

January/February 2018 Vol 63 No 1



# PORTS & HARBORS

Official Journal of the International Association of Ports and Harbors

## Facilitating free trade

Baku fired up to be Eurasian hub network

## Smoother operator

Single window for port-ship interaction

## Rubbish roundup

Baltimore's personable trash gathers

# Cash in, commodities out

China pursues Africa's resources



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D3513  
Liebherr LRS645  
YOM: 2012



D3589  
Linde C4531TL  
YOM: 2012



D3617  
Linde C4535TL5  
YOM: 2010



D3555  
Linde C4535TL5  
YOM: 2006



D3597  
CVS Ferrari F478.5PB  
YOM: 2007



D3553  
CVS Ferrari F379.5  
YOM: 2003



D3222  
CVS Ferrari F279.5  
YOM: 1999



DK115  
Kalmar DRF450-60S5  
YOM: 2013



D3587  
Kalmar DRF450-60CSX  
YOM: 2008



D3579  
Kalmar DRF450-70CSXS  
YOM: 2005



D3478  
Kalmar DRF450-60CSX  
YOM: 2005



D3578  
Kalmar DRF420-60S5  
YOM: 2003



D3528  
Kalmar DRF400-60CS  
YOM: 2003



D3576  
Kalmar DRF100-54S6  
YOM: 2011



D3586  
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YOM: 2010



D3577  
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D3551  
Fantuzzi CS45KL  
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D3537  
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YOM: 2004



DK121  
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D3602  
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YOM: 2006



D3503  
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YOM: 1985



D3535  
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YOM: 2005



D3582  
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YOM: 2002



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D3558  
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YOM: 2009



D3547  
Kalmar DCE120-12  
YOM: 2005



D3610  
Kalmar TR618i 4x4 RoRo  
YOM: 2010





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Africa continues to see investment from China, as the country imports resources to fuel its domestic industry

Photo: Shutterstock

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# PORTS & HARBORS

Official Journal of the International Association of Ports and Harbors

## PORTS & HARBORS

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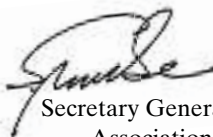
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## COMMENT

# Mixed blessing

Ports should consider both sides of the  
Belt and Road initiative



**Susumu Naruse**

Secretary General – The International  
Association of Ports and Harbors



A happy new year from Tokyo. While participating in the 21st Century Maritime Silk Road Forum in Zhuhai, China, as a keynote speaker, one of many conferences focusing on the topic, I recognised that Belt and Road has become the single-most powerful concept to develop ports abroad using Chinese resources.

Almost all the government officials and scholars at the forum stressed the importance of port development, and Belt and Road is there ready to support these developments. I felt a strong determination to promote Chinese investments abroad in order to compensate for the slowdown in the domestic economy.

The Belt and Road programme can be an excellent instrument to promote efficient transport systems between Asia and Africa/Europe, but we need to take into account some possible drawbacks of the projects in the initiative. Some reports claimed that there had been some fierce labour conflicts between Chinese workers and local residents. Reports also pointed out that when goods are transported by rail between China and Europe, the

transit time becomes shorter but it increases goods' carbon footprint and is, therefore, to the detriment of plans to reduce global warming.

Ports in China and other booming regions will continue to perform well this year, but across the globe demand is not expected to increase much in 2018. Estimating that container transport in 2017 would see a yearly growth rate of about 5–6% following

sluggish figures in 2015 and 2016, a famous shipping consultancy has forecast a moderate growth level of 2–3% for 2018. And it warns that this rate will continue for the medium term. It might not be very encouraging for the global port industry, but we have to get used to this new normal.

This year is an exciting year for IAPH as we are going to establish the World Ports Sustainability Program (WPSP), through expansion of the the scope of World Ports Climate Initiative, which was created nearly 10 years ago.

It will cover not only global climate issues but also the sustainable development of ports in areas such as lifecycle management of port infrastructure, safety and security of ports, and governance of port administration. We will hold an inaugurating meeting of WPSP in Antwerp this March to discuss its action plans. Please join us in commemorating the birth of WPSP, which will become IAPH's flagship programme. **PH**

“We need to take into  
account some possible  
drawbacks of projects  
in Belt and Road”

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## Port updates

### DREDGING REWARDED

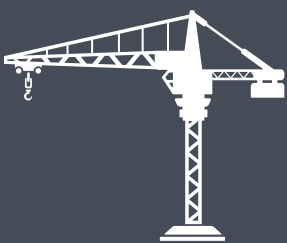
► The IHS Markit *Dredging and Port Construction* Innovation Awards saw Anthony Bates, founder of Anthony Bates Partnership, receive the Commendation for Services to the Industry Award, Gerard van Raalte take home the CEDA Lifetime Achievement Award, while the Rising Star Award was presented to Roderik Hoekstra, researcher/adviser at Deltares, board member of Young CEDA, and executive committee member of the CEDA-Netherlands chapter.

### SOUTH KOREA CRUISE

► The South Korean port of Pohang officially started construction of Youngil Port International Passenger Terminal on 7 November. It will accommodate large cruise ships, joining other ports in the country that are tapping the growing international cruise market. The KRW45.4 billion (USD41.5 million) plan was announced in February 2017. The terminal will accommodate 75,000 gt cruise ships at a 310 m berth. The plan includes 300 m of shore protection, waterways, and communications.

### BERTHS FOR TOWNSVILLE

► The northern Australian port of Townsville in Queensland is to embark on a 30-year development plan that will involve the construction of new berths and deeper channels by 2045. The work will begin in 2018 and will include up to six new berths, new land for cargo handling, and wider and deeper channels for bigger ships.



Getty Images: 1017537

The ports of Los Angeles (pictured) and Long Beach have issued guidelines to achieve zero emissions in 20 years

## US ports pioneer major zero-emissions plan

The new zero- and near-zero emission guidelines that the ports of Los Angeles and Long Beach approved in early November last year will be by far the strictest for any US port and, if the past is anything to go by, other ports will adopt similar guidelines to meet their environmental goals.

Known as the 2017 Clean Air Action Plan (CAAP), the environmental document will

guide investment decisions by container terminal operators and truck drivers in southern California for the next 20 years.

The two ports adopted the plan on 2 November. The original CAAP was implemented in 2006 and updated in 2012, with the latest version dubbed CAAP 3.0.

One of the main focuses of CAAP 3.0 is on reducing pollution from cargo-handling equipment,

including yard tractors, top handlers, side handlers, gantry cranes, reach stackers, and forklifts. In Los Angeles and Long Beach, pieces of such equipment total 3,760 units. While terminal operators say zero- and near-zero technology has a long way to go in their sector, the CAAP argues that technology in cargo-handling equipment is more advanced than vehicles and equipment

## COSCO-PSA Terminal raises capacity

Handling capacity at the COSCO-PSA Terminal in Singapore will hit 3 million teu/year when a third new berth was due to start operations on 1 January this year.

The terminal is a joint venture between China's COSCO Shipping Ports and Singapore's PSA Corporation. Both parties signed a memorandum of understanding on

30 November for the launch of the new berth.

This follows an agreement in March 2016 to develop three berths at Pasir Panajng Terminal 5. These replace two smaller and older berths at Pasir Panjang Terminal 1.

The first two berths began operations on 1 January last year and can handle 2 million teu/year.

All three berths are supported by an

used in other areas of the port.

This latest version could come at a cost of USD14 billion to ports and their stakeholders by 2035.

For example, electric ship-to-shore cranes are now common in many ports. The large, rubber-tyred gantry (RTG) cranes that lift containers into and out of the stacks are also becoming more common.

Georgia Ports Authority (GPA) continues to add RTGs, running mostly on electricity, to its fleet. Only 5% of the energy they consumes comes from diesel. GPA said in November 2016 that 45 of its 146 RTGs had been converted, and by 2026 it will have 170 RTGs, all of which will operate primarily on electricity. At full build-out, Port of Savannah will realise annual savings of USD11 million owing to lower fuel and maintenance costs, GPA stated.

Despite dire predictions by some industry sources that these guidelines would result in inflated costs and lead to cargo diversion, equipment manufacturers are already testing some of these zero-emission units. If successful, the equipment will be mass-produced in a similar manner to today's electric and battery-powered cars.

If zero- or near zero-emission yard tractors, top handlers, RTGs, and drayage trucks are manufactured in commercial quantities, the cost of port-related equipment is expected to drop considerably. Furthermore, plug-in electric and battery-

powered vehicles have much lower operating and maintenance costs than diesel-powered units. This means terminal operators and drayage companies at many US ports may opt for this technology as their first choice.

Rick Cameron, managing director of planning and environmental affairs at Port of Long Beach, cautioned that before terminals assume they will be burdened by unreasonable costs for replacing equipment, terminal operators and drayage companies must first understand that the CAAP, released on 23 October, will not force specific technologies on the industry, nor will it enforce rigid deadlines based on yet-to-be developed technologies.

The timelines for achieving zero- and near-zero emissions from cargo-handling equipment by 2030 and trucks by 2035 are not requirements. Rather, they are target dates that the ports hope to achieve by working with government regulatory agencies, motor carriers, terminal operators, and equipment manufacturers for developing, testing, and implementing the latest pollution-reduction technologies.

"These are not mandatory deadlines. They are goals," Cameron said. "The ports will work with terminal operators, truckers, and equipment manufacturers to encourage use of the best-available technologies that will reduce pollution without imposing onerous costs on port

tenants and their beneficial cargo owner [BCO] customers. Where available, the ports will advocate for federal and state agency grants to help mitigate the cost of new, cleaner equipment.

"Some technologies, such as plug-in electric or battery-powered cargo-handling equipment or short-haul trucks, are either available today or are in various stages of testing and could be mass-produced within the coming decade," the CAAP stated.

As port users replace equipment, the ports will seek to encourage use of only the latest technologies. "The technologies need to be commercially available and cost-effective," Cameron said. If terminal operators comply with the CAAP guidelines when they replace their equipment with units that are in compliance, they will be allowed to continue operating that cargo-handling equipment until its useful life is over, even if zero-emission technology becomes commercially available in the interim, he added.

Battery technology for motor vehicles is quickly becoming a passion for manufacturers such as Tesla, Volvo, Ford, and General Motors. The ports of Long Beach and Los Angeles are working with manufacturers to test zero-emission trucks in the rigorous drayage environment. According to the CAAP, there will be 70 zero-emission trucks operating in the port region by the end of 2019.

automated yard, allowing for more efficient berthing arrangements to increase productivity and enhance service capabilities.

"These agreements are timely, as the importance of Singapore as a pivotal regional maritime hub grows in tandem with the advent of mega vessels and new alliances in the shipping industry," COSCO Shipping Ports and PSA said in a joint statement on 30 November.

Partnering with COSCO will enable Singapore's ports to grow throughput, especially in the face of

rising competition from neighbouring Malaysia. Both countries are strategically located on the Strait of Malacca.

COSCO is also a key member of the Ocean Alliance, which brings together Evergreen Line, CMA CGM, and OOCL.

CMA CGM and Evergreen operate out of Malaysia's Port Klang and Tanjung Pelepas respectively, but volumes have moved to the PSA terminals in Singapore through the alliance, which was formed in April.

## Port updates

### BARCELONA AIR PLAN

► Port of Barcelona has invested in 31 electric vehicles and 47 charging points at a cost of EUR926,000 (USD1.01 million). It forms part of Port of Barcelona's Air Quality Improvement Plan, which aims to reduce the emissions from port activity. The port said, "The project comprises two main actions: incorporating vehicles with electric motors into the port fleet and installing the charging infrastructure, both for the fleet itself and for other electric vehicles that circulate around the port area."

### ► GERMAN LNG

Plans for a German LNG import hub in Wilhelmshaven are becoming more concrete, with a new study confirming that local conditions at the port are best suited among all German North Sea ports for such a project. The survey highlighted deepwater conditions, space availability, and access to the continental pipeline system as the main advantages over other ports, including Emden, Bremerhaven, and Brunsbüttel on the Kiel Canal.

### ► EVERGLADES UPBEAT

Port Everglades in Florida beat its previous record for containerised cargo volumes, with 1,076,893 teu moving through the port in fiscal year 2017, which ended in September. This figure represents a 4% increase on 2016. "The volumes of refrigerated produce coming into Florida through Port Everglades from Central America is significant. It represents more than half of all perishable cargo that arrives in Florida by ocean," said Port Everglades chief executive and port director Steve Cernak. Fabrics, tiles, and beverages also rank among the common commodities that go through the port.

## Port updates

### ► APMT PROFIT DIP

APM Terminals reported a year-on-year third-quarter drop in underlying profit of 13% to USD110 million. The Hague-based company reported a net operating loss of USD267 million and a negative return on invested capital of 13.3%, which it said was mainly due to impairments of USD374 million "related to terminals in markets with challenging conditions".



### ► HYUNDAI BUY-BACK

Hyundai Merchant Marine (HMM) may buy back Hyundai Pusan Newport Terminal in Busan, which it sold at the height of its liquidity crisis, as the reborn South Korean liner operator sets its sights on acquiring terminal assets to boost its competitiveness. In a filing to the Korea Exchange, HMM said it was considering investing in terminal assets in South Korea and overseas. From 2014 to 2016, HMM sold substantial stakes in Pusan Newport Terminal to private equity firm IMM and Singapore-based terminal operator PSA International.

### ► HAMBURG DREDGING

Growing numbers of mega ships were unable to enter and leave Port of Hamburg fully loaded in November because of draught restrictions on the River Elbe, and holding up the deepening work is hitting container throughput and hurting the national economy, according to Port of Hamburg Marketing joint CEO Ingo Egloff. He said the vital infrastructure project was being blocked by objections from environmental pressure groups, whose ultimate aim appeared to be scrapping the dredging altogether.



APMTerminals: 949630

APM Terminals' Moin in Costa Rica. The company is not seeking to invest in more deepwater terminal projects

# APM Terminals shifts commercial focus to inland

APM Terminals is shifting its commercial strategy away from investment in deepsea terminal infrastructure to focus more on inland services for beneficial cargo owners (BCOs). Its change in focus includes development of more direct and closer business relationships with BCOs and offering more value-added services beyond the terminal gate.

"Liner customers are rapidly becoming fewer but there are thousands of land-side customers, large and small, for us to also focus on," said chief commercial officer, Henrik Lundgaard Pedersen. "We have always done business with these customers and it is important for us to serve them well and ensure a better flow through the whole supply chain."

Pedersen said the shift in strategy would result in more investment in people, products, facilities, and technologies to improve inland services such as distribution from ports to consumer markets, storage, and container stuffing and consolidation. Improving

processes at the terminal gate to better integrate the port infrastructure with the supply chains of importers and exporters is also part of the effort.

"We will invest in these kinds of services and the facilities to provide them better throughout the world. These investments are typically much smaller than those required to develop deepsea terminal infrastructure."

The shift in focus will involve a higher level of direct engagement with BCO customers. Terminal operators have in the past been somewhat reluctant to engage directly with the customers of their main users. This will now be central to the commercial strategy of Maersk-owned APM Terminals in an environment of rising consolidation among container shipping lines in the form of larger liner network alliances, mergers, and acquisitions.

Pedersen said it was unlikely APM Terminals would invest in new deepsea terminals over the coming years and that the company was focused on

completing pipeline terminal projects, including those in Italy, Costa Rica, Morocco, and Ghana.

"We have put a lot of capital into the ground over the past number of years and will take a breather from this for a while. We have such a massive portfolio that we will continue to divest non-core assets, but overall we are still a net investor [in deepsea terminal infrastructure]."

APM Terminals is divesting its majority shareholding in its Zeebrugge operation in Belgium to COSCO Shipping Ports in a deal that was expected to be finalised before the end of 2017. The company currently operates 76 container terminals across the globe. Its largest footprint is in Asia, where it has 20 operating facilities.

The focus on inland services may well become a new frontier of competition for global terminal operators in an era of lower overall levels of demand, overcapacity in certain markets, and rising competition from new kinds of investor.



China's big three global terminal operators, China Merchants Port Holdings, COSCO Shipping Ports, and Shanghai International Port Group, have quadrupled to more than 40 the number of overseas locations where they have invested in the past five years. The four traditional global terminal operators, APM Terminals, DP World, Hutchison Port Holdings, and PSA International, together operate terminals in more than 80 locations globally.

