

# Baltic Transport

bimonthly-daily companion

## Journal

### REPORT

**Baltic general  
cargo & passenger  
markets in 2020**

### LEGAL

**The challenges  
of disruption-free  
vaccine distribution**

### ECONOMY

**Trade liberalisation  
to the post-COVID  
rescue**

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# The Port of Opportunities

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# Dear Readers,



**W**e're well into the third quarter of 2021, and the coronavirus is still keeping a firm grip on how we function. Vaccination programmes are more or less progressing but so are new variants of the pathogen. There are also news bits that those of us who have already got our jabs may as well ready ourselves for the booster shots. However, feeling once more fatigued for a couple of days is a small price to pay for avoiding getting acquainted with a ventilator. Speaking of COVID-19, we have, onboard this issue, TT Club explaining why distributing vaccines might convincingly be named the world's biggest logistics project (because, sadly, of the problems of theft and fraud, too). The insurer also examines other black swans and, luckily, how one can remain resilient in the face of unforeseen incidents. There's also a corona-read on trade liberalisation and how imposing/lifting restrictions on cross-border commerce can throttle/bolster national economies (depending on your political agenda, I guess). Another one gives an outlook for the European rail sector in the post-corona world.

One paradox of our condition is that change is the only constant. The port industry is part of this never-ending process of problem-solving. As such, it needs to re-invent itself from time to time. The European Sea Ports Organisation (ESPO) and Deloitte have recently painted a new 'portscape,' identifying the trends that will likely shape the industry's pathways to what can be called ports of the future. Please mind the plural, as sea- and inland ports come in different sizes and shapes. You might be a big port handling hundreds of millions of A-to-Z cargoes per year. Or, on the flip side, a small(er) one, mainly busy with your public role of serving domestic passenger traffic between islands and the mainland. You will, nonetheless, have to face common challenges of, among others, digitalising and greening your operations (and helping your clients do so as well). We have dissected the ESPO-Deloitte report for your convenience, putting the spotlight on its key takeaways.

Talking about digitalisation and care for the environment, we have, as always, prepared a few good reads on those topics. These include pieces on how collaboration and the human element will drive widespread digitalisation in ports & shipping; how class and industry can work together to decarbonise shipping; zero-emission fuels (with separate articles on hydrogen and biofuels); decarbonisation through digitalisation; and a stimulating look on how eco-developments in petrochemicals can impact the transport sector.

Inspired by the vocal movement of restoring cargo shipping with modern purpose-built sailing ships, we have decided to extend the Transport miscellany entry from the previous issue and devote the Heritage corner to how Göteborg III got a new life. As I write these words, the replica of the 1738-launched Göteborg I is undergoing sea trials before heading towards the Far East in spring next year. Fair winds and following seas!

Lastly, the Transport miscellany itself, very much concerned with art this time. Oh, and there is also this one peculiar record for all the pessimists reading us, namely, what containers can do for you if the hope of our times, Greta Thunberg, is proven wrong.

Przemysław Myszkowski



Photo: Rawpixel

## Baltic Transport Journal

### Publisher

BALTIC PRESS SP. Z O.O.  
Address: ul. Pułaskiego 8  
81-368 Gdynia, Poland  
office@baltictransportjournal.com

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[www.europeantransportmaps.com](http://www.europeantransportmaps.com)

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### **Baltic Ports Conference, 2/09/21, online, [www.balticportsconference.com](http://www.balticportsconference.com)**

Digitalization and smart solutions for ports and the maritime industry will be the main talking points of the Baltic Ports Organization's (BPO) annual gathering.



### **TOC Europe, 7-9/09/21, NL/Rotterdam + online, [www.tocevents-europe.com/en](http://www.tocevents-europe.com/en)**

With a 40+ year heritage of being the global gateway for shippers, logistics providers, shipping lines, 3PLs, port authorities, terminal operators, and other key stakeholder, TOC Europe is the place to meet everybody who's anybody in today's highly-complex global container supply chain.



### **Smart Ports 4.0 Summit, 29-30/09/21, online, [www.smartportseurope.com](http://www.smartportseurope.com)**

The Smart Ports 4.0 Summit aims to bring the traditional ports and maritime sector towards the digital future by embracing, adopting and deploying already matured as well as new, developing technologies with human capital and corporate identity.



### **WOF EXPO, 6-8/10/21, SK/Bratislava, [wofexpo.com](http://wofexpo.com)**

Experience the first logistics exhibition in Central and Eastern Europe which brings shippers, retailers, wholesalers, importers, and exporters in front of top exhibitors who offer the latest logistics and supply chain solutions. WOF EXPO covers all transport modes and technologies under one umbrella, and shows the importance of CEE which became a powerhouse for key sectors such as automotive, electronics, manufacturing, pharmaceuticals, perishables, aerospace, retail, agribusiness, chemical, FMCG, construction, and energy.



### **ITS World Congress 2021, 11-15/10/21, DE/Hamburg, [itsworldcongress.com](http://itsworldcongress.com)**

The ITS Congress is the most significant event focused on smart mobility and transport digitalisation. The Congress is the yearly celebration of smart mobility, underlining the importance of Intelligent Transport Systems (ITS), particularly in cities and regions hosting it.



### **Multimodal 2021, 19-21/10/21, UK/Birmingham, [www.multimodal.org.uk](http://www.multimodal.org.uk)**

Multimodal 2021 celebrates 14 years of putting shippers, retailers, manufacturers, wholesalers, importers and exporters in front of exhibitors who offer the latest logistics and supply chain solutions.



### **Shipcon 2021, 19/10-5/11/21, online, [shipcon2021.com](http://shipcon2021.com)**

The event will be centred around three main tracks – Sustainability, Digitization & Tech, and Diversity – with a dynamic mix of presentations, workshops, interactive elements, and learning initiatives all designed to engage delegates. During the event's interactive experience Shipathon, young professionals will compete to solve different virtual and Rotterdam live challenges – Sustainable Ports, Sustainable Shipbuilding, and Financing Sustainable Ships – culminating in a live pitch.

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## Tallink & Silja Line:

177,146 ro-ro cargo units carried in H1 2021 (-5% yoy)

While the first quarter brought a decrease of 14.5% year-on-year to 85,156 trucks & trailers transported onboard the company's fleet, the following quarter saw an advance of 6.0% yoy to 91,990 units.

### Tallink & Silja Line's volumes

Cargo units						
Traffic	Q1 2021	Yoy	Q2 2021	Yoy	H1 2021	Yoy
Estonia-Finland	57,595	-11.0%	64,313	+7.9%	121,908	-1.9%
Finland-Sweden	16,950	-17.6%	16,609	-8.2%	33,559	-13.2%
Estonia-Sweden	10,611	-4.2%	11,068	+28.2%	21,679	+10.0%
Latvia-Sweden	–	-100%	–	-100%	–	-100%
<b>Total</b>	<b>85,156</b>	<b>-14.5%</b>	<b>91,990</b>	<b>+6.0%</b>	<b>177,146</b>	<b>-5.0%</b>
Passengers						
Estonia-Finland	201,446	-76.2%	335,753	+4.1%	537,199	-54.1%
Finland-Sweden	56,077	-88.1%	82,192	+52.3%	138,269	-73.6%
Estonia-Sweden	9,701	-93.1%	9,822	+17.8%	19,523	-86.9%
Latvia-Sweden	–	-100%	–	-100%	–	-100%
<b>Total</b>	<b>267,224</b>	<b>-82.9%</b>	<b>427,767</b>	<b>+10.2%</b>	<b>694,991</b>	<b>-64.4%</b>
Pax cars						
Estonia-Finland	67,743	-55.3%	111,505	+18.1%	179,248	-27.1%
Finland-Sweden	7,739	-61.3%	13,805	+99.0%	21,544	-20.0%
Estonia-Sweden	333	-96.2%	403	-55.2%	736	-92.4%
Latvia-Sweden	–	-100%	–	-100%	–	-100%
<b>Total</b>	<b>75,815</b>	<b>-60.2%</b>	<b>125,713</b>	<b>+22.7%</b>	<b>201,528</b>	<b>-31.2%</b>

## Russian seaports:

412.13mt handled in H1 2021 (+0.3% yoy)

Whereas the turnover of liquid bulk contracted by 6% year-on-year to 211.35mt, the handling of dry bulk and general cargo rose by 8% yoy to 200.78mt.

### Russian seaports' volumes (million tonnes)

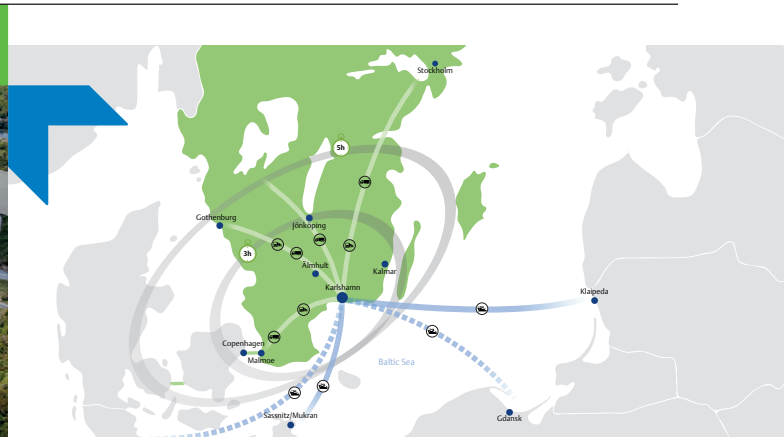
Region	H1 2021	Yoy
Azov-Black Sea	125.55	+2.2%
Baltic	123.54	-3.4%
Far East	113.10	+3.9%
Arctic	46.27	-1.7%
Caspian Sea	3.67	-12.2%

## Northern Sea Route:

12.8mt carried in the Arctic in I-V 2021 (-0.4% yoy)

Shipments of liquefied natural gas (LNG) and gas condensate accounted for 64.5% of the total traffic. Altogether 181 vessels were given permits for navigation across the Northern Sea Route, four more than in January-May 2020. Out of these, 40 permits were granted to foreign-flagged ships (nine more). Last year's cargo traffic on the Northern Sea Route totalled nearly 33mt, of which 18mt were LNG.

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**THE PORT OF KARLSHAMN** is one of Sweden's major ports and is strategically located in the south, facing the "new" Europe. There are plenty of industries and major consumer areas in the surrounding region. Customers all over the south of Sweden and Denmark can be reached from Karlshamn within 3–5 hours. Karlshamn has lots of development areas offering direct access to the port, intermodal rail terminal, E22, Logistics cluster and

environmentally friendly energy. The port, with its business mindset, is constantly developing and expanding. There is ongoing expansion of the RoRo-port with a 3:rd berth and widening of berth no. 2 for 230 m long vessels. Also shore-to-ship power connection, extended line-up areas and more. Large investments are planned for development of the rail infrastructure.



## The Port of Tallinn:

*11.17mt handled in H1 2021 (+9.1% yoy)*

The handling of dry bulk noted the highest increase of 37.8% year-on-year, up to a total of 2.36mt.

### The Port of Tallinn's volumes

	H1 2021	Yoy
<b>Cargo traffic (thousand tonnes)</b>		
Liquid bulk	4,420	-6.3%
Wheeled (ro-ro)	3,219	+20.0%
Dry bulk	2,361	+37.8%
Containerised	926	+4.2%
Break-bulk	242	+3.5%
<b>Total</b>	<b>11,168</b>	<b>+9.1%</b>
<b>Container traffic</b>		
TEUs	109,932	+5.2%
<b>International passenger traffic (thousand travellers)</b>		
Ferry	969	-53.5%
<b>Domestic ferry traffic (thousand)<sup>1</sup></b>		
Passengers	853	+25.3%
Vehicles	455	+29.5%

<sup>1</sup> Operated by the port's subsidiary TS Laevad

## The Port of St. Petersburg: 30.64mt handled in H1 2021 (+2.6% yoy)

The general cargo and dry bulk turnover rose by 3.3% year-on-year and 9.8% yoy, respectively, to 20.85mt and 4.31mt. The handling of liquid bulk contracted by 4.8% yoy to 5.47mt. A total of 1,037,549 TEUs was handled, a decrease of 3.2% on the H1 2020 result. Counting 15 tonnes per one truck/trailer, some 48,439 ro-ro cargo units went through St. Petersburg's quays, up by 36.2% yoy.

## The Port of Turku:

*66,428 trucks & trailers handled in H1 2021 (+3.2% yoy)*

On the whole, the Finnish seaport took care of 1.29mt (-0.2% year-on-year), out of which international traffic amounted to 1.24mt (+0.5% yoy) while domestic – 42.19kt (-16.9% yoy). With 1,555 TEUs, Turku's container traffic shrank by 17.5% yoy. Passenger traffic totted up 356,456 ferry travellers, a decrease of 36.7% on the H1 2020 result.

## New Silk Road: 878k TEUs transported in 2020

The figure is an estimation made by the Roland Berger management consultancy. According to China's National Development and Reform Commission, some 322k TEUs were carried between China and Europe in Q1 2021, a growth of 75% year-on-year. Westbound traffic totted up to 182k TEUs (onboard altogether 1,858 trains), while that in the eastern direction – 140k TEUs (1,540). The Austrian Rail Cargo Group says it doubled the number of containers in its New Silk Road traffic last year, up to 70k TEUs. Metrans, the rail arm of HHLA, noted a more than doubling of its China-Europe container volumes, which in 2020 totalled around 30k TEUs.

## North Sea Port: 34mt of seaborne cargo handled in H1 2021 (+5.1% yoy)

The Dutch-Flemish cross-border port also took care of 29mt of inland waterway freight, up by 1.9% yoy. Out of the total seaborne traffic, the turnover of dry bulk amounted to 17.8mt (+9.6% yoy), followed by 8.7mt of liquid bulk (+/-0% yoy), 4.6mt of break-bulk (-7.7% yoy), 1.7mt of wheeled (ro-ro) cargo (+39% yoy), and 1.2mt of containerised freight (-4.8% yoy).

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## Tallinn's new cruise terminal

The Estonian seaport has opened its brand-new facility, describing it as "the most modern and multifunctional terminal in the region." The Port of Tallinn also said it took numerous steps during construction to ensure the environmental sustainability of the new terminal. Solar panels, designed to suit the Nordic climate, generate energy, while heating comes from a heat pump using sea power. "These decisions allow the facility to operate outside the cruise season – hosting events, concerts, and conferences," said the port's press release. A new promenade has been opened, too, connecting cruise guests from the terminal to the 'culture kilometre,' a direct walkway between the port and numerous historical and leisure areas. "The new terminal makes the capital of Estonia, and all the city has to offer, more accessible – the aim is that all tourists leave with a safe and unforgettable travel experience and that cruise lines are able to reduce their environmental footprint by using environmentally friendly port facilities," the Port of Tallinn added.

## Crystal Endeavor gets her name in Stralsund

Crystal Expedition Cruises' latest Polar class cruise vessel, the first of its kind constructed in Germany, has been named in MV WERFTEN's shipyard in Stralsund. Up to 200 guests will find room onboard the GT 20,200 ship's 100 well-appointed all-verandah, all-butler serviced suites. *Crystal Endeavor* is equipped with dynamic positioning, enabling the ship to remain in one place utilising GPS and its thrusters rather than dropping anchor, thus avoiding any potential damage to delicate reefs. The ship can also connect to shore power supply and has several water treatment systems and a selective catalytic reduction system to minimise the emissions of nitrogen oxides.

## PCC Intermodal buys new locomotives

First, the company has bought four Alstom Traxx MS3 multisystem locos (the contract also covers training of PCC Intermodal personnel, the provision of full maintenance service, and an option for an additional locomotive). The four-axle locomotives are expected to enter the company's cross-border traffic (Poland, Germany, Austria, Czechia, and Slovakia) by end-2022. Next, the rail haulier has ordered electric locomotives from PESA. The Polish manufacturer will deliver three 111E Gama units, which will serve PCC's intra-Poland container traffic to and from the ports of Gdańsk and Gdynia. The new machinery is expected to come online by summer 2022.

## Göteborg port-Castellum JV to develop Halvorsäng

The port authority and the property company have signed a letter of intent to create a 50/50 business tasked with the development of the Halvorsäng area into a logistics hub. The partnership aims to facilitate planning, development, and construction at Halvorsäng, an approximately 270k m<sup>2</sup>-big plot, with 155k m<sup>2</sup> reserved for building space. The area lies north of the Port of Göteborg's container terminal and the adjacent oil depot, next to the Hisingsleden bypass. The parties expect to kick off construction works this autumn, with commissioning planned after four years. Castellum's initial investment will involve acquiring a 50% interest in the land at an estimated cost of around SEK400-450m (about €39.5-44.5m), with a further development investment of SEK550m (€54.3m).



The Port of Turku offers a competitive solution for import and export transports of trade and industry. Fast and high-frequency ship traffic both to Scandinavia and Germany and direct connection to ocean lines add flexibility to transport schedules and strengthen the delivery performance of companies. Thanks to the good and congestion-free road connections to and from the Port, time is saved also in Finland. In addition to a beneficial location, the Port offers its customers modern and efficient basic services ranging from load handling to warehousing. The strong overall concept makes the Port of Turku a reliable link in the supply chain of even the most demanding products.

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## Södertälje's brand-new LHM 420 – and Liebherr's very first to run on fossil-free, renewable diesel

The Swedish port has taken hold of the 124t of lifting capacity mobile harbour crane and will use it to handle containers and project cargo. The machinery has various assistance systems on board, including Liebherr's Vertical Line Finder, Teach-In, and Advanced Container Control. In addition, due to the port's proximity to the city, noise insulation has been installed. The Port of Södertälje's LHM 420 will run on the HVO100 renewable diesel made from hydrotreated vegetable oil or organic fats. The Swedish seaport has been using HVO100 to run its vehicles, machinery, and cranes since 2016. According to the port authority, Södertälje is the first port in Sweden that switched to fossil-free fuels. However, the crane will use its diesel engine to move around the terminal only. Once in position, Södertälje's LHM 420 will use the electric motor for cargo handling operations (up to 30% of the electricity consumed by the port comes from its photovoltaic system).

## Scanlog to take care of transportation for Europe's first battery gigafactory

The Swedish logistics company will handle transports for Northvolt Ett, a lithium-ion battery production site under construction in Skellefteå in northern Sweden. Scanlog will, among others, increase its organisation in Gothenburg to manage the maritime part of the multi-year deal. Large-scale manufacturing at Northvolt's facility is to commence this year. Annual capacity will ramp up to at least 32 GWh by 2024, with the potential to expand to 40 GWh.

## The Baltic Future Port project kicks off in Lübeck

The Lübeck Port Authority (LPA), together with eight partners, will work on digitalising port operations by establishing a 5G network. The German Federal Ministry of Transport and Digital Infrastructure has granted the LPA €3.9m to furnish the Skandinavienkai and Seelandkai harbours with the latest generation technology for broadband cellular networks. The overarching aim of the Baltic Future Port project is providing real-time communication, thanks to which ro-ro operations will become more efficient, hence the overall handling capacity will increase. The initiative will run till end-2023.

## Another order for Cavotec's next-gen vacuum mooring system

The Norwegian ferry operator Fjord 1 has requested two MoorMaster NxGs, which its newbuild zero-emission ferry will use while sailing between Søsnes and Åfarnes in western Norway. Once installed and commissioned in 2023, the automated vacuum pads will moor and release the ship 54 times per day. In addition, the parties have signed a long-term service agreement for existing MoorMaster vacuum mooring systems and e-vessel charging units from Cavotec. The three-year deal covers some 70 assets.

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## Sea trials of Gazprom Neft's LNG bunkering vessel – completed

The company has checked *Dmitry Mendeleev's* primary propulsion system, the functioning of the navigation equipment, and control systems. Further tests will check the ship's storage and load-/unloading systems. The 100 m-long and 19 m-wide *Dmitry Mendeleev* will offer 5,800 m<sup>3</sup> of storage capacity. The vessel has the Arc4 ice-class, meaning she can sail independently through 80 cm-thick ice. *Dmitry Mendeleev* will join Gazprom Neft's fleet in the second half of 2021, providing bunkering services in the Baltic Sea (chiefly to *Marshal Rokossovsky*, Rosmorport's dual-fuel ro-ro that connects the ports of Ust-Luga and Baltiysk). The ship's digital system makes it possible to control *Dmitry Mendeleev* by a single crew member directly from the navigation bridge.



Photo: Gazprom Neft

## Norsepower will fit Vale's VLOC charter with rotor sails

The auxiliary wind propulsion system for the 325k dwt ore carrier, owned by Pan Ocean Ship Management, will comprise five 24 m-high, 4.0 m in diameter, and tiltable rotors. "Norsepower has analysed the routes for the vessel chartered by Vale and estimates that its technology would be able to achieve an efficiency gain of up to 8% and a consequent reduction of up to 3,400 tonnes of CO<sub>2</sub> per year," the Finnish tech company stated in a press release. Vale's charter will be the first dry bulk carrier to be equipped with Norsepower's solution.

## Longer trains tested in Sweden

An 835 m-long container train set has crossed the Öresund/Øresund Bridge, connecting the German Maschen with the Swedish Malmö via Denmark. Apart from the northern Ore Line, where trains are 750 m in length, the standard set on the Swedish trunk network is 630 m-long, making it possible to carry up to 41 forty five-foot containers. An 835 m-long train can be loaded with 55 units.



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## Equinor chooses Łeba as its offshore wind energy O&M port

The Norwegian state-owned multinational energy company has acquired a site at the Polish Port of Łeba to serve as the operations and maintenance (O&M) base for offshore wind projects it is developing together with Polenergia. Equinor will construct, own, and operate the base, which will support the Bałtyk I, Bałtyk II, and Bałtyk III investments. Poland's Energy Regulatory Office has recently awarded contracts for difference to the Equinor and Polenergia's Bałtyk II and Bałtyk III 50:50 joint ventures (1,440 MW of combined potential capacity; Bałtyk I, 1,560 MW, follows a different timeline). Equinor is the projects' operator through the development, construction, and operations phases. Construction of the wind farms infrastructure could begin as soon as 2024.

## Ørsted-Port of Gdynia letter of intent

The Danish energy company and the Polish seaport have teamed up to work on remotely piloted & autonomous systems (vehicles, drones), robotics, as well as to develop Poland's offshore wind industry. The signatories plan to share knowledge, develop business cases, engage in research & development, and form applications for EU co-funded projects. Ørsted and the Polish state-owned PGE intend to install some 2.5 GW of capacity in the Baltic Sea. In total, Poland plans to have 8-11 GW of energy supply coming from offshore wind farms by 2040.

## Europe's strongest OPS for cruise ships comes online



Photo: Rostock Port

The 20 MVA onshore power supply (OPS) facility, located in Rostock-Warnemünde and completed in the summer of 2020, was used for the first time on 10 May. The setup makes it possible for two cruisers to concurrently draw electricity at the port's berths P7 and P8. The OPS is of modular design, with the components stacked inside twenty-foot containers. The installation includes an integrated frequency converter to transform shore electricity to accommodate all standard global shipboard power supply systems (with both 50 and 60 Hz). The Rostock-Warnemünde OPS is a result of a 2018-initiated co-op between the Hanseatic and University City of Rostock, the federal state of Mecklenburg-Vorpommern, Rostock Port, and AIDA Cruises.

## Intermodal traffic in Port of Trelleborg - continued great success for sustainable transports



Port of Trelleborg, with the ambition of being the Baltic Sea's climate-smartest port, is constantly working on various improvement measures within environment and sustainability. The port has worked for a larger proportion of trailers and containers to choose the train to and from Trelleborg, a work that in 2020 had a fantastic development with an increase of 72% compared with the previous year, which means that almost 27,000 trailers have traveled to or from Port of Trelleborg by rail. In 2021 the forecast is 38,000 and in 2029 50,000. The port's unique logistical location, where Europe meets Scandinavia, and with the possibility of combining the transport modes shipping, rail and road, is a success factor.

[www.portoftrelleborg.se](http://www.portoftrelleborg.se)





## Containerships' new Poland-Lithuania-England service

The company has combined two previously separate services to introduce BALT 7 that links the ports of Gdynia, Klaipėda, Teesport, and Tilbury. The weekly rotation, served by the 1,380 TEUs of capacity *Containerships Stellar* and *Containerships Nord*, departs from Gdynia towards Klaipėda, goes back to Poland and then heads to England's east coast. "This service is designed to ensure increased supply of empty containers into Poland to meet the growing demand of the market," the company underlined in a press release.

## CargoBeamer and Duisport launch a new combined rail service between Germany and Poland

The new link, suitable for semi-trailers (P400, frigo) and containers (incl. with dangerous goods), connects Duisburg and Poznań from the beginning of June. The connection offers three weekly round trips.

## New container rail service Poland-Slovenia

Loconi and Baltic Rail, with the support of the Port of Koper and the Baltic Container Terminal Gdynia, have combined their services to offer a single ticket rail route between the ports of Gdynia and Koper. Loconi operates a service between Gdynia and Wrocław in southwestern Poland (five weekly runs), while Baltic Rail – between Wrocław and Koper (three-to-five/week). The two have joined their offer, including train transloading, with the second journey optimised to ensure cut-off for the target sailing.

## TX Logistik upgrades its Germany-Sweden rail service

Starting from 5 July, the company's trains travel between Kaldenkirchen and Malmö five times per week instead of three. The open service offers the capacity of up to 38 trailers per train. In mid-June, TX Logistik received permission from the Danish authorities to use the 18 km-long Great Belt Bridge again after it had generally been closed to all transports of trailers in pocket wagons from January.

## New Poland-UK rail-sea link

PKP CARGO CONNECT, Duisburg Agency, and Samskip have partnered to offer a biweekly service that connects Gliwice in the south of Poland with Hull and Tilbury via Duisburg and Amsterdam. PKP CARGO CONNECT's trains run to Duisburg from which Samskip offers a rail connection to the Port of Amsterdam and then sea shipping services to the ports of Hull (part of Associated British Ports) and Tilbury (Forth Ports). The train sets consist of 40 containers.

# LÜBECK BALTIC SEA POOLING POINT



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Shaping Baltic Shipments





## **From China to Finland – by rail**

FESCO Transportation Group, RZD Logistics, and Nurminen Logistics have set up Finland Bridge, a sea-rail service that connects several Chinese ports with the Finnish Vuosaari. FESCO is responsible for the sea leg between the ports of Shanghai, Ningbo, Qingdao and Vladivostok; RZD Logistics for rail haulage over the Trans-Siberian Railway to Helsinki's Vuosaari, while Nurminen Logistics for cargo operations in Finland and farther throughout Scandinavia. The first west-bound trip, 62 forty-foot containers in total, took 25 days. The parties intend to run three/four round trips per month over the Finland Bridge.

## **Wilhelmshaven joins the New Silk Road**

DB Cargo and Hefei International Land Port (HILP) have partnered to establish a direct container rail route between Hefei and JadeWeserPort. The first train set departed on 25 June and arrived in Germany on 17 July. It carried 100 TEUs mainly loaded with household appliances, textiles, and electrical goods. HILP and Container Terminal Wilhelmshaven JadeWeserPort-Marketing (JWPM) have signed a strategic cooperation agreement while JWPM, China Logistics, and the Anhui Provincial Port & Shipping Group a memorandum of understanding, both aimed at turning the Hefei-Wilhelmshaven route into a regular service.

## **Hupac eyes a Europe-China service for liquids**

The company has partnered with VTG, which provides tank containers, to carry non-dangerous liquid goods from Europe (Ludwigshafen and Warsaw at this moment) to Lanzhou. In addition, Hupac has teamed up with the Chinese e-commerce platform Factoryhood.com, where customers can book service space for their orders. "The intention is to make this a regular service. Every product sent needs a 'non-dangerous goods' certificate and a shipping permit before it can be shipped to China. This is a long, bureaucratic process. Acquiring the shipping permit can take between four to six weeks. But this is something we are currently working on with China," Alberto Grisone, Hupac's Director of Development Russia & CIS Countries, explained.

## **New Poland-China container rail service**

PKP CARGO CONNECT and Cargo Partner have teamed up to offer a new route that links Schavemaker's terminal in Kąty Wrocławskie (southwestern Poland) with Xi'an, Zhengzhou, Qingdao, Chongqing, and Chengdu. Trains will travel via Małaszewicze on the Polish-Belarusian border three times per week, each carrying 42 containers. The service's transit time amounts to 14-18 days.

## **PKP CARGO CONNECT trails a new rail & road service from China to Czechia via Poland**

The Polish company is testing a new connection that sources shipments from the Chinese Chengdu, Xi'an, Chongqing, and Zhengzhou to its terminal in Małaszewicze on Poland's border with Belarus. Next, a 600 m-long, 42 container-big train is dispatched further to the company's facility in Gliwice in south Poland, where trucks get loaded for the final door-to-door delivery to a client in Czechia. The transit time from China to Czechia amounts to 17-20 days. All possible goods head westwards, while wood goes in the opposite direction.

## **RTSB builds a China-UK rail-sea network via Kaliningrad**

The company has put in place a combined service that links Chengdu with Felixstowe via the Port of Kaliningrad. The test run took place on 25 April when a freight train set left China and arrived in the Russian Baltic seaport after 11 days. The cargo was then loaded onto RTSB's *Anja*, calling Hutchison Ports' Felixstowe four days later. "This multimodal service not only eases customs procedures for shipments from China by bypassing the European economic area, thus avoiding additional declaration and controls in Europe. It also proves to be faster than other transport options between China and the UK. Intermodal rail connections generally offer lead times between 18 and 22 days," Elena Schmidt von Hülst, RTSB's Marketing Director, highlighted. The company has already been operating another rail-sea service from China to England: the Xi'an-Immingham route, with plans to add Tilbury to its network this summer. The company operates three vessels that depart six to eight times a month from Kaliningrad to England. Schmidt von Hülst underlined in this regard, "There are no fixed departure days; the vessels are exclusively allocated to our multimodal services between China and Europe and scheduled according to train arrivals."

## **Cargo Centre Graz receives its first container train from China**

On 21 June, the Austrian Rail Cargo Group brought the first set to the facility that lies south of the Alps. The train carried 41 forty-foot boxes loaded with non-food products ordered by a European retail group.

## **From Spain to China – by rail**

Maersk and RTSB have organised a truck & train shipment from Cartagena to Nansha near Shenzhen. The load, 37 forty-foot containers, was first transported by road from Cartagena to Madrid. The container train headed eastbound via Duisburg, leaving the EU through the border crossing in Poland's Małaszewicze and reaching Nansha via Hefei. The transit time amounted to 32 days.

## **From Xuzhou to the Port of Hamburg – by rail**

After carrying several test runs since November 2020, the container rail service, organised by Xuzhou-Europe Railway Express, has become regular, with two trips per month. In China, the block train is formed at two destinations: the Tongshan rail freight terminal and the Huaihai International Land Port. The train set covers the route in 18 days, using the border crossing in Erenhot and going via Mongolia, Russia, Belarus, and Poland.

## **New China-to-Europe route in FELB's portfolio**

The subsidiary of Russian Railways has launched a container rail service from Jinan to Frankfurt, with the help of RZD Business Asset, Shandong Hi-Speed Qilu Eurasia Railway Logistics, Infraser Logistics, and Contargo. The first train was dispatched from the Jinan Dongjiazhen station on 12 March and arrived on schedule at Contargo Industriepark Frankfurt-Höchst on 4 April. The service crosses the Zabaysk/Manzhouli and Brest/Małaszewicze borders.



## New China-Hungary container rail service

The Austrian Rail Cargo Group has put in place a new route that connects the Chinese Ganzhou with Budapest in a journey that takes 15-18 days. On their way, the trains cross the Alashankou/Dostyk Chinese-Kazakh and the Chop/Zahony Ukrainian-Hungarian borders. The new service is a once per week round trip.



Photo: Rail Cargo Group

## MSC launches its sea-rail New Silk Road service

The company has started offering an intermodal solution that routes cargo from a number of Chinese, Korean, and Japanese ports to the Russian ones in Vladivostok and Vostochniy and then dispatches it by rail to St. Petersburg. The service covers the Far East seaports of Yokohama, Busan, Ningbo, Shanghai, and Qingdao. Transit time to St. Petersburg ranges from 32 days for goods coming from Qingdao to 19 from Busan. The rail leg takes 13 days. From St. Petersburg, MSC offers feeder connections to North Sea ports of Bremerhaven, Antwerp, Rotterdam, and Le Havre.

A mosaic-style portrait of Marco Polo, a man with a beard and a turban, looking slightly to the right. The background is a textured, golden-yellow mosaic. Overlaid on the left side of the portrait is the text "THE BEST MAP OF THE NEW SILK ROAD!" in large, bold, yellow capital letters with a blue outline. Below this text, in smaller white capital letters, is "MARCO POLO". At the bottom left, there is a white rectangular box containing the text: "\* NOT A REAL QUOTE (BUT WOULD BE IF MARCO POLO WAS HERE WITH US - SCAN THE QR CODE AND CHECK FOR YOURSELF!)". At the bottom right, there is a QR code.





**Baltic Transport** bimonthly-daily companion  
Journal





## European Partnerships – launched

The European Commission has signed memoranda of understanding, setting in motion 11 European Partnerships tasked with boosting investment in research & innovation for the EU to deliver on the European Green Deal. The Partnerships, which will run from this year to 2030, will receive €8b from Horizon Europe. The total commitment from private partners and the EU Member States amounts to around €22b. Two initiatives directly target the transportation sector: the European Partnership Towards Zero-Emission Road Transport (2Zero) and the European Partnership For Zero-Emission Waterborne Transport. The latter aims for the EU to lead and accelerate maritime and inland waterborne transport transformation to eliminate all harmful environmental emissions (incl. greenhouse gas, air and water pollutants) through innovative technologies and operation (e.g., sustainable fuels, high-performance batteries, and Artificial Intelligence tools). The 11 European Partnerships are different from the so-called institutionalised European Partnerships. With an investment of nearly €10b, which the partners will match with at least an equivalent amount, they too aim to speed up the transition towards a green, climate-neutral, and digital Europe.

