



Global Maritime Weekly Digest

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*The **Global Maritime Weekly Digest**, based at **Southampton SOLENT University**, provides a regular flow of maritime news and analysis, of significance in a global context. Topics covered include shipping fleets and management, seaborne trade, ports, shipbuilding, ship recycling, maritime policy and regulations, and seafarers' labour.*

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Editorial comments

- Trends in **deliveries of new merchant ships and mobile offshore units** over the past decade are compared in item 1. After a rapid rise followed by an equally rapid reduction new merchant ships deliveries have stabilised, while those of offshore units are falling steeply.
- The longer term outlook for aspects of global **marine technology** is examined in a new research report focusing on autonomous systems (item 3). This research considers the employment, skills and socio-economic impact of these systems. Changing skillsets for seafarers are discussed.
- This month the IMO's contentious **Ballast Water Management Convention** was implemented, aiming to stop the spread of potentially invasive aquatic species carried on voyages in ships' ballast water (item 6). A late compromise extended the initial deadline by two years for existing ships to fully meet the Convention's requirements.
- A review of **China's investments in ports around the world** asks what is being gained by these acquisitions (item 5). Securing key supply chains, enhancing international trade capacities and building up geo-political leverage are identified as the prime objectives. Commercial aims are acknowledged, but trade security is also considered to be at the forefront.
- Much informative discussion took place during **London International Shipping Week** held last week (item 7). As well as promoting the UK as a centre of shipping services and other maritime activities, there was a focus on wider global trends. Three events are highlighted.

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(1) Clarksons Research, 1 September 2017

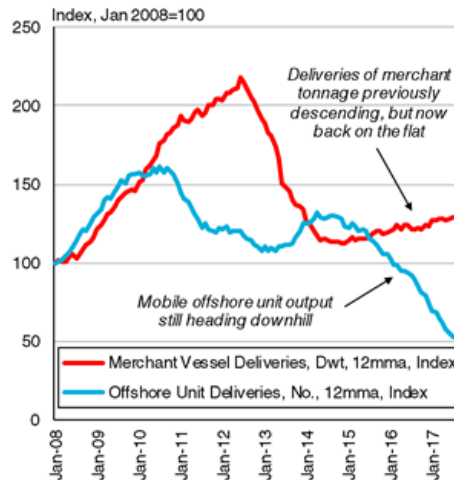
The Uphill And Downhill Of Two Long Cycles...

British cycling star Chris Froome has taken on one long cycle after another, currently tackling the Tour Of Spain following his fourth Tour De France victory back in July. Two long cycles are ongoing in the shipbuilding sector too, and this week's Analysis takes a look at the progress of the delivery cycles in the merchant vessel and mobile offshore sectors, through a challenging period for the industry.

Graph of the Week

The Delivery Cycle: It's Been A Tricky Tour Of Duty

The graph illustrates the progression of monthly deliveries of merchant vessels (dwt) and offshore units (number) from builders globally since 2008. In both instances the series are based on a 12-month moving average, indexed to Jan 2008=100. Merchant vessel data is based on ship deliveries as featured in *World Shipyard Monitor*; offshore data based on mobile offshore unit deliveries as featured in *Offshore Yard Monitor*. Note that the baskets of units being delivered in these two series do partially overlap; these particular series are used here to reflect indicative trends at a broad level.



Source : Clarksons Research

Big Climbs

Back in 2006-08, an unprecedented 651m dwt of merchant vessel tonnage was ordered at shipyards globally. Although, following the onset of the economic downturn, the delivery of some of this tonnage was delayed or cancelled, output rose substantially in 2009-12, with the 12-month moving average (12mma) of monthly deliveries peaking at 14.8m dwt in June 2012 (an index point of 218 on the graph; see graph description for details). Inevitably, however, following the financial crash, a slowdown in ordering ensued, and after the peak in output, deliveries started to slide sharply. Deliveries in the offshore sector were impacted by the downturn too, but a strong oil price buoyed ordering in 2013-14 and output levels, which had dropped following a peak in 2009, improved again, with the 12mma of mobile offshore unit deliveries reaching a peak of 56 units (an index of 132) during April 2014, just as merchant output was approaching its low point.

