

# The Northern Sea Route

A new strategic corridor  
for maritime infrastructure  
and energy flows?

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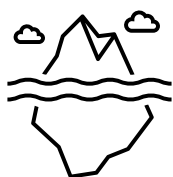
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## Key takeaways



### A new strategic corridor

Changing climate conditions are altering navigability, while investment in ports, energy infrastructure and specialised vessels is increasing the region's strategic importance.



### A highly demanding model

Arctic projects can be viable when production, dedicated port infrastructure, specialised vessels and secured off-take are developed as an integrated system.



### A selective investment approach

For port operators and infrastructure investors, this calls for selective, resilient and phased investment rather than capacity expansion ahead of demand.

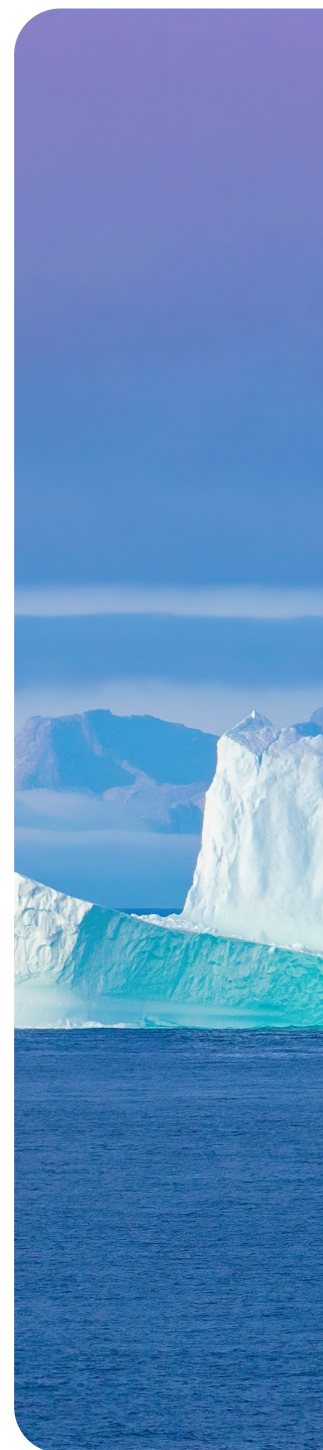
## Introduction

**Long regarded as the gateway to one of the world's last frontiers, the Northern Sea Route (NSR) was slow to open to commercial shipping.** While the earliest expeditions date back to the sixteenth century, it was only in the twentieth century, with the advent of icebreakers, that the NSR became seasonally navigable. Since the early 2000s, accelerating sea-ice melt has radically reshaped the Arctic landscape. Russia, whose coastline accounts for roughly 53% of the entire Arctic littoral – stretching from the Bering Strait to the Kola Peninsula, has invested heavily in port infrastructure and its icebreaker fleet, driving NSR traffic from under **4 million** tonnes in 2014 to more than **36 million** tonnes in 2023. With Shanghai now roughly 35 days' sailing from Rotterdam via this route (compared with 48 days through the Suez Canal), could the NSR emerge as a new axis of global trade?

**The opening of the NSR creates unprecedented prospects for container shipping, but above all for the hydrocarbons and raw materials sectors** (the region exports diamonds, iron, gold, and zinc, alongside oil and gas). Time and fuel savings are drawing shipowners and industrials alike, while the Arctic is estimated to hold **13%** of the world's undiscovered oil resources and **30%** of its undiscovered natural gas. Arctic ports such as Murmansk and Sabetta are being transformed into logistics or energy hubs – albeit with mixed results, as illustrated by the Murmansk coal export terminal project. Polar tourism is developing in parallel, generating fresh economic benefits for local communities. Fishing resources, still largely untapped, also represent significant potential, provided they are managed sustainably.

