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Cold Ambitions: The Northern Sea Route between economic reality and strategic leverage

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The Northern Sea Route (NSR) is unlikely to become the Arctic alternative to the Suez Canal often envisioned in public debate during the 2030–2040 period. Although climate change is increasing seasonal accessibility, the route remains constrained by climate variability, limited infrastructure, high operating costs, Russian regulatory control and, above all, a lack of predictability and operational reliability. For commercial operators, reliability and schedule stability generally outweigh the route's potential distance savings. Its most viable function therefore continues to be as a corridor for Arctic resource exports, particularly oil and gas. Beyond 2050, continued Arctic warming could increase navigability further and create conditions for more substantial Arctic shipping. Such developments remain highly uncertain and fall outside the scope of this assessment. Limited commercial use does not imply limited strategic significance. The NSR provides Russia with an additional export corridor for Arctic resources, strengthens its connectivity to Asian markets and increases its resilience against disruptions affecting other maritime routes. Its significance therefore lies less in the cargo it carries than in the strategic options it creates.

For the Netherlands, the implications are primarily strategic rather than commercial. The route is unlikely to alter trade patterns fundamentally or challenge Rotterdam's position as Europe's leading maritime hub. Its relevance lies instead in its implications for economic security, Arctic energy flows, sanctions-sensitive trade and the evolving security environment in the Arctic and North Atlantic.

Introduction

Debates surrounding the NSR often focus on its potential to shorten maritime connections between Europe and Asia. As Arctic sea ice retreats, the route is frequently presented as a future alternative to established shipping corridors such as the Suez Canal. Such expectations are typically framed in terms of reduced sailing distances, lower transport costs and the potential redistribution of global trade flows.[1]

While these expectations are not unfounded, they risk obscuring the route's current function and strategic significance. As discussed in the first policy brief in this series[2], the NSR forms

1 Vakhrusheva et al., 'The Norhtern Sea route: Russia's industrial and political expansin, its environmental costs, and Arctic shipping risks', *Bellona Foundation*', August 2025.

2 Karen van Loon et al., 'Cold Waters, Strategic Contestation: The Northern Sea Route in Arctic Power Politics', Clingendael, Policy Brief, April 2026.

part of a broader Russian Arctic strategy that combines economic development, energy exports, infrastructure investment and state presence. The question is therefore not only whether the route can become commercially competitive, but also what role it serves even if it does not.

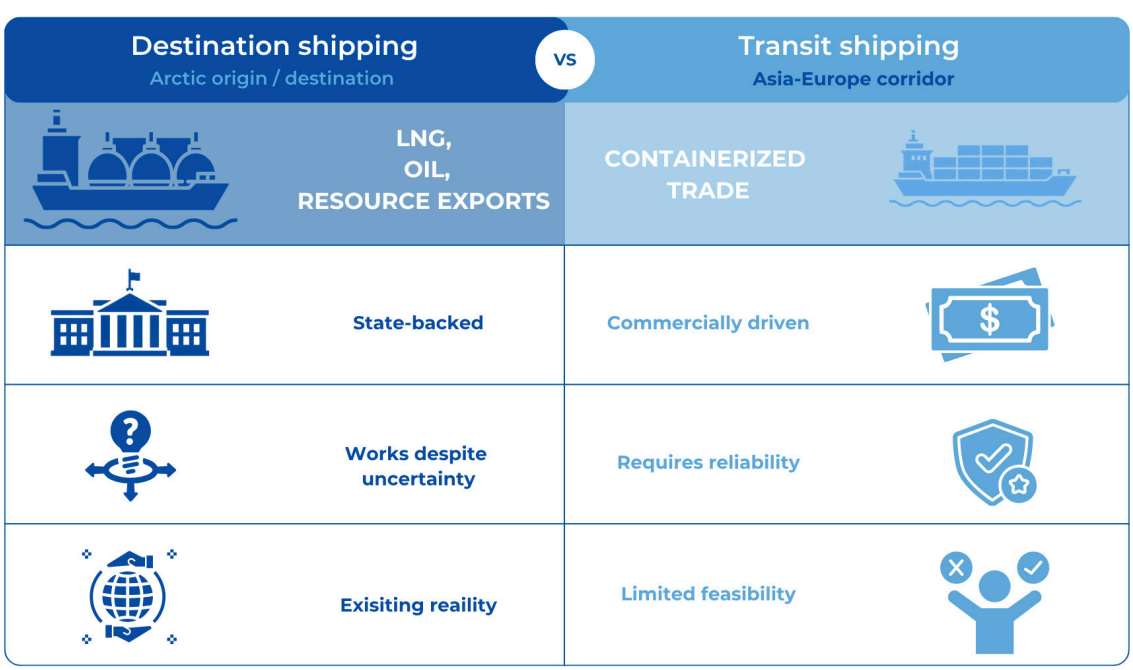
This policy brief examines the likely role of the NSR during the 2030–2040 period and its implications for the Netherlands and the Royal Netherlands Navy. Rather than asking whether Arctic shipping is technically possible, it focuses on whether the route can become commercially competitive and what this would mean for wider patterns of trade, energy security and geopolitical competition. The analysis assesses the economic foundations of Arctic shipping, the role of Russia's Arctic development strategy and the extent to which the NSR may influence Dutch economic and security interests.

