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8

In this edition, Patrick Verhoeven and Despina Theodosiou discuss how to make the maritime industry more diverse

Photo: Tototheo Maritime

REGULARS

- Comment:** Collaboration is key 3
- News:** Klaipėda port mulls big development, logistics failures cause hike in VLSFO prices, and more 4
- In conversation with:** Patrick Verhoeven and Despina Theodosiou discuss diversity in maritime 8
- Open forum:** Battery-powered ships offer commercial opportunities for ports, argues SPBES CEO Brent Perry 10
- Infographic:** Illustrated throughput information for European ports for the past five years 32
- Maritime update:** News from the IMO 35
- IAPH info:** ESI registrations increased, Tessa Major elected as IAPH vice-president, and member information 36
- Last word:** Jacques Vandermeiren, Port of Antwerp CEO, on the port's role to push sustainability in the sector 40

FEATURES

- Infrastructure:** The consequences of offshoring terminal jobs explained on Australian ports 12
- Sustainability:** Collaboration is key for global ports to successfully improve their carbon footprint 16
- Connected future:** With the help of ports, data-sharing platforms become more popular 18
- Port clusters:** Leaders from port cities have established a forum that aims to increase collaboration 22
- Liverpool addition:** The Liverpool Cruise Terminal afforded the architectures the possibility to create history 24
- Safety first:** A Finnish port's ground must be cleared of unexploded ordnance before expansion can start 28





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The new normal

The answers to global sustainability challenges are leadership and collaboration

Santiago Garcia-Milà
IAPH President



The outbreak of the coronavirus is greatly affecting our industry. While the World Health Organization sensibly stated that if adequate preventive measures are taken, including exit screening at ports in the affected areas, there should be no unnecessary restrictions of international traffic, yet the number of cancelled sailings has reached unseen levels. The coronavirus epidemic joins the list of cyber attacks, piracy and armed robbery incidents, extreme weather conditions, shifting trade patterns, and more – illustrating how disruption has become part of the new normal in maritime industry. Quah Ley Hoon, chief executive of the Maritime and Port Authority of Singapore, has rightly marked disruption as the third D, next to decarbonisation and digitalisation (read more on pages 16–17).

The answer to these global sustainability challenges are leadership and collaboration. There are multiple initiatives and

programmes to foster leadership and collaboration among ports on decarbonisation, digitalisation, and disruption. But the perfectly understandable desire to work with the like-minded often makes them fragmented and isolated. It is only through engaging with different ideas and solutions that global impact can be generated.

When we launched the World Ports Sustainability Program (WPSP) exactly two years ago, we intended to provide that unifying global platform, which would rally leaders in sustainability efforts and promote collaboration among ports to raise sustainability levels worldwide, in line with the philosophy behind the UN Sustainable Development Goals. The aim was not to reinvent the wheel, but to bring together existing initiatives and stimulate new ones, recognising the leadership of those involved.

The first World Ports Sustainability Report will be presented at the World Ports Conference in Antwerp, Belgium, during 17–19 March, showcasing the initial two years of running the programme. The report shows that we have made progress but that we still need to bridge important gaps. First, we need to connect the lead ports from each region so that they can set the agenda and targets. Second, we need to bring all ports up to speed, so that no one is left behind. It is not just a matter of outreach and communication, but training and coaching. Bringing these objectives together through a professional framework is the next level for both the IAPH and WPSP. **PH**

“The outbreak of the coronavirus is greatly affecting our industry”

Port updates

► TEESPORT OWNER WANTS FREEPORT STATUS

Teesport, owned and operated by PD Ports, has lobbied the UK government for it to be granted freeport status by the end of 2020.

This follows a government announcement creating the Free Ports Commission in August 2019, which will award 10 locations with special trade status by end of 2020. The decision will be made after the launch of a public consultation.

"We will continue to put a strong case to government during the public consultation, working alongside key stakeholders and businesses along the River Tees, the North East England Chamber of Commerce, and the Tees Valley mayor to seize the opportunities that lie ahead for our region," Jerry Hopkinson, chief operating officer and vice-chairman of PD Ports, said in a statement.

► OFFSHORE WIND FARMS TO BE BUILT IN JAPAN

Construction, operation, and maintenance of offshore wind farms at Akita and Noshiro ports in the Akita Prefecture, Japan, has begun in February.

Marubeni Corporation, a Japanese integrated trading and business conglomerate, will lead the project. It is carried out and implemented by Akita Offshore Wind Corporation and will cost about JPY100 billion (USD921 million).

With a combined capacity of 140 MW of electricity, the ports will have 33 wind power generators set up, expected to be operational by the end of 2022. The two wind farms are said to be the first large-scale offshore wind power project in Japan.

The electricity generated will be acquired by Tohoku Electric Power Company under a 20-year power purchase agreement to be used exclusively for commercial use.



Gettyimages/Michele Ursi/5137362

Navigating emission reduction obstacles

Shipping needs to reduce its environmental footprint

At a recent decarbonising shipping and ports conference held in London, organised by the British Ports Association and the UK Chamber of Shipping, different stakeholders shared experiences they have had with putting good intentions into practice when it comes to emission reduction efforts. Fran Collins, CEO of Red Funnel, a ferry operator in the UK, reported of the struggle to implement the use of biofuels for the company's fleet. "It was more challenging than anticipated. We couldn't find the supply we needed and then also weren't allowed to burn the fuel due to government regulations coming up against it," she said.

The Renewable Transport Fuel Obligation Order came into force in 2007 and is thought to "compel

owners of transport fuel who supply at least 450,000 litres a year to make sure the mix is at least 12.4% biofuel by 2032", as stated in a UK Department for Transport statement. Since the beginning of 2020, a part-way target of 9.75% is envisioned. Citing an exception for vessels on inland waterways that prevents the company from using the biofuel, Collins said that consequently, "there are government restrictions that inhibit you from decarbonising".

Red Funnel therefore stopped its trial of Green D+ fuel, made from waste vegetable oils, after nine months in 2019. The company is now looking into other fuel alternatives.

Cold ironing facilities are handled as another method to reduce carbon emissions in

shipping, but here operators rely on ports to provide infrastructure.

Ingvar Mathisen, port director and CEO of Port of Oslo, Norway, cited an example of helpful administrative support. "The municipality pays the premium to enable electro ferries," he said.

Steve Muscat, head of engineering at the UK Power Networks Services, voiced his surprise to see many port cranes operate on diesel. With ports investing in infrastructure on sometimes 30 year-long contracts, they will get caught out even though their cranes might be considered a recent investment. BPA CEO Richard Ballantyne commented on the conundrum, highlighting another stumbling block on shipping's way to a low carbon future.

Planned expansion of Slavyanka port

Korean infrastructure and engineering company Hyein E&C plans to invest an estimated USD500 million into the expansion of the Slavyanka port in the Russian Far East, the Russian Far East Investment Promotion Agency (IPA) announced at the end of January. The company has finished its feasibility study on the project and submitted it to the regional authorities.

Hyein E&C's project involves building a multipurpose terminal to transport containers and grain, plus developing an LNG export terminal with

an estimated annual transshipment capacity of 1 million tonnes, IPA said.

The Slavyanka port expansion is part of an anchor project for the Primorye-2 international transport corridor, IPA stated. This corridor will be used to transport goods between China, Japan, Korea, and Russia.

Its main transit route will go between Jilin and Hunchun in China to Kraskino and Zarubino in Russia, IPA added. The transport corridor was launched in test mode in 2017.

Demand uncertainty and regional turmoil threaten Indian stakes at Iran gateway

Sagging trade demand and rising geopolitical tensions in the Middle East region have put a heavy burden on Indian efforts to gain a head start, or even a respectable start, on its strategic investment at Chabahar port in Iran.

Located in the Sistan and Baluchistan Province on the southeastern coast of Iran, Chabahar is about 1,019 km from Kandla Port Trust (KPT) and about 1,463 km from Jawaharlal Nehru Port Trust (JNPT), two of India's major west coast ports. In exchange for a USD500 million investment commitment, India has secured exclusive rights to operate two refurbished cargo berths at Chabahar. The Chabahar harbor encompasses two gateways – Shahid Beheshti and Shahid Kalantari, but India's bet covers the former.

India's interest in Chabahar is two-pronged – opening an unhindered passage, bypassing Pakistan, for its burgeoning oil and energy sourcing from Iran, and pushing bilateral trade with land-locked Afghanistan as part of a May 2016 pact between India, Iran, and Afghanistan.

After lengthy delays, due in large part to business restrictions from US sanctions against Iran, India kicked off operations at Chabahar in December 2018. However, one year into the opening, the shipping route received only a lukewarm response from liner ship operators, with the exception of some sporadic bulk vessel movements. To illustrate the magnitude of the growth struggle, out of Chabahar's total market size of 50,000 teu annually, first-year operations under the Indian contract saw some 4,850 teu, according



Shahid Beheshti gateway at the port of Chabahar, Iran

to available industry data.

Aside from container equipment inadequacies, competitive disadvantages in relation to the established Afghanistan-Karachi (Pakistan) route are denting Chabahar's growth. Although shipping costs for Afghanistan-bound Indian freight have gone down a bit since Chabahar's opening, transits via Karachi are still seen as more economical. To explain why, anecdotal industry estimates put the cost of moving an Indian container directly to Afghanistan via Chabahar at USD2,000 against about USD1,600 for Karachi and USD1,900 for Bandar Abbas transits.

The Indian venture is also in a fix because of intra-port competition from the nearby Shahid Kalantari port. This is partly attributable to productivity issues in the absence of an efficient private partner for Indian-led operations, for which two previous bidding attempts failed to draw interest from investors and had to be abandoned.

In addition, ship operators are wary of potential additional empty container repositioning costs owing to hugely insufficient export liftings from Chabahar.

To reinvigorate carrier interest in a subdued market, the Indian ports of JNPT and Kandla have recently started giving discounts up to 40% on normal vessel-related charges for Chabahar's inbound/outbound calls, but even this inducement has yet to pay off. Sensing the challenges, the government is now considering enhancing the scale of such port tariff incentives, even as private terminal operators at JNPT have been averse to concessional pricing in light of their revenue sharing obligations as build-operate-transfer operators.

This was a contentious issue during previous stakeholder consultations on tariff rebates, and the consensus to extend a 40% discount was reached after port authorities agreed to compensate private terminals through revenue share adjustments. Similar pushbacks from these concessionaires cannot be ruled out if a deeper tariff cut were to be considered for implementation.

India is also aiming to boost industry participation, including setting up roadshows at some ports, notably Mumbai, to highlight the importance of the new shipping corridor.

Port updates

► ANTIGUA AND BARBUDA GROWTH TO CONTINUE

Cruise port operator Global Ports Holding (GPH) plans to invest USD50 million across the year to expand Antigua and Barbuda's cruise terminal. This is in addition to the USD45 million it is already spending on enhancements to the cruise port, Colin James, CEO of Antigua and Barbuda Tourism Authority, said at a media briefing at the end of January 2020. GPH's investment will be spent on port projects, including the construction of a seawall, land reclamation, dredging of the main channel, and St John's Heritage Quay area renovations.

Antigua is also currently working on a fifth cruise berth at St John's, which is scheduled to open in time for the 2020–21 cruise season.

Royal Caribbean Cruise Line is also investing in a new Royal Beach Club project, scheduled to open in 2021 at Fort James, Antigua and Barbuda.

The multimillion dollar project will be used to develop 805 m of the beach near Fort James, at the entrance to the St John Harbor.

The beach project is expected to generate USD80 million in direct government revenue, with an estimated USD1 billion in indirect revenue over the next 30 decades.

► CCTC FIXES LARGE CRANES IN KEELUNG

Taiwanese terminal operator China Container Terminal Corporation (CCTC) will fix new cranes at its terminals in Keelung port to cater to 10,000 teu ships. Currently, its facilities can only handle ships of up to 8,000 teu. CCTC's deputy general manager Tsai Te-Hsin said that the move will make its three harbours in Keelung more efficient.

CCTC's three docks in Keelung have eight single overhead cranes, and two of these will be replaced with double cranes.

Port of Chabahar: 5136360

Port updates

▶ PIANC PUBLISHES CLIMATE CHANGE GUIDE

The World Association for Waterborne Transport Infrastructure (PIANC) has published a new document detailing how ports can prepare assets for a changing climate. The aim of the guidance, titled Climate change adaption planning for ports and inland waterways, is to provide support to adapt port and waterway infrastructure and operations to the effects of climate change.

The four-stage methodological framework includes guidance on understanding of how assets, operations, and systems could be impacted; the type of climate-related information needed to prepare an adaptation strategy; how the vulnerability of waterborne transport infrastructure assets, operations, and systems can be assessed and a risk analysis undertaken; and finally, presents a portfolio of structural, operational, and institutional measures to be considered when developing an adaptation pathway.

▶ PORT EVERGLADES TO GET ITS HARBOR DEEPEN

Port Everglades, Florida, was selected for harbor deepening and widening works as part of the New Start designation in the US Army Corps of Engineers Fiscal Year 2020 Work Plan.

The New Start designation provides USD29 million to build a new facility for the US Coast Guard station in Fort Lauderdale. The Intracoastal Waterway will be widened by 76 m at a chokepoint where large new-Panamax cargo ships currently have operating restrictions.

"Addressing this chokepoint is a critical step to widening the Intracoastal Waterway so cargo ships are able to transit to and from the southern part of the port," said Glenn Wiltshire, Port Everglades acting chief executive and port director.



Allcargo Logistics 5136361

Allcargo Logistics is active in the wind industry, among other sectors

Allcargo aims to grab Indian logistics growth opportunities

Mumbai-based Allcargo Logistics, the parent of global non-vessel-operating common carrier ECU Worldwide, has concluded two significant investment deals to cement its position in Indian logistics verticals.

The big bet on that integrator push came when the company announced the acquisition of a controlling stake in domestic express logistics leader Gati, reportedly for USD58 million. The 44.6% buy of Hyderabad-headquartered Gati is particularly significant as it could allow Allcargo to be on par with global express delivery giants, such as DHL, UPS, or FedEx, in the long run.

Founded in 1989, Gati boasts a pan-India network covering some 19,000 delivery points, along with a fleet of more than 5,000 trucks, including temperature-controlled vehicles, about 2,500 last mile e-commerce delivery assets, and 278,000 m² of warehousing space across the country. In addition, the company has offices in several overseas locations.

"The exponential rise in cross-border and domestic e-commerce

has opened up new markets for traditional express players such as Gati. With Allcargo's existing strength in the ocean transportation business and Gati's expertise in land and air transportation, we are now in a unique position to offer our customers a suite of truly multimodal solutions," Allcargo chairman Shashi Kiran Shetty said.

The Gati deal also puts Allcargo on a stronger footing for further expansion of its mainstay ocean transport play, given the former's existing joint venture with Japanese international freight forwarder Kintetsu World Express for less than container load shipments.

Allcargo noted that the Indian market holds high growth potential for express logistics offerings, propelled by tax reforms, digitisation, burgeoning domestic consumption, rising cross-border e-commerce volumes, and expected demand growth from small and medium business-to-business services.

"This important deal was done to align the group to the growing Indian transportation and logistics

market, which is expected to further consolidate, owing to the digital push and continued reforms pursued by the Indian government," the company said. "This will help Allcargo achieve sustained growth as a leader in the logistics industry and continually grow in the short, medium, and long run."

Furthermore, Allcargo is poised to make deeper inroads into the Indian landside logistics space on the strength of a USD5.5 million investment it secured in January 2020 from private equity group Blackstone. The debt and equity financing deal is part of a move to raise resources for the development of various inland projects in the midst of construction or in the planning stages.

"Allcargo will retain a minority stake in the various logistics assets and transfer its debt as it relates to these specific assets to their relevant subsidiaries," the company said. "This partnership will help Allcargo's growing third-party logistics business and enable multinational companies to access world-class warehousing assets."

Klaipėda port mulls big development

Klaipėda seaport in Lithuania targets to invest EUR352 million (USD389 million) into port infrastructure and dredging operations between 2020 and 2023, a development plan recently submitted to the transport ministry stipulated.

The eventual target is to make the seaport “safer and more competitive”, and available for commercial ships of a bigger size, Vidmantas Paukštė, director of infrastructure and acting director-general of the Klaipėda State Seaport Authority, explained.

The navigation depth is slated to be increased to 15 m, and by building new breakwaters, the port will be able to accommodate more ships over 250 m in length.

The modernisation project could be followed by a deepsea

port construction project. Currently, land in Klaipėda port is used five times more than Riga, Ventspils, or Tallinn ports, and some expansion of the port territory is urgently needed, Arturas Drungilas, head of the marketing department of the Klaipėda seaport, said.

