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Will Arctic maritime routes really reshape the global trade map?

EXECUTIVE SUMMARY

Global sea trade, the backbone of global trade, is structurally concentrated around three major regions: East Asia, North America and Europe. **This makes the global maritime trade system heavily dependent on two key corridors: one linking East Asia¹ to North America through the Panama Canal, and another bridging East Asia to Europe via the Suez Canal. Recent geopolitical disruptions, however, have begun to reshape these flows.** Carriers largely avoid the Suez Canal, while trade diversification efforts - particularly in the United States - are reducing reliance on China. **The current conflict in the Middle East has further highlighted the vulnerability of traditional corridors.**

Against this backdrop, **the emergence of Arctic Sea routes introduces a potential new layer of change.** The accelerated melting of Arctic ice has made seasonal navigation possible along these routes that shorten distances from East Asia to both Northern Europe and North America. While their use remains limited, primarily to domestic or regional traffic and raw material transport, Arctic routes are gaining importance and are likely to see increased use as global warming advances. **The resurgence of instability in the Red Sea has increased the relative appeal of Arctic shipping routes, as these offer an alternative to the route around the Cape of Good Hope, which is significantly longer than the route through the Suez Canal.** To assess their real potential to capture a share of international shipping, we have calculated and compared their unit transportation costs with those of established global routes.

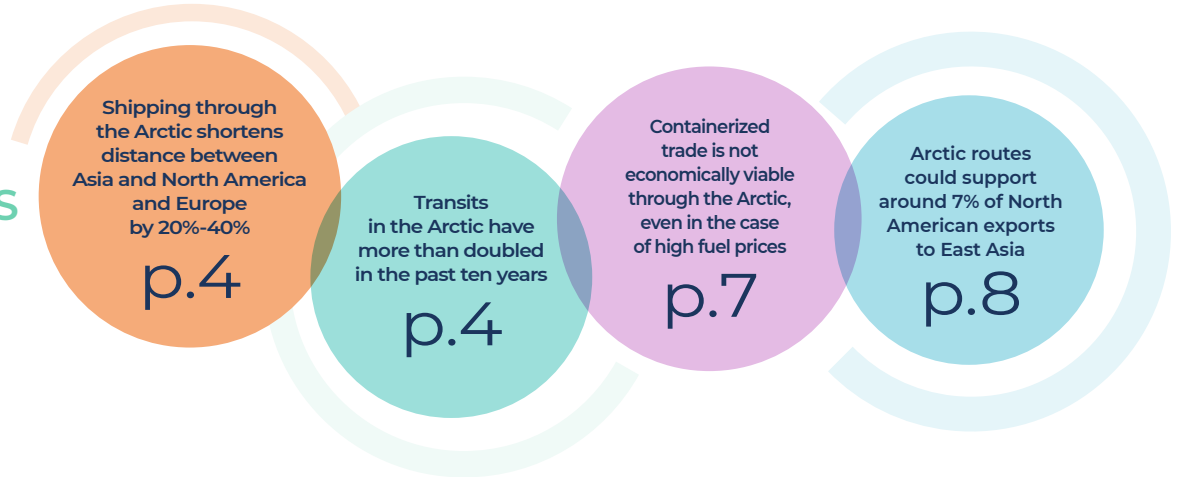
Our analysis indicates that, at least in a 5-year time horizon, **Arctic maritime routes are likely to remain primarily dedicated to bulk transport.** Cost savings are particularly significant for liquid bulk, with potential reductions of up to 45–50%. **Dry bulk commodity transport in the Arctic may also prove financially advantageous, though to a lesser extent. By contrast, container traffic along these routes remains uncompetitive due to Arctic specific costs and vessel size constraints.**

1 - East Asia includes China, Japan, South Korea and Taiwan

As a result, cereals, energy, metals and wood industries of North America and Northern Europe emerge as the main potential beneficiaries of expanded Arctic shipping, while equivalent sectors in South America and Africa would appear to be less competitive in terms of delivery times and transport costs.

With only 3.5% of the existing trade between the three regions likely to be able to use Arctic routes within that time horizon, the value of Arctic routes therefore lies elsewhere in the short-term, most likely in the political sphere.

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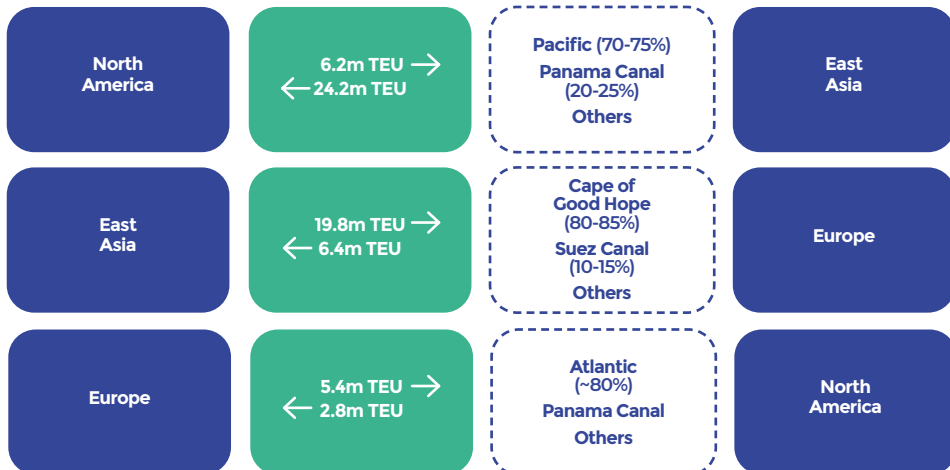
An established global sea trade system adapting to changing landscape

Maritime trade serves as the backbone of the world economy, carrying more than 80% of internationally traded goods. Although recent years have seen significant volatility, seaborne trade is still expanding and expected to continue so – albeit at a more moderate pace.

