malacca, Lombok Strait, Ombai Strait, South China Sea, and East China Sea. We consider the following questions: what is the value chain across the maritime routes between Europe and the major Asian economies in the Indo-Pacific; what are the geopolitical and security risks that threaten open and secure passage through the various chokepoints; and what are the alternatives? Thereby, we identify hot spots and weak points in the global supply chain where Europeans should concentrate their maritime security efforts on a national, minilateral, multilateral or EU level.

Maritime trade routes hold an immense strategic and economic value; an estimated 80% of global trade by volume and 70% by value moves via cargo ships. The Indo-Pacific, in particular, is a crucial region for European states. First, the size of the economies located in the area is considerable, generating 60% of global GDP and contributing two thirds of global growth, with its relative share of the global economy only expected to grow in the future. The Indo-Pacific is now also home to three of the four largest economies outside of the EU: China, India and Japan. Second, and relatedly, exchanges of goods between Europe and the Indo-Pacific are manifold, encompassing low, middle, and high value-added commodities. The interdependence between Europe and the Indo-Pacific is particularly intense when it comes to high value-added goods, such as specific types of mechanical and electrical machinery from the Indo-Pacific to Europe, with commodities such as optical equipment and aircraft and spacecraft products going in the other direction.

Given these interdependencies, disruptions in maritime trade between Europe and the Indo-Pacific would have dire consequences, including direct costs in terms of missed revenue, as well as indirect costs relating to disruptions to other production. The chokepoints are particularly at risk of blockade and therefore impeding trade. A reduction or full stoppage of shipping through these narrow passageways would make Indo-Pacific and European states (and likely the rest of the world) vulnerable to energy insecurity, food scarcity, and disruptions of supply chains.

To anticipate and prevent such disruptions, we consider risks to the chokepoints along the following seven categories: (1) great power rivalries; (2) littoral rivalries; (3) maritime disputes; (4) internal instability; (5) piracy and armed robbery; (6) terrorist attacks; and (7) climate-related hazards. Each aspect is classified as low, medium, or high risk, which is presented in Table 1. In the following step, we examine possible rerouting to bypass chokepoints and assess the associated costs if chokepoints are closed/passage is unsafe due to one or more of the abovementioned risks.

Each chokepoint is exposed to a different combination of risks. The major risk to an open Suez Canal is the internal instability of Egypt, including changes in governments and terrorism, as well as climate-related events. In turn, safe passage through the Strait of Hormuz is mainly threatened by littoral rivalries and the internal instability of Iran, as well as (albeit to a lesser extent) by great power rivalries, piracy and armed robbery against ships, and terrorist attacks. Tehran exercises control over the Strait of Hormuz, and Iran's littoral rivalry with Saudi Arabia is a further destabilising factor in the region and a potential threat to the security of shipping through Middle Eastern chokepoints. Terrorist attacks and piracy and armed robbery are further risks that could credibly disrupt trade flows through the Strait of Hormuz, while climate hazards and maritime disputes pose medium to low risks.

The Bab-el Mandeb Strait is most threatened by littoral rivalries, internal instability, piracy and armed robbery against ships. In fact, this chokepoint is located between Yemen, Djibouti, Somalia and Eritrea. The civil war in Yemen, tensions between Yemen and Saudi Arabia, piracy in the Gulf of Aden, and the sizeable foreign military presence in Djibouti all increase the vulnerability of the strait. Terrorist attacks near the strait, for instance by Al-Qaeda, are also quite common.

The growing Sino-American competition in the Indo-Pacific cast a shadow over the Strait of Malacca. The interests of major players in this strait make it hence particularly vulnerable to great power competition. Piracy and armed robbery against ships are also a significant threat to the Strait of Malacca, as passing through this chokepoint is one of the quickest maritime routes used by cargo ship loaded with valuable goods. Finally, the strait is subject to serious climate hazards, including volcanic eruptions, tsunamis, floods, landslides, rising sea levels, and coastal erosion. Similar to the Strait of Malacca, the Ombai and Lombok Straits also lie at the heart of Sino-American competition and are of strategic interest for great powers in the region because they are the most immediate alternatives for rerouting in case of closure of the Strait of Malacca. Climate hazards resulting from heavy rainfall, tsunamis, floods, cyclones, rising sea levels, and coastal erosion are another major threat. Finally, and most worrying, the South and East China Seas face risk related to great power rivalry, littoral rivalries and maritime disputes. In the region, China is both a superpower competing with the US and a littoral state involved in several maritime disputes with its neighbours. The Chinese government has laid claim to much of the South China Sea, including territories that Brunei, Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam also declare as theirs. In the East China Sea, tensions between Taiwan and China are at an all-time high and given the strategic importance of Taiwan for its production of semiconductors, a blockade or attack on the island is likely to involve other states, possibly including the US. At the same time, issues revolving around the Senkaku Islands could lead to the escalation of tensions between Japan and China. To make matters worse, the South and East China Seas are at risk of volcanic activity, typhoons, tropical storms, rising sea levels, cyclones, and earthquakes that have the potential to disrupt shipping activities and port infrastructures. Piracy attacks and armed robbery against ships are also common events, especially in the South China Sea.

Table 1. Assessment of security and geopolitical and security risks per chokepoint



	Suez Canal	Strait of Hormuz		Bab el Mandeb Strait		Strait of Malacca	Lombok Strait	Ombai Strait	South China Sea	East China Sea
Great power rivalries	M	M	H	M	H	H	H	H	H	H
Littoral rivalries	M	H		H		M	L	L	H	H
Maritime disputes	L	L	M		M	H	L	L	H	H
Internal instability	M	H	H		H		M	L	L	L
Piracy and armed robbery against ships	L	M	H	H		H		M	M	H
Terrorist attacks	M	M	H	H		M	M	M	M	L
Climate hazards	M	M		M		H	H	H	H	H

In the case of a closure of one or several of these chokepoints, re-routing ships through other secondary chokepoints would be the most obvious solution. However, different passageways might only be able to handle a limited increase in trade volume, and shipping times might increase.¹ For many chokepoints, there are no viable options for rerouting through close-by straits. An extended shut down of the Suez Canal or Bab el Mandeb, for instance, would mean rerouting through the Panama Canal or Cape of Good Hope.

Europe therefore has an active interest in open maritime trade routes, and needs to carve out its own role in the Indo-Pacific. It can no longer rely solely on the US to ensure maritime safety in the region. However, the scarce naval capabilities of European states as well as the vastness of the Indo-Pacific make it difficult to envision an active naval role for Europe in the region.

¹ IEA, *World Energy Outlook 2019*, 168.; Lincoln F. Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', *Communications in Transportation Research* 3 (2023): 12, <https://doi.org/10.1016/j.commtr.2022.100083>.

The brief therefore makes the following set of recommendations, encapsulated in Table 2:

First, Europeans should look to enhance their cooperation with Indo-Pacific states in multilateral, minilateral, and bilateral settings. In choosing its partners in the region, Europe will face a trade-off between affinity and maritime security relevance and might have to make some uncomfortable decisions.

Second, Europeans could focus on enhancing maritime security in the Indian Ocean, where deployment of naval capabilities is easier due to the vicinity to European ports.

Third, and finally, European states should choose maritime security and other policy tools according to the nature of the risks faced by different passageways. The Western Indian Ocean’s chokepoints – specifically Bab el Mandeb, and Hormuz – require more anti-piracy, anti-terrorism, and general law enforcement efforts, as well as potentially the use of high-end naval assets in the case that regional rivalries escalate. In contrast, where the Indian Ocean meets the Pacific Ocean in Southeast Asia, Europe should focus on disaster relief and humanitarian missions; with the understanding that European efforts to include themselves into great power conflict are likely to be both ineffective and counterproductive.

Maritime security between Europe and the Indo-Pacific is crucial to Europe, but a European contribution must be multifaceted and tailored to the various regions within the Indo-Pacific.

Table 2. Main findings and recommendations



	Findings	Recommendations
Maritime insecurity affecting trade between Europe and Indo-Pacific	Europe has significant trade flows of low, medium and high value-added goods with Indo-Pacific states, mostly focused on high value-added goods.	Europe should invest in maritime security along the entire route from European economies to key Indo-Pacific economies.
	Disruptions in trade lead to higher costs, longer shipping times, and economic insecurity.	
	Trade between Europe and the Indo-Pacific depends on maritime routes.	
	Chokepoints along maritime trade routes are vulnerable to a variety of threats and risks. Relevant chokepoints are the Suez Canal, the Bab el-Mandeb Strait, the Straits of Hormuz, Malacca, Lombok and Ombai, and the South and East China Seas. They can be threatened by great power rivalries, littoral rivalries, maritime disputes, internal instability, piracy and armed robbery, terrorist attacks, and climate-related hazards. The Western part of the Indo-Pacific is particularly at risk from littoral rivalries and internal instability, the Eastern part from great power rivalries and climate hazards.	
Ensuring maritime security in the Indo-Pacific	European states are not capable of an active naval role in the region to provide direct military security.	European states should enhance cooperation with Indo-Pacific states in multilateral, minilateral and bilateral settings
	Many Indo-Pacific states are not capable of providing maritime security on their own.	
	European naval capacity is limited, especially given the demands on European capabilities in the Euro-Atlantic and the distance to the Indo-Pacific.	

Introduction

The seas continue to offer the most economically efficient, effective, and cheapest means of transport of commercial and military goods and people.