The Port of Klaipėda needs to be able to accept big ships, otherwise the port risks losing a competitive battle on the Baltic Sea to other ports, including the port of Gdansk in Poland, Drungilas said. Lithuanian government officials had previously said that the deepsea port construction in Klaipėda might begin in 2025, but so far there is no certainty on this project.

The construction could cost

EUR619 million or EUR1.1 billion, depending on the specification of the project, Vilnius-based think-tank Smart Continent LT estimated. In 2019, cargo traffic in Klaipėda amounted to 46.22 million tonnes compared with 46.58 million tonnes in the previous year. About 6,776 ships called at the port in 2019 compared with 7,082 in 2018, the Lithuanian government estimated.

Speaking during a government meeting in 2019, Lithuanian President Gitanas Nausėda called to halt the project.

Nausėda explained that the only interested investor at that time was a group of Chinese companies, and that was not the kind of partner Lithuania wished to have.

Port updates

► HAMBURG WIDENS ELBE TO ATTRACT MEGA-SHIP

Widening works on part of the Elbe River, known as the passing box, was completed in January 2020, the Port of Hamburg Marketing said in a statement. To accommodate two passing ships with a combined width of 98 m, the section was expanded to 385 m, and a 36 km stretch of fairway between Wedel and the mouth of the Stör River was expanded to 320 m. Vessels of 23,000 teu have a width of about 61 m, while 18,000–20,000 teu ships are about 59 m wide.

“With the initial fairway widenings of the Elbe, we are on a good course, immediately improving the conditions for calls by mega-ships,” said Axel Mattern, joint CEO of Port of Hamburg Marketing, in a statement.

Port officials are hoping the improved access will continue a turnaround this year in a negative growth trend that has seen Hamburg lagging behind rivals Rotterdam and Antwerp in container throughput in the past few years.

Volume in 2019 at the port has benefited from the January relocation of trans-Atlantic operations of the Alliance – Hapag-Lloyd, Yang Ming, and Ocean Network Express – from Bremerhaven, a move that Alphaliner estimated in early 2019 could add about 500,000 teu to Hamburg’s annual volume.

Logistics failures cause hike in VLSFO prices

Bunker barge bottlenecks have caused supply shortages and difficulties, hiking up prices of very-low-sulphur fuel oil (VLSFO) in ports.

The first three weeks of January appeared chaotic for smaller shipping outfits attempting to source supplies of low-sulphur fuel.

In stark comparison, larger shipowners and companies had better planning for the transition and had secured barges through direct contracts, commented Danish bunker supplier Monjasa chief operating officer Svend Moholt. “With barge availability and logistical issues with the number of vessels wanting to bunker at different terminals, this imbalance in supply and demand has translated into premiums and pricing structures that are not reflective of a balanced market,” Moholt said.

The port of Singapore has



Bunker barges are in high demand

been impacted, with reports that Pacific International Lines has had six 6,600 teu and 1,500 teu box ships anchored in Singapore since the beginning of January owing to the unavailability of VLSFO bunkers.

There are similar issues in the Mediterranean, according to Tommaso Panzeri, project manager at Bunker Energy, who has seen vessels being diverted

from Malta to supply ports with fuel. “The difficulty finding compliant product and the lack of barge tankage has caused a dramatic increase in demand that found many bulker suppliers unable to satisfy,” said Panzeri.

Supply and pricing fluctuations are expected to continue throughout the first quarter of 2020, but the market is anticipated to stabilise afterwards.

← 385 m →



Team maritime

Despina Theodosiou, joint CEO of satellite communications company Tototheo Maritime and president of WISTA International, and IAPH managing director for policy and strategy, Patrick Verhoeven, call for all maritime sectors to work together to create a more diverse workforce.

Ines Nastali reports

"To be in the maritime or shipping industry could also mean being in law, finance, insurance, heavy engineering, technology, software development, supply chain management, environmental strategies, business administration, human resources, training and education, law enforcement, and so on," said Despina Theodosiou, joint CEO of satellite communications company Tototheo Maritime and president of the Women's International Shipping & Trading Association (WISTA), in a conversation with Patrick Verhoeven, policy and strategy managing director of IAPH, over other industries that increase the female workforce.

While this showed that more work needed to be done, Verhoeven highlighted there were other industries that have made great strides in increasing the share of women within their workforce. "I guess the closest parallel would be in other transport and network industries like aviation, railways, telecoms, and energy, where you see many female leaders. Some of these sectors also have a much better track record in reporting about their diversity," he said.

At the same time, he "agrees though that the maritime sector covers a very broad variety of professions in itself, some of which have achieved a better gender balance and others still have work to do. We have to focus our efforts on those," he added.

Theodosiou concluded that co-operation will be

key to improve the diversity in the world of ports and shipping. "What I'm trying to point out is that there are many ways for us to learn from many other industries. We need to look around and build up a way for the best practices in different sectors to be evaluated and fed into the various sectors and industries that make up shipping."

A start for this is to increase the collaboration between ports and shipping.

"Some wonderful initiatives are being undertaken around the world to bring women into port- and harbor-related roles. Their experiences and road maps need to be shared widely to allow other ports and harbors to hear about strategies and the positive results that they create. One great example of such an initiative is the IAPH Women in Ports Mentoring Programme," Theodosiou said (read more on the programme in the boxout on page 9).

"Additionally, any women in ports programmes need to have senior management buy-in and a full and open feedback loop. Many companies build diversity and inclusion into their strategy documents but fail to set up the feedback structure to make sure they are working."

The interdisciplinary approach is also what Verhoeven has in mind for the association's mentoring platform. "The ambition is to increase competences over a wide level of disciplines, including autonomous vessel operations, smart shipping technology platforms, and operational roles, which are usually occupied by men," he explained.

Besides increasing collaboration between different maritime sectors, Theodosiou has the unique opportunity to create change within her company Tototheo Maritime.

"I'm happy to say that our team is approximately 50-50% and this percentage is not limited to administration positions but applies throughout our structure," she said about the gender split in her company. She runs Tototheo with her husband Socrates, and yes, the split is at leadership level too.

However, Tototheo Maritime was not like that a decade ago; however, having a balanced gender workforce now have yielded "great results" for the company. She added, "Today this balance is inherent in our company's



“We see more and more female applicants”

Despina Theodosiou
CEO of satellite communications
company Tototheo Maritime

“Modern port labour is a highly skilled profession, but the historical perception of it persists”

Patrick Verhoeven

IAPH managing director, policy and strategy



ECFA 5048774

a study into the number of women employed in the industry and what jobs they have.

So, while change is under way, the WISTA president acknowledged that there are challenges that this co-operation will hopefully be able to tackle too. “Shipping is international and having this international character means that one cannot simply demand change and expect it. Women on ships need to feel comfortable, and they need to have the appropriate facilities. Furthermore, the right attitude towards the inclusion of women helps attract more, which in turn creates new ways of thinking and positive results,” she argued. For Verhoeven, more work needs to be done to include women in operational positions within maritime “like harbor masters, VTS operators, and pilots.” He added, “These jobs often require a nautical background, so there is a direct link with the diversity challenge that the shipping sector has.

“Dock workers also tend to be predominantly male still because of the perception that cargo handling is largely unskilled and hard physical labour. This is no longer the case, modern port labour is a highly skilled and technology-driven profession, but the historical perception often persists.”

The IAPH managing director, therefore, looks forward to working even closer with WISTA in future. “I believe that we should establish a much closer relation between WISTA and the IAPH Women’s Forum. The international network of WISTA is very strong and the organisation’s recent recognition of consultative status at IMO would give us the opportunity to work together in that context to drive a common agenda to promote diversity and inclusion in the port sector,” he concluded. **PH**

You can hear Despina Theodosiou, Emanuele Grimaldi (managing director of Grimaldi Group), Hadiza Bala Usman (managing director of Nigeria Ports Authority), Clemence Cheng (executive director of Hutchison Ports), Tom Boardley (secretary-general of Cruise Lines International Association Europe), and Masamichi Morooka (president and CEO of Yokohama-Kawasaki International Port Corporation) discuss sustainable co-operation at the upcoming IAPH World Ports Conference in Antwerp, Belgium, on 19 March.

culture. We believe in equal opportunities and pay and always look to recruit the best person for the job, based on skills, know-how, and attitude.”

Consequently, Theodosiou has seen changes more in recent years. “Even in departments that one might typically associate with male staff – such as the satcom support department – we have recruited women that are doing very well. We see more and more female applicants for traditionally male job positions. This is encouraging as it means that perceptions are changing, and we now have a bigger pool of competent candidates but also that applicants know that our company will give them an opportunity based on their skills and not their gender.”

Verhoeven, too, has noticed that women have taken up leadership roles in the port industry across the globe. “For example in Singapore, Montreal, Panama, Copenhagen-Malmö, Nigeria, and South Africa, women are today heading the port authorities and operating companies. Compared with the overall number of ports the percentage is still small, but there is progress,” he asserted.

With Theodosiou not only being one of the women leading a maritime company, but also acting as the president of WISTA, she has insight into industry-wide action as well. In January 2020, WISTA signed a memorandum of understanding with the International Maritime Organization (IMO), for example, to work on

IAPH’s women mentoring programme receives good grades

In February, mentoring platform provider Mentorloop published an analysis into the IAPH’s Women in Ports Mentoring project, concluding that it has delivered valuable help since its inception and is on a good way to connect more women, too.

A total of 21 participants signed up to the programme, showing that there is interest to receive and to give professional development advice.

Most of these participants have more than 10 years of experience in their roles and come from organisations they feel connected to, which explained why a majority of them said they have opportunities to develop their careers.

The participants come from Bulgaria, Namibia, New Zealand, South Africa, Sweden, and the US.

For mentees, the main goal in joining the mentor

programme was to increase their professional network; for mentors, to assist the mentee with career progression and share their knowledge of people and project management. The programme is currently scheduled to run until March 2020 and its continuity will be decided by the IAPH Board.

Find out more here: bit.ly/2HYKLUT

Electric benefits



The electrification of the shipping industry offers commercial opportunities to ports and health benefits to communities, argues energy storage specialist, SPBES CEO **Brent Perry**

With lower, more predictable fuel costs, reduced emissions, and longer intervals between maintenance cycles, the age of electric and electric-hybrid vessels is nearly upon us.

According to DNV GL, there were 356 all-electric or hybrid-electric vessels either in operation or under construction in 2019. This is already higher than the number of LNG ships sailing today, and ground-breaking projects like the installation of a 600kWh battery on *Maersk Cape Town* container ship show that the shipping world is waking up to the benefits of electrification.

Looking at the benefits to shipowners, it is clear why electric solutions are gaining such traction. They minimise noise and vibrations, optimise onboard generators, enhance vessel responsiveness and safety, and most importantly, reduce fuel consumption. Indeed, data from early adopters of fully electric ferries in Norway has shown a 95% reduction in emissions alongside an 80% reduction in operational expenditure.

Beyond fully electric, hybrid solutions can make alternative, greener fuels viable by smoothing variable power outputs, and can make traveling into and out of port under electric power possible. They can also power auxiliary systems while in port, meaning that polluting engines are not used.

Ports and portside communities are set to be one of the biggest beneficiaries of this shift. Ships burn some of the dirtiest fuel in the world, and emit a wide variety of pollutants that have important health and climate change impacts. Fine particulate matter, sulphur oxides, and nitrogen oxides can be found in dangerous levels in port communities. About 403,300 deaths per year, primarily in portside communities, can be attributed to the impact of these ships, alongside 14 million cases of childhood asthma. The 2020 sulphur cap, although welcome, does not entirely fix this problem; it is predicted that new limits will still lead to

266,300 premature deaths a year, alongside 6.4 million cases of childhood asthma, according to the Finnish Meteorological Institute.

Alongside public health benefits, there are commercial opportunities for ports. The growth in electric and hybrid ships also comes with growing demand for specialised facilities for them, for example battery charging facilities or maintenance facilities. However, it also comes with associated risks.

Let us look at a recent incident illustrating the safety concerns around batteries. In October 2019, a small fire broke out on electric passenger ship *Ytterøyningen*. The ship was able to return to port in Norway under its own steam, and evacuate all crew and passengers, before a serious gas explosion rocked the vessel, causing extensive structural damage. Twelve firefighters were taken to hospital after exposure to hazardous gasses from the batteries. Thankfully, all were released after a short time, but the vessel is still out of service.

This fire and explosion was caused by thermal runaway, which is the biggest risk surrounding the lithium-ion energy storage system (ESS).

The incident on board *Ytterøyningen* has proven that the risk of thermal runaway still exists with a battery that is not connected to any ship systems and in port.

Thermal runaway can occur after batteries are subjected to mechanical abuse or operating over, or under, the correct voltage or internal temperature. In these situations, heat may be generated within the lithium-ion cells, which may, in turn, increase to a point whereby it melts the separators inside the cells. This causes a reaction between the cathode material and electrolyte and can result in the temperature increasing until the cell vents toxic and flammable gasses. If ignition occurs, these gasses can create an unpredictable fire which can be very difficult to extinguish. When concentrated in an unvented room, these gasses are also capable of creating very large explosions.

A lot of ports are hesitant to invest in shore power facilities due to those safety risks. So let us look at what solutions are available when it comes to mitigating the risk of thermal runaway within a lithium-ion battery.

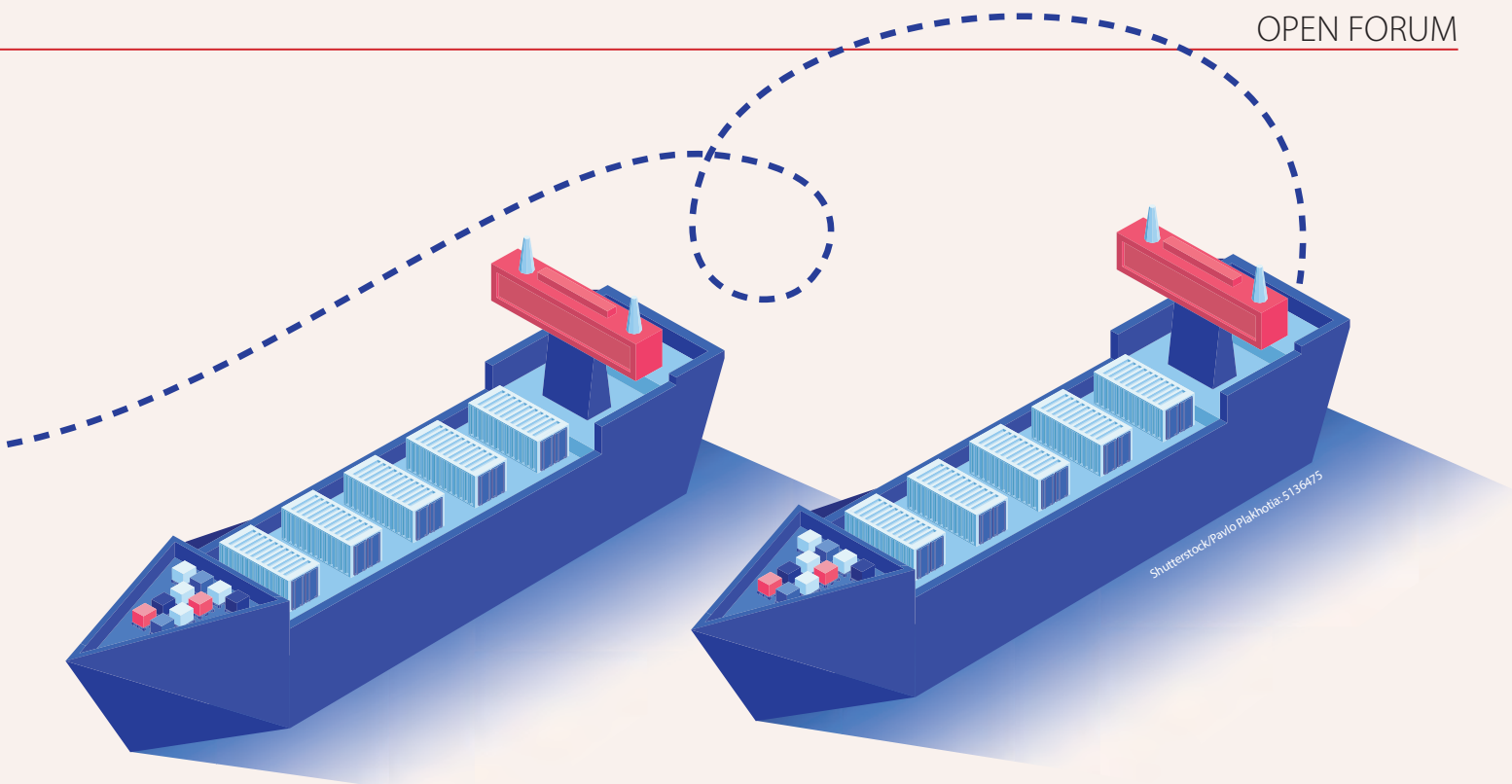
Battery design is key in this instance. The use of complete liquid cooling systems is one verified approach to managing battery temperature, whereby chilled water is circulated through the core of a battery. Liquid cooling, as opposed to air cooling, cools both the interior and exterior of a battery unit. As well as being more effective, liquid cooling has been proven to be far more efficient than air

“Ships burn some of the dirtiest fuel in the world, and emit a wide variety of pollutants”

Brent Perry
SPBES CEO



SPBES: 5135848



cooling, which requires 3,500 times more air flow volume than water flow volume to achieve the same heat removal. To try to compensate, the battery room for an air-cooled system requires both a robust heating, ventilation, and air-conditioning system and a way to evenly circulate the cooled air over the individual cells, an extra cost not typically included in the battery price by the vendor.

