



PORTS HARBORS

Official Journal of the International Association of Ports and Harbors

A giant challenge

Ports try to keep up with megaship needs

Top port projects of 2016

Notable expansions and renovations

Soundings bring success

Hydrographics' key role in Nigeria and Suez

Fuelling change

Bunker choices for effective emissions control

Buying and selling used heavy duty trucks worldwide



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container handling and port equipment



D3447
Kalmar DRF450-65S6
Year of manufacture: 2013



D3435
Kalmar DRF450-65S5L
Year of manufacture: 2011



D3378
Kalmar DRF450-60S5
Year of manufacture: 2010



D3408
Kalmar DRS4531-S5
Year of manufacture: 2006



D3415
Kalmar DRD420-65S5
Year of manufacture: 2002



DK086
Linde C4540TL
Year of manufacture: 2013



DK085
Linde C4540TL
Year of manufacture: 2012



D3438
Linde C4535TL
Year of manufacture: 2011



DK093
SMV 4535TB5
Year of manufacture: 2011



D3384
SMV 4535TB5
Year of manufacture: 2008



D3422
SMV SC4531TB5
Year of manufacture: 2006



D3372
SMV SC4527CB5
Year of manufacture: 2005



DK092
CVS Ferrari F478.5
Year of manufacture: 2008



D3439
Fantuzzi CS45KS
Year of manufacture: 2005



DK076
Fantuzzi SC45KM
Year of manufacture: 2003



D3436
Valmet TD4212
Year of manufacture: 1994



D3352
Hyster 22.00XM-12EC
Year of manufacture: 2008



DK089
SMV 5/6 EC890
Year of manufacture: 2007



DK087
[Other] Krups Krupp Crane
Year of manufacture: 1975



DK038
Herbst - ATAIR HFH ATAIR IX D620
Year of manufacture: 2008



D3389
Kalmar DC32-1200
Year of manufacture: 1991



D3416
Svetruck 25120-45
Year of manufacture: 2006



D3328
CVS Ferrari F16
Year of manufacture: 2003



G0870
Hyster H16.00XM-6
Year of manufacture: 2008



D3390
Svetruck 1612035
Year of manufacture: 2003



D3395
Hyster H16.00XM-12
Year of manufacture: 1999



D3407
Kalmar DCD150-12
Year of manufacture: 2003



G0871
Hyster H14.00XL2
Year of manufacture: 1999



D3397
Svetruck 13,6-120-32
Year of manufacture: 2008



D3255
Svetruck 13,6-60-30
Year of manufacture: 1996



D3442
Svetruck 1260-30
Year of manufacture: 2011



G0848
Hyster H9.00XMG
Year of manufacture: 2002



E4620
Hubtex EK5110
Year of manufacture: 2000



EL4645
Hubtex MQ45
Year of manufacture: 2006



D3371
Manitou MRT3050
Year of manufacture: 2010



D3313
Manitou MRT1850
Year of manufacture: 2001

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Shipping lines consider greener options as more countries request that vessels burn reduced-sulphur fuel

Photo: Shutterstock

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PORTS & HARBORS

Official Journal of the International Association of Ports and Harbors

PORTS & HARBORS

Published bi-monthly by the International Association of Ports and Harbors (IAPH), edited and produced by IHS Maritime.

IAPH

Publisher:
Susumu Naruse, Secretary General of IAPH
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International Association of
Ports and Harbors
Price Japanese ¥12,000 (US\$120 / UK£80 /
€90), postage included. Visa and MasterCard
accepted or for Bank Transfer. You do not have
to be an IAPH member to subscribe – contact
the IAPH at:
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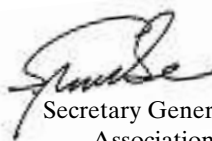
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A happy new year

SG Susumu Naruse looks to the Panama Canal
opening, global economics, and climate change



Susumu Naruse

Secretary General – The International
Association of Ports and Harbors



I said it a year ago, and I say it again, it may not be a good year for the global economy. The International Monetary Fund (IMF) lowered the global growth projection for 2016 to 3.1 percentage points last October, which is 0.3 points lower than 2014, due to risks such as declining commodity prices, depreciating emerging market currencies, and the expected slowdown in the Chinese economy. Again, we must carefully watch the path of the global economy and monitor consequent port demand this year.

At the time of writing, the COP21 is being held in Paris to create a new framework to fight global warming. One of the biggest challenges, to reach a consensus among global communities, must be a conflict between developed and developing countries.

This is exactly what I recognised when I participated in an UNCTAD expert group meeting on global warming last October. Although a lot of international organisations, including IAPH, have developed manuals and guidelines on how to mitigate global warming, developing countries tend to put a higher priority on

capacity expansion or facility development, sometimes ignoring environmental impact.

And even when they decide to construct some mechanism to fight global warming, they usually lack first-hand experience and, above all, sufficient resources. Regardless of the outcomes of the COP21, I think international support schemes to those countries need to be strengthened

as soon as is practicable. IAPH also needs to be able to proactively provide technical support to ports in those countries.

The Suez Canal was expanded at an unbelievable speed last year and the Panama Canal expansion is about to be completed. The canal's new dimensions have redefined the concept of Panamax vessels, which will surely affect global logistics strategies in a drastic manner. A lot of questions have been asked about ports in the region. Will ports on the US east coast become a preferred choice? Can ports in the Caribbean and South America become regional hubs? This year, we will finally find out.

We have a mid-term conference in Panama City this year to commemorate the new canal. In addition to presentations and discussions, there will be an opportunity to go on a site tour of the newly expanded canal. I hope many IAPH members will join this epoch-making event. Let's see you in Panama. **PH**

“There will be an opportunity to go on a site tour of the newly expanded Panama Canal”



Printed by Warners Midlands plc
The Maltings, Manor Lane, Bourne, Lincolnshire PE10 9PH ISSN 0554-7555

Port updates

▶ APMT IN AQUABA

The expanded Aqaba Logistics Village was officially opened on 12 November. The ALV Phase 2 facility at the Jordanian port includes 13,000 m³ of multipurpose warehousing and 40,000 m³ of open yard. It has been designed to allow the flexibility of handling a wide variety of cargoes as regional and international trading patterns evolve in the Middle East.

▶ LONG BEACH CLEARS AIR

The Port of Long Beach in California announced in October that it had surpassed every air pollution reduction milestone set for 2014 under the San Pedro Bay Ports Clean Air Action Plan, including cleaner diesel trucks, low-sulphur fuel, and the increased use of shore power for ships. According to an annual emissions survey, the port has reduced diesel particulate matter emissions by 85% since 2005, nitrogen oxides by 50% and sulphur oxides by 97%.

▶ LNG-FUELLED VLCC

Classification society DNV GL presented Dalian Shipbuilding Industry Company with an approval in principle (AIP) certificate for a new LNG-fuelled very large crude carrier (VLCC) design in December. The design has been found to comply with the gas-fuelled notation as given in the DNV GL rules for the classification of ships and the recently adopted IGF Code.

▶ BAKU DIVERSIFIES

The Port of Baku will complete phase 1 of its new international sea and trade port by 2017, increasing capacity to 11.5 million tonnes of cargo per year and up to 50,000 containers, many of which could be transit shipments between China, Central Asia and Europe. The port is an important cog in efforts by the government of Azerbaijan to diversify away from dependency on oil and gas.



Barack Obama's transport department outlines goals

US unveils national freight strategy

The administration of US president Barack Obama is promoting dedicated freight corridors and closer co-operation among port authorities and the private sector to tackle port congestion.

The *Draft National Freight Strategic Plan*, released on 18 October by US Department of Transportation (DOT) secretary Anthony Foxx, recommends sharing best practice for freight planning, supporting advisory committees and public forums with stakeholders, and encouraging effective use of federal funding.

"Our freight infrastructure should be as good as our workers are, as our businesses are, but it's not. It's crumbling and we're making matters worse by continuing to underinvest," lamented Foxx.

"We're extremely encouraged that Secretary Foxx is moving forward with the National Freight Strategic Plan," said American Association of Port Authorities (AAPA) president Kurt Nagle.

"Mapping the future of our freight network and providing resources to build it is a top priority for AAPA and its member ports."

Port of Seattle CEO Ted Fick added, "This strategic plan will help us make targeted investments to improve freight performance."

Securing increased funding for port infrastructure will be necessary to handle future growth, the draft plan acknowledges. The report's authors predict that container traffic at US ports will increase steadily as the volume of imports and exports transported by the US freight system more than doubles by 2040.

At current funding levels, "Some carriers may encounter delays, may need to proceed more slowly due to hazards, light-load their vessels, or offload some cargo to smaller vessels," the plan warned. Depending on channel conditions, it added that "Tankers or other vessels may encounter a delay in their arrival or departure time, or restrictions that reduce

recommended vessel draught.

"It is critical to establish federal freight transportation funding that is substantial, continuing, multimodal, reliable, and specifically dedicated to freight transportation projects," the plan's authors argue, adding that "this federal freight funding should augment rather than simply redirect existing federal transportation funding sources".

According to the strategy document, the Obama administration's 'Grow America' plan would provide USD18 billion over six years "through two dedicated, multimodal freight grant programmes for targeted investments". However, it is conceded that this plan requires congressional approval.

Prior to such congressional action, the Obama administration maintained that the DOT and other federal agencies "are working with state and local partners to apply innovative finance strategies, encourage public-private partnerships, and use existing grant programmes to support freight movement". The US federal government is "ideally suited to ensure co-ordination in freight planning and implementation", the strategy document concludes.

Nagoya gets quake-ready

One of Japan's busiest ports is using specially developed rubber-tyred gantries to ensure operations will proceed smoothly even when the earth moves, following the devastation of two ports in the past two decades.

Nagoya United Container Terminal manager Koji Kitachi told *P&H*, "The Japanese government has been raising awareness of the possibility of an earthquake in the Tokai and Tonankai area, which is close to Ise Bay, where Nagoya is."

Nagoya United Container Terminal operates Nabeta terminal in the 81.8 million m² port. It handled 2.7 million teu in 2014 and accounts for about 40% of Nagoya's total box throughput.

In 1995 the Great Hanshin-Awaji earthquake hit Kobe, causing cargoes to be diverted from what was once one of Japan's busiest ports.

The need to secure operations at Nagoya gained urgency after the Great East Japan earthquake

and tsunami on 11 March 2011. Operations at the Japanese port of Sendai were disrupted as facilities there were damaged in the aftermath.

"Japan experienced the Great Hanshin-Awaji earthquake in 1995 and the Great East Japan earthquake in 2011," Kitachi said. "Both damaged port facilities. Huge costs and time were spent to restore terminal operations. Fortunately, Nagoya is located in central Japan and had little or no impact from these disasters."

"But the Japanese government has been raising the possibility of a magnitude 8 earthquake happening in central Japan."

For two years from April 2012, the Japanese government granted Nagoya United Container Terminal the funding to construct the system, which promotes low carbonisation, enabling it to supply power in case of an emergency. The plan aimed to protect the terminal operating system (TOS) server from

earthquakes and tsunamis, ensure the generation of emergency power supply to continue operating the TOS even in an earthquake, activate an emergency power supply to evacuate ship-to-shore cranes should the need arise, and provide emergency power for reefers.

The systems were produced and configured by the machinery arm of Mitsui Engineering & Shipbuilding, which developed cranes with seismic devices after the Great Hanshin-Awaji earthquake. MES cranes and systems sales manager Kinuya Ichimura, explained to *P&H* that the isolator in the cranes was locked by a hydraulic system during normal operation. "When an earthquake occurs, the isolator is unlocked," he said.

Rubber-tyred gantry cranes usually receive shore power by cable reel systems or bus bar. MES modified the cables so if shore power was lost in an earthquake, the cranes would connect directly to the ship-to-shore power through the diesel generator set.

Throughput falls at China's top eight ports

China's top eight container ports handled fewer containers last October than in the same month a year earlier, as customs data for the month show worse than expected international trade figures.

The ports of Shanghai, Shenzhen, Ningbo-Zhoushan, Qingdao, Guangzhou, Tianjin, Dalian, and Xiamen handled a combined throughput of 12.45 million teu in October, about 1% lower than October 2014, according to figures from the Shanghai Shipping Exchange. In the first 10 months of the year, the top eight ports handled just over 124 million teu, 3.7% more than in the same period in 2014.

China's international trade for October was worse than expected, with exports down 6.9% in dollar

terms year-on-year. That is a fall for a fourth straight month. Imports fell by 18.8%. Economists had broadly predicted an improvement in October after a September drop of 3.7% in exports and 20.4% in imports.

The decline in October exports was led by falling trade with developed economies, figures from the General Administration of Customs show. Exports to Japan fell 7.7% and exports to the European Union were down by 2.9%. Shipments to the United States were 0.9% lower than in October 2014.

The ports of Shenzhen, Guangzhou, Tianjin, and Dalian all saw year-on-year throughput declines in October, while the number of containers handled in

Shanghai remained flat.

At 33%, Dalian in northeast China reported the highest drop in throughput, while consumer exports-focused Shenzhen saw a 5.4% drop. Shenzhen is China's second-busiest container port after Shanghai.

Qingdao and Ningbo-Zhoushan fared best of the top eight, booking throughput increases of 7% and 6.2% respectively.

Bucking the trend, some of the country's lower-ranked container ports saw strong growth. Tangshan, in Hebei province, the heart of China's steel production industry, saw volumes rise by more than 50%; while Rizhao container port in Shandong province, a major iron ore and coal port, saw throughput rise by 20%.

Port updates

► **ICTSI OPENS MICT YARD 7**
International Container Terminal Services Inc (ICTSI) opened Yard 7 of the Manila International Container Terminal on 26 November. The yard has four new rubber-tyred gantries and forms part of MICT's USD106 million expansion project. The yard adds 25,000 teu of capacity to the terminal, which now has capacity of 2.75 million teu. This is needed, according to a company statement, to meet customer demand and anticipated growth.

► **SOHAR CLEANS UP**
Volunteers from Sohar Port and Freezone in Oman and more than 200 school and college students came together in December for the Harmoul Beach clean-up. The event is a part of Sohar's Cleaner Greener community campaign, which aims to protect the local environment. Staff and students from participating schools were briefed on the importance of keeping beaches and ecosystems safe. After the briefing, volunteers collected and bagged rubbish from the beach, much of it plastic waste washed up and deposited by high tides.

► **CORK PILOTS WIN ISPO**
Ireland's Port of Cork's Pilotage Authority was the first to receive from classification society Bureau Veritas a certificate issued under the International Standard for Maritime Pilot Organizations (ISPO) standard of best practice for pilots and pilot organisations. The ISPO certification covers Port of Cork's pilotage services and vessel traffic management system. It is described as "an accessible industry-specific standard, managed by a group of users, that improves safety and quality and provides transparency to shipowners and stakeholders on pilotage standards".

Port updates

► THE EASY OPTION

The largest vessel in the Royal IHC Easydredge series of standard, twin-screw trailing suction hopper dredgers (TSHDs), the Easydredge 3700, will be built for an Asian customer to work on land reclamation, infrastructure and beach nourishment projects. IHC first launched the Easydredge concept in 2012, a budget range of small TSHDs with standardised components designed to be cost-effective and with a short delivery time.

► HK MAXIMISES SPACE

The Hong Kong government is taking a series of measures to enhance the use of backup land at the Kwai Tsing terminals. It believes this will alleviate port congestion and improve cargo handling efficiency and overall competitiveness of the Port of Hong Kong. Four sites totalling 15.2 ha and located immediately adjacent to the existing terminals at Kwai Tsing will be disposed to operators on a long-term basis in phases from 2016/17 onwards.

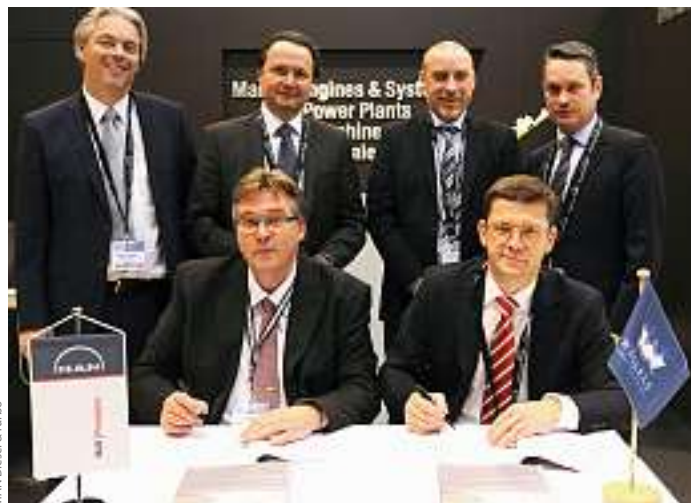
► TIMOR FUNDING

The government of East Timor has reached an agreement with the French Bolloré consortium for the construction and management of a USD400 million port, the country's prime minister Rui Maria de Araújo has announced. A contract for the public-private partnership is expected to be signed in the first quarter of 2016, with work expected to be completed later this year.

