Enhancing Hong Kong's position as a maritime centre

RT03/2022
19 May 2022

1. Introduction

1.1 Maritime industry is a highly competitive global industry involving different types of businesses. It covers not only traditional port activities like physically handling cargo and operating vessels/terminals, but also high value-added professional services that support sea-transportation businesses.[1] In the National 14th Five-Year Plan (concerning development during 2021 to 2025), the Central Government supports the development of high value-added maritime services in Hong Kong for better integration into the overall national development.

1.2 At the request of Hon YIM Kong, the Research Office has completed a research task on enhancing Hong Kong's competitiveness as an international maritime centre with reference to relevant experience of Singapore, London and Shanghai.[2] The research study, specifically, will further explore (a) the rising tides of digitalization and decarbonization that will bring the international maritime industry into new era; and (b) the positioning of the Port of Hong Kong within the Guangdong-Hong Kong-Macao Greater Bay Area ("GBA").[3] Findings are outlined below and summarized in **Appendices I-III**.

2. Development of international port cities

2.1 Similar to many long-established port cities with declining share in global/regional cargo throughput,[4] Hong Kong has proactively promoted its maritime services in recent years to serve as an impetus to further growth of the local shipping industry (**Appendix I**). Drawing on the experience in London, it can be found that cargo throughput is not necessarily the deterministic factor to maritime cluster development nowadays. London does not have a large amount of port throughput from a global perspective,[5] but its **high-end maritime services** (including managing vessels movements as well as providing a full range of value-added services) serve to consolidate its position

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1 These services range from ship management, shipbroking/chartering and classification societies, to ship finance, maritime arbitration, marine insurance, maritime education, and consultancy and accounting services.

2 Hong Kong trailed these three places in the 2021 Xinhua-Baltic International Shipping Centre Development Index. Meanwhile, it ranked behind Singapore, Rotterdam, London, Shanghai and Tokyo as the sixth best global maritime city in "The Leading Maritime Cities of the World 2022". The report was jointly compiled by Menon Economics (a consultancy firm) and DNV (a classification society).

3 The Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area, with the vision of developing GBA into the top bay area cluster in the world, recognizes Hong Kong's strengths in driving the growth of the professional maritime services in GBA.

4 Hong Kong lost the position as the world's busiest container port in 2005 and continued its slide in international ranking to come in at ninth in 2021. It can no longer rely solely on buoyant cargo flows to grow its maritime industry as in the case of the Port of Shanghai (the world's busiest container port since 2010).

5 In 2020, the Port of London ranked 69th in Lloyd's List Top 100 ports in terms of container throughput.

as a premier international maritime centre. In January 2019, the UK government launched **Maritime 2050** as a landmark strategy laying out the country's vision for the industry over the next three decades. The document sets out over 180 recommendations across seven themes (namely, UK competitive advantage, technology, people, environment, trade, infrastructure, and security and resilience).

2.2 Globally, Singapore has been the top international maritime centre in the Xinhua-Baltic International Shipping Centre Development Index since 2014, thanks to both the active government involvement and the comprehensive development strategies on all aspects as a maritime centre. These include (a) establishing the Maritime and Port Authority of Singapore ("MPA") as a dedicated port authority and the one-stop shop for all maritime commercial and strategic matters; (b) administering a comprehensive incentive scheme to attract foreign companies to conduct shipping activities in Singapore and help both new and existing players grow; and (c) providing forward-looking planning and guidance to the industry through the issuance of policy documents including the **Singapore R&D Roadmap 2030: Maritime Transformation** in 2019 and the **Sea Transport Industry Transformation Map 2025** in 2022. The latter document sets out targets including (a) building a vibrant innovation ecosystem and proactively developing new growth areas; (b) supporting maritime sector small and medium-sized enterprises ("SMEs") and start-ups to grow into global champions; and (c) nurturing a future-ready maritime workforce.