Mitigating the risks of fires resulting from thermal runaway is only the first layer of protection that an ESS must incorporate if it is to be used safely. The risk of a fire cannot be removed in its entirety, so failsafe mechanisms have to be in place in order to reduce the risk to the crew and vessel. Venting mechanisms can remove the flammable gasses away from an unstable battery, reducing the risk of a battery exploding.

Another factor in ensuring safety is the integration of an intelligent battery management system into the wider automation systems of a vessel. This allows accurate monitoring of voltage and temperature of the lithium-ion cells, and links directly to the alarm system. It also allows batteries to charge intelligently – slowing the rate of charge as the battery fills up to avoid overcharging, similar to the charging technology used for electric cars. As long as this system is in place, there is little additional risk to charging batteries as opposed to any other high voltage ship-to-shore power link.

Any shore power link can be used for charging. However, shore power links are not yet available in every berth in every port. Globally, ports have been sluggish in implementing shore power links for cold ironing, perhaps because peak power demand (13 MW for a cruise ship, 3 MW for a container ship), a lack of standardisation, and the high costs make them uneconomic.

The math is different for marine battery technologies, as the process does not only save the cost of fuel that would have been burned at port, it also saves the cost of fuel that would have been burned at sea. Thus, the payback time changes significantly, and those ports that have already made this investment, or plan to soon, are at a competitive advantage as more fully or hybrid electric ships begin operations.

Mirroring their operational environmental credentials, how can marine batteries be environmentally friendly when they have reached the end of their operational life? The European Commission has warned that the volume of difficult-to-recycle industrial lithium-ion batteries going for recycling will cause logistical challenges in responsible disposal. Akin to embedding safe design, constructing batteries out of recyclable materials is a big leap forward in improving the eco-credentials of marine batteries.

As marine battery applications grow, this has the potential to cause logistical headaches

for ports. Facilities to remove whole damaged batteries and transport them to be safely recycled can be large and unwieldy for ports, and get in the way of the normal operations.

Ordinarily, when a battery comes to the end of its life, the whole system must be recycled and replaced with new components. With designs where the entire system has to be replaced every 5–10 years, the recycling impact can be significantly higher, with no managed overview to ensure total recycling. This usually requires replacing a plastic housing and internal components held together with glue, creating a large amount of waste.

As we see it, a better option is to recycle only the cell as most of the parts of a battery cell, including the rare earth metals used to create it, can be recovered using the latest recycling techniques.

If in a fully electric or hybrid electric configuration, it is clear that marine batteries are already here. The benefits that they provide shipowners, as well as their benefits to the environment and to the health and wellbeing of seafarers and portside communities, make this clear.

Therefore, it is vital that marine batteries and infrastructure have safety embedded within design, and are operated alongside robust safety procedures. This will allow a greater scale of uptake and lead to widespread benefits realisation. **PH**

Shadow port

Ports are becoming more automated, and even being operated remotely from a centralised control tower. Australian parliament and cyber-security experts question the risks of offshoring automated terminal operations. **Zoe Reynolds** reports

Everything was at a standstill at Webb Dock East container terminal in Melbourne, Australia, on the morning of 5 June 2019. The white robotic cranes that normally glide gracefully back and forth between the trucks and mountains of containers stood motionless. Giant ship-to-shore (STS) cranes that pluck the boxes on and off vessels – lifeless. Australia's first fully automatic container terminal was, temporarily, paralysed.

"Victoria International Container Terminal (VICT) experienced an outage this morning, which affected both landside and vessel operations. The reason for the outage was due to a system communication error between the job scheduling system and VICT's cranes," VICT informed its clients in a notice circulated by the Freight and Trade Alliance that day.

Whether it was a glitch in the computer network or a sinister disruption breaking the cloud connection that spans 6,339km between Manila and Melbourne that winter's morning, the company spokesperson declined to comment. The incident, however, highlights the potential security issues and technical glitches that could occur at ports remotely controlled offshore.

VICT, a wholly owned subsidiary of Philippines-based International Container Terminal Services, Inc. (ICTSI) company, together with ICTSI shared services subsidiary Australian Pacific Business Services (APBS), are pushing the boundaries of remote-controlled port operations. APBS is headquartered in Pasay city, Manila, and its employees – through their office computer network – programme container movements at VICT like virtual building blocks on the Melbourne wharves.

Just up the road from the docks at Five ECom Centre along Harbor Drive, the 'Manila Team' – as the VICT management calls the APBS workers – cover equipment control (EC) operations from the automatic security gate to the Melbourne fleet of automatic stacking cranes using the latest digital terminal operating systems (TOSs) and video feeds via the cloud using satellite and internet. The 'Manila Team' communicates with the Australian dock workers and truck drivers, day and night.

It is the Manila Team who the Australian truck driver talks with after he positions the truck's cargo box under a beam of light and steps back into the booth

to let the robot crane do the lift or drop. Melbourne EC roles done in Manila now also cover yard planning, clerical work, the help desk, vessel planning, and "overflow EC work" for the yard cranes, according to workers at the terminal.

ICTSI won the contract as Melbourne's third operator in 2014, and launched its APBS subunit in December 2015. The company described APBS as an outsourcing operation for its subsidiaries and affiliates in the Asia-Pacific region and other clients. ICTSI operates 32 terminals in 19 countries. With the rise of automated ports, artificial intelligence (AI), and remotely controlled tele-robotics able to pilot machines from afar, other port operators will likely follow suit.

In Melbourne, workers still operate the remote-controlled STS cranes from inside the terminal, despite earlier signs it too would be moved offshore.

However, a terminal in Norway has begun offshoring equipment control jobs to Turkey, according to the International Transport Workers Federation.

Offshoring port operations has rung alarm bells among cyber-security experts. Questions have also been raised in the Australian parliament.

During the Senate Estimates Committee meeting on 21 October 2019, Senator Kimberley Kitching questioned Home Affairs Deputy Secretary Paul Grigson whether the security gates, automatic stacking cranes, and TOS functions were being offshored to Manila. She also asked whether Philippine workers had to undergo any of the security checks that Australian employees do. Grigson said he did not know and took all questions on notice.

Kitching also raised the possibility of security gate breaches at VICT. "If you are a truck driver you show up at the Port of Melbourne and your entire interaction would be someone who is in Manila, the Philippines, correct? I guess the question is, without physical verification, what is to stop multiple drivers from using the same card? Theoretically, could someone in Manila remotely open a security gate without a security card?" she asked.

Finally, she queried whether someone who had not had to go through any level of security screening might be let into a major Australian port, or if the department had done an audit on the Melbourne port.



"We do the audits, but I do not know if we have done that asset," Grigson replied, undertaking to find out.

Three Australian cyber-security experts contacted by *P&H's* sister magazine *Safety at Sea* (SAS) have called for greater government oversight and port audits: Lani Refiti, partner at Deloitte Asia-Pacific, has advised some of the world's largest mining operations and port providers on automation and cyber security; Royal Australian Air Force (RAAF) Air Vice-Marshal John Blackburn (retired), who had served as head of strategic policy with the Australian defence ministry; and Carsten Rudolph, associate professor specialising in cyber security at Monash University's School of Information Technology.

Cyber risks are heightened at ports as they become more automated and operations are offshored because the threat of supply chain risk and third-party risks increases, Refiti highlighted. Port of Melbourne is covered by the Critical Infrastructure Act, which requires registered ownership and operational information, he disclosed. "There needs to be assurance/validation performed and continuous cyber-security governance. Ports should look to adhere to some industry best practice framework," said Refiti.

Refiti recommends governments get an external party to test the security controls, examine the company's contractual obligations with third parties, and find out exactly what is happening and where risks might lie. Furthermore, individual tenants should have to tell the port if they offshored. "You should not do anything of this magnitude without the port knowing," he added.

stated Brian Hibbert, ICTSI chief information officer. "Cyber security is our priority at ICTSI, and why we need equally sophisticated, AI-driven technology like BlackBerry Cylance to protect our assets."

Ports are upping their game to avoid the disruption and major costs that can result from a cyber attack. Evan Davidson, vice-president of sales (APAC region) at BlackBerry Cylance, acknowledged ICTSI needed to increase its cyber maturity. "They [ICTSI] were running three versions of cyber software and did not have the critical intervention they required," he told SAS.

Davidson declined to comment on whether ICTSI had suffered cyber attacks in the past. However, he asserted the CylancePROTECT is a software that uses AI and machine learning algorithms to "detect, prevent, and contain existing and new malware will prevent threats".

"No company can claim that their security products can 100% protect from all information security threats. The use of AI cyber-security solutions is also not a silver bullet; however, it has been proven by independent assessors to be 99.1% effective at predicting and preventing cyber attacks on the end point," he said, citing studies that show the software has a predictive advantage of up to 33 months.

Nevertheless, Refiti is not convinced. "AI won't work by itself. It can become a danger because people get a false sense of security. Technology like this helps, but it is useless if not used properly," he explained. It would not, for example, stop a denial of service attack – a cyber attack meant to shutdown a machine or network and make it inaccessible to the intended users. "If you deny a third-party service provider access to the port IT systems to monitor and manage, then it is probably a bigger risk than stealing data," he asserted.

Similar with Refiti, Blackburn described offshoring critical infrastructure as fraught with danger. "Are the assumptions being made through the lens of a business, not national security?" the former RAAF deputy chief asked. "We need a scenario-based approach – the sort of work I did with the military. Is there an adversary who wants to bring the system down?"

Rudolph went further: remote-control systems could create targets for warfare, he cautioned. "Sensors and camera feeds can be hacked and manipulated so the view you get is deliberately not showing what is happening," he said, citing the 2008 cyber attack that set an oil pipeline in Turkey on fire. Rudolph stressed no single security control, not even advanced cyber-security tools such as CylancePROTECT, could guarantee security.

"A system-wide view is required," he said. "We are quite bad at building secure systems. Risk analysis should be undertaken before systems are put in place. From the security side, we need to rate the risks of moving jobs to cheaper countries."

It is not just cyber-security experts who have aired their concerns, industry experts have too. Peter van Duyn is a maritime logistics expert at the Institute

“Technology like this helps, but it is useless if not used properly”

Lani Refiti, partner, Deloitte Asia-Pacific

Under the Security of Critical Infrastructure Act 2018, ports are required to report information on who is operating an asset or part of an asset to the Register of Critical Infrastructure Assets, the Department of Home Affairs told SAS. When questioned about the wisdom of multinational corporations having offshore control and management of a nation's critical infrastructure, Refiti replied it would be scandalous if governments were looking the other way.

ICTSI/VICT declined to comment on this issue when contacted on several occasions. However, ICTSI is making efforts to improve the security of the automated port. On 19 November 2019, the company announced updates to its cyber-security protections; it was deploying BlackBerry's CylancePROTECT software across its global network.

"Economies never sleep – but neither do hackers,"



ICTSI 5133809

**Aerial view of VICT
at Webb Dock East**

for Supply Chain and Logistics, Deakin University, and director of the International Cargo Handling Co-ordination Association. He had also been a general manager at Patrick Terminals, which pioneered port automation in Australia. "Much of the work can be done from a control tower anywhere," he said. "But we still need people on the ground, even with an automated terminal, so they can work together, especially if there are any issues."

"Globalisation is happening and will no doubt continue," van Duyn went on. "But Maersk is a bit of a warning. If the whole country comes to halt because of something like this, it might be a wake-up call."

In June 2017, the Maersk Group shipping and port global empire became collateral damage in Russia's cyber war on Ukraine. It just took one finance executive at the company's Odessa terminal in the Black Sea to load a popular accounting software program onto a single computer to wipe all data from the company's global network. Terminals located in 76 ports around the globe were crippled and it was the automated terminals that were hardest hit. Such was the scale of the malware breach that books have been written about it.

Andy Greenberg described dormant container terminals from Long Beach, the United States, to Rotterdam, Europe, in his book *Sandworm*. Computer systems crashed, quay cranes froze, gates jammed shut and tens of thousands of trucks queued, 800 ships lay dead in the water. Shipping slackened as manifests and other digital data disappeared. Maersk container vessels, representing close to one-fifth of the world trade, bobbed at sea and unable to enter ports.

That Maersk was able to reboot after just a week or two was largely down to luck, as Greenberg had found out. West African country Ghana suffered a power blackout on the day of the security breach, disconnecting the local Maersk terminal computers from the global network, hence safe from the malware breach. The Ghanaian office was the only one that had all information of the company's domain controllers.

That lone surviving domain controller was flown in and hand-delivered to a team of 200 Deloitte IT experts working round the clock with 400 Maersk staff at the company's Maidenhead UK headquarters, and used to revive the company's global network.

"After the first days, Maersk's port operations had regained the ability to read the ships' inventory files, so operators were no longer blind to the contents of the hulking 18,000 teu vessels arriving in their harbors," Greenberg wrote.

Notable cyber attacks that have occurred in 2018 include the Long Beach and San Diego ports in the United States, the Port of Barcelona in Spain, and Austal defence shipbuilder in Perth, Australia.

"Increased automation and the decrease of manual intervention in the maritime industry provides fertile ground for security breaches," Dr Indra Vonck wrote for the Baltic Ports Organisation in 2017. He is the senior port expert in Deloitte's Port Services team. "Cyber security on ships and in ports now becomes of paramount importance, since the economic impact on the shipping industry and port operations is huge," he warned.

Port of Melbourne was audited on 5 December 2017 and will be audited again this financial year, according to the Department of Home Affairs. The port and VICT operate in accordance with maritime security plans approved by the Department of Home Affairs under the Maritime Transport and Offshore Facilities Act 2003. Due to privacy and security reasons, audit outcomes and contents of the security plans may not be publicly disclosed.

Looking beyond what is currently happening: how far can remote control of container terminals go and what are the risks? Could a company's global container terminal operations around the world be operated from one central control tower remotely? Could China monitor and control its 40–50 terminals dotted along its new maritime Silk Road spanning Africa, Asia, Australia, Europe, the Middle East, and South America from a central operations tower in Beijing or Hong Kong?

A leading TOS company advertises its software that allows stevedores "to run their operations, from a single terminal to multiple terminals across multiple geographic locations, all within a single instance".

Satellite and internet connections suffer time lags, making the offshoring of time-critical operations fraught, according to Fredrik Johanson, general manager of marketing and sales at ABB Crane Systems. "But with the introduction of artificial intelligence, that too will change and there will be no limit to how remote remote-controlled operations can be," he remarked in 2015, foreseeing developments that will change the face of the maritime industry. **PH**

i MORE INFO: For information on cyber threats facing shipping, download the SAS and BIMCO cyber-security white paper at safetyatsea.net

Working together to reduce emissions

Collaboration is key if global ports want to successfully improve their carbon footprint, **Keith Wallis** finds



With extensive fleets of diesel-fuelled cargo-handling equipment and invariably limited berth space, ports are at the forefront of the maritime industry to reduce greenhouse gas (GHG) emissions by improving operational efficiencies.

Highlighting the role ports play, the International Maritime Organization's (IMO's) technical adviser Astrid Dispert said, "Ports and shipping are intrinsically linked; as such, efforts to reduce maritime emissions need to extend beyond seagoing ships alone."

She added, "IMO's MARPOL Annex VI regulations on air pollution and energy efficiency are aimed at ships, but it is clear that for port emissions to be reduced, national authorities need to consider emissions from all sources, including cargo-handling equipment, trucks, as well as domestic vessels."

Dispert is an adviser on the IMO Global Maritime Energy Efficiency Partnerships (GloMEEP) project that also involves the International Association of Ports and Harbors (IAPH). She was part of a GloMEEP team that helped produce ship and port emissions toolkits in late 2018 to help jurisdictions develop policies to cut maritime emissions.