► LOANS FOR LOGISTICS

Yeosu-Gwangyang Port Authority and Hana Bank have teamed up to offer low-interest loans to logistics firms that ship goods through Gwangyang, South Korea's second-busiest container port. The scheme is in line with President Park Geun-hye's plans to deliver customised public services and generate new jobs.

MAN claims world first dual-fuel container ship conversion



MAN-Wessels Europort signing ceremony

MAN Diesel & Turbo announced at Europort in Rotterdam that it had signed a deal with German shipping company Wessels Reederei for what is believed to be the first dual-fuel container ship conversion.

MAN will supply the technology to retrofit the 8L48/60B main engine of Wessels' 1,000 teu *Wes Amelie* to dual-fuel operation, which will reduce its sulphur oxide emissions by more than 99%, nitrogen oxides by about 90%, and carbon dioxide by up to 20%.

It won't happen immediately, however. MAN explained, "Due to the long delivery time of LNG tanks, the engine retrofit will commence in the fourth quarter of 2016, with full operational usage of LNG as fuel planned for early December 2016".

Launched in 2011, *Wes Amelie* is a feeder vessel that operates in the North and Baltic seas, both of which have stringent emissions control areas (ECAs).

One of Europe's largest managers of coastal vessels, Wessels has a fleet of 43 ships and

has always seen fuel consumption optimisation and pollutant emission control as an integral part of its business philosophy.

"In selecting a suitable vessel for conversion, special attention was paid to the scalability of the engineering services, as well as the development costs, reducing significantly the cost of follow-up projects," MAN said. "As *Wes Amelie* has 23 sister ships – 16 of them structurally identical – that will allow follow-up projects to be easily implemented.

"This ship, therefore, facilitates a multiplier effect, with many other conversion-capable vessels also found around Europe".

Wessels general manager Christian Hoepfner said, "We are creating an increasing demand for LNG as a clean fuel. Only in this way, and not only through appeals, can the development of an LNG infrastructure continue to gain momentum."

MAN upgrades and retrofits head Thomas Spindler added, "We are very excited about this contract and view its potential for broader adoption within the

maritime sector as significant."

Wes Amelie is not the first commercial vessel to undergo such a conversion. Dutch gas shipping line Anthony Veder converted the conventional Caterpillar six-cylinder MaK M43C diesel engine in its 6,500 m³ LPG/LEG/LNG carrier *Coral Anthelia* in late 2014 to a Caterpillar M46 dual-fuel (DF) engine that enables the ship to run on boil-off gas when transporting LNG – in the process, also claiming the industry's first such in-hull retrofit.

Like *Wes Amelie*, *Coral Anthelia* operates in northwestern Europe's ECAs. Its new M46 DF engine was designed for unlimited operation on LNG, as well as marine diesel oil and heavy fuel oil, and was strategically engineered to allow for the retrofitting of current M43C engines. As a result, Caterpillar can perform in-hull conversions without having to move the engine block or perform extensive machining – and without the need to drydock the vessel.

Coral Anthelia's conversion was planned by Anthony Veder in co-operation with engineers from Caterpillar dealer Bolier, Damen Shiprepair Van Brink Rotterdam, Croon Elektrotechniek, piping contractor Leemberg, and ship automation specialist Eekels. Despite the project's complexity, the team completed the retrofit in less than five weeks.

"Converting an existing diesel engine to dual fuel is mostly driven by environmental, legislative or financial reasons," said Frans Juhrend, Bolier's customer support project engineer. "For clients transporting LNG as cargo, such a conversion results in a win-win-win situation in all three areas."



Royal Vopak-JCSSC facility at King Fahd Industrial Port

Vopak grows terminal at King Fahd Industrial Port

Dutch tank storage giant Royal Vopak, through its Jubail Chemicals Storage and Services Co (JCSSC) joint venture with Saudi Basic Industries Corp, has announced a massive extension to a new industrial terminal at King Fahd Industrial Port (KFIP) in Saudi Arabia.

The two-part deal is in support of the USD20 billion chemical complex being built by Sadara Chemical Co in Jubail Industrial City II in Saudi's Eastern Province that is nearing completion. It is the largest chemical complex ever

built in a single phase anywhere in the world.

Speaking to *P&H* in November, a Royal Vopak representative confirmed that under a 'tank storage construction agreement', Sadara was on the point of selling to JCSSC (for USD470 million) a 348,000 m³ tank farm at KFIP. This will supplement the 220,000 m³ of storage, port terminal, and related port facilities JCSSC already has under construction at KFIP.

"The 220,00 m³ that is currently under construction by JCSSC is planned for commission in the

second quarter of 2016," she explained. "It and the 348,000 m³ tankage are located next to each other and will be interconnected."

"Under a terminal services agreement, JCSSC, in which Royal Vopak currently holds a 25% share interest, will also provide Sadara with liquid product storage and handling services at KFIP for an initial term of 20 years."

The agreements lay an important foundation for Sadara's supply chain in Jubail as the company moves towards initial production. A joint venture between Saudi Aramco and Dow Chemical, Sadara's new complex consists of 26 major manufacturing units and will be the first in the Middle East to use refinery liquids, such as naphtha, as feedstock.

"By using best-in-class technologies to crack refinery liquid feedstock, Sadara will bring about many industries that either currently do not exist in Saudi Arabia or only exist through imports of raw materials," the Vopak representative said.

"Sadara is on track to deliver its first products by the end of 2015, with the complex anticipated to be in full operation in 2016, only 18-months after startup."

Huge Thai investment advances hub ambitions

Thailand's Laem Chabang port is undertaking three key infrastructure projects worth USD167 million to improve efficiency and expand its position as a trade hub for ASEAN, according to port director Montree Rerkjamnian.

Local press reports said Laem Chabang was seeking a contractor for a USD50 million container terminal development that would expand terminal handling capacity by 300,000 teu by 2018.

A railway support project, costing USD81 million, will also be

ready by 2018, with a second phase ready by 2022, the report said. A further USD36 million is being spent on increasing the number of cargo-check gates to 31 to help alleviate congestion within the port area.

Located just 130 km from Bangkok, Laem Chabang is ranked 22 on the list of world's busiest container ports. It handled 6.58 million teu in 2014. Hutchison Ports Thailand manages and operates four container terminals at the port.

According to Rerkjamnian, the

government has plans for additional projects in the area surrounding the port to support its development into a larger hub for ASEAN trade.

Meanwhile, plans for construction of the long-touted deepsea port at Pak Bara on Thailand's west coast near its southern border with Malaysia are once again proving controversial.

Due to begin construction in 2016, the Pak Bara seaport is part of a planned railway-highway land-bridge to link the Andaman Sea with a port in Songkhla province on the Gulf of Thailand.

Local opponents and environmentalists claim it threatens a national park and will badly affect tourism in the area.

Port updates

► BANK SUPPORTS BUSAN

South Korean state-owned policy lender Korea Development Bank has approved KRW915 billion (USD790 billion) in project financing for the Busan New Port phase 2-4 development. Of the funds, KRW855 billion comes from bank funds while the rest will come from private investors in a public-private partnership. Work on Phase 2-4 ran into financial difficulties as it tried to take off with just private investment.

► IZMIR GOES PRIVATE

Officials have said that Alsancak Port, which consists of the Izmir Cruise Port and the Izmir Cargo Port in Turkey, will undergo privatisation after tender in the first half of this year. Revised plans for the port have scaled-down the construction site of the cruise port by 50,000 m² to about 125,000–130,000 m², according to the Istanbul, Marmara, Aegean, Mediterranean and Black Sea Regions (IMEAK) Chamber of Marine Trade.

► DURBAN RAISES CAPACITY

South African national ports authority Transnet will undertake two projects to create additional capacity at the Durban Container Terminal, as well as reconstructing quay walls at the Durban Maydon Wharf. This is part of a series of infrastructure projects to take place over the next five years.

► MANILA MOBILE APP

An app from International Container Terminal Services Inc (ICTSI) is said to allow its Manila International Container Terminal customers "to monitor their containers in real time". It is available for both iOS and Android, and "uses MICT's Track and Trace system to check the status of shipments, truck entry and exit times, as well as vessel arrival and departure schedules", ICTSI said.

PSA Singapore terminals

Changing and growing

PSA International CEO **Tan Chong Meng** talks about the challenges facing terminal operators in Singapore and elsewhere

As a terminal operator, our role is to deliver what the customer wants, with a viable economic proposition. There will be an increase in transshipment demand because, as ships increase in size, there will be changes relative to what used to be the optimal way of transshipping a large collection of containers to customers, who, eventually, will want to receive one box. Hub and spoke activity is going up, but the quality and the way this is done has dramatically changed.

It hasn't taken very long for the shipping industry to change the size profile of ships. After 2010, when there was a strong financial recovery for the container shipping industry, people started to order bigger ships and this was on the conviction that demand would continue to grow. However, demand has been one of the disappointments.

I think going forward, we had all better learn

to live with 4–5% container handling growth because if we continue to behave as if growth will be at 10%, I think we'll all be sorry.

But, in 2010 the first big ships were ordered. Within three years the first ones sailed the seas. Within another two to three years, everybody will have at least one big ship.

So by 2018, within a short span of seven years, the way in which the mainline routes are done will be dramatically changed. Because these big ships need to be used, alliances become one of the ways in which efficiency, in terms of utilisation of ships, is preserved.

What needs to be recognised is that what takes shipping lines a short time to change is only one part of the equation. How long does it take for port systems to change? How long does it take a port to build and economically recover? Ports are built for life spans of 25–30 years, or even longer, if they can operate.

When I talk about port systems, I mean not just hub and main ports, but the systems of ports.

I think it will take 10–15 years for the port systems to brace themselves effectively for this latest change because what's effectively happened is the doubling in size of ships, from 8,000 teu. That dramatic step needs quite a bit of catching-up.

The third part of the logistics equation is the evacuation of ports, where for reasons of economies of scale, the containers come in thousands. Yet the customers only want the one box that is relevant to them. That part goes back to the relationship between the port and the metropolis.

In the past, ports and cities had strong historical associations. But the link between ports and city growth over time has attenuated because cities now have many



‘ How long does it take for port systems to change? How long does it take a port to build and recover economically? ’

Tan Chong Meng, *CEO, PSA International*



PSA International

That needs a solution and, I think, will need another 10–15 years, as such things happen piecemeal rather than systematically. Long-term, the industry will find solutions; however, in the short term, the problems come home to roost at the terminal.

First, the dwell time of boxes staying within a terminal versus the equivalent units transiting has gone up, so inventory per throughput has gone up, raising the complexity of tracking, consolidating, and preparing for ships to come in or for connections to be made.

Second, because of the alliances, the number of connections, incoming and outgoing, has increased. Previously, a ship might take boxes from say, 100 vessels, and the boxes discharged might feed 100 other vessels. Currently, the number of connections has gone up by about 10–20%. So that's more preparation, planning, and sophistication.

The fragmentation of the connection sizes is another factor. because the number of connections has increased, you would imagine, with a proportionate increase in call size, that for each connection, the number of boxes would remain the same.

But in reality, because of the emergence of the alliances and a new period of learning, we get very small connections. In fact, in the less efficient cases we studied, more than 80% of the connections had fewer than five boxes. So overall volumes have gone up, big volumes come in, connections increase, and this causes fragmentation.

For the operator, what does this mean? Yes, there's bigger volume and we need bigger space. The development of Singapore's Pasir Panjang Terminal (phases 3 and 4) is creating huge capacity (50 million teu by 2017). We need this extra space, but this will not be very helpful if the fragmentation and connections continue in the coming years.

I think it's a learning period. We have to learn how to use the big ships well. In another two to three years, there will be even more ships to come and we're not there yet. And we are learning how to use the ships between lines, among themselves, and between alliances, and how to actually plan well vis-à-vis the terminal, not just on the ships side, on the wharf side, but also, hopefully, on the land side.

Finally, I think one of the areas that is still underexplored as a community is the way we use existing IT capabilities that can help us tackle complex issues. Ports have a system and I'm sure liner companies are also developing systems, but these systems are not intertwined. It's difficult to get them to intertwine because the planning objectives are different. Somehow, these system must have a good handshake.

Call sizes and complexity increase, but our brain hasn't increased in size. When boxes are on the ships, they cannot move. A hauler coming to pick up a box cannot pick that box by itself. It's only the terminal that can make all movements take place, whether it is within the terminal, from ship to shore, or even on the ship itself. The only machines that can move the boxes are in the terminal and we take instructions.

But those instructions must be good and productive for the terminal and the ship, in terms of time and reduction of waste. At present, the reality is that waste has increased, so how do we square that circle?

I think we have to employ some of the capabilities within the planning space afforded by the IT revolution to enable parties on different sides of the negotiating table to come up with optimal plans for ships that sail within the same period of time. That requires good collaboration between the various parties, because we're all in it together. **PH**

other growth drivers, but every port city faces its own challenges and unique circumstances.


For instance, you have world port cities – large cities with large ports, such as New York, Hong Kong, and Singapore. We have to find a solution. Tuas, where Singapore will centralise its port operations by 2027, reflects that solution.


Some ports have already been dissociated from the metropolis because the growth drivers of the metropolis have dissociated from the port, which was one of the original growth drivers decades ago. This means there is now the ability to plan the port and the freight corridor separately.

But many ports are still stuck within a city and so transporting freight is a problem. Unlike 10–15 years ago, when it could go through urban/suburban areas relatively easily, now exiting the port is a problem, as volumes from high-growth emerging markets have doubled.

Worldwide LNG fuels and bunkering

LNG, while not replacing conventional marine fuel, is gradually becoming more widely available as an option for vessels. According to estimates, by 2023, the global market for LNG bunkers will be in the range of 15–20 million tonnes/year

 Proposed

 Planned

 Existing

 Total



+50

LNG-fuelled ships (excluding LNG carriers)
in operation worldwide



69

Confirmed newbuilding orders



2020

There could be an estimated 1,000 non-LNG
carrier vessels by 2020

Illustrations: Shutterstock

Middle East



Americas

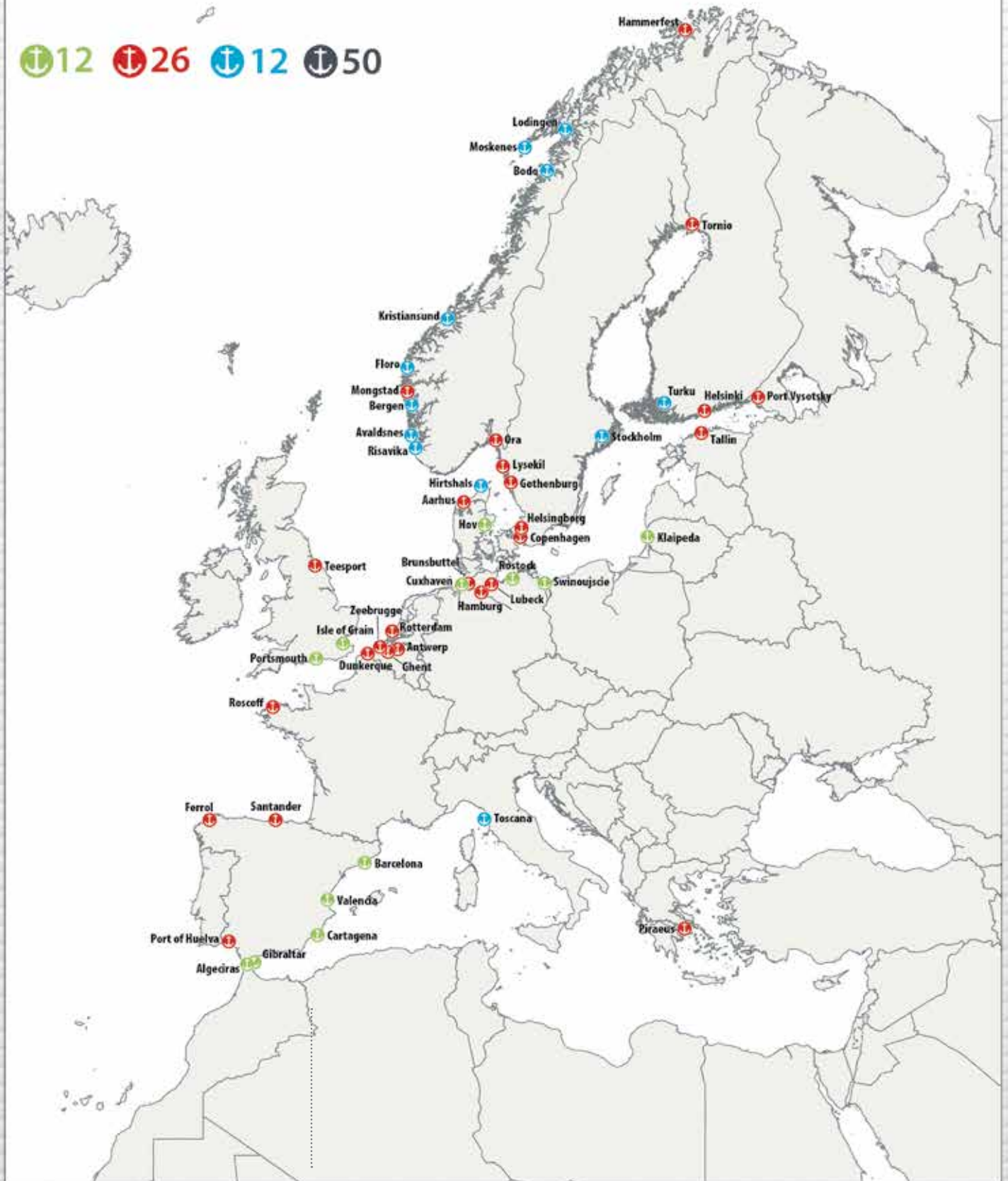


Asia



Europe

 12
  26
  12
  50





To ECA or not to ECA ...

