

Tolerate uncertainty – go forward

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The Finnish maritime industry, including ports, is being influenced by many of the same change factors as elsewhere, but there are also some unique features among them. In maritime transport and its operating environment in Finland – and more broadly across the entire Baltic Sea region – several significant factors of change are currently at play: the energy transition and the required shift in propulsion systems for shipping, fluctuations in cargo flows caused by the COVID-19 pandemic, and Russia’s war of aggression in Ukraine, which continues to reshape the situation. At the same time, offshore wind power development and ice-breaking are major future issues for Finland. In addition, economic uncertainty, global political instability, and the unpredictable US trade policy pose significant challenges for maritime transport and ports.

For Finland, a well-functioning maritime sector is of vital importance. Approximately 55% of the total value of Finland’s foreign trade is carried out through maritime transport in the Baltic Sea. When looking only at goods transport, as much as 95% of foreign cargo tonnage is transported by sea.

For instance, among the many disruptions and measures to accommodate them, Finland has seen a re-balance of ro-ro and container traffic, with the former benefiting at the expense of the latter. The lack of empty boxes available to Finnish exporters, resulting from sudden disruptions or traffic rearrangements (including blank sailings), made ‘trailer shipping’ more attractive (read: predictable).

Climate change & winter navigation

In Finland, almost all ports freeze over for at least part of the winter. Navigating in ice is therefore very familiar, and ice-breaking plays an absolutely central role in ensuring transport runs smoothly year-round. Finland built or designed the majority of the approximately 150 icebreakers currently in use globally, making the country one of the world’s ice-breaking powerhouses.

However, the future of winter navigation is challenged by increasingly unpredictable ice conditions (e.g., packed ridged ice) due to climate change, the increase in extreme weather phenomena such as gale-force winds, and, simultaneously, environmental

requirements, the reduction of emissions, and the improvement of vessel energy efficiency. In practice, this often means optimisation for open-water sailing and a decrease in the engine power and power-to-weight ratio of new vessels. Thus, the need for ice-breaking assistance will probably increase in the future. As such, global warming does not directly mean easier navigation in the freezing northern parts of the Baltic Sea; quite the opposite.

Future fuels & electrification

The energy transition sweeping through societies is also evident within the maritime sector. For example, changes in fuel transport for energy production are taking place as the shift from fossil-based to bio-based and synthetic raw materials – and possibly hydrogen – progresses, affecting transport flows, modes, and volumes.

As a consequence of Russia’s war of aggression, fossil fuel shipments (mainly oil) that previously arrived in Finland from the east have been replaced by maritime imports from other destinations. In the longer term, this will also reshape global fossil fuel transport flows. Currently, a vast share of global maritime transport still consists of shipments of oil, coal, and natural gas. As these decrease, the volume of port traffic will also decline, requiring new types of business activities. In the meantime, some Finnish seaports have already witnessed the exchange of coal in favour of biomass going over their quays.

A key question also concerns future propulsion systems. Shipping companies are deliberating about the technology for their newbuilds. While full electrification is unrealistic for ocean-going shipping, shorter, regular routes – such as ferry & ro-ro traffic – could be electrified in a feasible way under certain conditions, thus providing an efficient transition path towards fossil-free transport. Electric vessels have even been envisioned for the Helsinki-Tallinn connection, one of the busiest ferry routes in all of Europe. Speaking of which, heavy-duty & long-distance trucking is also being electrified, creating a new task for ports to provide fast-charging stations (and maybe also incentives, like priority serving, to encourage hauliers to go electric).

The transition of vessels to new propulsion systems will also require ports to develop the related fuel distribution infrastructure. For a long time to come, ships are likely to use several energy sources and fuels side by side, which poses challenges for ensuring fuel availability and distribution. The above changes and requirements will demand not only major investments from ports and their operators but also sufficient space, permits, and new expertise.

Wind energy

When new investments are made in wind power, green hydrogen, battery manufacturing, or other emerging energy sources,



Photo: Arctia

ports in Finland will play a vital role in the logistics and storage chains during both the construction and production phases.

The transition towards more sustainable energy production has meant, for example, a significant increase in wind power. The construction of wind farms in freezing seas, such as the Gulf of Bothnia where several potential projects are underway, requires specific coordination with maritime transport. Extensive offshore wind farms cause changes to the sea areas and shipping lanes. However, winter with its ice dynamics (such as the movement of ice floes) poses the greatest obstacle, which challenges winter navigation (hence working windows for farm erection, maintenance, and decommissioning/upgrading). Not all of the impacts are even known yet.

Also, wind logistics require proper infrastructure – quays with sufficient bearing, large (and clean) storage yards, equipment for taking care of oversized shipments (and personnel who know how to handle that machinery), etc. In short, multi-million investments which, in addition, aren't put on hold (chicken vs egg) by decision-making delays (either on the wind energy farm investor or the public sector's side).

Resilience & security

The COVID-19 pandemic highlighted the vulnerability of global logistics chains, which had been stretched to the near limit. The direct impact on ports, however, ultimately remained fairly limited. Challenges arose, for example, in maintaining regular, profitable liner services, as Finland's foreign trade relies heavily on fixed ferry & ro-ro shipping schedules that combine passenger and cargo traffic on the same vessels to improve service levels. During

the pandemic, passenger traffic nearly came to a complete halt for some time.

In turn, Russia's war of aggression in Ukraine has led to partial rerouting of vessel traffic across the Baltic Sea, due to sanctions. Cargo flows between Finland and Russia have dried up and have been replaced by new trades, largely by sea. Russian transit traffic through Finnish ports has decreased significantly. These changes have had a powerful impact on certain Finnish ports: some cargo groups and volumes have seen sharp declines, while entirely new flows have emerged. In the end, the war has affected maritime cargo traffic more than the pandemic.

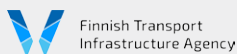
Both the coronavirus and Russia's war in Ukraine have underscored how rapidly situations can change. Concerns – and preparations for them, whether geopolitical, pandemic-related, regarding imbalances in imports and exports, or sudden changes in customs regulations – feature prominently in interviews with port operators.

The importance of resilience and security (including cyber) has grown for all actors. Maritime safety is continually threatened by GNSS disruptions in the Gulf of Finland; hybrid interference has increased, and there have been multiple submarine cable breaks. From a safety and environmental

perspective, concerns have also arisen as, following the cessation of Russian transport by many Western shipping companies, operations in the Baltic have largely shifted to the 'shadow' fleet. Finland works closely with its Danish partners on monitoring, reporting, and intercepting vessels that pose a threat to legitimate shipping, as well as infrastructure and the environment.

The role of ports and maritime transport in the security of supply and military mobility is especially critical in Finland. With the country and Sweden's NATO memberships, international military exercises in Finland have increased, with several ports playing a key role. As part of these exercises, practices for military mobility and operational needs in potential emergency situations have been developed, along with the coordination structures. While this created a new business line for ports, it also added the challenge of having to reconcile the needs of both civilian traffic and military peacetime operations.

Despite these major challenges in the operating environment, maritime transport and logistics have adapted surprisingly quickly to changes. Challenges, however, continue, meaning that operators (in Finland and beyond) will need to tolerate uncertainty going forward. ■



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