Maritime routes require protection. These routes hold an immense strategic and economic value, as an estimated 80% of global trade by volume and 70% by value moves via cargo ships.² The seas continue to offer the most economically efficient, effective, and cheapest means of transport of commercial and military goods and people. However, producers and consumers live on land, and trade therefore passes close to shores and through narrow passages, canals, and straits. In fact, most maritime routes rely on these narrow passages to facilitate trade between non-neighbouring countries. In 2019, before the Covid pandemic interrupted global supply chains, 89.3% of the total value of trade between non-neighbouring countries passed via such chokepoints, for a total value of \$24.717,6B.³ These maritime chokepoints are difficult and costly to circumvent, giving states (and sometimes non-state actors) that control or are located near these zones considerable coercive power.⁴

Unimpeded passage for commercial vessels through these bottlenecks is fundamental for fast deliveries between key nodes in the global supply chain. However, maritime chokepoints are also potential weak points, as they are subject to geopolitical risks like piracy, blockades, international warfare, and maritime disputes.⁵ The closure of one -or more- of these chokepoints would have detrimental effects on global trade, as demonstrated by the case of the container ship *Ever Given* that, in 2021, blocked the Suez Canal for six days. On that occasion, Suez Canal Authority chairman Osama Rabie said that the Canal's revenues were "taking a \$14m-\$15m hit for each day of the blockage."⁶ Moreover, ensuring these chokepoints are open also allows for the quick movement of military material and personnel during times of crisis and war.

European states have considerable interests in keeping these chokepoints open; generally, the EU's trade to and from Asia passes via the Suez Canal, Strait of Hormuz, Bab el Mandeb Strait, Strait of Malacca, Lombok Strait, Ombai Strait, South China Sea, and East China Sea. However, Europeans have limited naval capabilities, whether individually or collectively, which limit the possibilities for a European presence in the Indo-Pacific.⁷ Given these limited naval capacities of Europe, Europeans should consider which resources they should direct at security around these chokepoints. In this brief we consider the following questions: what is the value chain across the maritime routes between Europe and the major Asian economies in the Indo-Pacific; how could these routes be disrupted; what are the risks to various chokepoints, and what are the alternatives?

2 UNCTAD's Review of Maritime Transport 2022: Facts and Figures on Asia and the Pacific | UNCTAD, UNCTAD, 29 November 2022, <https://unctad.org/press-material/unctads-review-maritime-transport-2022-facts-and-figures-asia-and-pacific>.

3 Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', 2023, 5.

4 Henry Farrell and Abraham L. Newman, 'Interdependence: How Global Economic Networks Shape State Coercion', *International Security* 44, no. 1 (1 July 2019): 55–56, https://doi.org/10.1162/isec_a_00351.

5 Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', 2023.

6 Mary-Ann Russon, 'The Cost of the Suez Canal Blockage', *BBC News*, 29 March 2021, sec. Business, <https://www.bbc.com/news/business-56559073>.

7 There are varying definitions of what consists the Indo-Pacific region of. In this brief, 'Indo-Pacific' is referred to as the larger region enclosed by the Indian and Pacific Oceans. This goes from the Suez Canal to the Fiji islands.

To summarize, this brief does the following: (1) it offers an analysis of the economic value of the maritime routes to designated hot spots and weak points in the global supply chain where Europeans should concentrate their maritime security efforts on a national, multilateral or EU level. As all European economies count on extreme efficiency and specialization made possible by long-distance maritime transport, understanding the economic value of maritime routes underlines the importance of uninterrupted trade flows and the provision of maritime security. The brief also (2) assesses the geopolitical and security risks that threaten open and secure passage through maritime chokepoints; different threats will require different mitigation measures and this in turn affects the type of partnerships that Europe should seek to form with Indo-Pacific states.

1. Why does Europe need the Indo-Pacific?

The size of the economies located in the Indo-Pacific is considerable, generating 60% of global GDP and contributing two thirds of global growth, with its relative share of the global economy only expected to grow in the future. The Indo-Pacific is also home to three of the four largest economies outside of the EU: China, India and Japan. The EU itself is the top investor in the region. Four out of the top ten EU trading partners for goods are also key Indo-Pacific states (China, Japan, South Korea, India) and in 2022, over one third of European imports came from the region.⁸ Together, the EU and the Indo-Pacific hold over 70% of the global trade in goods and services.⁹ The trade interdependence and economic relationship between Europe and the Indo-Pacific region is hence undeniable. The section below discusses these trade relationships.

What is traded between European and Indo-Pacific states?

Exchanges between Europe and the Indo-Pacific encompass a wide array of goods with different values-added, from cereals to mechanical machinery, from ores to optical equipment. Value-added goods are commodities whose value has been enhanced as a result of the goods undergoing production processes involving intermediate inputs, which are “goods and services that are used in the production process of other goods and services”¹⁰ but are not sold individually in the market. It is difficult to quantify the amount of value added to goods through intermediate inputs, as these vary considerably from one product to the other.¹¹

However, it is possible to divide value-added goods roughly in three categories: high-, medium-, and low value-added goods. High value-added goods are complex commodities such as vehicles, machinery, and spacecraft, for which many intermediate inputs are required before they are saleable on the market. Goods such as raw materials, ores, and grains are considered low value-added goods because they undergo a limited amount of production processes before being sold on the final market. Between these two extremes, there are medium value-added goods such as mineral fuels, plastics, and organic chemicals, which

8 Oliver Krentz, 'The European Union and Its Trade Partners' (European Parliament, 2023), https://www.europarl.europa.eu/erpl-app-public/factsheets/pdf/en/FTU_5.2.1.pdf; 'Statistics | Eurostat', accessed 6 April 2023, <https://ec.europa.eu/eurostat/databrowser/bookmark/42c8a9a4-a711-4b41-97ad-215864c6c728?lang=en>.

9 'Question and Answers: EU Strategy for Cooperation in the Indo-Pacific', European Commission, 19 April 2021, https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_4709.

10 'Intermediate Inputs', U.S. Bureau of Economic Analysis (BEA), accessed 1 August 2023, <https://www.bea.gov/help/glossary/intermediate-inputs>.

11 'Value Added', U.S. Bureau of Economic Analysis (BEA), accessed 1 August 2023, <https://www.bea.gov/help/glossary/value-added>.

While the commerce of medium- and low-value added commodities is still important, that of high value-added goods certainly produces more revenue, and interruptions to these trade relations would have disastrous consequences for both European and Indo-Pacific states.

undergo more processing than low value-added goods but do not have a production chain as complex as that of high value-added commodities.

The interdependence between the Indo-Pacific and Europe is particularly intense when it comes to high value-added goods. In fact, for specific types of mechanical and electrical machinery, Europe relies heavily on imports from the Indo-Pacific, an essential component for manufacturing other complex goods. European imports of these two high value-added goods amounted to \$632.7B in 2020. Over 70% of Europe's electrical machinery comes from the Indo-Pacific, of which almost 65% from China, Japan, Vietnam, Malaysia, South Korea, and Taiwan alone.¹² Indo-Pacific countries, especially China, South Korea, and Japan, also import high value-added goods such as optical equipment and aircraft and spacecraft products from Europe. In fact, over 40% of Europe's total exports in these sectors travel to the Indo-Pacific market, generating a revenue of \$200.8B.¹³ Other high value-added goods are also central to trade between the EU and the Indo-Pacific, especially vehicles that are imported and exported to and from both regions. Disruptions in trade would thus have both direct costs in terms of missed revenue, as well as indirect costs in terms of disruptions to other production.

The exchange of medium value-added goods between the Indo-Pacific and Europe does not generate as much revenue as that of high value-added products. Nevertheless, over 40% of European imports of plastics and organic chemicals are sourced from the Indo-Pacific.¹⁴ In particular, at the far Western end of the Indian Ocean, the Gulf states are an important import source of mineral fuels, such as crude petroleum, natural gas, and LNG, with dependencies on these countries only set to increase as a consequence of the ban on Russian energy resources.¹⁵ At the same time, the Indo-Pacific is an important export market for the EU, with nearly 30% of total EU exports of organic chemicals and wood traveling to countries in this area, notably to China, Japan, India, South Korea, and Saudi Arabia.¹⁶

Low value-added goods such as ores (including critical raw materials), precious metals, iron and steel are also traded between Europe and the Indo-Pacific.¹⁷ These materials can be primary inputs for high-value-added goods and found in small quantities in certain components which could have final application in vehicles, aircrafts, and machinery. While low value-added goods are traded in considerable quantities between the EU and the Indo-Pacific, their trade generates considerably less revenue than that of high value-added ones.

The centrality of high value-added goods to trade relationships between the EU and the Indo-Pacific is visible in Table 3, that presents a selection of some of the most traded commodities between the two regions in terms of value and volume.¹⁸ The products are divided by high (blue), medium (green), and low (red) value-added goods, showing the share of EU imports and exports to the Indo-Pacific. The table also includes the trade data for the UK and Norway

12 'The Observatory of Economic Complexity | OEC', OEC - The Observatory of Economic Complexity, 2020, <https://oec.world/en>.

13 'The Observatory of Economic Complexity | OEC'.

14 'The Observatory of Economic Complexity | OEC'.

15 'Joint European Action for More Affordable, Secure Energy', European Commission, 8 March 2022, https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1511.

16 'The Observatory of Economic Complexity | OEC'.