This is the question considered by TRI-ZEN International's lead consultant **James Ashworth**, as he looks at existing ECAs and what may happen next

ECAs – emissions control areas – are administered by the International Maritime Organization (IMO). Today they exist in Europe, North America, Hawaii, and US-administered Caribbean islands.

Within these areas there are limits on sulphur oxides (SO_x) and nitrogen oxides (NO_x) in ships' emissions, although future developments are expected to focus additionally on carbon dioxide (CO₂), in line with global commitments on the reduction of particulate matter (black carbon) emissions. This has recently been declared a grade I carcinogen. This alone can – and is – bringing big changes to the composition of marine fuels.

Declaring an ECA is a big step forward, but it must meet three criteria to be effective: the regulation must be clear and unambiguous; the penalties for

infractions must also be clear and unambiguous, and carry sufficient deterrence to ensure compliance; and enforcement must be consistent and comprehensive to ensure the risk of detection of non-compliance is high.

It is alarming to hear recent tales of shipowners suggesting that it might be commercially viable to ignore emission control rules in Europe and simply pay the fines, rather than make the vessel conversions needed for compliance.

It would appear that Europe offers insufficient deterrence and risk of detection. While the United States and Canada have effective coastguards, Europe has only one established detection system – a "sniffer" mounted beneath the span of the Oresund Bridge joining Denmark and Sweden.

The Norwegian Angle

Following the 1982 Stockholm Conference on Acidification of the Environment – driven by a potent mix of abundant gas and green politics – Norway in 1998 led the adoption of sulphur reduction in marine fuels via the IMO's Annex VI to the MARPOL 73/78 Convention. This came into force in 2005.

The 58th session of IMO's Marine Environment Protection Committee adopted amendments to the annex in 2008 to further reduce emissions. These came into force in 2010, creating the North European Sulphur Emissions Control Area, which, with the introduction of NO_x controls, became an ECA. North America joined the club in 2012 with its ECA covering the Atlantic and Pacific coasts of the United States and Canada, including Hawaii and US-administered Caribbean islands.

Oceania

After a mixed reaction to the introduction of an Australian carbon tax in 2012 and with volatile politics, it is unlikely that the Australian government will be in any hurry to introduce any further binding emissions legislation. However, Australia does have an existing mechanism for dealing with marine emissions. Work has already started to identify Particularly Sensitive Sea Areas (PSSAs), leading to the adoption of Marine Environment High Risk Areas (MEHRAs). IMO guidelines are in use to study and manage selection criteria, and it can be reasonably concluded that limits will be aligned as well.

MEHRAs are unilateral, faster, and easier to introduce than walking the IMO ECA path. A likely outcome will be the widespread adoption of MEHRAs around the Australian coastline, paving the way for an ECA.

Although the environment is high on New Zealand's political agenda, the country is in no position today to request ECA status. It has no LNG infrastructure in place and the planned New Plymouth LNG import terminal has been on and off the table for years. However, all that could change fast if Australia adopts LNG bunkers and if supplies are made available from Australia, or if New Zealand manages to commercialise its gas reserves.

China

According to the Maritime Executive, Chinese ports handle about 30% of the world's 600 million teu. In September 2012, the Hong Kong government launched a three-year incentive programme to encourage oceangoing vessels to switch to low-sulphur fuels. As of June 2014, only about 12% of oceangoing vessels had registered, with operators indicating that rebates covered only 40% of the cost of switching fuels.

The Hong Kong government has now made mandatory the use of 0.5% sulphur fuel from July 2015, pushing China to also adopt it. Those responsible for ships that do not comply with the law will face fines to a maximum of about USD25,000 and six months imprisonment, while those failing to keep the required records of fuel switching will be liable to a maximum fine of about USD6,400 and three months imprisonment.

China has now issued a plan to cut marine SO_x by 65%, NO_x by 20%, and other emissions by 30% by 2020, against a 2015 baseline, for the Bohai Sea, Pearl River Delta, and Yangtze River Delta. These three areas are set to become ECAs, although whether these are imposed via the IMO remains to be seen.

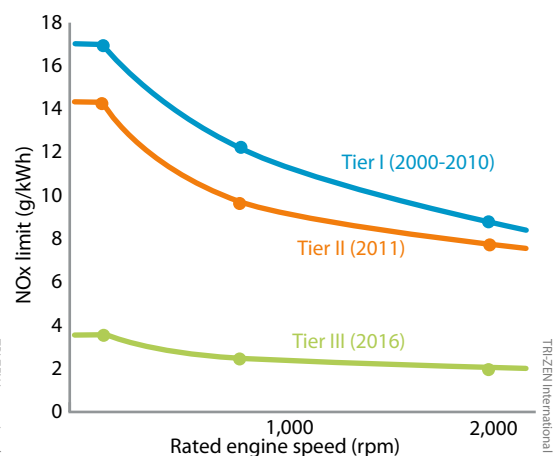
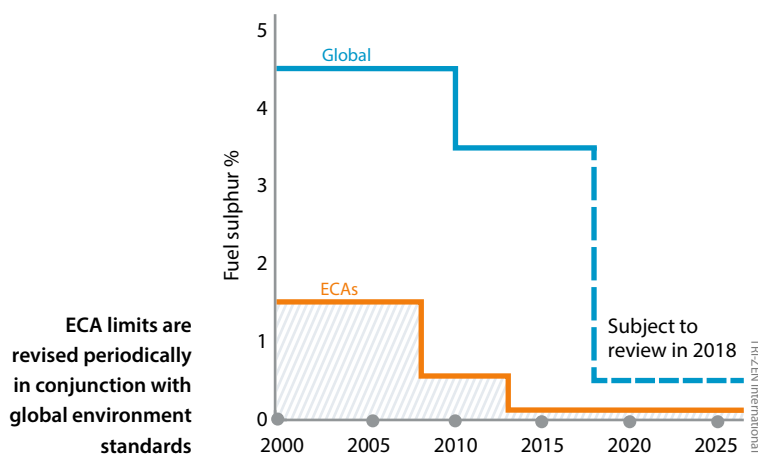
According to the Chinese Ministry of Environmental Protection, SO₂ and NO_x emissions from ships account for 8.4% and 11.3%, respectively, of China's total emissions.

Japan and South Korea

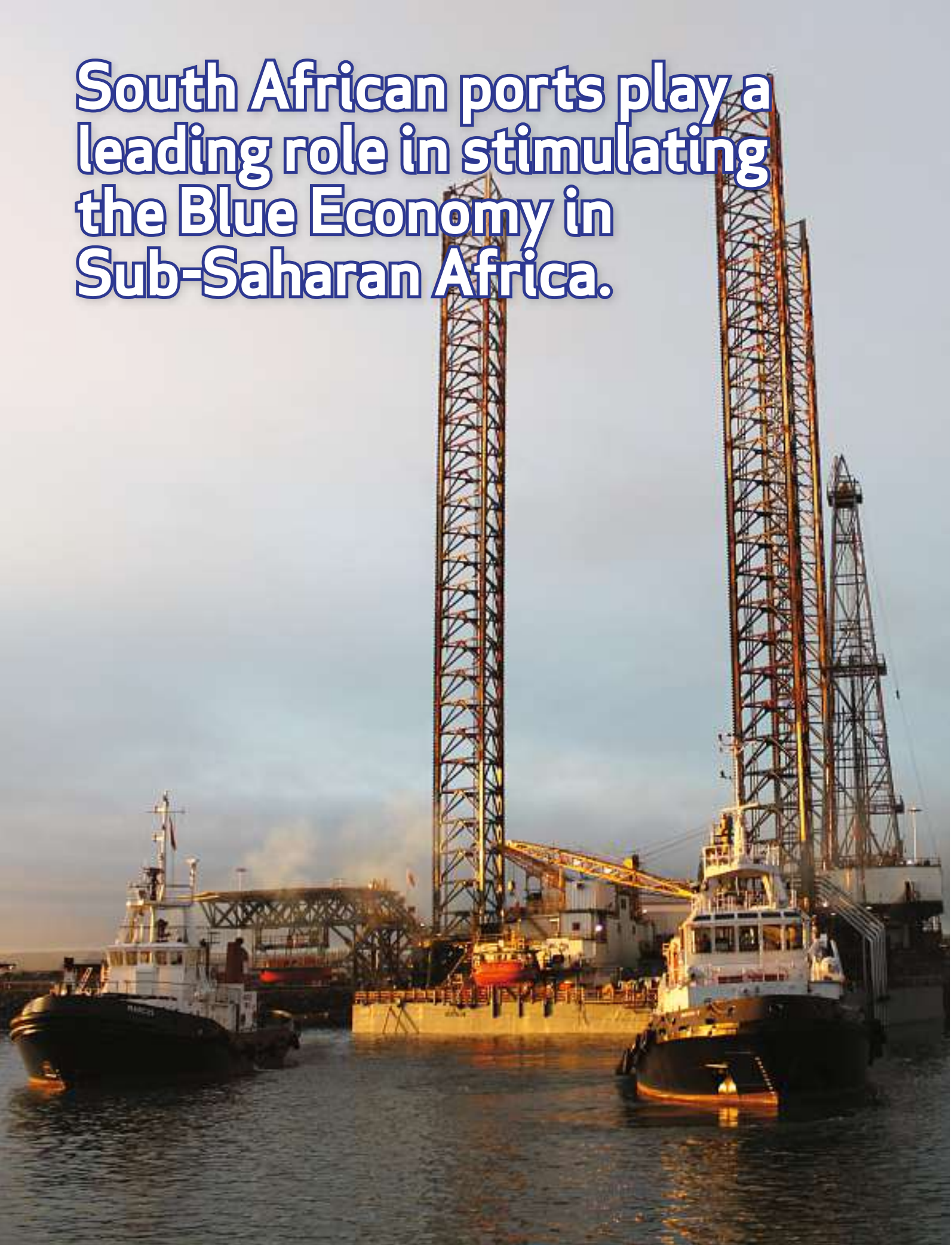
Japan and Korea are the two largest LNG importers, but it is surprising that they have minimal LNG bunkering facilities and no signs of an ECA being formed. But – following China's moves – this may be about to change.

The Arctic and Antarctica

The Arctic and Antarctic – among the world's most sensitive regions – need the most protection against emissions. However, with almost no people and no common administration, it is hard to determine how an ECA could be achieved, let alone enforced. Perhaps it is time for an alternative model. **PH**



South African ports play a leading role in stimulating the Blue Economy in Sub-Saharan Africa.



With 3 900 kilometres of coastline, 330ha of coastal land, eight ports and three coastal provinces at its disposal, South Africa is geographically well-placed to leverage the opportunities arising in the oil and gas sector.

In the spotlight: The Port of Saldanha Bay

South Africa's deepest natural port, the Port of Saldanha Bay, is strategically located in close proximity to West Africa's offshore oil and gas fields, the continental shelf that supports these commodities and has the marine industrial backup needed to exploit the opportunities in the up- and midstream sector. The Port of Saldanha accommodates vessels with a draught of up to 19 metres and has been identified as a key and strategic port to be developed into a dedicated oil and gas hub and services complex.

A significant increase in the number and frequency of requests for purpose-built facilities from large rig operators has necessitated that the Port of Saldanha be established to international standards in order to increase its competitiveness in relation to services such as rig repairs, bunker fuel supply and pipe storage.

Africa's challenges inspire new development and growth

Africa currently produces more than 10 million barrels of crude oil per day – approximately a tenth of global production – the compounded annual growth rate of oil production in West Africa being estimated at 5.8%, Southern Africa at 6% and Central Africa at 7.7%. This growth, however, may not be achieved if the region is not equipped with ports that can serve as dedicated oil and gas hubs and offshore supply to support services centres which meet the growing infrastructure-intensive needs of current and future oil and gas exploration on the seas of the continent.

Given the current production of around five million barrels of oil per day in West Africa alone, the South African Oil & Gas Alliance (SAOGA) estimates that the drilling infrastructure already in place would need to be serviced and maintained over the next 30 to 40 years, meaning that the demand for the facility is definitely sustainable in the medium to long term.

Recent developments in Africa, particularly in the oil and gas sector, have seen maritime activity increase, with Durban growing in activity as a result of the significant finds in East Africa. To support this growth, many up- and midstream service and equipment providers have clustered their offices in Cape Town, a traditional port of call.

Operation Phakisa: Bringing the vision to life

The South African government has established a collaborative forum, Operation Phakisa (a seSotho word meaning 'hurry up') comprising of the National Ports Authority, together with the Department of Trade and Industry and Department of Public Enterprises, to enable the implementation of the Saldanha Bay Industrial Development Zone (IDZ) and fast-track priority developmental projects that drive economic development.

To improve infrastructure and services to support the oil and gas industry that directly impact the cost performance of the industry, the private sector has demonstrated its support of the project by investing approximately R250 million (approx. USD \$20 million) towards establishing fabrication-related infrastructure in the Port of Saldanha Bay. This investment will assist in positioning the Port of Saldanha as one of the strategic catalysts in unlocking South Africa's untapped ocean economy potential, aptly known as the blue economy and estimated to have a potential total GDP contribution of R177 billion and the capability to create thousands of jobs, skills creation and new business opportunities.



Creating an import and export investor's paradise

Over the next five years, investments in port infrastructure for the oil and gas industry are expected to exceed 10 billion rands (US\$1 billion). Foreign investors looking to use South Africa as a base for expanding African operations will benefit from reduced secondary and dividend taxes offered by the Saldanha free port facility.

The Industrial Development Zone, which is set to be located adjacent to the main port, will have a variety of back-of-port activities offering investors the benefit of being located in a customs control area (CCA), or a free port facility, which means that no Value Added Tax (VAT) will be payable on goods, services, land, buildings or infrastructure items imported and exported at the CCA.

The IDZ will have dedicated quayside access to enable seamless and efficient turnaround of vessels in and out of the facility. The complex will also offer a world-class, one-stop shop for regulatory services such as permit applications and approvals, immigration administration and business support. In addition, companies operating within the IDZ will also have access to financial and non-financial support for employment and training activities for both skilled and semi-skilled staff on site.

South Africa is set to position itself as an integral player in the oil and gas sector!

TRANSNET



delivering freight reliably

*national ports
authority*

Singapore strives for LNG bunkering

Pricier LNG and import reliance are the main concerns, reports **Zeng Xiaolin**

Singapore's port authorities are keen to introduce LNG bunkering to keep up with a global push towards clean energy, even though dollars and sense are the foremost concern among shipowners and bunker traders in the Asian shipping hub.

Singapore is pushing ahead with plans to offer LNG as a marine fuel by 2020, and has begun dangling carrots to encourage fuel oil suppliers to build LNG bunker tankers and shipowners to build LNG-powered ships.

The Maritime and Port Authority of Singapore will provide funding of up to SGD2 million (USD1.56 million) per vessel for up to six LNG-fuelled ships for the pilot programme, which will begin in January 2017. The money will come from the MPA's Maritime Innovation & Technology Fund. The authority has also established a SGD12 million fund to promote the building of LNG-powered ships.