On The Descent

Merchant tonnage output headed downhill for a prolonged period from 2H 2012. Delivery volumes bottomed out in November 2014, when the 12mma reached 7.6m dwt (an index of 112). On the offshore side, a slowdown eventually came too, with the impact of the oil price crash in 2014 sending offshore deliveries into a descent. Today, the 12mma of offshore unit deliveries has declined by 58% since January 2015. In July 2017 it reached 22 units (an index of 52); the lowest level on record for more than two decades. As well as a hiatus in ordering, significant deferral to offshore deliveries, despite the completion of many units at yards, has had a persistent impact.

Back On The Flat Yet?

Since 2014, however, merchant vessel deliveries appear to be back on flatter terrain, with if anything a gradual increase in delivery volumes over the last two years. In July 2017 the 12mma average was up to 8.8m dwt (an index of 129), and deliveries are expected to increase again slightly this full year and next. In the offshore sector, on the other hand, there has been no respite yet from the tricky descent and offshore output remains under severe pressure.

Checking The Time Splits

Undoubtedly conditions for builders in both the merchant and offshore sectors remain pressurised. But, like Chris Froome's year, on closer inspection it's a story of two long cycles, one still on the descent and one maybe on flatter ground. This confirms the stress being felt in the offshore sector, and backs up the idea that any improvement in that arena might come some while after any better conditions on the shipping side. In the meantime, unlike the dreams of most road cyclists, builders across the board will be hoping that the road eventually turns uphill again. Have a nice day.

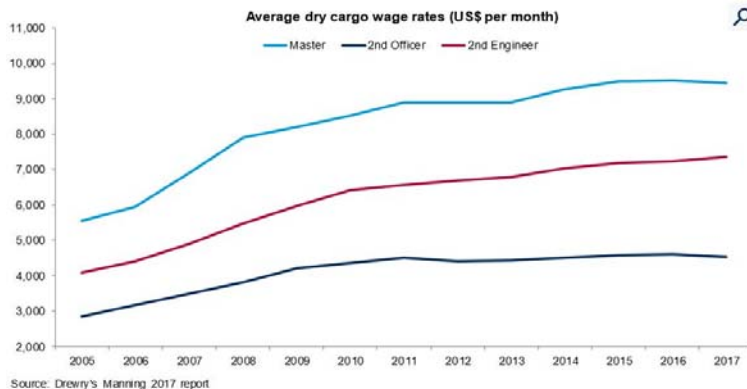
Source: Clarksons

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(2) Hellenic Shipping News, 5 September 2017/ Drewry

Shipping's recovery insufficient to lift seafarer wage costs

Despite a recovery in cargo shipping markets, ship manning costs will remain suppressed as shipowners and operators continue to be financially challenged and the officer shortfall recedes, according to the latest Manning report published by global shipping consultancy Drewry.



The lack of confidence in the industry has seen wage increases almost at a standstill since 2009, and over the past year average officer rates have slid into reverse. While there remains an overall shortfall in officer numbers, this has reduced markedly over the past year and the poor financial state of the industry has forced employers to limit labour costs to affordable levels.

Meanwhile, ratings wage levels have fared little better and we estimate that average global rates have risen by around 1% between 2016 and 2017, which is consistent with the trend of the past few years. Both International Labour Organisation (ILO) and International Transport Workers' Federation (ITF) base rates have remained unchanged in 2017. However, seafarers have been helped by a stronger US dollar, as most are paid in this currency.

"Since the fall in oil prices the demand for officers in the offshore sector has fallen and this has been a major factor in the softening of overall seafarer wage costs," said Martin Dixon, Director of Research Products and editor of the report. "While some sectors, such as LNG that require officers with particular experience, will continue to see above-average wage rises, we expect the downward pressure on manning costs to prevail with below inflation increases anticipated over the next five years."

Drewry estimates that the ongoing officer shortfall contracted by a third over the past year to 13,700, based on an assessment of the global shipping fleet encompassing all sectors except non-cargo carrying ship types, such as tugs and passenger ships, and smaller coaster vessels, such as oil tankers and bulk carriers of less than 10,000 dwt. By contrast, all assessments continually show a surplus of ratings.

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“However, slowing fleet growth and a healthy supply of officers is expected to eliminate the officer shortage over the next five years with a small surplus anticipated for 2021,” added Dixon. “But we think that experienced officers for service on specialist vessel types such as gas carriers will continue to be in tight supply.”