This publication forms the second part of a three-part Clingendael series on the future of the NSR. The first policy brief examined the route's geopolitical and strategic context, while the third will address the legal and governance regime surrounding Arctic navigation.

How the NSR works in practice

Commercial shipping activity along the NSR is shaped by three factors: Arctic resource extraction, seasonal operating conditions and Russian state control. Contrary to popular perceptions, increasing cargo volumes do not necessarily indicate the emergence of a major Europe–Asia transit corridor. Understanding the distinction between destination shipping and transit shipping is therefore essential.

Figure 1 **Destination vs Transit Shipping**



Source: Clingendael. Visualisation generated using artificial intelligence based on author-developed concepts and data.

In practice, the route is dominated by destination shipping linked to energy and resource exports rather than large-scale transit trade between Europe and Asia. LNG, crude oil, condensate and bulk cargo account for most traffic along the route, while containerised transit shipping remains limited in scale and highly seasonal.[3] Local resupply voyages and project cargo also remain important, particularly where they support Arctic extraction projects and remote settlements.

This cargo composition reflects the economic geography of the Russian Arctic. Although this brief focuses on commercial shipping, it is important to recognise that the infrastructure supporting Arctic shipping is often dual-use in nature. Ports, communications networks, icebreakers and logistics facilities contribute not only to commercial activity, but also to Russia's broader state presence in the Arctic.

The NSR primarily connects hydrocarbon- and mineral-producing regions to export markets and logistical support networks rather than serving as an internationally integrated transit corridor.[4]

Shipping activity is therefore closely tied to state-backed industrial projects that depend on maritime transport regardless of operational difficulty or commercial uncertainty. The route's development is consequently driven less by market demand for Europe–Asia transit shipping than by Russian strategic and economic priorities in the Arctic.[5]

The distinction between transit shipping and destination shipping is important because each follows a fundamentally different economic logic, resulting in distinct operational and commercial dynamics. Destination shipping can remain commercially viable despite higher operating costs and seasonal constraints because it supports resource extraction projects that have no practical alternative transport routes. Transit shipping, by contrast, must compete directly with established maritime corridors on reliability, cost-efficiency and predictability.[6] As a result, growth in overall NSR cargo volumes does not necessarily translate into growth in commercially significant Europe–Asia transit traffic.