17 'The Observatory of Economic Complexity | OEC'.

18 On the one hand, mechanical machinery, electrical machinery, mineral fuels, vehicles, and precious minerals are examples of products that generate high profits. On the other hand, products such as salts & stones, ores, iron & steel, and cereals generate less revenue but are traded in much higher volumes. Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', 2023.

to provide a broader picture of Europe's trade with Indo-Pacific countries.¹⁹ In 2020, the total value of the EU's exports of high value-added goods to the Indo-Pacific was \$373.6B, while that of imports totalled \$448B. These numbers stand in stark contrast to those of medium value-added goods (total exports: \$61.1B; imports: \$114.7B) and low value-added goods (total exports: \$39.8B; imports: \$32B). While the commerce of medium- and low-value added commodities is still important, that of high value-added goods certainly produces more revenue, and interruptions to these trade relations would have disastrous consequences for both European and Indo-Pacific states.

Table 3. European exports and imports of high-, medium-, and low value-added goods from/to the Indo-Pacific



Type of product	Name of product	EU exports to Indo-Pacific (\$ value and percentage share of total EU exports to the world)	EU exports to Indo-Pacific + UK and NOR (\$ value and share of total EU+UK+NOR export to the world)	EU imports from Indo-Pacific (\$ value and share of total EU imports from the world)	EU imports from Indo-Pacific + UK and NOR (\$ value and share of total +UK+NOR imports from the world)
High value-added	Mechanical machinery	\$123B 36.9%	\$143B 36.2%	\$149B 65.3%	\$171.65B 56.2%
	Electrical machinery	\$84.5B 44%	\$90.9B 41.5%	\$202B 76.8%	\$229.68B 70.2%
	Vehicles	\$83.6B 36.7%	\$92.39B 34.7%	\$59B 53.1%	\$70.32B 39.6%
	Optical equipment	\$57B 47.5%	\$62.37B 44.9%	\$34B 41.8%	\$38.77B 38%
	Aircraft and spacecraft	\$25.5B 51.8%	\$27.12B 43.7%	\$4.07B 15.2%	\$5.08B 13.9%
Medium value-added	Mineral fuels	\$12.7B 20.4%	\$22.06B 16.8%	\$55.7B 22.1%	\$59.546B 20.4%
	Plastics	\$23.5B 33.4%	\$25.2B 30.7%	\$27.5B 53.9%	\$33.66B 46%
	Wood & Wood articles	\$6.52B 33.8%	\$6.B 32%	\$3.1B 26.5%	\$4.18B 20.4%
	Organic Chemicals	\$18.9B 29%	\$20.8B 26.2%	\$28.4B 43%	\$30.99B 40.5%
Low value-added	Precious Metals	\$16.7B 30.9%	\$27.45B 30.7%	\$15B 27.6%	\$45.08B 28.3%
	Ores	\$4.04B 59.5%	\$4.15B 53%	\$2.53B 10.4%	\$2.64B 9.7%
	Iron & Steel	\$12.7B 44.2%	\$14.73B 41%	\$11.7B 41.2%	\$14.87B 39.1%
	Salts & stones	\$1.3B 31.9%	\$1.55B 29.1%	\$1.43B 32.3%	\$1.66B 28.5%
	Cereals	\$5.03B 38.3%	\$5.05B 36.8%	\$1.3B 19.7%	\$1.72B 20.3%

¹⁹ 'The Observatory of Economic Complexity | OEC'.

2. How could Europe be cut off from trade with the Indo-Pacific?

Access to the Indo-Pacific economies represents a massive share of Europe's ability to generate wealth and prosperity; however, that access is quite vulnerable to disruption. Roughly 40% of the world's containerised maritime trade travels through East-West shipping routes, and most of the trade between European and Indo-Pacific states moves via sea.²⁰ The provision of maritime security is thus vital to the promotion of economic prosperity in both regions. While the seas along which trade moves are vast, shipping routes often pass through narrow straits, channels, and canals, the so-called 'maritime chokepoints'. Free passage through these narrow waterways can be easily threatened and any level of disruption would have disastrous consequences to the livelihoods of billions of people. This section discusses each of the main maritime chokepoints through which goods travel to and from the Indo-Pacific and Europe as well as the geopolitical risks that threaten to disrupt trade between the two regions.

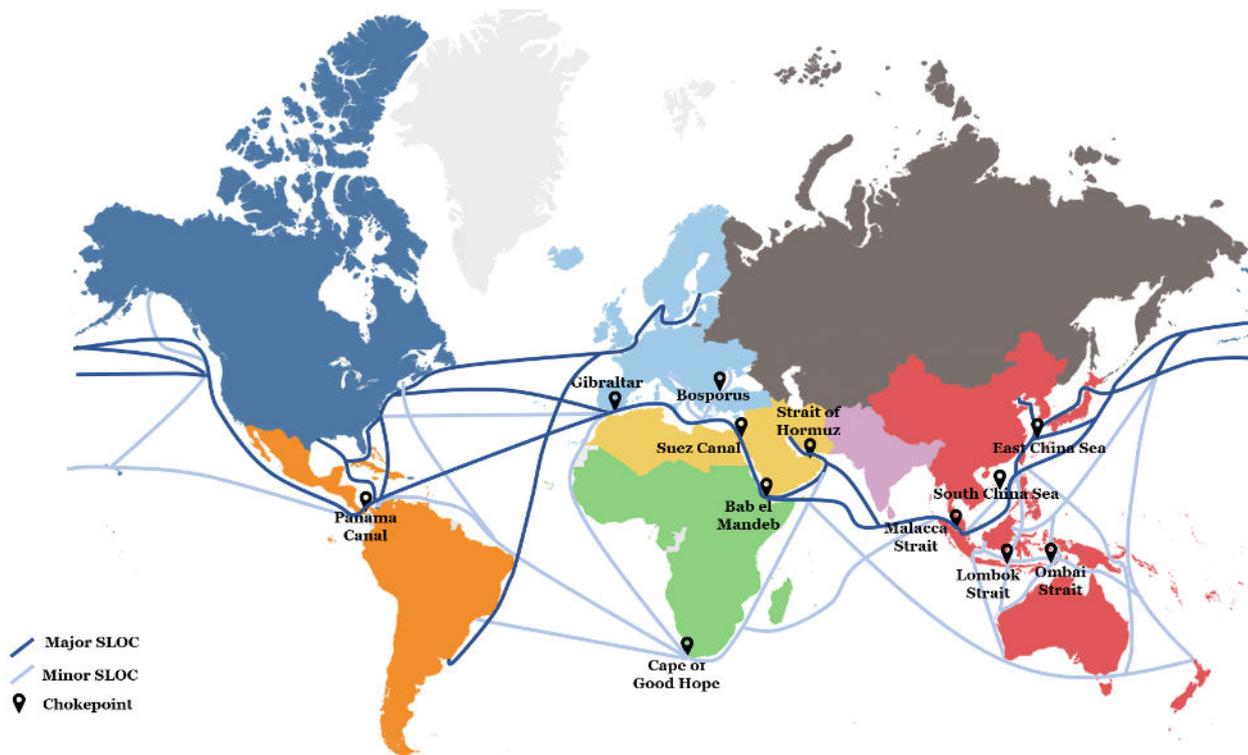
Why are maritime chokepoints passageways to global trade?

Trade between the Indo-Pacific and Europe passes through a limited number of key maritime chokepoints, as most of them are part of the area enclosed by the Indian and Pacific Oceans. These chokepoints include the Suez Canal, Strait of Hormuz, Bab el Mandeb Strait, Strait of Malacca, Lombok Strait, Ombai Strait, South China Sea and East China Sea. Strictly speaking, the latter two are not straits or canals but can be considered chokepoints nonetheless as they are narrow trade corridors that can hardly be avoided when shipping goods to and from the Indo-Pacific. Circumventing them adds significant costs and shipping time, as the analysis in this section will demonstrate. In 2019, the value of global trade between non-neighbouring countries passing by Indo-Pacific chokepoints amounted to \$16,719.9 billion, meaning that around 60.4% of the global total value of maritime trade between non-neighbouring countries passes by chokepoints located in the region.²¹ Figure 1 shows the world's main maritime chokepoints and maritime transport routes.

²⁰ 'UNCTAD's Review of Maritime Transport 2022'.

²¹ Janet Anderson, 'Chokepoints and Vulnerabilities in Global Markets', Roland Berger, 25 July 2022, <https://www.rolandberger.com/en/Insights/Publications/Chokepoints-and-vulnerabilities-in-global-markets.html>.

Figure 1. Maritime chokepoints and maritime transport routes.