A striking feature of the global maritime system is its concentration: roughly half of all seaborne trade takes place between just three regions - North America, Europe, and East Asia - reflecting their central role in global production and consumption. Consequently, a large share of world trade flows through a limited number of major corridors. In containerized trade, the major trade lane is between North America and East Asia. Totalling around 30 million Twenty-foot Equivalent Units (TEUs),

it is heavily skewed towards East Asian exports to North America. A large share, around 70–75%, crosses the Pacific to the West Coast, while most of the remainder travels via the Panama Canal (around 20–25%) to ports on the Gulf of Mexico² or East Coast. Meanwhile, the second largest container trade lane links East Asia and Europe. At approximately 26 million TEUs, it is similarly dominated by exports from East Asia. While the traditional route for Asia–Europe trade runs through the Suez Canal, only 10–15% of current volumes transit this passage. Instead, the dominant route now passes through Southeast Asia and around the Cape of Good Hope, accounting for roughly 80–85% of traffic. Trade between Europe and North America is more balanced, though Europe remains the larger exporter. Most of this trade crosses the Atlantic to the East Coast or the Gulf of Mexico (around 80%), with some transiting the Panama Canal to reach West Coast destinations. Other, less frequently used routes include the Suez Canal, the Strait of Magellan and the Northwest Passage.

Figure 1: Maritime trade between regions by tonnage and routes (Tonnage in million TEU and share of trade in %)



Source: UNCTAD, IMF, Coface

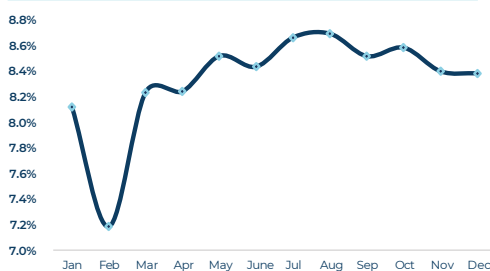
2 - Called "Gulf of America" in the United States

Another feature of the sea trade is its seasonality. Shipments typically rise ahead of the summer period and surge in the months preceding the Christmas retail season. Regional dynamics also shape these patterns—for example, East Asian exports slow during the Lunar New Year in the first quarter. As a result, global maritime trade generally peaks between July and October (**Chart 1**).

While these commercial sea routes remain predominant, geopolitics is reshaping global maritime trade, both by disrupting operational shipping routes and by altering its underlying patterns. Two recent major developments are at the heart of this shift. First, operational disruptions have intensified. The Houthi attacks in the Red Sea and the Gulf of Aden have forced carriers to avoid the region since November 2023, prompting a large-scale diversion from the Suez Canal toward the Cape of Good Hope. The current conflict in the Middle East has further diverted trade from the Red Sea. Second, the United States' trade war against its commercial partners has reshaped trade flows over the past decade. Initially focused on China, with successive rounds of tariffs and rising non-tariff barriers introduced from 2018 onward, this reconfiguration accelerated in 2025 with the broad tariff offensive of the US administrations - although China remained a primary target.

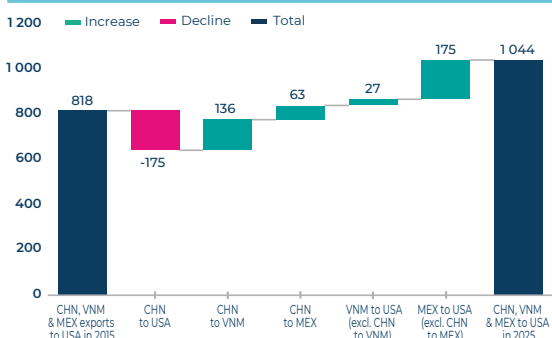
These measures prompted firms to adjust shipments through alternative routing strategies designed to minimise tariff exposure. As a result, China's direct exports to the United States declined, with a substantial share of this trade appearing to be rerouted through third countries. As shown in **Chart 2**, the fall in Chinese exports to the United States between 2015 and 2025 was almost mirrored by a rise in Chinese exports to Vietnam and Mexico, both of which recorded significant growth in their shipments to the US over the same period. In addition, the war between Russia and Ukraine, which intensified in 2022, has reshaped global trade patterns by bringing trade between Russia and countries that have subsequently sanctioned it to an almost complete halt while some countries have rerouted the trade through Central Asian countries. In response to these events, firms have increasingly diversified their supplier bases and relocated parts of their supply chains either closer to end markets or to countries perceived as more geopolitically resilient.

Chart 1 - Monthly share of global annual container throughput (Share in %, average of 2007-2025)



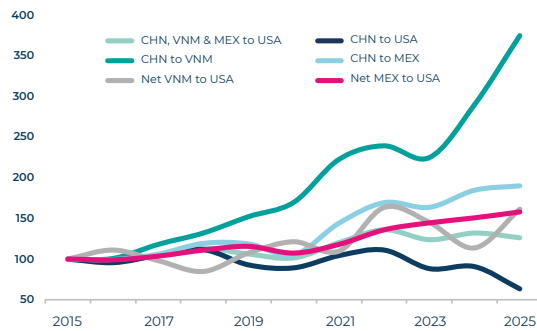
Sources: RWI/ISL Container Throughput, Coface

Chart 2 - Change in US imports from China, Vietnam and Mexico (Change in USD billions between 2015 and 2025)