2.3 Meanwhile, Shanghai has been catching up with Singapore in the Xinhua-Baltic International Shipping Centre Development Index. It ascended to the third place for the first time in 2020, consequential to a steady improvement in port facilities and shipping service levels over the years through adoption of various digitization and automation initiatives. Being the world's busiest port by container volume for more than a decade, coupled with favourable policies arising from the establishment of a **Free Trade Zone** in the city, adds to the competitiveness of the Port of Shanghai. Similar to Singapore, Shanghai also sees the implementation of the government's forward-looking planning and guidance for the maritime industry, noticeably the release of the **14th Five-Year Plan** to set out the vision of becoming a world-class international shipping centre.

3. Port digitization in leading maritime centres

3.1 Experience in the selected places above indicated that apart from the provision of value-added maritime services, digital transformation had been another defining trend in global maritime industry and will continue to be so in the years ahead (**Appendix II**). In Hong Kong, the maritime industry mainly relies on the initiatives of individual port operators to embrace automation of port operations.

3.2 For Shanghai, state-backed Shanghai International Port Group ("SIPG"), as the exclusive operator of the Port of Shanghai, has been the corporate entity leading the city's efforts by launching a smart command and control centre project at its Yangshan Port (洋山港). The project leverages 5G technology to allow port activities to be operated remotely from a central location, thereby enhancing port productivity and safety.

3.3 In Singapore and London, government's direct involvement is more visible. Singapore's MPA spearheads maritime digitalization to drive safe, efficient, and sustainable shipping. The port authority has started or planned a number of digital initiatives to facilitate ship-port data connectivity and interoperability along the maritime transport chain process.[6] MPA is also considered highly responsive in engaging the industry in digitalization, e.g. through amending the Electronic Transactions Act to recognize electronic Bill of Lading. London's authorities, meanwhile, put much focus on, among other things, supporting the design, manufacture and use of autonomous vessels with the goal of becoming a world-leader in maritime autonomy.

4. Decarbonization strategies in leading maritime centres

4.1 The highly carbon intensive shipping industry is under increasing pressure to act aggressively to clean up its operations. The International Maritime Organization, a specialized agency of the United Nations for regulating shipping, has set a target to reduce shipping's total annual greenhouse gas emission by at least 50% from 2008 levels by 2050. Currently, the most concrete actions taken include mandating/incentivizing the use of cleaner fuel by ocean going vessels ("OGVs") and less polluting berthing arrangements (e.g. through connecting to on-shore electricity supply).

4.2 Hong Kong has since 2019 put in place an environmental legislation requiring OGVs to use more environmentally friendly fuel regardless of sailing or berthing, which is among the first ports in Asia to do so. It is also promoting the use of Liquefied Natural Gas ("LNG") as marine fuel for OGVs as a viable and clean marine fuel to reduce carbon emissions from ships. Indeed, ship-to-ship LNG bunkering has been made available in Shanghai and Singapore in addition to major ports such as Rotterdam and Busan. There are other initiatives being pursued by the industry to pursue more progressive targets that may achieve reduced or even outright zero emissions, though most of them are still largely on the drawing board (**Appendix III**).

5. Positioning of Hong Kong port within GBA

5.1 Hong Kong, Shenzhen and Guangzhou are the three world-class ports within GBA, and they are currently in a relationship comprising both elements of co-operation and competition (i.e. the so-called co-opetition model). They are competing for the same cargo source in southern Guangdong although with a certain degree of differentiated focus. Hong Kong primarily serves as an international transhipment port, while Shenzhen and Guangzhou mainly handle export trade and domestic cargo respectively. Hong Kong also

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6 These initiatives allow individual data platforms of port authorities, port operators, shipping lines, logistics companies and platform providers to exchange data and interoperate through the Application Programming Interfaces. This in turn helps forgo the need for paper-based submissions and facilitates efficient processing of port reporting requirements and formalities.

has a vibrant maritime services cluster that is ready to offer comprehensive complementary services to Shenzhen and Guangzhou.[7]