3 Moe, 'The Northern Sea Route: Is the economic model viable?', *The Ocean Policy Research Institute*, March 2026.

4 Centre for High North Logistics, 'Main Results of NSR Transit Navigation in 2025', December 2025.

5 Centre for High North Logistics, 'Main Results of NSR Transit Navigation in 2025', December 2025.

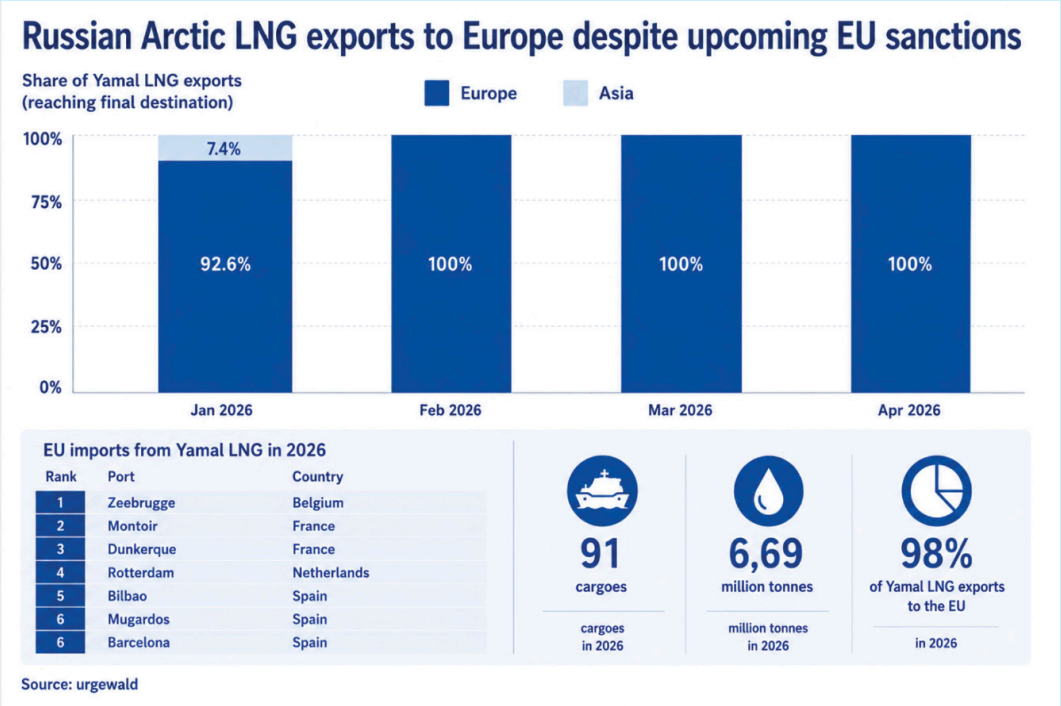
6 Liu & Kronbak, 'The potential economic viability of using the Northern Sea Route (NSR) as an alternative route between Asia and Europe', *Journal of Transport Geography*, May 2010.

Russian Arctic LNG and Europe's continuing connection to the NSR

Russian Arctic LNG projects provide the clearest illustration of the NSR's current economic function. Projects such as Yamal LNG and Arctic LNG 2 depend heavily on Arctic maritime transport and specialised Arc7 LNG carriers to move gas from the Russian Arctic to external markets. Their continued operation demonstrates that the route already serves an economically significant purpose as an export corridor for Arctic energy resources.[7]

Recent shipping patterns also demonstrate the extent to which Arctic LNG exports remain embedded in European energy networks. Between January and April 2026, almost all tracked Yamal LNG exports reaching their final destination were delivered to European ports. Belgian, French, Spanish and Dutch ports (including Rotterdam) continued to receive Arctic LNG cargoes despite the EU's planned phase-out of Russian LNG imports from 2027 onwards.[8]

The accompanying figure illustrates the NSR's current role as an energy corridor rather than a major Europe–Asia transit route. Whether Europe remains a significant destination market after 2027 is uncertain and will depend on the implementation of EU energy policy, sanctions regimes[9] and the availability of alternative LNG supplies. Regardless of destination markets, however, Arctic LNG exports are likely to remain central to the economic logic of the NSR.



7 Centre for High North Logistics, 'Yamal LNG export dynamics in 2025–2026 and preliminary assessment of post 2027 logistical capabilities.', 2 April 2026.

8 Humpert, 'EU Russian Arctic LNG Imports Hit $4.4bn Record Despite Sanctions Measures', *gCaptain*, 8 May 2026; European Commission, 'EU agrees to permanently stop Russian gas imports and phase out Russian oil', 3 December 2025.