Sources: US Census Bureau, National Statistics Office of Vietnam, Mexico National Institute of Statistics and Geography, Macrobond, Coface

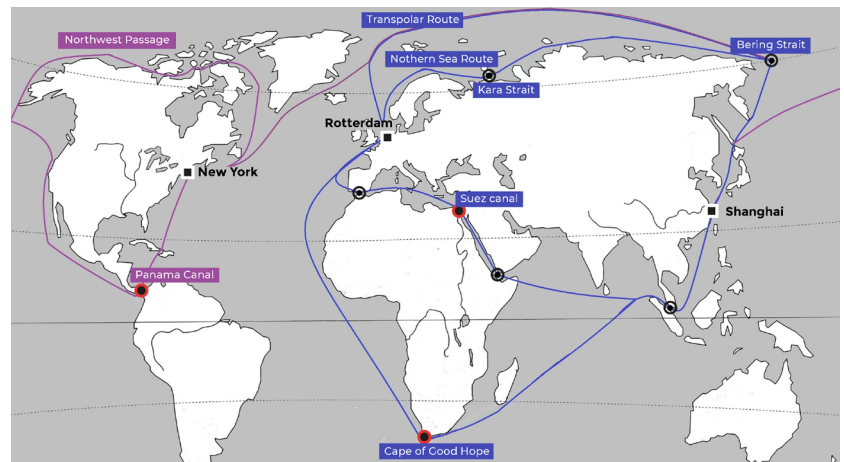
Chart 3 - Change in US imports from China, Vietnam and Mexico from 2015 to 2025 (Base 100=2015)



Net exports to USA are exports deduced by the change in the country's imports from China compared to 2014.

Source: US Census Bureau, National Statistics Office of Vietnam, Mexico National Institute of Statistics and Geography, Macrobond, Coface.

The emergence of the Arctic routes in the global sea trade system



Notes: the blue routes are between East Asia and Europe, the purple ones are East Asia and North America East Coast
Source: Coface

Further changes to global maritime trade could take place in the coming years. Behind these changes lies the emergence of Arctic Sea routes as potential key new international trade routes. There are 3 major Arctic routes: the Northern Sea Route (NSR), the Northwest Passage (NWP), and the Transpolar Route:

- **The NSR bridges East Asia to Europe, running from the Bering Strait, on Russia's eastern flank and Alaska (a US state), to the Kara Strait in the west, and following the Russian Arctic coastline - including sections located within Russian territorial waters. It is, by far, the most frequently used of the Arctic routes, as it is the least ice covered and the simplest to navigate. To date, most voyages along the NSR consist of domestic traffic or Russia-China trade. While on the rise, transit voyages - those crossing both the eastern and western boundaries of the route - remain limited relative to other trade routes. In 2025, they totalled 103 (up from 97 in 2024, Chart 4) and 3.2 million of cargo, which correspond to one week of transit through the Suez Canal in normal times. They are dominated by tankers³, bulk carriers and LNG carriers, which together account for roughly two thirds of transit shipping voyages (Chart 5) and 87% of ships' deadweight tonnage, primarily transporting Russian energy products. General cargo vessels represent around one sixth of transits, while container ships constitute another sixth - the latter showing the strongest growth in recent years.**

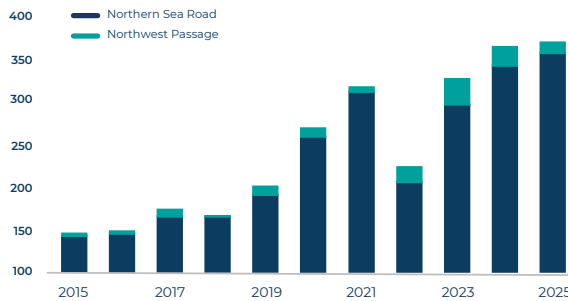
3 - **Tanker:** Transports liquid bulk cargo, such as crude oil, refined products, chemicals, or liquefied gases. **Container Ship:** Carries standardized containers (TEUs) used for efficient, intermodal global trade. **Dry Bulk Carrier:** Moves loose, unpackaged dry commodities like coal, iron ore, grains, or fertilizers. **General Cargo:** Handles non-containerized and mixed cargo, including breakbulk goods (machinery, pallets, bags, etc.). **Roll On/Roll Off (Ro Ro):** Designed for cargo that can be driven on and off the vessel, such as cars, trucks, trailers, and heavy equipment.

● **The Northwest Passage (NWP) joins the East Asian region to North America, going from the Bering Strait to Davis Strait, between Canada and Greenland.** It is the second least ice-covered route but by far the most complex, as it runs through the islands and narrow waterways of northern Canada, increasing collision risk. Mostly located in Canadian territorial waters, several of its current navigable channels can only accommodate smaller vessels. The underlying shipping infrastructure in northern Canada is still limited with only one operating deep-water port. It is currently improving its infrastructure by increasing its icebreaker fleet as well as looking into further deep-water ports in the NWP. It is possible that, in the future, the more direct path through the McClure Strait could become viable, though it remains unused at present. **Transit voyages on the NWP are much rarer than on the NSR.** In 2025, 6 commercial transits were recorded, consisting of 5 general cargo ships and a tanker.

● The Transpolar Route is the most direct route across the Arctic Ocean but has never been used by a commercial vessel.