5.2 In addition to the above, there have been calls for the establishing "combined ports" across GBA. In order to achieve synergy across ports, the customs procedures would need to be optimized with different customs districts, and potentially requiring the sharing of the same port code.[8] To enhance coordination, technologies like blockchain and Internet of things may be applied to provide real-time exchange of vital data. The experience of digitization in other major ports could offer insight or even readily available solutions for adoption. An academic study further recommends that "single windows" be constructed in GBA for reporting formalities for ships, with a single window for nine Mainland cities linking to respective single windows of Hong Kong and Macao.[9] Most recently, Macao stated in its Policy Address for Fiscal Year 2022 to seek breakthroughs in customs clearance policy by jointly establishing a "single window" integrated customs services platform with Guangdong.[10]

6. Observations

6.1 In the light of the intense competition from neighbouring ports, positioning Hong Kong as a comprehensive maritime service centre is believed to be more sustainable than a traditional shipping centre. In recent years, the Government has introduced a number of measures to foster Hong Kong's steady shift from traditional port activities to value-added maritime services, by fully leveraging the city's world-class financial and professional services. In addition to developing professional maritime services, there have been calls for the sector to accelerate digital transformation and to build up the local maritime talents pool[11], so that Hong Kong can seize maritime business opportunities related to GBA and stay competitive vis-à-vis its peers (specifically, places including Singapore, London and Shanghai).

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7 The Outline Development Plan for GBA supports Shenzhen and Guangzhou to form a complementary and mutually beneficial system of port, shipping, logistics and ancillary services with Hong Kong.

8 Huizhou Port and Shenzhen Yantian Port formally formed a combined port in 2019, the first in GBA. Under the combined port model, enterprises can enjoy one-stop cargo declaration, inspection, and release. Previously, they had to go through customs clearance procedures at the two ports' respective customs authorities. Recently in February 2022, the Guangdong provincial government unveiled reforms and innovation measures to promote trade and investment in its pilot free trade zone. One of the measures involve the simplification of custom clearance procedures in Qianhai and Shekou Area (前海蛇口片區) of Shenzhen and Nansha Area (南沙片區) of Guangzhou.

9 See 恒生管理學院全球供應鏈管理政策研究所及香港中文大學亞洲供應鏈及物流研究所 (2017).

10 It is envisaged that the establishment of customs clearance facilitation such as "combined port" and "single window" in GBA involves two different economic systems and three independent tariff systems, which might require a coordination mechanism at the national level. See Wang et al. (2019).

11 Hong Kong's maritime human resources ecosystem is considered not as vibrant as that of Singapore and London. For instance, the Hong Kong Polytechnic University is currently the sole provider of maritime education at the undergraduate level, whereas Singapore and London have a number of universities offering maritime-related technical and business courses.

Leading international maritime centres in a nutshell

Hong Kong | Singapore | Shanghai | London

(1) Overall strategy

- ✓ The Government has become more proactive in developing the maritime service clusters amid dissipating advantage in container throughput volume. In 2020, it amended the tax laws to provide (a) tax exemption and half rate tax concession to qualifying ship lessors and ship leasing managers respectively; and (b) **a 50% profits tax concession to marine insurance businesses**.

(2) Unique advantages

- ✓ Shipping is a capital-intensive business. Being an international ship finance centre, Hong Kong facilitates maritime companies to raise capital with debt and/or equity financing. It is also a leading maritime arbitration centre[(1)] and a global insurance provider[(2)].
- ✓ The **14th Five-Year Plan** and the **"Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area" support the development of high value-added maritime services in Hong Kong**.