9 European Commission, 'EU agrees to permanently stop Russian gas imports and phase out Russian oil', 3 December 2025.

Although climate change is gradually increasing seasonal accessibility, Arctic navigation remains subject to significant operational constraints. Sea-ice conditions remain highly variable and difficult to predict, while floating ice, fog, storms, narrow straits and limited support infrastructure continue to complicate navigation.[10] Incomplete hydrographic surveying and depth limitations along parts of the route further constrain vessel size and operational flexibility. For commercial shipping operators, predictability and schedule reliability often matter more than theoretical reductions in sailing distance.[7]

Arctic operations also require specialised capabilities. Ships operating along the NSR frequently depend on ice-class construction, polar-certified crews, icebreaker escort and specialised navigation procedures.[11] These requirements increase both capital and operational costs while limiting scalability, particularly for containerised liner services built around fixed schedules, large vessel volumes and integrated port rotations.

Infrastructure remains another major structural constraint. Compared with established maritime corridors, the NSR lacks dense networks for repair, bunkering, emergency response, search and rescue, insurance and logistics services.[12] Much of the available infrastructure also falls under Russian administrative control, increasing legal and political uncertainty for commercial operators. Shipping companies must account for permits, escort requirements, fees and evolving regulatory conditions, particularly during periods of geopolitical tension.[13]

Taken together, these factors undermine one of the central requirements of containerised transit shipping: reliability. For commercial operators, schedule stability generally outweighs theoretical distance reductions within logistics systems built around economies of scale, fixed port rotations and just-in-time supply chains.

Why this matters to the Netherlands

The NSR is unlikely to fundamentally alter Dutch trade patterns or challenge Rotterdam's position as Europe's leading maritime hub. While Rotterdam may benefit from Arctic-linked LNG, hydrocarbons and commodity flows, the route remains too limited, seasonal and unpredictable to compete with established Europe–Asia shipping corridors at scale.

Its relevance for the Netherlands lies elsewhere. The NSR forms part of a broader shift in which energy flows, maritime infrastructure and supply chains are becoming increasingly shaped by geopolitical competition. Arctic LNG exports continue to reach European markets, while sanctions, export controls and the rerouting of commodities create new challenges for monitoring strategic dependencies and economic vulnerabilities. Even where cargo volumes remain limited, Arctic shipping can influence wider patterns of energy connectivity and trade.

10 François Massonnet, "Will the Arctic be as navigable as we think? Three facts that challenge the narrative.," presentation delivered at the Clingendael strategic roundtable The Northern Sea Route: economic realism, legal contestation, and consequences for the Netherlands, Clingendael Institute, The Hague, 1 April 2026.

11 Christa Sys, "Arctic climate change and shipping: trends, challenges and opportunities," presentation delivered at the Clingendael strategic roundtable The Northern Sea Route: economic realism, legal contestation, and consequences for the Netherlands, Clingendael Institute, The Hague, 1 April 2026.

12 Vakhrusheva et al., 'The Norhtern Sea route: Russia's industrial and political expansin, its environmental costs, and Arctic shipping risks', *Bellona Foundation*', August 2025.

13 Li & Lynch, 'New insights into projected Arctic sea road: operational risks, economic values, and policy implications', *Climate Change*, 20 March 2023.

For the Netherlands, the principal challenge is therefore not adapting to a new Arctic trade route, but understanding how Arctic developments affect economic security within a more fragmented maritime environment. This includes monitoring Arctic-linked energy flows, sanctions-sensitive trade, ownership structures, vessel registries and emerging transshipment patterns. The significance of the NSR lies less in its direct impact on Dutch trade than in its implications for Arctic energy exports, sanctions-sensitive trade, critical raw material supply chains and the growing strategic importance of maritime connectivity. These developments illustrate how geopolitical competition increasingly shapes access to key transport routes, resources and markets.