Source: Drewry

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(3) Lloyd's Register, 12 September 2017

New report examines future of autonomous maritime systems

- LR, QinetiQ and the University of Southampton launch new insights report into future developments and challenges in Marine Autonomy
- Report considers employment, skills and socio-economic impacts of autonomous systems
- The ability of regulatory and legal systems to adapt will be a challenge
- Consumer-driven technology developments will drive the pace of change
- Changing skillsets will be required for seafarers

Maritime activity over the next decade will be dominated by unmanned surface and underwater vessels, according to a report on the future of autonomous maritime systems launched today.

Written and researched by LR, QinetiQ and the University of Southampton, the report is a follow-up to [Global Marine Technology Trends 2030](#), looking at how technology trends will impact upon the regulatory and social aspects of maritime operations.

Tim Kent, Technical Director, Marine and Offshore, LR, said: “Networks of autonomous surface and underwater vessels are set to radically change the nature of maritime operations. Developments widely reported in the media, such as those in [autonomous shipping](#), are happening with greater pace than expected as little as 2 years ago. These developments enabled by technology provide new opportunities and potential for disruptive business models. However, the principal challenges will be the integration of these autonomous systems into current maritime operations, legal and regulatory requirements, and not least the impact upon seafarers.”

Bill Biggs, Senior Campaign Leader for Autonomy, QinetiQ, said: “Technological advances in consumer and adjacent markets are a real opportunity for the maritime sector. Applied artificial intelligence, low cost low size sensors, increased connectivity, improved cyber security and better energy management are all likely to drive rapid and disruptive change. Trials already undertaken by navies and transport companies demonstrate the opportunities that autonomous maritime systems present. In 2016 QinetiQ supported [Unmanned Warrior](#), the largest demonstration of its type ever conducted, running as part of a major multinational naval exercise. It's just one example of the steps the UK is taking to keep up with the accelerating pace of change.”

Professor Ajit Shenoj, Director of the Southampton Marine and Maritime Institute at the University of Southampton, said: “The report recognises that autonomous systems and associated technologies will require people to learn to work seamlessly with them. Crew members of the future may become shore based, managing vessels remotely from the office or the sea, creating the need for new training and skillsets. The potential for the command and control to be geographically displaced from the vessel will also require behavioural and cultural changes within the maritime community.”

David Dingle CBE, Chairman of Maritime UK said: “I’m delighted that this timely and thought-provoking report is being launched during London International Shipping Week, demonstrating the UK’s preeminent role in cutting-edge innovation and thought leadership for our global industry. This thought leadership from three world-leading companies and educational institutions, coupled with exciting developments from leading manufacturers such as Rolls Royce, ASV and a wealth of small and medium size players, mean that the UK, the world’s maritime centre, really is leading the autonomy revolution.”

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(4) Clarksons Research, 8 September 2017

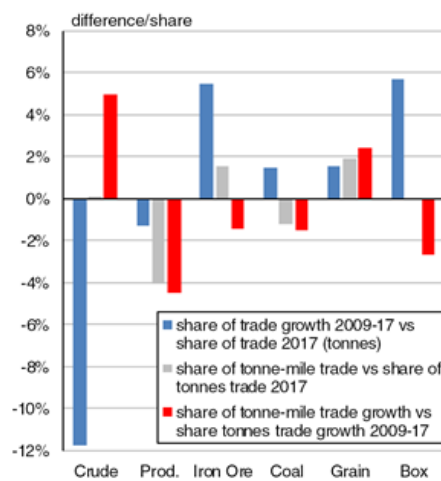
Trade On The Scales: Where Has It Put On Weight?

The world of seaborne trade spreads across a wide range of commodities and goods. But in terms of growth, at any point in time some elements look overweight or underweight compared to their share of trade in total. And once distance by sea comes into the equation, things can be even more complex. This week’s Analysis examines the tale of the scales since the downturn of 2009.

Graph of the Week

Seaborne Trade On The Scales - What's Over Or Under?

The graph shows three comparisons for a selection of key elements of global seaborne trade. The blue bars compare the share of trade growth (in tonnes) 2009-17 to the share of trade (in tonnes) in 2017. The grey bars compare the share of total tonne-mile trade to the share of total seaborne trade (in tonnes) in 2017. The red bars compare the share of growth 2009-17 in tonne-mile trade to the share of trade growth in tonnes. A wide range of seaborne trade data is available in *Seaborne Trade Monitor* and on *Shipping Intelligence Network*.