While it is relatively simple to convert cargo-handling equipment from diesel-fuelled to electric or hybrid power, it is far more taxing to make the required holistic operational changes to cut ports' GHG emissions. Significant collaboration needs to take place to reduce berth and port congestions,

supply alternative ship fuels, and implement other initiatives to reduce GHG footprint.

These were among the difficulties underlined by Quah Ley Hoon, chief executive of the Maritime and Port Authority of Singapore (MPA), in driving the maritime industry, especially in Singapore, towards a decarbonised future. Singapore is one of the world's top five busiest container ports, and in 2019, handled a record 37.2 million teu.

Quah told *P&H* that from a Singapore perspective, there are three challenges to implementing a decarbonised port.

These included "the need for closer collaboration with industry partners to develop well-defined challenge statements in the areas of port optimisation and the transition from semi- to highly automated terminals, sea traffic management, vessel operations, security – both physical and cyber – and in the use of alternative maritime energy".

The second challenge is the lack of a supporting ecosystem of relevant industry partners. "Having a list of challenge statements provides us with a perspective of the industry demand, MPA realises that there is no ready supply of start-ups, technology companies, or research institutions focused on the maritime industry," Quah explained.

The final challenge is to embrace a workforce, which is often ageing and has mismatched skills, as part of the innovation efforts.



Getty Images/rahkeli: 5136477

**Just in time arrivals
for ports would
reduce scenes like
these: ships waiting
to enter a port, here
in Singapore**

To overcome these hurdles, Quah said the MPA, in partnership with Singapore Shipping Association, has established a research and development centre of excellence called Pier71, to build up the ecosystem and bridge the gap between research and development.

"Specifically, MPA has set up the Centre of Excellence on Maritime Energy and Sustainable Development at Singapore's Nanyang Technological University to build up capabilities relating to alternative fuels and support maritime decarbonisation," she told *P&H*. "MPA's aspiration in driving these initiatives would be for maritime corporates to work together to innovate, stay relevant and competitive, and prepare our people and port to be future ready."

On a more practical level, Singapore has launched a raft of initiatives since 2011 to help reduce the environmental impact of port activities. These include construction of a mega terminal complex at Tuas that, when complete by 2040, will be capable of handling 65 million teu and consolidate all container port activities at Singapore's western region.

The facility, which will become operational in phases starting in 2021, will replace three city centre container terminals – Brani, Keppel, and Tanjong Pagar – as well as the Pasir Panjang terminal with a single complex, freeing up land for redevelopment.

Quah said, "Tuas port will be fully automated with the deployment of advanced port technologies, such as automated yard cranes that can load and unload containers with precision, as well as intelligent sensors and cameras. Driverless and battery-powered automated guided vehicles [AGVs] will also be used to transport containers. At the same time, drones will inspect port equipment and assist in troubleshooting with remote video streaming."

Terminal operator PSA is currently conducting pilot trials with 30 AGVs at Pasir Panjang terminal, ready for a full roll-out at Tuas. The AGVs have a 25% smaller carbon footprint compared to conventional diesel-powered prime movers, Quah said.

In addition, PSA has bought 200 liquefied natural gas (LNG)-powered terminal tractors to haul containers within Pasir Panjang terminal, with the aim of expanding the fleet for use at Tuas.

She added, "Tuas port will deploy green technologies, such as electrified port-handling equipment to reduce carbon emissions; as well as smart grid systems that actively optimise overall electrical consumption. The port will also use renewable energy, such as solar power, while the buildings' green designs help with rainwater harvesting."

All this will help reduce the port's carbon footprint, cleaning the air. Quah said, "Singapore has pledged to reduce its emissions intensity by 36% from 2005 levels by 2030 under its commitment to the Paris Agreement."

The MPA has also extended its Maritime Singapore Green Initiative (MSGI) until at least 31 December 2024. First introduced in 2011, MSGI provides incentives

to companies that adopt clean and green shipping practices over and above the minimum requirement set by IMO conventions.

"Some 267 Singapore-flagged ships have qualified for the Green Ship programme and 17 companies and 61 Singapore-flagged ships have participated in the Green Technology programme," Quah said.

Among the latest incentives is widening the Green Ship programme to encourage the adoption of engines using alternative fuels with lower carbon content such as LNG.

MPA is co-funding the construction of two LNG bunker vessels to facilitate ship-to-ship bunkering of oceangoing vessels as part of wider efforts to develop Singapore as a LNG bunkering hub.

The vessels, due to become operational by the third quarter of this year, come as MPA "is also preparing for the first simultaneous operations for LNG bunkering and cargo operations this year", Quah revealed.

Aside from port activities, Singapore has extended its decarbonisation efforts to look at ways at improving vessel scheduling and traffic management to reduce waiting times. The city-state is one of several countries – others including Indonesia and Malaysia – that has signed up to the Straits e-Navigation Alliance High Level Advisory Board, which is conducting research and testing of e-navigation concepts to tackle congestion through the Singapore Strait.

Ulf Siwe, validation communications officer research and innovation at Sea Traffic Management (STM), said e-navigation can help meet the IMO's goal to reduce GHG emissions by 50% by 2050 by reducing waiting times and improving voyage planning.

IMO's Dispert is just as encouraging about using e-navigation. "In percentage terms, we're talking about modest amounts. But it's exactly these types of measures that can make a huge difference in the short term and help reduce the carbon footprint of marine shipping. Added to that, they'd also have a beneficial effect on the wallets of the shipping companies."

Dutch research institute TNO, working with the Rotterdam port authority, estimated that 134,000 tonnes of CO₂ emissions could be saved in Rotterdam alone if container ships arriving at the port were able to reduce vessel speeds by 5% on the basis of being given more accurate arrival and berthing information.

Commenting on MPA's philosophy, Quah told *P&H*, "We recognise that climate change is an existential issue for an island state like Singapore. Making maritime more environmentally sustainable is a key priority for MPA."

She added, "Maritime Singapore's ambitions must be placed in a larger context of the new baseline that the global maritime industry is moving towards. This is underpinned by three Ds: namely disruption, digitalisation, and decarbonisation. We are watching these trends closely and will be developing plans moving forward." **PH**

A little help from our friends

With the help of ports, data-sharing platforms become more popular, making maritime business more efficient, writes **Charlie Bartlett**

Between 2015 and 2019, a project began to institute for shipping what has accompanied the air industry almost from its inception – a foundation for a system of sea traffic control. Sea traffic management (STM) validation, funded by the European Union to the tune of EUR43 million (USD47.5 million), comprised testing in 13 countries, on 311 ships, at 12 simulator centres, and crucially, the ports of Barcelona, Brofjorden, Gothenburg, Limassol, Sagunto, Stavanger, Umea, Vaasa, and Valencia. The goal was straightforward: standardise the way in which vessels and ports interact with one another, and, eventually, yield a much more efficient operating environment for all parties.

At time of writing, the project, which concluded in mid-2019, has yielded very limited results. Encouragingly, the S-211 Port-Call message format has been migrated into a common maritime data structure (CMDS) format, and now features in the CMDS GI registry currently managed by the International Hydrographic Office (IHO). This creates a standardised methodology for ports and ships to communicate with one another, defining the types of data to be included in the exchange.

Unfortunately, that's about it. Shipping now is not being presided over by sensible people in control towers. Port calls, at least for the immediate future, will be characterised by vessels racing in only to wait in long queues. For some reason, these types of co-operative schemes – unanimously beneficial for shipowners, ports, crews and the environment – never seem to stick the landing in this industry.

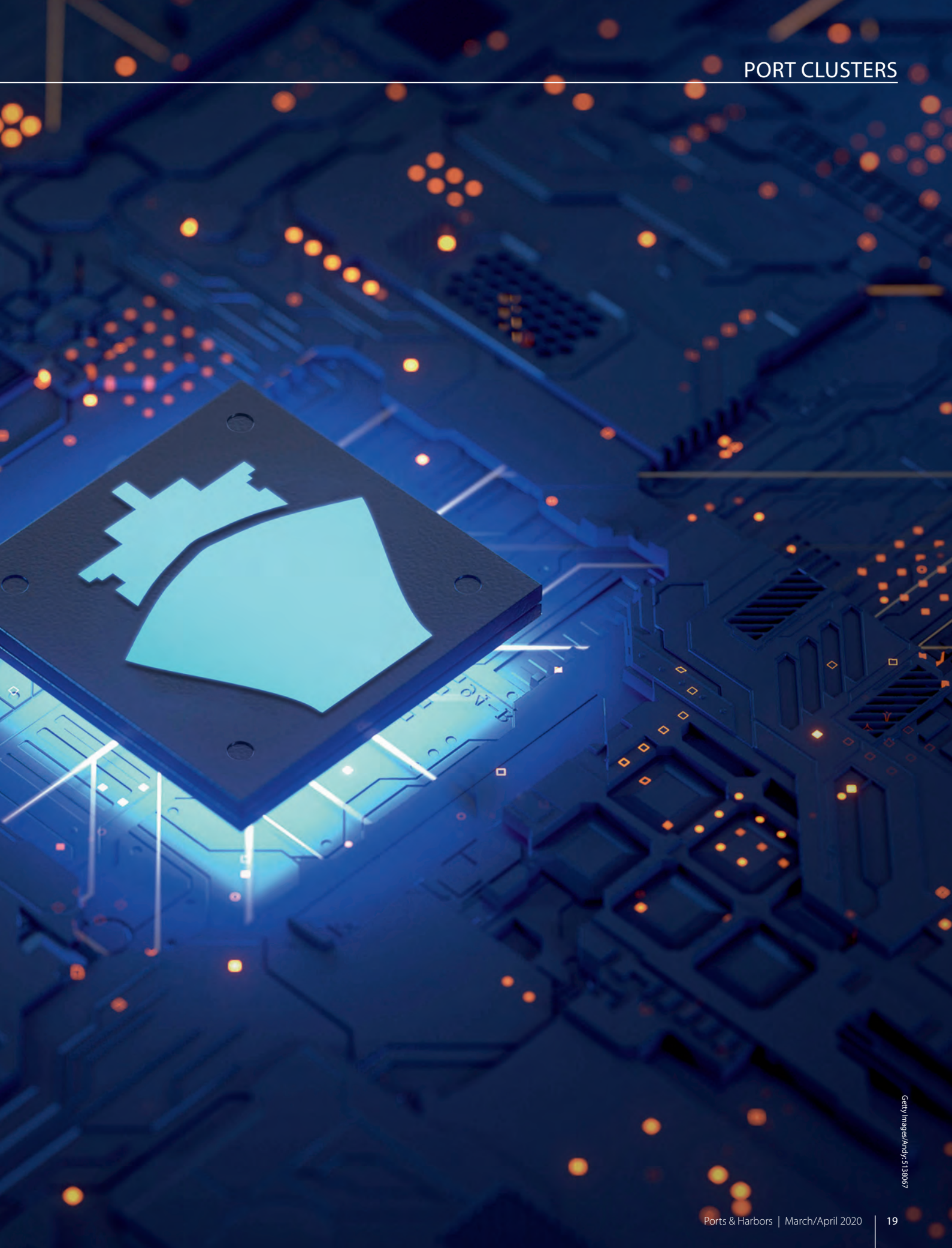
Perhaps, if those on one side of the equation

buddy-up, for example, the ports, they will be able to force efficiency improvements on the rest of the industry. In late 2019, the inland port of Antwerp, and the North Sea coast port of Zeebrugge, close to the Scheldt's mouth, resolved to do just that.

"We have been talking with the port of Antwerp for some time now to see how we can work more closely together with the aim of strengthening each other's platforms," Zeebrugge chairman Dirk De Fauw announced in October 2019. "The ambition of both our port authorities is to form a future-proof port with a complete offering from A to Z."

The two ports commissioned Deloitte and Laga to perform an economic study to outline the benefits of a potential merger. The results were unsurprising: both face challenges particular to the region, subject to massive competition with the tightly packed group of large ports along Europe's northern shore – Rotterdam, Hamburg, Bremerhaven, Felixstowe – all of them in the top 20 busiest in Europe by container throughput. Antwerp and Zeebrugge share and fight over much of the same hinterland infrastructure to get cargo to the European market; both are close to one another – situated within the North Sea environmental control area, requiring ships that call at both ports to burn expensive 0.1% fuel, with port state control inspectors at those ports enforcing this; and both lie in the shade of Rotterdam in terms of bunkering infrastructure.

The merger would therefore help to determine the competitive edge for the ports that they might be lacking currently. "Far-reaching co-operation makes both ports more robust in existing domains,





Zeebrugge port 15134212

Zeebrugge port, Belgium

consolidates local employment and strengthens the ports' roles in Flanders and internationally," Deloitte found at the study's conclusion. "Intensified co-operation will also enable the ports to respond more quickly and effectively to future opportunities such as economies of scale, energy transition, innovation, and digitalisation.

"Even more, clients of both ports are also in favour of increased collaboration between Antwerp and Zeebrugge. In short, co-operation can yield strong win-win results for both ports, provided that there is a far-reaching integration between the two port authorities."

But the 'co-opetition' model familiar throughout the port segment would not cut it, the consultancies determined; while the ports have collaborated in the past, these endeavours were limited in scope, marred by hostility and an unwillingness to commit. "A holding company and merger were the only management models retained in the governance analysis," Deloitte said.

"Deloitte's research indicates that our ports are highly complementary and that we face similar challenges," said Port of Antwerp alderman Annick De Ridder. "Together, we can turn Antwerp and Zeebrugge into the port of the future faster and more effectively by focusing on domains such as energy transition, innovation, and digitalisation. We're starting formal merger talks with Zeebrugge because we are confident

that this will enable us to reinforce our position as the main gateway to Europe."

Although digitalisation may be a nebulous concept, it greatly increases the breadth of what can be achieved when ports work together. So as part of the port of Antwerp's digital strategy, it has developed the API NxtPort as one of a growing number of projects promoting transparency and the sharing of key information between ports, forwarders, and ships, including schedules, gate in, gate out, loading, and unloading information. This will also play a role when working closer with Zeebrugge.

Collaboration between parties on the digital front could greatly speed things up in the realm of customs processes and intermodal transport, but there are also tangible gains in port productivity at stake, pertaining to yard space and hinterland travel time.

Every port would love to have more efficient logistics, but NxtPort is facing the same difficulties as other platforms, for example, ports are reticent to use somebody else's API platform to do it. Despite this, Maersk and IBM's blockchain-based TradeLens is slowly but surely making headway into the market. Developments on the blockchain front have pushed the US Federal Maritime Commission (FMC) to make an exception to the United States' 1984 Shipping Act, dubbed The TradeLens Agreement.

While use of the blockchain platform would



previously have run afoul of legislation barring carriers from collaborating “without the scrutiny of the US FMC”, the amendment “authorises the parties to co-operate with respect to the provision of data to a blockchain-enabled, global trade digitised solution that will enable shippers, authorities, and other stakeholders to exchange information on supply chain events and documents”. Given that anti-trust has been deemed not an issue in this case, the amendment opens up the possibility for a more open and co-operative approach between carriers and ports in North America.

TradeLens will not impact the speed at which boxes are physically loaded or unloaded. However, it will free up a great deal of resources in respect of customs movements and paperwork and the costs associated with these, which can amount to have of the value of some containers. Furthermore, mapping the movement of boxes over time will enable IBM to apply machine learning to the equation, identifying overlap and waste between operations between ports, and potentially benefiting all parties.

The technology garnered another vote of confidence when the port of Salalah became the latest to sign up, joining the Gulf ports of Abu Dhabi, Al Jubayl, Bahrain, Doha, and Sharjah. With 4 million teu going through Salalah every year, the implications for the growth of TradeLens’ critical mass are hard to ignore. “Adopting and incorporating blockchain technology into all aspects of supply chain will not only enhance the attractiveness of Salalah for these companies, but also support development of new business models that can further leverage the geographical location of Salalah,” said port CEO Mark Hardiman, who described the technology as a big step forward.

Elsewhere, TradeLens is making headway into another cluster, which is in the western Mediterranean.

The blockchain platform now spans the Strait of Gibraltar, thanks in large part to the inauguration of the Tanger Med’s APM transshipment terminal mid-last year. With the addition of the new terminal, MedPort can

a great deal of sense; it is a vital EU export corridor, and almost 6 million passengers and almost 2 million vehicles cross the strait every year, as well as around half the truck trade between Spain and Gibraltar.

Representation on both sides of the Gibraltar Strait is a boon for Maersk’s blockchain platform, but the cluster’s position as a world bunkering hub adds a different dimension. Huge numbers of vessels bunker in Gibraltar; about 4 million tonnes of fuel pass through the port each year in ship-to-ship transfers. Recently, however, LNG is garnering a presence here.