APM Terminals' inland service network currently comprises about 120 operations in 37 countries and provides services such as inland transport, warehousing, and container storage, cleaning, and repair services.

Its inland services intermodal facility in Mexico City, for instance, links all of the major ports to the main consumer market in the Central American country by rail and does last-mile container distribution. The facility handles 100% of Mexico-related shipments for Walmart, Mattel, and Hasbro. APM Terminals is currently working to further reduce transit times from its terminal at Lázaro Cárdenas to Mexico City for landside customers serving Mexico City.

Other examples of inland services offered by the company at the moment include stuffing and transporting containers for banana exporters in Côte d'Ivoire, storing imported containers in Ghana and delivering them to customers by truck once they have been cleared by customs, and weighing containers for export to provide VGM information at multiple ports.

In the past two years, APM Terminals opened five new regional reefer depots in Peru, aimed at supporting its potential to grow exports of asparagus, avocados, grapes, and blueberries. The depots, in the production regions, link with Peru's two container ports.

## German cargo figures put pressure on policymakers

Germany's seaports expect a slight increase in total cargo throughput this year but they are bound to lose further market share to Benelux ports without policy changes in infrastructure planning and import tax by the federal government in Berlin, an industry lobby group warned on 14 November.

The Association of German Seaport Operators (ZDS), which represents about 180 terminal operators, stevedores, and other service providers, said it expected throughput volumes in all German ports along the North Sea and Baltic Sea coasts to surpass 300 million tonnes this year for the first time since 2014. It was 296.3 million tonnes in 2016.

Vessel and cargo traffic is being boosted by improving economic growth in Germany and its neighbours. Figures released by the German statistics office in late 2017 showed that GDP in Germany grew by 2.3% year-on-year and 0.8% quarter-on-quarter during the third quarter.

Even so, growth in cargo business in German ports still

lags behind the increases posted by its main competitors Antwerp and Rotterdam, especially in container handling. ZDS chairman Frank Dreeke, who is also CEO of ports-to-logistics group BLG Logistics, blamed the ongoing market-share losses on recent changes in container shipping alliances and related service realignments, which ports and governments cannot influence, but also on local tax and regulatory conditions.

Two areas of concern were infrastructure planning delays, as in the case of the planned deepening of the Elbe and Weser fairways, and Germany's handling of import sales tax, Dreeke said. ZDS called for the introduction of a bill on the expedition of infrastructure planning as well as for the adoption of the same deferred application of import sales tax that occurred in the Netherlands and Belgium. Today, importers routing cargo via German ports must pay the tax immediately upon release of the cargo, whereas in the Netherlands and Belgium they are given several months to pay.



Port of Hamburg. ZDS believes German seaports will lose market share

## Port updates

### ► COUNTER INVESTMENT

Dutch dredging company Royal Boskalis Westminster is to continue to look at counter-cyclical investments in companies and equipment as trading conditions remain persistently difficult. This is a strategy it began in mid-2017 with the acquisition of subsea survey specialist Gardline. "In a persistently challenging market there tends to be interesting opportunities for anti-cyclical investments in companies or equipment that will result in Boskalis being well-positioned when end-markets recover," the company said in a third-quarter trading statement.

### ► COSTLY CONTRACT

The US Army Corps of Engineers has awarded the most expensive dredging contract in its history, totalling USD213.3 million. The contract, to deepen Charleston Harbour to 15.8 m, has been awarded to Great Lakes Dredge & Dock. Work will involve about 6.1 million m<sup>3</sup> of material being excavated to deepen a portion of the Charleston/South Carolina harbor entrance. Dredging could make the waterway the deepest on the east coast and subsequently more accessible to post-Panamax vessels.

### ► CMA CGM'S LNG DEAL

CMA CGM has signed a 10-year agreement with France's Total oil group for the supply of LNG for its nine recently ordered 22,000 teu ultra-large LNG-fuelled container carriers. The Marseille-based shipping line said the agreement provided for Total to supply it with some 300,000 tonnes of LNG over 10 years from 2020, the year when the first of the nine new vessels is due to enter service. It described the volume of fuel covered by the agreement as "unprecedented" in the history of LNG bunkering and said it would cover the needs of all nine vessels on order.

## Port updates

### ► VALPARAISO CRANES

Container terminal operator Terminal Pacifico Sur Valparaiso has ordered a LHM 800 Liebherr mobile harbor crane and two Liebherr ship-to-shore gantry cranes for the Chilean port of Valparaiso. The LHM 800 crane has a maximum lifting capacity of 154 tonnes and an outreach of 64 m. An additional 9.6 m tower extension allows operator to see for more than 40 m. Delivery will be later this year.

### ► FELIXSTOWE SPREADERS

Port of Felixstowe in the United Kingdom has placed an order for 13 Bromma YSX40E (all electric) spreaders. They will replace "ageing equipment originally supplied by other vendors around 17 years ago. The order, which will be commissioned in 2018, includes options for another 12 + 12 spreaders for delivery in 2019 and 2020," according to a Bromma statement.

### ► DREDGING DISPUTE

The UK's Port of Dover Western Docks Revival project is in dispute with an environmental group, putting the project at risk of delays and added expense. So alparaiso has ordered a LHM 800 Liebherrfar GBP250 million (USD327 million) has been committed to the project, but the environmental group opposes a plan to dredge reclamation material from Goodwin Sands. The three-phase project includes a major reclamation that will need 2.5 million m<sup>3</sup> of material.



Contship Italia: 100323

## Port-to-door services drive throughput at Italian ports

La Spezia port (pictured) and Genoa are two Contship Italia terminals to see more throughput to Basel, Switzerland

Contship Italia expects the number of containers moved on its intermodal service from the southern Italian gateway ports to Switzerland to reach 12,000 this year, a rise of 70% on the volume

handled on the service last year.

The operator of container terminals and intermodal cargo solutions said demand for the port-to-door service started in 2013 with a link between the

ports of La Spezia and Genoa and the Swiss city of Basel.

This is growing as beneficial cargo owners (BCOs) take the opportunity to limit the risk of supply chain disruption by

## Khalifa port gets more Chinese investment

COSCO Shipping Port has agreed with Abu Dhabi Ports of the United Arab Emirates (UAE) to develop a new container freight depot that is expected to be the largest in the region. The agreement was signed during the groundbreaking ceremony for COSCO Shipping Port's Abu Dhabi Container Terminal at Khalifa port.

The new freight station will comprise an area of 275,000 m<sup>2</sup>, with plans to add another 150,000 m<sup>2</sup> later, and will provide Abu Dhabi trade with a facility offering bonded less than container load

(LCL) and full container load (FCL) consolidation and de-consolidation services, cargo weight reduction, and short-term warehousing for de-consolidated cargo, as well as access to the container terminal in Khalifa port. The new freight station is scheduled to begin operation in early 2019.

COSCO Shipping Port and Abu Dhabi Port entered a 35-year concession agreement for the container terminal at Khalifa port in September 2016. The total investment in the terminal is approximately USD400 million and its construction

splitting shipment volumes from Asia to Europe.

"BCOs shipping from east of the Suez Canal can divide shipments between different transport corridors and so reduce the risk of supply chain disruption. They move a certain percentage of cargo via the south, which complements the volumes they already move via Europe's northern ports," said Contship's Danielle Testi.

According to Testi, the potential for shorter transit times and inventory cost reduction is also behind growth in the service.

The company calculates that on a shipment from Hong Kong to Basel, BCOs can realise inventory cost savings of about USD544/feu and a transit time saving of 16% compared with shipping by ocean and rail via Rotterdam.

Shanghai Shipping Exchange indices show average spot rates for Asia-Mediterranean trending lower than the Asia-north Europe service since September 2016, a factor also believed to be contributing to higher volumes on the service.

"In the past there was some reluctance to use Mediterranean ports. There was a perception of lower productivity and issues with labour, but this is no longer the case and we expect the port-to-door services to inland destinations

in southern and central Europe to continue to grow."

Shipments on the service are offloaded at La Spezia and Genoa and transported by rail to the 300,000 teu-capacity Contship CY Depot in Milan where they are transhipped to international rail services.

Contship operates its own trains in Italy, with 4,500 km of live coverage. In December, five weekly round-trip services served the route to Basel from the Milan depot.

In addition to Basel, there are routes to Munich and Duisburg in southern Germany. "Duisburg is becoming more important as a hub for overland shipments to and from China," said Testi.

The high level of growth on the service this year follows year-on-year growth of 180% and 40% in 2016 and 2015, respectively.

About one-third of containers moved out of La Spezia currently go by rail and the target is to raise that to more than half of the total volume of containers handled by the terminal.

"This is where we are trying to make a difference for shippers. We want to move the containers out of the port as quickly as possible. This is the only way to cope with massive stevedoring demand in a compact terminal. With higher speed to turn over shipments, we can offer more capacity to the market."

Testi said the trend of terminal operators looking further up the supply chain, combined with the influx of larger tonnage and resulting fewer port calls, was making port productivity more important to the industry.

"In the past you had more flexibility because you had more calls. Today it is different. Sometimes events out of the control of the terminal, such as weather or an issue at another port, can impact shipments and you need to be able to anticipate and respond to the issue in a live environment.

"For this you need better communication, collaboration, and increased sharing of information and data in the supply chain."

La Spezia is located on the Ligurian Sea, midway between Genoa and Pisa. The port is in the middle of a USD240 million expansion project that will see its Garibaldi pier extended by 82 m. The full project involves construction of a new on-dock rail facility and will take capacity from 1.4 million to 2 million teu/year.

More than 80% of the ports' imported container volumes come from Asia, including east Asia, southeast Asia, and the Indian subcontinent. The United States accounts for about one-third of exports, with another third destined for Asia and India.

and development is expected to take about 18 months and it will also start operations in early 2019.

The completion of the new terminal will take the total capacity of Khalifa port to 6 million teu by adding 3.4 million teu to the existing capacity of 2.5 million teu.

Commenting on the agreement, Xu Lirong, chairman of COSCO Shipping Group, said, "Khalifa port is an important gateway in Abu Dhabi and an important transshipment hub in the Middle East. The co-operation between the two parties is aligned with the Belt and Road initiative, which is helping to boost trade between two countries."

Sultan Ahmad Al Jaber, minister of state and

chairman of Abu Dhabi ports said, "The partnership between Abu Dhabi Ports and COSCO Shipping Ports to develop the region's largest container freight station will add a new dimension to UAE-China trade relations and is fully aligned with Abu Dhabi's Vision 2030 to drive growth, attract investment, support economic diversification, and create sustainable jobs."

China Harbour will be the main contractor and will lead the terminal project, according to Zhang Wei, vice-chairman of COSCO Shipping Ports.

In July, Abu Dhabi port also signed a USD300 million investment co-operation agreement with five Chinese companies from China's Jiangsu province in the free trade zone area in Khalifa port.

## Port updates

### ► FUTURE ENGINEERS

UK port company PD Ports has highlighted the value young people can bring to any business and is calling on other employers to help plug the engineering skills gap. As the UK's Department for Education revealed a 61% year-on-year drop in new apprenticeships, PD Ports is celebrating having offered them for 15 years. It continues to promote the scheme and in October welcomed three more apprentices to its workforce.

### ► ROTTERDAM CEO

Port of Rotterdam Authority has reappointed Allard Castelein as CEO for a second four-year term, which started on 1 January 2018. Castelein said, "Thanks to digitisation and the energy transition, this is a period of major changes for the port. The port authority and the companies established in the port complex need to continue playing an active role when it comes to taking on these challenges for the future."

### ► MGI WINS WITH AI

French port IT consultancy company MGI is developing a decision making tool using artificial intelligence for the port sector. Known as Channel 5, it is being developed in partnership with CEA Tech and in September won an award at the Port of the Future Conference. The system aims to give an accurate "real-time overview of port system status," said a company statement, by merging data from sources likely to affect transit flows.







Getty Images: 1017540

## Baku: a port city pulling ahead

Baku International Sea Trade Port's director-general and the host of the next IAPH conference in May, **Dr Taleh Ziyadov**, tells *P&H* about the port's plans to take centre stage in the emerging 21st century hub network

**B**aku, capital of Azerbaijan, is re-establishing its presence in the emerging trade network and harnessing its experience of the oil industry to position itself as a modern five-star transport and logistics hub on the Caspian Sea.

Azerbaijan and the countries along the ancient Silk Road have always acted as a land bridge on the major commercial routes between Europe and Asia. The

ancient Silk Road trade brought wealth and prosperity to the region's inhabitants at different stages in history.

The exchange of goods introduced new ideas and technologies, enriching and advancing the development of these societies. However, disruption of the ancient trade routes, brought suffering and hardship to the region with long-lasting impact. Some regions were gradually

able to recover, while others never did.

Over time, a number of commercial cities faded away as they lost the prominence they once held in the Silk Road trade, and new vibrant megacities emerged in their places.

The Euro-Asian trade was the economic backbone of Central Eurasia for centuries.

By the end of the 20th century, however, the majority of this trade bypassed the region, and so did the attendant benefits. Large ships that could carry thousands of containers at a time have replaced the ancient camel caravans of the Silk Road. Most of the trade between Europe and Asia is now conducted by maritime transport via the Suez Canal, which makes up more than 90% of total cargo exchanged between the two continents.



“The IAPH conference in Baku should be at the top of every port officials’ agenda”

**Taleh Ziyadov**  
Port of Baku director-general

**The Formula One Azerbaijan Grand Prix 2017 in Baku. The city is expanding its port, creating a logistics area, and establishing a free trade zone**

port in the city, in 2007, the government of Azerbaijan decided to move the port to a new location near Alat, a township 70km south of downtown Baku.

On 17 March 2016, the president of Azerbaijan, Ilham Aliyev, signed a decree to create the first-ever free trade zone (FTZ) in and around the new Port of Baku. The FTZ will offer special tax and customs incentives and stimulate growth in the non-oil economy of the country, creating a stable and protected investment climate and attracting new sources of foreign direct investments (FDI).

As in the ancient megacities, the new Port of Baku and FTZ aim to add value to moving cargo between Europe and Asia as well as act as a major hub for businesses from around the world wishing to establish their regional headquarters in Eurasia.

The completion of the first phase of the new Port of Baku is expected to be in May 2018. The new port will have free zone status where the development of a transport and logistics industry, pharmaceutical cluster, common-use oil supply base

facilities, IT and manufacturing, packaging, and consolidation areas are envisaged.

All this is a part of a larger strategy to strengthen Azerbaijan’s non-oil economy and diversify it away from hydrocarbons.

The new Port of Baku concept will be supported by a legal regime that will protect the interests and investments of international players, similar to the legal frameworks found in Hong Kong, Singapore, Dubai and London, for example.

It will have the ecosystem of a thriving, smart, green and innovative logistics hub of the 21st century. This is how future ports ought to be. Hence the title of the 2018 IAPH Conference in Baku is ‘Ports of the Future: Creating Hubs, Accelerating Connectivity’.

We in the ports industry must all start thinking about ports not just as part of the maritime industry, but the wider logistics chain and as economic players. We are ready to share our hub development experiences and to co-operate with other countries in the region, as all hubs interconnect and feed each other.

Now more than ever knowledge sharing is important and that is why active participation and discussion at the IAPH conference in Baku this year should be at the top of every port officials’ agenda. **PH**

Today, we are at the verge of emerging 21st century hubs that will once again revitalise the diminished land-based trade between Europe and Asia. China’s Belt and Road initiative will only contribute positively to emergence and development of these new hubs across Eurasia.

The revival of the new Silk Road and the developments around China’s Belt and Road initiative aiming to link China and Europe via land, will only increase the significance of the new Port of Baku and Azerbaijan. Located at the strategic crossroads of Europe and Asia and nearby sizeable markets such as Turkey, Iran, Russia, and China, Port of Baku is poised to become not only a transit bridge between Europe and Asia, but also a major distribution and value-adding centre of Eurasia.

The Port of Baku is the oldest and one of the largest ports on the Caspian Sea. For centuries, it has served as a key maritime gateway between east and west. Due to a limited expansion capacity of the old

## Green from the top down

It is the intention of Port of Baku to become first green port in Eurasia. Our community is sensitive to the environment and we believe that it is up to a country’s leaders to direct the conversation from the top down.

Port leaders should initiate a benchmark for ports and their community members. Our own initiative – to make sure whatever we do is environment-friendly – sets a standard for the region and offers a trend that others can follow. This is good for us and the region at large.