Source : Clarksons Research

A Fair Slice Of The Pie

The wide spectrum of seaborne trade is well known, with a range of cargo types contributing to a projected 11.5bn tonnes this year. Crude oil and oil products account for 27% of the total, dry bulk for 44% and containers for 16%. World seaborne trade has grown by 38% (an extra 3.2bn tonnes) since it slumped by 4% in 2009, but changes to the cargo shares over time are gradual. So, in term of understanding where the extra ‘weight’ has been put on, it’s necessary to look a little closer at what has been added.

What’s Overweight?

One interesting comparison is to contrast the share of the growth in tonnes since 2009 with the actual share of trade this year. As the graph shows, there can be quite a difference. Iron ore backed by continued Chinese demand, has accounted for 18% of the growth in seaborne trade since 2009, a positive difference of 5% against its 13% share of trade. Container trade (in tonnes) has accounted for 21% of the growth in the period, with a differential of 6%. Meanwhile combined crude oil and oil products trade has accounted for just 14% of the growth since 2009, a negative difference of 13% compared to its share of trade this year.

A second set of interesting comparisons take distance into account. Firstly, a quick comparison of the importance of the different cargoes in both tonnes and also in tonne-miles highlights a couple of instructive patterns. Dry bulk trade is estimated to account for 49% of the total tonne-miles this year compared to 44% of the tonnes. Oil products, with a greater prevalence of intra-regional trade components, provides 9% of the trade in tonnes but just 5% in tonne-miles.

Growing The Distance?

Secondly, this leads to a comparison of the difference between the 'weight' put on in terms of tonnes and tonne-miles since 2009, and this throws up some interesting trends too. Grain (including soybean) accounts for 8% of the growth in tonne-miles but just 6% in tonnes, whilst crude oil which accounted for 6% of growth in tonnes has contributed to 10% of the growth in tonne-miles. In both cases trade flow from the Atlantic to China has had a key impact. Box cargo, meanwhile, put on 21% of the growth in tonnes but only 18% in terms of tonne-miles.

Back To The Scales

So, there are a number of ways to examine where the balance of seaborne trade has altered. Key dry bulk cargoes and containers have added much of the weight, but adding in distance to the vessel demand mix, a top-up is notable in both grain and even crude oil. These ongoing changes just go to show how tricky managing the weight is for shipowners trying to second-guess the seaborne trade scales.

Source: Clarksons

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(5) Hellenic Shipping News, 11 September 2017/ Forbes

China's Seaport Shopping Spree: What China Is Winning By Buying Up The World's Ports

In a bid to bolster its position as a maritime powerhouse, secure key supply chains, enhance its international trade capacities, and build up geo-economic leverage, China has been buying up the development and operational rights to a chain of ports that stretch from the southern realms of Asia to the Middle East, Africa, Europe, and even South America.

While big Chinese state-owned firms began acquiring ports around the world rather quietly roughly a decade or so ago, now, under the strategic framework of what has been dubbed the 21st Century Maritime Silk Road (MSR) — the watery part of the broader Belt and Road Initiative (BRI) — these acquisitions have taken on a booming significance as this inter-continental network begins to take shape. It seems as if it is now almost daily news to hear about how a Chinese state-owned shipping firm has purchased a seaport or won the rights to develop a new ocean or land terminal in another country. On Monday, we found out that China Merchants Port Holdings just bought a 90% share of the Brazilian port operator TCP Participações for nearly a billion dollars. Before that, it was announced that Jiangsu province paid \$300 million to build a free trade zone around Khalifa Port in Abu Dhabi — a seaport which saw a new terminal go to China's COSCO at the end of last year. In July, China Merchants took control of Sri Lanka's Hambantota deep sea port for \$1.12 billion. Next, we may hear about how Lithuania finally opens the doors and lets China Merchants move in and do their thing at Klaipeda port. In the past year alone, China has invested over \$20 billion into seaports on foreign terrain, doubling the amount they spent in the previous year, according to estimates by the Financial Times.

These new acquisitions add to China's growing portfolio of international port holdings, which now span the world with terminals in Greece, Myanmar, Israel, Djibouti, Morocco, Spain, Italy, Belgium, Côte d'Ivoire, Egypt, and around a dozen or so other countries.