In late August 2019, Heerema Marine Contractors’ new semi-submersible crane vessel (SSCV) *Sleipnir* called at Gibraltar en route from Singapore to the Mediterranean. The 220 m, 187,987 gt floating platform bunkered more than 3,000 tonnes of LNG, the biggest single LNG bunker supply in Europe thus far. “The operation was performed in the sheltered bay, helping to make this a safe, efficient, and smooth operation,” said Niels den Nijs, CEO of Titan LNG. “We look forward to supplying Heerema with more LNG in the future to fulfil Titan’s mission of lowering harmful emissions from the marine and industrial sector.”

However, Gibraltar will have to work much more closely with its neighbours if it is to maintain this privileged position as a bunkering capital. In 2017, a report by the EU Select Committee in the House of Lords found that one-third of Gibraltar’s available bunker fuel storage lies across the border in Algeciras.

Around 88% of all Gibraltarian import goods, including food and fuel, arrive overland via the border; a new kind of border between the British territory and the EU, thanks to Brexit, could have ruinous consequences for a major Gibraltarian revenue stream – cutting off or impinging the provision of fuel, crew members, stores, spare parts, and survey and maintenance personnel.

“While, in principle, a restricted land border should not affect the provision of bunker fuel across the sea border, specifically from storage in Algeciras, there exists an element of uncertainty as to whether Spanish manoeuvres in a post-Brexit scenario may have an effect in this area and place at risk Gibraltar’s important bunker business, the port’s principal activity,” a report submission by the Gibraltar Port Authority stated.

“Uncertainty over restrictions on movement across the land border – stores, spares, provisions, and crew members – in the minds of shipowners and operators may drive them to alternative ports, all else – bunker prices – being equal,” the report continued.

Perhaps, then, the addition of an admin-curbing blockchain system to straddle both sides of this equation will be welcome. Either way, Gibraltar must not only work more closely with the port of Algeciras, but also with other ports across the straits in Ceuta and Tangier – if it is to maintain its position.

With a global geopolitical climate only growing in its fractiousness, it will not be the last port to face this challenge in the coming years. **PH**

“We can turn Antwerp and Zeebrugge into the port of the future faster”

Annick De Ridder, *Port of Antwerp alderman*

now handle up to 9 million teu annually and, crucially, draught of up to 18 m.

Tanger Med announced its blockchain participation in January, and with operators on both sides integrated within the platform, the gradual development of a well-sited port cluster, which also incorporates Gibraltar and Ceuta, continues apace. At the intersection of two continents, the collaboration of these facilities makes



Cathy Images/Janus, Orlow: 5133611

Sustainable collaboration

Leaders from the world's most influential port cities have established a forum that aims to create a collaborative infrastructure,
Tony Slinn reports

Currently, there are eight port cities that have joined forces in SEA20: Genoa, Hamburg, Helsinki, Luleå, Rotterdam, Trieste, Vaasa, and the US state of Washington.

SEA20 envisions marine cities becoming the drivers of global development. It bases its actions on the United Nations' estimate that 68% of the global population will live in cities by 2050, placing equal pressure on city infrastructure development and the maritime sector.

Attendees at the first meeting in Helsinki, Finland, in June 2019, included port leaders; Helsinki mayor Jan Vapaavuori; former Finnish premier and current vice-president of the European Investment Bank, Alexander Stubb; and CEO of technology company Wärsilä, Jaakko Eskola; along with politicians and industry leaders from China, Europe, and the US.

While shipping is the most cost-effective way to move goods around the world, as consumer demand rises, the International Maritime Organization (IMO) member states, ports, and maritime businesses are increasingly faced with challenges in transitioning to greener, more sustainable operations. In the meantime, pollution, greenhouse gas emissions, and congestion

are contributing to social tension in cities.

A preliminary report from think-tank Nordic West Office (NWO), "The Maritime Future: A Global Analysis on Marine and the Environment", was discussed at the SEA20 meeting. "The need to create a smarter marine and energy ecosystem that can handle change in the coming decades is of paramount importance for our marine cities," said NWO research director Lauri Tähtinen.

"Today, shipping lacks the comprehensive sharing of data and mutual trust necessary for solving sustainability issues. The issue of the common fate of cities and ports should be raised. They and their surrounding areas are in need of innovation," she said.

SEA20 plans to create guidelines and new principles in 2020. "There is a need for co-operation," said city of Helsinki enterprise services head Ulla Tapaninen. "The port and city of Helsinki are jointly developing a port-city ecosystem by enhancing operational efficiency, digitalisation, and sustainability through innovation and experiments. We see SEA20 as a great way of sharing these kinds of experiments with other cities and tackling challenges together."

Antwerp and Rotterdam port authorities jointly organised The Added Value of Ports event in Brussels, Belgium, in September 2019 to alert the European Commission and Parliament over the economic importance of ports for European trade, transport, infrastructure, and industry.

"The European Union [EU] can offer important incentives to achieve the transition towards the CO₂-neutral port cities of the future. EU support is essential for the infrastructure investments needed to realise the energy transition," said Rotterdam Port Authority (RPA) chief operating officer Ronald Paul, hinting for example at LNG as a fuel infrastructure. "It means connecting production locations within and between industrial clusters – we need the EU for this"

Rotterdam's smart ports paper is incorporated in British Ports Association's (BPA's) Port Futures programme, a



**Helsinki, Finland,
with car ferries
arriving into the
west harbor**

thought-leadership initiative involving industry partners, innovators, and port city experts. Furthermore, the two organisations are working together.

"Our logistics and maritime sectors face a number of economic and ecological challenges. Digitalisation presents new opportunities to not only raise efficiency within logistics chains, but also improve their sustainability," RPA digital business solutions director Joyce Blik said.

BPA CEO Richard Ballantyne added, "Smart port operations can offer new ways of improving port services and infrastructure by getting the most out of our assets and joining up different parts of the supply chain within and beyond ports."

The European Sea Ports Organisation (ESPO) is also involved in the transition. Its review of the EU's trans-European transport network (TEN-T) regulation in September 2019 called on the European body to recognise port cities' new roles.

ESPO anticipates TEN-T to be updated to cater for the demand of digitalisation, automation, and e-commerce, and suggests that societal challenges such as climate change, noise, and air pollution should also be addressed in the framework.

"It's now time to adapt the framework to the new market realities, new challenges, and new needs," said ESPO secretary-general Isabelle Ryckbost.

As ESPO had pointed out, new TEN-T guidelines can only be met with the full support of EU member states, along with a corresponding budget. The organisation estimated that the investment for European ports needs to be EUR48 billion (USD53 billion) over the next 10 years.

The UK government and Associated British Ports' (ABP) Port of Southampton has launched the country's first port economic partnership (PEP) designed to create stronger links between ports and government to maximise long-term trade and economic growth.

The PEP is part of the UK government's 2019-launched Maritime 2050 – Navigating the Future strategy. The strategy sets out the creation of such partnerships as a method of leveraging the maximum benefit from

public and private sector investments and ensuring that planning processes are as efficient.

In the light of a post-Brexit world, it will also focus on getting public and private sector organisations at local, regional, and national levels to work together to enable improved links with global trading partners.

In Australia, port operator Flinders Port Holdings is drafting a 50-year master plan to guide the development of its seven South Australian ports. International port planner Black Quay Consulting has won the contract, and will develop the plan alongside Flinders through to October 2020.

The Flinders master plan is likely to be complex, taking in multiple commodities across the seven facilities under the group's control, as well as several business streams within the group. Flinders CEO Stewart Lammin said, "It's key to ensuring we are a long-term, and a future-focussed business."

Brisbane port too is developing. A port representative told *P&H* sister magazine *DPC*, "We are working with supply chain partners on initiatives to achieve greater efficiencies, embrace innovation, and deliver sustainable and mutually beneficial outcomes for industry and the community."

The representative added, "A key example is our non-linear channel optimisation simulator [NCOS] online technology, developed in partnership with DHI Australia and FORCE Technology. It's a technological solution to a local problem: as larger container vessels continue to cascade south from northern trade routes, we needed to ensure the port could accommodate those ships seeking to call at Brisbane." The NCOS system played a pivotal role in boosting the channel's capacity by increasing vessel length overall by 13.6% to 350m and vessel beam by 11.1% to 50m (read more on page 38).

"We are continuing to harness the opportunity generated by this technology. We are developing additional capacity, 'modules' with global relevance and application such as climate change, sediment management, and vessel emissions reduction. These new modules have a common aim; to reduce environmental impacts and improve shipping efficiency," the representative explained.

This is not the first attempt to unify ports' efforts: If SEA20 is the newest port cities association, then Association Internationale Villes et Ports (AIVP) is the oldest, dating back more than 30 years. AIVP is focussed on how to facilitate dialogue between ports and cities; how to ensure that port operations and development do not undermine the environment and the quality of life of local residents; and how to maintain port cities' identity and culture. AIVP's 2019 meeting ratified its Agenda 2030 strategy and its 10 objectives; these have been submitted to the UN as port cities' contribution towards its 17 sustainable development goals. The objectives include; climate change adaptation, energy transition and the circular economy, sustainable mobility, and restoring and protecting biodiversity. **PH**

It's now time to adapt the framework to the new market realities

Isabelle Ryckbost
ESPO secretary-general



ESPO 5126704

Sophisticated addition

Scott Berman describes how updating the Liverpool Cruise Terminal in the United Kingdom afforded the architectural company behind it the possibility to create history



The imminent, USD65 million Liverpool Cruise Terminal is an example of how a construction project is responding to, and fostering, growth in the cruise industry locally, while signifying multipronged efforts to generate economic benefits and bring new jobs to the city and its region.

The terminal, which will sit at Princes Jetty on Princes Dock in Liverpool, will house its functions and spaces within a dramatic and distinctive building. The city council's project is being implemented by a varied team: the contractor is McLaughlin & Harvey; Bristol-based Stride Treglown is the architectural company; and Ramboll is the engineering consultant, with Jones Lang LaSalle working with Ramboll on the approval process. In August 2019, the city council's planning committee gave "the go-ahead for the detailed design" of the project, more specifically they "voted unanimously in favour of the application for the detailed design of the development".

Construction of "this transformational project" is expected to begin in summer of 2020, pending two additional approvals, said the city council's project manager, John Navaratnam. The terminal is scheduled to open in 2023.

Peel Ports and its subsidiary Mersey Docks and Harbour Company own the Port of Liverpool; container, ro-ro, and passenger bulk operations on River Mersey; as well as a nearby ship canal, an oil terminal, and a shipyard. For the cruise terminal project, Peel Land and Property (Peel L&P) reportedly gifted the land to the city, a move that the company's development director, Darran Lawless, said will ensure that the city can respond to "the high level of interest in the region from the world's largest cruise ships".

Local enthusiasm for the imminent project and what it will bring – including 500 local jobs – is evident, with Liverpool Mayor Joe Anderson voicing his support for the project. "This is the latest milestone in the re-emergence of Liverpool as a cruise destination. We



Rendering of Liverpool
Cruise Terminal

AOI Studios: 5134922



ACI Studios 5134921

Aerial view of Liverpool Cruise Terminal

are creating a world-class experience for the cruise companies and their passengers," he said.

This is possibly due to Liverpool's cruise industry having shown considerable life in recent years – a 77% increase in passengers from 2012 to 2018 – with Cunard, Princess, Regent, Norwegian, Viking, Holland America, Celebrity, and Disney cruise lines among the transit and turnaround calls at Liverpool in 2019. The Cruise Liverpool industry group has called 2019 "a record-breaking year" that included the arrival of 86 cruise ships, 165,000 passengers and crew, and USD15.6 million in economic impact. About 110 cruise calls are expected in 2020. With such trends, officials got busy.

The new building will replace and upgrade a 13-year-old, 800m² facility that can serve a maximum of 900 passengers on a turnaround, said Navaratnam. At 10,000m² of space, the new terminal will be able to handle cruise vessels with 3,600 passengers, or those accommodated by the "world's largest cruise ships", McLaughlin & Harvey has noted.

Within that expanse of space will be two floors holding boarding facilities, a baggage hall, check-in desks, passenger lounges, and a cafeteria. The entire structure will sit on a deck suspended out over River Mersey and atop steel piles. McLaughlin & Harvey has indicated that it will demolish an existing jetty at the site to make way for the construction, and that there will be passenger and vehicle bridges, as well as street improvements. Landscaped open public spaces are also part of the plan.

More broadly speaking, such projects are examples of the kinds of investments and assets being marketed

by the city of Liverpool, other nearby municipalities, and some major companies as the Superport region. The public-private Superport association said the region has recently received USD1.3 billion in "inter-modal infrastructure investment". Entities undoubtedly want to see more and are leveraging the region's related assets accordingly.

The cruise terminal is a conspicuous, high-profile marker of such things in a city with its own unique features. As Stride Treglown project director Gordon Tero puts it, Liverpool has "one of the, if not the, world's greatest city waterfronts".

The Liverpool terminal's central location in its city is "relatively unique", said Tero. "Most of the terminals around the world, while being incredible places, are located on the outskirts of cities for operational and logistical reasons, such as Singapore and Leixões, or are integrated into a larger commercial development, like Hong Kong and Vancouver," explained Tero.

"We have always been excited by Liverpool's willingness to embrace its maritime standing in world history by keeping the terminal at the heart of the city and treat it as a stand-alone facility on the waterfront," he said. "Travellers have been departing from and arriving at Liverpool Docks for hundreds of years and we are proud to be a part of writing a further chapter in this history. Much has been talked and written of Pier Head and the many other grand buildings and marine structures of Liverpool. We sit as a modern addition to this family."

A digital fly-through rendering by the architect shows a long, low-slung, elegant form. Light from a great hall, visible inside through great expanse of glass, shimmers



Stride Treglown: 5134923

Liverpool Cruise Terminal entrance

on the surface of River Mersey.

"Our building has an unashamedly industrial aesthetic, but at the same time a sophisticated and elegant form that sets it apart. Its materiality lifts it above the humble industrial shed, with tricolour standing seam zinc used for the wrap over twisted beam roof, and a robust white concrete artist-designed plinth. Both materials will both stand the test of time and give the building a sumptuous feel," Tero characterised the terminal's design.

"The building is a story of industry, of the River Mersey, and of movement. It is the only building on the riverfront that projects beyond the dock wall into the river, giving it a unique opportunity to converse with the river and its inhabitants. The building provides a beacon to those approaching it along the river through fully glazed ends, and which from the inside provide magnificent vistas north and south for those at either end of their voyage or during a stopover," he continued.

In Tero's view, "the new terminal will be a proud and confident addition to the waterfront. Not trying to shout above the crowd but sitting as a sophisticated and respectful member of the family".

Creating a massive, high-profile passenger terminal is a daunting task, whatever the variables and setting. Tero said the process at Liverpool has been "complex and time-consuming", suggested several things for decision-makers anticipating such projects and the process of working with outside architects on their designs.

"As cruise liner terminals are a relatively rare beast, although they are on the increase, having team with a strong understanding of maritime regulations and processes and how interrelate with the local planning framework is vital," he added.

There is much at stake and something unique about the opportunities presented by cruise terminals, particularly those located in great urban centres. "Unlike airports, cruise visitors are approaching your city in a way that they can embrace it immediately. Find a way to allow those visitors to be absorbed by the city as they disembark. In other words, connect your terminal to your city if you can," Tero continued.

The terminal project is one of several initiatives in a complex collection of governmental and business entities, associations, programmes, and strategic plans working to reinvigorate the city and region by shepherding public and private investments, attracting businesses, and building assets accordingly.

The initiatives include the city's USD18.3 billion Regenerating Liverpool programme – of which the cruise terminal is a part, in addition to road infrastructure, commercial office, residential space, and more – and the Scape Group's National Construction Framework for municipalities across the United Kingdom. There is also the Liverpool City Region Local Enterprise Partnership's Local Growth Fund, Cruise Liverpool, Superport, and the USD6.5 billion Liverpool Waters development scheme by Peel L&P. The city has hailed the Liverpool Waters scheme as "one of the largest regeneration projects in Europe, which will create five distinct neighbourhoods and breath life back in the city's northern docks". **PH**

Expanding Liverpool

There are other significant, related projects afoot or just completed at Liverpool:

- The second phase of expansion at the Liverpool2 container terminal. Work entails the delivery of 10 new cantilever rail-mounted gantry cranes and three ship-to-shore cranes and, reportedly, the construction of a quay wall and reclaiming some land from the Mersey. BAM Nuttall was the contractor for the first phase, a USD519.7 million terminal that opened for business in November 2016. Liverpool2 "is able to service 95% of the world's largest container ships", Peel Ports indicated. McLaughlin & Harvey is the contractor for phase two, which is slated for completion in 2021.