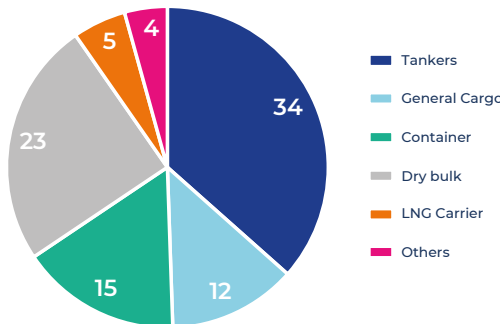
In addition to being focused on commodity transport, transit voyages on Arctic routes are concentrated in a narrow seasonal window corresponding to the warmest months of the year. This navigation window currently runs from July to October for the NSR, and to November for the NWP. This is notably reflected by traffic at the Bering Strait (**Chart 6**). Although Bering Strait data does not perfectly capture the number of full-transit voyages on either Arctic route - since some vessels travelling between Russia and China cross the Strait without navigating the entire NSR - they nonetheless provide a useful indication of seasonal activity, as the Strait constitutes a key boundary for both the NSR and the NWP. **The current navigation window coincides with the peak season for global shipping, which increases the attractiveness of Arctic Sea routes. In addition, they are expected to become increasingly navigable in the foreseeable future as a result of global warming, potentially paving the way for an expansion of their role in global shipping.**

Chart 4 - Number of transit voyages through Arctic sea routes



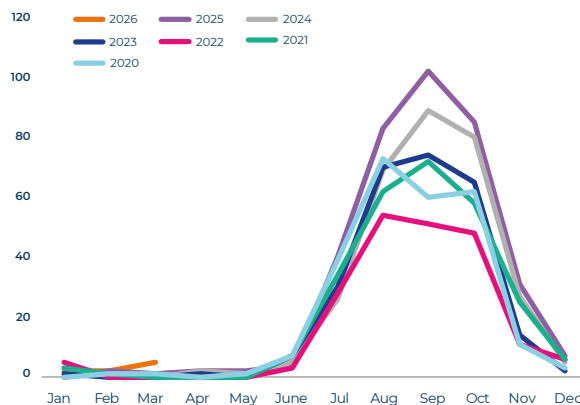
Includes research, supply, SAR and fishing ships
Sources: CHNL, Scott Polar Research Institute, Coface

Chart 5 - Commercial transit voyages through the NSR (in number, in 2025)



Commercial transits exclude research, supply, SAR and fishing ships
Sources: CHNL, Coface

Chart 6 - Commercial transit voyages through the NSR (in number, in 2025)



Commercial transits exclude research, supply, SAR and fishing ships
Sources: CHNL, Coface

A central characteristic of these Arctic routes is the shorter distances they offer. They reduce voyage time, allowing quicker delivery to customers. They also lower fuel consumption and costs. On the East Asia - Europe trade, the NSR decrease the distance by 30% to 40% compared to the traditional route via the Suez Canal. When considering the currently used routes through the Cape of Good Hope, the reduction is even greater, between 40% and 50%. The Transpolar Route offers an even more pronounced distance advantage, with the distance for shipments to and from Tokyo declining by 55% relative to the Cape of Good Hope route. On the East Asia-North America trade, both the NWP and the Transpolar Route shorten voyages by around 20%. Unlike the other two, the Transpolar Route also benefits from running predominantly through international waters, which helps reduce geopolitical risk. **The conflict in the Middle East, heightening disruptions in the Red Sea and difficulties to access the Suez Canal, has therefore reinforced these key advantages of Arctic routes.**

Although Arctic routes have the potential to reduce emissions from sea transport - with shipping accounting for an estimated 3% of global CO₂ emissions - their increased navigability is itself a direct consequence of climate warming. Moreover, navigation in the Arctic poses risks of oil spills, black carbon emissions and noise pollution in a fragile and largely preserved ecosystem. Using these routes could therefore place shipping companies in a contradictory position: they would appear to benefit from the very climate change they publicly commit to mitigating. As a result, Arctic navigation carries significant reputational risks and is often viewed as incompatible with the environmental pledges and sustainability strategies adopted by major carriers. Many shipping and logistics companies - along with goods producers - have for now committed not to use them. Furthermore, even though ice sea extent and concentration tend to decline over years, ice conditions remain highly variable and unpredictable, increasing operational risk.

BOX - The Arctic routes: a place of apparent safety, but a theatre of rivalries

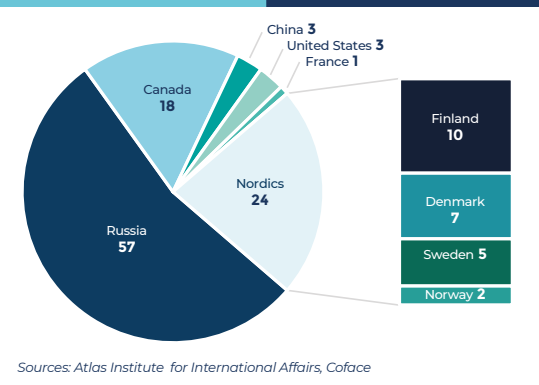
Although Arctic shipping routes avoid regions affected by piracy, such as the east coast of East Africa, as well as areas that have been characterised by geopolitical tensions in the Middle East, such as the recent disruptions around the Suez Canal and the Strait of Hormuz, the Arctic is not free from geopolitical sensitivities. Over the past four years, the region has shifted from a post-Cold War framework of cooperation to one of confrontation, driven by the deterioration of relations between Russia and the West, the accession of Finland and Sweden to NATO, and the tightening of sanctions regimes. These dynamics directly affect the governance of Arctic routes and the development of regional resources.