Three main chokepoints are key to unimpeded passage through the western part of the Indo-Pacific, meaning the Indian Ocean: the Suez Canal, Bab el Mandeb, and Strait of Hormuz. The Suez Canal is a vital passage connecting the Mediterranean to the Red Sea and it has a key role in the transport of several products, reducing the transit time from London to Taiwan by 8900 km.²² In 2020, 8,829 ships bearing 1.17 billion tons of goods passed through the Suez Canal, with this number diminishing only slightly in 2019, despite the Covid-19 crisis. In the same year, 12% of global trade passed via the canal.²³ Bab el Mandeb is the chokepoint between the Horn of Africa and the Middle East, and it is vital for exports and imports to and from the Red Sea ports. Lastly, the Strait of Hormuz, connecting the Persian Gulf and Gulf of Oman, is the only outlet from the Persian Gulf to the open Ocean. These three chokepoints are particularly vital to the trade of oil and gas from Middle Eastern countries. Roughly 1.74 million barrels per day (mb/d) flow through the Suez Canal, 3 mb/d through Bab el Mandeb and 17 mb/d through the Strait of Hormuz.²⁴ The oil flows through the latter are particularly impressive and approximately 88% of the oil produced by Gulf States is traded via the strait of Hormuz, of which almost 80% flows towards Asia.²⁵

In the hinge between the Indian and the Western Pacific Oceans, the Strait of Malacca is located between Malaysia and the Indonesian island of Sumatra, with approximately 25%

22 Yelena Dzhanova, 'The Suez Canal Has a Contentious History and Has Been Blocked and Closed Several Times since Opening', Business Insider, 28 March 2021, <https://www.businessinsider.com/the-suez-canal-blocked-and-closed-several-times-since-opening-2021-3>.

23 Anderson, 'Chokepoints and Vulnerabilities in Global Markets'.

24 Anderson.

25 Giancarlo E. Valori, "'Maritime Oil Routes'" Modern Diplomacy, 10 February 2022, <https://modern diplomacy.eu/2022/02/10/maritime-oil-routes/>; *World Energy Outlook 2019*, (IEA, 2019), <https://iea.blob.core.windows.net/assets/98909c1b-aabc-4797-9926-35307b418cdb/WEO2019-free.pdf>, 166.

of global shipping, 40% of the world’s trade, and over 100.000 vessels passing through this busy waterway yearly. In 2019, the combined imports and exports passing through the Seas equated to 42% of global trade value and 40% of trade by tonnage. The straits of Lombok and Ombai are less trafficked, but still important to global trade.²⁶ Within the Western Pacific, the South and East China Seas are two of the busiest trade corridors in the world. The value of goods passing via the South China in 2016 was estimated to be \$3.4-\$5.3 trillion.²⁷ Together with the East China Sea, that value goes up to \$7.4 trillion.

The high, medium, and low value-added goods identified in Section 1 as some of the principal goods traded between Europe and the Indo-Pacific all pass through the abovementioned chokepoints. Table 4 and Figures 2 and 3 offer an overview of the global movement of goods passing through each chokepoint with respect to the total percentage of non-neighbouring country trade in that good, by a) value; and b) weight.²⁸

Table 4. Global movement of goods through each chokepoint (% of non-neighbouring country trade by a) value; and b) weight (empty cells: no trade of goods through chokepoint)



	Suez canal	Babel Mandeb	Strait of Hormuz	Malacca Strait	South China Sea	East China Sea	Lombok Strait	Ombai Strait
A								
Mechanical Machinery	17.1%	17%	1.3%	21.5%	23.2%	18.1%	0.5%	0.01%
Electrical Machinery	13.8%	14.2%	1%	27%	35.9%	24.5%	0.5%	0.01%
Mineral Fuels	8.5%	7%	15.5%	27.3%	23.1%	12.9%	1.4%	
Vehicles	11.9%	11.7%	1.5%	14.3%	14.5%	12.7%		0.01%
Precious metals	27.6%	28.8%		22.9%			2.1%	
Optical Equipment					24.7%	20.2%		
Plastics			3.4%					
Ores							25.2%	
Aircraft and spacecraft								0.01%

B								
Mineral Fuels	7.8%	6.6%	12.9%	29.3%	24.3%	13.4%	2.8%	
Salts and Stone	4%	4.7%	7.6%	10.5%	9.2%	5.1%	0.5%	
Ores	3.5%	3.7%	1.8%	28.8%		11.8%	37.7%	
Iron and steel	8.6%	7.7%		16.1%	19.6%	14.7%		
Cereals	15.8%	9.5%	3.9%				0.9%	
Wood and wood articles						15.8%	2.2%	
Organic chemicals				9.6%				

26 Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', 2023.

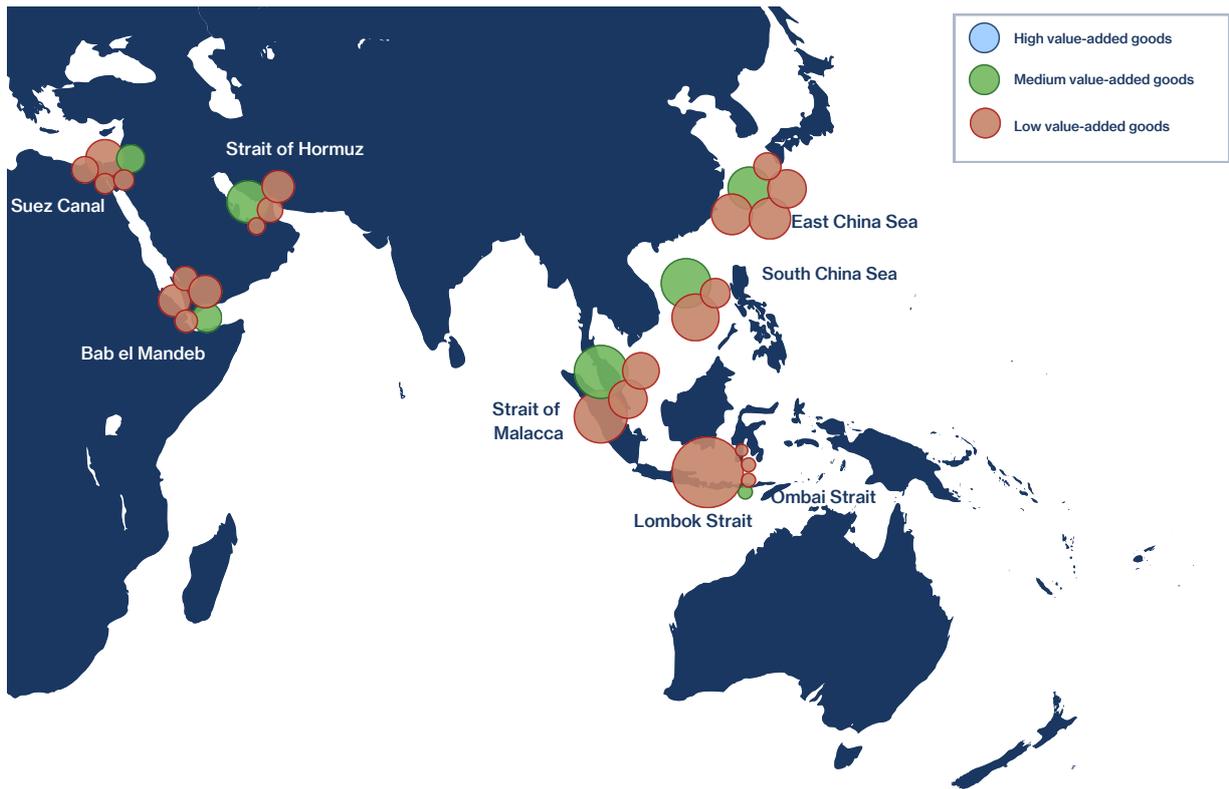
27 'How Much Trade Transits the South China Sea?', *ChinaPower Project* (blog), 2 August 2017, <https://chinapower.csis.org/much-trade-transits-south-china-sea/>.

28 Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', 2023.

Figure 2. Global movement of goods through chokepoints by value



Figure 3. Global movement of goods through chokepoints by weight



A reduction or full stoppage of shipping through these narrow passageways would thus have disastrous consequences for both the EU and the Indo-Pacific. The blockage of chokepoints would in fact make Indo-Pacific and European states (and likely the rest of the world) vulnerable to energy insecurity, food scarcity, and disruptions of supply chains, with diffused negative effects on economic security worldwide resulting from lost trade, shipping delays, increased shipping costs and times, backlogged ports, and shortages of ships.²⁹ Moreover, countries whose only coastline lies along an enclosed sea/gulf for which the closed chokepoint is the only outlet, would be cut off from trade. For example, if the Strait of Hormuz were to be blocked, countries in the Persian Gulf would be unable to ship out 97% of their available mineral fuel exports by weight, as well as being prevented from receiving 97% of their cereal imports by weight.³⁰

A reduction or full stoppage of shipping through these narrow passageways would thus have disastrous consequences for both the EU and the Indo-Pacific.

29 'Oil Market Report', International Energy Agency, accessed 19 November 2022, <https://www.iea.org/topics/oil-market-report>; Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', 2023.

30 Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', 2023, 7.

3. Risks and alternatives to maritime chokepoints

The following section looks at risks threatening trade flows through maritime chokepoints as well as possible alternative shipping routes. We consider risks as emerging from: (1) great power rivalries; (2) littoral rivalries; (3) maritime disputes; (4) internal instability; (5) piracy and armed robbery; (6) terrorist attacks; and (7) climate-related hazards. We first look at the Indo-Pacific chokepoints and assess the level of risk – low, medium, or high – to these chokepoints. In Table 5, we show how the seven risks were operationalised. We then qualitatively assess for each maritime chokepoint whether a certain risk poses a low, medium, or high threat to the continued functioning of that chokepoint. Table 6 offers an overview of the risk level of each threat to the Indo-Pacific chokepoints. Finally, we examine possible rerouting to bypass chokepoints and assesses the associated costs if chokepoints are closed or their passage is unsafe due to one or more of the abovementioned risks.

What are the geopolitical risks to maritime chokepoints?