Russian Arctic political economy

The development of the NSR cannot be understood through commercial shipping logic alone. State-linked corporations such as Novatek, Rosneft and Gazprom Neft play a central role in Russia's Arctic economy, with shipping serving primarily to support hydrocarbon exports and industrial development.[14]

A distinctive feature of this system is the role of Rosatom, Russia's state-owned nuclear energy corporation and designated operator of the NSR.[15] Beyond managing the world's largest fleet of nuclear icebreakers, Rosatom is responsible for shipping administration, infrastructure development and the coordination of Arctic maritime services.[2] Functions that elsewhere are distributed among multiple public and private actors are concentrated within a single state-controlled organisation.

Sanctions and geopolitical tensions have also increased Russia's dependence on a relatively small number of external partners, most notably China. Although Beijing continues to support Arctic cooperation and remains interested in Russian energy exports, much of the large-scale investment associated with earlier Polar Silk Road ambitions has not materialised.[16]

Secondary sanctions, commercial uncertainty and geopolitical risk have encouraged a considerably more cautious approach among foreign investors than many Russian planners initially anticipated.

As a result, the future development of the NSR is increasingly shaped by the interaction between Russian state support, sanctions pressure and Chinese demand for Arctic energy exports. The route remains important to Moscow's Arctic ambitions, but its long-term development is likely to depend as much on geopolitical conditions and access to external partners as on the economics of shipping itself.

China and Asian actors

China is the principal non-Russian actor involved in the NSR, but its role remains more limited and selective than official Polar Silk Road rhetoric often suggests. Rather than viewing the route primarily as a future Europe–Asia transit corridor, Beijing approaches the Arctic through the lens of energy security, supply diversification and long-term access to natural resources. Chinese involvement has therefore focused largely on Russian Arctic LNG projects through investment, financing and long-term energy agreements rather than on developing large-scale commercial transit shipping along the route.[17]

14 Opdahl, 'Enlisting oil and gas companies for Russia's Arctic development. Implementation in a rent-based political economy', *Post-Communist Economies 34(6)*, February 2022.

15 Burja, 'Rosatom's Role in Russia's Nuclear Arsenal and Energy Exports'. *Bismarck Brief*, September 2023.

16 Ibid.

17 See The State Council Information Office of the People's Republic of China, 'China's Arctic Policy', January 2018.; CNPC, 'First phase of Yamal LNG project becomes operational', 14 December, 2017.

This distinction reflects broader Chinese priorities. From Beijing's perspective, the economic value of the NSR lies primarily in securing access to Arctic energy resources and maintaining future strategic options rather than in replacing established maritime routes. Although the route can shorten sailing distances under favourable conditions, its operational uncertainty, seasonal variability and dependence on Russian-controlled infrastructure continue to limit its attractiveness for large-scale containerised trade. As a result, Chinese shipping activity remains closely linked to destination shipping associated with Arctic resource extraction.[18]

Chinese participation has also become increasingly constrained by sanctions exposure and geopolitical uncertainty. Secondary sanctions, restrictions on technology transfers and growing financial risks have reduced the willingness of Chinese firms to expand their involvement in Russian Arctic projects.[19] While Chinese companies continue to participate in projects such as Yamal LNG and Arctic LNG 2, several investors have simultaneously sought to limit direct exposure where legal and commercial risks increased.[20] The Sino-Russian relationship along the NSR is therefore best understood as pragmatic rather than transformational. Russia requires Chinese capital, technology and energy demand to sustain Arctic development, while China seeks access to resources without becoming overly dependent on politically sensitive Arctic investments.

Other Asian actors pursue similarly selective approaches. Japan remains involved in Arctic LNG projects primarily for energy-security reasons, reflecting its long-standing strategy of diversifying LNG supplies and maintaining access to multiple import routes.[21] South Korea's relevance has been concentrated in specialised shipbuilding and LNG-carrier technology, although sanctions and geopolitical tensions have significantly reduced cooperation with Russian Arctic projects since 2022.[22] India has shown growing interest in Arctic shipping and resource development, partly through its broader strategic partnership with Russia and interest in the Chennai–Vladivostok maritime corridor. However, Indian engagement remains exploratory and cautious. New Delhi has sought to balance potential economic opportunities against sanction risks, commercial uncertainty and a wider strategy of maintaining strategic autonomy.[23] Singapore, meanwhile, approaches Arctic developments primarily from the perspective of maritime governance and global shipping. As one of the world's leading transshipment hubs, it closely monitors Arctic shipping trends without becoming directly involved in Arctic resource projects.[24]