The Port of Baku is working closely with international organisations to achieve green port certification. We will then ensure that every member in our port community adheres to these standards.





Getty Images: 5067405

# Facilitating change

Julian Abril Garcia and Patrick Verhoeven explore how the IMO's FAL Convention will affect ports and give the sector a louder voice in regulatory discussions. **Namrata Nadkarni** reports

**T**he latest amendments to the International Maritime Organization's (IMO's) Convention on Facilitation of International Maritime Traffic (FAL) are set to strengthen the links between ships and ports and will usher in a new era of electronic communication and a closer relationship with the IMO.

Although FAL came into force back in March 1967, it is a living piece of regulation that has seen updates that keep it relevant. The FAL Convention, which has an impact on port operations, aims "to facilitate maritime transport by reducing paperwork and simplifying formalities, documentary requirements and procedures associated with the arrival, stay, and departure of ships

engaged on international voyages".

Julian Abril Garcia, head of facilitation for the IMO Maritime Safety Division, told *P&H* an average customs procedure encompassed interactions between 20 and 30 parties, 40 documents, and about 200 data elements, all of which see an average of 30 repetitions. The ability to send the same information to multiple parties electronically would save a significant amount of time.

The latest updates, which were confirmed at FAL 41 in April 2017, have resulted in amendments to the existing port arrival forms and the introduction of three new documents pertaining to security related information, advance electronic cargo information, and advance notification for waste delivery to port reception facilities. All are accessible on the IMO website. There are also changes being introduced to how shore leave should be processed, as ports would be required to explain their actions if they did not grant crew this leave, and greater clarity surrounding the handling of stowaways.

The biggest challenge for ports within the new amendments is the obligation to establish systems for electronic exchange of information – an obligation that carries forward the IMO's wider agenda for electronic navigation. These systems create new rules for the electronic clearance of ships and work towards the ambitious goal of establishing 'maritime single windows', such as having a single set of information that can go out to all interested stakeholders.

The amendments to the FAL Convention enter force in January 2018, although the complexity surrounding implementation of the rules related to the electronic exchange of information means many IMO member states have pushed back compliance to April 2019.

The situation is extremely complicated, Abril Garcia told *P&H*. "Once the FAL Convention amendments relating to electronic business come into effect from April 2019, all member states can submit forms either



**“You can offer a better service to the customers”**

**Julian Abril Garcia**  
Head of facilitation for the IMO Maritime Safety Division

IMO: 5067607



**How best to globally synchronise electronic data exchange is a conversation in which ports must be involved**

electronically or on paper for at least 12 months. The words 'at least' are important, as this means some member states and their ports may opt for periods of 24–36 months before they are completely electronic."

While the extra time may be used to iron out glitches in the new systems needed for the electronic communication, another reason for ports taking extra time to switch to the new system is the fact that some may have existing systems in which they have invested a significant amount of money. "Ports like having their own systems and many have spent a lot on systems that they find work quite well," said Patrick Verhoeven, IAPH managing director for policy and strategy. "Although they are happy to have a single window system, ideally this would be compatible with the platforms that they are using so that they don't lose out completely."

Abril Garcia agreed that legacy systems posed a big challenge. "These systems may be very complex, which will make it difficult to interlink with others," he said, adding that this will particularly be the case in developing countries, which may not have the resources to go beyond a basic system. "The other thing to remember is that we have 118 IMO parties to the FAL Convention and the necessities in developing countries are very different to those in developed countries." A further complication is that 56 IMO member states have yet to sign up to the FAL Convention, meaning ports in these countries would not have to comply with the regulations.

Verhoeven, who is particularly familiar with the issues of implementing a single window across European ports, was extremely sympathetic to the IMO's predicament. "We only had 28 member states in the EU and I know how complicated the situation was – particularly because you had different single windows per country or per port, so it was not straightforward."

The situation is particularly unpleasant for owners, he said, harking back to his time as secretary-general of the European Community Shipowners' Associations (ECSA). "Because of disparities between port forms, owners are forced to do and redo the same information for different electronic platforms, which is a burden for seafarers." As a result, he added, many owners preferred

the older systems they had grown familiar with.

The key issue in synchronising systems is the varying ways in which specific information is defined, interpreted, and processed by each maritime authority. Abril Garcia pointed out that this proved to be a sticking point when the IMO began developing a system for ports that required assistance in making the move from paper forms to electronic information exchanges.

"Bodies such as the World Customs Organisation, the International Organization for Standardization, and others have different standards and so we are working with them on the harmonisation of the data elements and their definitions," Abril Garcia said. "Once these terms are standardised ... the new electronic exchange would facilitate interchange with other systems without duplication of documents, costs would be lower for both owners and cargo handling, cargo release would be speeded up and so forth."

"Ports are businesses and time is money, so if you are able to do things quicker without compromising on quality or control by the authorities, you can offer a better service to the customers," he said, adding that the Organisation for Economic Co-operation and Development estimated that harmonising and simplifying trade documents would reduce trade costs by 3%. These savings could mean ports in states that have not signed up for the FAL Convention may opt to adopt the harmonised system to stay competitive.

Given the massive impact that the new systems will have on ports, the IMO is seeking greater input from port authorities, not just on the IMO electronic platform prototype, but for the FAL project as a whole. "It is important when making changes to the regulations affecting ports to make sure that they are participating in the discussion," Abril Garcia said.

Verhoeven welcomed this call for a closer relationship, as it aligns with the IAPH's strategic goals. "The IMO is predominantly for shipping, but we need to work together, as the ports are definitely a part of this conversation. We want to use our NGO status to make sure our members' voices are heard better, not just on issues such as greenhouse gases but also issues that will impact us in the long term such as automated shipping, electronic navigation, and more. At the moment, the loudest voices are those of the maritime administrations. "It is in our best interest to make sure that ports have closer relationships not just with these national regulators but also with the technical experts at the IMO so we can feed into discussions that will shape how the maritime industry develops," he said.

P&H understands that an upcoming opportunity for ports to grow closer ties to the IMO comes in the form of a special event being hosted at the IMO on 4 June ahead of FAL 42. "We are hoping to see many ports there to help us achieve the IMO's objective of connecting ships, ports, and people," Abril Garcia concluded. **PH**

**MORE INFO:** [www.imo.org](http://www.imo.org)



“Ports are definitely a part of this conversation”

**Patrick Verhoeven**  
IAPH managing director, policy & strategy

# Investment in Africa to fuel Chinese industry

China continues to pursue opportunities in African maritime infrastructure development to position itself for exports of the continent's natural resources, writes **Shem Oirere**



Getty Images: 5066481

**Oil rig at Port of Lagos, Nigeria. China is playing a role in the development of Lekki port**

China's increasing desire to scale-up exports of manufactured goods to Africa and ship out raw materials and natural resources from the continent to meet its industrial demand has seen it intensify its bid for a share in Africa's port infrastructure development and financing.

A few Chinese state-owned infrastructure development contractors have taken up port construction projects across Africa, with China Harbour Engineering Company (CHEC), a subsidiary of China Communications Construction Company (CCCC), taking up the largest share of ongoing port construction, upgrading, and container terminal expansion projects especially in east and west, with maritime project contracts in Cameroon, Djibouti, Ghana, Guinea, Kenya, Nigeria, and Tanzania.

In west Africa, CHEC is the main contractor in the construction of the oil and gas port of Atuabo in Ghana. The project is being promoted by Atuabo Free Port Company and Lonrho Ports Ghana, a subsidiary of UK logistics company Lonrho.

The USD600 million port project, located 326km west of the capital, Accra, began in 2015 and will have an 18.5m deep channel and three quays – 16.5m, 12m, and 9m deep respectively. When fully completed, the government of Ghana, directly or through its companies, will hold a 45% stake in the port, while the rest of the

shares will be taken up by Atuabo Free Port. In addition, CHEC in 2016 was awarded a USD1.5 billion contract for the expansion of Tema port, also in Ghana, by Meridian Port Services, a joint venture between Ghana Ports and Harbours Authority and Meridian Port Holdings and in which Bolloré Transport & Logistics and APM Terminals are the two main shareholders.

The contract, which is expected to be completed in the last quarter of 2019, entails construction of four deepwater berths and an access channel, making it the largest cargo port in west Africa, with an estimated capacity of 3.5 million teu annually. Bank of China and Industrial & Commercial Bank of China are among the financiers of the Tema port project, alongside the Dutch Development Bank (FMO), Standard Bank, and the International Financing Corporation.

CHEC is also active in Guinea, where it has signed a USD770 million contract for the upgrading of Port of Conakry. The port, which handles all goods into and out of Guinea is also a key gateway for neighbouring Mali. CHEC is constructing three docks, roads, and other infrastructure in the eastern zone of the port. Timelines for the start and finish of the project are yet to be officially confirmed.

Two other Chinese contractors, China State Construction Engineering Corporation (CSCEC) and China Civil Engineering Construction Corporation



(CCECC) have been developing the multipurpose Doraleh and Damerjog livestock ports in Djibouti at a cost of USD580 million.

At Port of Doraleh, CSCEC, with financing from China Merchants Holdings and Port of Djibouti, added seven berths with a depth of 16–18 m in the first phase, with a total quay length of 1,200 m. The port, which opened in May 2017, has four separate terminals for handling containers, ro-ro, breakbulk, and bulk cargos and can handle vessels up to 100,000 dwt. Phase two will see the berths increased to 15.

CCECC has also been involved in the construction of a 655 m-long quay at Doraleh with capacity for five ships and holding area for 150,000 head of livestock for the export market.

China is playing a major role in the development of the new Lekki deepsea port in Lagos, Nigeria, where CHEC was previously awarded a USD792 million contract for the construction of all marine and land-side infrastructure of the port. The project is being developed under a public-private partnership involving the Nigerian Ports Authority, Lagos state government, and Singapore's Tolaram Group.

When CHEC completes the project in 2019, the port will handle post-Panamax container vessels of up to 10,000 teu and an overall annual throughput of 1.5 million teu in its initial operation phase, with plans to increase the capacity to 2.7 million teu. Lekki Port will also have capacity to handle up to 16.7 million tonnes of liquid cargo and 4 million tonnes of dry bulk annually.

Chinese contractors have recently won key port development projects in east Africa, including in Kenya, where a consortium led by CCCC is constructing the first three berths at the country's Indian Ocean town of Lamu. The berths, worth USD484 million, are the first of the 32 planned at the port by 2030. The Lamu project is a component of the ambitious and much criticised USD25.5 billion Lamu Port-South Sudan-Ethiopia

corridor that links Kenya to the two landlocked countries. The other components are a railway line, an oil pipeline, and a highway (see p18).

Earlier, China Road and Bridge Corporation (CRBC) had won a USD66.7 million contract to expand berths at Port of Mombasa, east Africa's largest gateway. CRBC recently completed a 497 km standard-gauge railway project linking Mombasa and Nairobi at a cost of USD3.8 billion as Kenya sought to decongest Port of Mombasa through efficient movement of cargo in and out.

In neighbouring Tanzania, CHEC in June 2017 was awarded a USD154 million contract to expand Port of Dar es Salaam. The contract entails building a ro-ro terminal, deepening, and strengthening seven berths to enable the port to increase throughput from the current 20 million tonnes/year to 28 million tonnes/year by 2020.

Although Tanzania has put on hold the ambitious USD10 billion new Bagamoyo port project, Chinese financier, China Merchants Holdings International had already signed a financing agreement with Tanzania in partnership with Oman's State General Reserve Fund.

The widespread involvement in Africa's maritime infrastructure development has been captured in many China-Africa agreements and treaties, including the Beijing Action Plan of 2013–15. In the plan, China expresses its determination to increase the country's share of investment in Africa's transport sector as the east Asian economic giant seeks to grow its exports of manufactured goods to Africa and ship out raw materials and natural resources, particularly oil, gas, and minerals, to meet its insatiable industrial demand.

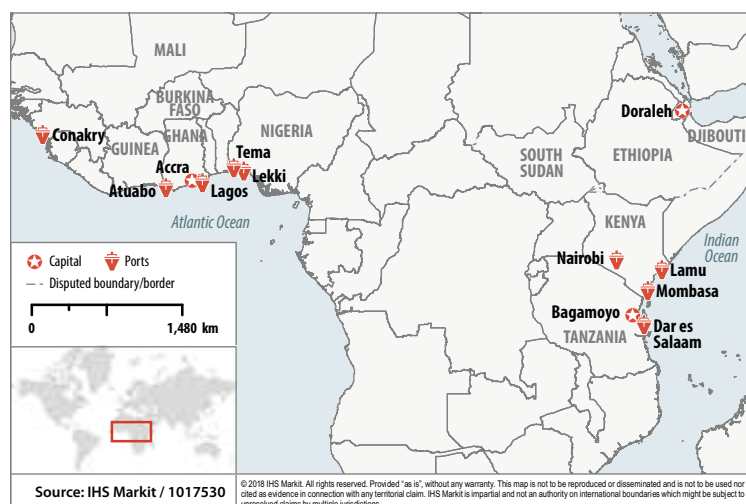
The plan says China and Africa "will continue to encourage and support more flights and shipping links to be set up by their airlines and shipping companies and capable Chinese companies will be encouraged to invest in ports, airports, and airlines in Africa".

There are concerns that China's involvement in Africa's infrastructure development is more about maximising Africa's raw materials and commodities at the expense of training and skills transfer. Despite this, Chinese influence continues to grow strong in the continent, including the setting up of its first overseas military base in Djibouti, where Chinese contractors are involved in port development projects.

China's ministry of commerce said in a 2016 release that "4 out of 10 countries with which China newly signed the largest-value contracts were from Africa, including Algeria, Angola, Egypt, and Ethiopia".

The ministry said 9 out of China's 20 highest-value recently signed projects were in Africa.

With a huge natural resources potential and availability of raw materials for diverse industrial use, Africa remains a region of interest to China, backed by a demonstrated ability to meet Africa's infrastructure financing deficit, which is estimated by the World Bank at USD93 billion annually. **PH**





# Lines respond to increase in trade

MSC has shown its long-term commitment to west Africa with interests three ports. As the area sees rising container traffic, the shipping line is sending big ships to its terminals, **Andrew Spurrier** reports

**G**rowth has finally started to return to west African container import trades after the sharp 2014–16 downturn caused by the slump in world oil prices. That growth, however, has been moderate. It has not yet stabilised and, in any case, remains short of the 5–10% annual growth rates that were being registered up to the end of 2014.

The import trades are fundamental for the carriers because of the much larger volumes involved and their determining effect on freight rates. West African export volumes, above all agricultural commodities and timber, were much less affected by the 2014–16 slump and are now showing double-digit growth rates.

Maersk Line east Asia–west Africa trade manager Jakob Holbak estimated that import volumes on Asia–west Africa lines had increased by an average of 3–4% in the first half of 2017, a growth rate he said had roughly been matched on the Europe–west Africa and Middle East–west Africa lines.

“It’s improved a bit but it’s still not fantastic,” he said, adding that oil prices were still at a low level and that the registered volume increases had been achieved on a reduced base.

Maritime consultancy Drewry said at the start of September that container import volumes on Asia–west Africa routes had grown during the second quarter of 2017 for the first time since the final quarter of 2014. According to data from Container Trades Statistics (CTS), in the second quarter of 2017, import volumes rose by 3% over the previous year to 330,500 teu.

It added that revised CTS first-quarter data suggested there was also a 1.4% increase in volumes during the first three months, rather than the 0.3% contraction initially reported. The upturn looks, therefore, to have started at the beginning of last year and to have taken the first-half import total to just short of 600,000 teu.

Most lines reacted to the uplift by adding services using smaller ships, but Mediterranean Shipping Company (MSC) has adopted a different strategy to most of its competitors in the region. It has introduced 11,000–13,000 teu vessels on its Asia–west Africa services. They call directly at the port of Lomé, where



their cargo is redistributed to other west African ports by feeder vessels.

Lomé Container Terminal is operated by MSC group subsidiary Terminal Investment Limited (TIL). It came into operation in December 2014 and currently offers an annual capacity of 2.2 million teu. Throughput is currently running at about 1.5 million teu, so plans to expand capacity to 3.5 million teu in a second phase of construction seem unlikely to be activated in the foreseeable future.