The Maritime Silk Road

The 21st Century Maritime Silk Road was first announced by Xi Jinping in Jakarta a month after the initial revelation of the Belt and Road Initiative (then called One Belt, One Road) in Astana in 2013. The vision was for China to construct an array of three enhanced sea routes from China to Europe and Africa, and filling them with new ports, manufacturing zones, and even entirely new cities. While this initiative was initially often met with skepticism and even abject mockery by the international community, China has

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been cobbling it together piece by piece — port by port — and is now something that is extremely difficult to marginalize or ignore.

Over the past few years, China has created a fully state-owned and operated global shipping empire. Giant SOEs like China Merchants and COSCO Shipping are now running 29 ports in 15 countries and 47 terminals in 13 countries, respectively. On top of this, other, relatively smaller state-owned entities like Shanghai International Port Group, Ningbo Zhoushan Port, and the Port of Lianyungang are also jumping into the fray, gobbling up the world's sea and land ports.

What does all of this mean?

Ocean shipping is, almost by definition, an international affair, and we need to ask if China's recent maritime expansion is really anything out of the ordinary. Are we putting an undue emphasis on the port acquisitions of China without proper contextualization?

We live in a world where port operators from one country own and operate terminals in other countries. PSA (Port of Singapore Authority) operates terminals in 15 countries, Denmark's Maersk Line has 76 ports in 41 countries, Switzerland's Mediterranean Shipping Co (MSC) has 35 terminals in 22 countries, while Dubai's DP World runs 77 ports in 40 countries. So if we just look at the raw numbers it would seem as if China's maritime movements are in step with the rest of the world.

However, there are often some key differences between how China's maritime companies operate internationally and what their projects look and feel like.

"COSCO and China Merchants Holdings — unlike PSA and DP World— do not function according to a fully commercial logic, but also have to align to state policies, such as the Belt and Road Initiative," Olaf Merk of the International Transport Forum at the OECD explained. "Hence their willingness to pay higher prices for some terminals than any other operator would do."

A case in point: COSCO shipping was given no less than \$26.1 billion by the China Development Bank to throw into Belt and Road projects earlier this year.

While China's new array of port holdings are fundamentally economically motivated projects there is a glaring political dimension as well.

While China's international port acquisitions may at first seem to be offensive maneuvers, their nature is inherent defensive. By owning and operating a complex network of key logistical nodes across Asia, Europe, and Africa, China can essentially control a huge portion of its inbound supply chain for essential commodities — like energy resources from the Middle East — and outbound trade routes for its exports. They provide China with a higher degree of self-reliance and decreases the amount of political and economic leverage that other countries can apply.

China's International port holdings also tend to be very strategically positioned, not only connecting together like a dot-to-dot across the map of Eurasia but also linking in with the overland Silk Road at key junctions, providing China with a new array of options for getting commodities and goods in and out of the country — a series of backdoors, if you will. Theoretically, if one shipping trade lane goes down China can bypass it by increasing the flow through another.

Example: The \$10 billion Kyauk Phyu Special Economic Zone in Myanmar isn't only becoming a Chinese shipping/manufacturing epicenter on the cusp of Southeast and South Asia, but is one of the points where China's maritime and overland Silk Roads connect, with a corridor that shoots north to Kunming in southwestern China that is already being provisioned with gas and oil pipelines. This provides China with a direct route to the sea for energy shipments coming from the Middle East that completely bypasses the heavily U.S.-influenced Strait of Malacca, which could theoretically be flipped off like a switch in a time of crisis, cutting China off from most of its west-bound maritime trade routes.

These new port holdings also further enmeshes China into the political and economic fabric of the world. While seemingly irrational, inflated amounts of money are being passed over the table today, what China is receiving are strong footholds in the international arena that they will be able to stand upon for decades, creating a new geo-economic paradigm in the process. While national leaders put on smily faces and talk about "win-win" partnerships, international infrastructure projects like China's maritime developments are drawing up the new front lines of the 21st century, where economic leverage is the weapon of choice.

"The large investments also give China geopolitical clout in different world regions, such as South Asia, Africa, and the Mediterranean, with recipient countries less prone to counter Chinese interests or positions," Merk added.