## Biofuels and hydrogen as a marine fuel – guidance from ABS

The American Bureau of Shipping (ABS) has added two publications to its **Sustainability Whitepapers** series (already covering liquefied natural gas, methanol, and ammonia, along with the three-part *Low Carbon Shipping Outlook* set). The **Sustainability Whitepaper: Biofuels as Marine Fuel** gives an overview of the various types of marine liquid biofuels that are 'drop-in' options for replacing conventional fuels in both the near- and long-term and their potential to contribute to industry decarbonisation goals. "Biofuels have been identified as highly promising carbon-neutral fuels that can enter the global market relatively quickly and help approach the IMO GHG reduction targets for 2030 and beyond. Being produced from renewable biomass, biofuels have the potential to offset the carbon emissions of a vessel due to the CO<sub>2</sub> absorption of the feedstock, which can help counterbalance the combustion emissions. However, the total carbon reduction potential of different biofuels clearly depends on a range of factors related to their value chain," Georgios Plevrakis, ABS Director, Global Sustainability, said. Next, the **Sustainability Whitepaper: Hydrogen as Marine Fuel** explores the gas' potential to reduce shipping emissions (both papers consider the safety aspect, vessel design implications, and regulatory challenges). The report also details industry projects utilising hydrogen and ABS' support for its development and considers the projected role for hydrogen in the maritime industry and beyond. "While hydrogen appears to be an ideal fuel for power generation, it carries various challenges of advanced storage requirements and fire hazard mitigation. To become a competitive alternative marine fuel, hydrogen may also face the challenges of availability and high costs to scale production and transportation infrastructure. Hydrogen is characterised by having a very low tank-to-wake emissions impact, which considers the emissions produced by an energy source. However, the life cycle of hydrogen production must be considered to evaluate the overall emissions of GHG from hydrogen," Plevrakis underlined. Meanwhile, a consortium led by ABS, together with CE Delft and Arcsilea, will carry out six studies on alternative fuels and decarbonisation technologies. The four-year project will study critical aspects of shipping decarbonisation such as biofuels, ammonia, hydrogen, wind-assisted propulsion, air lubrication, and other promising technologies. The initiative is part of the European Maritime Safety Agency's mission to provide technical assistance to the European Commission and the EU Member States in promoting sustainable shipping and supporting the shift to low- and zero-carbon operations. Plevrakis commented, "ABS understands that no one company has the solution to shipping's decarbonisation challenge and only by working together will the industry meet our sustainability ambitions. That is why we are engaged in projects all over the world with leading industry players to develop practical solutions and support their safe adoption by the industry."



Photo: Arizona State University

## EIB to change its transport lending priorities

The European Investment Bank (EIB) wants to engage with a broad range of stakeholders (incl. industry associations, civil society, and the private sector) to review its strategy, the first public consultation on the EIB's transport sector lending policy since 2011. "Transport needs to go green as fast as possible. Sectors like construction, electricity generation, and agriculture now emit much less than they did in 1990, while transport emissions have increased by 33%. We need to act boldly to accelerate the transition to sustainable and more resilient transportation," Kris Peeters, EIB's Vice-President responsible for transport, urged. **The EIB has prepared a consultation document and questions to guide and inspire the discussion and solicit stakeholder views.** The deadline for submitting contributions is 29 October 2021. An online public consultation meeting will be organised on 14 October for stakeholders to engage with the EIB staff directly. The draft revised Transport Lending Policy will be published and presented to the public and the Bank's governing bodies in Q1 2022. The EIB says that already two-thirds of its transport support goes to sustainable transportation and mobility. Still, it wants this share to increase further in line with the **EIB Group Climate Bank Roadmap 2021-2025** released in December 2020.

## ESBJERG-ATOS GREEN LOGISTICS PARTNERSHIP

• The Danish seaport and the IT company are working on a solution to calculate the carbon footprint of individual routes and specific modes of transport. The Port of Esbjerg and Atos expect customers will enter relevant data into the system, such as departure location, final destination

and type of goods, and will then be provided with an overview of the most optimal routes. Customers will be able to pick the routes with the lowest environmental impact while, according to the parties, also achieving a financial gain through lower excise duties. •

## AUTONOMOUS TRUCKS GO ONLINE AT CSP ABU DHABI

• The container terminal of COSCO Shipping Ports, operating within Abu Dhabi Ports' Khalifa, has put in place six electric Q-Trucks for supporting yard operations. The machinery produced by Qomolo, a sub-brand of ShangHai Westwell-Lab Technology Company, is equipped with a 360-degree sensory system with a traffic monitoring and driving guidance system that enables

operators to direct the vehicles' navigation and transportation of standard and refrigerated containers. The 80t of maximum load Q-Trucks run on a 281 kWh battery and have an operating range of 200 km/44 hours. The vehicles' electrical systems feature a temperature control system that extends battery life in extreme weather. •

## GOTHENBURG TO HOUSE THE NORDICS' FIRST FUTURE FUELS STATION

• The open-access facility, which the Norwegian Circle K will run, will provide heavy-duty vehicles with charging points and hydrogen gas and bio-based liquid fuel pumps. The station, located at Vädermotet, will

start in 2022 by offering ten charging points, with a maximum power capacity of 350 kW-1.0 MW (when fully developed). The 720 kg (15 trucks/day) of capacity hydrogen gas pump will be put in place in 2023/24. •

## HIRTSHALS EYES BECOMING A GREEN HYDROGEN HUB

• The Danish seaport has signed a memorandum of understanding with the Norwegian Gen2 Energy to produce green hydrogen locally and take care of imports from Norway. The agreement also covers the

set-up of a container factory in Hirtshals for exporting hydrogen, thus demonstrating the security of supply. The parties intend to use electricity generated by wind farms to produce hydrogen. •

## FORSEA'S TYCHO BRAHE TO BE FITTED WITH THE WORLD'S LARGEST BATTERY PACK

• With the help of ABB, the Helsingborg-based ferry line will increase the ship's battery capacity from 4,160 to 6,400 kWh. The upgrade has started in May and will be completed later in 2021. Together with her sister ship *Aurora*, *Tycho Brahe* has been e-sailing between the Danish Helsingør and the Swedish Helsingborg since autumn 2018. According to the company, this has led to a CO<sub>2</sub> reduction of 37kt. ForSea underlines that it only uses certified green electricity.

"Since the start, ForSea has proven that battery-powered operations are possible on a ferry route like ForSea's. [...] one of our vessels – *Aurora* – already sails up to 46 departures per day on 99% electric power. Following the upgrade onboard *Tycho Brahe*, at full operation, both vessels will achieve a total reduction of carbon dioxide in ForSea's fleet by 65%, a total of 23,000 tonnes," Kristian Durhuus, ForSea's CEO, said. •

## STENA LINE TESTS BLUE METHANOL

• Within the EU backed FReSMe project, the Swedish ferry company has run its *Stena Germanica* (sailing on methanol since mid-2015) on recycled methanol coming from the country's steel industry. The blue

methanol used by Stena Line in the trial bunkering was produced from carbon dioxide recovered from the blast furnace gases from SSAB's steel production in Luleå (another partner of the FReSMe project). •

## ORLEN LAUNCHES HYDROGEN EAGLE

• The Polish state-owned oil refiner and petrol retailer has announced it will create a production & distribution chain of low- and zero-emission hydrogen throughout Central Europe. The company intends to build six plants: three in Poland, two in Czechia, and one in Slovakia, with a total production capacity of 50kt by 2030. These electrolysis facilities, 250 MW combined, will be powered by renewable energy sources: solar and wind, including from Orlen and Northland Power's Baltic Power offshore farm (construction works on the potentially 1.2 GW-strong project will start in 2023).

The company also plans to erect hydrogen refuelling stations (for individual, public, and cargo transportation needs): 54, 26, and 22 in Poland, Slovakia, and Czechia, respectively. Orlen already operates pilot hydrogen refuelling points at its service stations in Wolfsburg and Müllheim in Germany. With the target total production capacity of over 1,000 kg per hour, the company is building three automotive-grade hydrogen production plants in Poland. In addition, Orlen wants to build three plants for converting municipal waste into low-emission hydrogen: two in Poland and one in Czechia. •





## WORLD'S FIRST FULLY ELECTRIC HIGH-SPEED CRAFT

• Partners in the Transport – Advanced and Modular (TrAM) project have announced that the construction works on the passenger ferry *Medstraum* have begun in the Norwegian shipyard Fjellstrand. The 31 m-long and nine-metre-wide catamaran will have two electric motors and a 1.5 MWh-big battery pack (with 2.0 MW of charging power). Having a capacity for up to 150 passengers and designed for a service speed of 23 knots, the ship will begin trial crossings between Stavanger and

surrounding communities and islands in spring 2022 to test and validate the project findings. According to TrAM, *Medstraum* will be the world's first all-electric and zero-emission fast ferry classed under the International Code of Safety for High-Speed Crafts (HSC Code). *Medstraum's* hull and superstructure will be made from aluminium. The project aims to lower production costs and engineering hours for fast electric ferries by 25% and 70%, respectively, using advanced modularisation. •

## VORDINGBORG TO HOUSE A GREEN BIOFUEL FACTORY

• Vordingborg Biofuel has announced its DKK2.0b (approx. €270m) plans to erect a renewables-powered biomethanol and e-methanol production plant in the Danish Port of Vordingborg. The company will use straws from wheat grain fields, pressed into briquettes, to make the fuel. During a biofermentation process, the briquettes will be converted partly into biogas and partly into biofertiliser (the

latter for use in agriculture). The biogas will then be converted to liquid biomethanol using surplus power from renewable energy sources. Estimates speak of a 300kt/year production capacity. According to expectations, the construction period will provide some 1,200 person-years of work. Once operational (in 2024), the plant will offer 25 permanent positions. •

## STUDY ON MAKING BORNHOLM A NEXT-GEN FUELS BUNKERING HUB

• The Bornholm Bunker Hub consortium will investigate the potential of establishing a green maritime fuel bunkering station on the Danish island. The consortium's founding parties (Ørsted, Molslinjen, Haldor Topsøe, Bunker Holding Group, Wärtsilä, Rambøll, Bureau Veritas, and the Port of Rønne) will carry out a feasibility study to set out the financial

potential for supplying sustainable fuels, produced using offshore wind energy in the Baltic Sea. The project will investigate how local Power-to-X can support the need for sustainable fuels for the more than 60k ships that pass Bornholm every year. The project will also answer whether it is appropriate to produce green ammonia locally or if it should be imported. •

## FURETANK'S FURE VINGA GETS BUREAU VERITAS' SMART NOTATION

• For the first time in the classification society's history, it has awarded a vessel a full suite of smart ship notations. The *Fure Vinga* tanker, designed by FKAB and built by China Merchants Jinling Shipyard (Yangzhou) Dingheng, has been equipped with smart systems for monitoring the ship's hull condition (H) as well as integrated machinery (M) and navigation (N) systems. Furetank's ship has optimised hull lines, a dual-fuel engine that can run on liquefied natural gas and liquid biogas, a battery pack for hybrid operations, and is fitted with a ducted propeller. The vessel's computer systems incorporate smart functions for the collection, transmission, analysis,

and visualisation of data to support the crew with informed decision-making to enhance safety and optimise operations and maintenance. The vessel complies with all tier one requirements included in Bureau Veritas' Rule Note Additional Service Feature SMART (NR675); hence it was granted the SMART (H1, M1, N1) notation. "The associated requirements have been specifically developed to set a benchmark for the safe and reliable design and operation of smart systems on board ships, covering both hardware and software, and includes extensive on-board system and integration testing," the classification society wrote in a press release. •

## CONDUCTIVE CHARGING TO BE TESTED IN HELSINGBORG

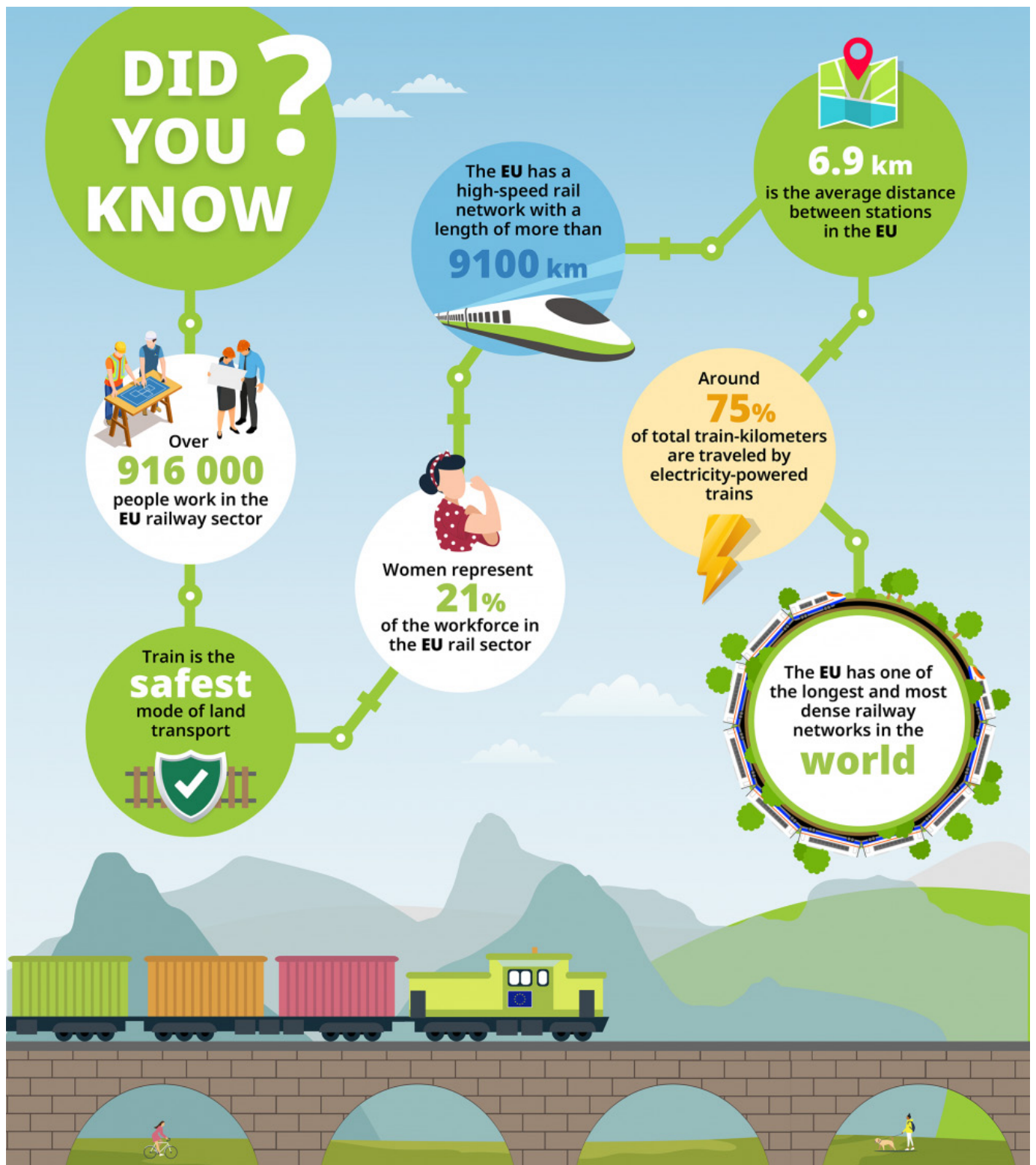
• The Swedish seaport has partnered with the also Swedish Elonroad to test a new electric road system. The solution will see the port's two e-vehicles charged from a power strip in the road, whether they are parked or on the move. Testing will begin this autumn. The power strips, approximately ten metres long, are glued to the asphalt and connected to a power source. The cars will have sliding contacts that automatically fold down to touch both the positive and negative terminals to transfer

the energy and charge the vehicle. According to the parties, conductive charging can transfer high power, up to 300kW per vehicle, with 97.5% efficiency. The municipal energy company Öresundskraft is also involved in the project, wanting to gain insights into the new technology and how electrifying the transport sector will impact the energy system. The domestic transport sector, primarily using fossil fuels, accounts for about one-third of Sweden's greenhouse gas emissions. •

## MERIAURA EYES DEVELOPING A CARBON-NEUTRAL DOMESTIC TRAFFIC VESSEL

• The Finnish Turku-based shipowner wants to create a hybrid ship to serve lake, canal, and sea feeder traffic, at the same time being 100% climate-neutral thanks to sailing on sustainably produced bio-oil and electricity stored in batteries. Once constructed, the vessel will be tested

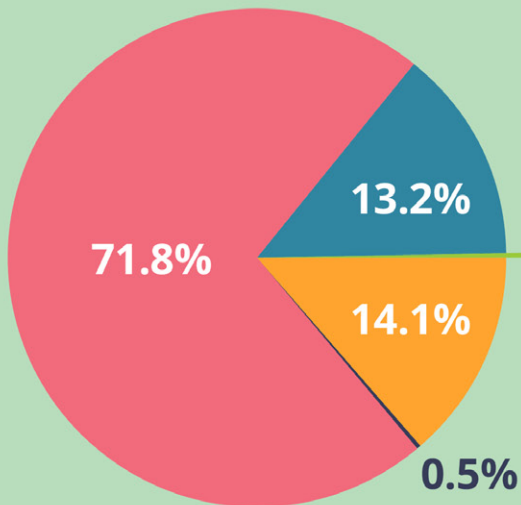
in Lake Saimaa. The Saimaa canal locks are being extended, and the size of the new concept vessel corresponds to the new Saimax dimensions (93 m-long ships carrying up to 3,500t vs the current 82.5 m). The canal is the only water connection between the lake and the Gulf of Finland. •







#EUYearofRail

EUROPEAN YEAR  
OF RAIL 2021

## RAIL IS SUSTAINABLE

Greenhouse gas emissions  
from transport (EU-27, 2018):

RAIL TRANSPORT

0.4%

Road transport

Civil aviation  
(including international)Waterborne transport  
(including international)

Other

Source: Statistical Pocketbook 2020

## RAIL IS SAFE

#EUYearofRail

Fatalities per billion passengers/km (2011-2015):



POWERED TWO WHEELERS 38



2.7 CAR OCCUPANTS



0.23 BUS/COACH PASSENGERS



0.1 RAILWAY PASSENGERS



0.06 AIRLINE PASSENGERS

0 5 10 15 20 25 30 35 40

Source: 6th Report on monitoring development of the rail market 2019

EUROPEAN YEAR  
OF RAIL 2021

# Trade liberalisation to the post-COVID rescue

by Ewa Kochańska

***Protectionism in Maritime Economies Study*** from the International Chamber of Shipping (ICS) examines the relationship between restrictive maritime trade policies and economic growth. In its results, the study discusses the benefits countries would reap, such as a 3.4% increase in GDP, if protectionist policies in trade were to be reduced or dismissed. The analysis illustrates how in the age of trade wars among the most powerful nations, together with disruptors like Brexit, COVID-19, and unexpected political outcomes, protectionism, anti-trade rhetoric, and misguided nationalism can easily become weapons of self-harm.

**W**hile the COVID-19 pandemic has been detrimental to most industries, seaborne trade faces additional roadblocks on the way to full recovery. A significant barrier in shipping is that governments' commitments on maritime services are not codified by the World Trade Organisation's General Agreement on Trade in Services (**WTO GATS**). Therefore, shipping is more susceptible than other industries to governmental protectionism and restrictions, slowing down economic progress.

According to many experts, the WTO's maintenance of trade liberalisation process after the financial crisis of 2008 played a vital role in the recovery of the global economy. For that reason, ICS hopes that this study will encourage "a serious discussion about resuming the WTO GATS negotiations with a particular focus on concluding a multilateral agreement on maritime transport services."

Throughout the study, the authors emphasise the importance of multilateral trade agreements, as the results of their analysis show all nations benefiting from such an approach and all at a profound disadvantage if some actors don't participate – low- and middle-income countries in particular.

## Ready for prime gains

The analysis, which used data from the WTO, the Organisation for Economic Co-operation and Development (OECD) and the World Bank, among others, is based

on a Protectionism in Maritime Economies (PRIME) Index and a corresponding PRIME score of each country, a tool developed especially for the study.

The PRIME Index calculations are comprised of five categories – entry and licensing; management and employment; operation and competition; tariffs and trade agreements; government efficiency and integrity. According to some of each

country's current maritime trade policies, out of 58 examined nations, 46 were assigned a PRIME score (from 0-100, where 100 is the worst score). With that information, the study explores the economic gains in case the trade restrictions were changed or lifted, hypothetically cutting the nations' PRIME scores (level of restrictiveness) in four different scenarios.

## PRIME Index Categories and Subcategories

### A. Entry and Licensing

1. Conditions on Market Entry in the Maritime Freight Transportation Sector
2. Conditions to Own and Register Vessels under the National Flag
3. Conditions on Licensing, Investment Screening, and Qualifications Relating to Market Entry

### B. Management and Employment

4. Conditions on Management and Employment in the Maritime Freight Transportation Industry
5. Quantitative Measures Affecting the Movement of Persons in the Maritime Freight Transportation Industry

### C. Operation and Competition

6. Conditions on Supply of Services in the Maritime Freight Transportation Industry
7. Government Procurement Measures in the Maritime Freight Transportation Industry
8. Regulations, Taxes and Fees in the Maritime Freight Transportation Industry
9. Government Involvement in the Maritime Freight Transportation Industry

### D. Tariffs and Trade Agreements

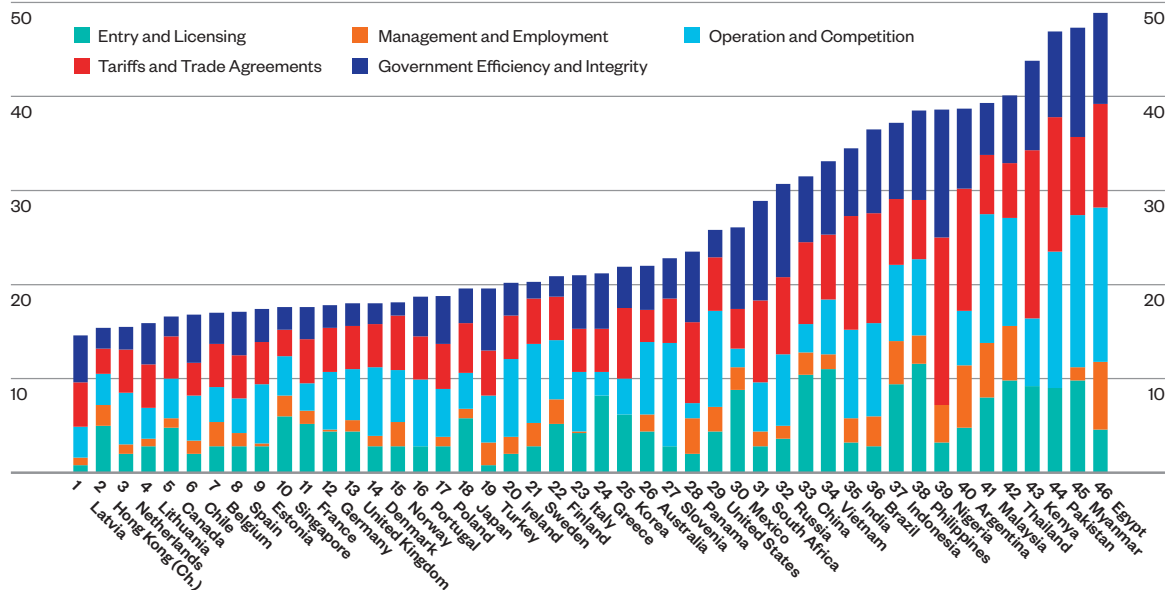
10. Tariffs and Trade Agreements
11. Commitments in World Trade Organization Agreements

### E. Government Efficiency and Integrity

12. Efficiency of Countries' Processing of Exports and Imports (Raw Values)
13. Efficiency of Countries' Processing of Exports and Imports (Index Values)
14. Measures of Governance



Fig. 1. PRIME Index global ranking



Source for all figs.: ICS/Craig Van Grassek, Protectionism in Maritime Economies Study (2021)

Fig. 2. GDP increase under Scenario 1

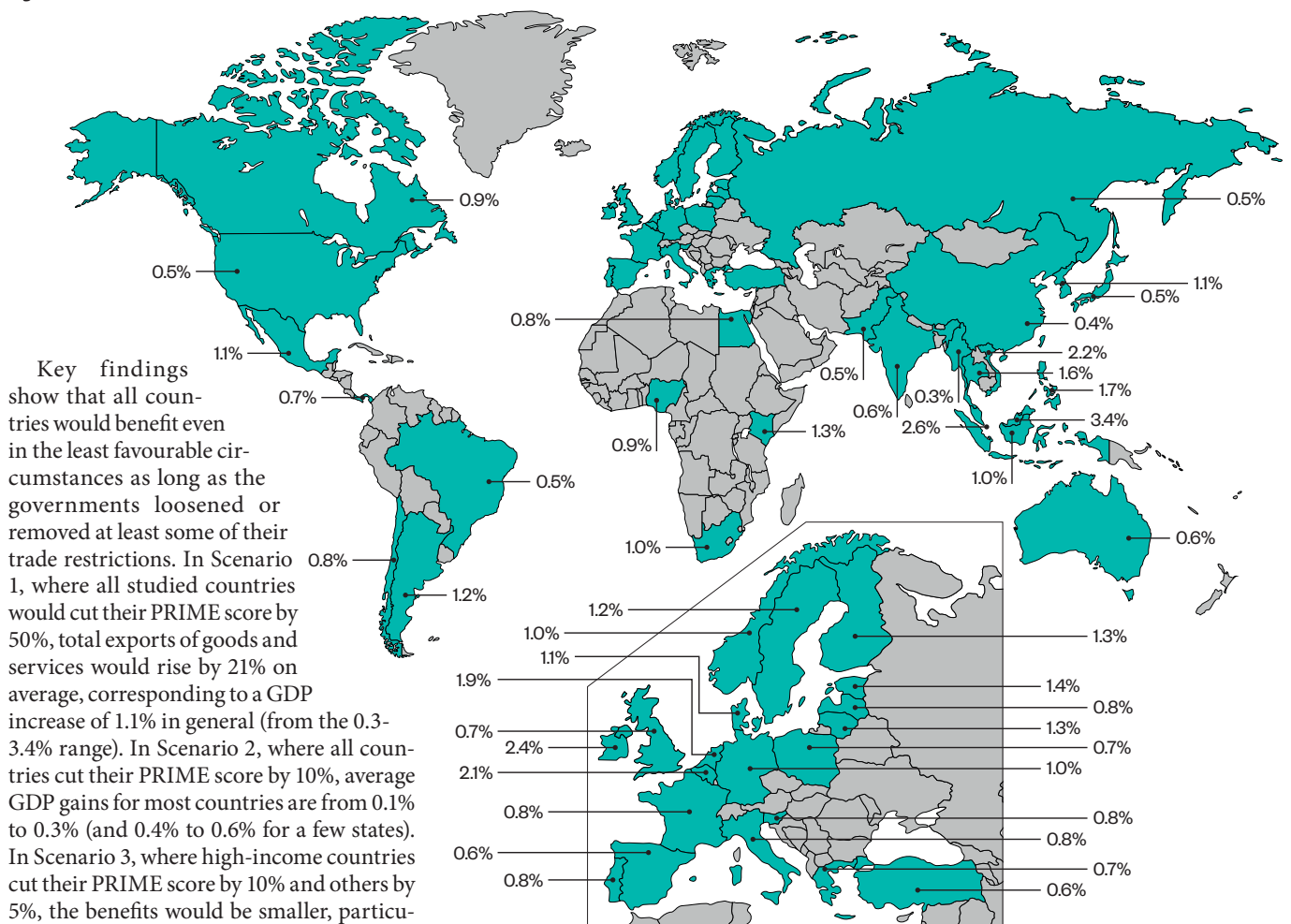


Fig. 3. Gains from liberalisation under Scenarios 2 and 4 using percentage changes over the 2015 baseline GDP level

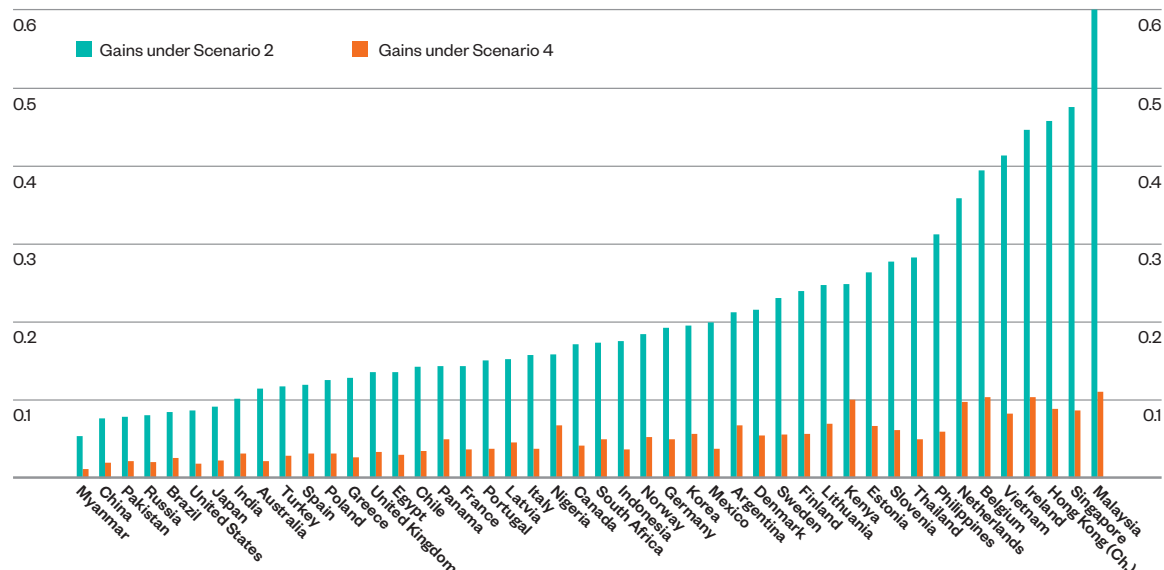


Fig. 4. Gains for low- and middle-income countries from liberalisation under Scenarios 2, 3, and 4

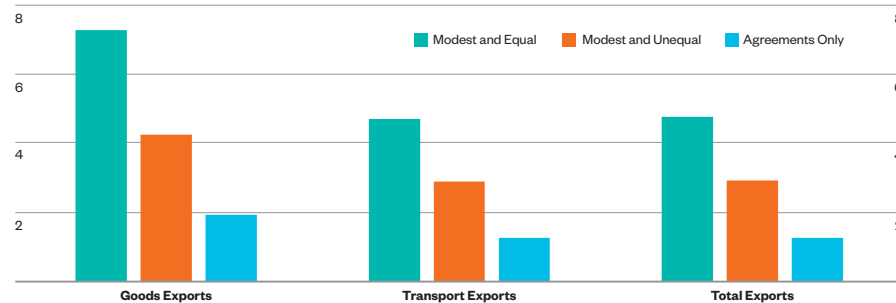


Fig. 5. Gains for high-income countries from liberalisation under Scenarios 2, 3, and 4



efficiency or market entry and licensing, the gains are much smaller – only about 25% of the gains in Scenario 2. “If countries limit their reforms to what might be gained from trade negotiations only, they will leave most of the potential gains on the table.”

One of the most significant outcomes of the analysis is that low- and medium-income economies would see the biggest payoff from a global agreement to less restrictive trade policies. Gains for low- and medium-income countries would be decidedly higher under Scenario 2 (all nations cutting PRIME score by 10%) than under Scenario 3 (high-income countries cut their PRIME score by 10%, other countries by 5%). For high-income economies, the difference between the two scenarios would be minimal. The study concludes that

countries that receive “preferential treatment” – that is, they don’t cut their PRIME score as much as others, are putting themselves at a disadvantage, passing on opportunities to eliminate policies that discourage investments and suppress economic growth.

However, all participants would benefit from a reduction in maritime protectionism and liberalisation of trade policies irrespective of their economic development level, and even if they do it unilaterally in case of a failure in global consensus. “While liberalisation in one country may be second best to global reform, it is greatly preferable to no reform at all.” It would also be of great disadvantage for any nation to pursue lesser reforms than its trading partners. The data reveals that everyone benefits if all countries

limit their trade barriers. However, if nations act unilaterally, their economies benefit as long as the governments take steps to open up their markets to fair competition.

Furthermore, the findings suggest that concentrating on just traditional tariffs in trade reform considerations and negotiations is counterproductive since economies gain most by removing non-tariff barriers (NTBs). The trade costs of these, such as quotas, sanctions, or import/export controls, are significantly higher than standard tariffs. The most common trade policies that impede maritime trade growth considered in the study are numerical and non-numerical limits on the extent of maritime services provided through cross-border trade; entry and licensing conditions for cross-border trade; and requirements for the use of local maritime and port services. NTBs, very importantly, raise the costs of doing business – for example, when customs procedures are more stringent than necessary and limit full market access with barriers such as import quotas – which can impede economic growth.

The analysis also shows a link between the costs of trade protectionism and import/export levels. In all four scenarios, total exports of goods and transport services go up. For instance, under the first scenario, where all countries cut their PRIME score by 50%, total export gains average around 21.1%, corresponding to a 1.1% average increase in GDP. The data also shows that nations with less protectionist regulations usually have more pro-market policies and competitive economies, translating to higher incomes and lower corruption levels. In contrast, countries with high trade costs tend to have weaker and more corrupted governments. Therefore,



reducing trade barriers must go together with improvements in the quality of governance to see an increase in income levels and economic competitiveness.

### Deliberate protectionist purposes

According to the report, governments don't recognise how crucial maritime transport is in trade negotiations. "This may be due to a lack of appreciation by countries of the strategic importance of maintaining competitive and cost-efficient maritime supply chains for the benefit of their national economies." After all, maritime transport handles over 80% of the global merchandise trade. The coronavirus pandemic has undoubtedly underscored the importance of shipping in supply chains worldwide (though the public eye is still very much stone-blind to this, preferring to focus on the negatives like the Suez Canal blockade). In response to the coronavirus outbreak, by 24 April 2020, more than 80 countries or territories had imposed some additional export restrictions. That alone caused a decline in the supply of manufactured goods globally, but coupled with labour shortages at ports, the movement of goods slowed down in the second quarter of 2020 faster and to a greater extent than ever before in such a short period.

Moreover, the authors state that recently, maritime trade restrictions are on the rise, varying greatly from country to country, and have been imposed for "deliberate protectionist purposes." Often, these restrictions take the form of NTBs instead of traditional tariffs. NTBs have proven to be the most fundamental obstacle to trade in developed economies that already have low tariffs. The study found them to be ineffective weapons in trade disputes and damaging to countries' economies that impose them.

Trade protectionism can be seductive because tariffs increase the government's immediate revenues; such policies can be used to promote domestic production, increase employment opportunities, and raise wages. On the other hand, local companies and customers can be negatively affected by trade restrictions due to, among other things, a decrease in international competitiveness, fewer product choices, and higher prices. Further, even though some jobs can be saved through protectionist trade measures, other industries must cope with corresponding job losses because higher prices translate to lower demand and output. And while federal revenues can indeed increase as a result of tariffs, they are often offset by, for example, lower tax collections from corporations and payroll along with numerous other adverse economic outcomes.

Unquestionably, in recent years, powerful nations have increasingly started using their

trade policies as weapons and tools of retribution, which is exemplified by the trade war between the US and China, continuing since 2018. The two countries had imposed tariffs on one another's goods for reasons debated globally for quite some time now. The US and other nations accuse China of intellectual property theft and unfair trading practices. At the same time, China claims that the Americans are trying to stop the state from becoming the global economic leader.