The Arctic nevertheless remains a uniquely demanding environment, defined by extreme constraints. Navigation is still governed by ice cover and unpredictable weather, requiring reinforced vessels and purpose-built infrastructure. Isolation and vulnerability to accidents demand rigorous risk management. The region is also a theatre of rivalry between littoral – and sometimes extra-regional – powers. Finally, the Arctic is home to some of the planet's most fragile ecosystems and to indigenous populations whose ways of life are under threat.

**Any development strategy for the region is therefore a delicate balancing act.**



## A shifting geostrategic context (1/2)

**The retreat of sea ice and the rise of dedicated infrastructure are making the Arctic more accessible – but also more contested.**

**Figure 1: The Northern Sea Route**



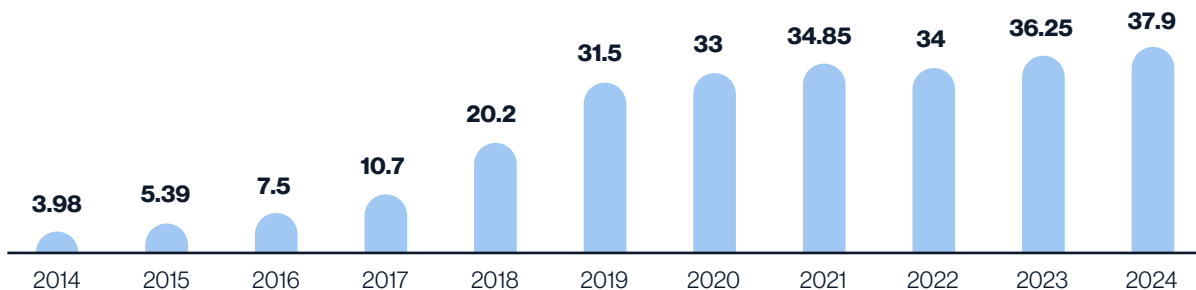
Source: Arctic Council / PAME, Arctic Marine Shipping Assessment 2009 Report, Eight Advisory Analysis

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### The gradual opening of new routes

Summer sea-ice extent has fallen by roughly 40% since 1979, widening the navigable windows for both the Northeast and Northwest Passages. Maritime activity across the Arctic is intensifying (from 1,298 to 1,812 unique vessels between 2013 and 2025, with total distance sailed more than doubling). Along the NSR itself, 37.9 Mt of cargo was carried in 2024 (versus under 4 million in 2014). Yet this growth remains overwhelmingly driven by Russian exports rather than international traffic. The distance savings versus Suez are real, but seasonality and operational uncertainty make a large-scale shift far from certain.

**Figure 2: Freight volume transported via the NSR (million tonnes)**



Source: Eurasian Rail Alliance Index, 2025; Eight Advisory Analysis

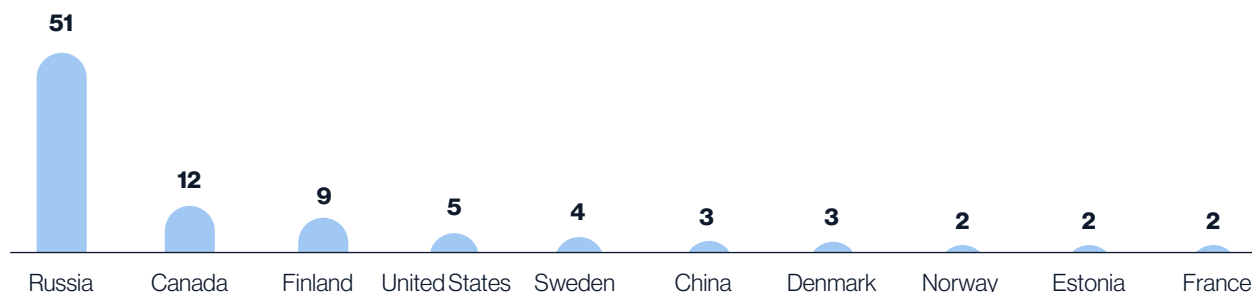
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## A shifting geostrategic context (2/2)