(3) Challenges ahead

- ✓ Being farther away, vis-à-vis other GBA ports, from the manufacturing base and hence cargo source in southern Guangdong may undermine the competitiveness of Hong Kong Port. Higher terminal handling charge and shortage of land for local port development add to the competitiveness concern.
- ✓ There have been calls from the industry for Hong Kong to follow Singapore in establishing an independent **statutory** body dedicated to formulating long-term strategies for local maritime development.
- ✓ **Younger generation in Hong Kong hesitates from following a seafaring career**, and consequently ocean-going vessels are increasingly being crewed by overseas personnel at both officer and rating staff levels.[(3)]

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(1) Hong Kong has been designated by the Baltic and International Maritime Council as the fourth designated arbitration venue alongside London, New York and Singapore. It is also the first jurisdiction outside the Mainland empowered to apply to the Mainland courts for interim measures relating to institutional arbitration.

(2) Twelve out of the 13 members of the International Group of Protection and Indemnity ("P&I") Clubs are present in Hong Kong. They provide liability insurance for more than 90% of the world's ocean-going tonnage.

(3) See Legislative Council Secretariat (2022) for details.

Leading international maritime centres in a nutshell

Hong Kong | **Singapore** | Shanghai | London

(1) Overall strategy

- ✓ The Singaporean government has been highly active in the development of the city state as an international maritime centre. It has drawn up various maritime strategic blueprints over the years to set out a consistent and long-term strategy to grow the maritime sector. The latest **Singapore R&D Roadmap 2030: Maritime Transformation** document represents an ambitious and well-defined vision for Singapore in its next phase of growth through the adoption of **technology and innovation**.(4)

(2) Unique advantages

- ✓ Singapore has established leading positions in a wide range of activities such as shipping hub for cargo terminal operations, shipbroking and ship management, ship finance, and maritime arbitration.(5)
- ✓ The Singaporean government has implemented the Maritime Sector Incentive Scheme which offers various tax incentives for firms involved in international maritime services, maritime support services and ship leasing segment.
- ✓ The growth of the local **talent pool** is supported by a coordinated and expansive educational curriculum. Singapore has several globally ranked universities offering courses ranging from Maritime Economics to Naval Architecture.

(3) Challenges ahead

- ✓ Singapore is a small city state and, unlike Hong Kong and Shanghai, does not have a natural large economic hinterland. This makes maritime sector of Singapore potentially more vulnerable to global trade tensions and supply chain disruptions.

(4) The Roadmap 2030 is driven by three national initiatives, namely (a) the first Sea Transport Industry Transformation Map launched in 2018; (b) International Maritime Centre 2030; and (c) Next Generation Port 2030.

(5) Singapore has remained the top international maritime centre in the Xinhua-Baltic International Shipping Centre Development since 2014, with its advantage of supportive government policies and shipping industry ecosystem.

Leading international maritime centres in a nutshell

Hong Kong | Singapore | **Shanghai** | London

(1) Overall strategy

- ✓ Shanghai is developing its maritime industry in a more strategic manner than ever with the vision of building a world-class international shipping centre. Shanghai city's 14th Five-Year Plan sets out the tasks of optimizing the respective strengths of the maritime cluster and promoting sustainable shipping with the aid of **technology**.

(2) Unique advantages

- ✓ Shanghai has an advantageous geographical location, at the mouth of the Yangtze River Delta ("YRD") which is one of the three coastal manufacturing hubs in the Mainland. Leveraging on YRD as its natural economic hinterland, the Port of Shanghai has been the **world's busiest container port since 2010**.
- ✓ Shanghai has been the most well-connected port as measured by the Port Liner Shipping Connectivity Index compiled by the United Nations Conference on Trade and Development.
- ✓ Shanghai's strength also lies in its **marine technology driven by the presence of modern shipyards** in the city with major newbuild projects gravitating towards them.(6) In addition, the **Yangshan port is a fully automated terminal** and one of the world's most competitive when it comes to smart port technology (see **Appendix II** for more details).
- ✓ Shanghai established the first pilot Free Trade Zone ("FTZ") in the Mainland in September 2013. Subsequent favourable government policy relating to FTZ has helped power Shanghai's status as an international maritime centre.(7)

(3) Challenges ahead

- ✓ Shanghai is still some way behind the world's leading financial centres in terms of market openness and the availability and sophistication of financial products. This might weigh on its development into a more comprehensive maritime hub given the importance of ship finance activities.
- ✓ Shanghai has fewer specific financial incentives for the maritime services and shipowners when compared with Hong Kong and Singapore.