Perfectly illustrating how trade policy can be used as an effective political tool, in 2016, then-presidential candidate Donald Trump built his campaign around blaming China for the loss of manufacturing jobs in the US. He criticised China's unfair trade practices and accused the country of engaging in "the greatest theft in the history of the world." He promised to put China in its place and force companies to return manufacturing jobs to the US. Trump's political instincts were correct – he sensed the frustration of American factory workers and farmers who felt that the political elites were ignoring their concerns. For that reason, it was some of the manufacturing-dependent regions of the US, such as Wisconsin and Michigan, that on the election day have unexpectedly flipped for the Republican candidate, putting Trump in office.

The 45th US president stayed true to his word, the trade war began, and the reality hit. The higher import tariffs serve primarily as a sales tax which increases costs for average consumers. The uncertainty accompanying the trade disputes has led to global trade diverting away from the US and China and slowing down manufacturing, investments, and global economic growth. The US manufacturing plants have been affected by the weaker overseas markets and an uncertain investment outlook. Factory employment started falling partly due to Trump's steel and aluminium tariffs, which were meant to protect domestic producers from unfair competition. Yet, as a side effect, those measures also disrupted supply chains, leaving industrial companies without materials but with skyrocketing price points for steel and resin. US farmers, meanwhile, lost the majority of the \$24b Chinese market due to retaliatory tariffs from China.

Trump ended up losing his re-election when the same regions that pushed him over the edge in 2016 voted for his opponent. And, perhaps in another lesson on trade disputes, once you start a war, it's not easy to end it or undo its consequences. In May 2021, around 300 US manufacturers sent a letter to Joe Biden, lamenting the

tariff-resulting "scarce metal materials and unsustainable prices" as the new president negotiates tariffs with the European Union and approaches talks with Beijing.

Additionally, COVID-19 highlights the pivotal role that seaborne transport plays in global supply chains and the fragility and complexity of world trade. The pandemic has had a "swift and severe" impact on maritime transport services, and the study names the pandemic as one of four major challenges to liberalisation in maritime transport along with domestic resistance to reforms; conflicting interests among low-, middle- and high-income economies; and the proliferation of trade tensions. COVID-19 drew attention to the fact that predictable regulatory and trade policies are vital for the maritime transport sector and, as such, for the global supply chains, especially in times of economic instability. The lack of consistency or clarity in trade regulations could, for example, stifle agricultural imports/exports, which affects food security across the globe, possibly leading to malnutrition or hunger-related deaths, particularly in underdeveloped countries. Similarly, especially during a pandemic, limited access to medical supplies could have grave consequences.

### Global upheaval

Clearly, trade wars, conflicting economic interests, resistance to trade reform and unexpected global events such as pandemics can be detrimental to the global trading landscape; in these times of increasing globalisation, their aftermath can be felt across the entire world. By analysing four different, more and less ambitious, scenarios for possible future trade reform, the Protectionism in Maritime Economies Study determined that reduction or removal of trade barriers in maritime trade can be economically beneficial. The results point out that balanced, transparent and well-thought-out trade policies, particularly in maritime, can encourage economic growth, notably if domestic reforms are combined with multilateral trade agreements.

Additionally, in times of global upheaval, free and open trade policies ensure that supply chains remain undisturbed, help in sustaining human welfare and economic stability. Furthermore, in the present time, any government policies that facilitate trade could help with the post-COVID-19 recovery, particularly in struggling communities. Even without pandemics or other disruptors, the relationship between trade and poverty reduction is undeniable; in the last 30 years, developing countries nearly doubled their share of global exports while poverty rates dropped from 36% to 9% in the same period.

# New portscape

by Przemysław Myszka

The European Sea Ports Organisation (ESPO) has recently commissioned the consultancy Deloitte to report on the transformative impact of global trends and events on the European port industry, including the coronavirus pandemic, the green and digital (r)evolutions, the changing political environment, urbanisation, and demographics. "More than before, port managers will have to play their important role as matchmakers, facilitators and neutral partners in the modern port ecosystem," Annaleena Mäkilä, ESPO's Chair, underlined in the introduction to *Europe's Ports at the Crossroads of Transitions*. It seems that the port sector will have to reinvent itself yet again. The ancients used to say: nothing new under the sun. Or is it?

The fundamental question is qualitative: will next-generation ports be, indeed, so much different from what we have got today? The report's short answer would be: yes. Or rather: they should be to become a fitting match for a digital and green economy. As such, Deloitte reached out to 55 senior port leaders and experts from across the EU to get a perspective on the industry's prospects, with a particular emphasis on how the role of port authorities can change.

## The four horsemen of change

According to Deloitte consultants, four overarching factors will reshape the port sector towards 2030 and beyond. First, the environment, which counts for adapting

to the adverse effects of climate change and (co)developing greening solutions. Second, technology, which will help ports to improve across a plethora of activity

fields. Third, geopolitics and its power to either make or break trade that drives port volumes. Lastly, demographics influencing commerce and port-city relations.

## Environment

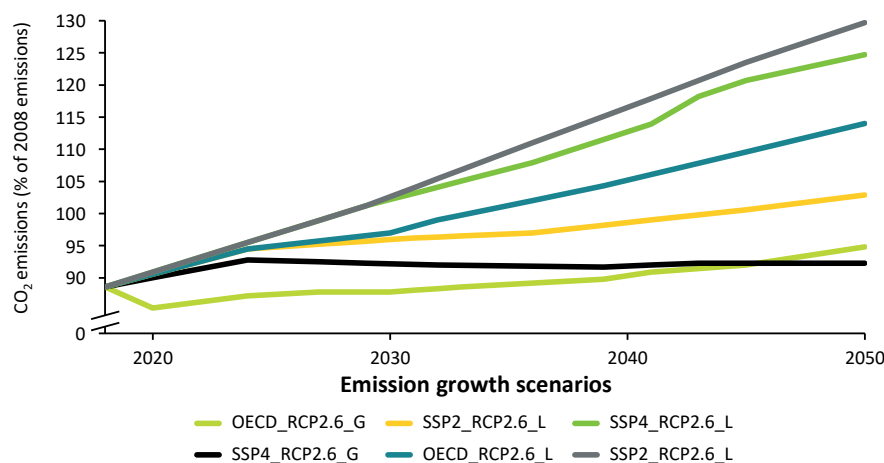
Two-thirds of the interviewed authorities considered sustainability to be the no. 1 trend impacting their ports. Rising temperatures will affect the industry directly. The global mean sea level is expected to increase

between 0.29 and 2.4 metres, making it necessary to upgrade the existing infrastructure or replace it with a completely new one to cope with higher water. More frequent severe weather events will put pressure on

the infrastructure, too (think of storms), and affect both people and machinery (heat waves, for example).

The environmental factor also stands for the energy transition. According to

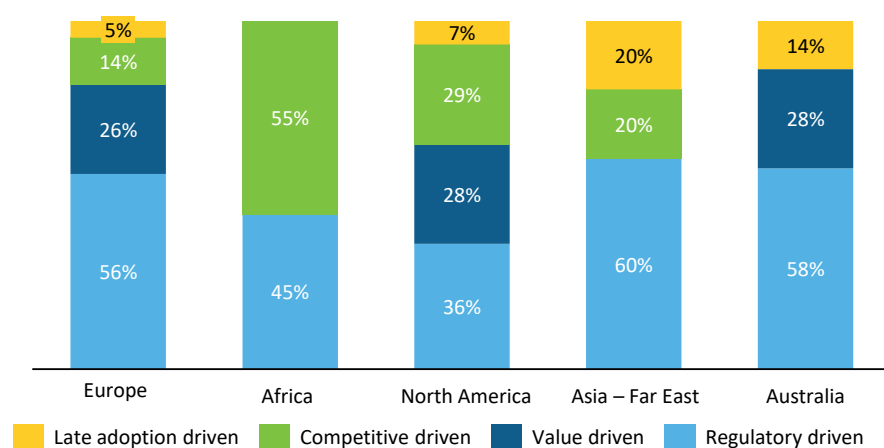


Fig. 1. Maritime shipping emission projections 2018-2050<sup>1,2</sup>

<sup>1</sup> Depending on the scenario, the share of maritime emissions (CO<sub>2</sub>) as part of global emissions will either remain stable or grow by 40% by mid-century

<sup>2</sup> The scenarios originate from the International Maritime Organization's Fourth Greenhouse Gas Study 2020 and are based on GDP and population projections from the so-called Shared Socio-Economic Pathways (SSPs) developed by the Intergovernmental Panel on Climate Change, as well as the Organisation for Economic Co-operation and Development's long-term baseline projection (OECD 2018)

Source for all figs.: Deloitte and ESPO's Europe's Ports at the Crossroads of Transitions (2021)

Fig. 2. Driver of sustainability reporting<sup>1</sup>

<sup>1</sup> Late adoption driven: similar practices that have been applied by successful actors within an industry. Competitive driven: following the drive to improve the level of operational efficiency. Value driven: internal values stemming from a uniformly trained pool of employees and consultants. Regulatory driven: resulting from formal and informal pressure from governments, or even from other stakeholders that influence an organisation, such as powerful customers.

## Technology

Some 57% of interviewed parties considered technological innovation to be the no. 1 or 2 trend impacting their ports. In reality, the picture is a mixed one. On the one hand, a piece of port-tech news breaks now and then, e.g., about using Artificial Intelligence or digital twin for better port/terminal planning and maintenance. On the other hand, when one takes a step back and looks at the bigger picture, the individual news bits might get overshadowed by the fact that other seaports still haven't tapped into the digital revolution (and in the Baltic alone, we have got anything between 100 and 200 ports).

The latter stems from different reasons, among many, the lack of funds or tech-savvy personnel, or outright negligence ("the municipality will back up our business no matter how deep the cargo volume dip," as heard behind-the-scenes during one regional port conference). Then again, several companies have made the small- and medium-sized ports their target market, rightly calculating that modern technology should be inclusive. There are also national authorities that push forward the port-shipping tech agenda thanks to EU funds.

On the flip side, there are also voices of enterprises engaged in aggressive

ESPO's **Trends in EU Port Governance**, 25% of European ports have more than 50% of their traffic linked to energy commodities. As the EU's economy shifts away from fossil fuels, so will port cargo traffic (and revenue streams). Some enterprises may ultimately dwindle, like those handling crude oil or coal. Others, such as petrochemical companies, will need to change gear, exploring more and more boldly the use of renewables for producing electrofuels and P2Chemicals. According to another Deloitte study, conducted on behalf of the Flemish government's Agency for Innovation and Entrepreneurship, industries such as refineries, steel, iron, non-metallic minerals production, and chemicals emit almost 75% of the industrial emissions. "These industries will need to cut greenhouse gas emissions by 45-55% and improve energy efficiency with at least 32.5% by 2030," say Deloitte experts. As a result, they might as well find themselves turning into exporters one day rather than importers.

Synergies will be highly sought-after: governments and heavyweight energy companies investing in large-scale infrastructure for harvesting renewable energy, tech-firms developing innovative solutions for storing it and converting it into new fuel types, and port authorities providing the land so that supply and demand can meet each other in the most convenient place (for the shipping and trucking sectors to lower their carbon footprints).

The EU Green Deal, coupled with a generational shift in values, can have a profound effect on consumer patterns: less car ownership and flight-shame can translate into lower demand for fuel but higher for ferry traffic (necessitating good & green public mobility options to and from ports – by train, bus, or bike).

marketing, concerned with selling whatever they've got on their shelves only, not caring about addressing the specific needs of their potential port clients. It seems that when a market matures, it inevitably also attracts scam artists.

The authors of the Deloitte-ESPO report strongly emphasise the development of port community systems (PCS) as a tool that can notably contribute to the authorities' role as matchmakers. PCSes can help ports become trusted and independent parties that handle sensitive data from competing parties to improve the performance of the whole

Fig. 3. Maturity of innovative solutions

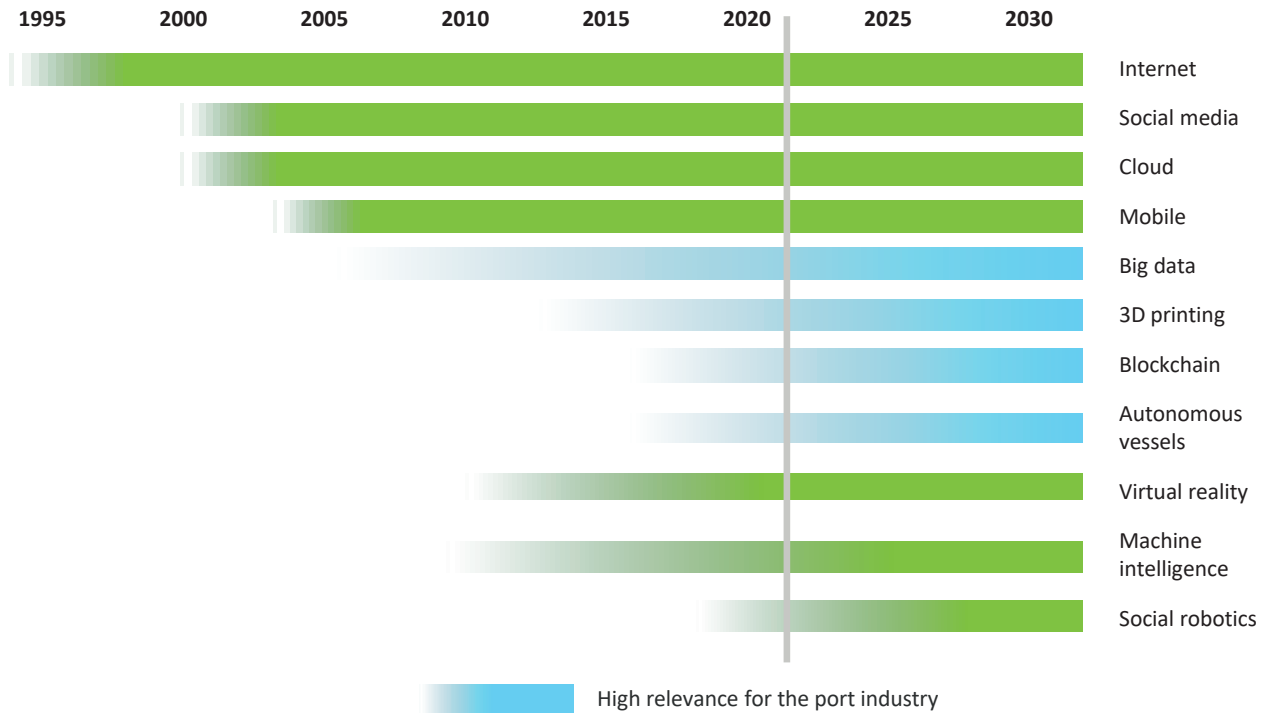



















Fig. 4. Impact of technology on ports and port trade

Legend: <div><div>▲ Positive impact</div><div>▼ Negative impact</div><div>▬ No impact</div></div>		+++ High impact	++ Medium impact	+ Low impact	- No impact	Impact on Ports	Impact on trade flows				
						Impact	Primary resources	Manufactured goods	Services	Data	
Digital platforms	E-commerce	++	▬	▲			▲				
	Port community systems	+++	▲	▲			▲	▲	▲		
	IoT platforms	++	▲	▲			▲	▲	▲		
Logistics tech	Smart materials	+	▲	▲			▬	▬			
	Autonomous vehicles	++	▲	▲			▬	▬			
	Blockchain	++	▬	▬			▲	▲			
	Cloud	++	▬	▬			▲	▲			
Production alteration	3D printing	+++	▬	▼			▲	▲			
	Automated operations	+++	▬	▲			▬	▬			
	Virtual assistants	-	▬	▬			▼	▼			
	Back office automation	+	▬	▬			▲	▲			
New products	Renewable energy	+++	▼	▬			▬	▬			
	Electric vehicles	+	▼	▼			▬	▬			




Fig. 5. Use cases of digital and innovation in ports based on Industry 4.0


		Use case (non exhaustive)	Example of use case in ports	Value generation
Connectivity	Internet of things	Sensorising of infrastructure and assets	Computer vision solutions e.g. smart harbour master systems	   
	Wearables	Tracking for safety and security	IoT and 5G applications for on terminal security	   
	Augmented reality	Virtual twin of infrastructure	Virtual twin of terminal/entire port	   
Big data	Optimisation and prediction	Optimisation of transport flows	Just-in-time port call optimisation & port community systems	   
	Machine learning	Self improving algorithms	Addition to other use cases	   
	Cyber security	Preventive cyber units	Port wide cyber prevention and response teams	   
Advanced manufacturing	Additive manufacturing	3D printing for parts and commodities	3D printing of spare parts for port assets	   
	Advanced materials	High tensile materials, smart materials	New materials for quay/flood wall	   
	Robotics	Automation of processes	Automation of port processes (e.g. locks) and terminals	   




**Increased efficiency, reliability and transparency through platforms**



**Improving environmental performance**



**Increased efficiency and transparency through automation**



**Improving safety and security**

logistics chain that goes through a given harbour.

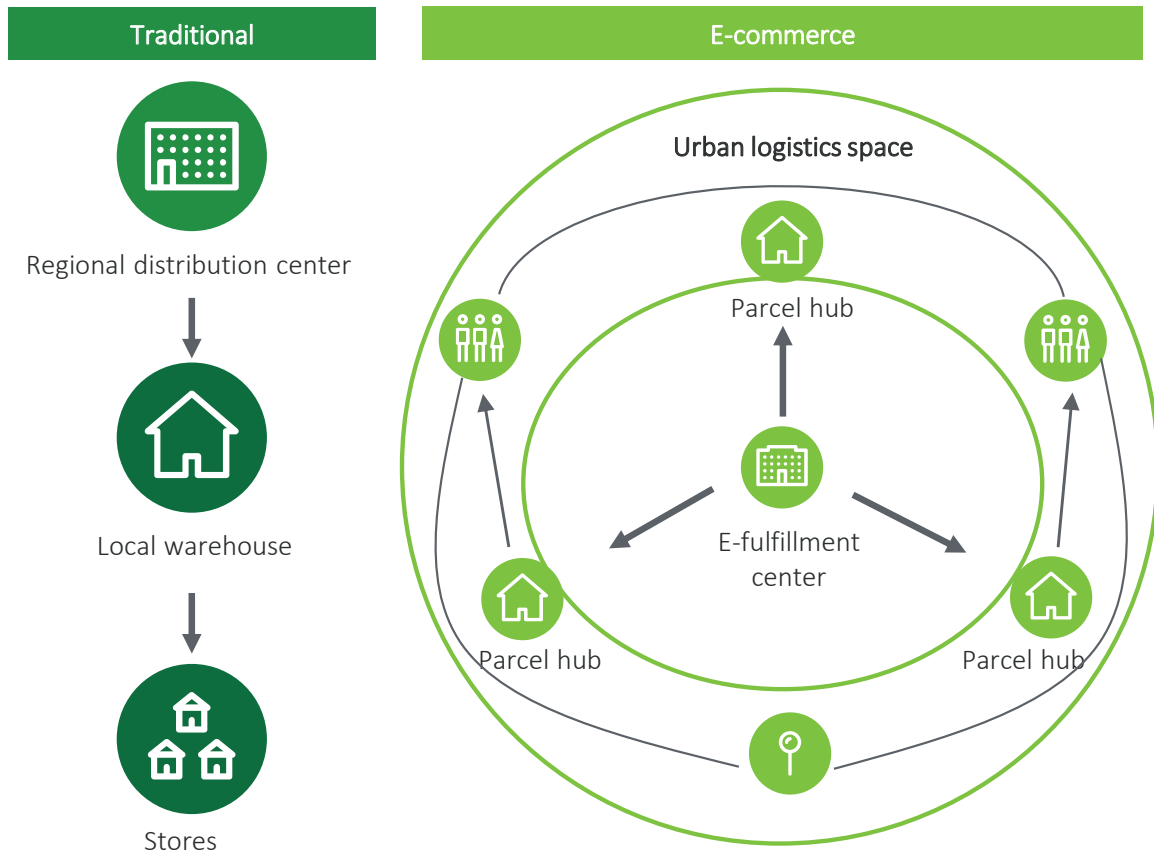
And winning the trust and ensuring independence in taking care of data exchange are precisely the things that sometimes make implementing a PCS such a struggle. When asked during the latest World Ports Conference, organised by the International Association of Ports and Harbors, Masaharu Shinohara, Executive Officer of the Kobe-Osaka International Port Corporation, admitted that immense effort had been put into building trust among the stakeholders to convince them that sharing data will benefit all involved. However, there might be structural difficulties in setting up a PCS, e.g., when the port authority is involved in stevedoring itself. As it often does, a lot will depend on culture, but even in

such a collective and orderly society as Japan, developing a data exchange platform wasn't a task one could easily breeze through. I also remember listening to Richard Morton from the International Port Community Systems Association, who said that we could head towards integrated regional PCSes at best. As things stand today, a global system is virtually impossible to set up (or, at least, the costs of getting it online would outweigh the benefits).

That said, *Europe's Ports at the Crossroads of Transitions* reads that the sharp increase in e-commerce brought about by the coronavirus pandemic will necessitate greater transparency across the supply chain as these (often high value) consignments are more time-sensitive than your usual container shipments.

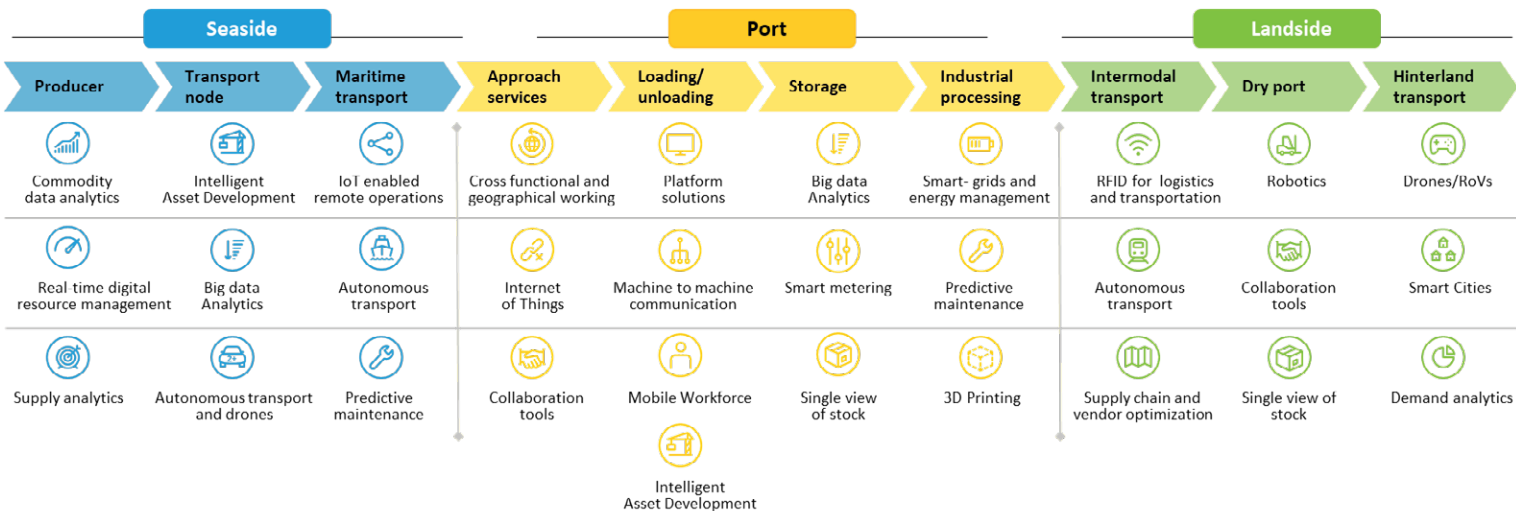
In this regard, the Deloitte-ESPO report brings forth findings from an [e-commerce study by SearchNode](#). According to these, during the 2020 summer season, when the lockdowns were less strict, 92% of the respondents still experienced a growth in their online revenues; 57% indicated the pandemic imposes challenges because of a disrupted supply chain, and 43% pointed to challenges regarding fulfilling the demand for products. Deloitte-ESPO authors further, "The pandemic accelerated the expansion of e-commerce towards new firms, customers (e.g., elderly) and types of products (e.g., groceries and everyday necessities). A global consumer survey measuring the adoption of digital and low-touch activities suggests that new users drove over 50% of the increase in online grocery shopping, pick-up from

Fig. 6. The e-commerce supply chain<sup>1</sup>



<sup>1</sup> Where shipping firms, logistics providers and terminal operators are pursuing as much scale and mass as possible. Consumers increasingly expect faster and more flexible services for the delivery of goods. Ports will have to manoeuvre between a changing demand and supply side, where they need to serve both “customers.” This leads to a push for more storage and buffering capacity in the port area.

Fig. 7. Technological innovation in and around the port ecosystem



restaurants or other stores.” In conclusion, they say, “[...] this shift is likely to stick post-pandemic.”

Technological developments, of course, promise a broad range of improvements to daily and strategic port operations. To name but a few that have already proven their worth in the

Baltic: automated mooring increases the speed of ships berthing and clawing away; onshore power supply decreases at berth particle emissions and noise pollution; digital twins make maintenance work easier; drones help to monitor emissions, take care of security, and make high altitude maintenance safer; software

optimising vessel arrivals streamlines port traffic and berth usage; training centres ready new employees to work with remotely operated cargo handling equipment (including groups traditionally excluded from heavy-duty on-site work, like women or people with mobility impairments).



The Deloitte-ESPO report lists globalisation vs protectionism as the main geopolitical barrier to increasing trade, hence more significant volumes going over port quays. For instance, the authors underline that some 56 new trade-restrictive measures (tariff increases, import bans, export duties, and stricter export customs procedures), not related to the coronavirus pandemic, were implemented globally mid-October 2019-to-mid-May 2020. They also quote the World Trade Organization, which estimates the cumulative trade coverage of import-restrictive measures implemented since 2009 – and still in force today – amounts to 8.7% of world imports. “This trend has grown steadily since 2009, and the increase in protectionism has led to a notable decline in global trade growth,” *Europe’s Ports at the Crossroads of Transitions* adds.

One of the signs of deglobalisation is the decreasing ratio of global trade to GDP since 2010. On a positive note, however, the EU has been able to counter this trend. Here trade (intra- and extra-EU) as a share of GDP was higher in 2019 than in 2008. “Calculations based on bilateral trade data show that intra-EU trade/GDP continued to grow, while extra-EU trade as a share of GDP fell from 2012 to 2016 but increased afterwards. Therefore, the fall from 2012 to 2016 in the global trade/GDP ratio originates from developments in non-EU countries,” Deloitte experts argue.

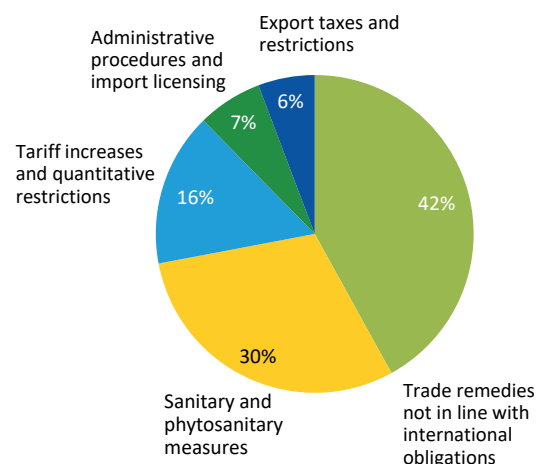
Staying in Europe, the publication also puts Brexit in the limelight, specifically, giving eight UK ports the ‘Freeport’ label, which makes them an area exempt from customs duties and tariffs. The move by Boris Johnson’s cabinet is supported by

the view that freeports can attract businesses and jobs to locations that would otherwise struggle. This is countered by the report’s authors who say, “Assuming a stable market, they [freeports] do not boost employment or trade growth overall, they just move economic activity from one place to another – a zero sum game, potentially from the EU to the UK mainland.” Naming certain port-related activities “footloose,” such as HQs of maritime firms or water-bound production plants, they warn against them moving to the UK, not creating any added value for the entire industry, just clipping some of their costs at the expense of the national budget. The report also highlights Brexit’s immediate trade impact: a decrease of 29% and 41% for imports and exports from/to the EU, respectively, in January.

The publication also mentions the Arctic. The northernmost ocean is expected to be summer-ice-free as early as 2040, making it easier to get at the world’s 13% and 30% of undiscovered oil and gas, plus uranium, rare earth minerals, and fish stocks.

China’s rising overseas involvement is also touched upon, primarily in the context of seizing critical assets like transport infrastructure. The question is whether it’s a legitimate concern or anti-Chinese sentiment. Taking over the port authority of the Greek Piraeus, with the EU’s consent, appears to be an isolated example that took place in extraordinary

Fig. 8. Total trade-restrictive border measures against the EU registered in 2019<sup>1</sup>



<sup>1</sup> On a European level, 438 active trade and investment barriers in 58 third countries were present in 2019. This indicates that protectionism is becoming structurally ingrained in EU’s trade relations with many partners. In 2019, for the first time, border measures (52%) took up the largest share, followed by behind-the-border measures (43%). From the newly added trade measures in 2019, 65% consisted of border measures.

circumstances, not likely to be mimicked in the foreseeable future. Under the rule of COSCO, Piraeus has grown into one of Europe’s container heavyweights. Nevertheless, thereby hangs a tale, **as I wrote in a separate piece on the EU’s increasingly assertive stance against China.** Then again, politics aside, authors of the Deloitte-ESPO report note, “In 2020, China temporarily became, by replacing the US, EU’s greatest trading and investment partner.” It also reminds the times, a couple of decades ago, when people in the US feared that the Japanese will take over the country (Japan is still the US’ biggest lender, but China is the one on the firing line nowadays).

## Demographics

Authors of *Europe’s Ports at the Crossroads of Transitions* remind, “The rise and fall of major maritime centres has been historically linked to population growth (growing demand), population distribution (demand concentration) and imbalance (shifting demand and supply costs).” They, however, further, “Over the next ten years, a strong growth in port volumes coming from pure demographic growth should not be expected in the EU.” It appears that two things stand behind it. Europe’s population is getting older, and, in the words of the World Economic Forum, **“Millennials will be**

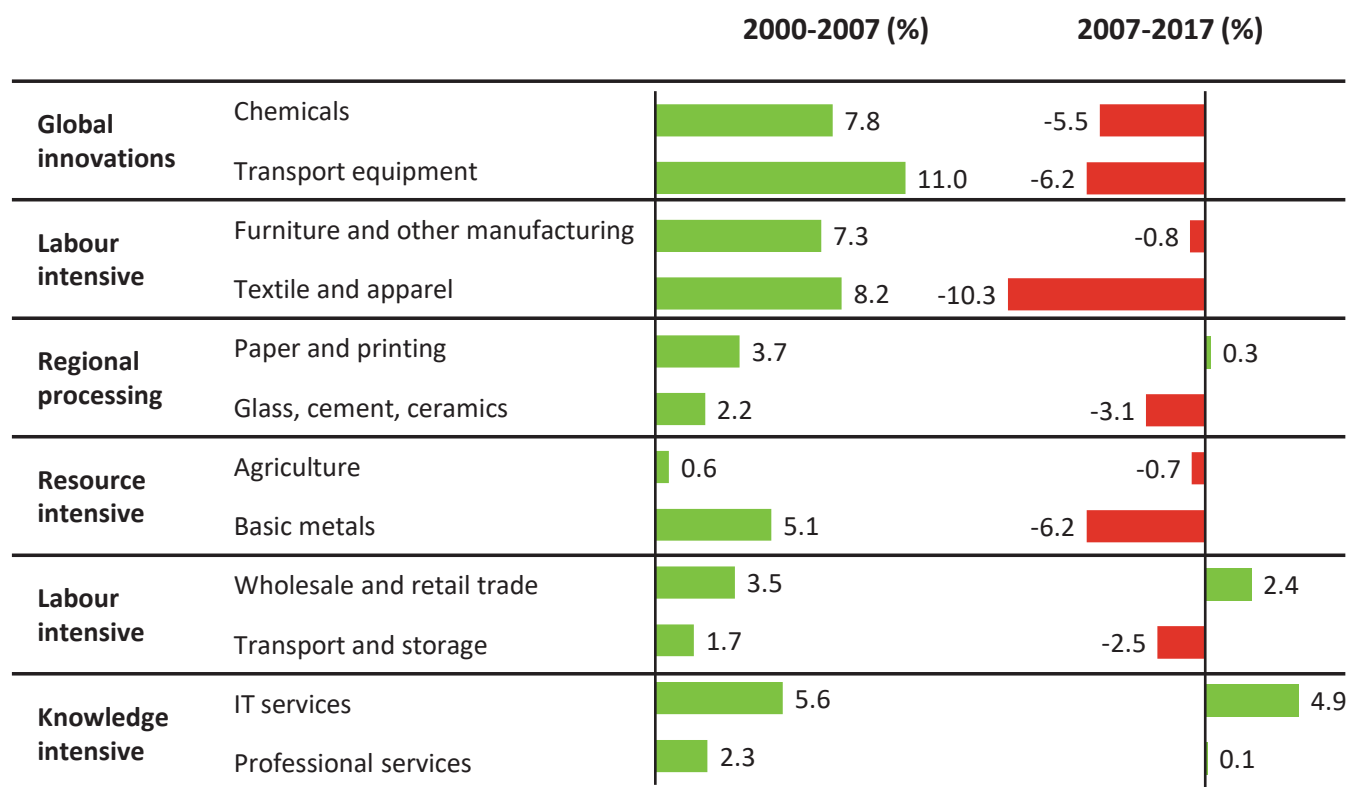
**the first generation to earn less than their parents,”** and that **“Millennials have it worse than any other generation.”** Trends such as minimalism and low- or zero-waste can put their two pennyworth, too, to a long-lasting decrease in consumption (or, at least, a profound shift from owning to sharing/subscribing products and services).

That said, demographics will fuel another trend impacting ports, namely **urban development.** It isn’t an ‘if’ issue – the EU’s level of urbanisation is anticipated to increase to 83.7% in 2050, reads the Deloitte-ESPO report. Tackled

incorrectly, it can boil over into urban sprawl, creating an array of difficulties – with lack of proper housing, inadequate provision of public services, or impaired mobility. With trucks heading to and from the port and vans trying to deliver all those time-sensitive e-commerce parcels, city logistics can become a growing nightmare should more people decide to own more cars (and ride them alone).

There is also the allure of living by the waterfront, partly driven by aesthetics but also as a confirmation of one’s social status (read: wallet size). As such, there is an evident tension between cities and

Fig. 9. Changes in trade intensity as share of gross output<sup>1</sup>



<sup>1</sup> Trade intensity (the ratio of gross exports to gross output) in almost all goods-producing value chains has fallen between 2007 and 2017. Trade is still growing in absolute terms, but the share of output moving across the world's borders has fallen from 28.1% in 2007 to 22.5% in 2017.