### Great-power competition

The opening of the Arctic is fuelling rivalry between littoral states and extra-regional actors alike. Russia, with over 24,000 km of Arctic coastline, invested more than USD 11 billion between 2018 and 2024 and continues to tighten its grip on the region. China has positioned itself as a "near-Arctic state", folding the NSR into its Belt and Road strategy, while the United States and North Atlantic Treaty Organization (NATO) are stepping up their presence – the US Army Corps of Engineers has awarded a USD 400 million contract to modernise the port of Nome, Alaska, a clear signal of growing American militarisation and engagement in the region. The legal status of these routes remains contested, pitting claims of internal waters (Russia, Canada) against the international strait doctrine championed by the United States and the European Union.

**Figure 3: Icebreaker fleet by country**



**Source:** Coast Guard Polar Security Cutter (PSC) and Arctic Security Cutter (ASC) Icebreaker Programs: background and Issues for Congress, June 2025.

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### Ultimately, the NSR is progressing

But is not yet a structural alternative to Suez (annual NSR traffic equates to just three weeks of Suez Canal activity). For carriers and shippers, the real issue is not simply cost, but reliability – navigation windows, insurance, safety, rescue capacity – and the need for specialised assets, from ice-class vessels to dedicated operations.

## Economic opportunities still to be built (1/3)

### A predominantly gas-driven proposition

One point deserves clarification upfront: the NSR is primarily an export corridor for Russian hydrocarbons rather than a trade route.



**37.02 Mt** of total traffic in 2025, of which only 3.2 Mt was international transit, spread across 103 transits and 15 container-ship rotations (11 in 2024, 7 in 2023), over a season running from June to October.



**More than 91%** of volumes relate to destination traffic (as opposed to transit traffic, which merely passes through the zone): liquefied natural gas (LNG), crude oil, condensate, and local bulk cargo.



**270 LNG** cargoes shipped from the Sabetta terminal alone in 2025, compared with 287 in 2024 (21.2 Mt), carried by a fleet of 14 Arc-7 icebreaking LNG carriers.



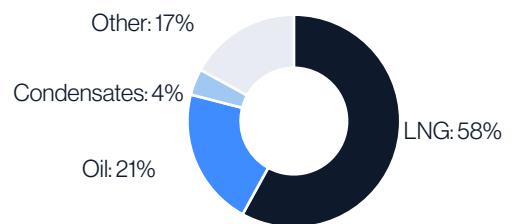
**Under 400,000 tonnes** for the containerised segment across the entire season – less than 1% of total NSR traffic.

The Arctic has become a strategic priority, first and foremost for Russia, which sees it as **a major economic lever** through hydrocarbons. The NSR could support broader commercial development, but momentum remains chiefly driven by energy and mineral exports. Russia tightly regulates access to the NSR – transit rights, prior authorisations, administrative obligations, and fees – while reinforcing its legal and military control. The objective is clear: to turn the Arctic into a zone of influence and secure a critical axis for its gas production.

In Europe, littoral states are taking a far more cautious stance. Under environmental pressure, Norway has frozen the award of any deep-sea exploration and mining permits in its Arctic zones (the Norwegian Sea and the Barents Sea) at least until the end of 2029. However, oil and gas exploration and production, governed by a separate regime, remain active in the Barents Sea.



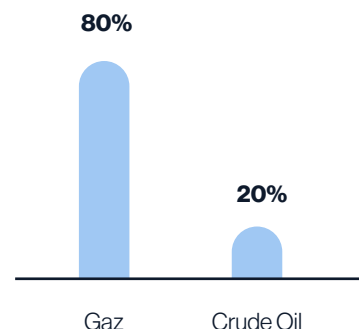
**Figure 4: NSR Cargo Mix (2025)**



Source: Arctic and Antarctic Research Institute, POLAR 2026

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**Figure 5: Share of Russian production originating in the Arctic**



Source: International Energy Agency (2022)

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## Economic opportunities still to be built (2/3)

### Structural international governance challenges

Arctic governance rests on a patchwork of international norms and national claims. The Arctic Council, a key forum for the region, has been largely paralysed since 2022 and excludes military matters altogether. Sources of tension are plentiful: freedom of navigation, the legal status of shipping routes, delimitation of the continental shelf, among others. Russia treats the NSR as internal waters and enforces strict rules; Canada takes a similar approach to the Northwest Passage, while the United States and the European Union uphold an international strait status. Technical agreements do exist – on search and rescue, fisheries – but the militarisation of the region complicates efforts to build a stable, predictable framework.