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(6) Shanghai ranks second after South Korea's Busan as the most advanced maritime manufacturing centre, thanks to the availability of fiscal incentives such as extended financing to 80-90% of a newbuild project's total cost if a shipowner chooses a Chinese shipyard.

(7) The preferential treatments include opening up of the shipping industries to foreign companies and easing access restrictions such as investors' qualifications, equity ratio restrictions and restrictions on business scope.

Leading international maritime centres in a nutshell

Hong Kong | Singapore | Shanghai | **London**

(1) Overall strategy

- ✓ London has passed the age of having top port throughput. The UK government has been focusing on developing high value-added maritime business services to consolidate London's position as an international shipping centre. It published the **Maritime 2050** in January 2019 as the first major strategy comprehensively outlining government and industry priorities for the future of the UK maritime sector.

(2) Unique advantages

- ✓ **Many international maritime organizations are headquartered in London.**[8] They attract businesses which benefit from proximity to these organizations, as well as raising the **reputation and influence** of London as an international maritime centre.
- ✓ The Port of London stands out for its overall **breadth and depth of its maritime service providers** and the ability to combine multiple services in one location.[9] The interaction between the various professions is a key advantage, enabling quick and expert solutions to shipping related problems.
- ✓ The UK is a leading provider of **maritime business education**. There are more than 20 educational institutions offering maritime business courses, with 10 being among the top 350 global universities.

(3) Challenges ahead

- ✓ London is losing share in maritime law, shipbroking and ship finance to rival ports like Hong Kong and Singapore which offer tax incentives to attract maritime companies to relocate there.
- ✓ High costs of doing business in London, not only in terms of office space and staff, but also in respect of the charges by providers of maritime services, might further affect the competitiveness of the city as an international maritime centre.

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(8) These include the International Maritime Organization, Baltic Exchange, International Group of P&I Clubs, International Association of Classification Societies and International Chamber of Shipping.

(9) The services provided include ship management, shipbroking, ship finance, chartering, marine insurance, maritime arbitration and legal services, ship classification, green finance and maritime consulting.

Highlights of port digitalization in leading maritime centres

Hong Kong | Singapore | Shanghai | London

(1) Digitalization in port operations

- ✓ In Hong Kong, the maritime industry traditionally relies on the initiatives of individual port operators to embrace digitalization of port operations and leverage innovative technologies to enhance the port efficiency. Hongkong International Terminals Limited has been among the most pro-active in port automation. Its Terminal 9 features the strategic use of latest technologies ranging from electronic payment and tracking, to remote-control gantry quay/cranes with an automated container stacking system.
- ✓ In 2019, four container terminal operators formed a contractual joint venture, the Hong Kong Seaport Alliance ("HKSA"), to collaborate on the operations of their facilities in Kwai Chung. HKSA aims to build a "Smart and Green Port" through accelerating the introduction of port automotive equipment and innovative digital solutions.

(2) Recent government support measures

- ✓ The Government pledged in the 2021 Policy Address to promote wider application of digital technology in business process and operations by the maritime industry for the development of a "Smart Port".
- ✓ Hong Kong Maritime and Port Board has subsequently set up the Taskforce on Smart Port Development to work with the industry on concrete proposals to drive the development of a smart port in Hong Kong.

(3) Challenges ahead

- ✓ Hong Kong Port ("HKP") has reportedly been relatively slow in adopting technology due to the concerns over the hefty investment required and the short-term impacts on profits because of upgrades.
- ✓ As reflected by the industry, the current Port Community System ("PCS") at HKP is not yet considered a comprehensive system of digital services. The system is far from competitive when compared with those of other ports in the world, given that it has been developed by individual ports to connect port users across different sectors.
- ✓ Nowadays HKP is mostly used for shipping transshipment cargo which creates a high traffic of vessels docking and setting sail at the same time and the resulting need for reducing vessel waiting and cargo handling times. It is important for HKP to catch up with the international digitalization trend in response to demand arising from transshipment business.