The NSR, which lies predominantly within Russian territorial waters, illustrates this shift. Russia maintains a de facto monopoly over its administration, with pilotage and icebreaker services providing by Atomflot, a subsidiary of the state corporation Rosatom. The current war between Russia and Ukraine adds further complexity. Under current sanctions, certain operators may find it difficult to utilise services and paying associated fees. As a result of these tensions, around 95% of transit voyages on the NSR now consists of traffic between China and Russia, while approximately 5% originated from South Korea in 2025. Russia granted Chinese vessels year round access, reducing their dependence on Russian icebreaker services. That said, this growing cooperation coexists with an underlying mistrust, as China develops ice capable fleet and now operates at least five icebreakers. In parallel, it avoids large-scale port infrastructure investment along the route, whilst Russia struggles to maintain its investment in the Arctic due to a deterioration in its public finances since 2022.

The dominance of Russia and China over Arctic shipping has broader implications. In addition to the region's energy and mineral resources, this dominance triggers the US interests in the region, notably in Greenland and northern Canada. This may revive in longstanding disagreements between Canada and the United States regarding the legal status of the NWP – whether it constitutes internal Canadian waters or an international passage. Faced with these powers' growing interests in the Arctic, Europe could find itself sidelined in a region where it once played a central role through scientific cooperation, environmental governance and economic partnerships. The combination of sanctions, geopolitical realignments and intensified great power competition could progressively marginalise European influence in the emerging Arctic order.

Given that icebreakers will remain essential for a large share of voyages in Arctic waters, the composition and availability of the global icebreaker fleet have become an increasingly salient issue. Russia currently possesses just over half of the world's icebreakers, followed by Canada with roughly 17%, and Finland with around 10%; collectively, the Nordic countries hold approximately 23% of global capacity (Chart 7). Finland is the world leader in icebreaker construction, accounting for around 60% of production as of 2024. Russia is the only country building nuclear-powered icebreakers, which allow to navigate through thicker ice, and remains the leader in heavy icebreaker capability. The United States is planning a significant expansion of its fleet, aiming to add 11 vessels to its current three, with several to be produced domestically by a Finnish firm. First contracts were awarded in December 2025 with first vessel delivery in 2028. China has also expanded its ice-capable fleet in recent years, now operating at least five vessels. These developments reflect a broader strategic competition in the Arctic, where control over icebreaking capacity increasingly shapes access, influence and long term commercial prospects.

Chart 7 - Icebreaker Fleet



Modelling the economic viability of the Arctic routes

In the context of increasing but still very limited shipping activities in the Arctic, a key question would be whether the three Arctic routes have the potential to become a major international shipping corridor. **The shortening of sea voyages is a key operational advantage of Arctic routes, and one of them also offers resilience against potential geopolitical disruptions. Yet their economic viability ultimately depends on their relative cost.** To assess this, we calculated transportation costs for two major corridors where Arctic routes could offer benefits: one linking East Asia to the east coast of North America, including the Gulf of Mexico, and another connecting East Asia to Northwest Europe. For both corridors, we compared costs on traditional routes - via the Panama Canal for East Asia-North America and via the Suez Canal for East Asia-Europe - with those on the Arctic alternatives.

Before anything else, we needed to establish the conditions of the voyages. First, to determine precise distances, we selected the largest cargo ports in the regions of interest: Shanghai, New York, and Rotterdam. Second, we chose standard vessels for each route, based on the largest ships recently observed on Arctic routes. We did this for three vessel types: containerhips, bulkers, and tankers. When no ship of a given type had ever been observed on a route, we selected the closest comparable case. For example, in the NWP, no containerhip has been recorded, so we used the dimensions and characteristics of an observed general cargo vessel which is able to transport containerized goods. For the Transpolar Route, we used the same standard vessels as on the NSR, as sea conditions appear similar. Finally, recent observation from the NSR show that two main categories of ships operating in Arctic waters: open water vessels with icebreaker assistance, and ice reinforced vessels, which can navigate independently depending on ice-conditions. This was the case, for instance, of the containerhip

Istanbul Bridge, which sailed from Ningbo to Felixstowe via the NSR in October 2025. Taking this into account, we distinguish two navigation configurations for Arctic routes: one where an open water vessel is escorted by a medium conventional icebreaker, and another where an ice-reinforced vessel⁴ sails without assistance.

These elements allowed us to obtain speeds and fuel consumption, as well as the value of the vessels, which were essential to compute transportation cost⁷ components.

Transportation cost = voyage costs + operating costs + capital cost

- Capital costs correspond to the depreciation of the vessel.

Voyage and operating costs include the following expense items:

VOYAGE COSTS	OPERATING COSTS
Fuel	Insurance
Port and Canal charges	Crew
Carbon permits	Maintenance
Icebreaker escort	

- Fuel prices were calculated based on Very Low Sulfur Fuel Oil (VLSFO) prices in New York and Rotterdam, as of 26 January 2026.
- Port and canal charges include Panama and Suez Canal fees, calculated according to the canal authorities' tariffs as of January 2026. We added a port dues malus for voyage through the Cape of Good Hope to consider the fact that port calls are often more frequent compared to the shorter route via Suez.
- Carbon permit costs were applied for East Asia – Europe voyage. Part of the European Union Emissions Trading System, 50% of CO² emissions of sea transport between EU and non-EU port are covered by the

4 - With hull reinforcement equivalent to that of PC-6 class vessels; capable of navigating through ice up to 1.2 meters thick.

system. We used the last 5-year average permit price. It is important to mention that, even if carbon prices were to double by 2030, our conclusions would not change.

- Icebreaker escort, insurance, crew, and maintenance cost were calculated as in recent academic research papers. Insurance costs are made up as follows: a base rate based on the vessel's value applied to all routes, a 40% surcharge on the insurance premium for Arctic routes, and a risk premium of 0.07% of the vessel's value for the route through the Suez Canal. This latter percentage corresponds to the rate in force prior to the start of the Houthi attacks in the Red Sea. For comparison reasons, we convert vessels transportation costs into unit transportation costs.