### Security implications are still not fully under control

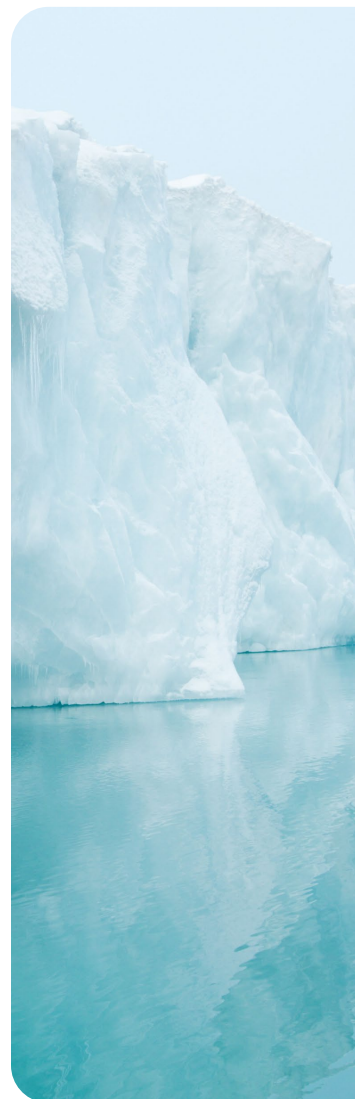
Rising traffic inevitably increases the risk of accidents and pollution – risks further amplified by isolation, weather, and limited rescue capacity. In 2023, the cruise ship Ocean Explorer ran aground in Alpefjord, off north-eastern Greenland, remaining stranded for three days with 206 people on board.

Despite search-and-rescue cooperation mechanisms and national monitoring efforts, maritime safety remains fragile. Infrastructure resilience is also a central concern. Ports, energy terminals, subsea cables, and communication systems are all exposed to climate risks such as permafrost thaw. These issues must be addressed if the region's development is to become genuinely investable.



*Unlocking the full economic potential of the Northern Sea Route will require not only modern, reliable port infrastructure, but also stable and predictable regional governance to foster confidence among investors and international operators.*