Currently the world's biggest bunkering port by sales volumes, Singapore sold more than 42 million tonnes of fuel oil in 2014.

Companies that apply for the fund must be registered in Singapore and the funded vessels must be Singapore-flagged or licensed to trade in Singapore for at least five years. In July 2015, the MPA invited interested parties to apply for a licence to supply LNG to ships in its waters.

In their proposals to the MPA, applicants must propose an LNG bunkering supply solution, including details of its procurement and delivery, and marketing plans. Shortlisted proposals will be announced by the authority by the end of the year.

While *P&H* understands that a few oil majors have applied for the licence, other fuel oil traders and suppliers are lukewarm, as they do not see any business potential due to the lack of infrastructure in Asia and the region's higher LNG prices.

Asia may be the biggest consumer of natural gas, but LNG bunkering is a different story, according to bunker traders and suppliers. Singapore-based marine fuels trading firm Sing Fuels told *P&H*, "LNG bunkering is an option we could offer to our customers but we'd rather wait and see how the oil majors fare with [it]. LNG supply and infrastructure are still question marks."

Singapore bunkering veteran Simon Neo described the situation as a chicken-and-egg issue.

Neo, executive director of Singapore-based bunker trading firm Piroj International, put it all down to cost

and the availability of alternative clean fuels.

Neo told *P&H*, "The number of ships that run on LNG or dual fuel can be counted on one hand. In this part of the world, there is little incentive to invest in retrofitting to run on LNG. Due to shale gas, LNG is cheaper in the US than in Asia." Globally, there are just 59 LNG-fuelled ships today. In the United States, Henry Hub prices are at about USD2.80/million Btu; in Asia, Platts' Japan-Korea Marker assesses LNG prices around USD8/million Btu.

Neo added, "While LNG bunkering is more prevalent in Scandinavia, due to the Baltic and North Sea ECAs, the vessels that are [using it] tend to be ferries. It is easier to build or retrofit ferries to run on LNG. Also, the routes they ply are shorter than [those of] merchant ships."

With oil prices continuing a downward trend, there is further disincentive to invest in LNG bunkering. "Heavy fuel oil now costs over USD200/tonne, while marine gas oil, which is cleaner, costs over USD400/tonne. With these price levels and the fact that shipping is not out of a slump, shipowners aren't willing to retrofit their vessels," said Neo.

Shipowners such as Thailand's Precious Shipping bear that out. The company's managing director, Khalid Hashim, told *P&H*, "It doesn't make economic sense, as our ships are mainly carrying cargoes within Asia where there are no emission control areas. On top of that, freight markets aren't good and our earnings are down. So to make a heavy investment like this isn't a priority."

The MPA has acknowledged that LNG bunkering could take some time to develop in Asia. Speaking at Gastech 2015 last year, MPA port services division director Parry Oei said, "It [LNG bunkering] may not pick up in five years, but maybe it will happen in 10 years' time. We are committed in the long term [to LNG bunkering] because of its benefits to the industry and country."

MPA chief executive Andrew Tan admitted at the Busan International Port Conference in November 2015 that the high cost of building LNG carriers or retrofitting ships to run on LNG could hinder the take-up of LNG bunkering.

But there are optimists who believe it is a matter of time before LNG bunkering catches on in Asia. Speaking at Gastech, Bernhard Schulte Shipmanagement UK managing director Angus Campbell said "The move to LNG is a fuel is a game-changer that cannot be ignored. Independent industry predictions indicate that the use of LNG as a bunker fuel offers opportunities for early movers to secure a market-leading position, and global LNG fuelling will become a mainstream option."

Gaspartners director Rolv Stokkmo, whose company is working with the National University of Singapore to research and promote LNG as marine fuel, told *P&H*, "LNG bunkering certainly has potential as it's clean and safe. I don't think the drop in oil prices will hit LNG demand to a big extent, because LNG prices have fallen correspondingly." **PH**

LNG bunkering gains traction in US

Vessel deployments are putting pressure on port infrastructure expansion, reports **John Gallagher**

Ships capable of running on liquefied natural gas (LNG) power in the US began rolling into service in late 2015, intensifying the pressure to create LNG bunkering infrastructure at American ports.

Isla Bella, a dual-fuelled LNG container ship operated by TOTE Maritime, entered Caribbean service in November. Its sister ship, *Perla del Caribe*, is expected to join it in February. The only thing missing to allow them to take full advantage of their LNG capabilities is a bunkering facility at their home port, Jacksonville, Florida.

TOTE attempted to jump-start the process a year ago when it signed a contract in early 2015 with gas suppliers Pivotal LNG and WesPac Midstream to provide LNG for TOTE's ships.

To meet the fuel demand, Pivotal LNG and WesPac are building an LNG liquefaction facility at Jacksonville.

LNG is used as a bunker fuel in the commercial cargo sector only by a small number of vessels, trading mostly in northern Europe. But an increasing move to LNG as a bunker fuel worldwide is a near certainty, according to Angus Campbell, managing director of Bernhard Schulte Shipmanagement UK. In October he told a conference in Singapore that an analysis of the market showed using LNG as a bunker fuel "offers opportunities for early movers to secure a market leading position ashore and afloat, and global LNG fuelling will become a mainstream option".

But investors have been hesitant to invest in LNG bunkering without a market to sell to, while vessel operators have been slow to build LNG-fuelled ships without sufficient infrastructure.

Increasing shale gas exploration in North America, however, has led to falling natural gas prices and is expected to boost LNG bunker fuel sales, according to a report released in October by Transparency Market Research (TMR), a forecasting and trend analysis firm. TMR estimates that the global LNG bunkering market will grow at a compounded annual rate of 63.6% from 2014 to 2025.

That growth, along with new regulations requiring vessels operating within 200 nm of shore to drastically reduce sulphur emissions, played a major role in getting LNG bunkering started at Port Fourchon, Louisiana, by offshore specialist Harvey Gulf International Marine.

America's emerging LNG bunkering industry is taking up increasing amounts of attention from vessel classification societies and US regulators. Classification society DNV GL's technology director for North America, Tony Teo, asserts that the early phases in the growth

of the bunkering infrastructure "are essential when performing risk assessment". He said simultaneous operations such as loading and unloading cargos and passengers at a terminal during bunkering operations required special attention.

The US Coast Guard (USCG), which is responsible for overseeing bunkering safety at US ports, is trying to figure out what its inspectors will need to know as the US moves towards LNG fuelling systems.

Anthony Hillenbrand, an LNG bunkering specialist at the USCG's Liquefied Gas Carrier - National Center of Expertise (LGC NCOE) division in Port Arthur, Texas, told *P&H* that inspectors working at ports that receive tankers carrying gas as cargo already have basic knowledge of handling LNG. Those elsewhere may not. "So figuring out how much training is needed and by whom is the challenge the USCG has right now."

To help get that started, in September LGC NCOE held a full day of training on LNG bunkering. The session focused on the risk involved in the fuelling of LNG vessels at ports and how to mitigate it. "We looked at the whole operation from start to finish with various stakeholders, including vessel owners and operators, and went through what may or may not happen, and how to deal with potential hazards," Hillenbrand said.

Pressure to expand LNG bunkering could ease in the short-term, at least in the US Puerto Rican trades, as vessel capacity adjusts to meet changes in demand. But Crowley Maritime, which will deploy two of its own LNG-fuelled container ships in the trade, told *P&H* that, by the time the Pivotal LNG and WesPac Midstream vessels were in service at the end of 2017, there should be more than enough vessel capacity to handle demand.

"The beauty of LNG is that it's a fairly stable price, because most of the cost is in the liquefaction process," said Crowley VP and general manager John Hourihan.

Despite the narrowing in price between traditionally cheaper LNG and marine diesel fuel due to recent plummeting oil prices, TOTE Maritime vice-president Peter Keller insisted, "Long term it's not about the price, it's about stability and our responsibility to meet cleaner emissions regulations." **PH**



Major port investment programmes

As we head into 2016, **Tony Slinn** looks at the some of the most significant global port expansion and renovation projects taking place



Lázaro Cárdenas

We begin at Mexico's second largest port, Lázaro Cárdenas on the Pacific coast, where APM Terminals signed a 32-year concession in 2012 for the design, construction, and operation of a new deepwater container terminal (TEC2) that is scheduled to begin operations this year.

The project will see an overall investment of USD900 million in development and equipment, with Phase I including 750m of quay served by seven ship-to-shore (STS) cranes with a 24-container row able to simultaneously handle two 350m vessels of up to 15,000 teu capacity. TEC2 will have an annual throughput capacity of 1.2 million teu, a fully automated gate, and the largest on-dock intermodal rail facility in any Latin American port.

The investment shows that Mexico has become an increasingly important global trading nation, particularly in the trans-Pacific sea lanes. With a population of 120 million, it is the second-largest economy in Latin America and saw overall trade more than double from USD345.7 billion in 2000 to USD771 billion in 2013.

Mexican ports also experienced rapid growth, handling nearly five million teu in 2013 and as a result



Cranes arrive aboard ZPMC's *Zhen Hua 26*

the government announced plans to double port capacity over the next six years.

Lázaro Cárdenas handled 1.05 million teu in 2013, up from just 1,600 teu a decade ago. It is 620km from Mexico City by rail and linked to major United States cities through the Kansas City Southern rail network.

Towards the end of 2015, APM Terminals confirmed its interest in expanding its Mexican operations into the port of Veracruz as part of a future public bid, eventually linking the Pacific and Gulf Coast operations through intermodal rail intersecting near Mexico City.

"TEC2 will be the most technologically advanced container terminal in Latin America," states APM Terminals Mexico's managing director JD Nielsen.



Panama Canal

Staying in Latin America, let's move to Panama where, at time of writing, the Panama Canal Authority (ACP) was still waiting for a report from contractor, Grupo Unidos por el Canal (GUPEC) on how long it will take to repair cracks that appeared during stress testing in August 2015 in one of the interior chambers of the new Cocoli Locks on the Pacific side of the waterway.

The USD5.25 billion canal expansion currently has a target opening date of April, which could be pushed back further depending on the scale of repairs needed.

ACP CEO Jorge Quijano remains confident, stating that, "any delay shouldn't be much, even if there is one."

The need for the expansion, which has spurred a series of port and infrastructure upgrades throughout the Caribbean and the US eastern seaboard, was highlighted in November 2015 as a backlog of ships waited as long as five days to pass through the current



The new Panama Canal training facility

canal. In mid-October 2015, ACP also announced that the canal moved 340.8 million tonnes during the fiscal year 2015 ending 30 September – a new record and a 4.3% increase over 2014. Quijano predicts that shipments could rise to 360 million tonnes in 2017, the first full year of the expanded canal's operation.

"Even though there is talk that China isn't very strong, with 6% growth it's still a major exporter, while the US

continues to be a large importer," he said.

Meanwhile, ACP has sold USD450 million in global bonds to fund a new bridge spanning the Atlantic side of the waterway – scheduled for completion in 2Q17 – and as of January ACP should have completed construction of a scale model maneuvering training facility to provide additional hands-on experience to pilots and tug captains and ensure they are prepared for the expansion's opening.

Located in Summit, it has two lakes connected by a 518m channel modeled on the Gaillard Cut and features docking bays and replicas of both the new and current locks. It has a fleet of two model ships, as well as four Cerro-class tugs, and by 2017 will have added a model tanker and LNG vessel.

It is said to be the world's largest such training facility and will add to instruction already provided at the Center of Simulation, Research, and Maritime Development.



Costa Rica

The Panama Canal expansion has galvanised plans to expand Costa Rica's Port of Limón-Moin, which is currently ranked 4th in Central America with a container volume of 1.09 million teu in 2014. It is the reefer trade that is predicted to drive growth, with shipments projected to double from an estimated 300,000 teu to 600,000 teu over the next 15 years.

Costa Rica is currently the world's largest exporter of pineapples and the third-largest exporter of bananas, accounting for 13% of all exports with sugar, coffee, and beef also being major export products.

The expanded canal will nearly triple the size of container vessels able to use it to 12,500 teu. Already on order for the Latin American trades are five 10,500 teu vessels for Germany-based Hapag-Lloyd, each equipped to carry 2,100 reefers (4,200 teu). But with just 9 m depth, Limón is limited to 2,500 teu-capacity vessels.

After Phase 1 of its expansion, APM Terminals Limón is currently dredging its access channel and turning-basin to 16 m, building a new 1.5 km breakwater, 600 m of quay to be equipped with six post-Panamax cranes, and



How it will look – APM Terminals Limón

a 40 ha container yard with 29 electric-powered rubber-tyred gantry cranes. About 60–70% of the 1.3 million teu-capacity terminal will be devoted to refrigerated storage capacity. Phase 1 is due for completion in 2018.

After the final phase, the facility will cover 80 ha, with 1,500 m of quay, five berths, a 2.2 km breakwater, and an 18 m-deep access channel, designed to serve as a hub for the Caribbean and Central America.

"The future of temperature-controlled shipments is containers and the larger containerships have dedicated space to reefer cargoes," said Kenneth Waugh, managing director of APM Terminals Costa Rica.



Africa

Phyllis Difeto, chief operations officer of Transnet, South Africa's National Ports Authority, has mapped out port and infrastructure plans through 2016 and beyond to 2022.

Speaking at the African Ports Evolution conference in Durban in November 2015, she explained that Transnet's market demand strategy is now in its third year and has seen investments of ZAR5.78 billion (USD402 million) in ports.

It is an integral part of the government's 'Operation Phakisa', a results-driven approach designed to unlock the country's economic potential and focusing on its maritime trade via an integrated system of regional ports and rail corridors aimed to complement rather than compete with each other.

"The South African government's focus on the Oceans Economy under Operation Phakisa will be a major driver to invest in the port system," Difeto stated. "A total of around ZAR2 billion will be spent over the next five years to refurbish existing facilities, while we



Mapping the future – Phyllis Difeto

will invest an estimated ZAR13 to 15 billion to create new facilities.

"We are addressing current challenges in the port of Durban, where depth restrictions demand an urgent programme of dredging as well as a [quay] lengthening project to create additional capacity," she continued. "In Richards Bay we will create additional container handling capacity through a short-term installation of mobile cranes and a medium-term expansion, and also create additional bulk capacity through a new LNG terminal and a further bulk liquid berth."

Other major projects include more bulk capacity at the port of Ngqura through a new 16 million tonnes per annum manganese terminal, plus a tank farm, as well as further break-bulk capacity through the reconstruction of Durban's Maydon Wharf.

"Operation Phakisa infrastructure developments at

Saldanha, Cape Town, East London, Port Elizabeth, and Durban will be aimed at supporting the oil and gas sectors as well as the ship repair and building industries," Difeto added. "There will also be a fleet management programme for all ports, including the acquisition of tugs, pilot vessels, and dredgers."



India

Construction is under way for Jawaharlal Nehru Port Trust's (JNPT) fourth container terminal with Singapore-based PSA International laying the foundation stone in October last year.

East of Mumbai in Maharashtra, JNPT is India's premier container gateway, handling about 56% of the country's box cargo. The new terminal will be managed by PSA subsidiary Bharat Mumbai Container Terminals (BMCT) and will double JNPT's overall capacity to 10 million teu once complete.

It will be built in two phases, each having an annual capacity of 2.4 million teu. Phase 1 is scheduled for completion within three years and the scope of work includes a 90 ha reclamation, construction of a 1,000 m quay with approach trestle, a gate complex, rail yard, and approach road. It will be equipped with 12 STS quay cranes as well as yard cranes.

Phase 1 works have been split into several packages. Dredging and the reclamation has been awarded to ITD Cem with ISDPL, the Indian subsidiary of Dredging International. Phase 1's three berths will have a depth of 16.5 m, enough to accommodate 15,000 teu vessels.

At full buildout, BMCT will have a quay length of 2,000 m, six berths, and 24 STS cranes. At time of writing,



Indian prime minister Narendra Modi (far left)

there is no indication whether Phase 2 will follow on immediately on completion of Phase 1 or be subject to market demand.

The Indian government, however, is confident there will be major container volume growth. In January, the shipping ministry launched its National Perspective Plan aimed at a comprehensive, integrated development of ports and geographical regions called coastal economic zones (CEZs) that are likely to extend along 300–500 km of coastline and 200–300 km inland.

As this is written, 14 CEZs have been identified across several states and the shipping ministry is in talks with state governments, as well as other ministries responsible for rail and road transport, power, steel, and industry in general.