Arctic shipping by 2030: limited diversification beyond commodities

Under the IPCC's intermediate warming scenario, which leads to roughly 2.7–3 °C of global warming by 2100⁵, Arctic navigation windows are expected to extend up to five months along the Transpolar Route, seven along the NWP, and eight months along the NSR, in both of our two navigation configurations by 2030⁶. This window becomes significantly longer when considering the use of nuclear icebreakers. These vessels should enable year-round navigation along the NSR by 2030. Yet the global fleet remains very limited, with eight units currently in operation and four additional vessels scheduled to enter service within the next four to five years. In addition, more than a third of the existing fleet is already over 30 years old and may soon reach the end of its operational lifespan.

NAVIGATION CONFIGURATION 1:

When icebreaker escort is required, the NWP and the NSR are not economically competitive, regardless of the type of cargo. In contrast, the Transpolar Route becomes less costly than traditional routes for liquid bulk products, such as crude oil and liquified natural gas, transported by tankers. Its use reduces transport costs by 10% between East Asia and Northwest Europe (Table 1), and by 20% between East Asia and the East Coast of North America (Table 2). However, trade of liquid bulk between the three regions is limited (see the following section). Tanker traffic, which currently dominates transits on the Northern Sea Route, is driven by the transport of Russian energy within the country or to China – rather than to intercontinental flows. This further reduces the appeal of Arctic routes in this navigation configuration.

Table 1 - Transport costs between Shanghai and Rotterdam with icebreaker escort

	Shanghai - Rotterdam		
	Suez Canal	Transpolar	NSR
Bulker (\$/ tons of coal)	12,49	17,74	18,41
Container (\$/TEU)	197,61	393,26	407,01
Tanker (\$/ million barrels)	2,61	2,35	2,44

Table 2 - Transport costs between Shanghai and New-York with icebreaker escort

	Shanghai - New-York		
	Panama Canal	Transpolar	NWP
Bulker (\$/ tons of coal)	12,22	19,28	23,51
Container (\$/TEU)	230,33	422,96	1 898,57
Tanker (\$/ million barrels)	3,15	2,53	4,74

NAVIGATION CONFIGURATION 2:

In this situation, carriers operate ice-strengthened vessels without relying on icebreaker escorts. Under these conditions, the attractiveness of Arctic routes increases. Although reinforced hulls entail higher fuel consumption and faster depreciation, the absence of icebreaker fees reduces total navigation costs. As a result, for liquid bulk products, the NSR also becomes economically viable, with costs comparable to the Suez Canal route between Europe and Asia - though still higher than the Transpolar Route. Moreover, **Arctic routes become competitive for dry bulk transport**, such as grains or minerals. For East Asia-Europe trade, the Transpolar Route reduces transport costs by 8% as compared to the Suez Canal route (Table 3), while the NSR roughly show similar costs (-2%). For dry bulk flows between East-Asia and North America, the Transpolar does not appear to be the cheapest option. Yet, with only a 7% cost premium relative to the Panama Canal route, it still emerges as a plausible alternative for carriers (Table 4).

Table 3 - Transport costs between Shanghai and Rotterdam with icebreaker escort

	Shanghai - Rotterdam		
	Suez Canal	Transpolar	NSR
Bulker (\$/ tons of coal)	12,49	11,47	12,22
Container (\$/TEU)	197,61	261,22	277,73
Tanker (\$/ million barrels)	2,61	1,40	1,58

Table 4 - Transport costs between Shanghai and New-York with icebreaker escort

	Shanghai - New-York		
	Panama Canal	Transpolar	NWP
Bulker (\$/ tons of coal)	12,22	13,12	18,21
Container (\$/TEU)	230,33	294,61	1 235,98
Tanker (\$/ million barrels)	3,15	1,60	3,42

In both scenarios, **Arctic routes do not appear profitable for container shipping - the dominant mode for transporting manufactured goods ranging from clothing and furniture to automotive parts.** Even without icebreaker escort, the Transpolar Route remains 28% and 33% more expensive than the Panama Canal route and the Suez Canal route respectively. Although the Panama and Suez routes involve canal transit fees and higher fuel consumption, the decisive factor is that container ships operating in the Arctic are significantly smaller, with capacities three to five times lower than those used on traditional routes. This constraint results in a substantially higher unit cost per TEU, which outweighs the potential distance savings offered by Arctic passages. This conclusion would change only if carriers were willing to deploy much larger container ships in the Arctic—something that is technically feasible but unlikely to occur by 2030. Operators remain cautious, partly due to the still unknown and unpredictable conditions of container ship navigation in the region.

Looking ahead to 2030, we assume that the Suez Canal would be accessible. However, **given the disruptions that have significantly constrained transit through the canal since the end of 2023, we also compared Arctic transport costs with an alternative East Asia-Northwest Europe route that bypasses Suez and instead rounds the Cape of Good Hope (Table 5 - next page).** Incorporating this alternative route changes only one of our conclusions. Because the Cape route does not impose vessel-size constraints, it allows the deployment of larger ships and therefore greater economies of scale, resulting in a lower unit cost than the Suez route. Consequently, it reduces the cost

5 - Intergovernmental Panel on Climate Change (IPCC)'s scenario 2-4.5

6 - Based on results of the research paper Navigability of Arctic sea routes in the 21st century based on CMIP6, September 2025

saving induced by Arctic routes. Thus, when icebreaker escort is required, the Transpolar Route is no longer the least-cost option for tankers. Consequently, in the event of a Suez closure, Arctic routes cease to be profitable for any of the three product categories.