Martijn Van Heugten, Partner Eight Advisory



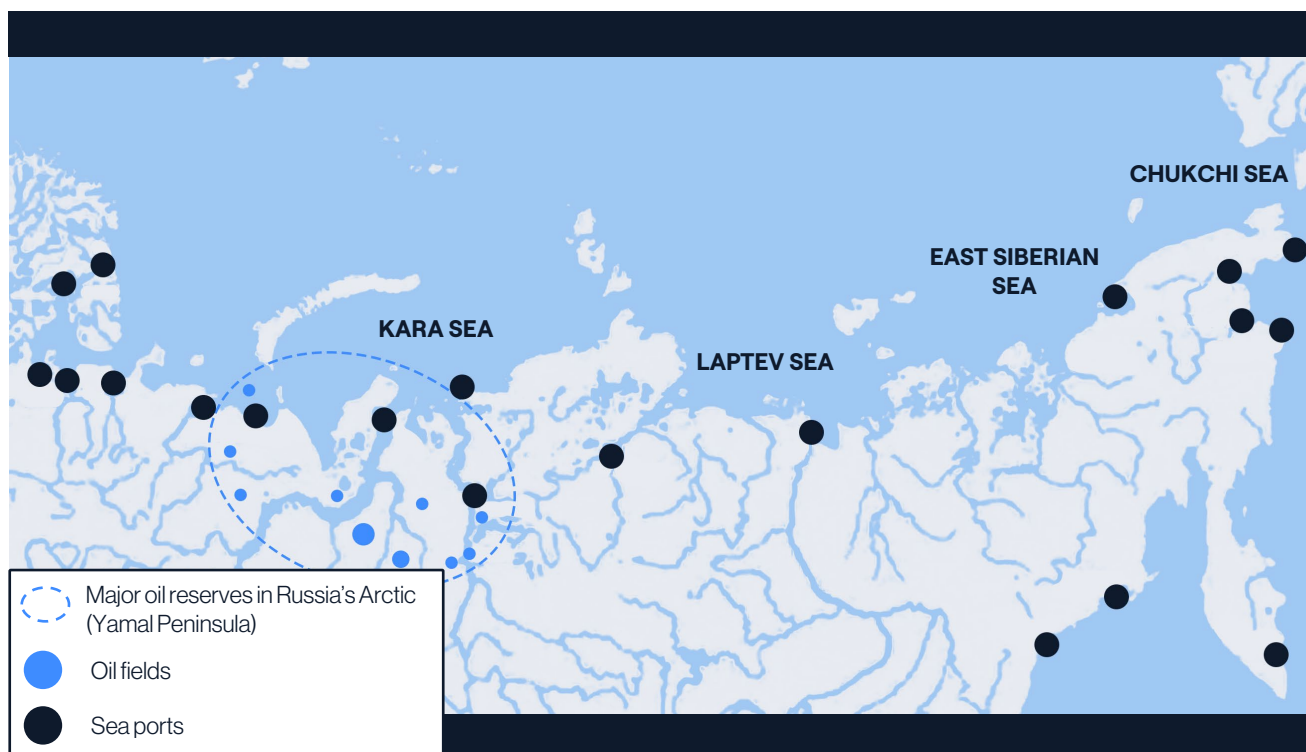
## Economic opportunities still to be built (3/3)

### Key ports along the Arctic coastline

Beyond maritime transit, the NSR has developed around a network of infrastructure dedicated to hydrocarbons. The port of Sabetta, built from scratch for Yamal LNG, has become the world's leading Arctic LNG terminal. Further east, Bukhta Sever, commissioned in September 2026, exports crude oil from Rosneft's Vostok Oil project (initial capacity of 28.4 Mt/year). To the west, Murmansk handles LNG transshipment to conventional vessels and the reloading of Arctic crude via the floating Umba terminal (around 275,000 barrels/day). The whole system is connected by onshore pipelines and a dedicated fleet of Arc-7 vessels.

At the end of the chain, European terminals receive these flows. Yamal LNG arrives at Montoir-de-Bretagne (France), Zeebrugge (Belgium), Milford Haven (Wales, UK, home to Europe's largest LNG terminal), and Rotterdam (Netherlands). Arctic crude oil used to flow to Dutch ports until the sanctions of December 2022 redirected these volumes towards China and India. While the NSR's future as a route for international trade remains uncertain, it already forms the central link in an integrated oil and gas supply chain, running from extraction in Siberia through to global markets.

**Figure 6: Strategic infrastructure and energy assets along the Northern Sea Route**



**Source:** Rylin McGee, « Mapping Russia's Arctic Hydrocarbon Development Scheme »; Innoter, « Monitoring of the Northern Sea Route » (2025); Eight Advisory Analysis

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# Case Study: Yamal LNG, proof of concept at scale

Yamal LNG demonstrated the viability of Arctic energy exports through the NSR, supported by dedicated port infrastructure, specialised vessels and integrated logistics.

## Case Study: Yamal LNG (1/2)



Launched in 2017 on the Yamal Peninsula (Western Siberia), the Yamal LNG project is operated by Novatek (Russia's leading independent gas producer) alongside TotalEnergies, CNPC, and the Silk Road Fund. With a production capacity of **16.5 million** tonnes of LNG per year and initial investment exceeding **USD 27 billion**, it stands as the benchmark case for gas development in the Arctic environment.