Highlights of port digitalization in leading maritime centres

Hong Kong | **Singapore** | Shanghai | London

(1) Digitalization in port operations

- ✓ Maritime and Port Authority of Singapore ("MPA") spearheads maritime digitalization to improve port productivity/efficiency and strengthen co-operation among stakeholders through initiatives such as:
  - (a) Singapore Maritime Data Hub – a data sharing and digital connectivity platform for technology companies/startups and maritime stakeholders to co-develop innovative digital services and applications for the maritime industry;
  - (b) digitalOCEANS™ – an initiative whereby individual platforms of port authorities/operators, shipping lines and logistic companies can exchange data and interoperate through a common set of data standards; and
  - (c) digitalPORT@SG™ – a one-stop portal for immigration and port health clearances for ships calling at the Port of Singapore (phase 1 completed in 2020), and **a just-in-time planning and coordination platform making use of artificial intelligence ("AI") to reduce the turnaround time of ships** (phase 2 to be ready by 2022).

(2) Supporting maritime companies in their digitalization journey

- ✓ MPA has launched the *Maritime Digitalisation Playbook* to help maritime companies, especially SMEs, formulating digitalization plans and implementing strategies to improve productivity and competitiveness. It has also developed a step-by-step guide – the *Sea Transport Industry Digital Plan* – on the digital solution that local ship agencies, harbour crafts and bunkering SMEs can adopt at each growth stage.
- ✓ MPA has also partnered the National University of Singapore to launch PIER71 as a joint initiative offering co-working spaces and investment matching opportunities for maritime technology start-ups.
- ✓ The Singaporean government amended its *Electronic Transactions Act* in 2021 to support the use of electronic Bills of Lading ("BLs") as legally equivalent to paper-based BLs.

(3) Construction of next generation port at Tuas

- ✓ Singapore is currently in the midst of constructing the mega Tuas port, characterized by the deployment of automation innovations and smart technologies on an unprecedented scale. The port is being built in four phases, scheduled for full completion in the 2040s, and will become the world's single largest container port capable of handling up to 65 million TEUs annually.

Highlights of port digitalization in leading maritime centres

Hong Kong | Singapore | **Shanghai** | London

(1) Government policy

- ✓ As early as in May 2015, the Shanghai Municipal People's Government issued the "Opinions on Accelerating the Construction of a Science and Technology Innovation Centre with Global Influence". Development of marine science and technology innovation is covered by the document, and has become the key driving force behind building an international shipping service centre which is one of the "four centres" being promoted by the city.

(2) Automation of the Yangshan port

- ✓ Shanghai's container ports are situated in three areas, namely Yangshan, Wusongkou (吳淞口) and Waigaoqiao (外高橋). The fourth phase of the Yangshan port, which started its operation in 2017, has been built with a vision to creating an intelligent twin of a physical port that requires no manual intervention and operates logically, scientifically and optimally.
- ✓ As a fully automated container port, the Yangshan port has seen wide application of advanced technologies. In addition to the use of AI-enabled cranes and "automated guided vehicles" (AGVs), Shanghai International Port Group ("SIPG") launched a smart command and control centre project at its Yangshan Port in June 2021. It is the first 5G-enabled project, allowing remote control of port operation by mounting high-definition cameras to cranes, with onsite image being sent to control tower in real time. This system enables SIPG employees to maneuver containers on and off ships while seated in control tower rather than perched on a crane. This improves the working environment, reduces labour costs, and improves operational security.

(3) Other digital incentives

- ✓ SIPG has launched a digital platform using blockchain technologies to enable real-time tracking across the logistical chain. In addition, the entire process flow of port business has become paperless, achieving a 100% paperless rate for custom clearance in each link at the port.
- ✓ The municipal government has set up special fund projects to support innovative research in marine technology.