The group is nevertheless continuing to develop in the region, to which it professes a long-term commitment. It gave concrete proof of this in May when it signed a 35-year concession to operate the planned new container terminal in the port of San-Pédro in Côte d'Ivoire.

Creation of the new facility is expected to cost EUR460 million (USD545 million) in total, the bulk of which will be provided by the port itself in the form of infrastructure investment. MSC is to invest EUR195 million to equip the terminal, which will be able to accommodate vessels up to 14,000 teu. MSC plans to use the terminal to serve landlocked countries such as Burkina Faso and Mali, but also as a transshipment hub.

A group source indicated that San-Pédro would be one of three strategic terminals in west Africa for MSC, alongside Lomé in Togo and Tin Can in Nigeria. “San-Pédro is an important import-export location for MSC



**Lomé Container Terminal, with an annual capacity of 2.2 million teu, is currently running at about 1.5 million teu**

that fits well into our terminal strategy for growth in transshipment capacity over the coming years," the source said.

Maersk Line, meanwhile, said it was not tempted to follow MSC's strategy of using big vessels on its Asia-west Africa lines to deliver to one major transshipment hub. It plans to continue to use 2,500–3,000 teu vessels and, less frequently, baby Panamax vessels with capacity up to 4,300 teu, which it sees as best suited to conditions in most west African ports, as well as offering maximum flexibility and cost-efficiency.

However, overall, Dutch maritime research firm Dynamar said the vessels being used on lines serving the west side of the African continent were much bigger on average than those serving the east side.

In a report released in 2017, it noted that average size of the 112 box ships on Asia-west Africa services, which were estimated to have been deployed by 10 different carriers, was 5,300 teu. This average included the 13,100 teu vessels deployed by MSC for its 'hub-and-spoke' operation centred on Lomé.

In the Asia-east Africa trades, on the other hand, Dynamar estimated that average vessel size was 2,900 teu, with nine different carriers operating a total of 52 vessels, the largest being 4,900 teu.

It also noted that many international terminal operators were active in west Africa, including APM Terminals, Bolloré, China Merchants, CMA Terminals,

“San-Pédro is an important import-export location for MSC that fits well into our terminal strategy”

#### **Mediterranean Shipping Company**

DP World, ICTSI, Portek, and TIL Group. Hutchison Port Holdings was, for a long time, the only international operator in east Africa, with its Tanzania International Container Terminal Services operation in Dar es Salaam.

In 2016, however, DP World, which already operated the Doraleh Container Terminal in Djibouti, obtained a 30-year concession for the development of a multipurpose port in Berbera, Somaliland, while P&O obtained a similar concession early 2017 to develop and operate the port of Bossaso, Somalia.

Dynamar added that east Africa covers a much smaller area than west Africa, with a total population of 317 million, spread out among just four coastal countries and seven landlocked countries, which are served by just six main ports. This compares with west Africa's 491 million people distributed among 20 coastal and 5 landlocked countries, which are served by nine main ports. **PH**

# The road inland

East Africa is a lynchpin of China's Belt and Road initiative due to its planned logistics network upgrades that will reach into landlocked countries, writes **Peter Shaw-Smith**

**F**ar-flung as they are from China's mother lode, nations in the Middle East and north Africa (MENA) know they stand to gain from China's Belt and Road initiative. The fluidity of the situation means that events are changing fast on the ground.

Belt and Road is a combination of two schemes: a 21st Century Maritime Silk Road (MSR) and a Silk Road Economic Belt. Both initiatives were announced by President Xi Jinping in 2013, according to a report issued in October by law firm Baker McKenzie entitled *Belt & Road: Opportunity & Risk*. Belt and Road is open to all countries and organisations, but official maps and documents emphasise the importance of more than 60 countries in Asia, the Middle East, eastern Africa, and eastern Europe.

China senses a vacuum that needs filling. "The plan laid out in [President Xi Jinping's address to the Chinese Communist Party Congress in Beijing in October] speech re-affirmed China's resolve to participate in the big global issues that will shape the world over the next 50 years. Sensing a void left by shifts in US policy, China has

already shown signs of wanting to take the lead in environmental and global trade issues," said Guy Dunn, CEO of EMIS, a unit of Euromoney.

East Africa is touted as one of the main focuses of Belt and Road. "Various African countries along the [route] have the potential to provide major opportunities for investment, including Kenya, Tanzania, Ethiopia, Djibouti, and Egypt," the Baker McKenzie report stated.

"East Africa is a more integral part of Belt and Road owing to Djibouti's ports, Ethiopia's manufacturing, and the region's existing plans to connect rail, road, and energy networks. Egypt offers a significant opportunity for Chinese firms, but they will need to collaborate with local players and the multilateral banks to avoid major challenges," it said.

In December 2015, Xi Jinping ushered in a new era of "win-win co-operation" between China and Africa, a strategy formulated to create mutual prosperity. "China has backed up this proposal with a USD60 billion investment in major capital projects, which are tied to developing local economic capacity. This is in the knowledge that for win-win co-operation to be sustainable, it is crucial to develop the local economy by putting in place real knowledge transfer," said Aboubaker Omar Hadi, chairman of the Djibouti Ports and Free Zones Authority (DPFZA).

A key challenge is to ensure that the whole continent benefits from Chinese investment, through improved intra-African trade. "We need to significantly improve intra-African trade and regional integration. For example, there are 54 countries in Africa and 15 of them are landlocked. With around 90% of global trade being carried by the international shipping industry, Africa must improve regional integration to the 30% of Africa that is landlocked. Intra-African trade is imperative if these countries are to fully integrate into the global economy," he said.

Asked if Djibouti's experience with Chinese engagement and investment had been positive, Hadi said, "Yes, Djibouti and DPFZA have established a win-win relationship with China and Chinese businesses. Djibouti has been chosen by China as a strategic stop on the Maritime Silk Road. Already, goods from Asia represent 59% of all goods passing through the Djibouti ports.

"Our Chinese partners, such as China Merchants Group or China Communications Construction Company [CCCC], bring extensive expertise and experience to the country. They have played an important role in our recent progress," he said, pointing to Doraleh Port (see page 12), Tadjourah Port, and in the construction of the first electric transnational railway in Africa, which links Djibouti City to Addis Ababa.

"China's relationship with Djibouti will bolster the economic transformation of Ethiopia. Djibouti is the gateway to Ethiopia, Africa's fastest growing economy.

**CCCC was involved in the development of Djibouti's Doraleh Port**



Getty Images: 5006541





Already, over 90% of Ethiopia's trade passes through Djibouti," he said.

Given the size of Africa's land mass, success with port installations is not enough to guarantee progress

in logistics up and down the continent. Singapore's DBS Bank (see chart) was able to identify several rail projects – not all located in east Africa – that could resolve problems being experienced by Africa's landlocked countries.

East Africa is perhaps the location of the biggest successes to date in terms of rail. The Addis Ababa-Djibouti Railway promises to revolutionise Ethiopia's access to maritime trade. Ethiopia is also known to be making overtures to Port Sudan in the north, Berbera in the east, and Dar es Salaam to the south.

Kenya's ability to serve Uganda, Rwanda, Burundi, and even Democratic Republic of the Congo, has improved dramatically with the Mombasa-Nairobi Railway, which will, in the coming years, be expanded to include Uganda and countries beyond. Tanzania is working towards completing the first phase of its east-west railway, which will eventually link the coast with Lake Victoria, Rwanda, and Burundi, as well as possibly Uganda.

"Africa is a very difficult market," said Richard A Butcher, global head and director of port and marine terminals at Wipro Technologies. "Certain countries, such as Angola, have seen massive growth, but oil money has dried up.

"Since China wants to transfer some labour-intensive manufacturing, non-extractives exporting economies offer more stable exchange rates [and are] more hungry for foreign investment," said Lauren Johnston, research fellow in the Melbourne Institute of Applied Economic and Social Research. Railway lines have been installed in west Africa, in particular along the Nigerian coastline and in Benin, as well as a new airport in Senegal, to link up to those northern landlocked economies. **PH**

## China's participation in Africa's transport sector

Status	Project	Completion date	Length (km)	Project cost (USD million)	Contractor
Completed	Addis Ababa-Djibouti Railway Line	2016	753	4,000	CRCC, Company A
Completed	Mombasa-Nairobi Railway, Kenya	2017	480	3,804	CCCC
Completed	Khartoum-Port Sudan railway, Sudan	2014	762	1,154	Company A
Completed	Abuja-Kaduna Railway, Nigeria	2016	187	850	CRCC
Completed	Benguela Railway, Angola	2015	1,344	1,830	CRCC
Completed	Addis Ababa Light Rail, Ethiopia	2015	32	475	Company A
Ongoing	Lagos-Calabar Railway, Nigeria	2014	1,402	11,100	CRCC
Ongoing	Lagos-Kano Railway, Nigeria	2006	1,315	8,300	C RCC
Ongoing	Chad-Cameroon & Chad-Sudan Railway, Chad	2011	1,364	7,000	CRCC
Ongoing	Abuja Rail Mass Transit Phase II, Nigeria	2017	33	1,473	CRCC
Ongoing	Dar es Salaam-Rwanda-Burundi railway	* 2019	1,216	1,215	Yapi Merkez **
<b>Total</b>			<b>8,888</b>	<b>39,986</b>	

\* 205 km Phase 1 only / \*\* Yapi Merkez = Yapi Merkez Insaat Ve Sanayi (Turkey) and Mota-Engil, Engenharia, and Construc o Africa, SA (Portugal)

CRCC = China Railway Construction Corporation Ltd / CCCC = China Communications Construction Company Ltd

Source: DBS Bank (Singapore), Fairplay

# Single window speeds trade

West African ports are increasingly opting for single-window platforms to enhance trade facilitation, slashing vessel turnaround times, writes **Shem Oirere**

**S**everal countries in west Africa have been proactive in implementing single-window systems, enabling their users to log standardised information and documents on a single platform in compliance with transport, import, and export transaction requirements. This work has been done ahead of the implementation of IMO's trade facilitation committee (FAL) regulation that will see all ports required to operate a single window in 2018 (see page 12).

A single window, sometimes called a port community system (PCS), has successfully been launched in Ghana, Senegal, Benin, Cameroon, Togo, Burkina Faso, and Mali, while in countries such as Nigeria, Guinea, Niger, and Guinea Bissau, the processes for development of the electronic platform are under way.

In Cameroon, the development of the single-window system began in 2000 but it was not until 2010, when the country approved the necessary legislation on cyber crime and cyber security, that it was launched. Since then, Cameroon ports have reduced customs clearance times from six days to three hours. The platform is now linked to 76 sites, including regional government departments.

A tender has advertised for the connection of 80 more such sites, with the goal of achieving 150 similar connections in the next two years. The country's ports linked with the system include Douala, Kribi, and Limbe.

At the port of Cotonou in neighbouring Benin, the World Bank supported the launch of a single-window platform to ease the management of vessel traffic, cargo, and intermodal operations. In 2013, the port received the IAPH gold award for information technology for its impressive implementation of the system and commitment to supporting best practice. Turnaround and dwell time for vessels has been reduced from 39 days to an average of 6 days.

The Cotonou single-window system is operated by a consortium of Bureau Veritas company BIVAC (Bureau Inspection Valuation Assessment Control) and PCS consultancy Soget, under a concession signed in 2010.

For the past two years, Togo has also been using its single-window system. It is operated under a 10-year concession awarded to Seguce Togo two years before the launch. This is a joint venture of BIVAC and Soget Seguce and has linked the system to at least six

# Port freight stations squeezed

A new high-speed standard-gauge railway line linking Port of Mombasa to Nairobi casts a shadow on the future of the ports' container freight stations, writes **Shem Oirere**

**K**enya's container freight stations (CFSs) have, since 2007, played a pivotal role in the smooth flow of exports and imports at Port of Mombasa, where they provide storage, stripping, cargo inspection services, and reloading capacity.

However, with the commissioning of a USD3.8 billion high-speed and more efficient standard-gauge railway line linking Mombasa to the capital, Nairobi, the role of the CFSs at the port is diminishing, with some operators likely to relocate to Nairobi, where Kenya Ports Authority (KPA) operates an inland depot.

The 472 km railway was built by a Chinese company and 90% of the financing came from Chinese loans,

with the other 10% from the Kenyan government. It has been likened to the 724 km Addis-Djibouti line, which cost a similar amount.

"Transporters and CFSs have to embrace innovation. The key in any business environment is innovation and existing transport businesses will survive if they embrace it," said Atanas Maina, the managing director of Kenya Railways Corporation in a recent interview.

He said the cargo trains would move the containers and cargo directly from the port to the Nairobi depot, improving flow efficiency at the port. This could translate to faster and cheaper business transactions.

According to KPA statistics, there are about 24 CFSs,



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**Cotonou's award-winning single window was implemented in 2012**

government agencies involved in authorisation and customs services for exporters and importers in Togo.

Despite being an economic leader in west Africa, Nigeria has yet to achieve a fully integrated single-window system but hopes to have electronic lodging of standardised information and documents.

Nigeria's National Ports Authority, which manages and operates the country's ports, has split the implementation of the single-window system into phases of paperless customs, regulatory single window, logistics single window, and fully integrated single window. Roll-out is expected next year.

NPA managing director Hadiza Usman, who is also

the IAPH VP for the Africa region, said in September that the authority was working with the Nigeria Customs Service "to introduce the much awaited single-window platform aimed at simplifying and harmonising formalities, procedures and related exchange of information and documents between various actors in the supply chain".

Currently, the country, whose major ports include Lagos Port Complex and Tin Can Island, Calabar, Delta, Rivers, and Onne Port, is implementing the paperless customs phase.

Progress has also been made in Niger, where the government in March 2016 appointed the Directorate General of Customs under the Ministry of Finance to be the lead agency in implementing a single-window platform.

Meanwhile, in Guinea, the government has drafted a single-window plan, which has been approved by the customs and port services agency and the Ministry of Commerce as the country marches towards full electronic transactions at the port of Conakry. Other ports in the country include Kamsar and Boke.

In neighbouring Guinea Bissau, the World Bank is supporting a feasibility study for the establishment of a fully integrated single-window system.

Ghana is also taking steps towards a single window. The government in 2002 launched the electronic platform for clearance and payments of and for exports and imports by Ghana Community Network Services Limited, a public-private partnership of Ghana Revenue Authority, Ghana Shippers Authority, Ecobank Ghana Limited, Ghana Commercial Bank, and Societe Generale de Surveillance of Switzerland. **PH**

all located at the Changamwe mainland area near Port of Mombasa. At least 50% of these have been designated by KPA; one specialises in handling cargo destined for neighbouring Uganda, Rwanda, Burundi, and eastern Democratic Republic of the Congo.

Before the launch of the new cargo train services, trucks and tractors ferried containers and cargo to respective CFSs for storage, inspection, and clearance. For 'less than container loads' or containers, the CFSs move them into a warehouse to await collection.

The stations are self-administered units where all government agencies involved in export/import operations, including, customs, police, and sanitary inspectors, are housed for ease of business.

KPA has reserved 40% of all containers and cargo through Port of Mombasa for the railway cargo trains. The CFSs have to fight it out for a share of the other 60%. Inland ports' body the Container Freight Stations Association (CFSA) expects a shift in its members' operations, such as relocating to the Nairobi depot.

KPA uses the depot to provide shippers with dry

port facilities, with a throughput of more than 180,000 teu. "We could leverage [the railway's] efficiency to transport our goods to Nairobi stations, thereby creating a new revenue source," said James Rarieya, chairman of CFSA. CFSA CEO Daniel Nzeki, Rarieya has said, "Most CFS operators charge less on storage and hence business is made on volumes moved from the port to the customer's premises."

According to Peter Otieno of the Car Importers Association of Kenya, operations of many of the CFSs concentrated in Mombasa will be negatively affected as containers from the port are moved directly to the Nairobi depot faster and more cheaply.

Kenya Railways Corporation had initially indicated the tariffs for a 20-foot container from Mombasa to Nairobi would be reduced to USD500, 50% less than to haul it by road. A similar container from Nairobi to Mombasa will cost USD250, also 50% less than by road. "CFSs will have to market themselves vigorously to individual cargo owners and offer competitive rates," said Otieno. **PH**





Dietmar Hasenpuch: 5067177

# Shipowners make the leap to LNG

Significant ship orders give an indication as to how the bunkers landscape will develop in the run-up to 2020

**P**orts and shipping are readying themselves for the 2020 sulphur cap of 0.5 %, as IMO continues to reinforce the imminent deadline. IMO is now concerning itself with implementation of the regulation, which it said in November it would be addressing at its February meeting this year. IMO has also reiterated that flag and port states will be responsible for ensuring consistent implementation, along with the bunkering industry, which needs to ensure the supply of high-sulphur fuel for those ships using scrubbers.