Finally, as noted earlier, our cost calculations rely on fuel prices, corresponding to a period when Brent oil prices were around 65 USD per barrel. This price level could be considered as moderated when compared to the five previous years, when it averaged 80 USD and even reached 129 USD in August 2022. The conflict in the Middle East has resulted in renewed volatility in energy markets, with Brent prices averaging 98 USD in March 2026.

In this context, we assess the sensitivity of our results under three fuel-price increase scenarios: +10%, +25%, and +50% (Table 6). **Rising fuel prices put pressure on traditional, longer routes but not enough to drastically alter our conclusions.** It is worth noting that, however, **from a 10% increase in fuel prices, the NSR becomes the second most competitive route on the Europe – East Asia route for the transport of liquid bulk cargo, even with an icebreaker escort, overtaking the Good Hope route.** In contrast, **fuel-price variations do improve Arctic routes' attractiveness on the East Asia-North American East Coast trade lane**, as Arctic routes offer more limited distance reductions - and therefore fuel savings - on this route.

Table 5 - Comparison of transport costs between Shanghai and Rotterdam using Arctic routes versus the route via the Cape of Good Hope

	With icebreaker escort (configuration 1)			Without icebreaker escort (configuration 2)	
	Cape of Good Hope	Transpolar	NSR	Transpolar	NSR
Bulker (\$/ tons of coal)	12,63	17,74	18,41	11,47	12,22
Container (\$/TEU)	200,77	393,26	407,01	261,22	277,73
Tanker (\$/ million barrels)	2,39	2,35	2,44	1,40	1,58

Table 6 - Top 2 most competitive shipping routes between Shanghai and Rotterdam based on fuel prices

Variation in fuel prices	With icebreaker (configuration 1)				Without icebreaker (configuration 2)			
	Base case	+10%	+25%	+50%	Base case	+10%	+25%	+50%
Navigation configuration								
Bulker	1. Suez 2. Cape of Good Hope	No change from base case			1. Transpolar 2. NSR	No change from base case		
Container	1. Suez 2. Cape of Good Hope	No change from base case			1. Suez 2. Cape of Good Hope	No change from base case		
Tanker	1. Transpolar 2. Cape of Good Hope	1. Transpolar 2. NSR	No change from +10% scenario		1. Transpolar 2. NSR	No change from base case		

- Both Arctic alternatives are the most cost-competitive routes
- At least one Arctic route is in the top 2 most cost-competitive routes
- No Arctic route features among the two most cost-competitive routes

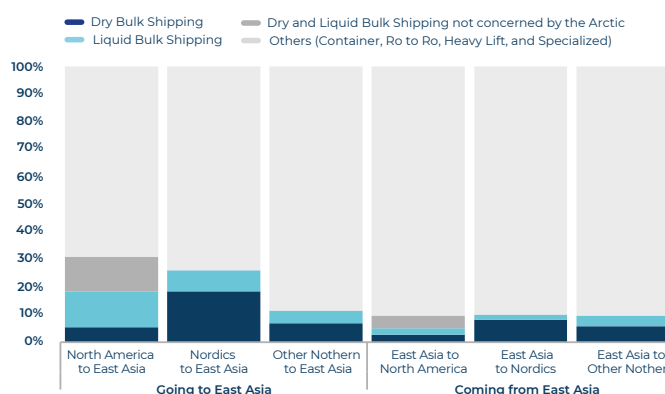
Limited overall impact on trade but some specific sectors could benefit

While future commercially viable Arctic shipping is likely to centre on dry bulk and liquid bulk (tanker) movements between East Asia ports and North America East Coast and Gulf of Mexico as well as Northern European ports, this section provides an indicative estimate of the current scale of such trade. The objective is to assess the potential value of flows for which Arctic routes could plausibly become competitive in the foreseeable future. Dry bulk and liquid bulk cargoes represent only a modest share of overall trade between East Asia and North America or Northern Europe⁷ (Chart 8). In total, the value of trade for which Arctic routes may become a viable alternative is estimated to represent around 3.5% of total trade between these regions.

This aggregate picture, however, masks substantial variation. In particular, exports from North America to East Asia and from the Nordic countries to East Asia show a far greater reliance on bulk shipping, with dry and liquid bulk together accounting for 34% and 26% of trade respectively. This reflects the growing role of energy commodity exports from North America, alongside chemicals – including fertilisers – and metals. The Nordic economies display a similar pattern, exporting both energy products and a broad range of

dry bulk commodities, notably iron, aluminium, nickel, and forest products such as wood, pulp, and paper. It should be noted that the East Coast of North America accounts for only a small proportion of energy exports, mainly natural gas as a large share of US energy exports departs from the Gulf of Mexico.

Chart 8 - Regional trade by shipping type (Share in %)



Dry and Liquid bulk not concerned by the Arctic include Dry bulk at West & Gulf Coast, and Liquid bulk at West Coast
Sources: TradeMap, Coface

7 - For this analysis, East Asia is China, Japan and South Korea, Northern America is Canada and the United States, and Northern Europe is France, Germany, Netherlands, Poland, the United Kingdom and Nordics (Denmark, Finland, Iceland, Norway and Sweden).