Geopolitical and security risks arguably pose the greatest threat to shipping security through chokepoints. While chokepoints can also be blocked by events such as natural disasters or accidents, or even the weather, geopolitical developments or crises have the greatest potential for escalation and for involving multiple states.³¹

Each of the seven geopolitical and security threats to Indo-Pacific chokepoints mentioned above entails potential disruptions to trade flows between Europe and the Indo-Pacific. Great power and littoral rivalries can result in major power conflicts which could cause maritime chokepoints to be blockaded, or the waters surrounding the straits could simply become unusable as their narrow passages turn into theatres of war. Similarly, maritime disputes over islands, maritime borders, and exclusive economic zones can result in unsafe waters for commercial vessels. In turn, internal stability is crucial as the political and regulatory apparatus of states close to chokepoints is fundamental to the smooth functioning of the physical

31 Rob Bailey and Laura Wellesley, 'Chokepoints and Vulnerabilities in Global Food Trade' (Chatham House, June 2017), <https://www.chathamhouse.org/2017/06/chokepoints-and-vulnerabilities-global-food-trade>; Tom Ough, 'Malacca Strait: How One Volcano Could Trigger World Chaos', *BBC*, accessed 4 April 2023, <https://www.bbc.com/future/article/20230117-malacca-strait-the-sea-lane-that-could-trigger-world-chaos>; Filip Medunic, 'A Glimpse of the Future: The Ever Given and the Weaponisation of Choke-Points', European Council on Foreign Relations, 23 April 2021, <https://ecfr.eu/article/a-glimpse-of-the-future-the-ever-given-and-the-weaponisation-of-choke-points/>.

Geopolitical and security risks arguably pose the greatest threat to shipping security through chokepoints.

and regulatory transport infrastructure. Corruption, worker strikes, and trade restrictions are forms of internal political instability that threaten the openness of chokepoints and uninterrupted trade flows. Piracy, armed robbery against ships, and terrorist attacks are all likely to happen in proximity of chokepoints, as cargo ships loaded with a variety of goods pass very close to land and represent inviting opportunities of loot for pirates and easy targets for terrorist groups aiming at disrupting trade flows. Lastly, climate hazards such as flooding, droughts, or rising water levels pose a threat to the smooth functioning of shipping routes.³² The risks to chokepoints have been operationalised with the indicators shown in Table 5.

Table 5. Operationalisation of risks to chokepoints.



Risk	Research question	Indicator	Data
Great power rivalries	Is the chokepoint vital to rival great powers' power projection?	Involvement of chokepoints in great power conflicts in the period 1900-2023	Historical collection of conflict involving chokepoints
Littoral rivalries	Is the chokepoint vital to rival littoral states' power projection?	Involvement of chokepoints in littoral conflicts in the period 1900-2023	Qualitative collection of conflict involving chokepoints
Maritime disputes	Is the maritime chokepoint in proximity of disputed maritime territories?	Current maritime disputes in proximity of chokepoints	Qualitative collection of conflict involving chokepoints
Internal instability	Are states in proximity of the chokepoints subject to internal political instability that might affect access to the chokepoints?	Political stability and absence of violence/terrorism	World Bank index for political stability and absence of violence/terrorism (2021) ³³
Piracy and armed robbery against ships	Are the waters/port infrastructures surrounding the chokepoint subject to piracy and armed robbery against ships?	Number and frequency of piracy and armed robbery episodes against ships in the last 3 years	IMB Piracy and Armed Robbery Map 2023 ³⁴ and qualitative collection of piracy and armed robbery episodes
Terrorist attacks	Are the waters/port infrastructures surrounding the chokepoint subject to terrorist attacks?	Terrorism-related incidents, fatalities, injuries and hostages in states in proximity of the chokepoints	Global Terrorism Index ³⁵ and qualitative collection of terrorist attacks
Climate hazards	Are the chokepoints threatened by climate hazards?	Climate-related hazards affecting the accessibility of chokepoints	HCSS Climate Security Risk Monitor ³⁶ and qualitative collection of climate-related hazards

32 Rob Bailey and Laura Wellesley, 'Chokepoints and Vulnerabilities in Global Food Trade', Chatham House, 27 June 2017, <https://www.chathamhouse.org/2017/06/chokepoints-and-vulnerabilities-global-food-trade-0/3-hazards-chokepoint-operation>.

33 'Worldwide Governance Indicators | DataBank', The World Bank, 2023, <https://databank.worldbank.org/source/worldwide-governance-indicators>.

34 'Live Piracy Map', ICC Commercial Crime Services, accessed 1 September 2023, <https://www.icc-ccs.org/index.php/piracy-reporting-centre/live-piracy-map>.

35 'Global Terrorism Index | Countries Most Impacted by Terrorism', Vision of Humanity, 2023, <https://www.visionofhumanity.org/maps/global-terrorism-index/>.

36 'Climate Security Risk Monitor', The Hague Centre for Strategic Studies, accessed 1 September 2023, <https://hcss.nl/climate-security-risk-monitor/>.

Suez Canal

The major risk to an open Suez Canal is the internal instability of Egypt. Future political uncertainty in Egypt might endanger the freedom of navigation through the Suez Canal, since the passageway is under Egyptian rule, represented by the Suez Canal Authority. While Egyptian policymakers are unlikely to completely close off the chokepoint, an extremist government might decide to prohibit the passage of ships coming and going from certain countries.³⁷ In the past, the Suez Canal has been at the centre of great powers' power projection, that culminated in the 1956 Suez Crisis.³⁸ However, since then, there have been little instances of great power competition impacting trade flows passing through the Canal. Animosity between littoral states, particularly Egypt, Israel, and Syria, has had violent repercussions in the past and while not all issues are settled, there is only a medium risk of these rivalries resulting in actual conflicts currently.³⁹ While several terrorist attacks played out in Egypt in recent years, none disrupted the functioning of the Suez Canal. Nonetheless, terrorism alert remains high in Egypt and future terrorism-related incidents cannot be excluded.⁴⁰ Rising sea levels and hot windstorms are worrying climate events that could impact trade flows through the Canal, as strong winds and coastal flooding have already delayed shipping in the past.⁴¹ No piracy attacks were recently registered in close proximity to the Suez Canal, nor are any maritime disputes currently threatening safe passage through the strait.

Strait of Hormuz

Safe passage through the Strait of Hormuz is mainly threatened by littoral rivalries and the internal instability of Iran, as well as (albeit to a lesser extent) by great power rivalries, piracy and armed robbery against ships, and terrorist attacks. Tehran exercises control over the Strait of Hormuz, which is included in Iran's national waters. While international law prevents Iran from closing off the chokepoint, the Islamic Revolutionary Guard Corps and its proxies are not new to attacks on civilian and tankers ships in the area. Iran's littoral rivalry with Saudi Arabia is a further destabilising factor in the region and a potential threat to the security of shipping through Middle Eastern chokepoints.⁴² The strait has also been central to great power rivalry in the Iraq War and the Gulf War, as well as previous conflicts between the United States and Soviet Union, and during WWII.⁴³ Terrorist attacks and piracy and armed robbery are risks that could credibly disrupt trade flows through the Strait of Hormuz, while climate hazards and maritime disputes pose medium to low risks.

37 Shaul Chorev, 'The Suez Canal: Forthcoming Strategic and Geopolitical Challenges', in *The Suez Canal: Past Lessons and Future Challenges*, Palgrave Studies in Maritime Politics and Security (Cham: Springer International Publishing, 2023), 15, https://doi.org/10.1007/978-3-031-15670-0_1.

38 'Milestones: 1953–1960 - Office of the Historian', US Office of the Historian, accessed 1 September 2023, <https://history.state.gov/milestones/1953-1960/suez>.

39 'Factbox - The Suez Canal: A Vital Oil Transit Route with an Ancient History', *Reuters*, 26 March 2021, sec. Money News, <https://www.reuters.com/article/egypt-suezcanal-oil-idINKBN2B126C>; Jeremy Brown, '1967 War: Six Days That Changed the Middle East', *BBC News*, 5 June 2017, sec. Middle East, <https://www.bbc.com/news/world-middle-east-39960461>; 'Milestones: 1953–1960 - Office of the Historian'.

40 'Global Terrorism Index | Countries Most Impacted by Terrorism'.

41 World Economic Forum, Marsh & McLennan, and Zurich Insurance Group, 'WEF Global Risk Report 2020' (World Economic Forum, 2020), http://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf; Jeff Masters, 'Suez Canal Shutdown Shows the Vulnerability of the Global Economy to Extreme Events', Yale Climate Connections, 29 March 2021, <http://yaleclimateconnections.org/2021/03/suez-canal-shut-down-shows-vulnerability-of-global-economy-to-extreme-events/>; 'Climate Security Risk Monitor'.

42 Patrick Wintour, 'A Visual Guide to the Gulf Tanker Attacks', *The Guardian*, 14 June 2019, sec. World news, <https://www.theguardian.com/world/2019/jun/13/a-visual-guide-to-the-gulf-tanker-attacks>.

43 'The First Gulf War - Short History - Department History - Office of the Historian', US Office of the Historian, accessed 1 September 2023, <https://history.state.gov/departmenthistory/short-history/firstgulf>; 'The Iraq War', Council on Foreign Relations, accessed 1 September 2023, <https://www.cfr.org/timeline/iraq-war>.