Last year, however, saw a significant rise in commitment by shipowners to LNG bunkers, which in turn spawned a new bunkering industry alongside the traditional offering.

Such interest is raising the profile of LNG bunkers as the industry standard and increasingly ports will be required to offer some type of LNG bunkering facilities. According to IHS Markit data, 85 ports are either offering, have made the commitment to offer, or have proposals in place to provide LNG bunkers (see map, page 25). Some of these plans are as basic as over-quay bunkering from road tankers.

CMA CGM's announcement of an order for nine 22,000 teu vessels to be fuelled by LNG (see page 32) has set the trend of things to come. Such a significant order from a big name does offer some insight into how the LNG bunkers landscape may pan out over the next few years. The nine LNG fuelled vessels will be deployed on CMA CGM's French Asia Line (FAL 1) and current vessels on that route take on the majority of their bunkers at Singapore, Rotterdam, and Zeebrugge. The latter two are, at present, the most advanced in offering LNG bunkers with both carrying out conventional ship-to-ship operations. Other operations tend to be truck-to-ship from the quay.



**Shell's Cardissa, usually in operation in Rotterdam, was sent to Singapore for a trial LNG bunker operation at Jurong Island**

Krispen Atkinson, senior consultant with Maritime and Trade at IHS Markit, believes the new vessels will take on the majority of their bunkers at Singapore and top up in Europe, most likely in Rotterdam and Zeebrugge, where facilities are already established.

These three ports, along with Antwerp, were the founding signatories of a 2014 memorandum of understanding (MOU) to co-operate on LNG bunkering. Since then, the MOU has expanded to include the ports of Jacksonville in the United States and Ulsan, South Korea, along with the Norwegian Maritime Authority and Japan's Ministry of Land, Infrastructure, Transport and Tourism, but it is of note to Atkinson that this original group looks likely to form the nucleus of the vessels' bunkering plans.

Although Singapore, Rotterdam, and Zeebrugge are among the pioneers of LNG bunker operations, further investment and developments will be required if CMA CGM's planned vessels maintain the existing routes.

The vessels will have a fuel tank capacity of 18,000 m<sup>3</sup>. At present, Rotterdam's Gate terminal has a bunker vessel, *Cardissa*, that can carry 6,500 m<sup>3</sup> of LNG. Shell, the vessel's owner, also signed a timecharter agreement in August for a second bunker vessel with 3,000 m<sup>3</sup> LNG capacity. But these two vessels combined will not be enough to cater to for this new class of vessel.

In the Belgian port of Zeebrugge, bunkering vessel *ENGIE Zeebrugge* has an LNG-carrying capacity of 5,000 m<sup>3</sup> and performed its first bunkering operation in June last year to two pure car and truck carriers. *ENGIE Zeebrugge*, jointly owned by ENGIE, Mitsubishi Corporation, NYK Line, and Fluxys, loads LNG at Fluxys' LNG terminal. It also has a jetty specifically designed to receive very small LNG carriers.

Meanwhile in Singapore, bunker offerings are still in the trial stage and so far have been focused on truck-to-ship operations, with plans to progress to ship-to-ship operations. The Maritime and Port Authority of Singapore (MPA) announced in December that it had set aside another SGD12 million (USD9 million) for initiatives aimed at boosting LNG bunkering in Singapore. Half of this will co-fund the construction of new LNG bunker vessels to facilitate development of ship-to-ship (STS) LNG bunkering in Singapore. Successful applicants will receive up to SGD3 million (USD2 million) per LNG bunker vessel.

There are two LNG bunker supplier licensees in Singapore: FuelNG is a Keppel-Shell joint venture, while Pavilion Gas is an LNG trading group backed by Singapore state investment firm Temasek Holdings.

Each was awarded a bunker supplier licence in January 2016 and both are participating in an LNG bunkering pilot programme, launched by MPA in the first quarter of 2017.

FuelNG completed the first commercial LNG bunkering in Singapore in September. This was carried out by truck-to-shore LNG bunkering for *Hilli Episeyo*, the world's first converted floating

‘There won't be much kick-up on low-sulphur next year. I think the industry will stall until it really has to use it’

**Krispen Atkinson**, senior consultant, IHS Markit

liquefaction vessel. The transfer was conducted in accordance with the Singapore Chemical Industry Council Technical Reference for LNG Bunkering (TR 56). Launched in April 2017, the framework provides a safe, efficient, and sustainable technical framework for LNG bunkering operations.

The remaining funds will top up an existing co-funding programme by MPA to support the construction of LNG-fuelled vessels.

In June, FuelNG facilitated Singapore LNG Corporation's (SLNG's) gas-up/cool-down and reload operation at the Jurong Island terminal for Shell's *Cardissa*, which usually operates in Rotterdam.

In addition, FuelNG secured contracts from Keppel Smit Towage and Maju Maritime to provide LNG bunkering services for two dual-fuel LNG harbor tugs. The tugs are still under construction and the bunkering contracts will commence in this year when construction is completed.

Another container ship operator that is hedging its bets on LNG is United Arab Shipping Company (UASC), which merged with Hapag-Lloyd in May last year.

UASC ordered 17 LNG-ready container ships – 6 of 18,000 teu and 11 of 14,000 teu – the first of which was named in 2014.

In the United States, Crowley Maritime launched the first of two new container/ro-ro Commitment-Class ships powered by liquefied natural gas in early 2017 in Pascagoula, Mississippi. The second vessel should be delivered this year and both will be able to carry 2,400 teu and a mix of nearly 400 cars and larger vehicles.

A number of other types of vessel operator have shown an interest in the fuel, with the passenger ferry industry taking the lead as its fixed operating routes make bunker calls predictable.

LNG is particularly popular with ferries in Norway as the government supported the construction of LNG bunkering infrastructure, prompting Fjord Line and Viking Line to operate a number of passenger vessels that run on the low-sulphur gas. This number will grow next year when Hurtigruten adds two gas-powered polar exploration vessels to its fleet, with the possibility that it will order a further two vessels in the same class.



Henk Chayst 504713

**Engie Zeebrugge performed its first LNG bunkering operation in June last year**

In the cruise sector, Carnival Corporation awaits four LNG-powered cruise ships, to be delivered from 2019 onwards. In December, heavy-lift company Jumbo Shipping signed a letter of intent with China Merchants Industry Holdings for an LNG powered offshore construction vessel estimated to be delivered in the first quarter of 2020.

The port of Yokohama in Japan is now active in this area and wants to position itself as a regional bunker hub for LNG, hoping to capture business as the first or last bunkering hub on the trans-Pacific route. Also in 2015, it started operating an LNG-fuelled tug. The port is developing this infrastructure with the City of Yokohama in co-operation with national government and the private sector.

On 19 September, Skangas' *Corilius* bunkered LNG to a vessel in international waters between Denmark and Sweden. The receiving vessel was oil and chemical tanker *Fure West*, which in 2015 was retrofitted to run on LNG.

North Europe has been a pioneer of LNG as a fuel, with bunkers available in, for example, Belgium, Sweden, and Norway. Ports in the area have been early participants in the IAPH LNG bunkering project.

A European Union (EU)-funded Spanish/French project, Sustainable Atlantic Motorways of the Seas Using as Fuel for Engine LNG (S/F SamuelLNG), aims to accelerate the infrastructure that will enable the global implementation of LNG as a marine fuel and focuses on the Atlantic Corridor as one of the most

## The case for Gijón

### **CEDA offers an overview of a smaller port working with industry to offer LNG bunkers in Europe as part of the S/F SamuelLNG Project**

Each of the ports involved in the S/F SamuelLNG Project has different logistical requirements, dependent on likely demand, traffic, and operational and environmental conditions. They will use the results from the project studies to develop the best LNG facilities for their own particular set of conditions.

Smaller ports, and those anticipating lower LNG demands in the early stages, may be reluctant initially to invest in the LNG infrastructure. Adopting a strategy of waiting until the market is more mature and the returns on their investment can be assured is likely to leave them in a vulnerable position.

Port of Gijón, a 'core port' of the Ten-T network, has similar challenges and several years ago started a new action linked to the key European Union issue: the use of LNG as a maritime fuel. With that in mind, the key objective of the study, currently being conducted at Gijón, is to consider the feasibility of more affordable LNG bunkering services, specifically for ports used by smaller vessels or operating under lower LNG demand.

The Port of Gijón study is focused on evaluating the infrastructure and likely investment needed and will include designs for a flexible or mobile bunkering system

and recommend a corresponding business model for such ports.

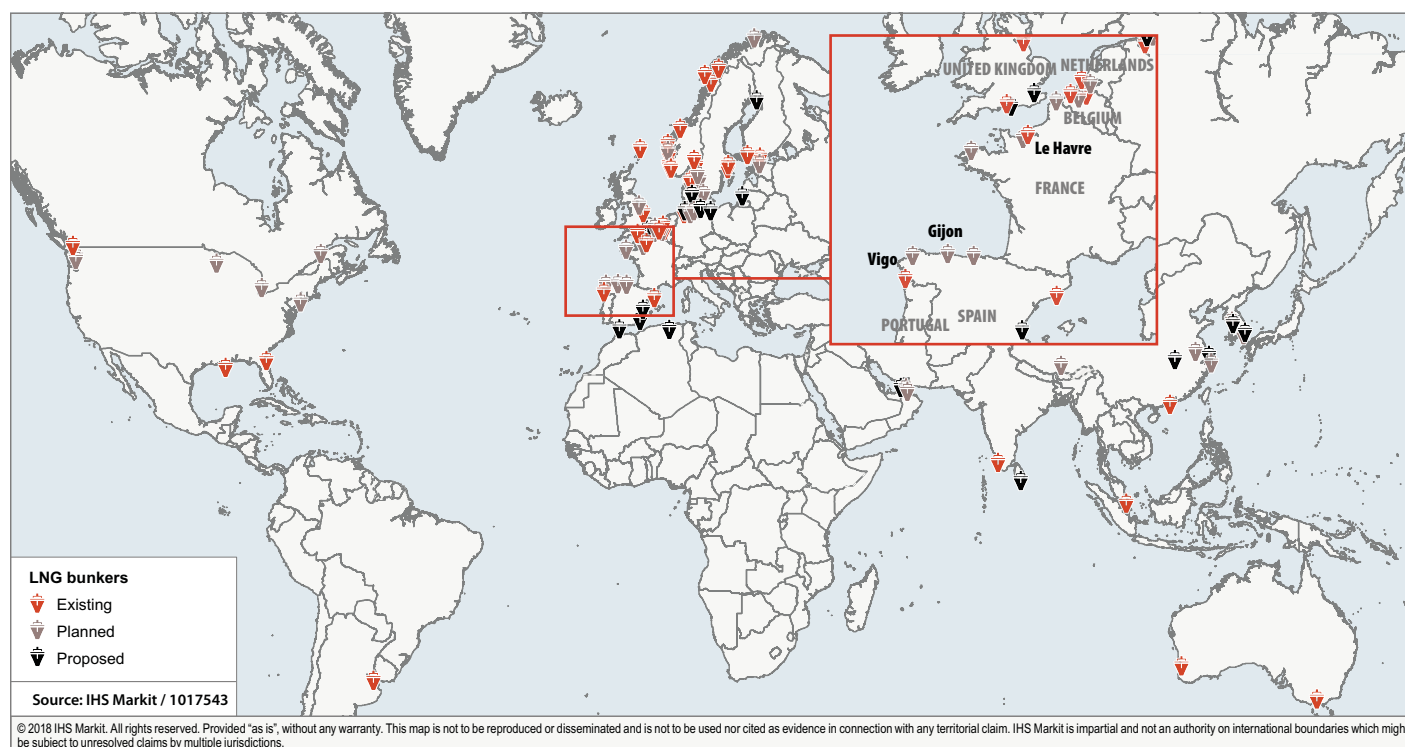
In collaboration with EDP, Gas Natural, and Ghenova Ingeniería, Port Authority of Gijón is designing the most suitable system based on the current low-demand scenario. Initial demand studies will consider both the maritime and road transport sectors in order to determine requirements for a global LNG logistic service that can be tailored to their needs. It will cover the options for low LNG demand and analyse the synergy between existing bunkering in maritime transport and refuelling in road transport to help identify the most economical solutions and appropriate locations for integrated bunkering activities.

In evaluating the effects of switching to LNG, the study will identify the potential difficulties presented by an LNG bunkering and refuelling service and consider the different options for small and medium-sized vessels. As part of Port of Gijón sub-activity, the final study will also define key operational parameters for safety and administrative conditions, for LNG bunkering and refuelling services operating under a low LNG demand model.

The Port of Gijón study will conclude with the production of a business model for implementing the most suitable system for LNG bunkering, which can be adapted to accommodate ports with similar challenges.

The sub-activity is on schedule to be completed in March this year.





important shipping routes of the EU (see map above).

The project is being co-ordinated by Dragages Ports and is supported by a consortium of 12 partners from along the Atlantic Arch, representing France, Spain, and the Netherlands.

The partners working alongside Dragages are five public port authorities – Nantes Saint-Nazaire, Le Havre, Rouen, Gijón, and Vigo. Also involved are Inova Labs, GHENOVA, Energias de Portugal (EDP), Gas Natural Fenosa, Suardiaz, and the Central Dredging Association (CEDA). The project is co-financed by the EU Connecting Europe Facility.

The main objectives of the project include preliminary studies such as LNG bunkering at the port of Nantes Saint-Nazaire and development of a mobile bunkering unit in Port of Gijón (see page 25) and a floating device in Port of Vigo.

Port of Vigo has worked with engineering design companies Inova Labs and GHENOVA to develop an innovative concept to provide LNG bunkering and on-shore power supply services from a barge. Another significant part of the project is the LNG retrofit of trailing suction hopper dredger (TSHD) *Samuel de Champlain*.

Port of Antwerp has been providing LNG bunkers via truck-to-ship (TTS) since 2012, but it understands that STS transfers are necessary to cater for larger vessels. The port authority's technical manager for the environment, Pieter Vandermeeren, told *P&H*, "We do not have LNG storage in the Port of Antwerp yet. The LNG is being collected by truck from the

Fluxys terminal in Zeebrugge or the GATE terminal in Rotterdam. We are, however, aware that truck-to-ship bunkering is a cost-effective solution for bunkering smaller volumes, which is the case for inland barges and shortsea vessels.

"We envision that larger seagoing vessels as well as shortsea vessels will be bunkered ship-to-ship. Such LNG bunkering vessels are very welcome in our port," Vandermeeren noted.

In addition, he explained that the port was keen to offer other alternative fuels, should its customers require them.

Indeed, LNG is not the only contender in the race. Owners can opt for low-sulphur distillate fuels, which would allow them to use their existing vessels without any technical modifications, or continue using heavy fuel oil (HFO) and filter the emissions through a scrubber. However, not all vessels are suitable to be retrofitted with scrubbers, and low-sulphur distillates are likely to be more difficult to source, and thus more expensive, than HFO and LNG.

The possible fly in the ointment would be if LNG costs increase, which seems unlikely in the short term. Atkinson said, "There won't be much kick-up on low-sulphur next year. I think the industry will stall until it really has to use it.

"What we may see is a gradual uplift in mid-2019 in places such as Singapore and Fujairah as owners start to look at switching ships, but the big push won't be until very late 2019, or even January 2020, as owners are forced to use it." **PH**



Kongsberg 9066367

# Automation on the dock

The first fully autonomous vessels will soon roll off the production line, transforming vessel efficiency and cost. **Stephen Cousins** looks into the implications of the technology for ports and how must they adapt to ensure navigational safety and smooth operations

**T**he idea that fleets of remote-controlled or fully autonomous ships will one day ply the seas is no longer the stuff of science fiction, and shippers, academics, and regulators are taking the first bold steps to usher in the innovative technology.

