Sweden and Lithuania chart the course to zero-emission shipping

by Monika Rogo, *Communication Manager, BPO*

Within the EU-co-funded Blue Supply Chains (BSC) project, the Swedish Umeå and the Lithuanian Kaunas are redefining the future of green shipping. Two ambitious initiatives – Sweden's roadmap for a climate-neutral seaport in Umeå and Lithuania's electrification of the Nemunas River – are setting a new standard for sustainable maritime transport. Both projects demonstrate how innovation, local energy resources, and strategic planning can speed up the transition to zero-emission logistics across Europe.

The Swedish case

The City of Umeå has unveiled a detailed plan to reach climate neutrality by 2040, including the transition to renewable fuels in port and transport operations. Developed by IVL Swedish Environmental Research Institute together with the Port of Umeå, Umeå Energy, Umeå Municipality, and Infrastruktur i Umeå (INAB), the roadmap envisions replacing fossil fuels with locally produced green hydrogen and electro-methanol. Umeå's strategic advantages include access to abundant sources of renewable electricity (hydro & wind), biogenic CO_2 (from district heating) and clean water for hydrogen electrolysis, as well as robust sea & rail transport infrastructure.

Projections show that a large-scale production plant in Umeå Eco Industrial Park could supply up to 110,000 tonnes of e-methanol annually by 2030. The ferry line Wasaline, which plies between Umeå and the Finnish Vaasa, has been identified as a key early adopter. Other players, including SCA through their fleet renewal, will also support the long-term emission cut ambitions. The analysis included three strategic scenarios, with Umeå most likely becoming the export hub for renewable fuels – exceeding initial domestic demand.

The Lithuanian case

Through the Lithuanian Inland Waterways Authority project, Lithuania is set to transform its inland waterway transport by electrifying the Nemunas River corridor between Kaunas and Klaipėda. Backed by EU and national funding, this initiative will eliminate over 48,000 truck journeys per year, significantly cutting CO_2 emissions and congestion. Since 2019, over €27 million has been invested to modernise the E41 waterway, rebuild infrastructure, and enable year-round shipping. Each barge replaces 106 trucks and saves 21 tonnes of CO_2 per trip.

Lithuania will also see its river tonnage & port infrastructure upgraded with six electric pushers, 12 cargo barges, 27 battery containers, and three smart charging hubs – in Klaipėda, Jurbarkas, and Kaunas Marvelė. The country has committed to funding 90% of the grid expansion costs, enabling high-capacity charging (up to 750kW per vessel), and ensuring predictable long-term electricity pricing.

Decarbonisation by design

Both work teams assessed a range of clean propulsion options: battery-electric, methanol, hydrogen, and hybrid systems. In the Swedish case, e-methanol and hydrogen were prioritised for deep-sea and ferry use due to their energy density and decarbonisation potential. Though the latter poses greater infrastructure and safety challenges (a.o., the need for 1,000 bar storage, hydrogen-induced cracking), it's still regarded as part of the long-term agenda.

In the Lithuanian case, battery-electric emerged as the fastest solution to deploy for inland waterways, offering simpler infrastructure and lower operational costs. Push boats with 660kW azimuth propulsion and 3.6-metre elevating wheelhouses are tailored for the Nemunas' unique conditions. Electro-balance modelling, simulations of computational fluid dynamics, and real-world testing have confirmed vessel performance and energy requirements in both regions.


Future vision for the Port of Umeå; photo: Belatchew

Where infrastructure meets climate policy

Both projects emphasise the importance of infrastructure-readiness and regulatory support; in Sweden, for upgrading onshore power (OPS), providing future-fuel bunkering, and integrating carbon capture (operational by 2029), while in Lithuania, for reinforcing port docks, adding cranes for handling those 30-tonne battery containers, and securing fixed-rate electricity contracts. EU rules, like FuelEU Maritime and the inclusion of shipping in its Emissions Trading System, will further drive the adoption of clean fuels, according to the project parties.

What's next

In the Swedish case, in 2027, the rail link between the seaport and the Umeå Eco Industrial Park will be completed; carbon capture operations will be in full swing two years later; in 2030, e-methanol production will kick off; in 2040, full port and municipal climate neutrality will be achieved.

In Lithuania, the public tender and construction of the first e-push boats are scheduled for this year; in 2026-27, the Klaipėda-Jurbarkas-Kaunas Marvelė charging stations will go live; and in 2030, the complete inland waterways fleet will become operational.

From Baltic innovation to global impact

Both roadmaps highlight that early grid and port infrastructure investment is key; that cross-sectoral collaboration improves cost control and roll-out speed; that tailored vessel designs outperform retrofits in green corridors; and that policy clarity and local leadership unlock funding and public support.

As Europe races to meet its climate targets, these two initiatives from Northern Europe prove that zero-emission shipping is not just a future vision — it's already underway. With complementary technologies, integrated energy planning, and strong governance, Lithuania and Sweden are offering scalable models for ports and rivers across the continent. **Click here to access the BSC Umeå-Kaunas roadmaps**. ■

The Baltic and Norwegian cruise markets – report

BPO has published a new insight paper, examining how over 30 cruise ports from across the Baltic, plus Norway's 14 largest, fared in 2024.

The Baltic cruise market has consistently struggled to return to its pre-pandemic levels. Just as the industry was recovering, Russia's war of aggression against Ukraine negatively impacted it. The 2024 market experienced a decrease in both ship calls and passenger numbers. That said, last year was also characterised by more off-season calls vs 2023. Statistics-wise, the ports of Aalborg and Malmö left the Cruise Baltic network, hence the lack of data for them (but the 2025 cohort grew with the Swedish Härnösand).

Conversely, Norwegian ports recorded sustained high cruise traffic in 2024. This could have come at the expense of the Baltic, though. Cruise lines have scratched St. Petersburg from their itineraries, and the Baltic Sea might now come across as a region located too closely to the ongoing war to some operators' tastes. **Contact BPO to get your copy of the report**. ■

BPO lunch debate in Brussels

At the end of May 2025, the European Parliament (EP) hosted the BPO Lunch Debate, an annual meeting that brings together representatives of Baltic ports and EU institutions. We were once again honoured to have Merja Kyllönen, Member of the EP and the Committee on Transport and Tourism (TRAN), as the host of this important event.

The Debate aimed to highlight the challenges that Baltic ports are already facing or will soon have to tackle, as well as to foster dialogue between the region's and European seaports and EU decision-makers. Key topics included the EU Port Strategy, investments in the maritime industry, and financing opportunities.

A big thank you to all the participants for such a constructive and inspiring exchange. We look forward to continuing this vital dialogue for the sake of the Baltic and European ports' future. Special thanks to Merja Kyllönen; Fotini Ioannidou, Director of Waterborne Transport in the Directorate General for Mobility and Transport; Martin Seidel, Advisor to the European Coordinator for the European Maritime Space; Isabelle Ryckbost, Secretary General, European Sea Ports Organisation; Helena Taimisto, Head of MEP Cabinet (APA); Jan Steinkohl, Adviser of the North Sea-Baltic European Coordinator; and Anaëlle Boudry, Senior Policy Advisor, European Community Shipowners' Associations. ■

Photo: BPO

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