Bab el Mandeb

Littoral rivalries, internal instability, piracy and armed robbery against ships, and terrorist attacks are highly disruptive risks for Bab el Mandeb. In fact, this chokepoint is located between Yemen, Djibouti, Somalia and Eritrea. The civil war in Yemen, piracy in the Gulf of Aden, and the sizeable foreign military presence in Djibouti all increase the vulnerability of the strait.⁴⁴ Terrorist attacks near the strait are also quite common, and Al-Qaeda has been involved in several incidents in the past.⁴⁵ Tensions between Saudi Arabia and Yemen are, further, at an all-time high, with Saudi Arabia launching air strikes on Yemen as recently as 2015.⁴⁶ The strategic positioning of several foreign military bases in Djibouti makes Bab el Mandeb a very sensitive hotspot for great power competition, as the US, France, Great Britain, Japan, Saudi Arabia and China all have deployments in the country.⁴⁷ The Hanish islands were the centre of a dispute between Eritrea and Yemen in the 1990s, and Eritrea's refusal to sign UNCLOS makes it more difficult to regulate maritime disputes in the region.⁴⁸ As for the Suez Canal and Strait of Hormuz, Bab el Mandeb is also subject to droughts and rising sea levels.⁴⁹

Strait of Malacca

Growing Sino-American competition in the Indo-Pacific evidently casts a shadow on the Strait of Malacca, which is one of the most important chokepoints for imports and exports of both China and the US. India also values the openness of this strait, as it is the connection between the Indian and Pacific Ocean and thus the gateway for India to Asia-Pacific states.⁵⁰ The interests of great powers in this strait make it hence particularly vulnerable to great power competition. Piracy and armed robbery against ships are also a significant threat to the Strait of Malacca, as passing through this chokepoint is one of the quickest maritime routes used by cargo ship loaded with valuable goods.⁵¹ The seas surrounding the Strait of Malacca were home to 41% of the world's piracy between 1995 and 2013.⁵² Climate hazards also pose serious threats to the viability of this chokepoint, as the area is subject to volcanic eruptions, tsunamis, floods, landslides, rising sea levels, and coastal erosion that might compromise safe

44 Alon Dikstein and Etay Levkowitz, 'The World Must Cooperate to Prevent Threats to Maritime Chokepoints', *Begin-Sadat Center for Strategic Studies* (blog), 18 May 2021, <https://besacenter.org/the-world-must-cooperate-to-prevent-threats-to-maritime-chokepoints/>; Medunic, 'A Glimpse of the Future'.

45 Ana Aguilera Raga, 'The Bab El-Mandeb Strait: Geopolitical Considerations of the Strategic Chokepoint' (Instituto Espanol de Estudios Estrategicos, 10 March 2020), ieee.es/Galerias/fichero/docs_opinion/2020/DIEEE019_2020ANAAGU_BabMandeb_ENG.pdf.

46 Ammar Al Ashwal, 'Yemen and the Curse of Geography: Bab al-Mandab Disputed by Great Power Rivalries', *Carnegie Endowment for International Peace*, 18 May 2021, <https://carnegieendowment.org/sada/84558>; 'BTI 2022 Saudi Arabia Country Report', *Bertelsmann Stiftung Transformation Index*, 2022, <https://bti-project.org/en/reports/country-report?isocode=SAU&cHash=929400bab6381626dcd89cd5867a50b9>.

47 Tomi Oladipo, 'Why Are There so Many Military Bases in Djibouti?', *BBC News*, 15 June 2015, sec. Africa, <https://www.bbc.com/news/world-africa-33115502>.

48 Alexander Lott, 'Maritime Security Threats and the Passage Regime in the Bab El-Mandeb', *Norwegian Centre for the Law of the Sea Blog* (blog), 21 June 2021, https://site.uit.no/nclos/wp-content/uploads/sites/179/2021/06/Alexander-Lott_210621_NCLOS-Blog.pdf.

49 'Climate Security Risk Monitor'.

50 Alejandro Puigrefagut, 'Global Affairs and Strategic Studies. Facultad de Derecho', *Global Affairs*, accessed 1 September 2023, <https://www.unav.edu/web/global-affairs/detalle/-/blogs/china-and-india-fight-for-the-gates-of-the-strait-of-malacca>.

51 'ReCAAP ISC Annual Report 2022' (ReCAAP, 2022), <https://www.recaap.org/resources/ck/files/reports/annual/ReCAAP%20ISC%20Annual%20Report%202022.pdf>.

52 Adam McCauley, 'The Most Dangerous Waters in The World', *TIME.Com* (blog), accessed 1 September 2023, <https://time.com/piracy-southeast-asia-malacca-strait/>.

passage and damage infrastructures surrounding the strait.⁵³ Maritime disputes and terrorist attacks have occurred in the past but do not represent such high risk for the safety of the Strait of Malacca. Lastly, littoral rivalries and internal instability are lesser threats that do not significantly undermine the functioning of the strait.

Ombai and Lombok Straits

The straits of Ombai and Lombok are close to each other and hence subject to very similar security and geopolitical risks. Similarly to the Strait of Malacca, they also lie at the heart of Sino-American competition and are of particular strategic interest for great powers in the region because they are the most immediate alternatives for rerouting in case of closure of the Strait of Malacca.⁵⁴ Climate hazards are the other biggest threat to the straits of Ombai and Lombok since the adjacent region is prone to heavy rainfall, tsunamis, floods, cyclones, rising sea levels, and coastal erosion. Considering that these two chokepoints are also much narrower and have less advanced port infrastructure in the region, blockage due to climate-related events represents a serious risk.⁵⁵ Piracy attacks, armed robbery against ships, and terrorism have happened in the vicinity of the Ombai and Lombok straits but not with consistent intensity or frequency.⁵⁶ Tensions between littoral states, in particular Indonesia and Timor-Leste and Timor-Leste and Australia over maritime boundaries have all been settled and internal instability does not particularly threaten passage via these two straits.⁵⁷

South and East China Seas

The highest threats to the South China Sea are also the most alarming risks for the East China Sea. Both these chokepoints are at the centre of current great power rivalry, specifically that between China and the US.⁵⁸ The economic, political, and military competition between Beijing and Washington is at an all-time high and the South and East China Sea lie at the heart of both countries' power projection efforts. The presence of China as both a superpower and a littoral state makes the Seas also prone to littoral rivalries and maritime disputes. In fact, China is currently involved in several maritime disputes. The Chinese government has laid claim to much of the South China Sea, which includes territories that states such as Brunei, Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam also declare as theirs. Chinese claims such as the one over the Spratly Islands have heightened tensions

53 Ulung Jantama Wisha, Yusuf Jati Wijaya, and Yukiharu Hisaki, 'Sea Level Variability in the Equatorial Malacca Strait: The Influence of Climatic-Oceanographic Factors and Its Implications for Tidal Properties in the Estuarine Zone', *Climate* 11, no. 3 (2023), <https://www.mdpi.com/2225-1154/11/3/70>; Bailey and Wellesley, 'Chokepoints and Vulnerabilities in Global Food Trade', 27 June 2017; 'Climate Security Risk Monitor'.

54 Dikstein and Levkowitz, 'The World Must Cooperate to Prevent Threats to Maritime Chokepoints'.

55 Jantama Wisha, Jati Wijaya, and Hisaki, 'Sea Level Variability in the Equatorial Malacca Strait: The Influence of Climatic-Oceanographic Factors and Its Implications for Tidal Properties in the Estuarine Zone'; Bailey and Wellesley, 'Chokepoints and Vulnerabilities in Global Food Trade', 27 June 2017; 'Climate Security Risk Monitor'.

56 'Global Terrorism Index | Countries Most Impacted by Terrorism'; 'Live Piracy Map'.

57 'Australia and Timor-Leste Maritime Boundaries: Rules-Based Order in Action' (Australian Government Department of Foreign Affairs and Trade, March 2018), <https://www.dfat.gov.au/sites/default/files/aus-timor-maritime-boundary-fact-sheet.pdf>; 'Timor-Leste's Maritime Boundaries' (Maritime Boundary Office, 2021), https://www.gfm.tl/wp-content/uploads/2021/01/Policy-Paper_English.pdf; Aristyo Rizka Darmawan, 'Australia-Indonesia: Burn the Boats | Lowy Institute', The Interpreter, 10 November 2021, <https://www.loyyinstitute.org/the-interpretor/australia-indonesia-burn-boats>.

58 Mohammad Tehseen, 'Sino-US Competition: Implications for South Asia and the Asia-Pacific', *Strategic Studies* 37, no. 4 (2017): 1-17.

across the region.⁵⁹ Should any of these disputes turn into a conflict, the South China Sea would be unviable. In the East China Sea, tensions between Taiwan and China are at an all-time high and given the strategic importance of Taiwan for its production of semiconductors, a blockade or attack on the island is likely to involve other states, possibly including the US.⁶⁰ At the same time, issues revolving around the Senkaku Islands could lead to the escalation of tensions between Japan and China, making the East China Sea a literal minefield.⁶¹ To make matters worse, the South and East China Seas are also at risk of volcanic activity, typhoons, tropical storms, rising sea levels, cyclones, and earthquakes that have the potential to disrupt shipping activities and port infrastructures.⁶² Piracy attacks and armed robbery against ships are also common events, especially in the South China Sea, where over 90 piracy acts were reported between 2021 and 2023.⁶³ Internal instability and terrorist attacks are considered to be medium to low risks for the South and East China Sea.⁶⁴

Summary

Maritime chokepoints key to trade and economic prosperity of both European and Indo-Pacific states are subject to a series of geopolitical and security threats. Great power rivalry, and especially increasing Sino-American competition, represents the biggest risks for several of the considered chokepoints, and particularly for those in the Pacific portion of the region. Chokepoints in the Indian Ocean and Persian Gulf area are instead particularly vulnerable to littoral rivalries, internal instability, and piracy and armed robbery against ships. Maritime disputes are likely to be more disruptive in the South and East China Sea, while terrorist attacks are a danger for the Strait of Hormuz and Bab el Mandeb in particular. Lastly, the chance of natural events impeding safe trade between Europe and the Indo-Pacific should not be underestimated, as most of these chokepoints are prone to destructive climate-hazards. The Impact of geopolitical and security risks per chokepoint is summarised in Table 6 below.