"Chinese involvement in foreign ports contributes to the emergence of China as a global power," concurred Frans-Paul van der Putten, the editor of the Clingendael Institute's popular New Silk Road

newsletter. “In various countries in Asia, Africa, Europe, and Latin America, Chinese state-owned companies and the Chinese government are acquiring a long-term economic influence as financiers, builders, operators, owners, and major customers of ports and port-related assets. Given the key role that ports often play in national economies, such influence may result in a certain degree of political leverage.” Another key area where China’s port acquisitions diverge from those of other countries is the fact that they are often not only developing mere seaports but complete transport-centric economic zones, which generally include manufacturing areas, business centers, power plants, and, occasionally, residential housing projects. With China, emerging markets can get an entire slate of development in one fell swoop. “Chinese overseas port investment typically involves a whole range of Chinese state-owned enterprises: a Chinese bank or development bank, a Chinese port construction company, and a Chinese operator,” Merk explained. “A new port needs to be financed, designed, constructed, operated, dredged, and serviced; all business activities that Chinese firms are eager to provide.” A good example of these “all-inclusive” port projects is Hambantota, in Southern Sri Lanka. Hambantota is not only meant to be the locale of a deep sea port, but a completely new economic ecosystem, replete with a massive industrial zone, a liquified natural gas plant, a conference center, stadiums, a tourism area built on reclaimed land, and an airport (which is currently happens to be one of the most underutilized international airports on the planet).

What’s in it for us?

The benefit flow of China’s international port projects doesn’t only go one way, as they often have a direct and immediate positive impact on the local and regional economies that they are being developed in. As Merk points out, “Chinese investment in the Greek port of Piraeus has transformed it into one of the main Mediterranean hub ports, showing spectacular growth rates. Investment by China’s COSCO means that the port will be more likely to attract Chinese cargo.”

What China offers is the FDI that emerging markets, diversifying economies, and some of the stagnant countries of Europe are hungry for on a silver platter, provisioning countries with large-scale infrastructure projects they couldn’t otherwise afford and then providing the cargo, companies, and other investors to make them a success. Basically, China agrees to take care of both sides of the supply-demand dynamic — they become both the buyer and the seller of the goods and services these new port-centered economic zones create — and allow the host countries to benefit from the economic shockwave which subsequently resonates.

While these international Chinese port acquisitions may appear to be another example of China-nomics, where demand is initially artificially created to absorb supply until more sentient market forces kick in, but China has proven that this form of long-term, multifaceted development can be made to work. Most of China’s so-called ghost cities that were built in the mass urbanization phase between 2003 to 2012 have now become vibrant economic hubs.

What is being laid down via China’s Belt and Road isn’t something for today, but for tomorrow, next year, 50 years from now when China has a complete network of ports and trade routes that cover the globe and their hands on a powerful set of levers that give them full control of their supply chain and the geo-economic leverage to do what they please.

Source: Forbes

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(6) International Maritime Organization, 8 September 2017

Global treaty to halt invasive aquatic species enters into force

A key international measure for environmental protection that aims to stop the spread of potentially invasive aquatic species in ships’ ballast water enters into force today (8 September 2017).

The International Convention for the Control and Management of Ships’ Ballast Water and Sediments (BWM Convention) requires ships to manage their ballast water to remove, render harmless, or avoid the uptake or discharge of aquatic organisms and pathogens within ballast water and sediments.

The BWM Convention was adopted in 2004 by the International Maritime Organization (IMO), the United Nations specialized agency with responsibility for developing global standards for ship safety and security and for the protection of the marine environment and the atmosphere from any harmful impacts of shipping.

“This is a landmark step towards halting the spread of invasive aquatic species, which can cause havoc for local ecosystems, affect biodiversity and lead to substantial economic loss,” said IMO Secretary-General Kitack Lim.

“The requirements which enter into force today mean that we are now addressing what has been recognized as one of the greatest threats to the ecological and the economic well-being of the planet. Invasive species are causing enormous damage to biodiversity and the valuable natural riches of the earth upon which we depend. Invasive species also cause direct and indirect health effects and the damage to the environment is often irreversible,” he said.

He added, “The entry into force of the Ballast Water Management Convention will not only minimize the risk of invasions by alien species via ballast water, it will also provide a global level playing field for international shipping, providing clear and robust standards for the management of ballast water on ships.”

Dealing with ballast water

Ballast water is routinely taken on by ships for stability and structural integrity. It can contain thousands of aquatic microbes, algae and animals, which are then carried across the world’s oceans and released into ecosystems where they are not native.