Last year, Kongsberg partnered with agricultural company Yara to build what they claim will be the world's first autonomous and zero-emissions ship. The container vessel, *Yara Birkeland*, will cost USD25 million to build, about three times the cost of the equivalent conventional box ship, and is expected to slash annual operating costs by

90% by eliminating the need for crew and fuel.

Rolls-Royce has revealed plans to develop a range of 60 m-long self-driving vessels, each with a range of 6,500 km, also signing an agreement to use Google's cloud-based artificial intelligence software to 'teach' object detection to systems used in autonomous ships. Meanwhile, Japan's largest container shipping company, NYK Line, is planning to test a remote-controlled vessel to travel across the Pacific Ocean in 2019.

Recognising the future ramifications of autonomous shipping, IMO's Maritime Safety Committee has



**Yara Birkeland is expected to reduce annual operating costs by 90%**

agreed to start to map out a new international regulatory framework for the safe operation of autonomous ships.

The rise of robotic ships will have major implications for ports that receive them. Maintenance activities currently carried out by crew would need to be transferred to ports, with an impact on berthing space, transit times, and dockworker skills. Automated vessels may require the installation of automated mooring systems and updated IT infrastructure to facilitate data communication. Meanwhile, the interaction of unmanned vessels with a varied array of existing traffic in ports will have serious ramifications for navigational safety.

Harmen van Dorsser, adviser for nautical innovation at Port of Rotterdam, told *P&H*, "We must ask ourselves how, as port authorities, we can welcome the ships of the future while ensuring that normal processes stay safe, smart, and smooth for everybody. There are big questions around the interaction between smart ships, 'stupid' ships, and regular ships in ports. How can we prepare ourselves and what information will we need to provide? Do we

“ We found that not many ports are working on this topic. We are trying to get information about the market ”

**Harmen van Dorsser**, adviser for nautical innovation, Port of Rotterdam

maintain our responsibilities for port control or is the future more about data and port information?”

Experts have predicted that remote-controlled ships will be in commercial use by the end of this decade. Despite recent technological advances and investment by shippers, there is little evidence of awareness among ports of how autonomous vessels could affect their operations.

Van Dorsser said, "We have spoken to the European Sea Ports Organisation asking how, together, as port authorities, we should act, but we immediately found that not many ports are working on this topic. Our intention is to create a network of port authorities to answer the question. We are trying to get information about the market, where it is going, the types of autonomous systems available, and how they will interact with other parties, such as VTS."

Rolls-Royce typically engages with ports on a project-specific basis, initially working with the shipowner or cargo owner to develop designs for remote autonomous ships, then opening discussions with ports on strategic routes. Oskar Levander, vice-president of innovation at Rolls-Royce, told *P&H*, "If you want to be a pioneer and a first mover with remote autonomous ships you require a lot of stakeholders involved in development. Ports are very much linked into this on our projects to ensure they are prepared for the vessels when they come."

The move towards autonomous ships aligns with the ongoing drive to automate container terminal operations, in which autonomously guided vehicles work to help reduce costs and waiting times. Unmanned ships could form another link in the chain, able to automatically relay data from ships in a standard format on location, distance from port, details of container numbers, locations on board prior to loading and unloading, and other factors.

"Today's communication technology [in the port context] is still far from the ideal in many cases," said Antti Kaunonen, president of automation equipment supplier Kalmar. "Everything inside a terminal is taken care of by the terminal operating system, but the poorest information exchange is related to the ships themselves when they arrive at the terminal. Often we don't have the information needed, especially on the specific locations of containers that need to be offloaded. It comes by fax, Excel document, or in another format."



Kalmar's cloud-based collaboration platform Xvela was developed to communicate container stowage information between ocean carriers and terminal operators and the company plans to expand it in future to synchronise communication between ports and autonomous vessels. Kaunonen said, "It's the whole logistic network you want to have under control to predict when a ship is going to arrive, whether it can optimise times to save fuel or take a different route if there are issues with the ship-to-shore cranes or other factors."

Navigation in ports is characterised by a vast number of traffic situations and, at present, VHF radio communication is paramount, used by VTS centres to contact vessels to understand their intentions and destinations and for inter-vessel communication.

Throw data-reliant unmanned autonomous ships into the mix and it raises questions on how they will communicate with existing ships and manoeuvre effectively to ensure safe navigation in a congested harbor. "An unmanned vessel that sails from Rotterdam to China could feasibly use a remote VHF connection to communicate with other vessels in its path, but that will not be practical given the complexity of ports," said van Dorsser.

Rolls-Royce envisions a near-term scenario in which partially autonomous vessels self-pilot and navigate when at sea, but as they approach ports a trained captain or pilot located in a remote operations centre would take over partial control. This individual would be able to communicate with the port and other ships over VHF radio and monitor/approve various navigational decisions made by the ship on approach.

"This is the way we would cope with the existing technology, but in an ideal future world, port VTS centres would expand their capabilities to share data with autonomous ships. Ports and ships would be fitted with situational awareness sensors to improve the safety of navigation," said Levander.

#### Rolls-Royce remote-controlled ship concept



Removing crew from vessels has major implications for the process of mooring and carrying out key maintenance tasks. Mooring is normally a labour-intensive task involving several crew on board and on the dock, but an autonomous vessel would need to handle the process using automated systems either located on the vessel or on the dock.

A ship-based system could use a robotic arm to pass a rope to a person on the dock to secure then tension it automatically. Alternatively, a fully automated system, similar in design to existing suction or magnetic mooring systems, could be fixed on the dock. Potential instability or clearance issues when docking larger vessels, due to wind or available depth could complicate the process.

"From an operation point of view, the latter would be the easiest way to deal with things, but it would require quite a high level of investment from the port. Whether it is worthwhile will depend on how frequently automated ships visit the port. A ferry could make a strong business case; vessels with longer voyages that visit less frequently could be harder to justify," said Levander.

A key operational model for any autonomous vessel is to carry out maintenance while the ship is in port because there are no crew available to do it at sea. Ports that receive autonomous vessels will need to enhance their servicing capabilities and have teams of suppliers and service technicians available to mobilise quickly to maintain ships when they arrive. This may require a reorganisation of facilities to provide more lay-down and berthing space for maintenance or the construction of new dedicated docks.

If autonomous ships spend longer periods of time in port it could pose a threat to logistical planning, but on the flip side it could create more jobs.

Maintenance may be a major stumbling block for the autonomous operation of deepsea vessels. Some have questioned the risks associated with travelling at sea for up to 25 days with no one on board to maintain systems, and the vast distances that would need to be travelled to reach a ship in trouble.

"McKinsey [a global management company] has predicted that by 2067, fully autonomous 50,000 teu ships will ply the seas, but I don't see that happening," said van Dorsser. He argued that, if something went wrong, every hour of delay could typically cost EUR3 [USD3.5] per container, including warehousing and other costs. And such delays could involve trying to reach a ship in the middle of the ocean. "It is not going to be cost-effective."

As developments in electronic sensors, digital connectivity, and intelligence raise the prospect of a fully autonomous fleet, the technology faces many practical, ethical, and regulatory barriers that could limit its ultimate impact. Ports must stay engaged and ahead of the curve to ensure their needs and concerns are taken into account. **PH**



Getty Images: 1017539

# Work together to beat cyber crime

Information sharing is one of the best ways to beat cyber criminals, say experts

**A**s automation takes a hold and becomes more embedded in the workings of ports and the logistics chain, opportunities for cyber criminals are increasing. Although it may be counter-instinctive, experts *P&H* spoke to believe that information sharing is one of the best ways to help mitigate cyber crime.

Part of the reticence undoubtedly comes from companies' fears of reputational damage and loss of earnings. This is understandable, with revelations that the Maersk cyber attack led to a USD300 million loss in profits, while shipbroker Clarksons' announcement of its cyber breach led to a 2% dip in share price.

As news of significant security breaches come to light, so too do the possibilities for automation. Raj Gupta, chief technology officer and senior vice-president of engineering at terminal technology provider Navis, told *P&H*, "As automation evolves we see it moving more and more into a larger end-to-end autonomous process. Not only are the automated ports working towards achieving higher moves per hour, but they are also looking to share operations and planning data with vessel carriers, and vice versa, to bring closer the [day when] fully autonomous vessels [can use] ports in future.

Utilising sensors, IoT [internet of things] data streams, GPS guidance, and machine learning frameworks, this will continue to evolve rapidly."

In October, the bill Strengthening Cyber Security Information Sharing and Co-ordination in Our Ports Act of 2017 was passed by the US House of Representatives and requires the Department of Homeland Security to facilitate increased information sharing about cyber security and establish voluntary reporting guidelines among maritime interests.

Norma Krayem, senior policy adviser and co-chair of the cyber security and privacy team at international maritime law firm Holland & Knight, said if ships decided not to comply with the proposed act, then in a year's time spot checks in US ports could begin to ensure compliance. Krayem "strongly encourages" information sharing, noting that the port and maritime industry has been fairly closed to sharing its cyber attack experiences.

Sharing such information does not make the victims of cyber crime vulnerable, she said. "What you did to defend your business can help everyone" and maritime and ports should look to other sectors, including banking and finance, communications, and energy that have learnt the value of cyber crime information reporting.

Attackers know that the industry is not reporting as widely as it should and are using this to their advantage. By not sharing, the industry is "playing into the hands of criminals", she cautioned. Ken Munro is an ethical hacker – someone who attempts to legitimately break into companies' IT systems to test their robustness – at Pen Test Partners. He recently released a blog about how container stowage plans shared by a container ship with a port could be used to destabilise the vessel. "Sharing [experiences of attacks] allows others to benefit from your experience and means everyone can be on the lookout for certain attack profiles," he told *P&H*.

He looks to the utilities sector as a prime example for the maritime industry to follow through schemes promoted by the UK's National Cyber Security Centre. "It was an industry that did not share information on cyber attacks for fear of the damage it could have for reputation and shareholders, but it now privately shares information about attacks with other utility companies so [the industry] can be on guard and prepare for a known cyber threat," he said.

Blockchain is being promoted as a relatively secure platform, but Krayem, while acknowledging it as an innovative technology and noting that it does give added cyber security, said there was no technology that could totally protect against cyber risks. Munro, too, sees the value, but said, "It's not necessary to implement blockchain to achieve a secure system. It may provide a helpful solution for some parts of the cargo shipping process in future, but there are far more basic security controls that shipping lines need to implement first."

"Attacks and risks will continue," said Krayem. We are living through a "technological evolution, and that means cyber risk". **PH**



# Wheels in motion for waste collection

Two rubbish gatherers are playing their part in improving water quality at Baltimore's Inner Harbor and have become a mascot for the waterway and port, writes **Scott Berman**

**The wheels of the two vessels have collected 640 tonnes of debris**

A novel programme featuring two so-called 'trash wheels' is helping to clear rubbish and debris from Baltimore's Inner Harbor while fuelling local outreach and community engagement. The effort is part of the non-profit Waterfront Partnership of Baltimore's Healthy Harbor initiative.

The two wheels have collected about 640 tonnes of debris flowing into the harbor since the first device went into operation after a pilot project in 2014.

The larger of the two devices, named Mr Trash Wheel and located in Baltimore's Inner Harbor, can collect as much as 22,679 kg of debris and rubbish daily, powered only by water current and, when there is not enough current, by 2,500W of electricity – roughly equivalent to the daily electricity needs of an average home in the

region – from solar panels on top of each device.

Maryland Port Administration (MPA), which administers nearby Port of Baltimore, a major vehicle, container, and general cargo operation, has supported the wheels, and, in its own separate effort, is preparing to launch a third wheel in the harbor.

It is spending USD450,000 on the new wheel, to be delivered and positioned off MPA's Masonville Cove dredged material containment facility, near the Patapsco River, in early 2018.

The Waterfront Partnership's effort, which has various corporate, governmental, foundation, and community supporters, is a creative, conspicuous catalyst for awareness of both the harbor's ecology, and, by extension, its economic importance. MPA representative Richard Scher said, "We are very happy to be part of the effort to clean our harbor."

The trash wheels are relatively small, but are helpful in meeting a common goal of making the harbor safe for swimming and fishing by about 2020.

The water quality problem stems not just from rubbish and debris, but also from tainted storm-water runoff that overwhelms the city's ageing sewer system and flows into the harbor. A long-term USD1.6 billion programme by the city to dramatically reduce pollution is now in the works.

In the case of the inner harbor, the water current comes from the Jones Falls stream, which runs through the city of Baltimore, partly beneath the Jones Falls Expressway, and empties into the harbor. The current





**Solar panels situated on top of the vessel supply power for when the current is insufficient to enable it to manoeuvre**

from Harris Creek, of which sections are channelled beneath Baltimore's Canton neighbourhood, powers a second, smaller device, called Professor Trash Wheel, which was positioned in the harbor at the mouth of the creek in December 2016.

The devices are located in strategic positions, which Adam Lindquist, director of the Waterfront Partnership's Healthy Harbor Initiative, explained are "the last chance to catch debris" before it is scattered into the harbor, where an open-water debris catch would be prohibitively expensive.

Instead, the devices stand at the mouths of their waterways with containment booms funnelling rubbish toward a raking system and a conveyor belt that is turned by the water current. The rake lifts material toward the belt, which carries it to a barge that is towed away and replaced when full, according to the Waterfront Partnership.

Lindquist said the devices together collect enough debris and rubbish to fill about 65 dumpsters annually. That consists of about 1 million cigarette butts, 689,000 polystyrene containers such as take-away coffee cups, hundreds of thousands of plastic bottles and grocery bags, countless twigs and branches, and other objects large and small – most notably a live, 1.5 m python, which was most probably an escaped or discarded exotic pet.

The devices were manufactured by US company Clearwater Mills. The larger, original version cost USD800,000, while the second cost a reported USD550,000. Each wheel costs about USD100,000 to operate and maintain annually, according to Lindquist. Monthly costs vary because the amount of rubbish collection, barge towing, and related expenses vary, depending on rainstorms, he explained. The more rainfall and runoff, the greater the amount of debris collected.

Funding for the first device came from grants, with MPA and utility company Constellation Energy paying about half the total. A variety of entities, foundations, and companies paid for the second device. Lindquist said internet donations continue to come in from individuals in about 40 US states and other countries.

The wheels are whimsical and conspicuous, with cartoon characters' eyes attached to their canopies, adding to their mascot status. They appear widely and inspire logos and slogans for fundraising products such as T-shirts. There is even a beer brewed in Baltimore called Mr Trash Wheel's Lost Python Ale, whose sales proceeds go to harbor clean-up efforts.

Mr Trash Wheel has social media pages on Facebook and Twitter, with the former providing a donation prompt. Those pages have had 50 million views so far and the devices have garnered considerable media interest locally and internationally.

As for the MPA, Scher said the port administration was pleased to have a trash wheel at Masonville Cove. It highlights the transformation of the Masonville site, which once housed a rubbish dump and whose containment facility receives about 382,000 m<sup>3</sup> of dredged materials each year from Baltimore's Inner Harbor. A portion of the site has been remediated into a nature reserve with wetlands and an educational visitor centre. The parcel sits just to the west of Port of Baltimore's Fairfield Auto Terminal, which will be expanded in a long-term dredged material reclamation project that is now under way. Additionally, the dredged material containment facility will be expanded gradually by raising its perimeter dykes, enabling the facility to take more material.

Masonville's annual capacity and that of another facility, Cox Creek, are relatively modest, with another placement site, Poplar Island, administered by the US Army Corps of Engineers, taking as much as 2 million m<sup>3</sup> annually. This is expanding in yet another project. Yet such steps illustrate long-term, multipronged approaches by the corps, MPA, and others to create, develop, and manage new spaces at various sites in the region, not only for materials dredged from navigation channels, but also for environmental benefits. An example is Poplar's other function: creating an important wildlife habitat, of a sort that has been disappearing in the region's Chesapeake Bay.

Much of the effort, such as underground sections of the waterways where the trash wheels are at work, may be out of sight to the average resident of the Baltimore area, just as the economic importance of Port of Baltimore to the city and region may be less than tangible to many. And even though Baltimore's Inner Harbor is a longstanding tourist attraction, Lindquist noted a general "lack of engagement between residents and their water" over many years. This is a situation the trash wheel programme is addressing, helping to change it in fun, even whimsical, yet strategic and telling ways. **PH**



Waterfront Partnership of Baltimore: 5065658



CMA CGM has made a commitment to LNG fuel for its 22,000 teu vessels

# CMA CGM opts for LNG to fuel giant container ships

French container line operator CMA CGM has announced that the nine 22,000 teu vessels it ordered recently in China will be powered by liquefied natural gas (LNG). It claims to be the first shipping company in the world to have chosen LNG to fuel very large container vessels.