Fig. 10. Maritime industry perspective on alternative fuels

Fuel	Part of future mix? (% participants)	Engine type	View on technology maturity	View on applicability to shipping	Advantages	Disadvantages
Green Hydrogen	65%	Combustion	Medium	Medium	Cross-sector applications – possibly faster R&D	Cost Relatively low energy density Cryogenic storage conditions Need for renewable electricity Inefficiency in conversion/production
		Electric (fuel cell)	Low	High	Less space for engine and better specs than combustion	
Green Ammonia	55%	Combustion	Medium	High	Relatively high energy density Already developed experience	Cost Toxicity
		Electric (fuel cell)	Low	High	Less space for engine and better specs than combustion	
Biofuels	10%	Combustion	High	Low	Easy to implement in current engines	Limited feedstock, unlikely to be available, large difference between types of biofuels, difficult to check compliance
Methanol	10%	Combustion	Rarely mentioned	Rarely mentioned		
Batteries	< 5%	Electric	High	Medium (ship size dependent)	Mature technology	Extremely low energy density Size and weight of batteries
Nuclear	< 5%	Heat	Medium	Low	Mature technology	Very high investment, social aversion, rarely mentioned by decisionmakers

their ports. The tricky part is to have the best of two worlds – efficient cargo and passenger serving ports and attractive space for urban development. It takes two to tango, with both parties understanding each other's needs. On the one hand, ports are often one of the biggest economic powerhouses in and around the

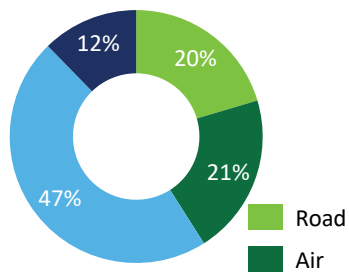
city (if not the largest), providing revenue and generating jobs. On the other hand, they can also be one of the central sources of, e.g., pollution or traffic congestion. Even though they aren't the ones who drive the ships and trucks, the negative glare of public scrutiny often falls on them for the nuisances caused by port

externalities. Ports are also dependent on their cities as markets and employee pools. Having stars in their eyes, local and central governments can rely on future ports as drivers of decarbonisation by supporting such initiatives as coupling offshore wind energy farms with hydrogen production to offer low/zero-carbon



Fig. 12. Modal split of EU's external and internal trade

EU external trade modal share, 2018



EU Intra-trade modal share EU-27, 2018

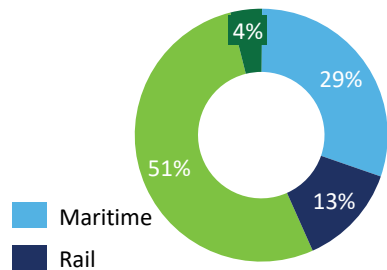


Fig. 14. Port environment, stakeholders, and interests



Fig. 11. Energy from renewable sources used in transport in the EU-28, and Iceland, Norway and Turkey (%)

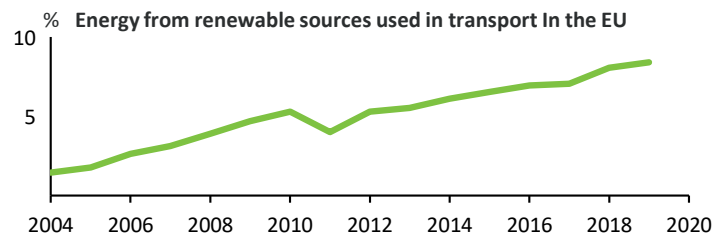
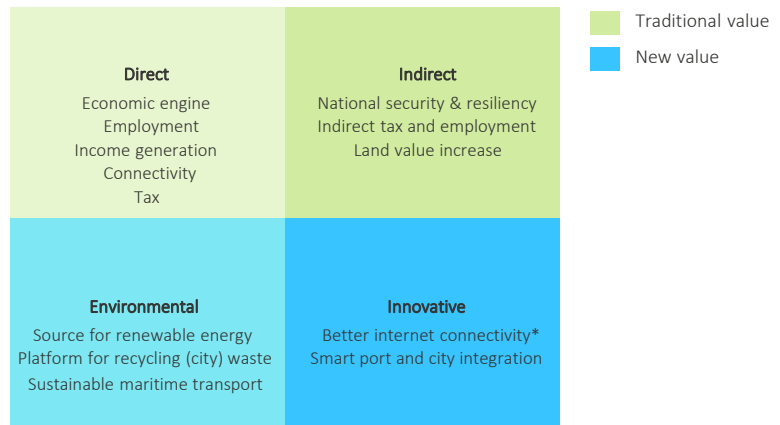


Fig. 13. Benefits generated by modern ports (non-exhaustive)



fuels for shipping and overland transport. “The main goal of this external cooperation is often to leverage on external knowledge or de-risk certain events and investments.”

Looking at the numbers, it will be one of the most significant challenges of our times. “Given the (current) low production capacity (less than 2% of the energy mix) of hydrogen in European ports, resilient and safe transport chains need to be established to import industrial use volumes.” The same holds for the carbon capture & storage and carbon capture utilisation technologies – ever promising to get that CO<sub>2</sub> from industries and pump it into depleted gas fields in the North Sea or off the Norwegian coast. However, giving the devil his due, two ports in our corner of the world, **Copenhagen** and **Gothenburg**,

have lately become part of cross-industry ventures to do precisely that.

Currently, the two most widely taken approaches to relieving port-city pressure points are tweaking port operations using modern technologies or setting up a terminal/harbour/port from scratch (not too close yet not too far from the settlement). The first is used for, e.g., streamlining cargo flows to and from ferry and ro-ro terminals. It’s widely acknowledged that adding road capacity is a dead end, as traffic jams easily swallow the extra carriageway. The alternative is to optimise the flow itself, chiefly by advising truck drivers on when exactly they should arrive at the, hopefully, automated gate. The decision to move harbour activities entirely is also made to improve the port’s competitive position through longer and

deeper quays and better hinterland connectivity. The Baltic Sea region saw several such greenfield projects coming to fruition over the past couple of years, with others already in the pipeline.

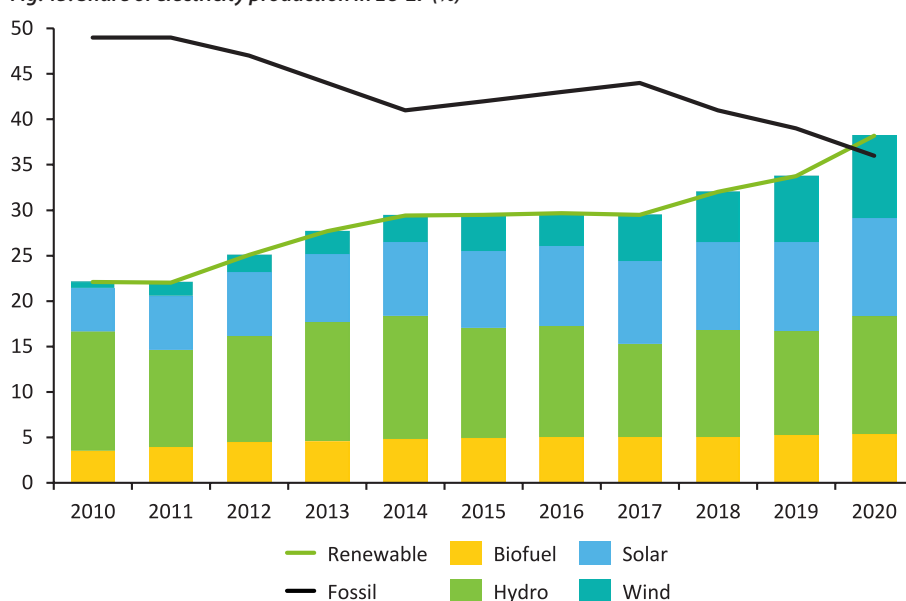
As is the case with the environmental and technological factors influencing each other, the same happens with demographics. According to UN Migration Agency’s projections, more than 100m people will live in areas where the average heat in the hottest month is likely to be too high for a human body to function well in the case of a temperature rise of two centigrade. In conjunction with political unrest, it might force people to move northbound to search for liveable conditions – either in port-cities themselves or through them.

## Post-corona

Authors of *Europe’s Ports at the Crossroads of Transitions* state, “Because the EU, compared to other areas worldwide, remained in a relatively strong economic health despite the COVID-19 pandemic, it is now in a good position to continue the energy transition.” We are talking about €1.8tr of money to boost the recovery. The message is also clear: those funds are to be used for making Europe’s economy (digitally) greener and overall more resilient.

“Even during the COVID-19 pandemic, investors continued to show interest in greener companies while showing less interest in carbon-heavy incumbents,” reads the Deloitte-ESPO report in this context. It also reminds us that in the crisis years of 2007-2009, the EU invested €565m into the offshore wind energy industry, plus some €25b in feed-in tariffs to make electricity it produces more economically viable. As a result, renewable energy sources overtook fossil in 2020 in electricity generation for the first time in the EU’s history. Yet, “While greening, digitalisation and growth are the clear priorities put forward for the national recovery plans, the national implementation very much differs both in terms of the size of the envelope and the way it will be spent, more in particular as regards investments for infrastructure and greening of transport. Different EU Member States have no port projects included at all.” On the contrary, even such up-to-date fossil diehard countries like Poland are finally getting involved in not only erecting their offshore wind

Fig. 15. Share of electricity production in EU-27 (%)



farms but also announcing **far-reaching plans of using energy from them to supply green hydrogen throughout Central Europe**, including for the needs of the transportation sector.

The EU intends to tackle their Member States’ imported greenhouse gas emissions, too. For instance, the Stockholm Environment Institute released in 2018 the two-piece series **Att se hela bilden** (*Seeing the Whole Picture*), in which it attempted to factor in the carbon footprint Swedes generate both domestically and abroad. While the former is all sunshine and rainbows, as one could expect, the latter unveils a considerably

darker image. With the **Carbon Border Adjustment Mechanism**, the European Commission will place a carbon price on imports from less climate-ambitious economies. “As the EU is determined to become carbon neutral in 2050 and maintains the highest environmental and climate protection goals in the world, it wants to implement such an instrument in order to raise the global climate ambitions of EU trading partners, to preserve global competitiveness of EU companies and to prevent the relocation of EU industry to countries with less ambitious emissions rules (carbon leakage),” Deloitte experts analyse.



## The European port of the future

The title is slightly misleading because not all ports are created equal. Port authorities also differ – from landlords to part-stevedores, and from state-, municipality-, industry-, private-, or even pension fund-owned. Then again, the authors of *Europe's Ports at the Crossroads of Transitions* tell us that the same trends will influence even such contrasting seaports as Rotterdam and Saarte Liinid.

The future port will be a green and digital facilitator of innovation and cooperation, providing a neutral platform for all parties along the logistics chain to up their performance. Filling those shoes will require plenty of investments in hard- and software infrastructure as well as in people. A great deal of it will be done with the helping hand of local, state and international agendas, and other

industries that need to green their credentials to win back the heart of sustainably oriented societies, activists and politicians.

In the more or less distant future, we may as well witness the fall and demise of the 'traditional' port model, focused on cargo and passenger volumes. Ports as clean energy generators and tech-break-through accelerators? Perhaps. ■

Fig. 16. Estimated impact of trends on different types of ports

● Strongest effect ○ No effect

		Larger ports	Smaller ports	More industrialised ports	Less industrialised ports	Urban ports	Capability match of traditional governance
Increased focus on sustainability		●	●	●	●	●	Low
Increased focus on innovation		●	●	●	●	●	Low
Shifting trade developments	Near-shoring	●	●	●	●	●	High
	Alternative trade routes	●	●	●	●	●	High
	Supply chain integration	●	●	●	●	●	Medium
	Security	●	●	●	●	●	Medium
Increased community awareness		●	●	●	●	●	High

Fig. 17. Evolution and development of port authority roles

	Regulator <sup>1</sup>	Landlord	Operator	Investor	Community builder
<b>Traditional role</b>	<ul style="list-style-type: none"> <li>Focus on controlling, surveillance, and policing functions to ensure the safety and security of ship and cargo operations (VTS)</li> </ul>	<ul style="list-style-type: none"> <li>Focus on management, maintenance, and development of the port area, the provision of infrastructure, and the implementation of policies and the development of strategies</li> </ul>	<ul style="list-style-type: none"> <li>Focus on technical-nautical services and the physical transfer of cargo between sea and land</li> </ul>		<ul style="list-style-type: none"> <li>Focus on aligning different stakeholders in the port area to improve the business climate, reach their sustainability goals, increase cohesion with city</li> </ul>
<b>Expected evolution of role</b>	<ul style="list-style-type: none"> <li>Possible expansion of traditional role on for example:               <ol style="list-style-type: none"> <li>1. Regulation of autonomous drones/ships</li> <li>2. Regulation of renewable fuels (e.g. bunkering requirements)</li> <li>3. Regulation on cyber security</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Ports take an even more proactive role and orchestrate all area developments within the port, leading to a strategic landlord role (such as strategic/pro active attraction of port industry, new industries/sectors, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Operations can increase, depending on the chosen revenue model behind the sustainability transition (facilitating services or investing in infrastructure) and the digital transition (develop or not develop digital tools)</li> </ul>	<ul style="list-style-type: none"> <li>Investments in sustainable and digital solutions to increase, as part to be more diversified in their income streams and to offset a potential stagnation of trade and passenger movement, influencing revenues</li> </ul>	<ul style="list-style-type: none"> <li>A driving (e.g. PCS) and entrepreneurial role going beyond the port area and the port stakeholders, followed by a facilitating role in external logistics and maritime data sharing initiatives</li> </ul>
<b>Future port authority role</b>					
<div> <div>Facilitate</div> <div>Follow Drive</div> </div> <div> <div>Facilitate</div> <div>Follow Drive</div> </div> <div> <div>Facilitate</div> <div>Follow Drive</div> </div> <div> <div>Facilitate</div> <div>Follow Drive</div> </div> <div> <div>Facilitate</div> <div>Follow Drive</div> </div>					

<sup>1</sup> Very limited and dependent on port in question

# As good as the latest reference

by Przemysław Myszka

**Designing a ship is, by all means, a monumental task. Creating a concept that will win the heart of the market is even more challenging. We're talking with Deltamarin's Esa Jokioinen about his company's 30<sup>th</sup> anniversary and how the business of ship designing has changed over the last three decades. We're also spotlighting shipping's future, most of all the pathways to its decarbonisation.**

■ *Deltamarin is celebrating its 30<sup>th</sup> birthday this year. How has ship design and engineering changed over the last three decades?*

There were already several established Finnish ship design offices when we entered the market in 1991. Many concept designs were turned into ships in Finland and across the Nordics throughout the two decades leading to the 1990s. As such, ship designing became the bottleneck. The timing was quite challenging, too, to put it mildly. The beginning of that decade wasn't particularly rosy for the Finnish economy, meaning that the order books of the country's shipyards didn't offer much work. That's why Deltamarin had to go international from the very beginning, securing contracts from all over the world, chiefly ferries and cruise ships. The 1990s were, in a nutshell, a decade of brand building through quality work. In hindsight, it looks like science-fiction. No Internet, emails, expensive cross-border phone calls – forget about mobile ones! – and even pricier flight tickets. Yet, here we are today. I can imagine it took much personal face-to-face effort from the management team; good footwork, so to say. In this business, quality trumps anything, so the word spread that the newcomer from Turku can deliver on the promises. Eventually, clients started contacting us.

The 2000s was a decade of continuation by expansion. We created our offices in Poland, China, and Croatia to establish a local foothold and build up the team. But we also had to enter new ship type markets and offshore. Then, somewhere at the break of the millennia, the B.Delta Series became a great success from the very start. I'm proud to say that we managed to change the market with a totally new design of eco dry bulk carriers. Around 150 vessels have, to date, been built according to the concept. The passenger vessel market has recently sped up, with ferries constructed in China and Europe and cruisers in the latter. The pandemic has shaken the situation considerably, not leaving shipowners, operators, and shipyards unaffected. That said, we at Deltamarin aren't complaining about our hands being idle. We also hope that better times will come for our ferry and cruise clients sooner rather than later.

■ *How has the process itself changed, chiefly the tools with which you work?*

We have gone from drawing boards to CAD computer programs to 3D and virtual reality. From the customer's perspective, though, I would say the development of computational methods has been more critical. We can design the concepts in a completely different way than ten or 20 years ago. For instance, we don't have to

optimise the vessel with a single speed in mind anymore. Modern tools give us insights into how different ship elements – hull, propulsion, and other systems inside the vessel – interrelate with each other. This way, the optimal speed margin can be widened, making sense from an operational perspective as ships will encounter different weather conditions throughout their lifespan, not to mention serving many diverse routes.

Further developing ship designing tools is crucial. We will undoubtedly see the inclusion of next-gen technologies, like Artificial Intelligence, into the work routine. That said, a person with the right expertise is far more valuable than even the fanciest solution. The key element is the ability to interpret the various outputs. The most potent simulation tool will be useless without the designers who can work with the provided data. The right recipe is to use Artificial Intelligence for optimisation but human intelligence for innovation.

Judging from our history, Deltamarin has been able to make a difference to the client's advantage. However, your company is as good as its latest reference (especially in the Far East). It is worthwhile to remember that when you have 30 years under your belt and high ambitions for the future. Having to choose between world dominance and maintaining top-notch quality, I'm sure Deltamarin would pick the latter.



■ *What is the company working on right now? What are the main trends shaping contemporary ship design?*

There is a growing need for greenhouse gas reduction expertise across the board. The industry, both freight and passenger, is up for a transformation because of the coming regulations. Hammering the green (r)evolution shipping details will require much work, but the overall trajectory has already been set.

Since shipping is more than diverse, there won't be any one-size-fits-all solution. There will be a tonne of research & development as well as business experimenting aimed at making hydrogen or ammonia a viable alternative. I'm convinced that technical issues, like getting the storage system onboard ships, will get resolved. The other thing will be meeting the demand with the supply, something beyond the reach of the shipping industry. If the world genuinely starts to move towards net-zero emissions, there will be competition between different transport modes and sectors for the same resources. We already see it happening, for example, in biofuels. I think that in 20 or 30 years, the fuel market for shipping will be much more diversified than today, probably including solutions we aren't aware of now. To continue thriving, Deltamarin will have to adapt. By all means, it won't be an easy task, requiring some pioneering work. A shipowner will knock on our doors at some point in time and ask if we can design a hydrogen/ammonia/fuel cell vessel. We'll have to ask and answer many questions, such as the state in which the fuel, say hydrogen, will be coming onto the ship. How will it be delivered to the port? How will the bunkering process look? Are we talking about traditional pipes or fuel stored in a container that's brought in? I'm sure these are all solvable issues, which, nevertheless, may take a bit more time than your run-of-the-mill diesel or LNG setup.

It will be an adventure but one that doesn't have to strike us like a bolt from the blue. Many ship concepts are nowadays designed to be ready for this-and-that solution for future conversion or upgrade, e.g., for hybrid battery operations, **auxiliary wind propulsion**, or to run on ammonia. It is a smart approach to ship designing that has all it takes to pay off in the future. It requires not as much extra work as imagination; after all, it's about making room for what might not be on the shop shelf right now. For example, we're working with



Photo: Höegh Autoliners



Photos: Deltamarin







Photo: Viking Line



Photos: ESL Shipping



Höegh Autoliners on their next-gen car carriers whose multi-fuel engines are to be ready to run on future zero-carbon fuels, including green ammonia. There are also traps to avoid. For instance, you can have a design prepared for air lubrication, but this particular solution is best installed during the building process. Later retrofitting is possible, yet much more troublesome.

■ ***What do you think about additional solutions that promise to make sea shipping more friendly to the environment? Are these already mainstream concepts or rather add-ons that the more affluent shipowners can afford only?***

Ship fuel will get more expensive in the future, be it through carbon taxation or that simply the premium on alternatives will be higher. As such, any solution that cuts kilowatt-hours will become attractive, and their payback times will shorten. Our customers are already calculating return-on-investment with a certain level of carbon tax in mind. One moment energy efficiency measures are nothing but shiny things, while a heartbeat later, companies are queueing for them.

The other thing would be designing ships that incorporate these measures into the blueprint, plus seeing how different devices work together and with other systems to assess the overall impact on performance. Deltamarin is involved in an EU co-funded **project**, where our part is to check how energy-saving solutions work in tandem, say sails, air lubrication and waste heat recovery. This knowledge will help to design ships to take advantage of the measures to the fullest.



Though all those solutions will decrease the ship's carbon footprint, the biggest savings still come from hull optimisation. The ship-owner has to bear the cost of steel; therefore, it's rewarding to go the extra mile during the designing phase to make sure the ship is shaped in the best possible way.

■ *Deltamarin has recently been acknowledged as one of Finland's most inspiring workplaces. What is the company's recipe for maintaining high employee satisfaction and motivation? Has the coronavirus pandemic had any impact on your operations?*

I have started my career at Deltamarin in 2003 and returned two years ago, working in the meantime (2013-2019) for other companies in the maritime space. At Deltamarin, we are constantly working on something concrete that gives you the feeling that your work has a tangible effect. The team is also driven by the ambition to maintain and improve the quality of what we deliver. I'm saying "team" and "we" because ship designing isn't a task for some lonely genius engineer hidden deep down in a basement. Cooperating with others helps to improve yourself. Openness, trust, and transparency are part of the company's DNA. At the same time, we're having much fun crunching the concepts for our clients.

The pandemic didn't change Deltamarin's spirit. Remote work has become the standard. The technical side of office-turned-home work wasn't tough to figure out. It may be a misconception, but it feels that nearly the entire world has made a giant digital leap in this regard. That also made working with our customers reasonably easy. In the past, preferring an online conference over an in-person meeting could be seen as disrespectful. For the past dozen or so months, there was simply no other way of connecting. We had projects that started and ended during the pandemic, and I'm surprised how well they went, given the extraordinary circumstances. There were no problems on the operational front – communicating over the Internet with our partners from Chinese shipyards went smoothly, if not better than previously. The same goes for sales. That said, we all miss the face-to-face meetings. The post-corona future will most probably bring about a hybrid between the analogue and virtual, hopefully, a mix of the best of both worlds. The environment will be better off, too; in many instances, travelling can be successfully exchanged for digital meetups. ■



Photo: Höegh Autoliners



Photos: Deltamarin





# Boundless opportunities

by Martin Wallgren, *Group Chief Information Officer, GAC*

**Shipping is one of the last sectors to be transformed by technology, falling behind other laggards such as banking. In part, this is because vessels are expensive assets so investing in digitalising them comes with higher risks than other sectors, like automotive. Moreover, changing to a new system, or a bundle of them, is always harder than creating new ones from scratch. Shipping's long and rich heritage has created a type of technical debt. It makes it tempting for maritime companies to choose a simple, more limited, and immediate solution rather than adopt a more transformative and costly approach that would future-proof the industry.**

Over the recent years, the maritime industry has evolved, including shifting shipping executives' priorities. As a result, the perception of digital transformation has changed from an intangible, futuristic concept to being an absolute C-suite priority.

Previously, industry discussions focused heavily on big data. Then, broader conversations started coming into play, incorporating other technological developments, such as Artificial Intelligence and drones, with the potential to impact digitalisation in shipping significantly. The perception of the role of data in the sector's transformation has also progressed, seen now as critical.

We have recently analysed our entire freight services system by assessing each step, removing redundant elements and integrating and connecting high-quality

data to make information flow more successfully. It has helped put data at customers' fingertips and enabled real-time reporting, allowing to address problems before they become critical. The project was a practical example that pre-existing data becomes more powerful, unlocking further insights when collated in a digital system.

## **Shifting priorities and remaining barriers**

In 2017, a PwC survey showed that fewer than 10% of maritime industry respondents believed digitalisation had changed their business markedly in the last five years – far behind other sectors, including high-tech, where the figure was around 25%. However, today's shipping aligns far more closely with digital transformation, and the industry is more

willing to explore its possibilities. Indeed, a growing majority of the maritime community now believes it presents boundless opportunities for the sector. This new collective mindset places shipping in a more favourable position to realise the tremendous potential that it offers.

The COVID-19 pandemic has acted as a catalyst. When social distancing regulations came into force, digitalisation met the urgent need to continue shipping operations and make the supply chain more resilient whilst minimising physical human interaction. More importantly, it demonstrated that the maritime sector has the capacity and ability to change if it must – and understands the reasons to do so.

Despite the sector's growing willingness to embrace digitalisation, some barriers remain nonetheless. A recent [survey](#) of port





Photo: Canva

authorities and operators worldwide conducted by the International Association of Ports and Harbors (IAPH) flagged some of them. The findings revealed that the biggest hurdles for digitalisation and electronic data exchange were coordinating multiple stakeholders in port communities and establishing legal frameworks.

### True digital transformation

The coronavirus pandemic has put the urgency of digitalisation into the spotlight. The situation has shed new light on the stark differences between the relatively few 'smart' digital-ready ports and the rest of them – the majority, which still mainly rely on paper-based interactions. Every port has different capabilities, and, consequently, adoption is highly uneven.

Digitalising the ports sector is even more challenging because many digital experts, especially start-ups, lack experience of working 'on the ground' in ports and at sea. Therefore, many digital systems need substantial further development when adopted before they generate considerable value to users.

Ship agents have always been a conduit between ship and port. Now, in an increasingly complicated digital age where trust and relationships are vital factors, agents could play a new role in lowering entry barriers and supporting overarching efforts to make the digital transformation accessible for everyone in the shipping community.

New digital technologies can also bring a new level of efficiency to port operations. For example, GAC's recently developed

a crew change module which uses machine learning to transform the crew sign-on process. The module, thoroughly tested during the crew change crisis triggered by COVID-19, automatically reads passports and scans them for crucial information then fed into a secure database. As a result, this crew change module has boosted efficiency and improved turnaround times and accuracy by reinventing what previously was a manual process.

In the future, this system could be expanded to provide a single secure digital ID system for seafarers throughout their journey to and from their vessels of work – covering hotel bookings, flights accommodation, and more.

The digital transformation of ports, however, goes well beyond systems and technology. The human element is essential. New solutions are useless if those using them do not understand them, specifically how they directly benefit and optimise their work. Digitalisation through systems can only take you so far. True digital transformation requires the participation of people knowing how to make the systems work.

Shipping companies must proactively support their people through upskilling, training, and changing the corporate mindset about the role and implications of

digitalisation on what they do. Without an early and sustained commitment to train and encourage the next generation of digital experts to get involved by working in partnership with the pioneers, digital transformation is a non-starter.

### Trust and collaboration

The digital transformation of the port and shipping sectors, and the wider maritime industry, has proved highly complex. With the involvement of multiple stakeholders at all levels being a requirement, from senior executives to port crews and seafarers, collaboration and trust are crucial for the whole endeavour to succeed in the first place.

Bringing key stakeholders together requires trust. Therefore, when facilitating digital transformation, it is likely that the shipping industry will turn to the established businesses that it knows and understands. Recognised global players with a long track record are well-placed to play a key role. The need for coordination will incentivise partnerships with companies that offer an overarching view and expertise on digitisation. Having local insight will also be necessary to understand and improve the status of digital transformation at global ports.



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# The choices we make today

by Mathieu Philippe, *Commercial Director, Bureau Veritas Marine & Offshore*

**Translating the newly adopted Energy Efficiency Existing Ship Index (EEXI) and Carbon Intensity Indicator (CII) measures into greener ships requires a new level of collaboration across the industry and beyond. This partnership should also include a sometimes-underestimated ally: classification societies.**

**T**he International Maritime Organization's (IMO) adoption of mandatory measures to decarbonise shipping was hardly a surprise. Still, the change remains significant – one that will force shipping to reinvent itself and companies worldwide to adapt to a new playing field.

The measures adopted in June by IMO's Marine Environment Protection Committee (MEPC) will force ships to improve their energy efficiency through technical and operational measures, in line with IMO's broader ambition to reduce the carbon intensity of international shipping by 40% by 2030 (compared to 2008).

In this transition, the key to success will be information – helping companies understand their current situation and the extent of the challenges they face and then assessing the merits and possible pitfalls of the various options that are available. It is where classification societies like Bureau Veritas (BV) can play a vital role.

## **A pivotal moment for shipping**

It is hard to overstate the scale and the urgency of the challenges that shipping now faces. Shipowners have just over a year and

a half to prepare their vessels to comply before the new EEXI and CII regulations come into effect on 1<sup>st</sup> January 2023.

On the technical side, the EEXI extends the technical design requirement to reduce carbon intensity to existing vessels of 400 gross tonnage (GT) and above, which represents around 55,000 ships worldwide. It assesses how the ship is equipped and retrofitted, covering aspects such as the optimisation of engines, hull and propeller, or the use of non-fossil fuels. Like the Energy Efficiency Design Index (EEDI), which has been mandatory for new ships since 2013, the EEXI compares the energy efficiency of ships to a baseline, with set values for different ship types and categories. Based on data from more than 600 vessels on our register, we expect that approximately 70% of post-EEDI ships will be compliant without any alterations – which still leaves a significant proportion of vessels that will need to adapt.

In addition, a requirement to reduce carbon intensity through operational measures is introduced, based on a new CII. The CII will apply to all ships above GT 5,000, which represents around 32,000 vessels worldwide. It calculates the ratio of total CO<sub>2</sub> emissions to the total transport work

and compares it to a reference value. Each ship will receive a rating of their energy efficiency from the best A to the worst E. Ships rated D or E for three consecutive years will have to develop a plan with corrective actions to achieve the required annual operational CII. The values of the reduction factors have been set by MEPC 76 up to 2026, which means that ships will have to become more energy-efficient over time. Based on data from our fleet recorded in 2019, we expect that between 40 and 45% of ships will be rated D or E by 2023, a figure which could reach 55 to 65% by 2026 if they keep operating in the same business as usual way.

Given the EEXI and CII timelines, shipping companies must act now if they want their vessels to earn the certificates that will allow them to continue sailing and trading from 2023. They must also consider ship performance on a long-term basis, as the trend towards decarbonisation will continue beyond that. The EEXI and CII requirements will be reassessed by 2026, at which point they are likely to become stricter. Shipowners need to make the right decisions today or risk seeing their young vessels on the water today joining the list of stranded assets.





Photo: Canva

### Making the right choices for each vessel

While the magnitude of the transformation facing shipping is hard to overstate, there are various solutions available to ensure compliance with the EEXI and CII regulations. New technologies and fuels are arriving on the market at an unprecedented pace, each making emissions reduction claims that need to be tested and verified. Each has its pros and cons depending on the type of vessel and operational context.

Improving a ship's EEXI and CII is generally achieved through a mixture of technical and operational measures. For most non-compliant vessels, the most convenient way to achieve the required ratings is likely to be the use of an Engine Power Limitation system. Another option to improve the metrics is engine optimisation by retrofit and upgrade. For example, eco-cams ensure flexible exhaust valve timing; eco-nozzles optimise the fuel spray boosting efficiency; turbocharger cut-out at lower loads improves the efficiency of the remaining ones; variable injection timing optimises engine performance; derating and tuning reduce fuel consumption; and slide valves eliminate deposits when slow steaming.

Shipowners can also explore other avenues to improve their energy efficiency, ranging from waste heat recovery, air lubrication or wind-assisted propulsion technologies, to switching to alternative fuels. Other options include improved logistics, variable frequency drive control, weather routing, and frequent hull cleaning and coating.

At BV, we have extensive expertise and experience in existing and emerging technologies, enabling us to develop rules and tools that genuinely support performance. As such, we also play an active role in developing new technologies and their implementation onboard. For example, we take

a collaborative approach to the all-important process of developing notations for new fuels. We have developed our notation for ammonia in collaboration with various stakeholders, including shipowners, equipment manufacturers, designers, and shipyards. As a result of this dialogue, the new notation is not just a BV rule; it becomes an industry standard, addressing the needs and concerns of the shipping companies which are ultimately responsible for delivering on the IMO's carbon reduction targets.

### Going beyond the minimum

At Bureau Veritas Marine & Offshore, we want to be shipping's trusted partner, providing independent and accurate guidance to our partners as they navigate through the options. Bureau Veritas Solutions Marine & Offshore, our technical advisory component, helps shipowners analyse their fleet by individual vessel and understand where improvements need to be made. Numerous options can be considered depending on the extent of the required reduction of the EEXI and CII metrics.

We help shipowners activate what we call the 'four keys' of low-carbon shipping, namely efficient hull, efficient ship systems, efficient operations, and the green energy transition (through alternative fuels or carbon capture). This careful assessment gives additional clarity to shipowners, thereby helping them make smart choices

that protect operating and capital investments and lead to commercial benefits, now and in the long term.

### Doing nothing is not an option

There is no silver bullet to decarbonise shipping. The choices made today will shape the industry for generations. With many technologies still in development and some alternative fuels in their infancy, we cannot sit back and wait for the perfect solution to be widely available. Instead, there is a need for shipping, class societies, equipment manufacturers, and technology companies to work hand-in-hand to develop those solutions. **One such partnership is the association** we have recently launched with the Barry Rogliano Salles (BRS) shipbroker and the ship designers and engineers from Deltamarin. By working together, we will provide even more effective ship performance and energy transition solutions to the world's shipowners.

Doing nothing is not an option. Consumers' desire for change has already translated into public scrutiny and commercial incentives, with a growing number of charterers including sustainability criteria in their tenders and investors adding environmental, social and governance considerations to their lending and investing decisions. Our willingness to work together must be proportional to the scale of the challenge we face – as an industry and as a society. ■



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# In many directions

by Alicia Rust

**After only about one and a half years – the Baltic Sea Bridge can draw some positive conclusions. The joint project between Mukran Port Terminals and Bahnoperator has successfully established itself as a fixed route on the New Silk Road. The German Baltic port handled some 15,000 TEUs in 2020, while from the beginning of this year till the end of May – another 16,000 TEUs.**

**H**arm Sievers, Mukran Port Terminals' Managing Director, has launched the ambitious China project about three years ago, using his funds and selecting the team. By November 2019, the first test trains began rolling in both directions. After only ten weeks of testing, the Baltic Sea Bridge, connecting the ports of Mukran and Baltiysk, a dedicated sea link for carrying New Silk Road containers, was upgraded to a bi-weekly sailing schedule. The high demand has resulted in quickly putting a new and bigger ship on the route.

Nowadays, the 24-hour Mukran-Baltiysk crossing is offered four times a week. Another general cargo vessel, *BREB Mukran*, chartered by a major shipping company from Bremen, has joined the operations.

## Tapping into the offer

From the very beginning, Harm Sievers was convinced that the market would quickly accept the new corridor. One could hardly have wished for a better confirmation of optimism, one's market research, and precise product development.

Mukran's long-lasting port partner, the Swedish Karlshamn, has also tapped into the offering. Via short sea shipping, China (Xi'an) in- or out-bound

containers are circulating within the Mukran-Karlshamn container service. In April 2021, one of the service's ships made its first port call to Karlshamn, transporting containers from Mukran.

The new services are excellent additions to the existing network, including numerous hubs in Germany and the Baltic Sea region. It will allow further markets in Scandinavia, continental Europe, and even the UK to connect with China.