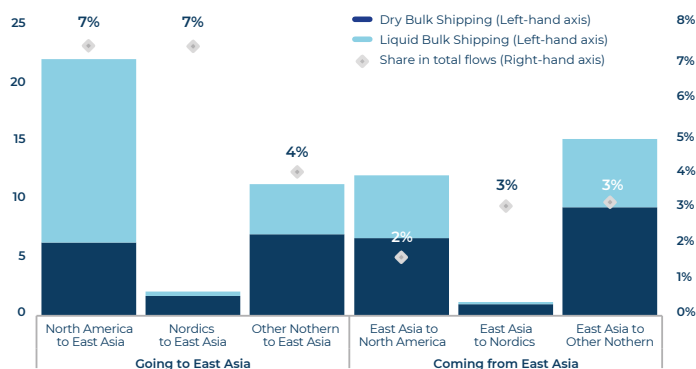
Although the route via the Panama Canal is shorter for reaching East Asia, the cost of such a journey via the Arctic is nonetheless lower for tankers. As a result, most North American energy exports might pass through the Arctic. Regarding dry bulk, around 39% of exports originate from East Coast ports, and these are precisely the ports that would stand to benefit from shorter sailing distances to East Asia via Arctic routes. By contrast to liquid bulk, shipping from the Gulf of Mexico via the Arctic is not economically viable for dry bulk.

Against this backdrop, the potential commercial relevance of Arctic routes becomes more apparent. If dry and liquid bulk segments were fully utilised during the current commercially viable months (July to October), the **value of trade routed through the Arctic could reach up to USD 64 billion – roughly 3.5% of total trade between these regions (Chart 9). The opportunity is more pronounced for exports from the Nordic countries to East Asia, where the potential value is approximately USD 2 billion, equivalent to around 7% of their exports to the region.** These flows would primarily comprise dry bulk cargoes carrying the commodities outlined above, along with some tanker shipments.

For exports from the North American East Coast – and the Gulf of Mexico for liquid bulk shipping – to East Asia, an Arctic route could support trade flows valued at around USD 22 billion, equivalent to approximately 7% of current exports. This share reflects shipments of petroleum gases and oil from the US East Coast and Gulf of Mexico, as well as dry bulk exports from these ports – especially metals. **East Asian exports to North America routed through the Arctic could amount to approximately USD 12 billion, or around 1.6% of current flows,** consisting largely of manufactured metals and chemicals destined for the East Coast.

For trade between East Asia and Northern Europe (excluding Nordic–East Asia flows), much of the potential shift involves intermediate goods and processed commodities. Here, manufactured metals and chemicals are expected to drive a significant proportion of the increase, with stronger growth in traffic from East Asia to Northern Europe than in the reverse direction – with USD 14 billion from East Asia as opposed to USD 11 billion going to East Asia.

Chart 9 - Value of regional trade susceptible of using Arctic Routes (USD billion, share in %)



Sources: TradeMap, Coface

In this context, we tried to identify key industries in the different countries of the three regions that would benefit from the use of Arctic routes. These are bulk commodities whose exports are strongly oriented (>10% of total exports) toward the markets that Arctic routes help connect. For European countries, these markets are located in East Asia. Conversely, for East Asian producers, the relevant destinations are North America and Northern Europe. Looking at the corresponding trade value, here are 10 countries–industry pairs that particularly stand out as potential winners:

SECTOR	PRODUCT	COUNTRY	EXPOSURE TO MARKET OF INTEREST (% exports)
Agriculture	Cereals	United States	25%
		Canada	21%
Energy	Mineral fuels	United States	11%
Metals	Iron ore	Canada	50%
		China	21%
		United States	18%
Paper	Wood pulp	Canada	46%
Wood	Wood and wood products	United States	18%
		China	33%
		Canada	10%

From this analysis, some sectors emerge as potential losers from the increased use of Arctic routes. These are the industries that compete with the prospective winners in the same markets and that could become relatively less competitive in terms of delivery times and transport costs. Two mechanisms can drive this outcome: either these industries become relatively more distant from their client markets because Arctic routes shorten the journey for their competitors, or the new routes place the winning industries at an equivalent distance from these destination markets, thereby erasing the geographical advantage they previously enjoyed. **This mainly affects industries based in South American or African countries. Brazil is a notable example, as the appeal of its mineral fuels, iron ore, wood pulp and cereals could wane. On the same continent, Chilean copper and Argentinean grains could also lose out to their competitors due to the use of Arctic routes. In Africa, South African iron ore and Congolese copper would also find themselves in the same situation.**

Some countries may also suffer from reduced traffic through their transport infrastructures. This is particularly true for Egypt and Panama, whose economies depend directly on toll revenues collected from their canals. Before the disruptions linked to the Red Sea tensions in late 2023, these revenues accounted for around 2% of GDP in both countries. They also benefit from significant indirect revenues linked to canal operations. Similarly, port hubs located along the traditional Asia - Europe route may suffer from lower traffic in the event of a shift toward Arctic routes. This is notably the case for the port of Singapore, where more than 60% of the country's exports are re-exports, and, but to a lesser extent, the UAE's port of Jebel Ali. A shift in traffic towards Arctic routes could therefore weaken these ports by reducing their role as essential nodes in global maritime trade. However, the risk for these hubs is longer term, as Arctic navigation is not expected to accommodate container shipping within our time horizon.

Over the next few years, the purely economic value of Arctic routes will remain limited and largely confined to raw materials, which account for only a small share of global maritime trade. This assessment is likely to change in the longer term, when container ships comparable in size to those currently operating on traditional routes — through the Suez Canal, around the Cape of Good Hope or via the Panama Canal — would sail regularly in Arctic waters. Such a development would disrupt the industry. In addition to the reduction in transportation cost that they would offer, shorter container transit times along the main trade corridors would increase shipping capacity, further putting downward pressure on freight rates. **For now, however, the strategic relevance of the Arctic remains primarily geopolitical, rather than commercial.**

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