Taken together, Asian involvement reinforces the NSR primarily as a resource and energy corridor rather than as an emerging Arctic alternative to established Europe–Asia shipping routes. Asian actors continue to support selected Arctic energy projects where commercial and strategic interests align, but few appear willing to make the large-scale investments necessary to transform the NSR into a major international transit corridor. The route's future therefore remains tied more closely to Arctic resource exports than to the emergence of a new Arctic trading system.

18 Soldatkin, 'Foreign shareholders freeze participation in Russia's Arctic LNG 2 -Project', *Reuters*, 25 December 2023.

19 'China receives 22 shipments of LNG from sanctioned Russian projects in 2025', *Reuters*, 2 January 2026.

20 Soldatkin, 'Foreign shareholders freeze participation in Russia's Arctic LNG 2 -Project', *Reuters*, 25 December 2023.

21 Mitsui & Co., Ltd. & Japan Oil, Gas and Metals National Corporation, 'Final Investment Decision for Arctic LNG 2 Project in Russia', 5 Spetember 2019.; Mitsui & Co., 'Our Business; Energy Deartment', n.d.

22 'Samsung Heavy says $3.54 billion icebreaker orders from Russia's Zvezda cancelled', *Reuters*, 18 June 2025.

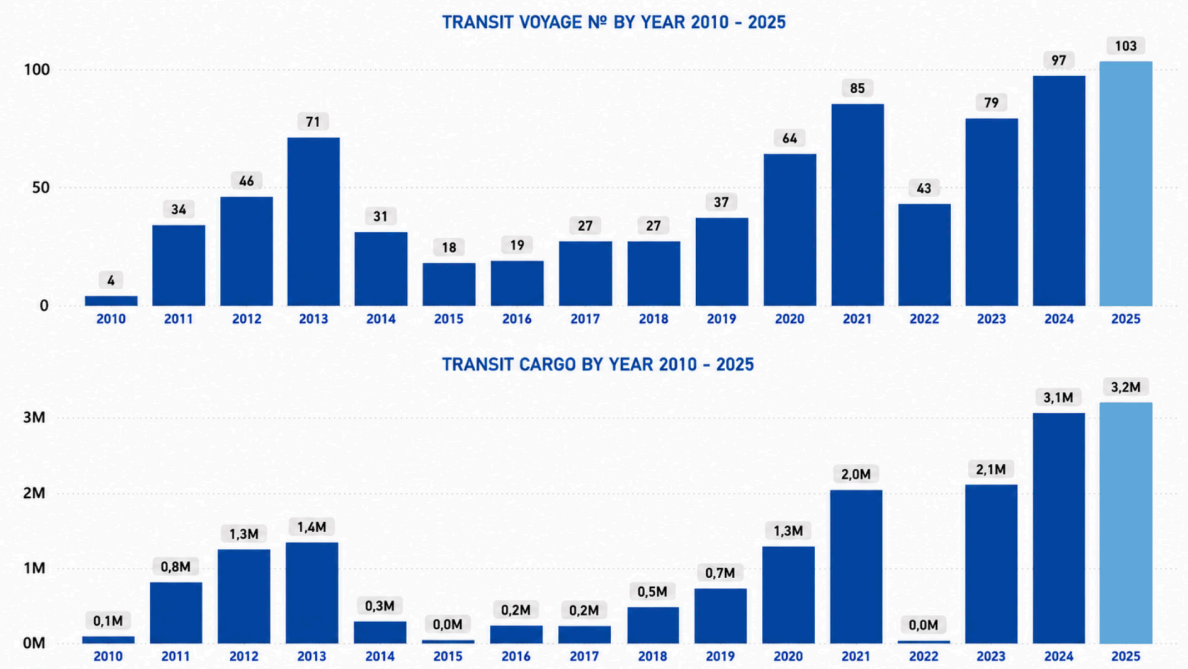
23 Government of India, 'Leaders' Joint Statement on the development of strategic areas of Russia-India economic cooperation for the period up to 2030', 9 july 2024.; 'India will not buy from Russia's sanctioned Arctic LNG 2 project, oil secretary says', *Reuters*, 27 September 2024.; Khorrami & Østhagen, 'India in the Arctic: A Potential Pathway to Strategic Autonomy Beyond Russia', *Observer research Foundation*, 23 April 2025.