## The length and breadth

Mukran's China traffic expansion is done in close cooperation between the port, Bahnoperator, and Eisenbahngesellschaft Potsdam (EGP). The last one operates the ElbePort Wittenberge, a trimodal transshipment terminal (also linked to Bremerhaven and Hamburg), extending the Baltic Sea Bridge further towards the German hinterland. A future bi-directional connection to Great Britain is in preparation via Cuxhaven. Mukran has also established a direct container train to and from Rotterdam.

"Thanks to its geographical location, Mukran Port is the ideal logistics hub for the transports between Asia and Europe," Marcel Stein, Bahnoperator's Managing Director, underlines. He explains,

"The Xi'an route in central China to Mukran is significantly more time-efficient for these transports than the traditional overland route via Poland and Germany, from where onward transports to Scandinavia and the Baltic States then take place." Stein analyses, "In China, a maximum of 50 forty-foot containers can be transported by train. Considerably more across the Commonwealth of Independent States, whereas through Poland only 41-42 containers by default and up to 46 under certain conditions. However, through Mukran, just like in China, 50 containers can be carried. It means that Baltic Sea Bridge 740 m-long trains do not have to be separated, which means more capacity."

## Anew

Mukran has undergone a series of fundamental changes over the last couple of decades. What was once a ferry port is now an industrial zone that keeps developing in many directions: cruise, ro-ro, offshore (wind and project logistics), and most recently specialised container traffic for high-quality products and spare parts between China and Europe. The German Baltic port has anew become the westernmost freight terminal of the Trans-Siberian Railway. ■



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# A flight of black swans

by Michael Yarwood, *Managing Director Loss Prevention, TT Club*

**So-called black swan events are meant to be a rarity. Over the past 18 months, those engaged in global supply chains would be forgiven for thinking black swans are more common than their white brethren. Let us then spot the birds and assess some of the consequences of them coming home to roost, also offering a few comments on how to mitigate the expense and risks that result.**

**F**ollowing nearly a year and a half of disruption due to the coronavirus pandemic, the recent Suez Canal blockage was another unwelcome complication for the global supply chain. Port congestion in Southern China, West Coast USA, Europe, and many other places has, in part, been a consequence of both these troublesome birds. However, higher than typical consumer demand has also added to the capacity crunch. The latest figures for global consumer spending show regular year-on-year increases of over 10% for each of the months so far this year (versus a decade-long average of around 4%).

## **Greater than expected waves of cargo**

Whether it's because of delayed ship arrival due to the Suez blockage or awaiting a berth in Yantian, or simply larger volumes of cargo to feed the rapacious appetites of American and European consumers, operational difficulties are widespread across ports and terminals around the world. The arrival of large volumes of laden containers, coupled with the potential challenges of hinterland distribution, will disrupt standard delivery patterns. Therefore, one consequence will be an accumulation of cargo, a complex risk and one that will not affect destination ports and terminals only.

There is a significantly heightened risk of theft, and thus a greater focus on security is required. Whether it simply be an

overspill holding/storage area or temporary warehousing, it is more likely to be stolen whenever cargo is not moving. Supply chain actors should be mindful of these security risks and ensure that sufficient consideration is taken to ensure that any third party providers of storage are adequately resourced to meet your security expectations.

Final mile haulage will be another vital factor as greater than expected waves of cargo arrive. As highlighted in the recent **International Road Transport Union (IRU) survey**, driver shortages are expected to soar through 2021. Many countries across Europe already have to grapple with this challenge. In the US, shortages of drivers have also been the experience of trucking companies over recent months. Available last-mile haulage capacity is likely to be stretched when peak demand hits or delayed ships arrive in a more intense sequence. The lack of capacity to move laden containers out of the terminal can create additional challenges. Those seeking to secure road haulage capacity should be mindful of the associated security risks highlighted in the latest **TT Club-BSI joint cargo theft report** and ensure that sufficient due diligence is undertaken when employing new or unfamiliar service providers.

## **Staying one step ahead**

Abandoned cargo is not a new challenge. Every year, delivery delay or failure of the consignee to collect cargo results

in substantial storage, container demurrage and container detention costs. These issues are also invariably complex and require expensive management time to resolve. There may be no legal or contractual way to escape liability or recover the costs associated with abandoned cargo, including container demurrage, port storage, disposal costs or fines.

Whilst clearly not a consequence of the pandemic, Suez blockage or increased consumer spending, the explosion in Beirut last August brought into focus, in a sadly horrific way, how both the neglect of cargo storage and lack of owner responsibility can have disastrous effects. Stored ammonium nitrate fertiliser exploded, killing more than 200 people, injuring 6,500 and devastating parts of Lebanon's capital. Following the deadly blast, it was revealed that another 50 abandoned containers filled with hazardous chemicals had been discovered in an open-air storage yard. Some had, apparently, been languishing in at the port for more than a decade.

More common, though in many cases less dangerous, examples will be increasing as a result of congestion and delay around the world. Learning how to identify risks early to help mitigate the inevitable fallout is critical. TT Club recommends establishing effective due diligence procedures and developing specific processes to identify suspect shipments to stay one





Photo: Canva

step ahead. Early detection and proactive management reduce losses. However, in the complex logistics supply chain, such things are not always straightforward; whilst sales pressures should be managed, relationships with partner operators may dictate tolerating certain bookings where assurances are less present.

The simple lesson is that all bookings should be subject to deliberate business decision-making – and procedures should be crystal clear on how to handle all exceptions. Adequate advanced consideration will lead to an informed commercial decision to decline the booking or allocate additional operational attention to the shipment.

### Leave nothing to assumption

There are many potential causes of cargo being abandoned at some point in the supply chain – understanding what they are should offer some protection. Most commonly, goods are left at the destination port. Management controls are required to identify problematic commodities, routings and destinations. Other red flags may include uncertainties concerning the nature of the shipper or sanctions issues.

Certain commodities present more risk – and may be influenced by geographical or seasonal conditions. Being alert at the outset of the booking process may reduce exposure. Experience will complete one's list, but here are several commodities commonly presenting higher risk: waste (all kinds, including fabric, paper and wood); scrap (metals, plastics, wood); cargoes intended for recycling (often waste shipments with an alternate descriptor); used computer equipment; old tyres; and personal effects.

While the reasons for uncollected cargo vary, most are relatively low value, high-volume and often not newly manufactured goods. However – and particularly arising from **cargo integrity** concerns – it is essential to recognise that declarations may also be fraudulent. Dangerous goods screening checks are equally critical.

Knowing your shipper is fundamental in identifying heightened risks. Not all cases of abandoned cargo involve a shipper who intentionally seeks to deceive but conducting careful due diligence will pay dividends. The reliability of the shipper is a crucial consideration to assess any heightened risk. Consider the routing of the cargo being presented for shipment. Deliberately develop knowledge over time concerning usual trade routes for certain commodities.

The underlying sales contract will not usually be visible to the freight operator, but its terms could point to a reason for abandoned cargo. Be alert to factors that may indicate potential problems, not just where freight is “shipped to the order of” but also changes in economic or market conditions.

TT Club has been involved in other instances where dangerous goods have languished in terminal areas until their hazards were exposed. As with many troublesome issues, the reality is that uncollected shipped goods affect a small fraction of transactions, although it will have a disproportionate impact

on time, distraction and cost. Whatever the cause – be it a mistake, fraud, insolvency or fiscal issues – the lesson of Beirut sadly needs to be learned the world over.

Even amongst sophisticated and well-ordered operations, it has been known that regulated dangerous consignments have simply been ‘lost’ in the system. There is no room for complacency, particularly in geographic areas where extreme seasonal temperatures occur, and therefore ongoing, routine physical checks of the yard remain necessary adjuncts to technologies. At an operational level, the simple lesson is – leave nothing to assumption; preparation and practice are key.

### Just in time – or case?

It might be time to review the habits prevalent over the last decade at a macro supply chain scale, whereby streamlining and operational efficiencies have been a priority. Such measures have included reducing suppliers, choosing specific routes, and introducing just in time principles to lessen the burden of unnecessary storage costs.

The black swans that have taken flight since the beginning of last year might give practitioners reason to question this bias towards efficiency and cost reduction at the expense of resilience. The new normal might see many actors increase their focus towards contingencies, more ‘just in case’ than ‘just in time.’ ■



TT Club specialises in the insurance of intermodal operators, non-vessel owning common carriers, freight forwarders, logistics operators, marine terminals, stevedores, port authorities and ship operators. The company also deals with claims, underwriting, risk management as well as actively works on increasing safety through the transport & logistics field. Please visit **www.ttclub.com** for more info.

# The biggest logistics project ever

by Michael Yarwood, *Managing Director Loss Prevention, TT Club*

**Already on the front line and proven critical to the world's economy, performance in the global supply chain is now being catapulted into the public gaze like never before. While the uptake of COVID-19 vaccination programmes in several countries is high, many regions have yet to roll out vaccines at a similar rate. Some Southeast Asian countries such as Vietnam and Taiwan, where death rates were low during the first wave, are now suffering as vaccination rates are low across their populations. It is estimated that only 1.1% of the African population has been jabbed. At the end of June, it was reported that only 4% of people in India had received their vaccines. Necessarily, supplies and the distribution of COVID-19 vaccines will be ramped up significantly in the coming months.**

It is hard to imagine a comparable product with a wider 'value' associated with the well-being of the global population, societal benefits and the impact on the global economy. As such, the distribution of COVID-19 vaccines has been labelled the 'biggest logistics project ever.'

Without the inevitable emotion attached to its distribution, one could argue that the vaccine is similar to any other valuable, sensitive cargo. The basics remain constant: identify the characteristics of the cargo to ensure its integrity is maintained; understand the location of manufacturing, delivery, routing and volumes, as well as value; then determine the appropriate strategies to adopt for safe and secure transport. Yet, there are considerable differences in distributing this particular freight – whichever vaccine is considered.

## **Risk at every juncture**

Critical challenges exist in maintaining integrity in the temperature-controlled vaccine supply chain, including accurate instructions and communications between stakeholders. Risks exist at every juncture, including packaging, packing, transport and unpacking. Such sensitive shipments will be vulnerable to the slightest error or discrepancy. Vaccines, specifically, are not just perishable but also subject to tight regulations

concerning transport. Of particular relevance are the necessary controls regarding traceability and evidence of integrity throughout the journey.

The availability of transport equipment might be an interesting challenge in the current circumstances. Air freight capacity has remained tight throughout the pandemic despite increased passenger aircraft conversions to all-freight configurations. Sea freight might provide additional capacity. While it isn't a traditional mode of choice for such pharmaceutical goods, the nature of this particular supply chain and the fact that there will inevitably be various production batches suggests that sea freight could be a good fit. That said, the current troublesome accessibility to containers in many regions of the world may restrict the attraction or feasibility of utilising the maritime mode.

There might also be the requirement to use reefers for some vaccine types. It may, however, be more difficult to increase the production of this specialist and costly equipment. Semi-active and passive solutions may be more readily scaled up to meet peak and ongoing demands.

Contamination risks will be amplified, given the sensitive nature of the cargo. Carrying equipment will need to be clean, clear of debris, free of visible pests, and controlled to ensure that previous loads will not lead to taint or odour.

Ship stowage planning may also require increased attention.

## **Counterfeit rings**

There have been many reported spikes in counterfeit medicines and related criminal activity across the globe. It may be anticipated that COVID-19 vaccines are a prime contender for counterfeiters to target. The heightened regulatory environment may only partially mitigate this risk for the transportation of these particular pharmaceutical products.

In a recent major operation, Europe's Interpol broke up global counterfeit rings, closing more than 100,000 bogus online pharmacies, making nearly 300 arrests and seizing more than \$20m worth of phoney items in the process. Mainly targeting counterfeit COVID-19 testing kits, this operation followed other examples. These have included discovering counterfeit networks in China and South Africa and producing fake vaccines from simple, widely available ingredients such as saline solution and mineral water.

Despite these law enforcement breakthroughs, the world's fight against the coronavirus pandemic has been further undermined by a booming trade in counterfeit personal protective equipment, COVID-19 testing kits, vaccine passports and other products, disrupting the preventative efforts and contributing to the spread of the virus.





Photo: Canva

In India, police reports speak of around 2,000 people injected with fake COVID-19 vaccines in Mumbai and another 500 in Kolkata – some of them disabled. Vaccination rates rose sharply in early July after the centre made shots free following a devastating pandemic surge in April-May. Still, the rush to be jabbed allowed counterfeiters to benefit by supplying fake vaccines of saline solution. In Kolkata, police arrested a man posing as a civil servant with a master's degree in genetics who reportedly ran as many as eight spurious vaccination camps.

In the case of COVID-19 vaccines, as opposed to other high-value pharmaceuticals, only governments and multilateral agencies have access to the limited number of closely monitored suppliers meaning there is little room for so-called 'bad actors' to acquire genuine supplies. But the very tightness of supply allows these bad actors in the world of counterfeiting to exploit the imbalances in the supply of the vaccine and associated products against the enormous global demand.

### Intensified security strategies

It is a near-perfect supply/demand situation to encourage counterfeit vaccines, which has not been helped by the expense of developing vaccines at a national level. There is a very high research and development cost behind producing a genuine product, making access difficult, especially for poorer countries. It has ultimately led to unequal global access to vaccines, with much of the world's supply being controlled by the most powerful countries.

In attempting to achieve some semblance of equanimity of distribution to poorer

nations, and those not taking up vaccine orders early, national policymakers will determine approvals and demographic priorities. However, realistic or not, widespread expectations will be that distribution and availability are immediate, or at least imminent. There will inevitably be those who fall outside of a defined demographic willing to pay for expedient access. Consequently, the black-market environment will likely continue for some time into the future.

Very early in this pandemic, items such as face masks and anti-bacterial hand gel became key targets for perpetrators of cargo crime. Unless distribution plans are perfectly executed within the expectations of any given population, which is unlikely, the vaccine supply chain will see a far greater multiplication of these threats.

The stakes could not be higher, far beyond theft or cybercrime; here, cybersecurity will need to defeat industrial espionage. Pharmaceutical regulations alone will be insufficient to support the necessary tracking, tracing and transparency through the end-to-end supply chain; intensified security strategies need to be developed and implemented. The menace of cybersecurity risks in this instance should put all on the highest alert. In general, freight crime rarely attracts media attention; it may be expected that the theft, loss or damage of COVID-19 vaccines would be front-page news.

### The ultimate consignee

The scale of the logistical challenge can't be over-estimated. Many supply chains during the pandemic period have suffered stress and disruption, and there are regular reports of port congestion, shortage of containers, lack of reefer point capacity and strains on limited air cargo solutions. Significant volumes of the vaccine in need of distribution are to be anticipated well into the future. While some countries are considering local manufacturing and distribution, the logistics requirements are expected to stretch capacity and capability.

Distribution will eventually become global, necessitating careful planning and due diligence. While air freight is widely expected to support the primary movement of the vaccine, the global distribution requirement will necessitate substantial involvement from surface intermodal actors. The likely multiple transfers will require the most careful management of all aspects. The ultimate consignee in the context of the vaccine is, of course, you and me; delivery to a destination country or local region is not the end of the supply chain since final mile logistics involving truckers and temporary storage could prove complex. For the very final link in the supply chain, we will remain in debt to our medical professionals. ■



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# The diversified future

by Przemysław Myszk

**There's a growing understanding that the shipping business must become more sustainable. How to hit that nail on the head is, however, a wholly different discussion, with many solutions portraying themselves as the silver bullet. At the same time, the coronavirus continues to disrupt the industry, especially the passenger part. We're talking with Stena Line's Erik Lewenhaupt about the present and coming challenges, including the pandemic and Brexit, the company's experiences and plans surrounding electricity, next-gen digital tools, and his outlook on what will be the name of the game in the foreseeable future.**

□ *Let's address the elephant in the room first – the coronavirus. What has been the to-date impact of the pandemic on Stena Line's operations?*

The pandemic has been very tough on us. National travel restrictions have hit the international ferry business hard. We scratched the deepest bottom when we noted a 90% reduction in the number of passengers. For the year as a whole, we lost more than 50% of our passenger volume. The flurry of all sorts of ever-changing rules made it at moments difficult to corona-adjust our operations. For example, one country said one thing about the quarantine's length, while the one sitting on the ferry route's other end – something different. The rule-making landscape had been varying like the view in a kaleidoscope. The situation is still full of uncertainty, even though the vaccination programme is rolling out through Europe. There is some light at the end of the tunnel, though; senior passengers, those already vaccinated, started boarding our ships in greater numbers. This, however, won't make me venture into saying that this summer will be like in the good old days. On a more positive note, there are signs that the traffic might build up in the coming months. Since the pandemic's outbreak, we have been focusing on keeping the best of both worlds of the ferry sector, namely providing services that combine passenger and freight flows – where and whenever possible. An equally important priority was to retain as many of our crew as possible. On the one hand, we can be proud that we have swiftly implemented anti-corona measures to render our services safe. The cargo part of our business has been running uninterruptedly, making it possible for our clients to haul vital supplies

Europe-wide. On the other hand, we had to close two routes. The plummeting passenger numbers wouldn't allow for keeping them operational, hoping that the pandemic will go away, and the traffic will rebound.

The impact of the pandemic, its length and breadth, is unprecedented. The persistence of the virus makes it very challenging to run a cross-border business such as ours. One can increase safety and hygiene measures, introduce social distancing, receive a helping hand from public authorities in the form of furloughs. Still, the hard reality for Stena Line is that we had to make idle some 30% of our workforce at the end of the day. However, if it hadn't been for the governmental support, chiefly in Sweden and the UK, I'm convinced things could have been worse. Nevertheless, this is the naked truth of the passenger sector in general, off- and onshore: the more one's business tilts towards cruising, the more exposed you are in this situation.

Meanwhile, as the pandemic continued to take its toll, Brexit has materialised. We have to wait and see whether it will have an enduring effect on our bottom line. In the weeks leading to Brexit, we saw a noticeable increase in cargo traffic towards the UK, especially from the Netherlands. Many enterprises were stockpiling before the 'Great Unknown.' Next, similar to other companies active in the region, we have increased the capacity between the Republic of Ireland and France. The so-called "Brexit by-pass services" have picked up the intra-EU volumes. That said, the situation, particularly in the Irish Sea, is a mixed one. Some routes are up, some down. As of now, it is a market in the making, so to say. Perhaps the picture will clarify later this year.

□ *Has there been any silver lining to corona?*

Indeed, the issue of sustainability has sped up despite – or because of – the pandemic. It can be seen across the EU, but also in the UK. We hear ambitious statements, most notably encapsulated in the European Green Deal. The block wants to move to a greener and more circular economy/society, including the transport & logistics sector. Really big topics have started to fly in the high-tier EU debate, such as the shift to low- or zero-emission fuels as well as the inclusion of sea shipping in the EU Emissions Trading System. We, as Stena Line, see it as a positive development. National initiatives are all right, like aiding companies that want to shift freight flows from land onto waterways or when a port authority grants lower fees to the more eco-friendly ships. Yet, the EU should take care of the big picture by establishing a framework – covering regulatory affairs, infrastructure investments, research & development – that will make it possible to green the industry as a whole.

□ *What is currently the company's sustainability strategy?*

The maritime sustainability agenda is nowadays very much tilting towards the carbon footprint issue. If you are a company like Stena Line, operating 36 vessels, then it's crystal clear that doing something with how much greenhouse gas you emit will be vital if you're concerned with the state of the environment. That's why our focus lies on carbon emissions and clean energy. We want to lower our emissions by 30% by 2030 versus the 2019 baseline.





Photos: Stena Line



Yet, there's more to our strategy than this. Our industry is traditionally male-dominated. Stena Line's ambition is to break this pattern and make shipping a more attractive workplace for women. That holds for all levels of our business, including leadership. In our view, diversity adds to sustainability. Before 2023, females should account for 30% of our leaders, i.e., among managers, the Group Management Team, and the Board of Directors.

Apart from these two areas, we also pay attention to many other things that comprise the 'Stena experience.' For instance, we are making other services, like hotel and catering, more sustainable, too, by looking at how to make our supply chain greener and fairer.

**Can you shed light on the development of Stena Fuel Pilot, an Artificial Intelligence-based assistant for your crews?**

The industry is full of digital platforms that support shipping operations or fleet or booking management. That said, we didn't find a solution that would suit our needs, hence the decision to develop Stena Fuel Pilot.

In essence, it's a decision-support tool for ship officers. We've started by gathering historical data from five years of operating a given route, which equals a couple of hundred yearly sailings. The datasets encompass weather, trim, cargo, currents, and so on. The AI analyses these data and pairs the current sailing against the historical background, advising the crew on the most optimal way to operate. The captain and the chief engineer are still in charge and have the final say whether to follow the algorithm's advice. To date, the solution has saved us 2-3% on fuel consumption across seven ships. Unfortunately, the corona has halted the installation of Fuel Pilot on other vessels. We are waiting to grant the installation teams access to reap the benefits with the rest of our fleet. If all goes well, we'll equip four ships with it every quarter.

**Speaking of AI, what's your take on autonomous shipping?**

I'm not convinced that we will see ferries the size we have in our fleet sailing on their own. We may witness smaller crews and

automation used to a broader extent. But large seagoing ro-paxes with private and commercial passengers, plus cargo, alone onboard for a dozen or so hours – I don't see that coming. I'm not sure if full automation would bring the benefits of making the whole effort worth the candle. In addition, it would require replicating the know-how and experiences of the crew, which is, I dare say, a bit more complex than in other shipping segments because of the various human interactions on board.

Then again, maybe it's simply about 'domesticating' technology. After all, when New York City saw elevators for the first time, you couldn't ride them alone; the elevator crew had to make sure the "journey" would be safe. It was just too risky to leave people to themselves in an elevator.

**Can you also say something more about your fleet renewal programme?**

The E-Flexers are the culminating point of our ferry operations running since the 1960s. As the name implies, we wanted flexible vessels, both in terms



Photo: Wikimedia Commons





Photos: Stena Line



of passenger and freight transportation, to move them across our network when needed. The pandemic and Brexit have proved that this approach was the right one to take. Traffic flows can change rapidly; therefore, having ships that fit different routes, existing and potentially new ones, is pivotal.

The E-Flexers are also very well designed, energy efficiency-wise. Thanks to them being overall bigger than our current tonnage and the hull and engine optimisation, we can trim some 25% off a single transported unit versus the older vessels in our fleet. The E-Flexers run on traditional bunker; however, their design allows for future conversion.

**□ It seems that your company has put its bet on electricity. What are the company's plans across this field?**

With today's pace of development, it's hard to check in practice each alternative propulsion technology, no matter how much buzz there is around them. Even big companies like ours don't have endless capacities to put all the solutions

to the test. That said, Stena Line wants to play its part in greening the industry, hence the decision to centre our efforts around electricity.

We aren't doing this in isolation. Our past, present, and future projects play into the broader trend of electrifying port infrastructure or, even more broadly, as we're witnessing it in Sweden, the logistics supply chain. For many years we've been using the onshore power supply, as it makes perfect eco-sense in instances where the energy mix is green and policies, like taxation, don't discourage the use of cold ironing. A total of 14 ships in our fleet can 'plug in.'

Next, in-port cargo handling equipment and vehicles are getting electrified. Truck manufacturers, e.g., Volvo and Scania in Sweden, are working on solutions that will make it possible to electrify lorries. Just a couple of years ago, e-cars were a thing only when somebody was commuting on short distances in cities that had the charging infrastructure. Fast forward to today, and we're talking about heavy-duty long-haul e-transportation. The same goes for tugs – we're barely a few years before that happens.

One of Stena's other companies, Battery Loop, intends to develop what could be called "port power banks." The idea is not only to provide shore power in ports that otherwise couldn't offer it or at least the amount needed, but it's also about giving second life to 'used' vehicle batteries. The supply of batteries generates a carbon footprint of its own. We should make the process as sustainable as possible, which means reusing and recycling them to the fullest. Europe goes green with renewables, which is positive, but it'll require a whale of energy storage to balance supply and demand. During off-peak hours, when there are no ferries at berth and port operations aren't so intense, the energy storage installed in ports can support other uses across the grid.

**□ Can you share the company's first off-shore experiences with electricity?**

We've started our e-adventure with *Stena Jutlandica*. At the time of her conversion in 2018, she was, if not the biggest hybrid ship, then at least one of the top. The solution we used is a containerised

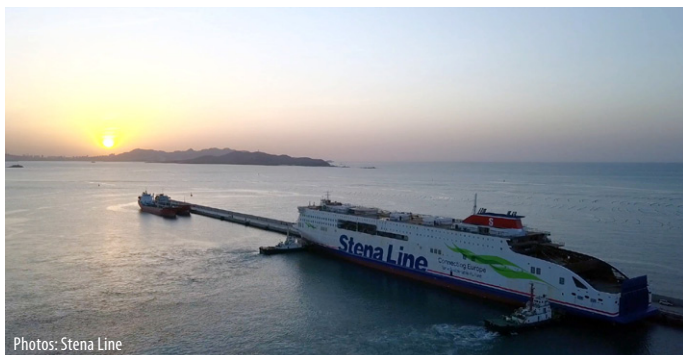


Photo: Stena Line



Photo: Port of Gothenburg





Photos: Stena Line



1.0 MW battery, whereas there are 4-5 MW installations on the market today, with more powerful ones already on the drawing boards. It only manifests the potential hidden in ship electrification – from supplementing ancillary systems through hybrid propulsion to fully electric operations.

The battery pack onboard *Stena Jutlandica* supplements one or two auxiliary engines. She can draw energy for running the thrusters, ventilation, and heating & cooling. The batteries can as well act as a backup in case of a blackout. The batteries are charged in the Port of Gothenburg and use peak shaving when at sea. Overall, the project has proved to be a success from both environmental and safety perspectives. The ship crew is pleased to operate it, too.

**□ What will it take to construct *Stena Elektra*, your fully electric, large-scale ferry?**

Scaling up from *Stena Jutlandica* to **Stena Elektra** will require a few things. First, the battery technology itself – whether the present technology will evolve to power the ship of her size, or maybe we'll have to experiment with alternative battery technologies. Secondly, the shore infrastructure. The onshore power supply is one thing, even if you think about providing cruise ships with electricity, which requires significant grid capacity. Charging a seagoing ferry will be an altogether different kettle of fish. We're looking at, give or take, 30 MW to charge 60 MWh batteries in *Stena Elektra's* case. Port authorities must work with energy companies, suppliers and infrastructure managers alike, local and even national authorities to make this happen. Being able to plug *Stena Elektra* will be the result of a concerted undertaking of many parties. We're in talks with the ports in Gothenburg and Frederikshavn, between which the e-ferry will sail, who've expressed their support for this fossil-free venture.

Lastly, the triple-e issue, namely we need electricity that is ecological and economical. Naturally, there will be a significant number of points to resolve while designing the ship in detail and preparing for its construction. By all means, *Stena Elektra* will be a monumental project, having everything it takes to be a game-changer. We're excited to embark on this journey and hope to see her one day calling to ports she'll be serving (as quietly as a Tesla!).

**□ You have also been running one of your ro-paxes on methanol. Are you planning to expand on this idea?**

We are satisfied with running *Stena Germanica* on methanol. We've shown that it's, in fact, possible. We'll further explore the topic by shifting to renewable methanol to slash her carbon footprint. The supply of e-methanol must be, though, scaled up to become a commercially attractive option. Most recently, we have, within the EU backed FReSMe project, run *Stena Germanica* on recycled methanol coming from the country's steel industry. The so-called blue methanol used in the trial bunkering was produced from carbon dioxide recovered from the blast furnace gases from SSAB's steel production in Luleå. It is a fantastic example of cooperation between shipping and the steel industry, proof that together we can drastically lower our climate impact.

**□ What's your take on the Next Big Fuel/Thing in shipping? Which solution and policies have the highest chance of being a game-changer?**

The industry needs the stick of regulations – preferably the more international, the better – and the carrot to drive the green transition. If allowed and supported, shipping lines are more often than not eager to go beyond the regulatory minimum. For instance, if the industry falls under

the Emissions Trading System, the money gathered this way should be channelled back in the form of green investments, be they capital or research & development funding. In my opinion, this would give shipping a shot in the arm. Companies would get extra wiggle room to either retrofit their fleet with energy efficiency measures or opt for eco-friendly new-builds. The transition is a process in the making. We cannot wait for some magical point in time for everybody to say, "All right, we're now going to replace our vessels with the latest and greatest ships that will tick off IMO's targets."

Evolution and revolution in the shipping business will go hand-in-hand. Some have already opted for liquefied natural gas and are increasingly interested in exchanging it for renewable liquid biogas. Others have invested in add-on energy efficiency solutions such as wind propulsion or air lubrication. At the same time, companies are placing their bet on electricity or hydrogen. We need to explore all those avenues. We'll find the future much more diversified in terms of the number of energy carriers available. What will work in one instance won't fit other circumstances.

Much research will have to be carried out to corroborate the claims this-and-that solutions makes. Shipping companies need to have clear guidelines before they make an investment decision. Otherwise, the risk will be too high, and they'll pass on the opportunity and play it safe by opting for more traditional solutions. New fuels and next-generation technologies need support and validation from classification societies and authorities like the IMO and EU. For example, suppose an operator invest millions in a new ship that runs on hydrogen. In that case, they want to be sure that it works on the operational level and there is a common standard for how the carbon footprint for that propulsion gets valued among authorities across the globe. We need both support and alignment to speed up this transition. ■



# Feasible on all counts

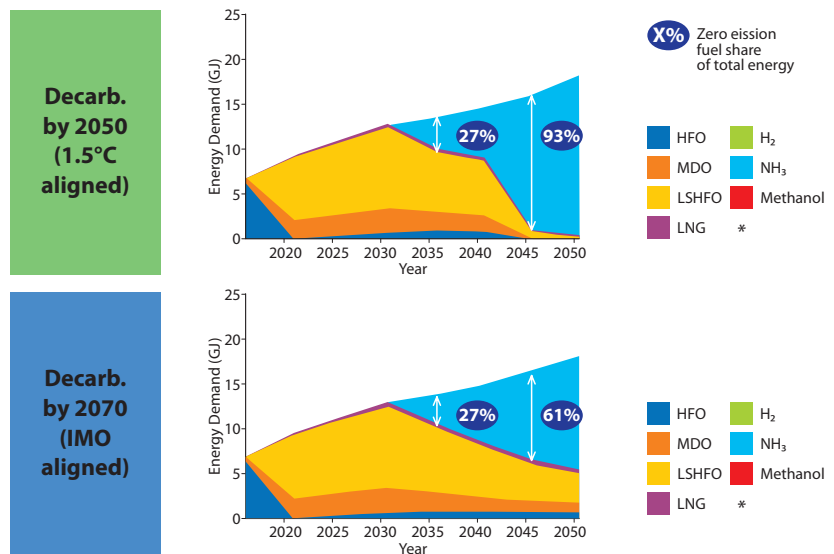
by Peder Osterkamp, *Shipping Lead, COP26 Climate Champions*;  
Dr Tristan Smith, *Reader in Energy and Shipping, University College London*;  
and Kasper Sogaard, *Head of Research, Global Maritime Forum*<sup>1</sup>

**The ambition of the Getting to Zero Coalition is to have commercially viable zero-emission vessels operating along deep-sea trade routes by 2030. But at what degree of adoption do zero-emission fuels become “commercially viable?” An S-curve based analysis suggests that zero-emission fuels need to make up 5% of the international shipping fuel mix by 2030 to enable decarbonisation in line with the Paris Agreement goals.**

The Getting to Zero Coalition aims for “commercially viable” zero-emission ships by 2030 but has yet to quantify this target. Such a target would help mobilise commitment and action across stakeholders. Energy companies would have greater confidence in demand when planning green fuel development projects. Cargo owners could get mobilised to pay a premium for zero-emission fuels on a corresponding per cent of their freight. Investors could quantify the amount of investment needed across the value chain. Shipowners could plan investments in newbuilds and retrofits. And regulators could be called on to ensure a level playing field is in place to enable the transition.

In 2019, UMAS conducted a study to describe the most technologically feasible paths to achieving decarbonisation for international shipping by 2050, putting the sector in line with a 1.5°C trajectory – and by 2070 – the International Maritime Organization (IMO) aligned course. In both cases, zero-emission fuels needed to make up 27% of energy by 2036. So, what does that mean for the fuel adoption rate required by 2030?

Fig. 1. Decarbonisation trajectories for international shipping



\* or equivalent fuel that meets the GtZ zero carbon emissions definition

Sources: UMAS GloTraM; UK Clean Maritime Plan

## Estimating shipping's tipping point

The adoption of zero-emission fuels in shipping is bound to follow an S-curve, as has been the case with all historical industrial transformations. An S-curve consists of three stages. It starts with a slow emergence

phase when there is rapid learning, and the costs begin to come down. After this, the

<sup>1</sup> The views expressed in this Insight Brief are those of the authors alone and not the Getting to Zero Coalition or the Global Maritime Forum, Friends of Ocean Action or the World Economic Forum.



diffusion phase sets off with the rapid adoption of the new technology, with positive feedback loops between different actors raising confidence, increasing demand and investment throughout the value chain. The curve flattens out again in the reconfiguration phase as the new technology is adopted and new normal establishes.

To estimate the “tipping point” shipping needs to achieve by 2030 for rapid diffusion of zero-emission technology post that date, we generated an S-curve to fit the UMAS 2036 and 2046 milestones. These establish that to reach decarbonisation by 2050, zero-emission fuels need to represent 27% of total energy by 2036 and 93% by 2046. Though the Getting to Zero Coalition has not yet agreed on a target year for full decarbonisation, it is preferable to have a 2030 target that enables decarbonisation in line with the Paris Agreement. The resulting curve indicates the need for a 5% adoption rate of zero-emission fuels by 2030.

Based on this, the **UN Climate Champions** have set 5% zero-emission fuels by 2030 as the **Race to Zero Breakthrough** for international shipping, campaigning to achieve this near term milestone to ensure that the sector is on track for net-zero emissions before 2050 (the Race to Zero Breakthroughs for nearly 30 sectors were launched at the World Economic Forum’s Davos Agenda in January 2021).

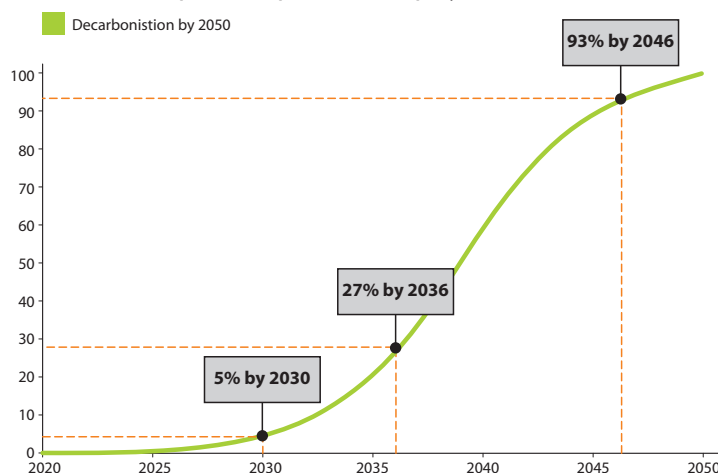
### How can the 5% target be reached?