Black Sea

The Russian government plans to spend RUB20–25 billion (USD400–500 million) to expand and deepen the port of Novorossiysk and add better facilities and road and rail links.

The project, slated to begin in 1Q16 and be completed by 2020, will see the quay at Novoroslesexport, one of the port's largest terminals, lengthened to 1,655 m.

Currently, Novorossiysk – Russia's second-largest port – can accommodate vessels up to 6,000 teu, but following the expansion that will increase to 10,000 teu. The objective is to boost container volumes by up to 15% annually and compete with Ukraine's deeper ports, which have taken trade from Novorossiysk.

Container throughput at Novorossiysk fell by 9% in 2015 due to falling oil prices, sanctions and the rouble's decline against other international currencies. The port is operated by Novorossiysk Commercial Sea Port Group (NCSPG), Europe's third largest port operator in terms of cargo turnover, which also runs Primorsk on the Baltic Sea and Baltiysk in Kaliningrad. In 2014 NCSPG's market



Deeper – Novorossiysk

share was 21% of total cargo turnover at Russian ports, which amounted to 131 million tonnes.

Moving along the coast to Georgia, the port of Poti will see a major expansion beginning this year aimed at turning it into a multipurpose, multiuser deepwater hub serving Georgia, the Caucasus, and central Asia.

APM Terminals bought Poti, Georgia's largest port, in April 2011 and has so far invested over USD70 million upgrading infrastructure. In 2014, Georgian ports' total container throughput was about 480,000 teu, of which Poti handled 80% (385,000 teu). Figures for 2015 are

expected to see the port handle over 8 million tonnes of cargo and 400,000 teu, with more than 1,300 vessel calls.

Under its port masterplan, APMT's next expansion phase, which it expects to complete in 2018, includes two new deepwater berths able to accommodate 9,000 teu vessels, and an annual throughput capacity

of 1 million teu. At full buildout, Poti will have a water depth of up to 16m – enough to accommodate the largest vessels calling the Black Sea – a cargo throughput capacity of 50 million tonnes and two million teu. An adjacent industrial and free trade zone will complement the projected throughput growth.



The USA

While the American Association of Port Authorities (AAPA) welcomed the USD44.3 million for port projects awarded at the end of October 2015 by the government under its TIGER VII infrastructure grants, the fact remains that some states are now picking up the cost of what has traditionally been a federal expenditure – dredging and maintaining federal waterways.

With funding for navigation channels at its lowest in a decade, port directors feel that the government is abandoning them. The imminent opening of an expanded Panama Canal and the draught and infrastructure needs of the latest generation of mega box ships has done nothing to allay those worries.

Tired of waiting for government funds, ports in Florida and Georgia have secured cash to deepen federal waterways, spending about USD500 million in the process.

AAPA navigation policy director Jim Walker said, "The federal government is just funding-constrained. The states see the need to get their port investments completed as we come to the end of the 'Panamax standard'. Post-Panamax ships require ports to be at least 43 feet [13m] deep – new ship generations are even bigger and require 50 feet or more."

In September 2015, Florida's PortMiami finished its 'DeepDredge' project, giving it 15.8m (52 feet), making it the deepest port south of Virginia, and positioning it as one of the first calls for post-Panamax ships.

The USD220 million project was funded by state and local cash – Florida Governor Rick Scott said the state would pay the federal government's USD77 million share and seek reimbursement later.



PortMiami

PortMiami makes the point

Overall, PortMiami has spent more than USD1 billion transforming itself with post-Panamax cranes capable of reaching 22 containers wide/nine containers above deck, on-dock rail in partnership with Florida East Coast Railway linking it to 70% of the US population in four days or less, as well as a new access tunnel connecting the port directly to the interstate highway system.

Georgia Ports Authority was in a similar situation with its USD700 million dredging project along the Savannah River. As a result, the state advanced its entire USD266 million share, a cost would have been spread over several years if federal dollars had been available.

Not all port directors, however, agree. Port of Corpus Christi in Texas has Congress approval to deepen to 52 feet, but the USD300 million needed had not materialised as this was written.

Executive director John LaRue says he has no other choice but to wait for federal money. "We don't like having the federal government abrogate their responsibility," he stated. "If everybody starts doing their work, they'll just say we really don't have to do this, we'll let the ports do it themselves."



Turkey

APM Terminals Izmir on the Aegean coast is set to open in 1Q16, expecting its first vessel call in March.

Operating under a 28-year concession agreement with Turkish petrochemical giant Petkim, Izmir's first phase will have a 700m-long quay, 16m depth, and 1.3 million teu capacity. The new port represents an investment of USD400 million, and will create 600 jobs.

Five rubber-tyred gantry cranes (RTGs) and two STS gantry cranes capable of handling 16,000 teu box ships arrived in October 2015 with one further STS crane and five additional RTGs booked to arrive in December 2015.

The terminal can be expanded to 4 million teu capacity and will become the Aegean region's biggest, serving



APM Terminals

STS cranes arrive at Izmir

Istanbul and southern Turkey. The country's government has announced plans to increase exports to USD500 billion annually by 2023 and the port will contribute significantly towards realising that ambition. **PH**



Damen Dredging Equipment

Hydrographics helps inland port

A Damen survey system ensures sandbanks are not allowed to interfere with fuel depot traffic, reports **Tony Slinn**

Damen Dredging Equipment (DDE) has supplied a unique hydrographic survey system to a long-standing Nigerian client in order to ensure an inland port with a huge fuel depot can get its barges safely from the sea.

A DDE representative told *Ports&Harbors*, "The river is called the Imo, the inland port Akwete, and it is 52 km upstream from the sea".

Explaining the way the river was used and the nature of the problem, she said, "A continuous cycle of fuel barges is towed along the river, from open waters to the Akwete depot, by a Damen STU2208 Stan tug. Due to the river's strong currents, however, sandbanks are formed [constantly] in various locations.

"To ensure the barges can sail safely, two Damen CSD500 cutter suction dredgers [CSDs] eat their way through these sandbanks," she continued, "but of course it's vital they know exactly where to dredge. As a result, we've supplied both software and hardware for the CSDs, plus a local survey vessel for carrying out pre- and post-surveys on the river."

The equipment includes a single beam dual-frequency 200/33 kHz sensor made by Airmar Technology Corporation of the US, a specialist in ultrasonic transducers and sensing technology. This can determine the thickness of the silt layer as well as the actual depth of the river: the low frequency reflects the bottom, the high frequency the top layer.

Navguard software is also installed. This allows constant updates to maps used by both dredgers and the Stan tug.

"This system has been installed on a simple boat and the raw survey data are processed in the office, for instance, taking reflections from shoals of fish out of the measurements," the Damen representative explained. "It results in a map showing the various depths ... allowing the dredgers to operate efficiently, attacking only those sandbanks blocking the navigation channel, and enabling the fuel barges to pass safely without delays.

"The local crew has now been trained by a Damen field service engineer in how to use the Navguard software, and how to carry out survey trips independently," she concluded. **PH**

MORE INFO: www.damendredging.com

(Top and near right) Survey vessel starts making its lines (Far right) Control cabin, with on-screen information, during dredging



Damen Dredging Equipment



Damen Dredging Equipment



Royal Boskalis Westminster

Suez survey team applauded

Tony Slinn reports on the unsung team of heroes – the hydrographic surveyors – who made Egypt's Suez Canal expansion possible

Dredging the New Suez Canal

There was much celebration when six international dredging contractors completed the enormous project of expanding the Suez Canal in just nine months.

Ports&Harbors covered the dredging specifics extensively in a previous issue but, to recap, the project comprised a 35 km-long New Suez Canal, created to run parallel to the existing canal, with 200 million m³ of sand, clay and rock dredged in under nine months. In addition, two service channels and two cross channels were dredged to connect the existing and the new canals.

The contractors were split into two consortiums: Belgian giant DEME worked with US-based Great Lakes Dredge and Dock in one; Dutch majors Boskalis (the project leader) and Van Oord, with National Marine Dredging Co of Abu Dhabi and Jan De Nul of Belgium formed the other.

"Boskalis surveyors led the way on this project and our senior surveyor, Ronald Kok, directed all the surveying work for the consortium," a Boskalis official told *Ports&Harbors*. "He was one of the first surveyors to start work in Egypt, before the other team members arrived. He was a member of the first topographic team that, kitted out with rucksacks full of GPS equipment, struggled through sand, water, and mud to obtain the required data for longitude, latitude and elevation."

To make the surveyors' task more difficult, the Egyptian government saw the region as a security zone and refused permission for the use of remote-controlled equipment.

"Ahead of us," Kok commented, "the Egyptian army was still hard at work digging out the soil down to the

baseline. And behind us, we had the first cutter suction dredgers waiting to get started.

"Close to 99% of the in-survey consisted of topographic measurements," he added. "There wasn't enough water depth for the ships to complete hydrographic surveys along the route of the new section of the Suez Canal, and the survey ships were still on their way."

In fact, the survey team was only at full strength after two months. "As the work progressed, we had about 40 surveyors operating in four working areas on the 35 km-long route," Kok continued. "For the hydrographic z-measurements – depth – they used the single-beam equipment required by the client.

"One of the reasons surveying was so important on the Suez project was because the work was paid for on the basis of the number of dredged cubic metres, which meant the consortium depended on our x, y and z measurements to determine the dredged volumes. So we conducted 'payment surveys' twice a month."

These surveys were carried out in parallel with the in-surveys, which continued until mid-June, and the final surveys, which started in the second week of June. Daily progress of all the vessels was monitored, of course, so the dredging teams could work as efficiently as possible.

In early May, Kok was able to start planning the final surveys, which demonstrated that the right depth had been reached everywhere.

"We had to finish no later than 5 August," he explained, "and many people doubted we could do it. But to get the job done, we pulled out all the stops, running day and night surveys with five survey vessels, for example, and by processing survey data in 24-hour shifts.

"We conducted the final measurements on 3 August," he concluded, "and despite the extremely short time for preparations, the time pressures, and the heat, the survey teams did a magnificent job." **PH**

MORE INFO: www.boskalis.com

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The International Association of Ports and Harbors (IAPH) is a global alliance representing over 180 ports in about 90 countries. Together, IAPH member ports handle over 60% of the world's sea-borne trade and nearly 80% of the world's container traffic. It is a non-profit-making and non-governmental organisation headquartered in Tokyo, Japan.

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'The Global Ports' Forum for Industry Collaboration and Excellence'

Room for improvement

Precision positioning can still get better, NOAA's

Rick Brennan tells **Jason Barnes**

Despite some service providers now delivering horizontal positional accuracies in the sub-10cm range and vertical accuracies in the low tens of centimetres, Captain Rick Brennan, chief of the US National Oceanic and Atmospheric Administration's (NOAA's) Coast Survey Development Laboratory, still sees space for change and improvement.

"Historically, we used to be pretty pleased with plus or minus 1 nm in open-ocean navigation. Near-shore, a couple of cables was considered fair going. That was true until quite recently. What we're seeing now is a reduction in dredging due to shrinking government budgets. This is driving a greater need to know the vessel's position in the water column relative to the seafloor.

"In comparison with land-based navigation, maritime navigation has a greater need to know its vertical position. This is complicated by factors including a vessel's speed and load, the weather, tides, and water density [salinity]. I think that's going to drive the requirement for better positioning accuracy as vessel operators desire greater cognisance of the risks they face – an example might be a large petroleum carrier looking to transit an environmentally sensitive area. We'll see things happen on a carrier-by-carrier and a port-by-port basis – several ports are now specifying clearances."

The big driver of demand is economics and larger vessels. "It makes more sense to move a larger quantity of cargo once. That also makes better environmental sense. This drive towards larger ships is going to push the need for better out-of-the-box GPS accuracies. At present,

charts' accuracies are referenced to tidal datum but I can see a shift to referencing to the geodetic ellipsoid. Vessels will know where they are vertically at all times and I don't think we're too far from that point. Some satellite service providers can already correct survey-grade GPS services from 1 m to sub-20cm in the vertical and that can only get better. With new satellites and GPS vendors constantly improving their positioning algorithms, we will see single-centimetre accuracy in 10–15 years."

We can anticipate a classic trickle-down effect, with larger shipping companies pressing for out-of-the-box solutions. Brennan notes that a USD100,000 navigation system upgrade is "small beer" to larger ships and operators. He also highlights port approach strategies as an influence. Canada's St Lawrence Seaway, for instance, already has a whole range of GPS beacons in position for survey purposes and there is little reason, he says, why these couldn't also be used for approach applications.

One issue will be the maritime industry's traditional conservatism – particularly when considering the pace of change in ICT and consumer electronics. Bridge ECDIS systems are being left behind in favour of portable pilot units (PPUs), which typically ally a tablet computer to a GPS receiver. But many of these PPUs use charts that do not comply with IHO ENC standards. National hydrographic organisations, such as NOAA, need to work out how to get the most up-to-date, type-approved charts on to pilots' mobile devices quickly and easily.

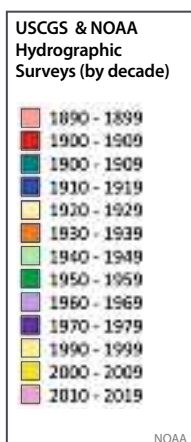
Brennan sees the trickle-down effect being turned on its head by such developments. "It used to be that standards were set by the IMO/IHO and then adopted by the larger operators first. Now, standards are being driven by service providers who are manipulating and adding data in order to add value and differentiation."

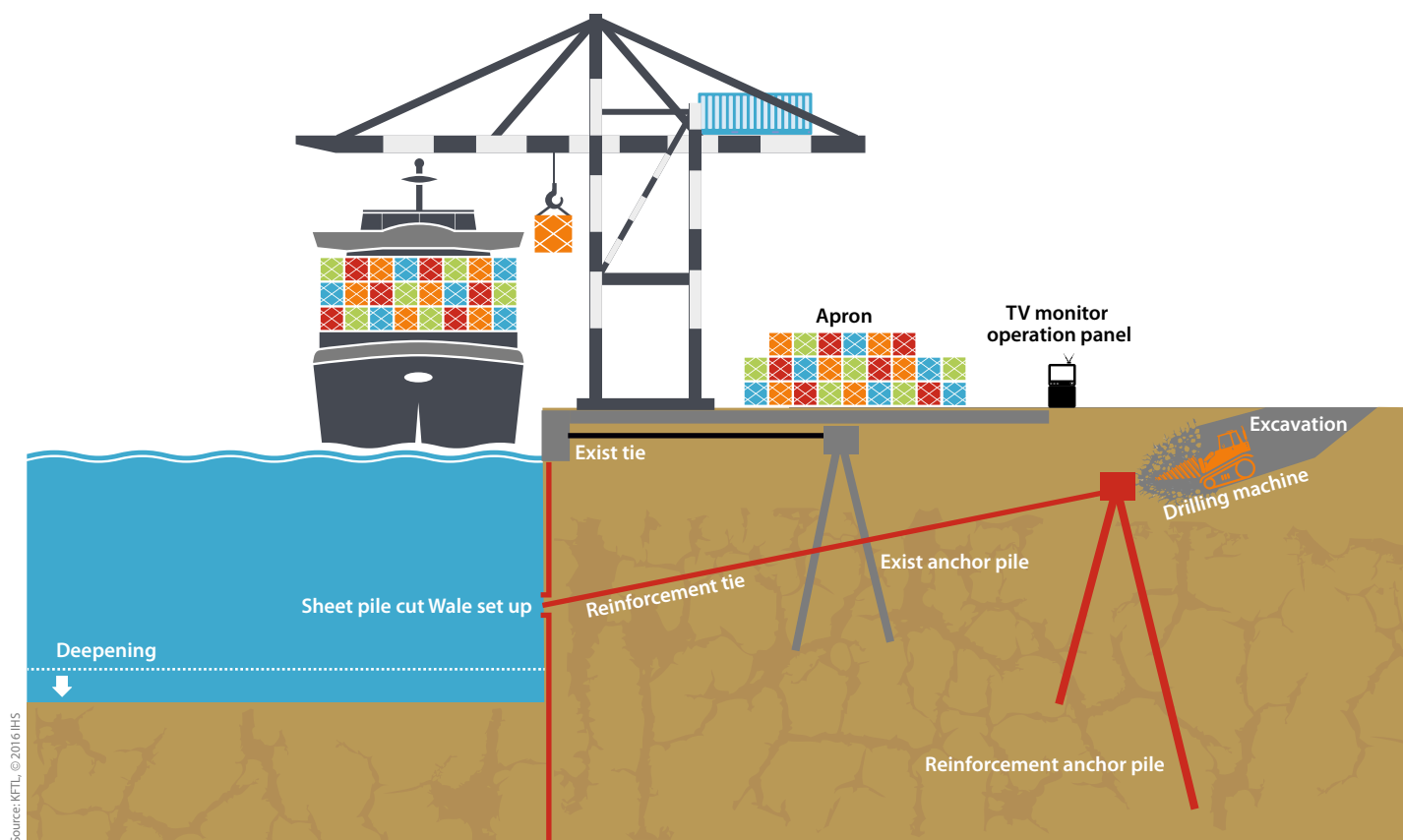
In the face of this, a decade-long definition process is no longer sustainable. Brennan considers the IHO is moving in the right direction with the S100 standard and notes the need, where safety is concerned, to take a considered approach to standards' formulation.