Highlights of port digitalization in leading maritime centres

(1) Maritime technology

- ✓ In the "Technology" theme under the UK government's strategic document **Maritime 2050**, there are four sections comprising Future of Shipping; Smart Ports; Digitalisation; and Communication, Navigation and Exploration.
- ✓ In the section of "Future of Shipping", the vision is to position the UK as a world-leader in the design, manufacture and use of maritime autonomy and other innovative ship-port technologies. It features particularly the development of autonomous vessels to take over routine tasks of crews and increase operational predictability and safety.

(2) Enabling maritime autonomy

- ✓ In "**Technology and Innovation in UK Maritime: the Case of Autonomy**", published in January 2019 alongside Maritime 2050, the UK government commits to developing a legislative framework for the testing and deployment of autonomous vessels, as well as leading work towards an international regulatory framework.
- ✓ The government has thus funded the establishment of Maritime Autonomy Regulation Lab which brings together representatives from academia and industry to (a) pioneer ideas for the regulation of autonomous vessels; and (b) create an environment which attracts international companies to invest in autonomous technologies. A consultation exercise was conducted during September to November 2021 to solicit public views on the legislative framework.

(3) Digital initiatives from industry stakeholders

- ✓ The UK is home to many of the largest maritime companies which are better able to invest in new technologies due to their size and financial/manpower resources. For example, some UK law firms are investing in Robotic Process Automation to automate straightforward tasks. Insurance marketplace Lloyd's has embarked on an ambitious digital transformation effort that will see core applications off mainframe and onto the cloud, thereby bringing thousands of paper-based processes into the digital era. Meanwhile, UK engineering company, Rolls Royce, has partnered a US-based technology company to develop fully and semi-autonomous vessel control systems.

Highlights of decarbonization strategies in leading maritime centres

Hong Kong | Singapore | Shanghai | London

(1) Government's regulation to control marine pollution

- ✓ Starting from 2019, ocean going vessels ("OGVs") are required under the **Air Pollution Control (Fuel for Vessels) Regulation (Cap. 311AB)** to use compliant fuel[(1)] within Hong Kong waters, irrespective of whether they are sailing or berthing. The environmental regulation serves to prepare Hong Kong ahead of the regulation of the International Maritime Organization which imposed a sulphur cap of 0.5% in marine fuel oil globally that took effect from 1 January 2020.

(2) Other government initiative to reduce marine emission

- ✓ The Government pledged in the Clean Air Plan for Hong Kong 2035 to take forward the use of LNG in OGVs, as well as formulating technical requirements and related safety regulations and specifications for LNG bunkering.

(3) LNG bunkering

- ✓ LNG bunkering is currently not available in Hong Kong. The Government is exploring the use of the offshore LNG terminal newly constructed by the two power companies as a bunkering facility for OGVs. The terminal, which is located in southern waters of Hong Kong, includes a floating storage and regasification unit ("FSRU") vessel and a double berth jetty with mooring facilities for the FSRU vessel and LNG carriers. It is expected to come into service in the latter half of 2022. Looking ahead, the industry considers ship-to-ship LNG bunkering as a more preferred option for land-scarce Hong Kong in terms of flexibility in bunkering location and land requirements.[(2)]

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(1) Compliant fuel includes (a) low-sulphur marine fuel with sulphur content not exceeding 0.5%; (b) LNG; or (c) any other fuel approved by the Director of Environmental Protection.

(2) Another alternative, shore-to-ship LNG bunkering, might be difficult for Hong Kong as it requires permanent onshore LNG storage facilities.