- A USD22 million ro-ro terminal upgrade at Peel Port's Twelve Quays terminal on the west bank of River Mersey at Birkenhead. The project is set to open at any time, according to the port's website and will accommodate larger, fuel-efficient Stena E-Flexer ferry vessels that ply the route between Liverpool and Belfast. These ferry vessels can carry 927 passengers and 120 cars in addition to 3,100 freight lane metres. Construction includes a multilevel berth for more efficient access for vehicles and larger import-export berthing facilities, Peel Ports reported.
- A four-star hotel nearby the cruise terminal. In October 2019, the city gave the go-ahead for planning for the Peel L&P project, which is part of its Liverpool Waters

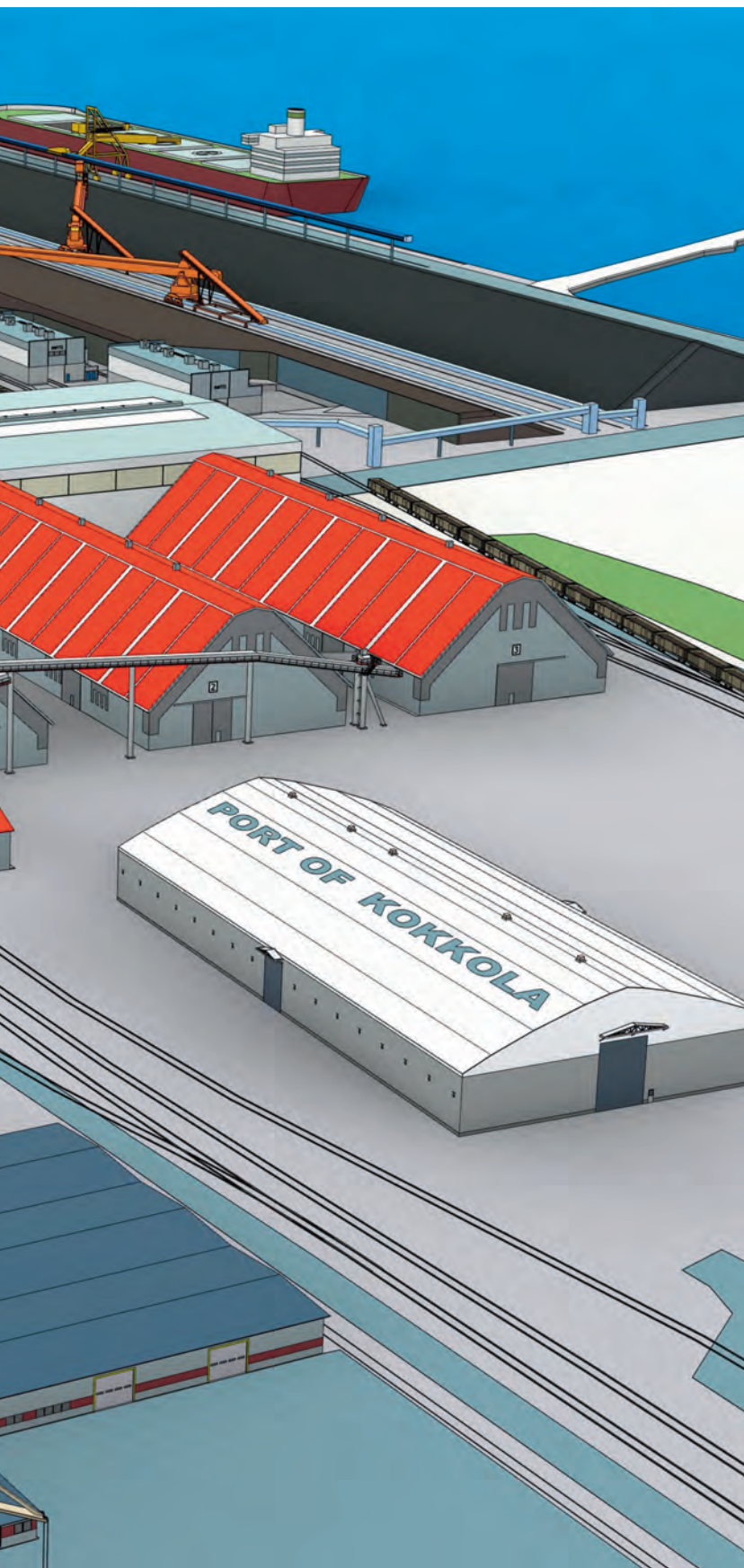
scheme. Construction may commence in early 2020. Wates Construction is the contractor.

- A USD41 million Isle of Man Ferry Terminal project at Princes Half-Tide Dock that will replace a terminal at Pier Head. Designed by The Manser Practice architectural company, renderings show a form with an upper-floor perimeter wrapped completely in glass and sitting upon a base sheathed in metal panels. Contractor John Sisk and Sons may begin work this summer, with the terminal opening late in 2020.
- A USD26 million road link in support of the ferry terminal, and a USD41.7 million upgrade to the A565 roadway to ease traffic flow to and from the cruise terminal.



Port of Kokkola: 5133412

Rendering of
the Deep Port
future vision



Careful considerations

Before the port expansion project begins in Kokkola, Finland, the ground must be cleared of unexploded ordnance – a common issue in the North and Baltic Sea coastal zones, writes **Scott Berman**

A dredging and reclamation project by the port of Kokkola and the Finnish Transport Infrastructure Agency (FTIA) is creating what one port official calls “a huge opportunity” for this export bulk and container operation. The port comprises three port locales on western Finland’s Gulf of Bothnia, about 500 km from Helsinki. A campaign 20 years ago took depths to 13 m, helping to draw Capesize and Panamax vessels, but the draught limit still requires the largest vessels to load only up to 75% of capacity. Taking the depth down to 14 m enables a more effective utilisation of the cargo-carrying capacities.

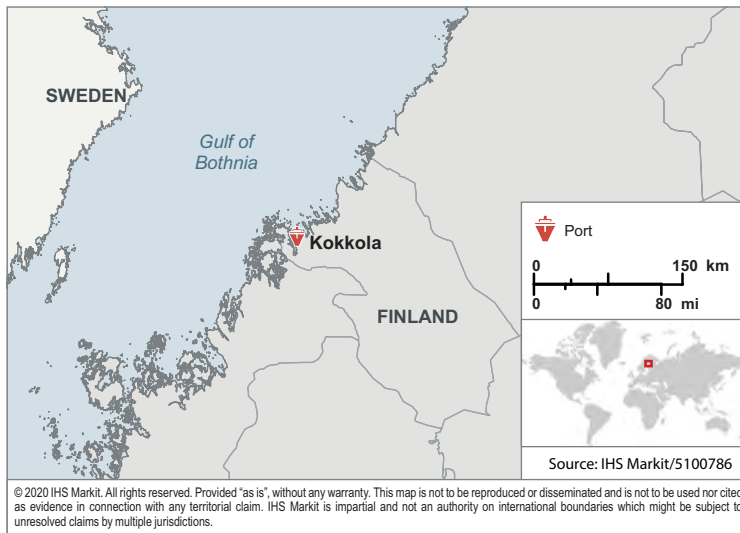
The USD69.8 million project started construction in September 2018 and is scheduled for completion in September 2020. Of that total, almost USD50 million is for deepening the channel itself, with FTIA financing more than 77% of the cost and the port the rest; while the port is also providing almost USD20 million for dredging its harbor basin and related works.

Seppo Paukkeri, project manager for FTIA, said that a Wasa Dredging and Van Oord joint venture is the main contractor, with Wasa “responsible for backhoe dredging of hard soil, contaminated sediments and risk masses, underwater blasting, and embankment construction – via subcontractor Tallqvist Infra Oy – and Van Oord handling soft soil hopper dredging”.

He characterised the Kokkola fairway as “a typical Finnish coastal fairway, it’s very narrow and Panamax-sized vessels need certain space for safe navigation”. Therefore, combining the dredging works and vessel traffic has been quite challenging.

According to Paukkeri, at least 3 million m³ of varied materials have been cleared, volumes that the port is depositing in several basins at Kokkola’s Deep Port in a long-term reclamation project that will add port parcels.

Tapio Lampinen, technical manager for the port of Kokkola, said the new parcels will, like the rest of Deep Port, be “used exclusively for bulk cargo: we plan to build new warehouses, storage fields, material handling equipment”. Technicians are depositing other materials from the campaign into several basins, depending on



material type and requirements: hard moraine, soft soil, and contaminated sediment. The variety of materials, removing them, by dredging and at times blasting and then placing them, have by its very nature, been challenging, Paukkeri said.

The contaminants, which contained zinc and mercury, totalled about 135,000 m³ of materials. They are now cleared from a deep port basin and have been placed in a newly constructed basin. Lampinen explained that technicians will stabilise the materials after the current project is completed. Once that process is complete, planners can begin constructing a port parcel atop it, he said.

To take another example, the designated Basin 2 holds 248,000 m³ of materials, such as clays, and will be left to dry and compress over several years before more port property can be built. Basin 4, with a volume of 663,400 m³ of sandy materials, is gradually being filled for the same purpose.

Before any physical work could start at Kokkola,

technicians and officials had to work on a complex step in particular: underwater encounters with unexploded ordnance (UXO), or shells and other weapons dating from the World War II. Such objects detected in other campaigns over the years made it prudent to find out what was there before dredging started. So officials launched a comprehensive effort to locate and remove UXO, work that was carried out in 2018. Paukkeri explained that "before the construction phase began, the Finnish Defence Forces [FDF] searched and cleared UXO found in magnetometric surveys and removed all the explosives". It was a running start, yet some objects remained.

As Lampinen and Paukkeri indicated, hopper dredgers in the campaign that followed in the wake of the surveys have encountered nine such shells so far. In each instance, dredging was stopped for several hours to make way for FDF minesweepers – navy diver specialists were deployed to help with the operation – to remove the UXO and destroy the objects off site. All of the objects were handled without incident.

More UXO could be found in some dredged materials from stretches of waterway of about 460,000 m², said Lampinen, and the project is designed accordingly: technicians are placing such high-risk area materials – roughly a third of an expected, eventual total of about 1 million m³ – into a basin on Pommisaari, a 15 ha reclaimed military island located just off the port property. The overall reclamation work is a long-term process, and "much work will remain for the port before the dredging spoil basins can be used for port constructions," said Lampinen.

"We're looking at initiatives being deployed with the objective to develop sustainable approaches that meet the current and future needs of the port and its stakeholders. We're constantly developing our services. The dredging project provides us a huge opportunity to develop our port structures, and after the completion of this project we will be able to offer further, efficient tools to meet the needs of our clients," he concluded. **PH**

**TSHD Volvox
Atalanta at work
at Kokkola**



Safety first

Different methods are being used to remove unexploded ordnance from port construction projects, **Scott Berman** reports

Port of Kokkola: 5133411

Aerial view of the port of Kokkola, Finland

According to Germany's Fraunhofer Institute for Chemical Technology, there is "an estimated 1.6 million metric tonnes of conventional and 220,000 metric tonnes of chemical warfare agents" that were dumped at sea decades ago, mostly at the end of the Second World War, and now decomposing, posing explosion and pollution hazards. As indicated below, some unexploded ordnance (UXO) dates from the First World War.

Boskalis subsidiary Heinrich Hirdes EOD Services, a hydraulic engineering company that works with UXO, has echoed the estimated figure on conventional UXO, and has pointed out that the construction of offshore wind farms and their connecting cables to landside is posing new dangers when encountering the objects.

Belgium's Flemish regional government – specifically, the Department of Mobility and Public Works, Maritime Access Division – in 2018 launched a programme to hammer out the parameters of a test of ways to efficiently remove UXO in the North Sea. A market consultation session was held in October 2019 in Brussels.

The government is targeting an estimated 35,000 metric tonnes of dumped conventional and chemical ammunition dating from the First World War, which sits in a sandbank called De Paardenmarkt off the coast of Knokke-Heist, about 90km from Antwerp. According to the government, "to date, there is no danger to the marine environment or public health, but there is a constant risk" of chemical UXO oxidising or breaking open in collisions with vessels, either of which would "result in heavy chemical pollution".

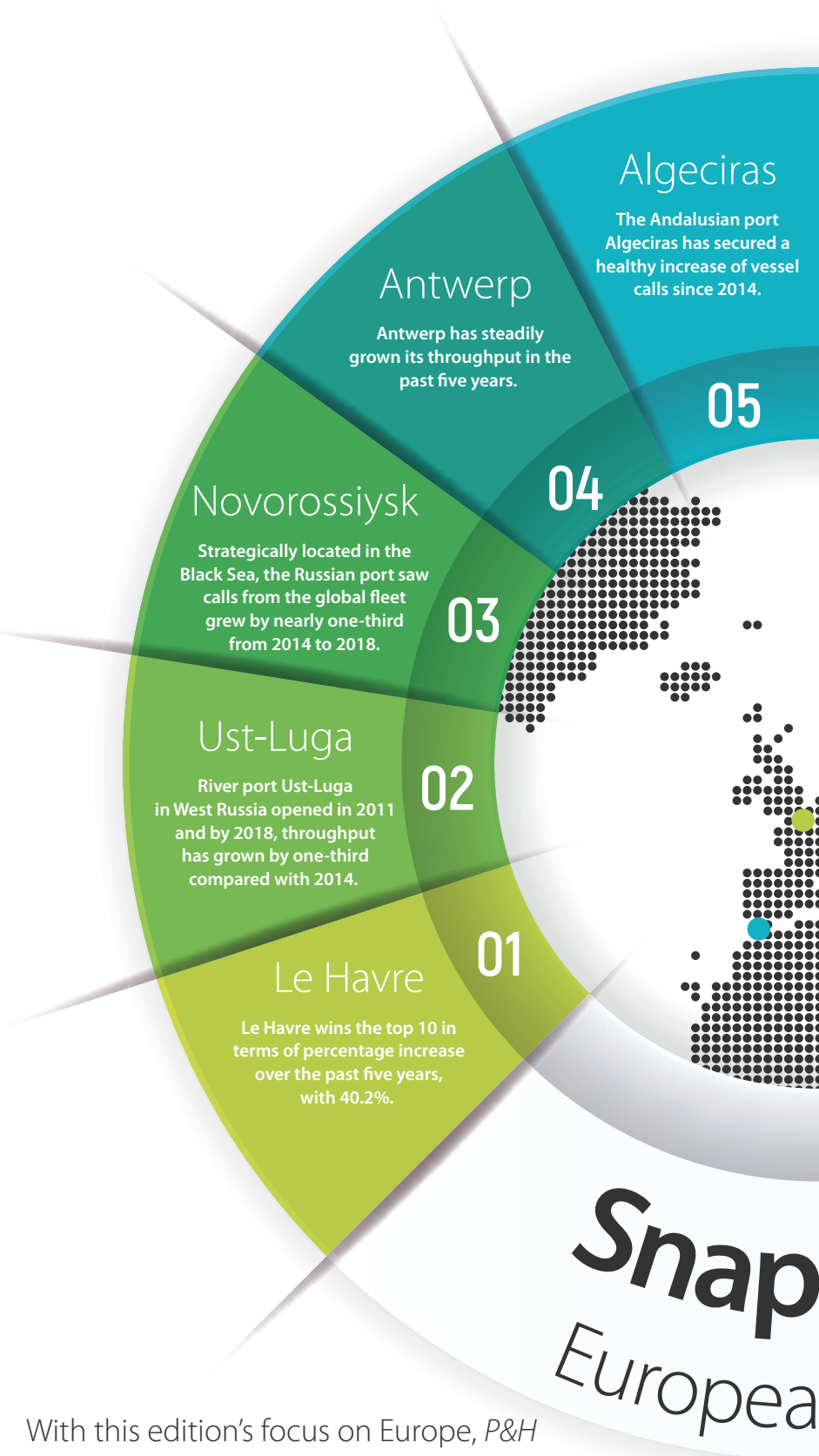
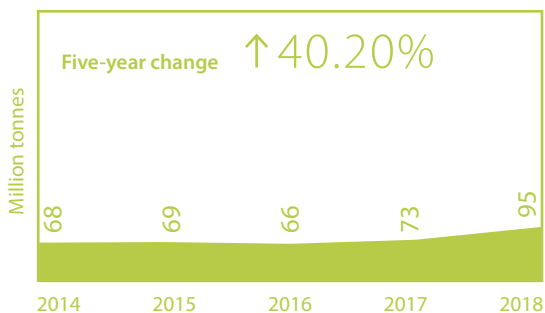
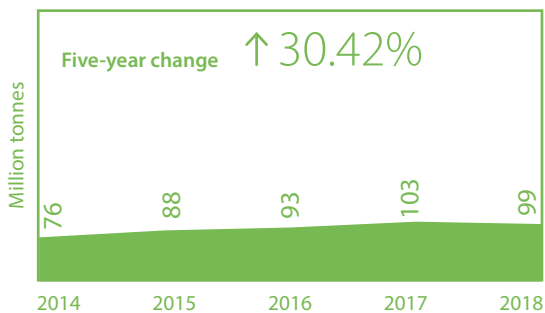
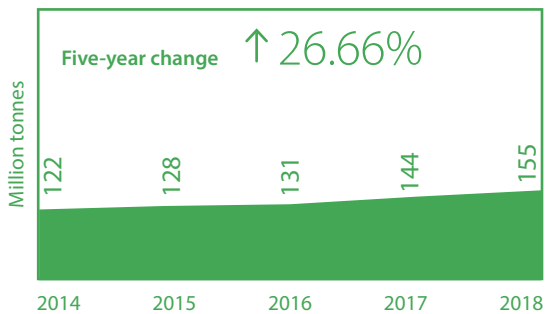
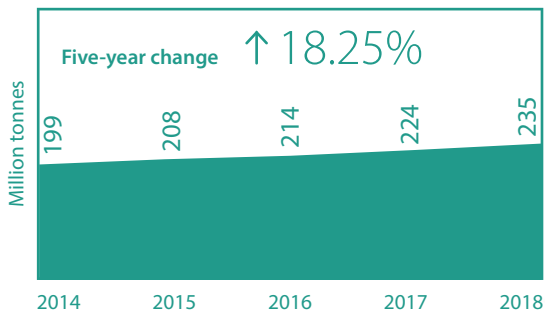
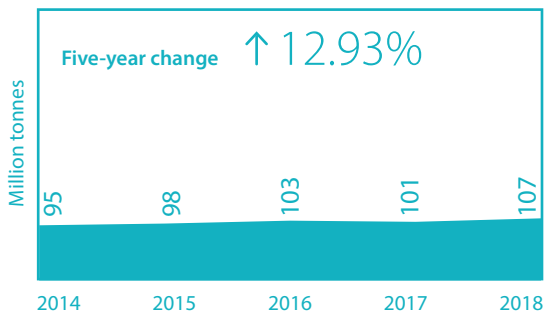
The government has specified several key technologies as being of interest, including precision detection, environmental monitoring, sediment dredging, and robot technology to raise and remove the UXO. Depending on what approaches are eventually selected, the government is planning a test that would demonstrate ways the UXO "could be cleaned up safely

and time- and cost-effectively" in a full-scale project.