S100 will replace the current S57 and will bring some welcome new features, he says. "Among them is the fact that high-resolution surveys will be used to create models of the seafloor and be provided to the mariner in a gridded format. At present, ENCs contain a sparse set of depth measurements. NOAA has much higher-resolution data that cannot be provided in the S57 ENC format. Once S100 is complete, we'll be able to provide data that are much more computationally rigorous. S100 will be more aligned with other international data standards — what you'll have is an ISO-type standard we will be able to update or modify far more quickly.

"And, because the bathymetry will be in a modelled format, it will be possible to apply real-time water level measurements to the depth model and provide the mariner with actual water depth at the time of transit. S100 also will provide formats to display currents and meteorological data in an ECDIS and allow a mariner to answer the question, 'Can I enter this port?'" **PH**

All charts are now updated weekly





Confidence in Jamaica

A CMA CGM-led consortium has revealed new details of its plans to rejuvenate the container transshipment hub in Kingston, Jamaica, reports **Greg Miller**

With the expanded Panama Canal set to debut in the second quarter of 2016, the race continues among container transshipment hubs in the Caribbean Basin to upgrade facilities to handle larger vessels.

As liner consortiums switch to higher-capacity ships for the Asia-US east coast route after the opening of the larger waterway, although the overall box volume transiting the region will not necessarily increase, transshipment calls in the Caribbean could migrate to the hubs best able to serve such tonnage.

One of the biggest question marks in the region is whether Jamaica's Kingston Container Terminal (KCT) will be ready in time, given how fast its competitors in Panama and Colombia are building up their own capacity. KCT's expansion is being undertaken by Kingston Freeport Terminal Ltd (KFTL), a joint venture between French carrier CMA CGM and Terminal Link that won a 30-year concession in April 2015 from the Port

Authority of Jamaica (PAJ) to operate the facility.

Addressing the Caribbean Shipping Association conference in October 2015, KFTL chief executive Olivier Tretout offered assurances on the expansion timetable. "We are on track," he asserted. Phase-one construction and dredging are scheduled to be completed by the first quarter of 2017, he added. "Phase one of the development plan is going to begin very soon: in weeks, not months. We recently received the proposals from engineering and dredging contractors and [bids of] the three shortlisted companies are very close."

He stressed that the deadlines in the concession agreement signed with the PAJ (2020 for phase-one terminal work, 2021 for dredging) did not reflect the actual schedule of infrastructure work. "Within one and a half years, we will have a terminal that is designed to handle the big vessels, just like the other ports in the region," he said.

In addressing concerns about whether KCT would be ready in time to handle the vessel mix brought in by the Panama Canal's expansion, Tretout predicted that the regional transition to much larger container ships would not happen immediately upon the expanded canal's opening. "We can already handle 8,000–9,000 teu ships on the west berth," he said. "There will not be enough cargo to

have the very large vessels overnight after the opening of the canal. It will take months, or even a year or two, so with the plan we have, we think we are on track to meet the needs of the shipping lines."

A total of 1.3km of quay wall on the south end of the terminal will be upgraded in phase one to handle deeper-draught vessels. Currently, 600m of the south quay is not used. Work will begin there first, allowing terminal capacity to remain unaffected when construction is under way. Once the first 600m has been completed, which should take around five months, vessel operations will be shifted to the upgraded area and construction work will start on the remaining 700m.

Because larger ships will be serviced by these berths, the berth walls need to be strengthened. "The challenge is to create a new quay wall in front of the existing one," explained Tretout.

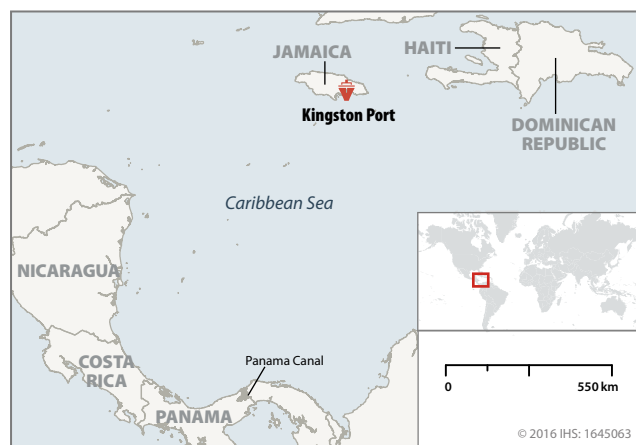
Dredging is due to begin in March or April 2016. Water at the berths will be deepened to allow for vessels with 14.7m draught; the channel will be dredged to 15.6m.

A recently completed survey has scaled back the project's expected dredging requirements, said Tretout. He told *P&H* that the amount of material to be dredged would be 20% less than previously estimated. "It is soft material and the amount of sand usable for reclamation purposes is quite small, so we will dispose all the material at sea, not on land," he said. The shape of the channel will not be changed, just deepened. "It will be quite easy to dredge," he added.

This year, KFTL will purchase additional equipment for KCT, including two post-Panamax gantry cranes and 24 straddle carriers. This will bring the number of post-Panamax quay cranes up to 16 and boost the number of straddle carriers to 64. In 2016, KFTL will install a new terminal operating system.

Tretout also noted that KFTL might accelerate its timetable for phase two, which primarily consists of new equipment purchases plus more dredging. "We are thinking of merging the two phases and doing everything at once. That could be an option [decided] in the coming months," he revealed.

Phase one would bring KCT capacity from 2.8 million to 3.2 million teu/year. Phase two would then bring



capacity to 3.6 million teu/year and allow for berthing of vessels with draught of up to 15.5m. The second phase would also bring the number of post-Panamax gantry cranes to 20 and the total of straddle carriers to 70.

Overall investment during the first year of the project will total USD250 million, with two-thirds for infrastructure and dredging and one-third for equipment, said Tretout. "We are already in the investment process," he said in October, citing orders for straddle carriers. In May 2015, KFTL applied for an Inter-American Development Bank loan of USD125 million for the Kingston project, citing a total project cost of USD313.8 million. As of November 2015, that loan had yet to be approved.

Tretout emphasised that, as with other CMA CGM terminals around the world, Kingston will be a multi-user facility. "The customer base we have secured today is made up of two companies, Zim and CMA CGM, but we want to work with all companies," said Tretout.

Volume at KCT fell in 2015, according to PAJ statistics. Containerised transshipment volume totalled 5,619,105 tonnes in January-September 2015, down 300,230 tonnes or 5% from the same period the previous year. Domestic containerised volume through KCT totalled 750,496 tonnes in January-September 2015, down 38,418 tonnes or 5% from the same period of 2014.

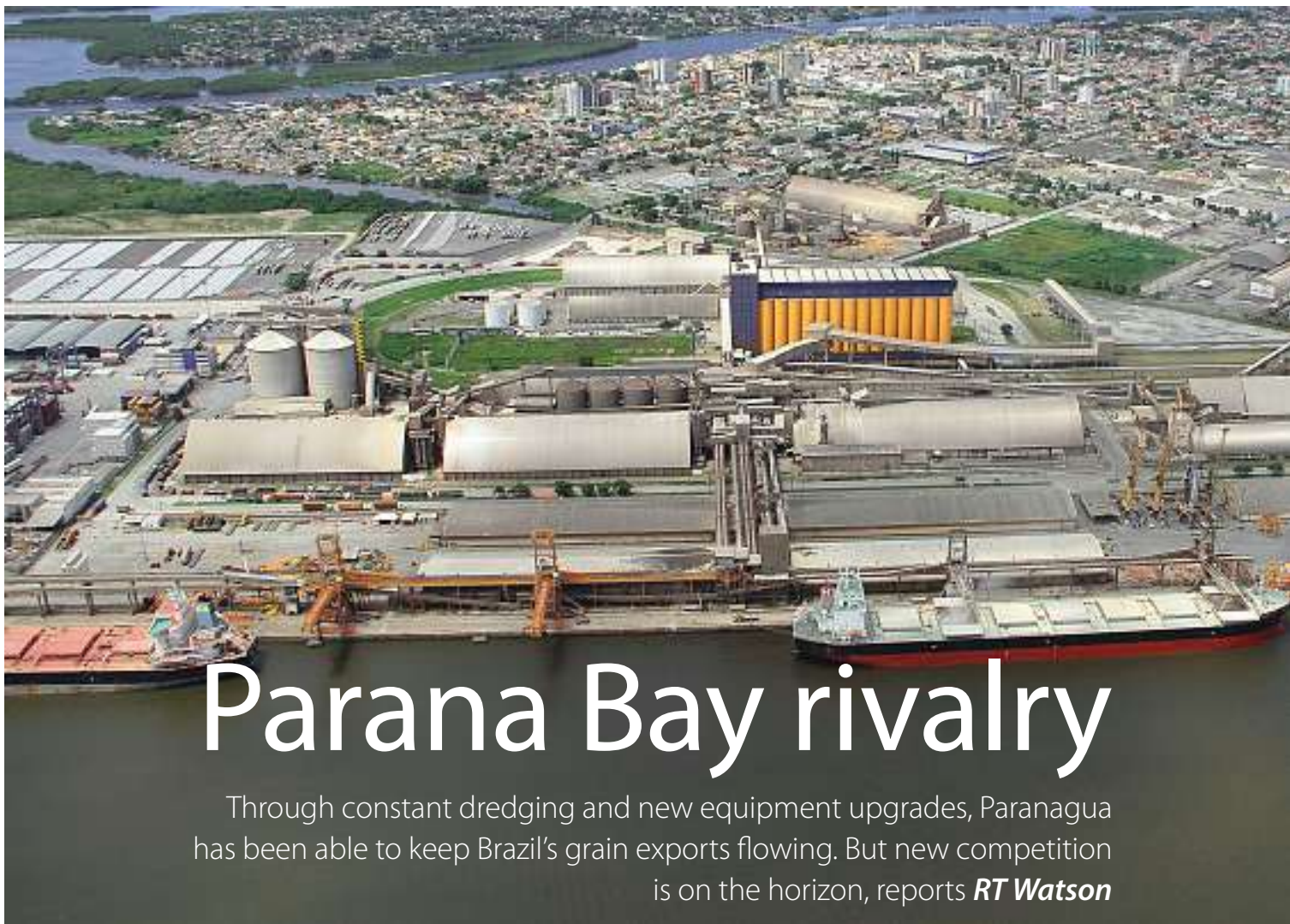
"I am sure that transshipment is going to grow and I hope domestic volume is going to grow," said Tretout. The Kingston expansion project and KFTL's long-term concession agreement should "really be a driver for the Jamaican economy", he added.

"Right now, the capacity of the terminal has two limiting factors: one is the availability of mobile equipment, and that has been more or less fixed, and the other is availability of the staff, which is quite surprising. Our plan is to recruit the existing KCT staff and an additional 100 workers in the first year," said Tretout.

"The handover of the terminal should happen by the end of the year," he said in October. "The staff issue will be fixed and there will be a general upgrade of the infrastructure. This is not rocket science. It just takes time and energy." **PH**

Kingston channel deepening and berth reinforcement





Parana Bay rivalry

Through constant dredging and new equipment upgrades, Paranaguá has been able to keep Brazil's grain exports flowing. But new competition is on the horizon, reports **RT Watson**

Paranaguá, South America's busiest grain port

For centuries, the waters inside the tranquil Parana Bay have welcomed ships carrying cargo to and from Brazil's southern coast. Paranaguá has both established itself as the second largest port in the country, and as the biggest grain port in all of Latin America. Thanks to its focus on agribusiness and careful planning, the port has performed well in the face of Brazil's economic woes.

It has made considerable strides over recent years and its business strategies offer useful lessons. Paranaguá's facilities were challenged in 2011 when Brazil's commodities boom outpaced local infrastructure.

In 2012, Luiz Henrique Dividino took over as president of Administração dos Portos de Paranaguá e Antonina (APPA). "For decades, we've let planning fall by the wayside in Brazil. We only put out fires," Dividino told *P&H*.

Dividino is not the kind of executive who is satisfied with simply drawing up ambitious plans for the future. "We can always make plans for the next 10 years. But clients have needs that demand attention today," he stated. Dividino attributes much of the port's success to recent

infrastructure improvements. "We finally replaced equipment from the 1970s with completely new equipment, including ship loaders," he explained. Key equipment upgrades and dredging have boosted productivity by 33%. "Before, the port only accommodated vessels up to 9m. Now the depth is 13.8m," said Dividino. The new depths have paid big dividends: the number of 300m vessels docking in Paranaguá has soared from just 17 in 2011 to 151 in 2014.

More dredging is in the works. In October, DTA Engenharia signed a USD40.7 million contract to dredge both Paranaguá's and Antonina's access channels, turning basins, and piers. The external access channel of Paranaguá will be dredged to 15m, the internal areas to a depth of 13-13.5m. DTA Engenharia has 12 months to complete the dredging, with 7.3 million m³ of material in total to be dredged.

Antonina, which is located deeper inside the confines of Parana Bay, could take on a larger supportive role after its access channel is dredged to 9-9.5m. In the past few years, Antonina has been almost exclusively



focused on the movement of solid bulk arriving by rail.

Dredging will benefit Paranaguá by enabling its two principal berths to handle ships of up to 80,000 dwt. Dividino expects Paranaguá to be ready to receive vessels in 2016 measuring 386 m by 52 m. "In 2011, we started the dredging programme. Three campaigns are already in the books. Dredging is an ongoing thing," said Dividino. "We have to keep up to date. You have to dredge every year."

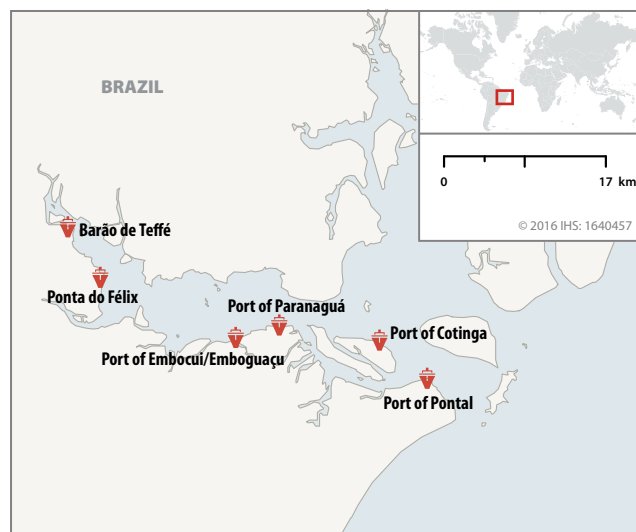
The DTA Engenharia contract came on the heels of another major announcement: for the first time in 30 years, Paranaguá is investing in a major berth expansion. At present, larger ships are forced to take up two berths when docking in Paranaguá. The planned work will make it possible to simultaneously dock three ships. The project, slated for completion in 2017, aims to further boost grain exports by tripling one of the berth's operating capacity to six million tonnes a year with a new loading capability of 2,000 tonnes of grain per hour.

Dividino explained that 75% of Paranaguá's productivity was tied to agribusiness. Much of the work to facilitate high grain volumes is complete, with the pier already extended 1,800 m. The pier at Paranaguá's container terminal has been extended by 300 m.

The expansion plans are included in a total package of modernisation investments priced at USD48.3 million. More than USD133 million has been invested in the past four years alone. As Paranaguá's primary function is dedicated to servicing the 'Grain Export Corridor Complex', Brazilian authorities have been paying more and more attention to the port. Agricultural goods currently rely on six berths, each 244 m long, plus 10 ship loaders with capacities of 800–1,500 tonnes/hr. Vessels dealing in liquid bulk have four terminals and four berths.

In general, Brazilian ports have suffered a drop in cargo volume as a result of the country's economic downturn. Yet Paranaguá is performing better than average. In August, it exported 708 million tonnes of soybeans, up 43% from 494 million tonnes in August 2014.