"We have made the bold decision to equip our future 22,000 teu vessels with a technology firmly focused on the protection of the environment," CMA CGM chief executive Rodolphe Saade said. "By choosing LNG, CMA CGM confirms its ambition to be a leading force in the industry in environmental protection by being a pioneer in innovative and eco-responsible technologies."

The group said the new vessels

would use just a tiny amount of marine diesel oil for ignition purposes, otherwise they would be fully LNG-powered. It added that, in opting for LNG, it was going beyond the requirements to reduce the sulphur content of its marine fuel to 0.5% by 2020, as well as putting itself in line with the objectives of the Paris Agreement on climate change and the international talks currently taking place, notably at the International Maritime Organization (IMO) on the reduction of greenhouse gases in the shipping sector.

The use of LNG was a "real technological breakthrough", it said, which enabled shipping companies to reduce their carbon dioxide emissions by up to 25%, sulphur emissions

by 99%, emissions of fine particles by 99%, and nitrogen oxide emissions by 85%.

In addition, the performance of LNG vessels on the Energy Efficiency Design Index (EEDI) showed a 20% improvement over vessels using heavy fuel oil.

The group said it had already reduced CO<sub>2</sub> emissions per container transported per kilometre by 50% between 2005 and 2015 and planned to further reduce its CO<sub>2</sub> emissions by 30% in the period 2015 to 2025.

The new vessels are to be built at China State Shipbuilding Corporation's Hudong-Zhonghua Shipbuilding and Shanghai Waigaoqiao Shipbuilding and are due to be delivered from 2020. They were billed as the biggest container vessels ever

when the order was confirmed by the group in mid-September.

The order was unexpected, given the container shipping sector's current overcapacity problems, but CMA CGM competitor Mediterranean Shipping Company (MSC) followed up a few days later with an announcement that it planned to order 11 comparably sized vessels from South Korea's Daewoo Shipbuilding & Marine Engineering and Samsung Heavy Industries.

CMA CGM is not the first to order LNG-powered box ships. A small number of smaller LNG-powered container ships are already in service, including two 3,100 teu vessels operated by US domestic carrier Tote Maritime. Another 10 LNG-fuelled box ships are also on order.

The new CMA CGM vessels promise, however, to be the first intercontinental container ships to be LNG-powered, opening the question as to whether or not other carriers will follow suit. CMA CGM said its decision to use LNG had been the result of work it carried out since 2010, notably with French energy companies ENGIE and Total, and LNG-containment specialist Gaz Transport & Technologies (GTT).

It added that the architecture of the new vessels would not be different from others of their type. LNG tanks with a capacity of 18,000 m<sup>3</sup> will be situated under the forward superstructures, with the LNG management and control centre situated on the upper deck.

The vessels will use dual-fuel engines produced by China's WinGD group.

## Notable numbers



22,000 teu

Size of CMA CGM ships that will be LNG-fuelled

700

Ballast deficiency notices issued by USCG in five years

Ludovic Gérard, vice-president of the group's CMA Ships subsidiary, has revealed that, in taking its decision to power the new vessels with LNG, CMA CGM has sacrificed some 400 container slots on each vessel to make way for the 18,000 m<sup>3</sup> LNG tanks.

He said this reduction in the number of container slots had been taken into account in calculating the new vessels' 22,000 teu commercial cargo capacity.

He expressed confidence that LNG supply infrastructure would be sufficient to meet the group's needs by the time the first ship comes into service. He pointed out that LNG supply infrastructure already existed and was serving car carriers and ferry vessels.

Bunkering vessels are already in service or on order, he said, and the group has opened discussions with the major LNG suppliers regarding the provision of additional facilities to meet its needs.

Nonetheless the group acknowledged that its decision presented potential LNG supply problems.

It said it was currently working with partners on an "operational, regulatory, and technical framework" that would enable vessels to receive LNG without their commercial operations being disrupted. It added that it was committed to the development of LNG infrastructure, notably in the form of bunker barges and competitive, commercial supplies of LNG in ports where its ships call (see p22).

## MOL gas-fuelled bulker wins first approval

Japan's Mitsui OSK Lines (MOL) said on 6 December that classification society Lloyd's Register had granted approval in principle for an LNG-powered bulk carrier that the shipping line has jointly designed with utility company Tohoku Electric Power and Namura Shipbuilding.

The trio recently conducted a hazard identification study upon completing the basic ship design.

This is the first joint project by three companies – a shipping company, cargo owner, and shipbuilder – to have won approval in principle for a vessel powered by LNG. The design ensures sufficient cargo capacity without making the hull larger by installing the LNG fuel tank at the

stern. The hazard identification study is looking at installation of the tank cover in a way that prevents an onboard fire from spreading to the LNG fuel tank.

In due course, MOL will contract a bulk carrier of this design at Namura for a long-term coal shipping contract with Tohoku Electric Power.

Amid a regional push towards LNG bunkering before the imminent cap on sulphur content in bunkers by 2020, MOL has been actively studying the design of LNG-fuelled bulk carriers.

In January, it launched a joint study called the Green Corridor to explore the design of LNG-fuelled Capesize vessels, with classification society DNV GL,

China's Shanghai Merchant Ship Design and Research Institute, and Australian mining giants BHP Billiton and Rio Tinto. These initiatives are part of MOL's Ishin Next-MOL Smart Ship project.

"As stricter standards on exhaust emissions from merchant vessels have taken effect around the world, LNG, which can significantly reduce not only SO<sub>x</sub>, but also CO<sub>2</sub>, which is a cause of global warming, and NO<sub>x</sub>, which is a cause of acid rain, is expected to see wider use as vessel fuel.

In addition to researching the feasibility of using LNG as fuel, MOL strives to reduce its environmental impact, while providing safe, reliable transport services," said MOL.

## Ports and Terminals handbook updated

A new edition of Delft Academic Press' handbook *Ports and Terminals* is available for purchase.

According to Prof Han Ligteringen, who was involved in the update, the book now includes the latest developments in the field of masterplanning, waterway design, and container terminals.

The handbook is aimed at port planners and is a comprehensive guide to all technical, economic, and environmental aspects that play a role in the preliminary feasibility study, the masterplanning, and the basic design of ports, terminals, and offshore marine facilities.

According to Ligteringen,

updates from the original (2012) edition include:

- Planning methodology – provides explanations of how the studies carried out by the project owner best fit within the applicable legal framework;
- Financial and economic studies – this text has been expanded and the central function of the business case in the optimisation of the project has been elaborated;
- Sustainable port development – new sections on this and adaptive port planning;
- Approach channels: this chapter has been updated based on the report by PIANC on this subject (*Harbour Approach Channel, Design Guidelines 2014*) that was prepared

in close co-operation with IAPH, IALA, and IMPA;

- Containers – this section includes the latest developments in container shipping and the design of container terminals.

There are only minor updates to the general cargo, multipurpose, ro-ro, and ferry terminals sections, as well as liquid and dry bulk terminals, fishery ports, and marinas.

Ligteringen said, "Like the first edition, the book serves as study material for graduate students, but will also be most useful for professionals in the port sector, to provide insight into the planning process and guidance on the design of facilities."



USD14 billion

Potential cost of California ports' Clean Air Action Plan

3 million teu

Annual handling capacity at COSCO-PSA Terminal in Singapore



# Competition worries persist as EU CO<sub>2</sub> reporting starts

The European Union's (EU's) new carbon data reporting scheme, which began on 1 January 2018, is a lingering concern for shipowners competing aggressively for customers' cargo.

The monitoring, reporting, verification (MRV) regulation requires shipowners to submit a CO<sub>2</sub> monitoring plan to external verifying organisations, such as classification societies, by August 2018. This has raised concerns regarding the sharing of proprietary information among shipowners.

The actual monitoring and reporting includes annualised ratios of fuel consumption and CO<sub>2</sub> emissions with respect to distance travelled and cargo carried, which will be published and made public by the European Commission.

Vessel operators have maintained, since the adoption of the EU MRV requirements in 2015, that such cargo information is considered commercially sensitive and that making it public could influence competition among carriers.

In the run-up to the start of data collection, vessel owners were concerned about the potential ramifications.

"We have huge concerns as an industry, and not just from my members," Chamber of Shipping of America (CSA) president Kathy Metcalf said. CSA represents US-based companies



Shipowners fear EU carbon data reporting may compromise competition

that own, operate, or charter tankers, container ships, and bulkers, in both the domestic and international trades. "We have a lot of issues with the cargo data being required, because it's proprietary, and companies compete [to carry] certain commodities on the same trade routes," Metcalf said.

Metcalf and other shipowner interests also continue to be concerned about the potential for duplicated reporting by shipowners if the EU regime remains separate from a similar carbon reporting regime required by the IMO, which comes into force on 1 January 2019.

"It should be made certain that the regulation is aligned with the IMO framework," according

to the European Community Shipowners' Associations. "This will ensure that European shipping will be covered by a single system, in an efficient manner, without double work."

Class society DNV GL, an official verifier of EU MRV data, said in a statement last year that although the industry expected the EU and IMO regimes to be aligned in the future, the two schemes would most probably be "applicable in parallel" for a number of years. "It is too early, however, to specify the details and practical implications of having two similar, but not identical, regimes during this period," DNV GL noted.

The IMO is establishing an initial carbon strategy in 2018, to be finalised by 2023, after real-time

data on carbon emissions have been collected and analysed.

London-based International Chamber of Shipping (ICS) has suggested longer-term CO<sub>2</sub> reduction objectives that include maintaining international shipping's annual total CO<sub>2</sub> emissions below 2008 levels – 2008 was the year in which shipping-sector carbon emissions reached their peak.

Speaking at the UN Climate Change Conference in Bonn in mid-November, Simon Bennett, ICS director of policy, praised a provisional decision by the EU on 13 November to not include shipping within the full scope of the regional EU Emissions Trading System (ETS), a "market-based measure" that vessel operators consider inappropriate for global shipping.

"This is because of the huge risk of creating serious market distortions and the administrative challenge of incorporating tens of thousands of ships operated by thousands of [small and mid-sized vessel operators] into a discredited system, which the EU is already struggling to reform," Bennett said.

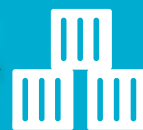
He added that, in the event that market-based measures were considered as part of the IMO carbon strategy, the EU's decision made it more likely that the type of market-based measure to be considered would be a global fuel levy.

"Compared with the nightmare of a regional ETS, a global fuel levy would clearly be the preference of the vast majority of shipowners, should a market-based measure ever be imposed on them," he said.

## Notable numbers

1.5 million teu

Lomé's present annual throughput



2–3%

Projected container transport growth for 2018

## UAE first Arab nation to sit on IMO Council

The United Arab Emirates (UAE) has become the first Arab nation to win a Category B seat on the 40-member IMO Council, following biennial elections that took place on 1 December during the week-long 30th Session of the IMO Assembly in London.

Abdullah Al Nuaimi, UAE minister of infrastructure development and chairman of its Federal Authority (FTA), said, "[We] are pushing to continue the country's competitive role in global trade and the international economy, especially in our continuing efforts to expand the development of local ports with a total investment of AED157 billion [USD43 billion] over the coming years."

The win, which he said would

enhance the UAE's contribution to the development of international laws and regulations promoting global trade, transport, and shipping, was the result of an election that included nominees from 11 leading countries in the international marine trade sector, including Germany, Sweden, the Netherlands, Brazil, Argentina, France, and Australia.

The 40-member IMO Council for the two-year period 2018 and 2019 involves 10 Category A leading maritime nations, 10 Category B states with 'the largest interest in international seaborne trade', and 20 Category C countries representing different global geographic areas with 'special interests in maritime transport or navigation'.

Shailesh Garg, general manager at Drewry Maritime Services India, told *P&H* that port terminal expansions alone would not account for the size of the planned investment figure cited by Al Nuaimi, but that the improvement of port efficiency and capacity, creation of inland container depots, rail, and even Hyperloop infrastructure, could be part of the mix.

"They can do it, but I don't know what the plan is," he said.

The UAE and other Arab nations are stepping up involvement in the international shipping sphere.

An IMO workshop took place in Abu Dhabi from 31 October to 2 November 2017 to assist with ship surveys. Under IMO treaties, ships can be surveyed or certified

either by officers of relevant flag states, or by recognised organisations acting on their behalf. Countries delegating surveys and certification to recognised organisations need to recognise, authorise, and monitor these organisations, the IMO said.

It added, "The event [assisted] participants from Arab and Mediterranean states to meet their responsibilities under IMO's Recognised Organisation Code, which entered force in January 2015."

In January 2016, the IMO convened a meeting in Jeddah, Saudi Arabia, attended by 18 Arab and African states, as well international observers, to revise the Djibouti Code of Conduct on the repression of piracy, armed robbery against ships, and illicit maritime activity in the western Indian Ocean and the Gulf.

## North American container sanitation rules could go global

A North American initiative to ensure invasive species are not spread on or in containers means container lines have to be vigilant in inspecting the boxes, according to the president of the Shipping Federation of Canada (ShipFed), Michael Broad.

The initiative was launched by the US Animal and Plant Health Inspection Service (APHIS) and the Canadian Food Inspection Agency (CFIA), and is expected to gain global acceptance.

Broad said the best practice outlined in the initiative had mainly fallen on shippers but that carriers also had a clear role in making sure that no

empty container returned to a terminal had any packing or extraneous material inside it. He added that there should be no growths or build-up of dirt on the interior or exterior of the box. "If there is, send it back to the customer for cleaning."

APHIS and CFIS jointly released the guidance on practices to ensure sea container cleanliness after consulting with shippers, carriers, and supply chain partners since 2016. The idea is for the industry to adopt best practice voluntarily rather than have it imposed on them by regulation.

Bob Ballantyne, president of the Freight Management Association

(FMA) of Canada, said that for now the result of this would be a reduced chance of shipments being held up at ports of entry or other inspection points while inspectors ensured the containers were not contaminated with invasive species.

He said that inspections of containers would become "a lot more rigorous to prevent the spread of invasive species", adding that they would "focus on what's on and inside the containers".

Participants in the consultations included FMA, representing the Global Shippers' Forum, the US National Industrial Transportation League, and

the World Shipping Council.

A precedent for voluntary compliance with the cleanliness regulations can be found in industry co-operation to meet standards on safe loading of containers, ensuring that they are not top-heavy, putting them at risk of falling over, or in danger of having goods fall out when opened.

The IMO supported that initiative and is expected to do the same with the sea container cleanliness initiative, Ballantyne said. "North American shippers exporting products in containers should also begin following the recommended practices."

**USD40 million**

China's participation in Africa's transport sector



**638.5 tonnes**

Rubbish collected in three years by Baltimore's 'trash wheels'

# US gets tough on ballast water failures

Ships trading in the United States should ensure that crews are documenting communications with port state control and with their ballast water equipment manufacturer to avoid penalties for inoperable equipment, according to the US Coast Guard (USCG).

In a blog post published on 1 December, John Nadeau, the USCG's assistant commandant for prevention policy, warned shipowners that by shifting from implementation to enforcement mode, the agency was taking a harder look at whether ship crews are taking appropriate measures when their ship's ballast water filtering equipment is not working.

"Contingency planning should be included in the vessel-specific ballast water management plan [BWMP]," Nadeau wrote. "The BWMP should provide succinct directions and alternate measures to be taken if a ballast water management system [BWMS] is inoperable or the vessel's intended compliance method is unexpectedly unavailable."

The US ballast water regulation requires vessel owners or operators to inform the nearest captain of the port (COTP) as soon as possible to identify options if a BWMS stops operating properly during a voyage. Although not required by the regulations, "I recommend that the vessel owner or operator also contact the destination COTP as soon as practicable to identify options for compliance with the ballast water



US ballast rules are that crews must take 'appropriate measures' if ballast water filtering equipment is not working

regulations," Nadeau advised.

The COTP will determine if attempts to repair the BWMS are "supported by communications with the manufacturer" and whether other compliant ballast water management methods are available, he said. A COTP may ask the representative what the vessel's BWMP directs the crew to do, as well as how the representative plans to comply with the regulation.