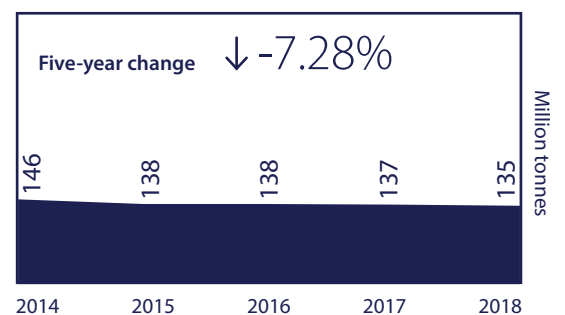
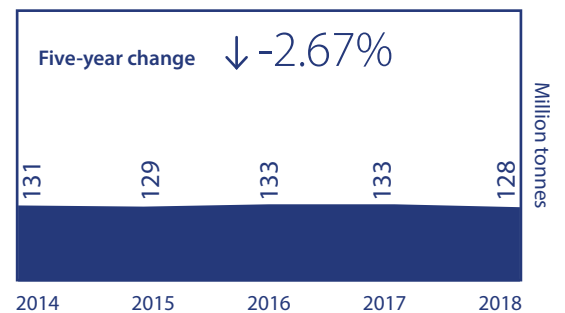
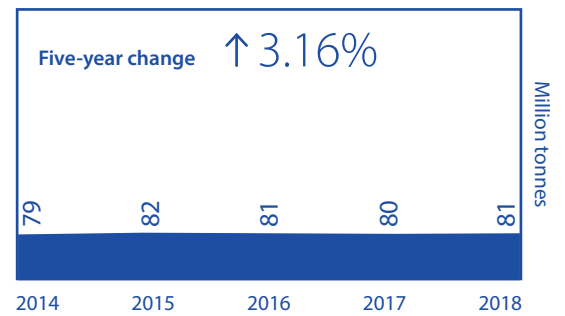
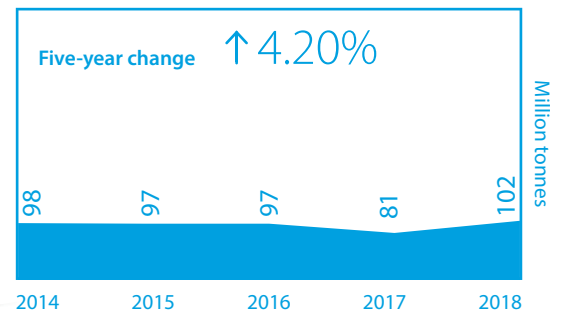
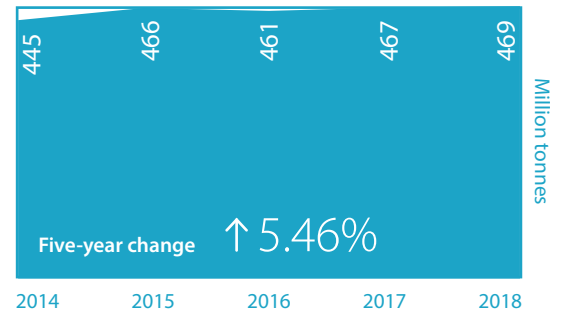
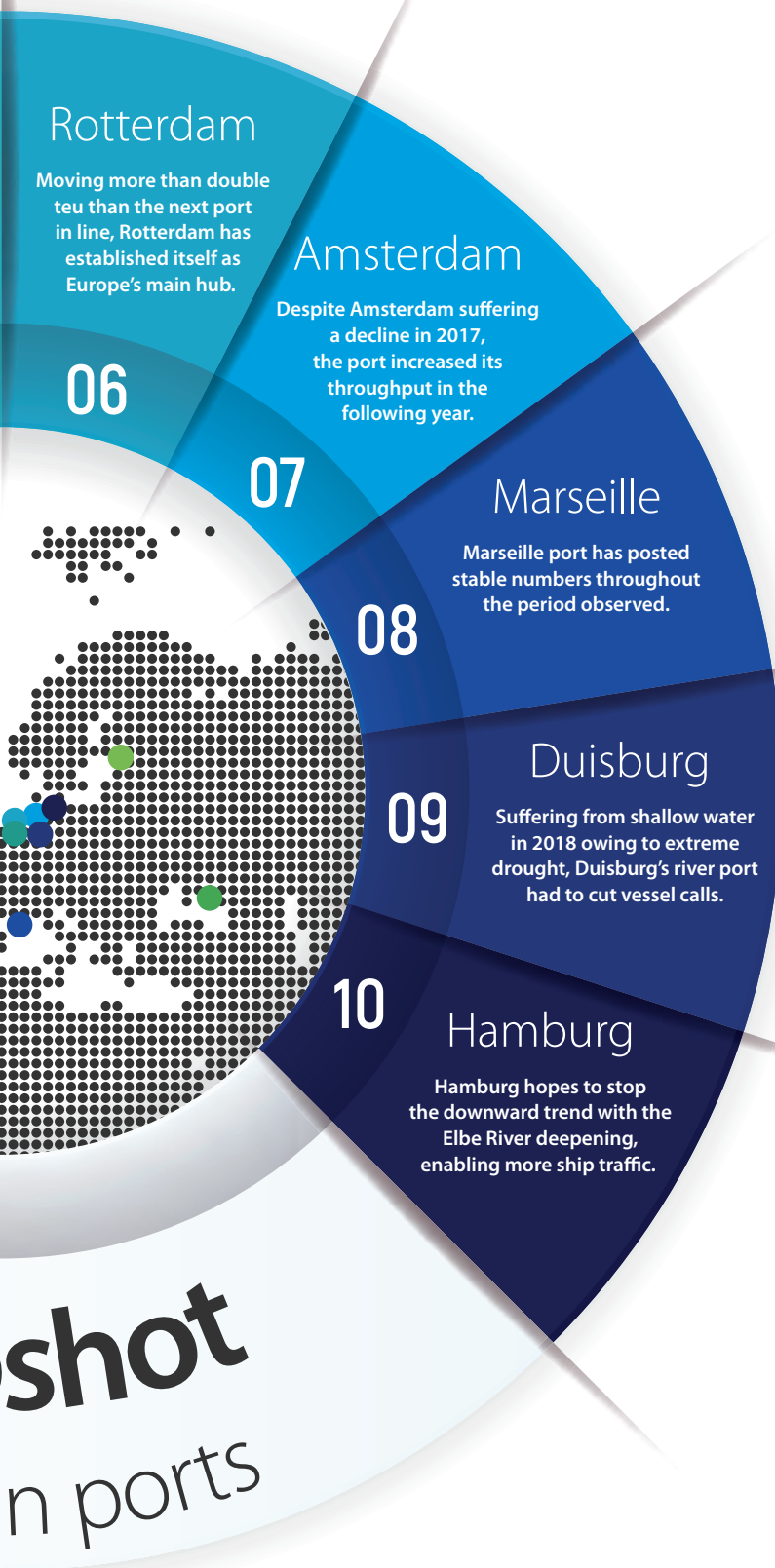
On a related note, UXO is being discovered in greater numbers in recent years with the use of technologies such as magnetic probes and sonar, as Fraunhofer pointed out. However, divers often are required to dispose of UXO. Further, some objects cannot be removed and must be detonated in place, with explosions and toxic substances posing danger and environmental contamination to the people and marine life alike. To address this multipronged problem, Fraunhofer has worked with other organisations in a German government-funded programme, co-ordinated by Heinrich Hirdes EOD Services, to develop what Fraunhofer called "a robotic underwater salvage and disposal process for the disassembly of ammunition in the sea", or RoBEMM for short. As the company describes, its applications include sounding in waters and on land, radar, side scan and multibeam sonar, magnetometers, electromagnetic surveys to investigate UXO as well as divers to recover them; and bubble curtains to buffer explosions.

Fraunhofer declined to comment further on the specifics of the technology and its ongoing development, but indicated that the goal of RoBEMM is to provide a semi-automated process that renders underwater UXO "harmless directly where it's found", replacing divers, and dispose of such objects in an environmentally sound way. Testing is under way, according to the research institute.

Dutch subsea provider N-Sea, in 2017, developed MagSense, a vertical gradiometer array designed for accuracy in a variety of conditions and undersea terrains. The company won a contract with 50Hz, an operator of transmission systems, to detect and remove UXO along the two planned subsea cable routes, and the option to carry out the operations for a third cable route between offshore wind farms in the Baltic Sea and the landing point in Lubmin, Germany. **PH**



With this edition's focus on Europe, *P&H* looks at the top 10 European ports in terms of throughput and how they have performed in the past five years



Note: all volumes displayed in metric tonnes
Source: IHS Markit – Ports and Terminals © 2020 IHS Markit/Shutterstock: 5100784



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Women in maritime training growing



The IMO and the IAPH provide training courses for women working in maritime industry

The shipping industry is making great strides in providing greater training and equality to women working in ports by providing port management training and mentorship programmes.

The IMO currently supports two Women in Port Management programmes: one at the Galilee International Maritime Institute (GIMI) in Israel; and the other in France with the Institut Portuaire d'Enseignement et de Recherche (IPER). Each course runs for two weeks.

Since 2008, the IMO have been sponsoring several fellowships to attend the course at GIMI annually, with the most recent taking place between 6 and 19 November 2019.

Participants are provided key information and updates on innovations in the port industry, and course subjects include

global trends and advances in port development, management, and operations; port security and efficiency in container terminals; and international law concerning ports and ships.

As part of the course, GIMI organised visits to the Israeli Maritime Training Authority in Akko and Port of Haifa, as well as practical simulator exercises. These gave participants experience of day-to-day operations in a port, with a view to applying this knowledge in their respective countries.

The event was delivered through the IMO's gender and capacity building programme in collaboration with GIMI. Course participants were from Cabo Verde, Fiji, Kiribati, Mongolia, Papua New Guinea, Seychelles, and Solomon Islands.

The joint IMO-IPER training

course runs yearly, in collaboration with Le Havre Port Authority. The 2019 session ran from 24 June to 5 July.

The course is specifically for female officials from maritime and port authorities of developing countries to improve management and operational efficiency of their ports.

Lectures are delivered in English or French on various issues including security, marketing, tariffs and logistics as well as facilitation of maritime traffic, ship/port interface, and concession contracts.

Similar with the course at GIMI, IMO-IPER participants visit the Le Havre and Rouen ports to gain experience in the day-to-day operations of a port.

IAPH has its own training Women in Ports Mentoring Program, which was launched in

2019, after the IAPH board allocated a USD10,000 budget towards this to attract, empower, and retain female talent in the maritime industry.

This is done through a specifically designed software mentoring application known as Mentorloop, which matches mentors and mentees and provides resources, education, training, and other tools to assist mentors in providing guidance to mentees. The programme also delivers a methodical package to continuously improve the quality of the mentoring relationship, as well as provide specific and measurable reporting performance indicators.

Though the mentors and mentees are predominantly IAPH member ports, the Women in Ports Mentoring Program is open to all women working in the maritime industry.

Read more on efforts into increasing the female maritime workforce on page 8.

Coming up

17th Women in Port Management course, Institut Portuaire d'Enseignement et de Recherche, Le Havre, France

Dates: TBC – second half of 2020

The course will be delivered in English.

Women in Port Management course, Galilee International Management Institute, Nahalal, Israel

Dates: 11 to 24 November 2020

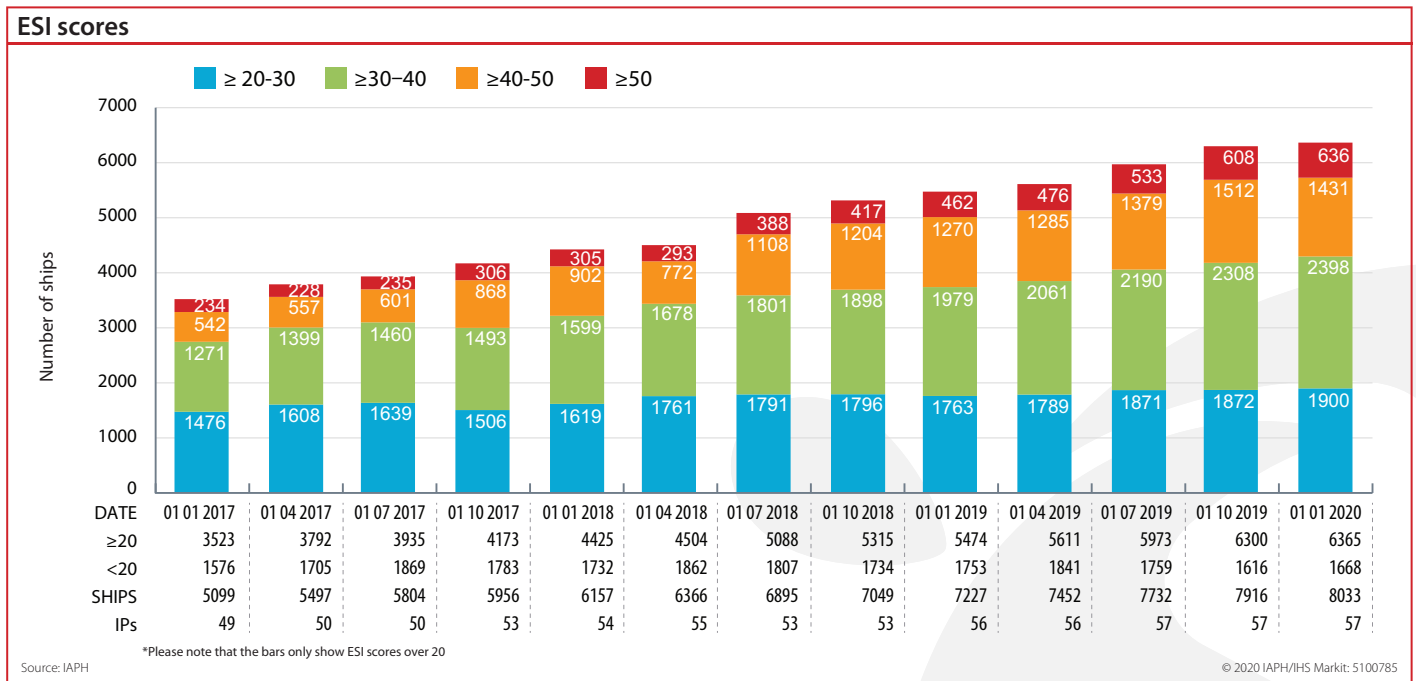
Notable numbers

21

Total number of participants in the IAPH Women in Ports Mentoring Program

169

Interactions took place between mentors and mentees in the IAPH Women in Ports Mentoring Program



Vessels are calculated for NO_x, SO_x, and CO₂ emissions

More than 8,000 vessels registered on ESI

A total of 8,033 ships have been registered with the Environmental Ship Index (ESI) as of 1 January 2020. The initiative, aimed at evaluating the environmental footprint of merchant ships with ports serving as incentive providers to reward low-emission vessels, has been growing steadily over the past three years. Compared with the beginning of 2017, close to 3,000 ships have been added to the list.