There are three primary sub-segments of shipping that could move first and achieve this 5% target. Firstly, container traffic is likely the first shipping sector to start to decarbonise as a few ports/routes account for a large share of volume, and the sector is closer to the end consumer. For example, ten large deep-sea routes accounted for seven million tonnes of CO<sub>2</sub> in 2018. These routes could make up 0.8% of the total 5% needed.

If ammonia is selected, ammonia and LPG tankers are well suited to be the first movers. It is also valid for ships used to transport other hydrogen-derived fuels. Ammonia transport alone accounted for approximately 0.1% of emissions in 2018. Together with LPG tankers, the sum could be 2% of the total 5% needed. It is an upper bound and would require high rates of transport demand growth.

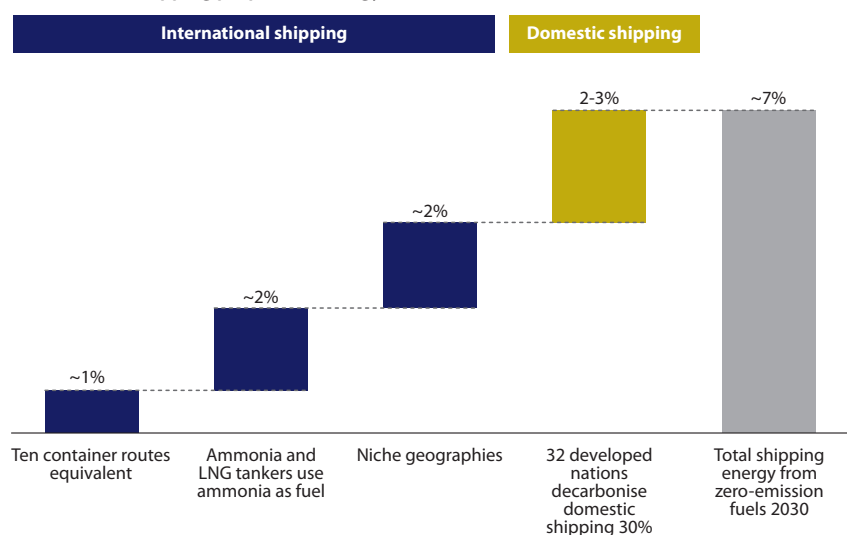
Niche international routes (non-container shipping) have a high likelihood of enabling conditions for zero-emission fuel first movers. For instance, Chile-US, Japan-Australia, Dubai-Singapore, Australia-Singapore, and Denmark-Norway could provide another 2%.

Fig. 2. Zero-emission fuel adoption rate (per cent of fuel per year)



Sources for Figs. 2-3: COP26 Climate Champions; UMAS

Fig. 3. Zero-emission fuel adoption contribution per lever 2030 (per cent of total shipping propulsion energy)



In addition, domestic shipping could account for another 2-3%. A total of 32 developed nations make up approximately 50% of domestic shipping emissions. If they achieve 30% of energy from zero-emission sources, this will correspond to 15% of domestic shipping energy and 2-3% of total shipping energy. Therefore the UN Climate Champions have set 15% of zero-emission fuels by 2030 as the Breakthrough necessary for domestic shipping.

### Can supply meet a 5% demand by 2030?

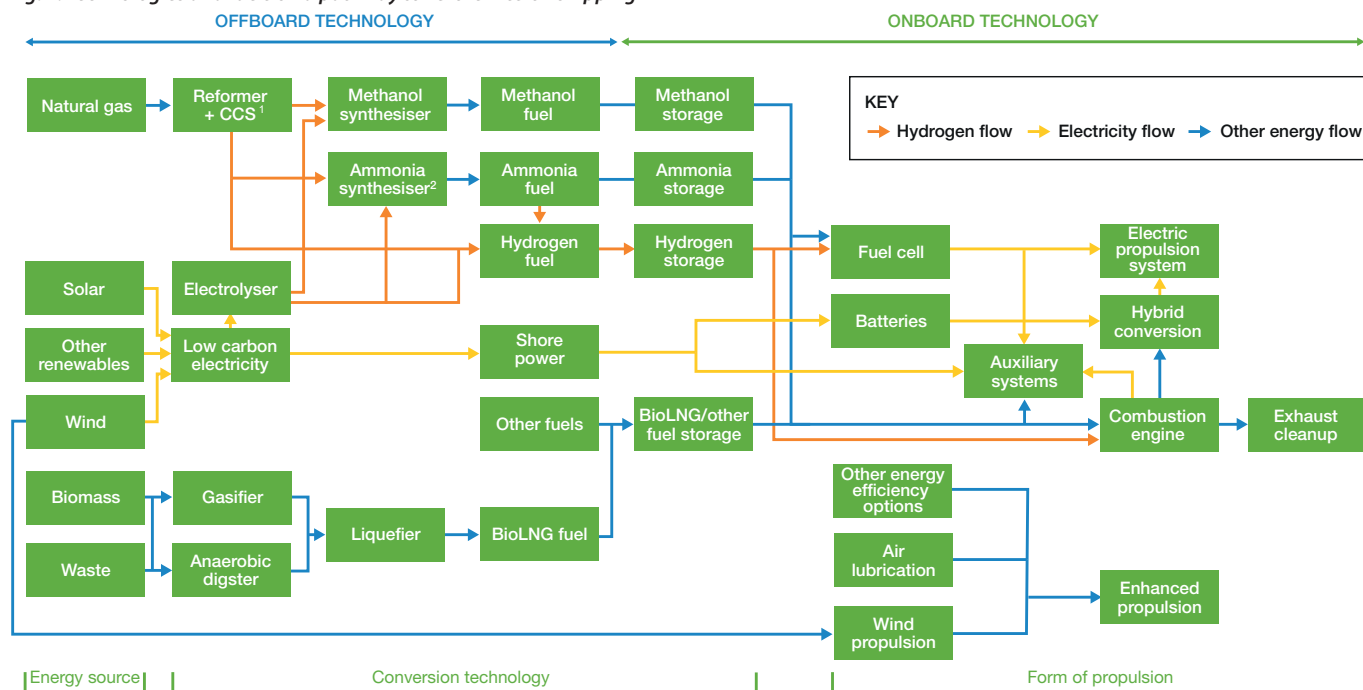
The Getting to Zero Coalition’s definition of “zero carbon energy sources” is intended to be inclusive of fuels derived from zero-carbon electricity, biomass, and the use of carbon capture and sequestration. It excludes, however, energy sources derived from carbon capture and utilisation based on the combustion of fossil fuels.

The definition includes green hydrogen and its derivatives, such as ammonia and methanol, blue hydrogen and its derivatives, and sustainable biofuels.

In terms of scalability, hydrogen-derived fuels have the most considerable long-term potential for rapid scaling in the following decades. As such, they should be a significant part of the 2030 fuel mix. Therefore, a key question is: will it be possible to supply enough hydrogen-derived fuels for international shipping to enable up to a 5% penetration by 2030?

UMAS estimates that the overall energy need for shipping will be 12.9 Exajoules in 2030. Five per cent of this amounts to 0.64 Exajoules (or 15.8 million tonnes of heavy fuel oil equivalent). Assuming that the hydrogen-based fuel used is ammonia, to produce it in this amount would require roughly 60 gigawatts of green hydrogen electrolyser capacity.

Fig. 4. Technologies and fuels on a pathway to zero-emission shipping



<sup>1</sup> Steam Methane Reformer (SMR) + Carbon Capture & Storage

<sup>2</sup> Equipment used for the Haber Bosch process

Source: Frontier Economics for UK Department for Transport

The 60 gigawatt of green hydrogen electrolyser capacity for shipping by 2030 is achievable when considering the large-scale ambitions announced by leading economies. To name a few: Australia has committed more than \$500m to back new hydrogen projects; Chile is aiming for five gigawatts of electrolysis capacity under development by 2025; China has a goal to support demand for 60 million tonnes of hydrogen by 2050 (equivalent to 510-gigawatt electrolyser capacity); the EU's 2020 Hydrogen Strategy articulates an objective to install at least 40 gigawatts of renewable hydrogen electrolyzers by 2030 and support production of up to ten million tonnes of renewable hydrogen by the same year (eq of 85-gigawatt electrolyser capacity); and Japan that intends to boost the amount of power it plans to generate using hydrogen, looking to burn about 10 million tonnes annually by 2030 (eq of 85-gigawatt of hydrogen electrolyser capacity).

In addition, the Green Hydrogen Catapult is an initiative by seven green hydrogen industry leaders – Yara, Iberdrola, Ørsted, ACWA Power, CWP Renewables, Snam, and Envision – to deliver 25 gigawatts of green hydrogen electrolyser capacity by 2025 at \$2/kg. Their long-term goal is to align the production and use of green hydrogen with a trajectory that displaces

fossil fuels at a rate consistent with achieving net-zero global emissions by 2050. With a green hydrogen price of \$2/kg, the cost of green ammonia would be roughly double that of heavy fuel oil.

## Unlocking green hydrogen

Several other actions are needed to reach the right quantity and price of green hydrogen and boost zero-emission fuels by 2030. For example, large scale system demonstrations would help to showcase feasibility and draw conclusions. Freight purchasers can also give essential demand signals by committing to use zero-emission fuels even if available at a certain premium. The need for rapid deployment of capital and low-cost, long-term investments requires institutional investors and

IMO regulation in line with Paris targets focusing on operational efficiency measures and incentives to adopt zero-emission fuels.

In conclusion, a quantified target for zero-emission fuel adoption by 2030 would help mobilise industry stakeholders. Zero-carbon fuels will need to account for approximately 5% of the fuel mix by 2030 to decarbonise international shipping by 2050 (1.5°C aligned). Even if the target is a 50% absolute reduction by 2050, this still requires rapid growth of zero-carbon fuel use in the 2030s, which requires a similarly small initial use by 2030.

Achieving this is feasible on all counts – regarding fuel supply, vessel technology, port infrastructure, safety, demand, government commitment, and finance. □



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## Getting to Zero Coalition

The Getting to Zero Coalition – a partnership between the Global Maritime Forum, the Friends of Ocean action, and the World Economic Forum – is a powerful alliance of more than 120 companies within the maritime, energy, infrastructure and finance sectors, supported by key governments and IGOs. The Coalition is committed to getting commercially viable deep sea zero-emission vessels powered by zero-emission fuels into operation by 2030 – maritime shipping's moon-shot ambition. Go to [www.globalmaritimeforum.org/getting-to-zero-coalition](http://www.globalmaritimeforum.org/getting-to-zero-coalition) to find out more.



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# One piece at a time

by Taneli Fabritius, *Technology Manager*,  
and Janne Kärki, *Research Team Leader, VTT Technical Research Centre of Finland*

**We need electrofuels for reducing emissions from transport and P2Chemicals for cleaner products. The Power-to-X (P2X) technology can provide both. What is missing, however, are large-scale production facilities. Creating the supply could lead to new export opportunities. Joint P2X demonstration projects, which bring together the companies from across the entire value chain, are essential to commercialisation.**

Stop for a moment to look at the things around you. You might be able to identify many products made from oil, such as various plastics or certain cosmetics. Even if you've embraced the plastics-free life, the chances are that you didn't make them yourself on the spot. Oil-based transportation is what brought them onto your shelf, not to mention the energy consumed at the production stage. The elephant is in the room, even if we don't see it with the naked eye.

Mitigating climate change requires phasing out the widespread use of fossil oil. At the same time, though, we need energy and base materials to make goods. That's why CO<sub>2</sub> capture from industrial emissions (or directly from the air) and hydrogen produced from water using clean electricity have lately become hot topics. These and many more innovations promise to exchange the unsustainable oil-based economy for a clean one.

Electrofuels and P2Chemicals still face legislative hurdles and barriers concerning competitiveness. In addition, there is a considerable demand for additional clean energy to start manufacturing them. The facilities needed to produce pure hydrogen and capture CO<sub>2</sub> are still in relatively early stages of market penetration. As such, how

can the world's oil refineries and the petrochemical industry be renewed?

## Capacity to production to use

A Nordic Energy Research organisation **project** compared potential electrofuels production sites throughout the Nordic region. Scenarios show the output of Nordic electrofuels could tot up to about 25 terawatt-hours by 2045. It roughly corresponds to Finland's total annual consumption of diesel fuel in road transport.

It looks like there will be no shortage of raw materials for electrofuels in the Nordics. That said, sustaining the production will require plenty of additional clean electricity. If the needed electricity were to be entirely covered by wind power, the Nordic countries would need 15 gigawatts more wind energy, six-to-seven times more than Finland's current capacity.

Energy consumption of fuels in domestic transport in Finland is about 49 terawatt-hours a year, of which road transport consumes 93% (electricity used for electric vehicles is not included in the 49 TWh figure). Direct electrification both reduces emissions and cuts the total need for energy in transport. The Finnish **road map** for fossil-free transportation shows how to cut emissions from the sector in half by 2030. According

to it, the next phase will evaluate the availability and impact of electrofuels.

In Finland, there could be several production facilities for electrofuels in the early 2030s. Annual domestic production of 250m litres could cover around 5% of the energy used as fuel in domestic transport. The significance of electrofuels in reducing domestic emissions might not be of much relevance before 2030, but we must keep the long-term goal in mind. Bringing down domestic transport, including heavy-duty haulage, to zero-emission by 2045 means no further use of fossil-based oil.

On a global scale, the demand for electrofuels will be substantial as well. Estimates claim that about 70% of the world's energy for transport will come from fuels as late as 2050. Emission cuts from domestic transportation should be utilised as a springboard to commercialise novel technologies for export.

The beginning of 2021 saw the launching of the **E-fuel project** of the Neste Vetur programme. It aims at large-scale production and commercialisation of electrofuels. Involving 15 partners, E-fuel is an investment of more than €6.0m to develop electrofuels. One of the project's goals is to improve the production efficiency in converting electricity to fuel by 10-15 percentage points





Photo: Neste

compared with the current technologies. A key enabler for this is combining high-temperature electrolysis with CO<sub>2</sub> capture and a hydrocarbons synthesis unit.

Meanwhile, new production technologies for electrofuels are to be commercialised together with companies in the value chain. For example, Convion and Elcogen are developing high-temperature electrolysis in parallel projects.

E-fuels will also demonstrate the end-use of produced electrofuels in heavy vehicles. New possibilities for reducing CO<sub>2</sub> and local emissions emerge when knowledge in electrofuels, vehicle technology, and emission control are combined.

### Demonstrations to commercial installations

In the **BECCU project**, funded by Business Finland, VTT, alongside a big group of Finnish companies, is developing a production process that allows the captured CO<sub>2</sub> from bioenergy plants to serve as raw material for polyols, a speciality chemical, together with clean hydrogen. If the project succeeds, it will be possible to manufacture polyurethane (used in the construction industry, glues, and many everyday use goods) out of polyols

produced in an environmentally friendly manner.

Meanwhile, the Park Höchst industrial park in Frankfurt hosts the **ICO2CHEM** project, led by VTT. It will serve as a manufacturing demonstration of chemical products, including paraffin oils and waxes used in insulators and coatings, with hydrogen and CO<sub>2</sub> side streams available in the area. Altana, one of the project partners, tests oils and waxes produced within ICO2CHEM in its product applications.

Concerning P2Chemicals, the array of potential P2X products is genuinely extensive. From the point of view of profitable business, it would be reasonable to start commercialisation with higher value products that exhibit sufficient prerequisites for economic success.

Building extensive chemical production facilities can cost hundreds of millions or billions of euros. Hence, the technology needs to be well understood before inking

a new plant. Demonstrations allow developing and testing new technologies and collecting invaluable data for investment decision-making whether to scale up or not.

### Another look

Breakthroughs, be they technological or economic, require time to mature – from laboratory tests to small-scale pilots to full-blown production sites and worldwide export success. Due to a long-lasting commitment to research and development, we can develop winning ‘Made in Finland’ technologies for the world market, enabling producers to stop using fossil oil.

So how can the world’s oil refineries and the petrochemical industry be renewed? The answer is the same as the old joke about how to eat an elephant: one piece at a time. One day, when we take another look at the goods surrounding us, we’ll notice the poor creature is no longer in the room. □



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# The sixty-four thousand dollar question(s)

by Ansuman Ghosh, *Director of Risk Assessment, UK P&I Club*

**One of the main challenges facing the global shipping sector is the inevitable transition to green fuels, among them biofuels, which will have a transformative effect on an industry not necessarily noted for its readiness to adapt at speed.**

**T**he International Maritime Organization's (IMO) **ambitious emission targets for both 2030 and 2050** mean shipowners/operators need to broaden the conversation around biofuels and become familiar with supply and demand issues, onboard fuel management, regulatory framework,

and government policies. It will ensure a smoother and quicker transition and ultimately a wider uptake of biofuels. This Q&A, compiled from questions submitted to the UK P&I Club from stakeholders across the sector, offers guidance on types of biofuels, specifications, handling and usage, and highlights obstacles impeding progress.

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## Types and manufacture of biofuels

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- ☐ *How does the supply of large quantities of biofuels with lower lignin-carbohydrate complexes (LCC) compare against the supply of conventional fuels?*

There is a significant potential supply of sustainable biomass for biofuel production, coming from different sources. However, to expand production over today's volumes, more expensive biomass sources will need to be utilised, which will increase costs.

- ☐ *Which countries produce the most hydrotreated vegetable oil (HVO) or fatty acid methyl esters (FAME) available on the market?*

Generally, the US and Brazil are the two single most significant producers of biofuels (mainly ethanol and FAME). The EU also has a substantial production of HVO. A growing number of port stakeholders in Sweden and Finland are shifting away from fossil fuels to HVO to, for example, power their vehicles and cargo handling equipment.

- ☐ *Is biomethane, derived from waste, a viable marine fuel of the future in terms of logistics and volumes?*

Liquefied biogas (LBG) can be a carbon-neutral drop-in fuel for gas-fuelled vessels, which makes it a future fuel of great interest for shipping. Current availability is limited; however, there are concrete plans to ramp up LBG supply across the Nordics, one of the pioneers of using liquefied natural gas (LNG) as ship fuel and now also LBG (as a blend).

- ☐ *What materials are mainly used to produce biofuels? How many different types of biofuels are there at present?*

There are many different feedstocks used for biofuel production today. However, by volume, ethanol, FAME, and HVO are by far the three most common biofuels.

- ☐ *While biofuels certainly help reduce harmful emissions from a ship's engines, what environmental cost is there to produce and manufacture these?*

The key here is the choice of feedstock used for biofuel production. Some biofuels, produced from feedstock such as food crops or energy crops, have moderate lifecycle greenhouse gas (GHG) emission savings relative to fossil fuels – or no savings at all. Other feedstocks, such as wood residuals and waste sources, can be used to produce biofuels with very low lifecycle GHG emissions.

- ☐ *What is the impact of biofuels on food security?*

Some feedstocks used for the production of conventional biofuels can also be used for food production and thus will impact food security. However, advanced biofuels are produced from feedstock not used for food production and will have a low-to-no impact on food security. A well-thought-out policy is critical in ensuring that supplying biofuels doesn't won't backfire from an environmental standpoint.

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## Quality, characteristics, and specifications

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- ☐ *Why does palm oil-based biofuel have high lifecycle GHG emissions?*

This high emission is due to the high indirect land usage change associated with palm oil production.





- ☐ **Do nitrogen oxides (NO<sub>x</sub>) emissions outweigh the benefits of lower carbon emissions from biofuels?**

NO<sub>x</sub> emissions are not likely to be much higher than for conventional fuels, and, in some cases, they have been reported to be lower. More research is needed to better understand the NO<sub>x</sub> emissions arising from using liquid biofuels.

- ☐ **Which ports currently offer biofuel or biofuel blends for ships?**

At present, chiefly hub ports like Fujairah, Singapore, and across the Antwerp-Rotterdam-Amsterdam area. However,

these may be contracted and therefore not always available.

- ☐ **What proportion of the international marine fleet is already using biofuels?**

The use of biofuels in marine shipping is currently mostly restricted to trials; therefore, take-up is low.

- ☐ **What are the International Organization for Standardization (ISO) standards for biofuel quality?**

Presently, there are no ISO standards for biofuel onboard ships. Discussions regarding these are ongoing.

### Handling and usage

- ☐ **Do we still need separation and purification of biofuels onboard?**

Yes, separation and purification are still required. The separation temperature will be determined based on the analysis report, which is the same as for very low sulphur fuel oil (VLSFO). The difficulty you may experience will be managing the temperature, so it is neither too cold (cold flow properties) nor too warm (ageing of the fuel and too low viscosity for the engine). This level will be different for every individual fuel, which will add to the difficulty. It is also worth noting that VLSFO may still have aluminium-silicon/water present; therefore, purification remains essential.

Yes, but the bunker supplier should offer the mix. Do not mix onboard!

- ☐ **Can B100 biodiesel be used directly on existing marine propulsion internal combustion engines?**

Trials for this are ongoing.

- ☐ **What is the shelf life of biofuels when stored in ship bunker tanks?**

Use the biofuel as soon as possible. We recommend that you dewater the tanks, including the bunker tanks, as water contributes to bacterial growth.

- ☐ **Is biofuel compatible with low sulphur fuel oil?**

### Obstacles to growth

- ☐ **We are heading towards Artificial Intelligence (AI) controlled ships, but biofuels present several on-site challenges. How will shippers accept the combined increase in costs while reducing manning schemes and simplifying ship design to cut costs?**

The shipping industry is not a uniform entity. If fully automated ships are a choice, maybe biofuel is not the best solution; however, a shipowner must then accept that the rest of the installation with another alternative fuel will also be more expensive, and the cost of that fuel itself.

consisting of biofuels and fossil fuels to comply with IMO's short-term GHG measures.

- ☐ **Can biofuels only be used in newly built vessels? Old vessels may not be designed for biofuels, and cost-wise it may be expensive for companies to carry out drastic changes in drydock on older ships.**

The changes required wouldn't be any more challenging to implement than the change to VLSFO. You may need to verify equipment components, and some upgrades might be necessary, too, but no new equipment installation should be required.

- ☐ **The increased testing, additional technology, training, and monitoring that will come with biofuels will be extensive. How can crews be expected to manage this trend within the shipping industry?**

Without a doubt, using alternative fuels, including biofuels, requires a lot more from the shipping industry. There is no opt-out option, however, since legislation will force everybody to take action.

- ☐ **Getting permissions – from engine makers, class, and flag states – makes it difficult to enable the trial of biofuels. How can the industry support shipowners in making these more easily accessible?**

The industry can help to incentivise the uptake of biofuels, as well as remove regulatory barriers. On the regulatory side, IMO rules development on lifecycle GHG emission factors and change of NO<sub>x</sub> regulations to make it easier to use biofuels on existing vessels would help. Short-term decarbonisation measures are likely to be adopted by the IMO. Also, a push from banks and cargo owners towards cleaner logistics will help lift many of the barriers faced by biofuels today by boosting their demand. ■

- ☐ **Will biofuel replace distillate fuel by 2030?**

It is not likely, but it may well account for a significant proportion of the future fuel market. However, many ships may use blends



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# The fuel for a low-carbon future?

by Jonathan Köhler, *Researcher, Fraunhofer Institute for Systems and Innovation Research*

**Shipping is facing an uncertain future. The coronavirus pandemic has delivered a (hopefully temporary) blow to economic growth and global seaborne trade. That said, a long-term transformation of the shipping industry is also underway, with environmental issues driving the change. Global trading patterns may change, but the shipping industry will always be part of international supply chains. To play its role in the green transition, it has embarked on a quest for eco-friendly propulsion and fuels for the future.**

Since 2006, the International Maritime Organization (IMO) has designated the Baltic as an Emissions Control Area (ECA), regulating fuels to control the level of sulphur oxides (SO<sub>x</sub>) leaving a ship's funnel. A global cap on sulphur in ship fuel came into force last year. The effect of this was to make shipping lines either change to low-sulphur fuels (diesel, low-sulphur residual fuel oil, or liquefied natural gas, LNG) or to fit 'scrubbers' to remove the unwanted particles from exhausts. In the Baltic, ships mainly switched to marine diesel, with a few companies betting big on LNG (and nowadays increasingly more on liquid biogas, locally sourced from renewables as is the case in Finland and Sweden).

But this has proved to be just a start. Climate change has become more and more prominent as a global environmental challenge. Shipping, emitting 2-3% of all greenhouse gases (GHG), is expected to play its part in significant emissions reductions. The IMO has published a strategy to meet the Paris Agreement goals: a 50% reduction in GHG emissions by 2050 compared to 2008.

## Towards hydrogen systems

Reaching that target will require shipping to change its fuels once more. Given the lack of progress on carbon capture and sequestration, fossil fuels will have to be abandoned and low-carbon fuels

developed. Shipping is fortunate in that there are already several technological options on the table. These include wind (zero fuel cost but limited in power and dependent on the weather) and biofuels (many different sources but competing with food production and requiring strict controls to ensure GHG reductions).

The current favourite is, however, hydrogen, offering a range of possibilities. It can be used for combustion with water as the only byproduct; it can deliver electricity through a fuel cell or can be used to produce synthetic fuels. Suppose 'green' hydrogen is produced using renewable energy. In that case, it is a zero-carbon energy carrier that has many potential applications, e.g., as a reducing agent in blast furnaces or for decarbonising cement production. Fuel cells are considered an alternative to battery vehicles where high power or long-range are required in overland transportation. Therefore, hydrogen technologies for shipping can build on technologies from other applications. At the same time, fuel infrastructure can be developed as part of a broader 'hydrogen economy.'

There is now widespread policy support for the development of hydrogen systems. The European Commission (COM) published its *Hydrogen Strategy for a Climate Neutral Europe* in 2020, which sees targeted support for hydrogen as part of the European Green Deal. The COM has also established Hydrogen Europe

as an industry and research platform for developing hydrogen systems. The 'Hydrogen 2030: the Blueprint' scenario foresees investments across Europe of up to €62bn in hydrogen systems and infrastructure by 2030. Germany's *The National Hydrogen Strategy* from 2020 also foresees investing €310m in hydrogen R&D till this decade's end. The EU and its Member States support these strategies through developmental programmes, like the large-scale *EU Fuel Cells and Hydrogen Joint Undertaking* (FCH JU) for R&D and funding under the Horizon Europe R&D programmes.

If these substantial investments come to pass, they could drive a major expansion of hydrogen technologies over the next decade. The response to these policies and R&D initiatives has generated a new wave of projects, with shipping receiving increasing attention as one of the main application areas.

## The megawatt range

Shipping hydrogen technologies are still at the developmental stage. It is necessary to upscale current fuel cell technologies for ship propulsion to the megawatt range. An alternative is to develop marine motors that run on hydrogen.

Another challenge is fuel storage. Atmospheric hydrogen is a very light gas. It can be compressed or liquefied to store energy in sufficient quantities for use



onboard ships. Compression to 700 bar is feasible for smaller marine applications, but it is necessary to liquefy hydrogen to deliver a realistic range of operations for larger applications. When at atmospheric pressure, hydrogen must be cooled to -253°C (only 20 centigrade above absolute zero). It requires specially insulated systems and tanks, but LNG is already transported in large quantities at -162°C, so cryogenic technology is already available. *Suizo Frontier*, the first liquid hydrogen tanker, is already undergoing sea trials between Australia and Japan.

An alternative is to carry ammonia that is liquid at -33°C and has a higher energy density than liquid hydrogen. It can be reformed onboard with a catalytic reactor to produce hydrogen. Both alternatives require special attention to safety. If pure hydrogen leaks, it is highly flammable, while ammonia is poisonous. However, both are widely used as industrial chemicals, so safety procedures for design and operation can be developed from industry standards.

The Norwegian car ferry *Hydra*, to be operated by Norled, is one of the leading ship hydrogen projects, launched in November 2020. She will use two 200 kW fuel cells to deliver up to 50% of the power requirements. Another significant project is the planned installation (by 2024) of 2x2 MW fuel cells on the offshore supply vessel *Viking Energy*, with ammonia for energy storage. The BeHydro joint venture of Company Maritime Belge and Anglo Belgian has developed marine motors that run on hydrogen and diesel fuel. The *Hydrotug* for the Port of Antwerp will also be powered by 2x2 MW dual-fuel diesel/hydrogen motors designed by BeHydro. *Hydrotug* should set sail in 2022. Meanwhile, BeHydro is developing a mono-fuel hydrogen motor.

### The critical factor

Those and other follow-on projects are expected to demonstrate the feasibility and safety of hydrogen technology in shipping. However, does it mean that hydrogen is *the* fuel for a low-carbon future? Not necessarily.

Motors for ships that run with methanol and ammonia as fuel are also in development and demonstration. However, if any of these fuels are to deliver the necessary reductions in GHG emissions, they will need to be produced using renewable energy sources. For example, within the EU backed FReSMe project, Stena Line has been using the so-called 'blue methanol'

### Overall, there has been an abundance of hydrogen, fuel cell, and ammonia announcements breaking the news over the past couple of months. Just to name a few:

Copenhagen Airports, Maersk, DSV Panalpina, DFDS, SAS, and Ørsted have partnered to develop an industrial-scaled hydrogen and e-fuel production facility in the Greater Copenhagen Area.

HySHIP, a consortium of 14 European partners, will work on the design and construction of a ro-ro demonstration vessel that will run on liquid green hydrogen (LH2) as well as on the establishment of an LH2 supply chain and bunkering platform.

The Danish shipping line DFDS and its partners have applied for money from the EU Innovation Fund to build a ro-pax equipped with proton-exchange membrane fuel cells.

Corvus Energy and Toyota have partnered to develop and produce sustainable, large-scale, and modularised Proton Exchange Membrane (PEM) fuel cell systems for the international marine market.

DFDS, Arla, Maersk, Danish Crown, and DLG have partnered within the Power-to-Ammonia project to increase the availability of green ammonia as an alternative fuel.

Future Proof Shipping has partnered with the Holland Shipyards Group to retrofit the container barge *Maas* to a zero-emissions hydrogen propulsion system.

The Danish energy company Ørsted has begun construction works on the setup of the 2 MW-strong H2RES site in Copenhagen; the project will investigate how to combine an electrolyser with the fluctuating power supply from offshore wind, using the company's two 3.6 MW turbines at Avedøre Holme.

The IVL Swedish Environmental Research Institute, Sintef, the University of Iceland, Stena Rederi, and Powercell Sweden have initiated a study on how hydrogen and fuel cells compare to other alternative fuels for sea shipping.

The Bornholm Bunker Hub consortium will investigate the potential of establishing a green maritime fuel bunkering station (ammonia) on the Danish island.

The Polish state-owned oil refiner and petrol retailer Orlen has announced it will create a production & distribution chain (nicknamed Hydrogen Eagle) of low- and zero-emission hydrogen throughout Poland, Czechia and Slovakia (the company already operates pilot hydrogen refuelling points at its service stations in Wolfsburg and Müllheim in Germany).

to run its ferry *Stena Germanica*. The methanol used in the trial bunkering was produced from CO<sub>2</sub> recovered from the blast furnace gases from SSAB's steel production in Luleå.

Green hydrogen produced from renewables is used by the current technologies that have reached the large-scale development stage. In this sense, shipping is likely to become a part of a hydrogen energy system in the future. Even ships that use wind propulsion will need auxiliary power, so hybrid energy systems – possibly hydrogen – will be installed.

The critical factor, besides emissions reductions, is, of course, the cost of fuel. Any new technology is expensive compared to the current fossil fuel systems that run while ignoring environmental considerations. So the question is instead: what will the relative costs of the various alternatives be, including their supply infrastructure, if they are adopted on a large scale? It is a question that cannot be directly answered, although the current prices of the different fuels are one crucial component. The other is the capital cost

of setting up the systems alongside their maintenance. It is challenging to assess and make future forecasts, as had been the case with LNG. Still, one possibility is to adopt product service systems where the shipyard or engine builder 'rent' the power system to the shipowner/operator to reduce the risk of the system being overtaken by later technologies or regulations. Another possibility is to fit 'for but not with,' providing the space and reserves of stability in the ship to allow for changing fuels during the ship's life.

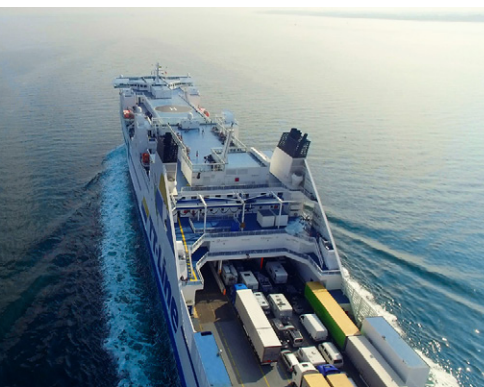
### Low-carbon logistics

For now, shipping will have to try out different possibilities for propulsion, see which systems reduce their costs the quickest and look for synergies with other low-carbon energy systems. Hydrogen will probably play one of the central roles, so shipping should actively explore and develop hydrogen technologies as part of low-carbon logistics. Then, the industry will be well-prepared for the rise in societal demand for low-carbon products, including their supply chains. □



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# Baltic general cargo & passenger markets in 2020

by Marek Błuś

A total of 313.8mt of general cargo went through the quays of Baltic seaports last year, a decrease of 5.3% on the result from 2019. Unitised freight traffic lost 4.6% year-on-year, totalling 234.4mt, out of which wheeled cargo (ro-ro & ferry) amounted to 137.4mt (-4.6% yoy) and containerised – 97.05mt (-4.4% yoy). The region's break-bulk market suffered the most, sustaining a 7.6% yoy downtick to altogether 97.05mt. Some 10.47m trucks, trailers & railcars rolled across the terminals (-4.9% yoy). At the same time, 10.85m TEUs were lifted on & off (-4.7% yoy). Combined, they gave 26.55m Universal Cargo Units (-4.8% yoy). The passenger side of Baltic ports' business was hit the hardest by the coronavirus – contracting by 54.6% yoy to 53.3m travellers (with Russia seeing not a single ferry nor cruise passenger in the pandemic year of 2020). As always, we strongly encourage reaching for the latest edition of the *Baltic Yearbook*, due for publishing in September, to supplement the tables below with detailed figures on individual ports, including the Top 10s for each category.