24 The Arctic Institute, 'Singapore', 20 March 2024.

The limited willingness of both Russian and foreign actors to invest in large-scale transit shipping is reflected in actual shipping patterns. Despite sustained political attention and recurring projections of rapid growth, transit traffic along the NSR has remained modest. Most shipping activity continues to be linked to Arctic resource exports and destination shipping rather than Europe–Asia transit trade.

Figure 3 shows the growth of NSR transit voyages and cargo volumes from 2010 to 2025. While the upward trend highlights increasing use of the route, the figures still underscore the NSR's limited role as a niche Arctic shipping corridor rather than a major global trade route comparable to the Suez Canal.

Figure 3 **Number of transit voyages and cargo volume on the NSR, 2010–2025.**[25]



The contrast is striking. In 2025, approximately 3.2 million tonnes of cargo transited the NSR, compared with around 464 million tonnes handled by the Suez Canal. The comparison highlights the extent to which expectations surrounding the NSR continue to exceed its actual role in international shipping. Rather than emerging as a new Arctic trade highway, the route remains primarily a corridor for Arctic energy and resource exports.

Arctic shipping and its impact on European ports

The NSR is unlikely to fundamentally reshape European port hierarchies during the 2030–2040 period. Transit volumes remain too limited and seasonal to generate a significant redistribution of cargo flows between major ports such as Rotterdam, Antwerp-Bruges and Hamburg. The route is therefore unlikely to challenge Rotterdam's position as Europe's principal maritime gateway.[26]

25 Centre for High North Logistics 'Main Results of NSR Transit Navigation in 2025', December 2025.

26 Anonymous expert interview, April 2026.

The most plausible effects are therefore selective rather than transformative. Some Nordic ports may benefit from their proximity to Arctic shipping routes and strengthen their role in LNG handling, Arctic resource exports and support services linked to Arctic operations. Such developments could marginally increase the importance of ports such as Narvik, Tromsø or Kirkenes as logistical gateways for Arctic energy and resource flows, without fundamentally altering existing European port hierarchies.

Figure 4 **Potential implications of the NSR for selected European ports**

Source: Clingendael. Visualisation generated using artificial intelligence based on author-developed concepts and data.

For Rotterdam, the relevance of the NSR lies less in direct port competition than in its implications for economic security and maritime awareness. Rotterdam is unlikely to lose significant cargo volumes as a result of Arctic shipping. However, the port remains connected to wider European energy and commodity networks that may increasingly involve Arctic-linked flows, including LNG, hydrocarbons and critical raw materials.[27]

The continued use of Arctic export routes also creates challenges related to sanctions enforcement, beneficial ownership structures, vessel registries, ship-to-ship transfers and the rerouting of commodities through third countries.

Implications for the Royal Netherlands Navy

The economic assessment presented in this policy brief does not point towards a dedicated Royal Netherlands Navy mission centred on protecting commercial shipping along the NSR. The route remains too limited, seasonal and politically constrained to function as a major trade artery for the Netherlands. Nevertheless,

27 Christa Sys, "Arctic climate change and shipping: trends, challenges and opportunities," presentation delivered at the Clingendael strategic roundtable The Northern Sea Route: economic realism, legal contestation, and consequences for the Netherlands, Clingendael Institute, The Hague, 1 April 2026.

the economic infrastructure associated with the NSR cannot be viewed entirely separately from Russia's wider Arctic posture.