Dividino credits Paranaguá's ability to grow amid tough economic conditions to APPA's foresight. "In 2013, we got a railway section up and running. If we



hadn't done so, we could have really seen a drop in volume. Because we activated the railway, we were able to make up for the loss," said Dividino. Paranaguá and Antonina are both connected by rail to the state of Paraná's capital city of Curitiba, Brazil's eighth largest city.

He also noted that despite Paranaguá's focus on agribusiness, the port had seen a 25% increase in container volume since 2013 because of measures taken over the past two years.

Paranaguá's container terminal – Brazil's second largest – is managed by TCP. The terminal has 320,000 m² of storage space and three berths totaling 879 m. "I would say the difference with Paranaguá is we get our heads around the cause [of a problem] and move forward," said Dividino. "Second, whenever one of the companies in our port has a problem, we go to Brasília with them. We aren't going to leave our future investors hanging. We are in it together until the end."

Nevertheless, Paranaguá could soon face competition. In July 2015, Brazil's waterways regulatory body, ANTAQ, approved a project for a 450,000 m² container terminal called Porto Pontal at the mouth of the very bay that feeds into Paranaguá and its sister port, Antonina. Porto Pontal's first phase is expected to be completed in 2017.

Porto Pontal would be 43 km closer to the open sea than Paranaguá. Because of its location, operators could save up to an hour of mooring time by choosing it over Paranaguá. Porto Pontal is set to cost USD292 million and feature a 1,300 m mooring pier – longer than the pier at container terminals in both Paranaguá and Santos. Backers of the Porto Pontal project claim that the new terminal would augment port capacity in the state of Paraná by 55%. Both Brazil's Secretariat of Ports and ANTAQ have stated that they want the new terminal in Porto Pontal to be managed by APPA, the administrative body charged with overseeing the ports of Paranaguá and Antonina. Porto Pontal's investors are pushing to keep the facility's administration separate and private. For now, however, Paranaguá reigns supreme. **PH**





Port work starts at Saemangeum

Saemangeum New Port is part of a bigger project aiming to develop the west coast of the Korean Peninsula, **Zeng Xiaolin** reports

It was 25 years ago that South Korea first set out to develop Saemangeum on the west coast of the Korean Peninsula. Development work began in 2012 and now, finally, building has started on Saemangeum New Port. Its completion target date is 2030.

The project's first phase will equip it with four berths by 2020 and 18 by the end of the whole project.

Saemangeum Development and Investment Agency (SDIA), an independent government agency tasked with attracting investors, told *Ports&Harbors* that the port would accommodate car carriers, general cargo ships, container ships, and cruise ships.

Gunsan Regional Oceans and Fisheries Administration, which will oversee the new port's construction, said that, once completed in 2030, it would be able to handle 17.29 million tonnes of cargo each year, including 450,000 teu of containers.

The administration said, "Saemangeum New Port will be the driving force behind the development

of Saemangeum city and the smooth processing of the export of goods produced in Saemangeum's industrial complex."

Saemangeum New Port will be just 380 km away from China's Shidao Port and its lower logistics costs could make it more competitive than Incheon or Busan. The port, which is being developed with a budget of KRW2.5 trillion (USD2.2 billion), will have an area of 4.88 million m². It is being built on waters just outside a section of the Saemangeum Seawall, called Sea Dike 2. The area is being reclaimed to form the base for the new port.

Prior to construction, the area's water depth was 3–9 m below chart datum, but the area will be deepened by dredging to about 13 m.

"It is estimated that 48 million m³ of materials will be dredged up," said SDIA. "[These] will be recycled by making them into landfill for the port hinterland. The dredging will be monitored for contamination or pollution according to the environmental impact assessment that was drawn up prior to the works."

The construction is expected to generate KRW3.07 trillion worth of work for the local economy and provide jobs for 22,400 workers.

Hyundai Engineering & Construction and POSCO Engineering & Construction are the main contractors

for the breakwater construction, with part of the work subcontracted to Dong-Ah Geological Engineering Company. Dong-Ah worked on soil improvement from July 2012 to November 2013 to ensure the breakwater would have a secure foundation.

The award for the building contract for access roads and coastal facilities for the development of the inner port is still pending administrative procedures.

In anticipation of growing demand for cruise trips, especially arrivals from China, by 2030, Saemangeum New Port will have a berth for an 80,000gt cruise ship, a 4.1 km-long quay, 14.4km of shore protection and a 3.3km access road.

The port will also speed up development of the wider Saemangeum project, which aims to turn the reclaimed area into an industrial, tourism, and agricultural hub.

As mentioned, South Korea has been planning all this since the 1990s, after droughts had caused the country to import rice from the 1960s to the 1980s. The Seoul government initiated the Saemangeum project with the aim of creating a clean and green city that would be the economic hub of northeast Asia.

Part of that involved building the Saemangeum Seawall, which, at 33.9km, makes it the longest man-made dyke in the world.

Construction of the seawall began in 1991 but a series of protests by environmentalists concerned with the impact of the works on the local environment resulted in periodic interruptions.

Prior to 2006 Saemangeum served as a habitat for migratory birds. About 400,000 birds – including the endangered Nordmann's greenshank and spoon-billed sandpiper – depended on the Saemangeum estuary as an important feeding ground on their 24,000km migration between Asia, Alaska, and Russia. Environmentalists accused the government of failing to monitor the impact of Saemangeum's development on wildlife and took their fight to South Korea's Supreme Court in both 1999 and 2005.

But the project ultimately went ahead and the Saemangeum Seawall was completed in 2010, linking two headlands south of the industrial port

city of Gunsan and Buan county to create 400km² of farmland, and a freshwater reservoir. Since then, the Seoul government has spent nearly KRW220 billion to strengthen the seawall.

Anthonie Versluis, a port projects consultant with Roland Berger Strategy Consultants, told *Ports&Harbors* that, historically, industrial development as a means to realising economic growth had been a core element of South Korea's economic development policies.

Versluis said, "The development of the entire Saemangeum economic zone is indeed visionary and ambitious and shows lots of features that one can also find in new economic zones in China. The essence of the plan is to build a new industrial and economic cluster on a 'clean slate' basis, so as to achieve higher levels of economic efficiency in general as well as higher levels of attractiveness for new investments, both local and foreign."

He noted that, once Saemangeum New Port was operational, competition for cargoes among South Korea's many ports would intensify. Busan is South Korea's busiest port and focuses on containers, while Gwangyang and Incheon are expanding to attract more boxes. Other ports such as Masan, Pyeongtaek-Dangjin, and Donghae are hoping to get more vehicle and general cargoes.

"Obviously, such a large scale and new development would challenge older industrial and economic areas within Korea and would create some degree of competition for new businesses," said Versluis. "It is to be hoped, therefore, that this will create positive pressures on such areas to seek renewal and redevelopment. At a national level, the economy in general should benefit from such pressures.

"Potentially," he concluded, "this could lead to a degree of stagnation in cargo flows through other ports. That would be a challenge for national-level port planning. The government would do well to consider the formulation or review of a national port development policy. In an ideal world, that should be aligned with national-level development planning for all other transport infrastructure." **PH**

Saemangeum tidal flats

Artist's impression of Saemangeum New Port





Heads of state gather at COP21 in Paris in November. IAPH played an active role in the carbon debate

IAPH involved in carbon debate at COP21

IAPH presented the results of five years of the Environmental Ship Index at the Climate Change Conference (COP21) in Paris last month. The index expresses the environmental performance of vessels in terms of the emission of air pollutants oxides of nitrogen and sulphur (NO_x and SO_x) and carbon dioxide (CO₂).

Of the more than 4,000 vessels registered in the Index, 175 oceangoing vessels have a score of more than 50 and four of these have obtained the maximum score of 100.

"The ESI appears to be a simple but powerful tool for ports, in supporting shipowners at the vanguard who perform better than legally required. This way, they contribute to a better environment and assist the port in obtaining its licence to operate," said Fer van der Laar, who was

IAPH's managing director for Europe and the time of introduction of WPCI.

Antwerp, one of the first ports to introduce WPCI, said that the number of environment-friendly seagoing ships calling at its facilities had increased since the scheme was introduced.

"In 2012 there were 462 calls in Antwerp by ships that qualified for the discount. Two years later the number had risen to 501, and during the first nine months of 2015 the port had already granted discounts for 671 calls," it said in a statement.

Also at the Paris conference, IAPH and global waterborne transport association PIANC launched a 2020 action plan called *Navigating a Changing Climate* [see IAPH Info, p37].

The plan is part of the COP21 WeAreTransport campaign, which

seeks urgent action to decarbonise the transport sector, improve the resilience of transport infrastructure, and adapt it to cope with the effects of the changing climate.

Any CO₂ emissions-reduction target for shipping that is agreed at COP21 should offer "specifics, clear practical guidance, and global standards", Poul Woodall, environment and sustainability director with DFDS Seaways, told *P&H*. In Woodall's opinion, the question of an emissions reduction target is not a simple one. It must take into account multiple factors, for example, that a single solution is not practically applicable on every ship in the world or even in the same fleet, and a timeframe.

"[Setting targets] is a tricky question," he said. "But I think what is important, not only for the industry, but for us as global citizens, [is that] you come out with some specifics that apply to everybody [and which can be] properly enforced."

"I am not an expert who can say the levels should be 'x' or 'y'. What I am looking for is clear guidance on where we as an industry should go in a way that is possible," Woodall said.

Historically, the burden of regulation is the expense it confers on industry via new technologies and ship designs. But Woodall pointed out that costs also result from conflicting regulations and non-harmonised implementation. As an example of conflicting regulations, Woodall cited the negative impact of sulphur reduction measures on CO₂ emissions.

Current sulphur restrictions are imposed in emission control areas (ECAs) and outside those defined control areas (non-ECAs). Inside ECAs, ship fuel was restricted to 0.1% sulphur on 1 January 2015.

"Traditionally, shipping uses a residual fuel, a waste product, but to get a fuel that can meet the sulphur requirements you need a refined product. In the refining process, you use energy. That energy generates CO₂," Woodall said.

Meanwhile, Woodall wants industry to start gearing up for the European Monitoring, Reporting, and Verification standard to target greenhouse gases, which came into operation at all EU ports for ships exceeding 5,000 gt in April 2015 and will be enforced from 2018.



Notable numbers



6,000

Container moves in 24 hours many carriers now expect from terminals

66%

Respondents to a survey who believe new SOLAS weighing regs will cause disruption

Court US overturns ballast water rules

America's top environmental regulator, the Environmental Protection Agency (EPA), has been ordered to rewrite its rules governing ballast water releases and other incidental discharges.

The EPA issues a so-called vessel general permit (VGP) to protect against 27 types of discharges from vessels in US waters, including foreign invasive species carried in ballast tanks. Four environmental groups, led by the National Defence Council, sued the EPA, claiming the agency's 2013 VGP was based on flawed methodology and did not sufficiently address potential environmental hazards.

In October 2015, the US Court of Appeals for the Second Circuit agreed with the plaintiffs, ruling that the EPA "acted arbitrarily and

capriciously" in issuing parts of the VGP.

"I think it's a stinging rebuke of EPA's effort," said Nina Bell, executive director of Northwest Environmental Advocates, one of the groups opposing the VGP. "The agency set out to maintain the status quo and almost succeeded."

The court ruled that the 2013 VGP, which is set to expire at the end of 2018, will remain



Inspectors will follow new rules

enforceable until the EPA makes changes consistent with the court's opinion. That could potentially include considering technologies that can achieve ballast water quality standards higher than IMO standards, as well as using onshore treatment for ballast water discharge.

Kathy Metcalf, president of the Chamber of Shipping of America, which represents US and foreign-flagged carriers based in the country, said the big question for her members was whether the EPA would amend the current VGP before the new one is scheduled to be issued by the end of 2018.

Meanwhile, the court ruling creates even more uncertainty for vessel operators looking at major long-term investments to comply with ballast water rules. "If

shipowners have been undecided about buying a ballast water system and installing it, this decision reduces the likelihood ... that shipowners are going to do that now," said Robert North, president of North Star Maritime, a marine consultancy specialising in regulatory compliance.

North, a retired US Coast Guard (USCG) rear admiral who spent part of his 35-year career running the USCG's regulatory programme for US- and foreign-flag ships, believes the ruling raises serious questions about US ballast water treatment equipment approval.

Three ballast treatment systems have made it through lab testing and are awaiting approval, and roughly 15 more are undergoing testing. "Now ... the USCG could start type-approving systems based on the earlier standard while the EPA establishes a more rigid requirement," North said.

Causes of Somali piracy re-emerge

Only a few catalysts would need to be in place for piracy to rekindle off the Somali coast, claims security expert *Dave Sloggett*. Where once the gangs involved in piracy would speed past with fearsome people carrying guns off to their next escapade at sea, now tumbleweed gets blown on the wind.

Many of those that went to sea with the aim of capturing merchant vessels have returned to their previous daily rhythms. At the height of the pirate attacks the atmosphere in the local area was feverish. Now it is calm.

For those that prior to the

outbreak of piracy had been fishermen, the return to the daily grind of catching enough fish to feed their families has been a shock. Their temporary riches have been replaced by a subsistence level of living.

However, problems developing in the now calm coastal waters off Somalia may yet see these men return to their former activities.

The arrival of the fishing fleets from South Korea and other countries threatens to create the conditions where the piracy might re-ignite.

It was the primary factor that created the original push to

piracy. Illegal fishing was plundering the rich stocks off Somalia's vast coastline. As a result, it took fishermen up to 10 times longer at sea to catch the same levels of fish as before the arrival of the super-trawlers.

With the absence of piracy has come a change in the behaviour of some vessels transiting the waters off Somalia. To save fuel they are now moving closer to Somali territorial waters. It is possible for fishermen to see their potential prizes on the horizon.

A return to piracy would solve several problems at the same time. The illegal fishing vessels

would again move off, allowing the fish stocks to recover, reducing the time taken to catch fish and making it a worthwhile living for those not wishing to become pirates. But for those tempted by a return to former riches, the temptation of the vessels now operating close to shore may prove too great.

Isolated attacks have continued over the past two years. Far from being over, piracy in Somalia may have simply entered a quiescent state, until the point where it can re-emerge if the right catalyst occurs. That stimulus may well be the factory ships. History, it would seem, may well be about to repeat itself.



2016

New SOLAS weighing regs come into force on 1 July this year



4,000+

Vessels that have registered with the ESI in the past five years



Port of Szczecin on the River Oder will receive investment

Shippers say mega ships and alliances have been bad news

Carrier alliances and larger container ships have both been bad news for shippers and terminal operators, according to the secretary-general of the European Shippers' Council (ESC).

"Mega alliances of carriers have resulted in reduced choice for shippers," Nick Delmeire told delegates at the 10th European Inland Terminals conference in Antwerp in late November.

"Due to low rates, services have deteriorated and the loops that shippers expect are not available."

He said seaport terminals – and, in knock-on effect, inland terminals – were struggling because of the more intensive loading and unloading patterns imposed by the new vessels.

"Carriers are now expecting

6,000 moves in 24 hours but the most terminals can currently manage is 4,200–4,500 moves," he pointed out, adding that if the bigger container ships missed their time slot, terminal planning had to go out the window.

Delmeire called on all the players in the supply chain to get together to plan for the future, otherwise there would be serious congestion problems ahead.

He also believes green transport initiatives are not popular among shippers, who are reluctant to invest in such programmes. He added that such initiatives were also being sabotaged by the growth of online buying at so-called webshops, with their sometimes spurious promises of 'free delivery'.

In his presentation on the ports of Szczecin and Swinoujscie, ports board president Zbigniew Miklewicz said the Polish government had decided to make major infrastructure investments to bring back into use the River Oder, which has fallen into neglect since the end of communist rule in Poland.

"The government wants to develop the Oder as a transport corridor to the southern industrial region around Wrocław," he told conference delegates. He added that an agreement had also been signed with the German government to bring back into use the Oder-Havel Canal, which linked Berlin to the Baltic Sea before the Second World War.

Stefano Bonaldo of Venice Port

Authority spoke of the growing role of the five NAPA ports of the north Adriatic. He said the two main reasons for this new status were a recent trend that had seen manufacturing move increasingly from west to east Europe and the creation of three TEN-T cargo corridors that will converge on the north Adriatic.

Several speakers representing shippers, including Proctor & Gamble's Marc Verelst, highlighted the increasing demand for collaboration between supply chain players. Verelst highlighted the need for trustees – independent co-ordinators who could act as dispassionate referees between supply chain players that are often in competition with each other.