The evaluation is split into two categories: vessels that achieve below 20 points through the formula-based calculation for NO_x, SO_x, and CO₂ emissions and vessels that score above 20.

The infographic above shows the number of ships that have scored more than 20 points: 1,872 vessels are listed with up to 30 points; 2,308 vessels have between 30 and 40 points; 1,512 ships reached between 40 and 50 points;

and 608 ships secured more than 50 points.

Additionally, since the last update in October 2019, Port of Aarhus has joined the programme as an incentive provider.

This port is the first incentive provider of ESI discounts in Denmark.

i MORE INFO:
www.environmentalshipindex.org



Tessa Major
is now part
of the IAPH board

Port of Açu: 5137076

New vice-president elected

Tessa Major, chief commercial officer, Port of Açu, was elected as IAPH vice president America, Central and South on 28 January 2020. Following her appointment, she joined the IAPH board with immediate effect.

"Port of Açu is a young port with robust growth indicators that has a genuine passion for challenges. Port of Açu and I feel honored to be elected to represent our region in this prominent association," she commented. She added, "It is great to see that the capabilities of Port of Açu as a maritime player and our ambition to be a globally connected port are appreciated. We are looking forward to

strengthening IAPH's activities in South and Central Americas, focusing on collaboration with the member ports and jointly generating positive contributions to the maritime and industry sector as well as the community in the region as a whole."

In operation since 2014 and with a strategic location, Port of Açu is a 100% private asset and develops a relevant role in the iron ore production export, in the crude oil handling and in the service provision to the O&G offshore market in the country. Beyond that, it handles pet coke, bauxite, pig iron, beach iron, scrap and gypsum as well as general and project cargo.

IAPH website in your own language

Since 1 January 2020, IAPH members can access the association website in your own language. In order to do this, just click the 'Translate' tab on the screen where you will find a selection of

languages to choose from. You can see a screenshot of the tab on the right.

If you have any questions or requests, please contact the IAPH secretariat at info@iaphworldports.org.



Membership notes

The IAPH Secretariat is pleased to announce that the following have joined the association

Regular member

Port of Duqm Company SAOC

Address: P.O. BOX 2409, P.C 111 4th Floor, Almashreq Building, 18 November Street, N. Azaiba, Oman

Telephone: +968-2434-2800

Fax: +968-2458-7343

Email: reggy.vermeulen@portduqm.com

Website: <https://www.portofduqm.om>

Representative: Reggy Vermeulen, CEO

Associate members

Maritime Street

Address: 7 rue d'Alexandrie, 75002 Paris, France

Telephone: +33 6 40 45 13 82

Email: pascal.ollivier@maritimestreet.fr

Website: <http://www.maritimestreet.fr>

Representative: Pascal Ollivier, President

Nature of business activities: A global, strategic advisory company dedicated to governments and technology solutions providers

Port Operators Association of Turkey

Address: Merdivenköy Mah. Nur Sk. Business İstanbul Sitesi A Blok No:1A D.1101, 34732 Kadıköy, İstanbul, Turkey

Telephone: +90-216 455 71 02-03

Email: turklim@turklim.org

Website: <http://turklim.org>

Representative: İrfan Bilgin, Secretary general

In addition, IAPH welcomes free temporary members, linked to the 2020 World Ports Conference: Autoridad Portuaria de Vigo, Autorità di Sistema Portuale del Mar Tirreno Settentrionale, Belfast Harbour, Borg Haven IKS – Port Authority of Fredrikstad & Sarpsborg, Copenhagen Malmö Port, Economic Cities Authority, Global Ports Holding, Grand Port Maritime de Dunkerque, Hambantota International Port Group Pvt Ltd, Port Authority of New York and New Jersey, Port of Aveiro, Port of Brisbane, Port of Cork, Port of Felixstowe, Port of London Authority, Port of Long Beach, Port of Thessaloniki, Port Castelló, Ukrainian Sea Ports Authority, and Port of Santos

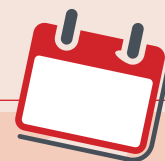
2020

2021

2022

Dates for your diary

A selection of forthcoming maritime courses and conferences



March

- 17–19:** 2020 IAPH Conference
Antwerp, Belgium
<https://www.worldportsconference.com/>
- 24–26:** Black Sea Ports and Shipping 2020
Istanbul, Turkey
<http://www.transporevents.com>
- 29–31:** The International Maritime Transport and Logistics Conference (Marlog 9)
Alexandria, Egypt
<https://marlog.aast.edu/en/home>
- 30 March** IMO: Marine Environment Protection Committee (MEPC)
–03 April: London, United Kingdom
<http://www.imo.org>

April

- 06–10:** IPER Seminar: Le Cadre Juridique de L'activité D'un Port
Le Havre, France
<http://www.iper.fr>
- 18–24:** Singapore Maritime Week 2020
Singapore
<https://www.smw.sg>
- 20–30:** APEC's course on "Port environmental policy and sustainability"
Antwerp, Belgium
<https://apecporttraining.com/course/port-environmental-policy-sustainability/>
- 20–30:** C-MAT Specialisation Course: Maritime Supply Chain
Antwerp, Belgium
<https://www.uantwerpen.be/en/centres/c-mat/programme/specialisation-courses/maritime-supply-chains/>
- 20–30:** TTPM: Strategic Port Pricing and Commercial Billings Management
London, United Kingdom
<http://www.ttpminternational.co.uk>

IAPH World Ports Sustainability Awards: shortlist for 2020 announced

The projects shortlisted for the awards are listed alphabetically with no ranking order. Winners will be announced at the World Ports Conference Gala Dinner on 18 March 2020 in Antwerp



RESILIENT INFRASTRUCTURE

Collaborative project – Green and connected ports

The GREEN C PORTS project pilots the usage of sensors, big data, and artificial intelligence to reduce the impact of port operations on their cities, monitor emissions from ports and vessels, and optimise performance of port operations in the EU TEN-T Core Network. The project consists of prototypes and pilot tests that will be used in different European ports. Through GREEN C PORTS, port authorities would be able to control ships that are complying with environmental regulations and would be ready to define incentive schemes and financial bonuses to be applied to those shipping companies whose vessels are truly less polluting.

Port of Brisbane – NCOS Online

NCOS Online is a technology that provides a near real-time, seven-day detailed forecast of environmental conditions and a vessel's under keel clearance (UKC). NCOS Online has delivered significant environmental outcomes with the technology supporting substantial UKC improvements and playing a pivotal role in increasing in the capacity of the port of Brisbane's navigational channel.

Port of Rotterdam – PortXchange Pronto

The start-up PortXchange has been working on the global roll out of Pronto – a platform to optimise port calls. With Pronto, vessels can sail just-in-time to ports, which reduces CO₂ emissions and anchor time, resulting in lower NO_x emissions. In August 2019, PortXchange was launched as an independent organisation. Pronto is currently being tested in Algeciras, Felixstowe, Houston, and Rotterdam, and will be expanding to more ports in 2020.

CLIMATE AND ENERGY

Port of Helsinki – Carbon Neutral Port 2035

Aside from the port pledging to be fully carbon neutral by 2035, strong focus of its programme is on incentivising, and helping customers and stakeholders in their own carbon neutrality by equipping nine berths with onshore power, offering auto-mooring and low-emission incentive programmes, build solar plants, and electrified heavy machinery fleet charging, as well as helping to reduce city congestion. Majority of the programme's measures will be implemented during the first five years, in the period between 2020 and 2024

Port of Marseille – Jupiter 1000

The Jupiter 1000 project is the first industrial demonstrator of power to gas with a power rating of 1 MWe for electrolysis and a methanation process with carbon capture. The EUR30 million (USD32.5 million) demonstrator will be implemented on a selected industrial site at the port of Marseille-Fos, France. Green hydrogen will be produced using two electrolyzers involving different technologies from 100% renewable energy. The produced hydrogen will then be fed into the gas network.

Port of Valencia – The LOOP-Ports project

The project, co-ordinated by Fundació Valenciaport and funded by EIT Climate-KIC, analyses a circular economy approach for EU ports where products, materials, and resources are maintained in the economy for as long as possible, and waste is minimised. LOOP-Ports will contribute to the transition of the EU economy towards closed-loop systems through the creation of a network of ports.

COMMUNITY OUTREACH & PORT CITY DIALOGUE

Focus area 1 Port development and "license to operate"

Maritime and Port Authority of Singapore – Singapore's next-generation port

Sustainability is integral to the construction of Tuas port. To adapt to rising sea levels, the port will have an operational platform of 5 m above mean sea level. More than 50% of the total fill materials for Phases 1 and 2 are dredged material and excavated earth from construction projects. During construction, corals were relocated, with a survival rate of 80%. Tuas will be a digital and automated port with just-in-time operations and electrified port equipment.

Port of Huelva – Ecological recovery project

The port of Huelva is situated in an estuary of high ecological values. Through concentrated efforts for over 10 years and a total investment of EUR27 million, the project addressed the environmental recovery of the degraded left bank of the Odiel estuary, and the conservation of habitats and their environmental values. The environmental work was complemented with the construction of a boulevard along 1 km of the Odiel estuary and a 4 km pedestrian path. This has provided residents with a recreational area of high environmental and social value.

Port of Montreal – Grand Quay development project

The Grand Quay reinvents port spaces and rethinks port-city relations. It responds to a wish expressed by Montrealers to provide better access to the river. It revitalises a century-old site into a modern cruise terminal

whose innovative architectural design ensures a quality welcome for cruise ships and their guests. It reduces the port's environmental footprint through the installation of shore power, the first green initiative of its kind in Quebec, the creation of green spaces including a green roof that is original in design, and the reorganisation of the area to encourage active transportation.

Focus area 2

Addressing the externalities of port operations

Northwest Seaport Alliance – Clean truck programme

Under the Northwest Ports Clean Air Strategy, the ports of Seattle, Tacoma, Vancouver, British Columbia, and the Northwest Seaport Alliance (NWSA) collectively set a goal of having 2007 or newer engine year trucks exclusively serving container terminals. The NWSA implemented a large-scale effort to improve outreach and education on trucking issues in the gateway, working closely with stakeholders. So far, the programme has been responsible for reducing emissions from trucks by 33.4 tonnes of diesel particulate matter per year.

Port of Vigo – Sunset dock project

As part of the port of Vigo's Blue Growth strategy's 'green' objective it created the Sunset Dock project. The project develops innovative practices to achieve sustainability goals by; recovering the good state of marine ecosystems in the port area, promoting awareness of ecosystem conservation in the port area, and reducing carbon emissions.

Port of Yeosu Gwangyang – Community outreach programme

The programme was developed around four key pillars, bringing together the port and the local community. These are: 1) the development of the Yeosu Project and Academy, providing education and training on ocean affairs to developing countries to cope with maritime challenges; 2) running community outreach programme initiatives, such as the Ocean Natural purification volunteer service; 3) the Sunflower Garden Project, planting sunflowers in a 53,000 m² idle space in Gwangyang Distripark; and 4) the Port-City Dialogue Programme, bringing together local authorities and the chamber of commerce to agree on common policies addressing port sustainability.

SAFETY AND SECURITY

Port of Açú – Emergency preparedness project

The project was implemented in response to a 2019 oil spill off the coast of Brazil, highlighting the important role ports can play in emergency response actions. Strategically located and relying on terminals that provide specialised offshore support to oil companies, Port of Açú set up a task force, which carries out drills, community engagement, wildlife monitoring, and drone flights as part of the project. The project highlights the need for ports to proactively engage in contingency plans and be prepared to act in a co-ordinated manner in emergency response situations, especially in oil-producing nations. Port of Açú proved its capacity to be one step ahead, engaging preventively through integrated actions that demonstrated in practice that the port sets safety standards that can add effectiveness to oil response frameworks.

Port of Amsterdam – MOBI platform

Administrative port security activities can often be time-consuming and require a proper communication between the port terminal and the authority. MOBI port security platform and its smart web-based software application (MOBI-app) facilitates co-operation between port terminals and designated authorities for port security activities. Port Facility Security Officers, port security auditors, and port security supervisors work together in one transparent digital environment, carrying out real-time tasks and sending each other notifications, messages, documents, and images through the application. This ensures that information is always up to date and makes the status of the processes transparent to its users.

Port of Los Angeles – 2nd generation cyber-security operations centre

The next evolution of the port of Los Angeles' cyber-security programme is to extend beyond the port authority and into the port community with a cyber resilience centre, a solution to reduce cyber risks of the port ecosystem. The 2nd generation cyber-security operations centre will share information with the port of Los Angeles ecosystem for collaboration and engagement with stakeholders, which will result in greater collective knowledge and stronger community defence against cyber threats.

GOVERNANCE AND ETHICS

Dutch Seaports – Applying the OECD guidance for responsible business conduct

A study was conducted on the relevance and application of the Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises for and by Dutch seaports. This exercise resulted in a comprehensive list of cargo flows that call for greater attention by the port authorities. A step-by-step approach was also developed on how to actuate due diligence. This approach helps individual ports draft a plan at their own pace while highlighting the elements that require inter-port collaboration.

Port of San Diego – Environmental innovation through blue economy incubator programme

In 2016, the port of San Diego launched a unique blue economy incubator programme to attract innovators with novel solutions to address port environmental challenges, from compliance to remediation. The programme is a launching pad for sustainable aquaculture and port-related blue tech ventures by providing funding and key assets and support services focused on pilot project facilitation. To date, the port has launched eight pilot projects, including shellfish nursery operations, copper remediation technology, a drive-in boatwash, a smart marina application, a marine debris removal vessel, seaweed aquaculture, bio-enhancing shoreline armoring alternative, and a new approach to sediment remediation in marine environments.

Port of Seattle – Duwamish Valley Community Benefits Commitment

In December 2019, Port of Seattle Commissioners voted unanimously to adopt Resolution 3767, the Duwamish Valley Community Benefits Commitment. The purpose of this commitment is to guide Port of Seattle operations that impact the Duwamish Valley by institutionalising the voices of community into port processes. These include: 1) community and port capacity building, including training for port staff; 2) healthy environment and communities, including investments in community-based climate change solutions; and 3) economic prosperity in place, for example, targeted youth workforce development. **PH**



Port of Antwerp, 51 36563

Building partnerships in support of the SDGs

Port of Antwerp CEO Jacques Vandermeiren explains the port's ambition to be the "lever for a sustainable future"

“We are, more than ever, also concerned with social matters and sustainability”

With its mission “home port as a lever for a sustainable future”, Port of Antwerp, the second-largest port in Europe, sets out its guidelines for the future. Sustainable growth and transition are among the key priorities.

The 17 sustainable development goals (SDGs) of the United Nations form the guideline for its sustainable policy and are integrated in day-to-day business operations.

For all SDGs, Olympic minimum ambitions have been formulated. However, for five SDGs which touch the heart of operations and on which the greatest impact can be made, Port of Antwerp strives for more.

That is why extra-challenging goals for these so-called gold medal SDGs have been defined. SDG 17 – seeking to strengthen global partnerships to support and achieve the ambitious targets of the 2030 Agenda – is the lever for these ambitions.

Partnerships pave the way for innovation in an industrial environment. Whether it concerns the fight against climate change, the sustainability of business operations, or the innovation of technological developments, collaboration will pave the way to transition.

Ports can play an essential role in this transition. We are no longer just importing and exporting goods. We are, more than ever, also concerned with social matters and sustainability.

Through an ambitious corporate social responsibility project and road map, Port of Antwerp wants to break free from the image of the traditional infrastructure manager and be a proactive community builder instead. Therefore, in support of the SDGs, Port of Antwerp will team up with business frontrunners to implement its business plan for sustainable growth and transition.

Dedicated teams for sustainable energy, sustainable industry, and sustainable shipping have developed a balanced portfolio of showcase projects, addressing the different businesses on diverse port platforms. The portfolio includes projects for green hydrogen, carbon capture and utilisation, circular economy, waste heat, and alternative shipping fuels.

We absolutely need to find more and better ways to co-operate and support each other in this process. That way, we can be the lever for a sustainable future. **RH**

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