Tab. 1. Baltic Sea region's ports' total cargo turnover in 2019-2020 (thousand tonnes)<sup>1</sup>

Nº	Country	2020	2019	2020/2019 [%]
1	Russia	241,481	256,437	-5.8%
2	Sweden	168,101	169,792	-1.0%
3	Finland	109,948	121,567	-9.6%
4	Denmark	91,271	93,727	-2.6%
5	Poland	88,488	93,864	-5.7%
6	Germany	54,023	56,844	-5.0%
7	Lithuania	51,529	52,244	-1.4%
8	Latvia	44,928	62,380	-28.0%
9	Estonia	37,688	37,690	+/-0%
<b>Total</b>		<b>887,457</b>	<b>944,545</b>	<b>-6.0%</b>

<sup>1</sup> All tabs.: only Russian and German Baltic ports; all Danish ports



Tab. 2. BSR's ports' general cargo turnover in 2019-2020 (thousand tonnes)

Nº	Country	2020	2019	2020/2019 [%]	Share of total 2020	Share of total 2019	Share 2020-share 2019 [percentage point]
1	Sweden	78,979	83,419	-5.3%	25.17%	25.17%	+/-0pp
2	Russia	46,162	46,576	-0.9%	14.71%	14.06%	+0.66pp
3	Finland	43,713	49,207	-11.2%	13.93%	14.85%	-0.92pp
4	Denmark	38,352	37,903	+1.2%	12.22%	11.44%	+0.78pp
5	Poland	35,640	37,312	-4.5%	11.36%	11.26%	+0.10pp
6	Germany	35,600	39,474	-9.8%	11.35%	11.91%	-0.57pp
7	Latvia	12,362	12,406	-0.4%	3.94%	3.74%	+0.20pp
8	Estonia	12,015	13,440	-10.6%	3.83%	4.06%	-0.23pp
9	Lithuania	10,949	11,636	-5.9%	3.49%	3.51%	-0.02pp
<b>Total</b>		<b>313,772</b>	<b>331,373</b>	<b>-5.3%</b>			
<b>General cargo's share of total</b>		<b>35.36%</b>	<b>35.08%</b>	<b>+0.27pp</b>			

Tab. 3. BSR's ports' unitised cargo turnover in 2019-2020 (thousand tonnes)

Nº	Country	2020	2019	2020/2019 [%]	Share of total 2020	Share of total 2019	Share 2020-share 2019 [pp]
1	Sweden	59,656	61,068	-2.3%	25.45%	24.88%	+0.57pp
2	Denmark	33,162	33,439	-0.8%	14.15%	13.62%	+0.53pp
3	Russia	31,662	31,985	-1.0%	13.51%	13.03%	+0.48pp
4	Poland	30,403	32,011	-5.0%	12.97%	13.04%	-0.07pp
5	Finland	27,658	29,675	-6.8%	11.80%	12.09%	-0.29pp
6	Germany	27,276	30,665	-11.1%	11.64%	12.49%	-0.86pp
7	Estonia	8,424	8,637	-2.5%	3.59%	3.52%	+0.08pp
8	Lithuania	8,348	9,957	-16.2%	3.56%	4.06%	-0.49pp
9	Latvia	7,838	8,061	-2.8%	3.34%	3.28%	+0.06pp
<b>Total</b>		<b>234,427</b>	<b>245,498</b>	<b>-4.5%</b>			
<b>Unitised's share of general cargo</b>		<b>74.71%</b>	<b>74.09%</b>	<b>+0.63pp</b>			
<b>Unitised's share of total</b>		<b>26.42%</b>	<b>25.99%</b>	<b>+0.42pp</b>			





Tab. 4. BSR's ports' wheeled (ro-ro) cargo turnover in 2019-2020 (thousand tonnes)

Nº	Country	2020	2019	2020/2019 [%]	Share of total 2020	Share of total 2019	Share 2020-share 2019 [pp]
1	Sweden	46,120	47,135	-2.2%	33.57%	32.73%	+0.84pp
2	Denmark	25,831	26,776	-3.5%	18.80%	18.60%	+0.21pp
3	Germany	25,520	28,446	-10.3%	18.58%	19.76%	-1.18pp
4	Finland	15,775	16,650	-5.3%	11.48%	11.56%	-0.08pp
5	Poland	8,747	8,926	-2.0%	6.37%	6.20%	+0.17pp
6	Estonia	6,616	6,672	-0.8%	4.82%	4.63%	+0.18pp
7	Russia	3,241	2,668	+21.5%	2.36%	1.85%	+0.51pp
8	Latvia	3,136	3,420	-8.3%	2.28%	2.38%	-0.09pp
9	Lithuania	2,390	3,300	-27.6%	1.74%	2.29%	-0.55pp
<b>Total</b>		<b>137,376</b>	<b>143,993</b>	<b>-4.6%</b>			
<b>Wheeled's share of unitised</b>		<b>58.60%</b>	<b>58.65%</b>	<b>-0.05pp</b>			
<b>Wheeled's share of general cargo</b>		<b>43.78%</b>	<b>43.45%</b>	<b>+0.33pp</b>			
<b>Wheeled's share of total</b>		<b>15.48%</b>	<b>15.24%</b>	<b>+0.24pp</b>			

Tab. 5. BSR's ports' containerised cargo turnover in 2019-2020 (thousand tonnes)

Nº	Country	2020	2019	2020/2019 [%]	Share of total 2020	Share of total 2019	Share 2020-share 2019 [pp]
1	Russia	28,421	29,317	-3.1%	29.28%	28.88%	+0.40pp
2	Poland	21,656	23,085	-6.2%	22.31%	22.74%	-0.43pp
3	Sweden	13,536	13,933	-2.8%	13.95%	13.73%	+0.22pp
4	Finland	11,883	13,025	-8.8%	12.24%	12.83%	-0.59pp
5	Denmark	7,331	6,663	+10.0%	7.55%	6.56%	+0.99pp
6	Lithuania	5,958	6,657	-10.5%	6.14%	6.56%	-0.42pp
7	Latvia	4,702	4,641	+1.3%	4.84%	4.57%	+0.27pp
8	Estonia	1,808	1,965	-8.0%	1.86%	1.94%	-0.07pp
9	Germany	1,756	2,219	-20.9%	1.81%	2.19%	-0.38pp
<b>Total</b>		<b>97,051</b>	<b>101,505</b>	<b>-4.4%</b>			
<b>Containerised's share of unitised</b>		<b>41.40%</b>	<b>41.35%</b>	<b>+0.05pp</b>			
<b>Containerised's share of general cargo</b>		<b>30.93%</b>	<b>30.63%</b>	<b>+0.30pp</b>			
<b>Containerised's share of total</b>		<b>10.94%</b>	<b>10.75%</b>	<b>+0.19pp</b>			

Tab. 6. BSR's ports' break-bulk turnover in 2019-2020 (thousand tonnes)

Nº	Country	2020	2019	2020/2019 [%]	Share of total 2020	Share of total 2019	Share 2020-share 2019 [pp]
1	Sweden	19,323	22,351	-13.5%	24.35%	26.03%	-1.67pp
2	Finland	16,055	19,532	-17.8%	20.23%	22.74%	-2.51pp
3	Russia	14,500	14,591	-0.6%	18.27%	16.99%	+1.28pp
4	Germany	8,324	8,809	-5.5%	10.49%	10.26%	+0.23pp
5	Poland	5,237	5,301	-1.2%	6.60%	6.17%	+0.43pp
6	Denmark	5,190	4,464	+16.3%	6.54%	5.20%	+1.34pp
7	Latvia	4,524	4,345	+4.1%	5.70%	5.06%	+0.64pp
8	Estonia	3,591	4,803	-25.2%	4.53%	5.59%	-1.07pp
9	Lithuania	2,601	1,679	+54.9%	3.28%	1.96%	+1.32pp
<b>Total</b>		<b>79,345</b>	<b>85,875</b>	<b>-7.6%</b>			
<b>Break-bulk's share of general cargo</b>		<b>25.29%</b>	<b>25.91%</b>	<b>-0.63pp</b>			
<b>Break-bulk's share of total</b>		<b>8.94%</b>	<b>9.09%</b>	<b>-0.15pp</b>			



Tab. 7. BSR's ports' ro-ro cargo units traffic in 2019-2020 (thousand units)

Nº	Country	2020	2019	2020/2019 [%]	Share of total 2020	Share of total 2019	Share 2020-share 2019 [pp]
1	Sweden	3,031	3,306	-8.3%	28.96%	30.04%	-1.08pp
2	Denmark	2,205	2,312	-4.6%	21.07%	21.01%	+0.06pp
3	Germany	1,961	2,111	-7.1%	18.74%	19.18%	-0.45pp
4	Finland	1,132	1,170	-3.2%	10.81%	10.63%	+0.18pp
5	Estonia	879	882	-0.3%	8.40%	8.01%	+0.38pp
6	Poland	681	697	-2.3%	6.51%	6.33%	+0.17pp
7	Lithuania	230	211	+9.0%	2.20%	1.92%	+0.28pp
8	Russia <sup>1</sup>	216	178	+21.3%	2.06%	1.62%	+0.45pp
9	Latvia	132	138	-4.3%	1.26%	1.25%	+0.01pp
<b>Total</b>		<b>10,467</b>	<b>11,005</b>	<b>-4.9%</b>			

<sup>1</sup> Estimated counting 15 tonnes per one cargo unit

Tab. 8. BSR's ports' container traffic in 2019-2020 (thousand TEUs)

Nº	Country	2020	2019	2020/2019 [%]	Share of total 2020	Share of total 2019	Share 2020-share 2019 [pp]
1	Poland	2,916	3,046	-4.3%	26.86%	26.75%	+0.12pp
2	Russia	2,431	2,604	-6.6%	22.40%	22.87%	-0.47pp
3	Sweden	1,598	1,621	-1.4%	14.72%	14.23%	+0.49pp
4	Finland	1,495	1,620	-7.7%	13.77%	14.23%	-0.45pp
5	Denmark	938	875	+7.2%	8.64%	7.68%	+0.96pp
6	Lithuania	639	705	-9.4%	5.89%	6.19%	-0.30pp
7	Latvia	458	470	-2.6%	4.22%	4.13%	+0.09pp
8	Estonia	216	242	-10.7%	1.99%	2.13%	-0.14pp
9	Germany	164	205	-20.0%	1.51%	1.80%	-0.29pp
<b>Total</b>		<b>10,855</b>	<b>11,388</b>	<b>-4.7%</b>			

Tab. 9. BSR's ports' Universal Cargo Unit (UCU) traffic in 2019-2020 (thousand UCUs)

Nº	Country	TEUs 2020	TEUs 2019	Ro-ro 2020	Ro-ro 2019	Ro-ro to TEU 2020 [x1.5 ratio]	Ro-ro to TEU 2019 [x1.5 ratio]	UCU 2020	UCU 2019	2020/2019 [%]
1	Sweden	1,598	1,621	3,031	3,306	4,546.5	4,959	6,144.5	6,580	-6.6%
2	Denmark	938	875	2,205	2,312	3,307.5	3,468	4,245.5	4,343	-2.2%
3	Poland	2,916	3,046	681	697	1,021.5	1,045.5	3,937.5	4,091.5	-3.8%
4	Finland	1,495	1,620	1,132	1,170	1,698	1,755	3,193	3,375	-5.4%
5	Germany	164	205	1,961	2,111	2,941.5	3,166.5	3,105.5	3,371.5	-7.9%
6	Russia	2,431	2,604	216	178	324	267	2,755	2,871	-4.0%
7	Estonia	216	242	879	882	1,318.5	1,323	1,534.5	1,565	-1.9%
8	Lithuania	639	705	230	211	345	316.5	984	1,021.5	-3.7%
9	Latvia	458	470	132	138	198	207	656	677	-3.1%
<b>Total</b>		<b>10,855</b>	<b>11,388</b>	<b>10,467</b>	<b>11,005</b>	<b>15,700.5</b>	<b>16,507.5</b>	<b>26,555.5</b>	<b>27,895.5</b>	<b>-4.8%</b>

Tab. 10. BSR's ports' passenger traffic in 2019-2020 (thousand ferry &amp; cruise travellers)

Nº	Country	2020	2019	2020/2019 [%]
1	Denmark	20,572	33,845	-39.2%
2	Sweden	14,056	30,523	-53.9%
3	Finland	7,250	19,744	-63.3%
4	Germany	4,638	12,605	-63.2%
5	Estonia	4,451	15,923	-72.0%
6	Poland	1,559	2,232	-30.2%
7	Latvia	466	1,142	-59.2%
8	Lithuania	309	421	-26.6%
9	Russia	—	870	-100%
<b>Total</b>		<b>53,301</b>	<b>117,305</b>	<b>-54.6%</b>





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Port of Kaskinen (Kaskisten satama) is located on the western coast of Finland, in the Gulf of Bothnia. It is one of the most important Finnish exporting ports for sawn timber and pulp, and it is also specialised in handling chemical industry products and bulk cargo. The Port of Kaskinen handles over 1 million tons of goods annually.

**[WWW.PORTOFKASKINEN.FI](http://WWW.PORTOFKASKINEN.FI)**



# Three decades of BPO — looking towards the future

by Andrzej Urbaś, *Communication Manager, BPO*

**The Baltic Ports Organization (BPO) was established in Copenhagen on 10 October 1991. Thirty years have passed since that momentous day. Over these three decades, the maritime industry in the Baltic Sea region (BSR) and the whole world has undergone significant changes. As the scale of activity and ambitions become increasingly substantial, so do the challenges.**

**T**he reach of the BPO grew significantly over the years. Today, the organisation is home to 46 members from all over the BSR, representing the industry's key ports and stakeholders. It also isn't slowing down, with new additions to the family happening regularly.

This growth is made possible by the core values of the BPO remaining the same: fostering cooperation, dialogue and the exchange of knowledge and experience, along with contributing to the economic, social, and environmentally sustainable development of maritime transport in the region – all to strengthen its global competitiveness.

Main areas of activities, such as representing its members before the EU institutions and relevant industry organisations, contributing to the promotion of clean technologies and green initiatives, and establishing the BSR as a role model

region for green transport, are supported by the creation of focused working groups and organisation of leading industry events and webinars.

## **For a green future**

It will come as no surprise to anyone even vaguely familiar with the maritime industry that climate change and environmental sustainability have dominated the discussions for quite some time. The 2015 EU's Sulphur Directive was the last major milestone on the path to greening the sector. Now it faces an even more paramount challenge with the decarbonisation goals of 2030 and 2050.

Baltic ports are no strangers to acting with purpose wherever the environment is involved. Over the years, the BSR became a paragon for green transport, with rapid development in areas such as alternative fuels, particularly liquefied natural gas (LNG), or alternative

energy sources available to ship operators in ports. The region boasts a constantly growing LNG bunkering network, plus new onshore power supply (OPS) stations added almost by the day. The BPO is proud to play a role in this development and looks forward to doing so.

The latest area of focus for the BPO, one underscored by the organisation's recent joining of Hydrogen Europe, is the use of hydrogen as an alternative fuel in support of the established decarbonisation goals. The development of different uses of hydrogen is one of the European Commission's critical priorities on the path to achieving the objectives of the European Green Deal and Europe's clean energy transition. This process will face challenges that neither the private sector nor the EU Member States can address alone. Hurdles will only be overcome through cooperation and working together. It is why Hydrogen Europe's





mission and work are so important, and the BPO is proud to be able to add its know-how and experience to the table.

“Ten years ago, the BPO has initiated multi-port projects aiming at the development of infrastructure for LNG bunkering. Through this unique regional approach, LNG can now be bunkered at almost any port in the Baltic. As maritime transport enters a new decarbonisation era, the Baltic ports should be a part of the hydrogen initiative, especially since our members have much experience gathered while developing LNG bunkering infrastructure. Therefore, joining Hydrogen Europe is the perfect opportunity for us not only to learn but also share our experience,” Bogdan Ołdakowski, BPO’s Secretary-General, underscored.

### **A digital landscape**

The digitalisation process is one that these days touches nearly every industry all over the world. Ports are no exception. One of BPO’s recent answers to the need to exchange knowledge and experience accumulated by BSR ports, related to the implementation and development of digital solutions that offer clear benefits, was to establish its latest working group – the Digitalization Managers Group.

Brought to life earlier this year, the group already saw several fruitful

meetings. Apart from clear benefits, digitalisation also brings a host of challenges that need addressing. The most crucial one is choosing the right approach that carefully identifies real needs and areas that can benefit from implementing digital tools and does not lead to overextending and wasting precious funding on solutions that might look great on paper but are an ill fit for the given company.

BPO’s new working group aims to alleviate these challenges and do what it’s been so well known for throughout the organisation’s existence – fostering communication and exchanging ideas and best practices to allow our members to make educated decisions and boost their overall competitiveness.

### **No challenge too big**

It would be impossible to write about the last few years without mentioning the global COVID-19 pandemic, leaving no industry unscathed or the world economy unaffected. While the pandemic certainly left its mark on the port sector, it also gave it a chance to prove its grit and resilience.

Baltic ports have shown their ability to remain flexible and rapidly adjust to restrictions they were subject to, ensuring smooth transportation of freight across sea borders. All ports in the region have

stayed operational, fulfilling their essential role for the global economy. It is a testament to the strength of the BSR, built upon a foundation of years of continuous development with a focus on efficiency and the ability to stay ahead in terms of the implementation of relevant technologies.

Facilitated by the BPO, 2021’s beginning was also marked with meetings between cruise managers from Baltic ports. The pandemic hit the cruise sector the hardest with a near-complete business halt, an event not witnessed in the past 30 years. The BPO hoped to help the ports prepare for a possible restart of the cruise season in 2021 (which we are now witnessing!) and support each other by giving them a chance to exchange experiences and ideas on how to best deal with the situation.

We are proud of what we’ve accomplished over the past three decades. We cannot overemphasise that it was all possible due to the spirit of cooperation that characterises our members and the BSR as a whole. We will continue to strive to offer our members the support they need. Only by working together can we assure the continuous development of the region and its competitiveness. We want to thank all of you for your trust! Here is to another 30 wonderful years! ■

# Baltic Ports Conference 2021

by Andrzej Urbaś, *Communication Manager, BPO*

**During the Baltic Ports Conference (BPC), the most important annual event for the Baltic Ports Organization (BPO), all its members and guests join together to discuss the key and most urgent issues for the port sector. Above all, it is a great networking platform for exchanging knowledge and experiences between various stakeholders making up the maritime community in the Baltic Sea region (BSR) and beyond.**

**T**his year's event – free to attend! – also marks BPO's 30<sup>th</sup> anniversary, about which you can read more in the second article in this newsletter. The webinar will identify the key trends that will define the port sector's development in the years to come – such as digitalisation, sustainability, and technological advancements. The conference will also feature an analysis of ports' function as a driver of entrepreneurship and innovation, including their upcoming role as alternative (green) energy hubs.

## **Virtually from Tallinn!**

We couldn't be more proud to announce the host of this year's conference – the Port of Tallinn. As one of the Baltic digitalisation leaders, they are the perfect host for an online edition of the BPC. It also certainly doesn't hurt that Estonia is one of the most digitalised countries in the whole world!

Our hosts have been riding the digital waves for quite some time now, with many exciting projects and initiatives. Their FlexPort management programme, in use since 2011, integrates operational data and financial recording. The Smart Port solution minimises waiting times for vehicle check-in and vessel boarding, a system specifically designed with ferry ports in mind. The port also utilises digital innovations to reduce their impact on the environment. An air quality monitoring and anomaly detection system, dubbed eNose, has been operating since 2016.

"I would like to warmly welcome all participants of the BPC 2021 to the Port of Tallinn as we are virtually hosting the event this year. With smart and green solutions, the Port of Tallinn aims to become the most innovative port on the shores of the Baltic Sea. Let's discuss how we can guarantee the sustainability of the Baltic region together and share the best practices of using technological advancements

to enhance the port business as well as protect the environment," Valdo Kalm, the Port of Tallinn's CEO, said.

You will have the chance to learn more about Tallinn's approach to the smart port concept, understood not just as a catchphrase but a solid business case in a presentation by their very own Margus Vihman.

## **Shifting the mindset**

These days ports aren't just essential transport nodes responsible for the flow of cargo. While this role indeed remains the most important one, as shown by the most critical months of the COVID-19 pandemic, they are much more these days.

A port is an ecosystem encompassing a broad range of companies. It supports economic activities in the immediate area and farther into the hinterland – within and beyond country borders. With the rise of the importance of intermodal connections, a port is a crucial stop between the sea and land transport. It results in many





# BALTIC PORTS CONFERENCE

VIRTUAL EDITION

2 SEPTEMBER 2021

# 30<sup>th</sup> ANNIVERSARY BPO THE FUTURE BEGINS TODAY

industries flocking to coastal areas, creating more employment opportunities and leading to new ones sprouting up in the linked hinterland.

Ports also drive innovation since so many of their activities are dependent on efficiency, reliability, and support of global logistic chains. Since the challenges are many, so is the need for answers. It is no surprise that ports and terminals are home to great strides in automation or digitalisation. The conference will allow you to learn more about how ports approach and explore these new opportunities.

## Ports and the green transition

Sustainability and reduction of negative environmental impacts are among

the most important topics discussed in connection with nearly every industry. The ambitious decarbonisation goals set by the European Union are possibly one of the most significant challenges that ports will need to meet in recent history. Switching from fossil fuels to renewable energy sources will significantly influence the economic structure in Europe and worldwide.

Ports' role as energy hubs and development bases for offshore wind will be one of the main items on the agenda of the event's closing sessions. The decrease and ultimate stop of fossil fuel usage will create opportunities for the rapid uptake of alternative fuels and energy sources. The BSR already has access to

a growing liquefied natural gas (LNG) bunkering network, an advantage that could play a vital role during the transition period. Naturally, fossil fuels are not only a source of energy; they are also the cargo that moves through the ports. With these eventually disappearing, the event will also address the issues related to the resulting vacuum and how to fill it.

This year's edition will be a special one for many reasons. We will meet virtually to celebrate BPO's long-running history. While meeting in person may still be difficult these days, we encourage you all to join us on 2 September and once again be a part of one of our most exciting annual events. With a bit of luck, we will see each other next year, this time face to face! ■

# Decarbonisation through digitalisation

by Søren Christian Meyer, CEO, ZeroNorth

**Nobody can deny the growing urgency and requirement for the global shipping industry to demonstrate progress on its decarbonisation pathway. Indeed, the issue of cutting carbon from our industry's operations is the definitive challenge of our times. After all, shipping was responsible for around 2.9% of global emissions in 2018, according to the International Maritime Organization's (IMO) *Fourth Greenhouse Gas Study 2020*.**

**A**chieving the IMO's goals requires us to collectively embrace a step-change in ambition, innovation, and collaboration. We can already see some of this coming to the surface – the development of exciting clean technologies that can tackle fuel efficiency and alternative fuels that promise a decarbonised propulsion option altogether. However, there is another solution that we can deploy against this challenge in the near term: data and digital technologies.

## Similar or even greater

As a separate but related to the decarbonisation trend, digitalisation is an extremely exciting force for positive change across shipping operations. We are already starting to see the favourable effect that it can have on cost, safety, and risk. But we must also realise that data-driven technology solutions are also an immediately achievable first step shipping companies can take towards achieving greater sustainability outcomes for vessels, voyages, and fleets.

It is helpful to explore how digital technologies stack up against other solutions

on the market, particularly vessel clean technologies tackling fuel and emissions. Generally, these can save anywhere from 5-10% fuel, depending on the solution, weather, and vessel. The industry has started realising that our combined vast data resource – which remains widely underutilised – can enhance vessel performance, increase earnings, and reduce CO<sub>2</sub> in a similar, and sometimes greater, order of magnitude that clean technologies can.

Solutions that do this, such as ZeroNorth's Optimise platform, are powerful in how they use information that owners and operators already have at hand. By crunching a massive range of data on the current qualities of a vessel – from its current fuel, lading, heading, and operational status – and contemporary external factors – such as fuel price, market rates, and weather – platforms like ours can make recommendations to owners and operators on the up or downside of changing speed or taking on fuel in a new location.

Over time, digital technologies turn data into a commercial asset and unlock genuine increases in earnings and reductions in CO<sub>2</sub>. However, unlike other cost or fuel efficiency solutions, there is

little-to-no CAPEX barrier to digital solutions. Without a requirement for hardware installation, like clean vessel technologies have, advanced digital solutions can pay themselves back extraordinarily quickly whilst delivering similar commercial value at a low ongoing cost point.

## The (fuel-agnostic) benefit of immediacy

Digital technologies also afford us another gain and arguably the most important of all, given the urgency with which we must act: the benefit of immediacy. After all, owners and operators are presented with a requirement to improve their sustainability without many tangible methods of doing so – a handful of proven clean technologies exist on the market and even fewer future fuels options.

There is also a reason to believe that digital solutions can also be an enabler for the future decarbonisation pathway. The increase in earnings driven by a platform such as Optimise can be, for example, injected back into a business to invest in R&D and other efficiency solutions.

Digital technologies are also a decarbonisation solution in the long term because data-driven decisions, increased earnings,





bunker cost savings, and emissions reductions will remain relevant no matter the fuel used in the future, especially as future low-carbon fuels are expected to be drastically more expensive than conventional marine fuels and knowledge from data will help drive improvement actions.

#### **Collaboration: the right business & climate choice**

There are also very valid social reasons for shipping to use digitalisation to tackle decarbonisation. By connecting the profitability benefits of technologies such as Optimise to its complementary sustainability advantages, we will be able to drive immediate action and prove that it is possible to make the right choice for a business and for the climate at the same time.

Meanwhile, from a societal perspective, we can expect to see far more scrutiny from consumers and cargo owners into activities taking place in the supply chain. That means more pressure on the shipping industry to adapt and improve its efficiency – again improving the position of solutions to reduce environmental impact.

With this in mind, we must also recognise that the sheer scale of our industry

means that no one player can solve all our future challenges on their own (or, for that matter, any silo-entrenched sector). Shipping's decarbonisation efforts must be based on the principles of partnership and collaboration, with industry leaders working together to drive greater shared impact than could reasonably be achieved alone.

Today, you don't have to look far to see that partnerships are becoming increasingly common as we all learn to become more transparent and comfortable with the idea that collaboration can work hand-in-hand with commercial performance. It is why ZeroNorth is building its ecosystem of leading partners and data providers, showing the industry what is possible and realising a cumulatively more significant impact that the organisation could generate on its own. When it comes to decarbonising shipping, the whole is greater than the sum of its parts.

#### **Making a difference today**

Digitalisation is one of the most potent reshaping forces our industry has ever seen. It is radically changing how we do business and can now profoundly change the way we tackle our environmental impact.

Given the (green) power of 'digital action' in the immediate term, data-driven solutions must have a central place in the decarbonisation pathway. It is particularly important given the low cost to unlock efficiencies, which pound-for-pound make digital solutions that turn data into actions some of the best value decisions currently on the market.

It's time that we looked at our industry's data asset and made the most out of it. By doing so, we can turn ones and zeros into dollars and cents, simultaneously tackling decarbonisation. That should excite anyone interested in making a difference today. ■



Born from Maersk Tankers, ZeroNorth was founded to change the shipping industry through digitalisation. Working alongside our customers and partners, we truly believe that we can support shipping companies worldwide to optimise their business while reducing shipping climate footprint. This is what empowers us, a team made up of some of the most creative and strategic minds in shipping, with over 90 years of experience in the industry. Set a course for [zeronorth.com](https://zeronorth.com) to discover more.

# Federated States of Data

by Eusebiu Catana, *Senior Manager, ERTICO – ITS Europe*

**Congestion, especially on roads, is one of the biggest transport challenges. It costs Europe about 1% of its GDP every year and is the cause of significant carbon emissions. Logistics actors are implementing environmentally concerned collaborative strategies addressing supply chain integration, multimodal transportation, consolidation of deliveries, and reverse logistics to reduce their footprint. With the European Green Deal (EDG), the European Commission focuses on shifting 70% of road freight to rail and other more sustainable modes. ERTICO wants to contribute to making all transport means as efficient as possible, minimising their environmental impact.**

**T**here are no reasons why the transport & logistics sector shouldn't benefit from an interconnected world. Drawing from innovations from other industries, ERTICO is creating synergies between technological trends – such as Artificial Intelligence, big data, the Internet of Things, and automation – and smart solutions for transport & logistics. Given the organisation's expertise, we provide inputs to the European Technology Platform ALICE, specifically within the Information Systems in Logistics working group.

By combining our team's expertise and experience in transport, logistics, and digitalisation, ERTICO is leading several European flagship projects. In particular, we are working across three specific areas: freight market needs and trends, freight digitalisation, and freight transport automation.

## The oil of our times

Achieving key EU priorities (EDG, a more robust economy that works for people, digitalisation in Europe) will require much effort, not least creating an integrated and harmonised transport

network. Transport is the essential link between different value chain processes, from outsourcing raw materials, to choosing the production site and carrying the end product to the client's doorstep (hopefully, retrieving it for circular re-use, too).

This process may sound uncomplicated, but in reality, it involves hundreds, if not thousands of different stakeholders, both operating hard assets (like vehicle fleets) and people managing the digital backbone. To face these challenges, the new European project **BOOSTLOG** is looking at maximising the efficiency and effectiveness of the freight transport system to progress towards a transport system that is low-carbon, low-energy, congestion-free, growth-supporting, all modes-inclusive, and user-centric.

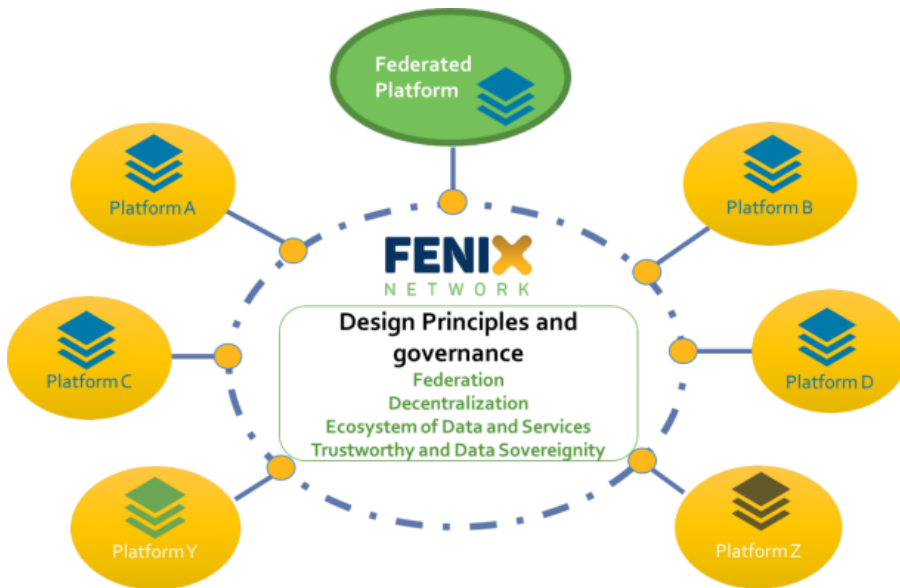
Boosting the impact of freight transport & logistics will require the oil of our times: data. The overarching aim of the **FENIX** project is to develop the first European federated architecture for data sharing. It will serve the logistics community (shippers, logistics service and mobility infrastructure providers, cities and authorities) by developing and implementing digital corridor information systems

(a multimodal federation of IT platforms). FENIX will establish a federated network of transport & logistics actors across Europe and beyond, enabling information and service sharing needed to optimise the Trans-European Transport Network Core Corridors, including the Motorways of the Sea Programme, from multiple angles: economic, environmental and societal. One use-case concerns connecting port operations between the Italian La Spezia and the Moroccan Casablanca, making the entire transport process more efficient.

Based on these principles, the design of the FENIX Network architecture focuses on the provision of a specification of a connector, following reference architecture data sharing concepts that respect decentralisation of the ecosystems of platforms. It will describe the technical roles and specifications of a few functionalities needed to be federated and adhered to the design principles.

Firstly, Identity Management. This part is required to authenticate the identities of the federation participants to allow the exchange of identities between the platform nodes. It will guarantee access to the proper

Fig. 1. Architecture components of and design principle relations within the Fenix Network



The figure visualises the FENIX Federation network of platforms. It depicts the main design principles (the middle of the picture) and the different platforms (different circles) that exchange data following the principles. Each of these platforms has its datasets or services (i.e., estimated time of arrival, planning, CO<sub>2</sub> footprint, IT). The small circles linked to each Federation platform represent the federated services specified in FENIX (Identity Management, Broker, Data Exchange).

service or data asset. Secondly, there's the Broker function, a search & discovery service of a distributed catalogue of services and data available in each of the federated platforms in the network. This functionality should allow federated entities to discover logistics services or data offered by each platform and provider based on a harmonised data and service description metadata model. Thirdly, Data Exchange. As the degree of global collaboration grows, and given the multi-tiered nature of modern logistics networks, the complexity of supply chains will also increase. Swift, reliable, and secure data sharing between different logistics data platforms will become even more critical to the involved stakeholders.

### Going beyond prototype demonstrations

With three-quarters of goods exported or imported to the EU via its seaports, the port industry is vital to the European economy. At the same time, ports face their specific challenges: cargo volumes are rising – with an expected 57% increase by 2030 – and so are the vessels. How to handle these shipments efficiently, from berth to the gate, is a task that requires fitting together many moving puzzles – and in an environment that changes, too. Technological developments, such as Industry 4.0, are opening new vistas for growth. Meanwhile, social pressure demands from the port

and shipping industries to partake in the green transition.

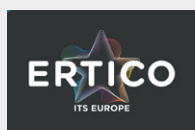
The **5G-LOGINNOV** project, started in late 2020, is focusing on seven 5G thematic areas. By supporting public-private partnerships across 11 use-case clusters, it strives to help build a European offer for new 5G core technologies. The initiative's main aim is to design an innovative framework addressing integration and validation of Computer-Aided Design & Computer-Aided Manufacturing (CAD/CAM) technologies related to Industry 4.0 in general and ports in particular. As such, it intends to create new opportunities for innovation in the logistics value chain. Several 5G technological blocks support the project. These include a new generation of 5G terminals, notably for future connected and automated mobility, new Internet of Things 5G devices, data analytics, next-generation traffic management, and emerging 5G networks. The intention is to help port cities to address present and future capacity, traffic, efficiency, and environmental challenges.

The 5G-LOGINNOV project will deploy technologies beyond Technology Readiness Level 7 (system prototype demonstration in operational environment), e.g., the **Green Truck Initiative** will use CAD/CAM & automatic truck platooning based on 5G technological blocks. Thanks to the new advanced capabilities of 5G relating to wireless connectivity and core network agility, 5G-LOGINNOV ports will significantly optimise their operations whilst minimising their environmental footprint and negative impact on cities and the local community. At the same time, 5G-LOGINNOV will be a catalyst for market opportunities, particularly for hi-tech small- and medium enterprises, including start- and scale-ups, willing to share their solutions with the port market. To that end, 5G-LOGINNOV will make it easier to access these new possibilities by using its three Living Labs as facilitators and ambassadors for innovation. Regardless of their size and budgets, all ports are more than welcome to explore and find new solutions that best fit their needs.

### A historical moment

ERTICO's work and activities in the transport & logistics field focus on increasing interoperability, connectivity for cargo-flows optimisation, and facilitating supply chain management. By 2030, the organisation intends to achieve seamless logistics and freight transport. Closer to 2025, its goal is to achieve complete digitalisation and automation of freight and logistics operations.