Alex Van Breedam, CEO of logistics player Trivizor, suggested that publicly owned ports could play such a role, as orchestrator of traffic flows and as account manager, providing services for different sectors and geographies.

Fabienne Margail, head of Marseille Port hinterland department, explained the development of Medlink – a grouping of the Marseille-Fos and Sète seaports and nine inland ports to exploit the underused transport potential of the Rhone-Saône river basin.

On the final morning of the conference, Professor Albert Veenstra of Dutch logistics institute Dinalog looked at logistics innovations including the first completely automated consumer goods warehouse, built by Wehkamp in the Netherlands, to offer same-day delivery for online customers.

He also explained the concept

Notable numbers

220,000 m³

Size of the extended terminal at King Fahd Industrial Port



3

Projects that Laem Chabang port is undertaking

of synchronomodality, which would permit an independent logistics provider such as a trustee to choose the optimal mode of transport depending on such factors as capacity, local traffic issues, weather conditions, and the availability of equipment.

Veenstra added that among the major barriers to faster and more integrated supply chains were cumbersome, bureaucratic customs procedures.

However the European Commission is in the process of setting up single windows for each of the cargo corridors it is creating under the TEN-T programme, permitting information exchange between all the players in the supply chain and cutting down on document duplication.

Other speakers talked of the European Commission having a mixed record in facilitating trans-European cargo flows.

The European Union transport directorate's Dimitrios Theologitis said successful alliances had been created between sea and inland terminals to facilitate cargo flows. This strategy has worked well in west Europe but not yet in central and eastern Europe.

Several speakers said the European Commission should exercise more scrutiny in the subsidies it awarded for terminal investments, arguing that in some cases funding more than one terminal in the same area purely on the grounds of compliance with the terms of the subsidy had led to overcapacity.

SOLAS changes give shippers a headache

New SOLAS amendments that require containers to be weighed may appear minor at first, "but the devil is in the detail", Peregrine Storrs-Fox told the British International Freight Association (BIFA) conference last week.

The TT Club's risk management director told delegates that despite first impressions, the changes would have a significant impact on the logistics industry and that there was increasing doubt about whether the 1 July deadline could be met.

The reality of these 'small' changes will hit in just a few short months, but commentators say knowledge of the new regulations and their impact is lacking across the industry.

This argument is supported by a survey conducted by shipping information company INTTRA. Only 30% of 410 respondents expected their "company and/or their customers" to be prepared for compliance when the regulations are implemented in July. A further 48% said they had doubts, and 10% said they would not be prepared. 66% said they expected either a moderate or major disruption in the industry. "Respondents foresee the most disruption in the Asia-Pacific region (42%), followed by Africa (22%)," according to a press statement.

Akshat Arora, a Singapore-based marine surveyor at the Standard Club, agrees. "Regarding the pinch points, there could be few practical considerations and enforcement concerns in some of the developing countries," he said, but added he believed that they



BCT Baltic Container Terminal

Weighing issues face container ports such as Gdynia, Poland, pictured here

would become clear by 1 July.

The shipping industry has had more than a year to consider the impact of the new regulations, as the SOLAS amendments were adopted in November 2014.

"The intervening period [between November 2014 and July 2016] is considered as the transition or planning period," Arora told *P&H*. "All regulated parties need to be prepared to implement and abide by the container weight verification requirements by 1 July 2016.

"It is merely the next logical step towards transparency in the supply chain and reduction in operational risks."

But there are many questions still to be answered. BIFA director-general Robert Keen noted that one of the weakest links at the moment was how to get the bill of lading, complete with shipper's name and verified gross mass (VGM), to the shipping line in a timely fashion. Without this, under the new regulations, the master should not allow the container to be loaded.

Numerous parties are likely to be involved in supply chains,

including party packing the container, the logistics company or freight forwarder, but, as Arora notes, the "SOLAS amendments and the IMO Guidelines are clear that the shipper named on the bill of lading is the party responsible for providing the packed container's VGM".

The carrier and terminal operator may rely on a shipper's signed container weight verification to be accurate. However, if the ship or terminal operator has reason to believe that the verified weight is significantly in error, "they may take such steps as may be appropriate in the interest of safety to determine the accurate weight. The terms of such arrangements and the recovery of the costs are commercial matters for the parties to address," he said.

If a master did sail without the relevant paperwork and there was an incident, then the "claim has to be treated on a discretionary basis", said Arora.

A BIFA representative said, it's an "emerging situation. A lot of questions will be answered. But it looks like a recipe for disaster."



12.45 m teu

Handled by China's top eight box ports last October, 1% less than a year earlier

2018

Year when European Monitoring, Reporting, and Verification standard comes into force

IAPH joins environment coalition

IAPH has joined PIANC-led environment initiative the Think Climate Coalition as a partner, to raise awareness about the challenges posed by climate change at a global level.

Under the coalition's initiative known as Navigating a Changing Climate, the partners, including the World Association for Waterborne Transport Infrastructure (PIANC), the International Association of Ports and Harbors (IAPH), the International Harbour Masters' Association (IHMA), the International Maritime Pilots' Association (IMP), the International Bulk Terminals Association (IBTA), a coalition of the International Dry Bulk Terminals Group and the Coal Export Terminal Operators Association, the Smart Freight Centre (SFC), and the European Dredging Association (EuDA), will work together to encourage the owners, operators and users of waterborne transport



consider 'no regrets' solutions – ie good practice solutions that can prove beneficial for other reasons, irrespective of rates of change in climate parameters; and adaptive management solutions whereby monitoring outcomes inform decisions as to next steps", said Adams.

The plan, which is called *Navigating a Changing Climate*, identifies action steps. Working groups to tackle specific areas of need are already under way and the need for others will be identified in the coming months, he said.

Asked how the group will track how much awareness is rising, Adams said there would be a number of indicators.

He explained, "Many of these indicators will be anecdotal, but they include: the number of organisations registering as supporters; publication downloads; attendance at events and workshops/offers to host or run such events; numbers of visitors to the resources on partner associations' websites and particularly to the web-based resources that will be developed over the five years of the plan."

The initiative constitutes one of 13 transport initiatives put forward by stakeholders of sea, land, and air transports as "Transport Initiatives Proposed in the Context of An Action Agenda on Transport and Climate Change" at the COP21 in Paris.

infrastructure to: reduce greenhouse gas emissions, and shift to low carbon maritime and inland navigation infrastructure; and act urgently to strengthen resilience and improve preparedness to adapt to the changing climate.

IAPH's environmental initiative, known as World Ports Climate Initiative (WPCI), which was launched in 2008 to assist its member ports in addressing and combating issues related to climate change, is highly regarded by the coalition as a model case.

The action plan notes, "Waterborne transport, both maritime and inland, is an essential enabler to human society. It is also one of the most energy-efficient and environmentally sound means of meeting global transport needs, although more can be done to reduce greenhouse gas emissions.

"Whereas recent years have seen considerable efforts by the International Maritime Organization (IMO) under the United Nations Framework

Convention on Climate Change to reach agreement on a global approach to reduce greenhouse gas emissions from international shipping, much less attention has been paid to the infrastructure that supports waterborne transport. Our initiative is designed to address this gap."

Supporting the drive as a member of the coalition is the International Dry Bulk Terminals group. Executive director Ian Adams told *P&H* that the drive was motivated by a significant lack of awareness about the potential impacts of climate change including sea level rise, frequency of extreme conditions, and availability or appropriateness of technical solutions.

The current situation, according to a coalition press release, has led to a lack of action justified by a lack of information on measures that can be taken.

Part of the group's 2015–20 action plan is to provide guidance "to help users look for the low-hanging fruit – cheap and relatively easy solutions; to



Action Plan of the PIANC Think Climate Coalition

PIANC

MORE INFO:
<http://www.pianc.org/thinkclimate.php>



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 and we'll be happy to include them

▶ Women's forum

Women's scholarship launched

In compliance with the resolution adopted at the IAPH Hamburg Conference in June 2015, the IAPH Women's Forum scholarship was launched in October 2015 and comes as two awards.

If you are an enthusiastic female employed by an IAPH member port, you are eligible to apply for and benefit from this programme, established to advance the status of women in the port industry.

The Women's Forum Annual Meeting Scholarship

- Is open to female employees of any IAPH regular member below senior management level
- The maximum amount of grant is USD5,000 (for travel expenses to attend the conference, such as airfare and hotel).

This scholarship is to be used for attendance at the IAPH Annual Conference and is for a female member of a member port that is below senior management level. The award requires the presentation by the scholarship winner of an original paper to the IAPH Women's Forum during the IAPH World Ports Conference or

Mid-term Ports Conference.

Registration for the Conference will be waived for the scholarship awardee.

The Women's Forum Biennial Training Scholarship

- Is open to female employees of any IAPH regular port member
- The maximum amount of grant is USD15,000

(every two years, including travel expenses to attend the conference, such as airfare and hotel).

There are two components of this training scholarship: 1) a training course and 2) attendance and a presentation at the Women's Forum at the IAPH World Ports Conference in the second year of the scholarship programme.

This scholarship is to be used for a port-related course at a year-round academic institution (college or university) for port or maritime-related courses, training at one of the IAPH-affiliated training institutes or other training programme established by an IAPH member or associate member as approved by the IAPH Scholarship Committee.

Registration at the conference will be waived for the awardee.

The deadline for submission of application to both scholarships is 12 February 2016.

For more information and details of the scholarship, please visit

 <http://www.iaphworldports.org/#WomensScholarship>

or contact the IAPH secretariat at  n_tonda@iaphworldports.org



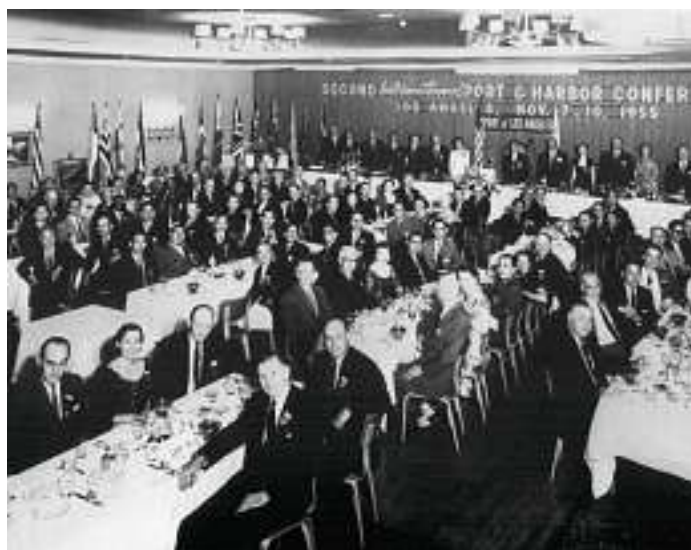
IAPH celebrates becoming sixty years young

The International Association of Ports and Harbors recently observed its 60th anniversary on 7 November 2015. On that day back in 1955 IAPH was founded in Los Angeles, USA, with 126 delegates from 38 ports and maritime organisations in 14 countries gathering to announce the birth of the organisation.

Over the past six decades, IAPH has steadily developed into a global alliance of ports, representing today some 180 ports and some 140 port-related businesses in 90 countries.

The member ports together handle well over 60% of the world's seaborne trade and nearly 70% of the world container traffic.

Since Bennett J Roberts of the National Harbours Board, Canada, became the first IAPH president in 1955, 31 presidents have been elected. The current IAPH president is Santiago G Milà of the Barcelona Port Authority, Spain.



Those first delegates in 1955

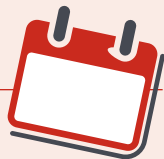
2016

2017

2018

Dates for your diary

A selection of forthcoming maritime courses and conferences



January

28-29: 10th Indian Ocean Ports and Logistics 2016, Reunion Island
<http://www.transportevents.com>

February

1-12: 'Sister Port' Relationship Concept, Planning and Management, London, UK
<http://www.ttpminternational.co.uk>

15-26: Seminar on Port Security, Antwerp, Belgium
<http://www.portofantwerp.com/apec/>

15-26: International Shipping and Global Supply Chain Management, London, UK
<http://www.ttpminternational.co.uk>

15-17: PMAESA Conference, Dar es Salaam, Tanzania
<http://www.pmaesaconferences.org>

16-17: RoRo Shipping Conference, Gothenburg, Sweden
<http://www.informamaritimeevents.com/event/>

17-18: Cargo Logistics Canada Expo and Conference, Montreal, Canada
<http://www.CargoLogisticsCanada.com>

23-25: LNG Bunkering Training Course, Stockholm, Sweden
<http://www.lloydsmaritimeacademy.com/event/lng-bunkering-training-course>

25-26: 7th Intermodal Asia 2016, Melbourne, Australia
<http://www.transportevents.com>

28-2 March 16th TPM Annual Conference, Long Beach, CA, USA
<http://events.joc.com/tpm2016>

29-18 March Short Course on Coastal and Port Structures, Delft, Netherlands
<http://www.unesco-ihe.org/coastal-and-port-structures>

29-2 March ICHCA International Conference 2016, Barcelona, Spain
<http://www.ichca.com>

29-11 March Seminar on IT and EDI in Port Business, Antwerp, Belgium
<http://www.portofantwerp.com/apec/>

March

7-18: Strategic Port Pricing and Commercial Billings Management, London, UK
<http://www.ttpminternational.co.uk>

9-10: Infrastructure Development and Financing Seminar, San Diego, CA, USA
<http://www.aapa-ports.org>



The new Panama Canal may be fully operational by conference time

2016 Mid-term Ports Conference

Hosted by the Panama Maritime Authority (ACP), the IAPH Mid-term Ports Conference will be held in Panama City, Panama from 10-13 May, 2016. Do not forget to mark your calendar for the event.

The preliminary conference programme is available on the IAPH website: <http://goo.gl/Lr17li>

The dedicated conference website will be launched with all relevant details including registration soon.

Meanwhile, three hotels – Hilton Panama, Radisson Decapolis, and Hard Rock Hotel – all within walking distance of the conference venue are suggested by the host.

Visitors to headquarters

New IAPH associate member SafeSTS, headed by managing director Yvonne Mason, and IAPH life supporting member Soka Kikuchi visited the IAPH head office in Tokyo on 12 November 2015. Headquartered in Norfolk, UK, the company which has 17 lightering locations, introduced its STS (ship-to-ship) transfer operations, after which Secretary General Naruse highlighted recent IAPH activities, including the IAPH Women's Forum.



(L-R) Soka Kikuchi, SG Naruse, Yvonne Mason and Capt Robert Gilchrist



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Peter Mollema

Investing in energy efficiency

Peter Mollema, senior manager at the Port of Rotterdam Authority, highlights the port's transition to greener sustainable activities

Being one of the largest industrial complexes in the world, the Port of Rotterdam, besides its importance for shipping, has a pivotal role in the transition to a more sustainable energy future as well.

We are committed to decoupling environmental pollutants such as carbon emissions and nitrogen oxides from greater port activity and economic growth, and realising the most sustainable industrial cluster in the world.

Against a background of huge flux in the international energy landscape, the Port of Rotterdam is widening its energy portfolio and investing in energy efficiency and renewable energy, creating an attractive location for industry and making Rotterdam even more competitive.

We want to enhance the ease of doing business by integrating and strengthening industrial clusters. In terms of energy efficiency there is a potential of saving up to 20 PJ of primary energy by 2020 by using heat from port industry for district heating and horticulture, simultaneously creating extra value and revenue streams for our clients and contributing to national energy goals.

We invest in wind and solar and are exploring how the port can facilitate smart energy use and storage possibilities to integrate an increasing amount of renewables into the energy mix.

Investing in bio-based industry and alternative fuels such as liquefied natural gas (LNG) is an example of how the port continues to invest in new growth areas that are sustainable and good business. LNG is an important transition fuel that cuts emissions and is still competitive, so after the success of the pioneering GATE LNG terminal, the port is stimulating the use of LNG by inland barges and heavy goods vehicles among others.

Investing in research and development and education through our dedicated Smart Port partnership with academia and industry, is helping the transition to a sustainable economy. The research focuses on the immediate and medium-term challenges that industrial players face and how best to overcome them.

We also recognise that the Port of Rotterdam is part of an international global supply chain and are aiming for efficient and low-carbon global logistics. This reduces costs and boosts the environment.

Also, as a measure of our continued commitment, this year we participated in a joint industry initiative between the world's five largest marine terminal operators called Go Green. It aims to promote environmental awareness and sustainable future operations. The initiative focuses on three main themes: reuse and recycling; climate change; and the communities in which the industry giants operate. **R&H**

“ We are committed to realising the most sustainable industrial cluster in the world ”





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