1. **Arctic infrastructure and maritime awareness**

The NSR is not merely a shipping corridor, but part of a wider Russian Arctic system that includes ports, energy installations, icebreaker fleets, satellite infrastructure and military facilities along the northern coastline. Continued investment in Arctic resource extraction and transport infrastructure contributes to a denser strategic environment in which civilian shipping, energy logistics and military activity increasingly intersect. For the Royal Netherlands Navy, this reinforces the importance of maritime domain awareness in the wider Arctic and North Atlantic regions.

2. **NATO's northern flank**

Even if commercial traffic along the NSR remains limited, Russian Arctic infrastructure supports Moscow's broader military posture in the High North, including the protection of the Northern Fleet and strategic assets based on the Kola Peninsula. Allied attention is therefore likely to remain focused on the Norwegian Sea, the Greenland–Iceland–United Kingdom gap and adjacent Arctic waters. The relevance of the NSR for the Royal Netherlands Navy lies less in the route itself than in its connection to the wider military geography of the High North.

3. **Arctic security and economic security**

The NSR highlights the growing relationship between maritime security and economic security. Arctic LNG exports, sanctions-sensitive cargoes, ownership structures and transshipment networks increasingly blur the distinction between commercial and strategic shipping. Growing Chinese involvement in Arctic energy projects, shipping and infrastructure further reinforces this trend, although Beijing's role remains primarily commercial and energy-focused rather than military. Maritime security actors are therefore likely to play a growing role in maintaining situational awareness regarding Arctic-linked shipping activity, particularly where sanctions evasion, strategic dependencies or critical infrastructure risks are concerned.

4. **Arctic operability and interoperability**

The Netherlands does not require specialised forces dedicated to the NSR. However, continued investment in cold-weather operating experience, interoperability with northern allies and participation in NATO and Joint Expeditionary Force activities remains important. This includes maintaining Arctic and cold-weather expertise, including the Netherlands Marine Corps' long-standing experience in Arctic amphibious operations and training with northern allies.

The economic assessment presented in this policy brief does not point towards a dedicated Royal Netherlands Navy mission centred on protecting commercial shipping along the NSR. The route remains too limited, seasonal and politically constrained to function as a major trade artery for the Netherlands. Nevertheless, the economic infrastructure associated with the NSR cannot be viewed entirely separately from Russia's wider Arctic posture. As discussed in the first policy brief in this series, Arctic transport infrastructure, energy projects and military presence increasingly reinforce one another within Russia's broader strategy for the High North.

The main implication is therefore not that the Royal Netherlands Navy requires a new NSR-specific mission, but that Arctic developments reinforce existing priorities: maritime domain awareness, allied interoperability, High North readiness and the integration of economic security considerations into maritime planning. They also strengthen the case for closer NATO–EU coordination on Arctic resilience, critical infrastructure protection and maritime situational awareness.

Conclusion

The NSR is unlikely to emerge as a reliable large-scale Europe–Asia transit corridor during the 2030–2040 period. Although climate change is increasing seasonal accessibility, the route remains insufficiently reliable and predictable for the requirements of modern container shipping. Operational challenges, limited infrastructure, high costs and Russian regulatory control continue to outweigh potential distance savings. Its most viable function therefore remains that of a selective corridor for Arctic resource exports, particularly LNG, oil and other commodities linked to Arctic extraction projects.

The central finding of this brief is that the NSR's future is likely to be determined less by global trade than by Arctic resource extraction. Rather than emerging as a new Suez Canal, the route primarily serves Russia's energy exports and broader Arctic development strategy. Its importance therefore derives less from the volume of cargo it carries than from the strategic flexibility it provides.

For the Netherlands, the implications are primarily indirect but strategically relevant. Rotterdam is unlikely to face structural displacement, and the Royal Netherlands Navy does not require a dedicated NSR mission. However, Arctic developments increasingly intersect with economic security, NATO's northern flank and the wider High North security environment.

The central policy challenge is therefore not adaptation to a new Arctic trade highway, but ensuring that Arctic developments are integrated into Dutch assessments of economic security, maritime resilience and allied planning.

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