Production is shipped out via a fleet of 14 Arc-7 icebreaking LNG carriers, capable of navigating through ice without icebreaker escort. Investment in this fleet exceeds **USD 5 billion** (around USD 350 million per vessel). Today, virtually all volumes are exported to Europe: over the first four months of 2026, this destination absorbed **98%** of exports.



The EU's ban on importing Russian LNG under long-term contracts, effective from 1 January 2027 – and in force for short-term contracts since April 2026 – will redirect Yamal's flows towards Asia. This eastward shift is supported by a structural geographical and economic advantage: from Yamal, the NSR reaches Asian markets in **11 to 12 days**, compared with roughly **30 days** via the Suez Canal. In Asia, LNG also trades at a premium of USD 3 to 5 per MMBtu (million British thermal units) over European prices. A shorter transit time combined with a price premium makes Asia an economically compelling destination.



## Case Study: Yamal LNG (2/2)



However, the Yamal model is **unlikely to be replicated at scale in the near term**. Yamal's intended successor was Arctic LNG 2 – same operator, same region, even greater capacity (19.8 Mt/year, USD 21.3 billion capex). Hit by US sanctions in November 2023, the project saw its first train run at half capacity in 2024 before stalling. It has since found a narrow lifeline in China. China's Beihai terminal has received 41 cargoes (around 2.6 Mt) since August 2025, and a second terminal, at Longkou, is due to start operating in October 2026. Volumes nonetheless remain a fraction of the plant's design capacity. On the oil side, the outlook is even less certain. Vostok Oil, Rosneft's flagship project, claims 6 billion tonnes of reserves (according to Rosneft – a figure whose robustness remains to be demonstrated) and targets 115 Mt/year by 2033. Yet it currently relies on the Vankor cluster, whose output declined from 22 Mt/year in 2016 to 14.8 Mt/year in 2023. The Bukhta Sever export terminal loaded its first cargo in early September 2026. However, trial production has begun at only one section of the Payakha field, and it is unclear whether output will be enough to fill even the terminal's initial capacity.



Yamal LNG demonstrates that an integrated Arctic project – spanning extraction through to delivery – is **technically and economically viable**, provided every link in the chain is in place: dedicated port infrastructure, a specialised fleet, and secured off-take agreements. But it equally illustrates the structural fragilities of this model. Dependence on a single, sanctioned operator, the near-impossibility of quickly replicating this model (Arctic LNG 2 is reliant on a single market, Vostok Oil still hypothetical), and the concentration of outlets on a European market undergoing regulatory closure – all these factors combine to keep **Arctic development on a fundamentally slow track**.



*Yamal proves that Arctic infrastructure can work, but not that it can be replicated. For investors, the priority should be to phase capital deployment against observable demand and secure the critical elements in the value chain before committing to additional capacity.*

Martijn Van Heugten, Partner Eight Advisory

## How we can help

Eight Advisory supports maritime and oil & gas players across the infrastructure investment lifecycle.



**For infrastructure and growth funds considering investments in assets serving the Northern Sea Route**, opportunities may span port infrastructure, LNG and gas terminals, hydrocarbon storage facilities and related logistics. Eight Advisory can support investors in assessing targets, identifying financial and tax risks, modelling cash flows and valuing assets in a rapidly evolving environment.



**For port, terminal and energy operators reassessing their position in the value chain**, changing cargo flows may prompt a review of land reserves and the adaptation of port services and infrastructure. Eight Advisory can help assess strategic and operational options, including redeploying land, developing Oil & Gas storage services and adapting multimodal solutions, and evaluate their implications for activity, investment and business plans.



**For project sponsors and operators planning new terminals and port infrastructure**, the challenge is to turn project ambitions into robust, financeable business plans. Eight Advisory can support business-plan and cash-flow modelling, the assessment of investment needs and financing options, and the preparation of concession or PPP bids, including the financial aspects of discussions with public authorities.

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