Untreated ballast water released at a ship’s destination could potentially introduce new invasive aquatic species. Expanded ship trade and traffic volume over the last few decades has increased the likelihood of invasive species being released. Hundreds of invasions have already taken place, sometimes with devastating consequences for the local ecosystem, economy and infrastructure.

The Ballast Water Management Convention requires all ships in international trade to manage their ballast water and sediments, according to a ship-specific ballast water management plan. All ships must carry a ballast water record book and an International Ballast Water Management Certificate.

All ships engaged in international trade are required to manage their ballast water so as to avoid the introduction of alien species into coastal areas, including exchanging their ballast water or treating it using an approved ballast water management system.

Initially, there will be two different standards, corresponding to these two options.

The D-1 standard requires ships to exchange their ballast water in open seas, away from coastal waters. Ideally, this means at least 200 nautical miles from land and in water at least 200 metres deep. By doing this, fewer organisms will survive and so ships will be less likely to introduce potentially harmful species when they release the ballast water.

D-2 is a performance standard which specifies the maximum amount of viable organisms allowed to be discharged, including specified indicator microbes harmful to human health.

New ships must meet the D-2 standard from today while existing ships must initially meet the D-1 standard. An implementation timetable for the D-2 standard has been agreed, based on the date of the ship’s International Oil Pollution Prevention Certificate (IOPPC) renewal survey, which must be undertaken at least every five years.

Eventually, all ships will have to conform to the D-2 standard. For most ships, this involves installing special equipment.

Background

IMO has been addressing the issue of invasive species in ships’ ballast water since the 1980s, when Member States experiencing particular problems brought their concerns to the attention of IMO’s Marine Environment Protection Committee (MEPC). Guidelines to address the issue were adopted in 1991 and IMO then worked to develop the Ballast Water Management Convention, which was adopted in 2004. IMO has worked extensively with the development of guidelines for the uniform implementation of the Convention and to address concerns of various stakeholders, such as with regard to the availability of ballast water management systems and their type approval and testing.

Shipboard ballast water management systems must be approved by national authorities, according to a process developed by IMO. Ballast water management systems have to be tested in a land-based facility and on board ships to prove that they meet the performance standard set out in the treaty. These could, for example, include systems which make use of filters and ultraviolet light or electrochlorination.

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Ballast water management systems which make use of active substances must undergo a strict approval procedure and be verified by IMO. There is a two-tier process, in order to ensure that the ballast water management system does not pose unreasonable risk to ship safety, human health and the aquatic environment.

To date, more than 60 ballast water treatment systems have been given type approval.

GloBallast programme

Since 2000, the Global Environment Facility (GEF)-United Nations Development Program (UNDP)-IMO GloBallast Partnerships Project assisted developing countries to reduce the risk of aquatic bio-invasions through building the necessary capacity to implement the Convention. More than 70 countries directly benefitted from the Project, which received a number of international awards for its work. The GloBallast programme also engaged with the private sector through the Global Industry Alliance (GIA) and GIA Fund, established with partners from major maritime companies.

Examples of invasive species

The North American comb jelly (*Mnemiopsis leidyi*) has travelled in ships' ballast water from the eastern seaboard of the Americas e.g. to the Black, Azov and Caspian Seas. It depletes zooplankton stocks; altering food web and ecosystem function. The species has contributed significantly to the collapse of Azov Sea, Black Sea and Caspian Sea fisheries in the 1990s and 2000s, with massive economic and social impact.

The Zebra mussel (*Dreissena polymorpha*) has been transported from the Black Sea to western and northern Europe, including Ireland and the Baltic Sea, and the eastern half of North America. Travelling in larval form in ballast water, on release it has rapid reproductive growth with no natural predators in North America. The mussel multiplies and fouls all available hard surfaces in mass numbers. Displacing native aquatic life, this species alters habitat, ecosystem and the food web and causes severe fouling problems on infrastructure and vessels. There have been high economic costs involved in unblocking water intake pipes, sluices and irrigation ditches.

The North Pacific seastar (*Asterias amurensis*) has been transported in ballast water from the northern Pacific to southern Australia. It reproduces in large numbers, reaching 'plague' proportions rapidly in invaded environments. This invasive species has caused significant economic loss as it feeds on shellfish, including commercially valuable scallop, oyster and clam species.