59 Pia Krishnankutty, 'Not Just US, India — China Is Involved in 15 Other Territorial Disputes in Asia', *ThePrint* (blog), 15 July 2020, <https://theprint.in/theprint-essential/not-just-india-tibet-china-has-17-territorial-disputes-with-its-neighbours-on-land-sea/461115/>.

60 Joris Teer and Mattia Bertolini, 'Reaching Breaking Point: The Semiconductor and Critical Raw Material Ecosystem at a Time of Great Power Rivalry' (The Hague Centre for Strategic Studies, 19 October 2022), <https://hcass.nl/wp-content/uploads/2022/10/Reaching-Breaking-Point-Full-Version-HCSS-2022.pdf>

61 Zoe Huang, 'Triple Tango: Managing Tensions in the East China Sea', CSIS, 24 August 2020, <https://www.csis.org/blogs/new-perspectives-asia/triple-tango-managing-tensions-east-china-sea>.

62 Dinah Gardner, 'How Taipei Discovered an Active Volcano on Its Doorstep', *BBC Future Planet*, 3 May 2022, <https://www.bbc.com/future/article/20220427-how-taiwan-discovered-an-active-volcano-on-its-doorstep>; Andrea Rezzonico, 'The South China Sea: A Potential Climate, Nuclear, Security Hotspot - The Council on Strategic Risks', Council on Strategic Risks, 29 April 2019, <https://councilonstrategicrisks.org/2019/04/29/the-south-china-sea-a-potential-climate-nuclear-security-hotspot/>; 'Climate Security Risk Monitor'.

63 'Live Piracy Map'.

64 'Global Terrorism Index | Countries Most Impacted by Terrorism'; 'Worldwide Governance Indicators | DataBank'.

Table 6. Assessment of security and geopolitical and security risks per chokepoint



	Suez Canal	Strait of Hormuz		Bab el Mandeb Strait		Strait of Malacca	Lombok Strait	Ombai Strait	South China Sea	East China Sea
Great power rivalries	M	M	H	M	H	H	H	H	H	H
Littoral rivalries	M	H		H		M	L	L	H	H
Maritime disputes	L	L	M		M	H	L	L	H	H
Internal instability	M	H	H		H		M	L	L	L
Piracy and armed robbery against ships	L	M	H	H		H		M	M	H
Terrorist attacks	M	M	H	H		M	M	M	M	L
Climate hazards	M	M		M		H	H	H	H	H

What are alternatives to chokepoints?

Given the high risk of geopolitical and security disruptions to key chokepoints, a temporary closure of one -or multiple- of these hotspots in the near future cannot be excluded. Voyages that avoid Indo-Pacific chokepoints take considerably more time, which translates in additional shipping costs. In fact, even a day of delay can be extremely expensive. Analyses based on spot prices⁶⁵ for shipping over the past several years have calculated that a one-day delay to the delivery of cargo carried by a Suez-Max sized ship would have added \$2M in transport

65 Spot prices refer to the price of the commodity in the moment the data was collected. 'Spot Price', Corporate Finance Institute, 2023, <https://corporatefinanceinstitute.com/resources/career-map/sell-side/capital-markets/spot-price/>.

costs for that ship's cargo alone per day in 2021.⁶⁶ When container ship Ever Given blocked the Suez Canal for six days, the Suez Canal Authority declared losses of about \$14-15M per day. Estimates deriving from the same event showed that the cost of renting certain ships to move cargo to and from Asia and the Middle East had jumped by 47% to \$2.2m.⁶⁷ It is also estimated that a week-long closure of the Strait of Malacca would entail \$64.5m in additional shipping costs, while a detour south of Australia to avoid a blocked Malacca Strait, Ombai Strait, Lombok Strait, and the South China Sea would cost the global economy an estimated \$2.8 billion per month.⁶⁸

However, given the significant volume of trade passing through the chokepoints (Section 1), exchanges between Europe and the Indo-Pacific are unlikely to stop even with increased shipping costs. Alternative sea routes would hence be needed to circumvent the blocked/unviable chokepoints. In some cases, re-routing ships through other secondary chokepoints would be the most immediate solution. For instance, in the event of the closing of the Strait of Malacca, ships could be re-routed through the smaller Lombok and Ombai Straits.⁶⁹ With the closure of Malacca, trade through the Ombai Strait would rise 814% by value and 1704% by weight and through the Lombok Strait 1572% by value and 270% by weight. The Lombok Strait would also see an increase in trade of 1478% by value and 157% by weight if the South China Sea were to be blocked.⁷⁰ However, there are limits to such an increase in trade volume through the straits of Lombok and Ombai. First, re-routing through these chokepoints would still entail adding up to seven days to ship transit times.⁷¹ Second, these straits are narrower, shallower, and less equipped with the necessary infrastructures (e.g., port facilities and refuelling stations) than the Malacca Strait.⁷² The ability of these straits to manage such gigantic trading volumes should hence not be taken for granted.

Rerouting through close-by chokepoints is not always a viable solution, especially considering that for many other chokepoints, such as the Strait of Hormuz, Suez Canal, and Bab el Mandeb, there are no such options in the vicinity. Further east, there are rerouting options that entirely avoid Indo-Pacific chokepoints. In case of a blocked Strait of Malacca, South China Sea, East China Sea, Lombok Strait, and Ombai Strait, the alternative route would be a detour south around Australia, which would add several days to shipping times.⁷³

An extended shut down of the Suez Canal or Bab el Mandeb would mean rerouting through the Panama Canal or Cape of Good Hope. Both these routes add considerable nautical miles and times to shipping, with a likelihood of more shipping being directed to the Panama Canal than it can handle.⁷⁴ Another alternative to the Suez Canal would be the North-Eastern Passage connecting Asia and Europe via the Arctic, but this is currently unviable for commercial ships due to the difficulties related to the thick ice surrounding the Arctic.⁷⁵

66 Lincoln F. Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', *Communications in Transportation Research* 3 (1 December 2023): 9, <https://doi.org/10.1016/j.commtr.2022.100083>.

67 Benoit Faucon, Sarah McFarlane, and David Hodari, 'Energy Industry Grapples With Fallout From Suez Canal Blockage', *WSJ*, 25 March 2021, <https://www.wsj.com/articles/energy-industry-grapples-with-fallout-from-suez-canal-blockage-11616680152>.

68 Paul Van Hooft, Benedetta Girardi, and Tim Sweijs, 'Guarding the Maritime Commons | What Role for Europe in the Indo-Pacific', *The Hague Centre for Strategic Studies*, February 2022, <https://hcsc.nl/report/guarding-the-maritime-commons-europe-in-indo-pacific/>, 8.

69 Van Hooft, Girardi, and Sweijs, 'Guarding the Maritime Commons | What Role for Europe in the Indo-Pacific'.

70 Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', 2023, 7.

71 Pratson, 12.

72 IEA, *World Energy Outlook 2019*, 168.

73 Van Hooft, Girardi, and Sweijs, 'Guarding the Maritime Commons | What Role for Europe in the Indo-Pacific', 8.

74 Pratson, 'Assessing Impacts to Maritime Shipping from Marine Chokepoint Closures', 10.

75 Anderson, 'Chokepoints and Vulnerabilities in Global Markets'.

Even where alternative sea routes exist, they usually entail long detours that add considerable nautical miles, times, and costs to shipping.

While this might change in the future due to climate change, the feasibility of this route remains uncertain, as Russia lays claim to much of it.⁷⁶ No alternative sea routes exist for the Strait of Hormuz, which represents the only outlet to open sea from the Persian Gulf.

Even where alternative sea routes exist, they usually entail long detours that add considerable nautical miles, times, and costs to shipping. The most direct route between Europe and the eastern part of the Indo-Pacific (China/South Korea/Japan) passes through the Suez Canal, Bab el Mandeb, Malacca Strait and the South and East China Sea, and moving goods along this sea route takes between 40 and 60 days. In the event of the blockage of the Suez Canal or Bab el Mandeb, shipping would take around 65 days, adding significant costs and delays. To completely avoid Indo-Pacific chokepoints, the same trip would take up to 80 days, an amount of additional shipping days that would cause severe disruptions. Table 7 below presents a selection of currently viable sea routes connecting Europe to the Indo-Pacific (as presented by the Baltic Exchange Index), together with the chokepoints crossed by these routes and the duration of travel, as well as possible alternatives in case of the closure of some chokepoints.⁷⁷ The selection is based on the Baltic Exchange Index, and it is not comprehensive, as it is dependent on available data. However, it still shows effectively the difference between direct routes and routes that avoid certain chokepoints.