We are in a historical moment when we, as a society, are overcoming the pandemic. That said, COVID will have an enduring impact on many areas of our daily life, including changing how shared mobility works. At the same time, activities and projects within ERTICO are reaching key milestones. We work towards defining new pan-European initiatives on urban freight, multimodal cargo traffic, and overall decarbonisation of the transportation sector. Working together is key in moving forward. That is why ERTICO and its Partners are open to broadening the cooperation and onboarding new leaders from across the transport & logistics domain.



ERTICO – ITS Europe is a public-private partnership of 120 companies and organisations representing service providers, suppliers, traffic and transport industry, research, public authorities, user organisations, mobile network operators, and vehicle manufacturers. Together with our partners, we develop, promote, and deploy Intelligent Transport Systems and Services (ITS) through a variety of activities, including European co-funded projects, innovation platforms, international cooperation, advocacy, and events. Our work focuses on connected & automated driving, urban mobility, clean mobility, and transport & logistics. Please visit [www.ertico.com](http://www.ertico.com) for more details.



# Celebrating without a party?

by Alberto Mazzola, *Executive Director, CER*

**It is the question European railways asked themselves last year when it became clear that, by the kick-off of the European Year of Rail in January 2021, the pandemic would still very much be with us – and would remain this way for some time. Rail passenger operators suffered almost €25b in loss of turnover in 2020 (in EU 27), a year-on-year decrease of 42%, an estimated weekly loss of €470m. The EU 27's rail freight industry lost almost €1.9b in turnover in 2020 (-12% yoy; €36m/week). The first months of 2021 have not, so far, shown adequate signs of recovery. The situation of the rail sector remains fragile.**

**H**owever, despite the difficulties, the party is on. The **Connecting Europe Express** (CEE), a joint DG MOVE-CER initiative for the Year of Rail, will cross 26 countries in 36 days, including in its route all European gauges. The Baltic strand will commence in Tallinn at 8:49 on 21 September and arrive in Kaunas at noon on 22 September, with mid-stops in Tartu, Valga, Riga, Jelgava, and Vilnius; other regional stopovers include Stockholm, Malmö, Copenhagen, and Gdańsk. Special events will be organised at almost all CEE locations, giving business and political communities the chance to meet to discuss why rail should be the backbone of European mobility and how this can be made a reality.

## **Sustainability – capitalised**

It takes a certain kind of resilience to organise such a major operation in these difficult times. We believe this kind of resilience has enabled railways to continue providing passenger and freight services of essential importance during the worst days of the pandemic. And in the context of National Plans for Recovery and Resilience (NRRPs), railways have capitalised on it and their sustainability credentials.

Rail – nine times less CO<sub>2</sub> intensive than road for freight and air travel for passengers – is indisputably the ready-made solution for decarbonisation. Rail is also seven

times more energy-efficient than road and accounts for only 2% of total EU energy consumption for transport, while it carries 18% of freight and 8% of passengers of all transport modes (2018 data). It is by any standard more sustainable than any other mode of transport. This is, of course, another pivotal feature of rail that cannot go unnoticed in the context of NRRPs, given the obligation of the **Recovery and Resilience Facility** (RRF) Regulation to spend at least 37% of its resources on projects that could contribute to the green transition of the EU economy.

To date, CER has collected data covering most EU Member States, intending to have a clearer understanding of state RRF spendings. Situations differ greatly from one country to another. It is not always easy to draw clear-cut conclusions regarding national investments in rail from considering NRRPs only, nor is it simple to make a comparative analysis between different NRRPs. In certain cases, railways are among the leading receivers of RRF funds. In other cases, they receive a lower share of RFF, but public support is granted through other means (both EU and national). There are also instances when railways have only a very small share of RRF and no compensation from other sources.

All in all, transport spending accounts for roughly 17% of the national plans' budgets, and rail accounts for approximately

57% of the transport total. Around 5% of the rail budget is earmarked to rolling stock and 95% to rail infrastructure. On a different front, road investments account for about 23% of the transport budget, with seemingly less than half of this envelope dedicated to road electrification projects. It comes as a surprise since it would mean that over half of the road transport budget within NRRPs is dedicated to traditional road transport – something not in line with the green and digital transitions RRF resources should foster.

At the same time, pro-climate reforms have been announced with the NRRPs. Policy solutions, of course, differ significantly from country to country. Among other initiatives, we see the EU Member States committing to implement general carbon-pricing for transport and industry, the distribution of vouchers to citizens to support the use of public transport solutions, the implementation of fiscal modulations of ownership taxes on combustion engines cars, fiscal incentives for the production of green hydrogen, and minimum thresholds of clean vehicles in public procurement practices.

## **Investments, investments**

The EU Trans-European Transport Network (TEN-T) should indeed be expanded, with particular attention to high-speed. Only city-to-city high-speed

connections can hope to replace short-haul flights, providing the quality service that citizens demand. The idea of connecting European capitals with high-speed rail is gaining momentum among the block's Member States. We hope to see this reflected at the end of 2021, when the EU Council will discuss the revision of the Regulation establishing the TEN-T.

At the same time, infrastructure projects should enable rail freight services to reach their full potential. Longer and heavier trains should be able to run on European tracks, and last-mile infrastructures, like local freight networks serving industrial sites as well as rail terminals at sea- and airports, should be developed to expand, as much as possible, the possibility of offering door-to-door rail services for European goods.

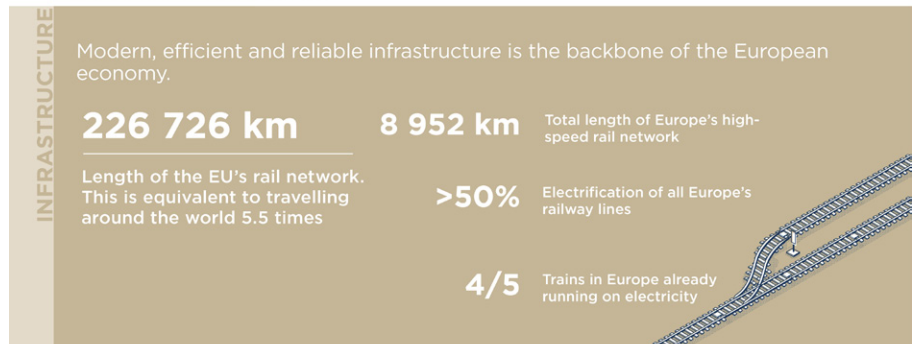
Much is needed for increasing the digitalisation level of rail operations and services. Ensuring the broadest possible 5G coverage throughout the rail network will allow better services for rail customers, web access for train passengers, and the technological basis for new plug-in technologies for track and trace.

The European Rail Traffic Management System (ERTMS) deployment should be accelerated, with adequate funding, more robust governance, and a readier industrial basis. ERTMS is the only solution to increase network capacity without building new tracks, something that should place ERTMS spending among the most sustainable options for any funding.

Further than that, investment in railway automation will be essential to improve railways credentials on many fronts: safety (although it is already widely known that rail safety levels are the highest among all modes), reliability, cost-effectiveness, and speed. In particular, technologies for digital automatic coupling must be improved further and implemented as soon as possible.

The European rail community looks forward to seeing these projects become a reality. Particular expectations lie with the progress made on cross-border megaprojects, such as the Rail Baltica. On 30 June 2021, the construction work of the Rail Baltica corridor officially commenced at Riga International Airport, on the railway station which will provide a fundamental regional link between air and rail travel. This is an important signal, and we look forward to seeing the corridor completed – an added value for the Baltic Sea region in particular and the mobility and logistics of the entire European continent in general.

## ABOUT THE RAIL SECTOR



**CER**  
The Voice of European Railways  
[www.cer.be](http://www.cer.be)

## THE JOURNEY TO SUSTAINABLE AND SMART MOBILITY BEGINS WITH RAIL

To achieve a greener future through sustainable and smart mobility, four overarching goals are key:

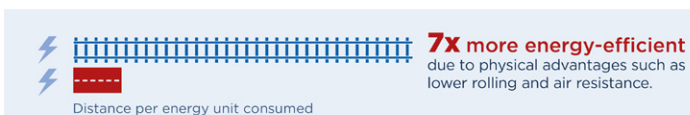


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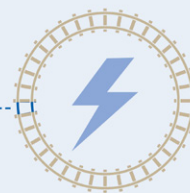
## RAIL AND THE ENVIRONMENT

Energy-efficient rail contributes to reducing the transport user's environmental burden on society.

### Energy efficiency of rail



**Rail uses just 2% of total EU energy consumption in transport** to carry 18% of Europe's freight and 8% of its passengers (2018).



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## From port to door

by Fitzwilliam Scott

**International commerce and port cargo handling have always been major economic contributors, directly through turnover and gross value added to GDP and through more indirect benefits like job creation and infrastructure investments. Intelligent transport systems (ITS) and smart mobility are now playing a central role in developing next-generation logistics, helping ports become more efficient, sustainable, and profitable.**

**G**iven the importance of freight, shipping, and logistics to the global supply chains and local economies, it's hardly surprising that five prominent port cities are playing host to the consecutive ITS World Congress: Singapore, Hamburg, Los Angeles, Suzhou, and Dubai. **Goods Journey from Ports to Customers: Smart and Sustainable Ports of the Future** was the focus of ERTICO-ITS Europe's webinar in the run-up to October's **ITS World Congress in Hamburg**. "Maritime trade is the bloodstream of the global economy, transporting around 11 billion tonnes of goods every year," underscores Zeljko Jeftic, Deputy Director of Innovation & Deployment at ERTICO-ITS Europe.

### **A quantum leap in port logistics – literally!**

Hamburg's smartPORT initiative promotes sustainable economic growth and optimal efficiency while minimising environmental impacts. "Located in the heart of the city, there are obvious challenges in balancing economics with the social impacts created by port activities," underlines Dr Phanthian Zuesongdham, Head of the Hamburg Port Authority's Division Port Process Solution and smartPORT's Lead Coordinator. She furthers, "We need to organise our infrastructure and traffic capacity, so cargo flows are quick and efficient. This is where ITS technologies and collaborating with partners come into play."

Because of the proximity of so many harbours to urban and residential areas, streamlining how ports and local/regional road networks interface is particularly promising. According to Richard B. Easley, President of E-Squared Engineering, "We should remember that freight and traffic are inseparable: this may seem obvious, but it's not always appreciated."

He also says we need to think about integrated solutions that bring highway, roadway, and port operations together, "Separate solutions can mean new problems. We need to be smarter and make sure well-meaning solutions don't have unintended consequences. Linked to that, we need to deal with an 'It's not my job' attitude among different stakeholders when it comes to freight issues."

As such, Hamburg's **Green4transPORT** project provides a strong example of managing traffic flows. Dr Zuesongdham highlights the initiative's particulars, "It's the first vehicle-to-everything (V2X) implementation in a real-world port setting. Working with partners, we equipped traffic lights and 60 trucks with real-time communications." When cargo-laden trucks want to exit the port, traffic lights prioritise the convoy, reducing delays, inefficiencies, and greenhouse gas emissions that would result from braking, idling, and accelerating. "Visitors to the ITS World Congress can see this for themselves – it will be part of our 'Logistics Experience' tour," she invites.

Another Hamburg-led project, MOZART, is the first to use quantum computing for next-generation traffic management and control, finding the optimal configuration for 35 traffic lights that regulate the entry and exit of 20,000 trucks moving through Hamburg's port facilities each day.

Ports and cargo handlers are increasingly developing and trialling future mobility solutions. However, "The commercial demand for sustainable transportation is rising faster than the efficiency gains provided," says Jörg Lützner, Continental's Head of Innovation Management Commercial Vehicles & Services. "The industry needs to step up its efforts to provide those efficiency increases and further reduce CO<sub>2</sub> emissions." His company's focus includes reducing fuel consumption and

increasing efficiency through, for example, innovative tyres, tyre pressure monitoring, and the Conti360° Solutions all-round tyre fleet management.

The ITS World Congress will feature several Continental-related activities. For ports, this includes radar-based localisation for the EU-funded AWARD project looking at confined area manoeuvring. "We're also involved in the ENSEMBLE project for platooning," says Lützner and adds, "And in terms of customer delivery, we are working with partners in Singapore to trial last-mile delivery robots in a real-life city environment."

### **The quest for the future fuel**

Having mentioned Singapore, this shipping hub has embarked on an ambitious decarbonisation programme. "There is no silver bullet solution, and the preferred fuel depends on many factors," cautions Yi Han Ng, Director of Maritime and Port Authority of Singapore's Innovation, Technology & Talent Development Division. He continues, "Singapore's maritime decarbonisation efforts focus on two key targets. Beyond ensuring emissions from domestic maritime and port activities meet internal targets in the 2030s and 2050, Singapore supports the International Maritime Organization's initial strategy on the reduction in GHG emissions from ships."

To support the global efforts, Singapore has established an international advisory panel for maritime decarbonisation which recommended four strategies: harmonising standards, implementing new solutions, financing projects, and collaborating with partners. Yi Han Ng says in this regard, "Our Maritime Singapore Decarbonisation Blueprint 2050 will be ready by the end of 2021, and we have set up a fund of 120 million Singaporean



Photo: Canva

dollars to support the establishment of the Maritime Decarbonisation Centre in Singapore."

The nation can take advantage of its status as a major bunkering port to support future marine fuel research and trials. Singapore can do it by leveraging local research expertise and a regulatory sandbox environment to conduct joint industry projects to develop standards and facilitate knowledge sharing. In the view of Yi Han Ng, "The Port of Singapore can be a living lab for maritime decarbonisation. We hope others will join us on our journey towards a low-carbon shipping sector."

### Benefits beyond the port gate

The role ports play stretches outside their premises. One of the world's busiest inland ports, Suzhou in China, is one of the more outstanding examples. "Our port economy

is very important to the local economy," says Zhiwen Wu, Head of Investment Management from Jiangsu Suzhou Port Group. He further, "We contribute to economic development in various ways, for example, through port city integration and coordinated development. Every million tonnes of cargo throughput can create more than 100 million yuan of GDP plus employment opportunities for 2,000 people." Suzhou is a growing port, with a throughput that increased from 330mt in 2010 to 550mt last year. Zhiwen Wu adds, "We are a contributor to strong regional growth in the Yangtze delta region. Experience shows the port is a powerful engine to drive the hinterland economy: indirect output value, employment opportunities, local taxes, and developing local infrastructure."

Christian Kassida, Volkswagen's Director Transport Policies – Public Affairs, puts the

port-city last-mile logistics in the centre of attention, "Recent times have shown the increasing importance of light commercial vehicles to individuals and society in terms of delivering goods and services. We are in the midst of a transformation to local zero-emission mobility and logistics, and the pace of change continues to accelerate in the key areas of electrification, digitisation and automation. This is about making traffic safer, more environmentally friendly, and more efficient."

Jacob Bangsgaard, CEO of ERTICO-ITS Europe, sums up, "Smart sustainable mobility is what we do, and logistics is a priority area for us. We are keen to continue strengthening dialogue in this area, so logistics has naturally become a bigger and more important element of our Congresses. Please join us in Hamburg this October to learn more!"



## In the same vein

by Przemysław Myszka



Photos: SOIC Ship Management AB

**We wrote about the Gothenburg-based Greencarrier Group taking over *The Swedish Ship Götheborg (Göteborg III)*, the replica of the 1738-launched *Göteborg I*, in the previous issue's *Transport miscellany*. The sailing ship has just undergone critical maintenance. Its jib mast, which shrunk over the years, was taken off. New iron rings, heated to almost 800 centigrade, were placed to hold the mast below the deck. All so that *Göteborg III* could set sail again. She'll go on a sea trial this August, from Gothenburg to Stockholm. Then, in April 2022, the ship will embark on a seven-month-long journey, with Shanghai as her easternmost destination point.**

**S**weden joined the Far East trading race on 14 June 1731 when the Swedish East India Company was formed. Securing a 15-year-long monopoly, the Gothenburg-based enterprise could start carrying Swedish timber, tar, iron, and copper to the East, importing tea, porcelain, and silk on the backhaul. The venture went bankrupt after 82 years but managed to generate substantial wealth by carrying out 131 voyages with 37 different vessels. Among them was the 58 m-long (incl. bowsprit, almost 41 m without it) and 11 m-wide 830t *Göteborg I*, constructed at the Terra Nova shipbuilding yard in Stockholm.

### As if by some mysterious force

On 12 September 1745, the ship was about to make a third back-from-Asia call to Gothenburg. Having only 900 m to the berth, *Göteborg I* veered to starboard, lost her rudder function, and hit a well-known navigational obstacle (since that time known better as the "*Göteborg's* rock" or the "East India Shallow").

Fortunately, none of the crew died (originally 130-men-strong). Much of the cargo was salvaged, too, including tea, porcelain, spices, and silk. The sinking was a mystery, however. *Göteborg I* had an experienced pilot, while the weather and sea conditions were favourable on that day. Or at least it seemed so on the surface. The winter-through-spring climate of 1744-1755 created the perfect storm for a navigational phenomenon called dead water on that very day.

Dead water, regarded as a sailor yarn back in the day, posed an unexpected, grave threat. The Norwegian Arctic explorer, polymath, and Nobel Peace Prize laureate Fridtjof Nansen described it, "When caught in dead water *Fram* appeared to be held back, as if by some



Photos: SOIC Ship Management AB





Photo: Wikimedia Commons/Amjad Sheikh



Photos: Wikimedia Commons/Anneli Salo



mysterious force, and she did not always answer the helm. In calm weather, with a light cargo, Fram was capable of 6 to 7 knots. When in dead water, she was unable to make 1.5 knots. We made loops in our course, turned sometimes right around, tried all sorts of antics to get clear of it, but to very little purpose."

*Göteborg I* didn't even have the chance to wrench herself free. Captain Eric Moréen declared, "The impact was so hard that the front of the ship, which had struck the rock, was lifted 4.5 feet (1.4 m)



Photos: Wikimedia Commons



out of the water, and as the side had been holed, the ship soon began to take in a lot of water; it could be seen from the pump's water-level gauge that the water was 20, 30 and within a few minutes 60 in (1.5 m) deep inside the ship."

### With fanfare

The ship was pinned to its resting place for several years but eventually sank to the bottom. *Göteborg I* had to wait till 9 December 1984 for divers from the Gothenburg branch of the Swedish Society of Maritime Archaeology who retrieved 38 pieces of porcelain. Two years later, it was confirmed that the finds come from the vessel in question. The Gothenburg Maritime Museum received a green light from the country's National Heritage Board to excavate the site. During the summers of 1986-1992, a total of 5,750 finds was fished out (some 10% of the original load). It was mainly porcelain, but also tea, mother-of-pearl shells, galangal, pepper, silk fabric, ingots of tutanago, cannonballs, lead shots, rapier handles, sword hilts, rigging material, and objects belonging to the officers and crew.

Just as her insides surfaced, so to say, so did an idea to build a replica of *Göteborg I*. The concept quickly caught fire – and sponsors. On 11 June 1995, the keel-laying ceremony took place in Gothenburg. Two silver coins, one from 1745 and the other from 1995, were placed in the halved joints of the 33 m-long keel. Joakim Severinsson was responsible for the construction and historical design of the ship, while Det Norske Veritas for approving the blueprints. Still, to build a vessel, one needs a shipyard. What remained of the disused Eriksbergs quay gave life to Terra Nova, honouring the historical yard. A ship hall was erected, alongside timber and rigging workshops (incl. a sail loft) and a forge.

The plan was to build *Göteborg III* using traditional techniques. That said, due to regulations, the ship's interior and bowels house a few modern solutions (apart from the headroom being 10 cm





Photos: SOIC Ship Management AB

higher than the original one, to make, well, room for sailors' heads who are today taller than their counterparts two centuries ago). There's a diesel engine that powers propellers (thanks to which another dead-water accident won't occur), plus satellite navigation and communications equipment, modern facilities for the crew

(incl. lavatories, washing machines, desalination gear, ventilation, refrigerators), watertight bulkheads, and fire protection. The rigging – ten tonnes of hemp ropes, 1,000 blocks, and almost 2,000 m<sup>2</sup> of linen sail – was also made after the fashion of the 18<sup>th</sup> century.

*Göteborg III* was launched on 6 June 2003 and finally completed in 2005 at the cost of SEK250m (about €40m), out of which 40% came from public funds. The same year, in October, the ship embarked on an 18-month-long voyage to China. The rotating crew of 80 people sailed from Gothenburg to Shanghai via Vigo, Cádiz, Recife, Cape Town, Port Elizabeth, Fremantle, Jakarta, and Canton. On the way back, *Göteborg III* visited Hong Kong, Singapore, Chennai, Djibouti, Alexandria, Nice, Gibraltar, and London. In Gothenburg, she was greeted by China's







Photos: SOIC Ship Management AB

President Hu Jintao (who, interestingly, visited Sweden chiefly to do so) and the Swedish royal couple Carl Gustaf and Silvia.

Alas, stormy clouds began gathering over the ship's masts. The East Indiaman Götheborg Foundation, whose members included such heavyweights as Volvo, SKF, Stena Line, and the Port of Gothenburg, discontinued its economic support in 2010. A non-profit organisation operated by Swedish East India Company was quickly set up to take over. Yet, the question of financing remained unresolved. The Gothenburg Municipality was willing to shoulder the maintenance costs, stating that sponsors should cover the expedition costs. After 2010, *Göteborg III* made two European tours only, a short one in 2012 (30 June-3 August) and a longer one the year after (6 May-7 September).

### The mission

In mid-2019, Greencarrier declared the company would fund *Göteborg III*'s future sailings, rescuing her from becoming a stationary museum. "Better still," somebody in Gothenburg probably thought, "Let's take over the Swedish East India Company from the Ostindiefararen Götheborg foundation, including the replica." The deal was cut.

Greencarrier subsequently established SOIC Shipmanagement, whose "[...] mission [...] is to ensure that *The Swedish Ship Göteborg* is kept in an excellent condition and will continue to sail the oceans of the world." To that end, an expedition with a mission is in the making. "International trade has positive effects on all three dimensions of sustainability; economic, social, and environmental. The expedition's aim



Photo: SOIC Ship Management AB



Photo: Wikimedia Commons



is to bring forward Swedish innovations as an important and necessary part of the solution towards our vision of creating a sustainable future. East Asia comprises a number of important and growing markets," SOIC Shipmanagement says on its website.

As for the April 2022 voyage, Greencarrier's subsidiary underlines, "*The Swedish Ship Göteborg* will head out on an East Asian expedition. In the same vein as in our history, the mission is to create new business opportunities for Swedish companies."



## Logistics park-turned-urban gallery

By early autumn, CEVA Logistics will have redeveloped its Somaglia facility in northcentral Italy. As part of the Prologis PARKlife initiative, eight Italian urban artists have already used 40k m<sup>2</sup> of building façades and water tanks as canvases. They have created works of art inspired by keywords such as innovation, future, diversity and inclusion, integrity, passion, and sustainability. Starting in September, guided tours will be open to the public (available by reservation free of charge). Moreover, the site will transform into a small urban centre. It will be possible to find a series of benefits to enrich the working day, including public transport, general services, activities, and open space for free time. The green areas will be redeveloped to include larger, more diverse

trees and perennial flowerbeds with varying colours "[...] to create a natural dialogue with the works of art in the logistics park." The redesign of the green areas will ensure better shading and wellness paths accompanied by bicycle lanes. The project also includes new relaxation and refreshment areas. "The PARKlife initiative is a perfect example of our commitment to our employees as they work to deliver responsive logistics solutions for our customers. People are key to our business, and at CEVA, we want to create an environment where our employees can thrive. [The] artistic unveiling is an important step in supporting current employees and attracting new ones to the industry," Christophe Boustouller, Managing Director of CEVA Logistics Italy, said.



Photos: CEVA Logisitcs





## Irmina's second life

The photo, taken in the former Lindenau's shipyard in Klaipėda, pictures the two main characters of *The Flying Dutchman* as performed at the 2020 summer edition of the Klaipėda Festival. We can see the baritone Almas Švilpa starring the role of the Dutchman, while the Polish harbour ferry *Irmina* – his vessel. The single performance, broadcasted this spring via the OperaVision.eu platform, was received enthusiastically. It had to be repeated four times this year and is planned to be a fixed point of the festivals to come. More about the opera can be found on the Klaipėda Musical Theatre's website. Here, let us put flesh on the bones of *Irmina*. She was built in 1968 in Gdańsk and till 1989 sailed within Szczecin and Świnoujście. Next, for two decades, she carried tourists from Sassnitz to the cliffs of Rugia as *Nordwind*. In 2012, she got hulked in the Lithuanian seaport. Her retirement-cation is a perfect match – no health certificates are needed to be an embellisher of Wagner's opera!



Photo: Klaipėda State Musical Theatre

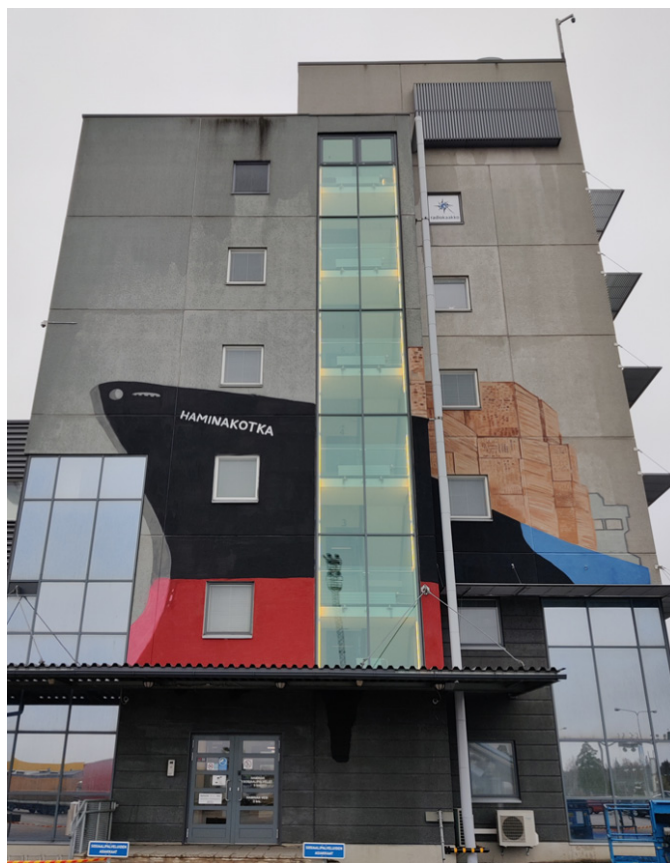
## HaminaKotka's aluminium anniversary

On 1 May, the Finnish Port of HaminaKotka celebrated a decade since its foundation, following the Hamina and Kotka seaports merger. In COVID 19-restricted times, the birthday was celebrated by painting the port office buildings with murals by Timo Tyynismaa. In addition, the great flag of the Port of HaminaKotka was raised to the tallest flagpole in Finland in Hamina on Labour Day. Together with Finland's



Photos: Port of HaminaKotka

flag, the port's was also hoisted to the flagpole of the City Hall and at the Kantasatama Harbour in Kotka. "On its 10<sup>th</sup> anniversary, the competitiveness of the Port of HaminaKotka is at its peak both nationally and internationally, and it is ready to face all the challenges of the future. For this, thanks are due to our efficient and extensive customer and co-operation network as well as our committed owners and personnel," Kimmo Naski, the joint port authority's CEO, underlined.





## Bags over bombs

Heinkel He 111, masterminded to win the title of the 1930s' fastest pax aircraft, finally ended as a bomber. Still, its short civil service is worth remembering, too. Deutsche Lufthansa employed 12 such planes on its longest services, including the famous link to South America. He 111s flew overland to the Port of Bathurst (now Banjul in Gambia) where the postbags were transhipped to flying boats. These, in turn, crossed the Atlantic with the help of the so-called catapult ships, which refuelled seaplanes in mid-ocean. The whole service excluded passengers, as such 111s' cabins were turned into freight compartments. Meanwhile, the class carried up to ten travellers across European routes, so shipments had to be moved to the nose. Looking at the picture, it seems that the loader had an easier task than the stevedore inside.



Photo: Lufthansa-Bildarchiv

## Unity of opposites

Remember the Danish bike shed made out of a wind turbine blade that we brought to your attention back in BTJ 5/20? We had to 'travel' to the Canadian province of Manitoba to discover another example of an industrial scrap that was given a new lease on life. A pair of railcar wheels forms a base for a two-sided bench at the railway station in Rivers. Such a construction, in our opinion, fits the place just fine, as it doesn't provide the psychological comfort of a standard bench, a symbol of stability and stillness. The wheel is associated with movement and activity. A passenger waiting for a train should be nervous; their bodies can rest, not their senses. We are pretty sure that anybody sitting between these iron wheels won't miss a train to Winnipeg, even if mesmerised by the most exciting *Transport miscellany* entry!



Photo: J. Hazard/Wikimedia Commons

## Regal figures

The presented postcard, sold or handed over onboard the Polish passenger steamer *Kościuszko* in the 1930s, depicts her master Capt. Eustachy Borkowski. Passengers also got his autograph, a fact that at that time increased its souvenir value while nowadays – its collector's worth. We wonder: could similar cards appear in boutiques of modern ships, say, cruisers or ferries serving long routes? Editorial rules for postcards state that they can portray public persons (members of a royal family, for instance) and persons in uniforms serving in public places (if they agree, of course!). We are sure that a captain's job (at least senior captains') includes community duties performed in uniforms in public places (read: passenger areas). But the most important thing – they are public persons of imperial stature!



Photo: Adam Daszewski's collection

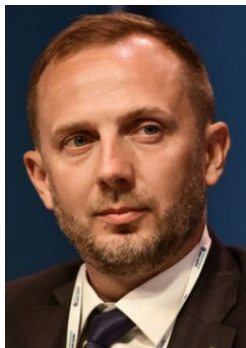
## Will containers save us?

The other day we were approached by James from Conex Boxes, who said he liked our entries on the alternative uses of shipping boxes (thanks, bro!). He also mentioned the company's [blog post](#) about how survivalists (also known as preppers) can utilise a good-old twenty or forty footer. If you think Greta Thunberg's efforts to save Earth are doomed to failure, then you might as well prepare for doomsday by getting your hands on a shipping container and repurposing it innovatively. However, each alternative use will require some more or less costly fine-tuning (think, e.g., ventilation, sanitation, electricity, fresh water, safety). The Internet is, unfortunately, full of cases of containers used as underground bunkers gone wrong. A roof that's caving in when you're sitting several or more feet below the ground level? Thanks, but no thanks! Then again, why not buy ten containers and erect an entire compound? Including a reefer for whatever you'll grow in that hydroponics container. Interestingly, if you fancy post-apocalyptic video games (say, the *Wasteland* series), you already know that containers are a staple of a dystopian universe. Maybe that's why there's such a lack of empties?

### 10 Ways Survivalists Can Use Shipping Containers

1. Secure Storage for Supplies
2. Tool Storage Shed
3. General Workshop
4. Equipment or Vehicle Storage
5. Backup Home or Bunker
6. An Underground Shelter
7. A Crafting Shed
8. Indoor Garden
9. Food Preparation
10. Bedroom





**JACEK SADAJ**  
*Port of Gdynia Authority's Managing Director*

Having hitherto served as the Port of Gdynia's Vice-President in charge of infrastructure and property management, Sadaj has been chosen to head the Polish seaport. He earlier worked for ENERGA Logistyka, Energomontaż-Północ Gdynia, Air Liquide Polska, OMAX Poland, and the Promeco Group. Sadaj is a graduate of the Gdańsk University of Technology and holds an MBA from Gdańsk Foundation for Management Development.



**JANNE VIRTÄ**  
*The Port of Rauma's Managing Director*

Virta, an Engineer in Logistics, Materials, and Supply Chain Management from the Satakunta University of Applied Sciences, joins the Finnish port from Euroports Finland, where he most recently worked as Commercial & Business Development Director. He started his career at Rauma Stevedoring and then moved to Euroports to work as Operations Director. Virta also worked for the company in China, overseeing the Gaolan terminal.



**VIRPI HAUTAMÄKI**  
*Wasaline's Sales Director*

Hautamäki, a graduate in Marketing from the Vaasa University of Applied Sciences and the University of Vaasa, worked as the Sales Manager at the Finnish-Swedish ferry company in 2016-2019. She then worked as the Event Manager in Seinäjoki at SJK Group's OmaSp Stadium and at Myynninmaailma Oy as the Sales Manager. Taking on her new role, she said, "It is a pleasure and an honour to return to Wasaline to restart the sales organisation after a difficult year with corona. The challenging times continue, but with the new ship, a lot of new potential opens up for tourism in the region."



**MIKAEL LIND**  
*Adjunct Professor in Maritime Informatics at Chalmers*

Lind, a Senior Strategic Research Advisor at Research Institutes of Sweden (RISE), has become the Professor in the field of **Maritime Informatics**, a faculty he has helped to create in the first place. At RISE, Lind is also Editor of the UN/CEFACT Cross Industry Supply Chain Track and Trace Project, Rapporteur for SG2 (corridor management) in the second mandate of DTLF of the European Commission, and Member of the World Economic Forum's 'Blockchain for Supply Chain' project community.



**ANDERS MAYNTZHUSEN**  
*ZeroNorth's Chief Revenue Officer*

Mayntzhusen joins ZeroNorth from the post of CCO at the Danish-founded customer service tech company Dixa. He was also Co-Founder and Board Member at Weply, CEO of .kinth, and BAS Reklame's Managing Director. "I am extremely excited to start working for ZeroNorth, which might be Europe's most promising hyper-growth B2B tech company. With Maersk Tankers and Cargill as investors and a strong board of directors and management team, there is every opportunity for ZeroNorth to become the market leader by 2022," Mayntzhusen said.



**NILS ADEN**  
*Harren & Partner Group's Managing Director*

Aden joins with a wealth of experience from leading roles in international ship management, transformation projects, M&A transactions and integration. In his previous assignments, he overlooked the merger of VShips and Norddeutsche Reederei H. Schuldt as Managing Director, led Zeaborn as CEO, and also as Chief Exec transformed E.R. Schifffahrt into an international ship management player. The 48-year-old brings more than two decades of industry executive know-how.



**UWE LEUSCHNER**  
*FELB Group's CEO*

Leuschner has over 25 years of logistics experience. In the years 2009-2021, he worked for the DB Group, including with DB Cargo as Senior Vice President Business Development Eurasia, as Managing Director of DB Cargo Eurasia, and as Head of DB Cargo Russia in Moscow. Earlier, as Director General of REWICO AG, FIEGE Russia AG, and DB Schenker Russia, he has acquired vast experience in the Russian market. Leuschner studied Foreign Economics at the University of Economics in Prague and General Management at Pace University in NYC.



**TOM PIPPINGSKÖLD**  
*Finnlines' Vice President and Deputy CEO*

The company's CFO and Member of the Executive Committee will continue carrying out his current duties, namely taking care of Group's finance, administration, legal, human resources, communications, and IT. Pippingsköld previously held the positions of Chief Financial Officer with Fingrid, Principal at the European Bank for Reconstruction & Development, Financial Manager for Danske Bank, and Nord Pool's Deputy Director.



*When in transport  
& logistics doubt*



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