Source: IMO

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(7) Richard Scott, editor, *SOLENT Global Maritime Weekly Digest*, 17 September 2017

Some LISW week reflections

Much valuable discussion emerged during London International Shipping Week held last week. But also, arguably, a quantity of hype, hyperbole and hot air was generated. Exhorting speakers to be controversial sometimes results in excitable predictions and speculation, not all of which is soundly based.

Enlightening events

Among especially informative events, an afternoon conference at LISW organised by WISTA, the Women's International Shipping and Trading Association attracted a large audience in the council chamber at the Mayor of London's iconic riverside headquarters, City Hall. Speakers and panellists provided useful insights into the theme of autonomous ships, robotics and the internet of things and how these are affecting the maritime world.

Another enlightening conference during the Week was entitled 'China Shipping in London', organised by the Chinese Shipping Association of London, held at the Baltic Exchange. Presentations were given about trends in China's economy, and the impact of China within the global dry bulk and tanker markets. There was a focus on various legal issues and related UK services. Finally, talks and a panel discussion explored potential for the freight derivatives market in China and the UK's involvement.

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The Institute of Chartered Shipbrokers London & South East Branch LISW seminar was entitled 'Market Vulnerabilities', hosted by consultants Moore Stephens at their offices. Three speakers – Prof Amir Alizadeh-Masoodian of Cass Business School, Martin Dixon of consultants Drewrys, and Mark Williams of shipbrokers Affinity – provided valuable overviews and stimulating thoughts about several shipping markets, and the difficulties and imponderables facing these sectors.

Hints of hype

On the other hand, some aspects seemed to be over-promoted. For example, one respected global shipping institution made a declaration during the Week that is difficult to envisage as a possible outcome under any circumstances. The opening sentence of a published outline on this institution's latest research project declared that 'maritime activity over the next decade will be dominated by unmanned surface and underwater vessels'. The focus actually seems to be (global) *maritime technological research activity*. If this sentence was offered by an enthusiastic student in a dissertation draft, it would be returned by the supervisor for reconsideration and further thought.

Moreover, there was a slight suspicion that some presenters were 'talking their own book'. There may have been a tendency to over-emphasise ideas underpinning aspects of services which their individual enterprises specialised in offering. Some of these contributions to the wider debate were seemingly portrayed or disguised as balanced assessments.

On a lighter note, among all the discussion of technological (including underwater) advances affecting the maritime world, happily there was no suggestion of a revival of the submarine ore carrier concept. Maritime historians may recall that the weekly magazine *The Shipping World* introduced this interesting idea over half a century ago in September 1959. The idea was described as the first design for a submarine dry cargo vessel, previous designs having been for tankers. This self-unloading, nuclear powered vessel was given the prototype name *Moby Dick*. It was designed to carry 28,000 tons of ore at a speed of 25 knots, operating ninety metres under the sea surface, mainly serving Arctic routes. Was this 1959 idea tongue-in-cheek (not entirely serious)? It appears to have been a genuine proposal, but never materialised.

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Autonomous ships and the human element

As vessels become more and more autonomous consideration has to be given to the human element of future vessel operations, according to David Patraiko FNI, Director of Projects at The Nautical Institute. Speaking today (Monday) at the Autonomous, robotics and IoT – exploring the potential and human impact conference organised by WISTA-UK (Women in Shipping and Trading Association) as part of London International Shipping week, he said the human element in developments could not be ignored. "Although some might be surprised that the leading maritime professional organisation that is so well recognised for its commitment to the human element should be involved in the autonomous vessel debate, there are some very good reasons," he explained.

Pointing out that the existence of autonomous vessels is a "reality" with hundreds working today, Mr Patraiko said they will be increasingly interacting with manned vessels. The NI's work was of importance in ensuring relationships between the autonomous vessels and humans.

"NI members are already dealing with many autonomous systems onboard, including machinery, cargo, communications and navigation," he told the conference. "Understanding and refining the interaction between the human and these systems is a priority as we move into the future."

The NI is dedicated to 'supporting those in control of seagoing craft' and has opened its membership to all maritime professionals accepting the need of those in autonomous ship operations to embrace professional development.

It will be essential to ensure the competencies of all involved in controlling autonomous vessels, whether onboard or ashore, are maintained, he added.

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Source: The Nautical Institute

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