Table 7. Direct and alternative sea routes with chokepoints crossed, avoided, and shipping days



	Baltic Index Route name	Starting/Arriving	Chokepoints passed	Chokepoints avoided	Duration (days)
Direct sea route	S1B (BSI)	Turkey/China-South Korea	Suez Canal, Malacca Strait, South China Sea	N/A	40-50
	P4_82 (BPI)	Netherlands/ South Korea-Taiwan (via Australia)	Suez Canal, Bab el Mandeb, Malacca Strait, East China Sea	N/A	55-60
Rerouting options⁷⁸	C9 (BCI)	Amsterdam-Rotterdam/ China-Japan (passing by Passero and Cape of Good Hope)	Malacca Strait, Cape of Good Hope	Ombai Strait, Lombok Strait, Suez Canal, Bab el Mandeb	65
	C16 (BCI)	North China-South Japan/ Netherlands	Cape of Good Hope, Malacca Strait, East China Sea, South China Sea	Ombai Strait, Lombok Strait, Suez Canal, Bab el Mandeb	65
	P2A_82 (BPI)	Netherlands/China-South Korea-Japan (via US)	Panama, East China Sea	Ombai Strait, Lombok Strait, Malacca Strait, South China Sea, Suez Canal, Bab el Mandeb	65-80

76 Chorev, 'The Suez Canal', 18-19.

77 Shipping times vary depending on winds, weight of the vessels and other factors. All estimates here are indicative. 'Interactive Map', Baltic Exchange, accessed 14 April 2023, <https://www.balticexchange.com/en/data-services/routes.html>.

78 These routes are not one-on-one alternatives for each other, but they do give a sense of the increased time and costs involved with rerouting.

Avoiding closed chokepoints is thus extremely challenging. Not only does it entail extra time and costs, but also leads to rises in shipping rates, shortages of ships, and straining of cargo handling capacities at ports. The difficulties in establishing new sea routes (e.g., Arctic routes) only add to the problem. The most immediate consequences of chokepoint closures would be trade delays and shortages of goods and materials such as mechanical and electrical machines, mineral fuels, vehicles, ores, precious metals, organic chemicals, and many more. However, in the long run, chokepoint blockages would translate into severe economic, food, and energy insecurity in both Europe and the Indo-Pacific. Keeping maritime chokepoints open is of the utmost importance to Europe. The Old Continent's distance from these hotspots and its scarce naval capabilities are considerable obstacles to its chances of securing the chokepoints. It is hence indispensable for European states to cooperate with states in the proximity of these waterways to safeguard maritime security and the openness of maritime chokepoints.

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4. Conclusions and recommendations - Looking for friends in the region

Europe's economic power is its best shot at being a relevant actor on the stage of international relations. However, much of the European ability to leverage such economic weight depends on trade with the Indo-Pacific. The diversity of goods exchanged with this region makes up the majority of European trade. The products imported and exported from and to Indo-Pacific states go from low value-added goods such as minerals and ores to high value-added commodities like vehicles and machinery, passing through medium value-added products (e.g., mineral fuels and plastics). Considering that most of the trade of these products is conducted via sea, the smooth running of maritime transport is vital to the economic security of Europe.

The shipping routes that are indispensable to connecting Europe and the Indo-Pacific pass through a handful of key chokepoints, namely Suez Canal, Strait of Hormuz, Bab el Mandeb Strait, Strait of Malacca, Lombok Strait, Ombai Strait, South China Sea and East China Sea. These narrow waterways represent major vulnerabilities in maritime transport routes, as they are easily subject to security and geopolitical risks. Great power and littoral rivalries, maritime disputes, internal instability, piracy and armed robbery against ships, terrorist attacks, and climate hazards all undermine the stability of shipping processes between Europe and the Indo-Pacific.

The vulnerability of chokepoints and European economic dependence on trade with the Indo-Pacific make it Europe's vital interest to enhance maritime security and protect shipping routes. However, the scarce naval capabilities of European states as well as the vastness of the Indo-Pacific make it difficult to envision an active naval role for Europe in the region. This begs the question: what should Europeans do to ensure the openness of maritime chokepoints so that trade can flow freely from the shores of Europe to those of the Indo-Pacific? Recommendations following from the findings of this report are summarised in Table 8. Relying on the US to provide maritime security in the region cannot be the only option, as Washington is already a) overstretched across multiple regions in the world; b) engaged in intense economic, political, and military competition with China that could have undesired effects for Europe; c) going through a series of domestic uncertainties that are pushing the government's attention increasingly far away from Europe. To counterbalance the uncertainty surrounding the US ability and willingness to provide the resources necessary to keep chokepoints in the Indo-Pacific open as well as the Old Continent's scarce naval capability

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and geographical distance from many of these maritime bottlenecks, Europe should look at enhancing its cooperation with Indo-Pacific states.

The states that lie in proximity to the maritime chokepoints have a clear interest in keeping trade flow going through these narrow waterways, as they are often some of the primary beneficiaries of maritime shipping. However, most of these states do not have sufficient capabilities to be providers of maritime security on their own. Closer cooperation with European states in multilateral, minilateral, and bilateral settings could be the key to ensuring the safe continuation of trade between Europe and the Indo-Pacific. In fact, Europe could focus on enhancing maritime security in the Indian Ocean, where deployment of naval capabilities is easier due to the vicinity to European ports. In this way, Indo-Pacific states would have the chance to shift their focus completely to the Pacific portion of the region, concentrating their resources there. This would allow for a better spread of capabilities across the seas.

The nature of the risks to the maritime chokepoints in the Indo-Pacific also connects to the types of maritime security and other policy tools that Europeans can best use in the Indo-Pacific. The Western Indian Ocean's chokepoints –specifically Bab el Mandeb, and Hormuz– would require more anti-piracy, anti-terrorism, and general law enforcement efforts, as well as potentially the use of high-end naval assets in the case that regional rivalries escalate, as would to a lesser degree the Suez Canal. In contrast, where the Indian Ocean meets the Pacific Ocean in Southeast Asia, disaster relief and humanitarian missions would be important capabilities to meet local needs. Of course, the risk of great power conflict is also greater here, yet European efforts to include themselves into great power conflict are likely to be both ineffective and counterproductive.⁷⁹

Forming meaningful partnerships in the Indo-Pacific is, however, not an easy task for Europe. Cooperating exclusively with states that share European values and beliefs would be too reductive, just as it would be limiting to only work with those that possess the most military capabilities. In choosing its partners in the region, Europe will face a trade-off between affinity and maritime security relevance and might have to make some uncomfortable decisions. The pool of candidates for cooperation in the Indo-Pacific is vast, and so are the choices presenting themselves to European states in this regard. While Europeans will surely have to design their naval strategies, both individual and collective, to strengthen maritime security near key maritime chokepoints, which chokepoints and states would require the most resources? To whom should Europe direct its attention and cooperation efforts?

79 Paul Van Hooff and Tim Sweijjs, 'Why Should Europe Guard the Indo-Pacific Maritime Commons: Order, Access, or US Hegemony?' (The Hague, Netherlands: Hague Centre for Strategic Studies, September 2023), <https://hcss.nl/report/why-should-europe-guard-the-indo-pacific-maritime-commons-order-access-or-us-hegemony/>.

Table 8. Main findings and recommendations



Findings	Recommendations
<p>Maritime insecurity affecting trade between Europe and Indo-Pacific</p>	<p>Europe should invest in maritime security along the entire route from European economies to key Indo-Pacific economies.</p>
<p>Europe has significant trade flows of low, medium and high value-added goods with Indo-Pacific states, mostly focused on high value-added goods.</p> <hr/> <p>Disruptions in trade lead to higher costs, longer shipping times, and economic insecurity.</p> <hr/> <p>Trade between Europe and the Indo-Pacific depends on maritime routes.</p> <hr/> <p>Chokepoints along maritime trade routes are vulnerable to a variety of threats and risks. Relevant chokepoints are the Suez Canal, the Bab el-Mandeb Strait, the Straits of Hormuz, Malacca, Lombok and Ombai, and the South and East China Seas. They can be threatened by great power rivalries, littoral rivalries, maritime disputes, internal instability, piracy and armed robbery, terrorist attacks, and climate-related hazards.</p> <p>The Western part of the Indo-Pacific is particularly at risk from littoral rivalries and internal instability, the Eastern part from great power rivalries and climate hazards.</p>	
<p>Ensuring maritime security in the Indo-Pacific</p>	<p>European states should enhance cooperation with Indo-Pacific states in multilateral, minilateral and bilateral settings</p>
<p>European states are not capable of an active naval role in the region to provide direct military security.</p> <hr/> <p>Many Indo-Pacific states are not capable of providing maritime security on their own.</p> <hr/> <p>European naval capacity is limited, especially given the demands on European capabilities in the Euro-Atlantic and the distance to the Indo-Pacific.</p>	<p>European states could focus higher intensity security efforts on the Indian Ocean, specifically the chokepoints in the Western Indian Ocean such as the Strait of Hormuz and Bab el Mandeb, to which European states have greater access. In the Western Indian Ocean, Europe should counter piracy, terrorism, and regional rivalries, and strengthen law enforcement. In the Southeast Asian region that bridges the Indian and Pacific oceans, Europe should focus on disaster relief and humanitarian missions.</p>



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