"Additional information the COTP may request includes the length of time the system has been inoperable, the suspected cause of failure, repairs already completed, a schedule for proposed corrective action, and other operational data," Nadeau

said. The COTP will then use that information to confirm that the BWMS meets an exception under the regulation for being "unexpectedly unavailable".

Between 2012 and 2017, the USCG issued nearly 700 vessel deficiency notices for ballast-related incidents of non-compliance. The penalty can range from a warning letter to a fine of up to USD38,175.

The US regulation is distinct from requirements of the IMO Ballast Water Management Convention, which came into force on 8 September.

However, because the IMO has extended the compliance schedule for some vessels to September 2024, crews may be

tempted not to use the BWMS on a regular basis, which can lead to operational problems.

Some shipowners experiencing problems have complained that after they have spent millions of dollars for installations on their fleet, equipment manufacturers have provided minimal support.

But an inoperable BWMS will be treated like other pollution prevention equipment that fails or cannot perform its intended function as designed, Nadeau cautioned.

"Inoperability is a compliance issue. It is not a valid reason to discharge unmanaged ballast to US waters, nor is it grounds for an extension to a vessel's compliance date."

## Notable numbers

2 million m<sup>3</sup> Predicted volume of LNG to be bunkered by ships by 2030



2 Members joining IAPH since November



## UK to retain port of refuge arrangements, insurers told

The man responsible for the United Kingdom's response to maritime incidents has said he believes it will be business as usual after Britain's exit from the European Union (EU).

Hugh Shaw, UK Secretary of State's Representative for Marine Salvage and Intervention (SOSREP), was speaking to insurers at Lloyd's on the future of port of refuge arrangements.

He was asked how the country's relationship would work with the EU member states once Britain left the European Union and, with it, the single market's laws and conventions. He said he believed the role of the UK in the European maritime industry was such that he expected it to still play a major part.

"I hope things will not change," he said. "The UK has

been extremely influential in modelling the regulations we have in place. I am looking at a bridging document that will tie in with the European Union.

"I hope we will continue to add to the debate and continue the close relationships with the European states."

Shaw said the handling of the loss of *Prestige* in 2002, which saw the vessel denied a place of refuge in Spain and sent out to sea where it broke up and caused extensive oil pollution in Spain, France, and to a lesser degree the United Kingdom, was the catalyst for change.

Following the loss, the European Union and the IMO focused on the issues surrounding ports of refuge and the need for more consistency. The European Union created a

set of directives and these are now being used as the basis for other regional agreements across the world, he said.

Looking to the future, Shaw said the key concern was the sheer size of new container vessels. He cited the difficulties the UK encountered with the salvage operation for *MSC Napoli*, which was beached in southern England.

"*MSC Napoli* had 2,300 units on board and we now have vessels such as *OCCL Hong Kong* at 21,413 units," he explained. "It is not only the scale of the task but also the likelihood that the more containers on board, the higher the level of dangerous cargoes that the vessel will be carrying."

He said that while progress continued, there was a need for shipowners and insurers to work

with the authorities at the time of any incident. "There needs to be more transparency," he explained. "We need to know what is on the vessel in terms of cargos and we continue to have issues not only around misdeclaration, but also reluctance by owners and insurers to share cargo details with the authorities and salvors, citing confidentiality."

"We have to know what is on the vessel to not only help protect the safety of the vessel and the crew but also the salvors who will then board the vessel."

He added, "The future is looking brighter, as there ... has been significant progress since *Prestige*, but we cannot afford any complacency. There remain challenges, and the maritime sector has to work together in times of crisis."

## Houston pilots call for bigger fireboats

Two Houston pilots who have been recognised by the IMO for their role in protecting the lives of the crew of crude oil tanker *Aframax River* during a 90-minute blaze have expressed the hope that the incident will prompt better firefighting facilities in the Houston Ship Channel.

Capt Michael McGee and Capt Michael Phillips averted a major tragedy when 57,943 gt *Aframax River*, which they were piloting, broke down and burst into flames after colliding with mooring dolphins at about midnight on 6 September 2016.

The pair, who between them have 45 years of piloting experience, were able to manoeuvre the vessel to a safe location without loss of life and avoiding serious damage to the pier structure and surrounding petrochemical facilities, despite being surrounded by a wall of burning fuel for nearly 90 minutes.

Noting that it took an hour for fireboats to reach the blaze as the vessel was positioned in the middle of the 80 km channel, McGee called for larger fireboats to be stationed in the area. He said, "In Houston, with

all its traffic and chemical ships, we need something like this. If anything happens as a result of this incident it should be this."

Both Philips and McGee received the 2017 IMO Award for Exceptional Bravery at Sea on 27 November. The pair explained that McGee managed to manoeuvre the stricken and blazing vessel away from surrounding ships and facilities, while Phillips co-ordinated communications and firefighting efforts with the United States Coast Guard and numerous local fireboats.

The size of the tanker meant it required two pilots to manoeuvre. McGee said, "It was invaluable to have Captain Philips there. With the size of the vessel it was all I could do to get the ship into a safe area."

The pair added that the safety risks had increased as larger vessels have become a more common occurrence in the Houston Ship Channel. Philips said, "Shipping channels are not getting any bigger but ships are getting a whole lot bigger and faster. We've previously never had ships of this size. ... No one asked us about 300m ships. We would have said to dredge a new port far away, but no one bothered to ask us."

400 ha

Size of Baku's  
planned  
logistics park



27

Approximate number of  
LNG-fuelled container ships  
in service or on order

# IAPH aims to be promoted more widely

Yariela Shiara Stevens Kelly, technical adviser to the Permanent Mission of Panama in the IMO, was appointed as chair of the IAPH Communication and Port Community Relations Committee by President Santiago Garcia Milà. Stevens' appointment follows the resignation of Martin Byrne, CEO of Port Nelson.

Stevens is fully committed to promoting IAPH's aim to enhance its reputation as a platform for discussion on port-related issues and to facilitate information-sharing on sustainable practices that contribute to the improvement of ports and harbors, the industry and the sector, she told *P&H*. "I am sure that these objectives will be fulfilled to

the extent that the dialogue is facilitated and the relationship among our members is developed more and better in a way that the physical distances are shortened and the commitment of each of them will be improved."

Stevens' current position gives her the opportunity to actively participate in numerous committee and subcommittee meetings at IMO, interacting with stakeholders from different countries and members of IMO staff. At these meetings she has also taken on leadership roles, directing the discussion of maritime and port issues, making her well suited to champion IAPH's aims and ambitions.

She said, "I appreciate the



Panama Maritime Authority

appointment as chair of the Communication and Community Relations Committee of the IAPH, which is ... a task I will undertake making all the contributions that my abilities

and knowledge allow me."





Stevens believes her experience within IMO is good starting base to "project IAPH as "the global ports forum for industry collaboration and excellence".

## Membership notes




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

### Associate members

#### En Punto Solutions Chile

 Address: Alcantara 200, Piso 6, Las Condes Santiago 7550159, Chile  
 Telephone: +56 22 368 45 98  
 Email: lapp@enpuntosolutions.com  
 Website: www.enpuntosolutions.com  
 Representative: Katherine Lapp, principal

#### Silvina Zhivkova Bakardzhieva

 Address: 72A, Floor 6, app 16, Varna 9000, Bulgaria  
 Telephone: +359-879856313  
 Email: silvinazhivkovabakardzhieva@gmail.com

## IAPH Training scholarship

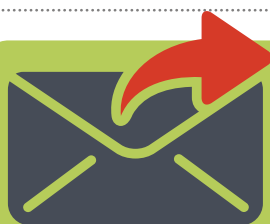
The IAPH training scholarship is an exciting opportunity for two members of staff from IAPH regular member ports in developing countries to attend advanced short-term port training programmes of a week or so in length, to be exposed to the latest advances in port management and operation and to expand their network of contacts.

Successful candidate can choose from the following IAPH-affiliated training institutes: PSA Institute, Singapore; IPER, Le Havre, France; APEC, Antwerp, Belgium; Lloyd's Maritime Academy, London, UK; IHE Delft, the Netherlands; TTPM International Consultants,

London, UK; and Marseille Fos Port Training Institute, France.

Each year, USD10,000 is budgeted to fund two scholarships, each of USD5,000, to cover tuition and course fees and, if deemed necessary, economy international air travel. Approved applicants should make all necessary arrangements by themselves, including registering on the approved course and payment of the tuition fees. If international travel is required, the applicant is recommended to seek support from his/her port.

**MORE INFO:** [www.iaphworldports.org/awards](http://www.iaphworldports.org/awards)



## We value your opinions

Do you have strong views about any of the articles in *Ports & Harbors*?  
 Are there other industry issues you feel strongly about?

**Email your views to [ph@iaphworldports.org](mailto:ph@iaphworldports.org) and we'll be happy to include them**

2018

2019

2020

# Dates for your diary

A selection of forthcoming maritime courses and conferences



## January

**Commences 22:** Certificate in Container Shipping  
Tutored distance learning  
[www.lloydsmaritimeacademy.com](http://www.lloydsmaritimeacademy.com)

**23-26:** Mauritius Maritime Week 2018  
Mauritius  
[www.transporevents.com](http://www.transporevents.com)

**29-9 Feb:** APEC Seminar on port business development and marketing  
Antwerp, Belgium  
[apecporttraining.com](http://apecporttraining.com)

**30-31:** AAPA Seminar on Planning for Shifting Trade  
Tampa, Florida, USA  
[www.aapa-ports.org](http://www.aapa-ports.org)

**30-1 Feb:** PEMA Annual General Meeting  
Bilbao, Spain  
[www.pema.org](http://www.pema.org)

**Commences 31:** Certificate in Maritime Environment Management  
Online learning  
[www.lloydsmaritimeacademy.com](http://www.lloydsmaritimeacademy.com)

## February

**Commences 2:** Certificate in Trade and Transport Law  
Tutored distance learning  
[www.lloydsmaritimeacademy.com](http://www.lloydsmaritimeacademy.com)

**5-9:** IMO Sub-Committee on Pollution Prevention and Response (PPR)  
London, UK  
[www.imo.org](http://www.imo.org)

**5-16:** APEC-JNPT Seminar on Train the trainer  
Navi Mumbai, India  
[www.jnptantwerpporttraining.com](http://www.jnptantwerpporttraining.com)

**6-7:** Breakbulk Middle East  
Abu Dhabi, UAE  
[www.breakbulk.com](http://www.breakbulk.com)

**12-16:** APEC-JNPT Seminar on Master planning and feasibility studies  
Navi Mumbai, India  
[www.jnptantwerpporttraining.com](http://www.jnptantwerpporttraining.com)

**12-16:** Strategic Port Concession Policy, Operations & Management  
London, UK  
[www.ttpminternational.co.uk](http://www.ttpminternational.co.uk)

**19-2 Mar:** APEC Seminar on IT & Port Community Systems  
Belgium, Antwerp  
[apecporttraining.com](http://apecporttraining.com)

**21-22:** IMLA-MLAS Joint Conference 2018  
Mumbai, India  
[www.mlas.org.sg](http://www.mlas.org.sg)

**27-29:** CILT ASEAN Forum 2018  
Selangor, Malaysia  
[www.transporevents.com](http://www.transporevents.com)

## March

**1-2:** AAPA Public Relations Workshop  
Mobile, Alabama, USA  
[www.aapa-ports.org](http://www.aapa-ports.org)

**4-7:** 18th TPM Annual Conference  
Long Beach, California, USA  
[events.joc.com](http://events.joc.com)

**5-9:** 'Dry Port' Planning, Operations and Management  
London, UK  
[www.ttpminternational.co.uk](http://www.ttpminternational.co.uk)

**5-16:** APEC Seminar on Legal Aspects in Port Operations and Trade  
Antwerp, Belgium  
[apecporttraining.com](http://apecporttraining.com)

**5-23:** IHE Delft Short Course:  
Coastal and Port Structures  
Delft, the Netherlands  
[www.un-ihe.org](http://www.un-ihe.org)

**6-7:** AAPA Seminar on Smart Ports  
Oakland, California, USA  
[www.aapa-ports.org](http://www.aapa-ports.org)

**18-20:** MARLOG 7  
Alexandria, Egypt  
[marlog.aast.edu](http://marlog.aast.edu)

**20-21:** AAPA Spring Conference  
Washington, DC, USA  
[www.aapa-ports.org](http://www.aapa-ports.org)

**20-22:** 5th Pacific Ports Clean Air Collaborative (PPCAC) Conference  
Los Angeles, California, USA  
[www.ppcac.org](http://www.ppcac.org)

**22-23:** WPSP Launch Event  
Antwerp, Belgium  
[www.iaphworldports.org](http://www.iaphworldports.org)

**26-29:** Breakbulk China  
Shanghai, China  
[www.breakbulk.com](http://www.breakbulk.com)





Port Klang Authority: 5065452

# Quest to stand among the best

**Captain Subramaniam Karuppiah**, general manager of Port Klang Authority, writes that radical reform of Malaysia's port sector has made Port Klang the 11th-busiest port in the world, but it has aspirations to be in the top 10

Carefully thought-out initiatives and policies such as the privatisation of ports, transformation of the regulatory environment, implementation of change programmes in port operations, and the adoption of supply-driven policy in capacity building has, over the years, contributed to the expansion and development of Port Klang Authority.

Notwithstanding the challenges faced by the port sector and unfavourable global economic conditions, Port Klang has enjoyed tremendous growth with its approach to business and ability to identify and take advantage of opportunities.

Strategically located in the Strait of Malacca, one of the world's busiest shipping lanes and centrally positioned within ASEAN, Port Klang offers efficient port services coupled with one of the most competitive rates in the region and a variety of options to meet customer requirements. The port has a sizeable land bank that can be made available for cargo generation and value-added activities promoting regional distribution.

Also in the pipeline is the development of a third terminal at Carey Island, comprising an integrated maritime city offering commercial, industrial, and logistics facilities, all of which will help Port Klang become a preferred logistics gateway.

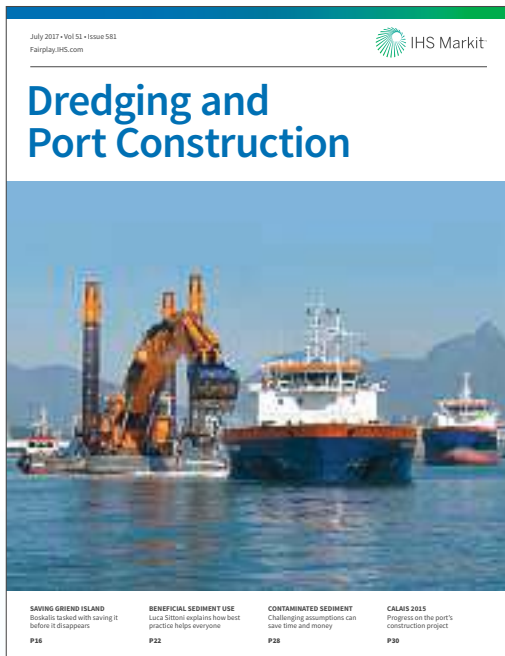
Under Malaysia's National Logistics and Trade Facilitation Masterplan, which aims

to provide a strategic direction to improve the productivity and competitiveness of the country's logistics industry, the government of Malaysia has earmarked Port Klang for further infrastructure enhancement with a long-term plan to transform it into a regional maritime centre.

Another initiative set to boost Port Klang further is the implementation of a digital free trade zone (DFTZ), which leverages Alibaba, the e-commerce platform to connect Malaysian exporters to China's huge consumer market. As part of Alibaba's electronic world trade platform initiative, the DFTZ aims to help small and medium-sized enterprises collaborate in end-to-end cross-border trading minus the complex regulations, processes, and barriers. Phase one of the initiative was recently launched to facilitate growth of transshipments of air cargo volumes and in its second phase the initiative will involve Port Klang, where bulk goods can be traded through the e-commerce platform and moved directly via the port.

Port Klang is a leading member of the China-Malaysia Port Alliance, part of China's Belt and Road initiative. This, combined with its 120-year track record to overcome trials and tribulations, will give it the strength and resilience to prevail over the numerous challenges ahead. Port Klang is confident that it has what it takes to be among the best ports in the world. **R&I**

“The government of Malaysia has earmarked Port Klang for further infrastructure enhancement with a long-term plan to transform it into a regional maritime centre”



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