Highlights of decarbonization strategies in leading maritime centres

Hong Kong | **Singapore** | Shanghai | London

(1) Maritime Singapore Green Initiative

- ✓ Singapore launched the Maritime Singapore Green Initiative as early as in 2011 seeking to provide opportunities for clean maritime growth. It is now a comprehensive initiative comprising four major programmes, with two of them being:[3]
  - (a) Green Ship Programme, to provide initial registration fee reduction and tax rebates for Singapore-flagged ships voluntarily adopting LNG as its primary fuel; and
  - (b) Green Port Programme, to reduce port charges for OGVs calling at the Port of Singapore if they use LNG as a marine fuel throughout entire port stay of four days or less.

(2) LNG bunkering

- ✓ Singapore has been developing ship-to-ship LNG bunkering operations. Its first LNG bunkering vessel, FueLNG Bellina, completed the first bunkering of an LNG-fuelled oil tanker in May 2021.

(3) Other government initiatives to reduce maritime emission

- ✓ Maritime and Port Authority of Singapore ("MPA") has also undertaken a series of sustainability initiatives to reduce marine emission. These include the establishment of a S$40 million (HK$224 million) Maritime GreenFuture Fund for research of low-carbon technologies and develop solutions for sustainable maritime transport.
- ✓ In March 2022, MPA published the **Maritime Singapore Decarbonisation Blueprint: Working Towards 2050** which charts ambitious and concrete long-term strategies to build a sustainable Maritime Singapore. These strategies include (a) initiating joint-industry research and development projects in areas such as alternative fuel and energy management; and (b) promoting green financing.

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(3) The other two programmes under the initiative are, namely, Green Energy and Technology Programme (provide funding for local maritime companies to develop technology and conduct pilot trials for reducing maritime emissions) and Green Awareness Programme (promote awareness of green shipping and encourage companies to adopt carbon accounting and reporting).

Highlights of decarbonization strategies in leading maritime centres

Hong Kong | Singapore | **Shanghai** | London

(1) Shore-to-ship power supply

- ✓ Shore-to-ship power connection eliminates emission at port.[4] Shanghai's shore-to-ship power supply already achieved a 79% coverage rate in terms of berths with onshore power supply in 2020, and the city seeks to develop facilities to raise the coverage rate to 100% by 2025 in accordance to the city's 14th Five-Year Plan.
- ✓ Starting from 1 April 2022, Shanghai International Port Group ("SIPG") announced that international cargo vessels using new fuels (e.g. LNG) and shore power could enjoy a 50% discount on port charges during their port stay.

(2) LNG bunkering

- ✓ Recently in March 2022, Shanghai's Yangshan port made its debut ship-to-ship LNG bunkering with simultaneous cargo unloading for a container vessel.[5] Such simultaneous operation not only saves the port space for building LNG storage facilities, but also reduces the duration of port stay and improves port efficiency.

(3) Other initiatives to reduce maritime emission

- ✓ SIPG has set a goal of reducing energy consumption by 70% and emission from the Yangshan port to zero. It also plans to power autonomous vehicles and handling equipment with low-emission hydrogen fuel-cell batteries in order to reduce carbon emissions. Energy-efficient lighting, solar-assisted heating and power monitoring systems will also be used at the terminal to better protect the environment.
- ✓ The Port of Shanghai has agreed to work with the Port of Los Angeles to form a trans-Pacific "green shipping corridor" as part of an effort to reduce emission from one of the busiest cargo routes. The goals for the green shipping corridor include reduction of emissions through the 2020s and shift to zero-carbon fuelled ships by 2030.

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(4) Shore power enables ships at dock to use shoreside electricity to fulfil energy demand (such as lighting, ventilation and communication) while turning off their pollution-generating propulsion and auxiliary engines.

(5) The simultaneous process of uploading/offloading cargo on the dock side of a ship while filling its fuel tanks from the other side by an LNG refilling vessel is known as "simultaneous operation".

Highlights of decarbonization strategies in leading maritime centres

Hong Kong | Singapore | Shanghai | **London**

(1) Succession of government decarbonization strategies

- ✓ The UK government published a national action plan – Clean Maritime Plan – in 2019 setting out the roadmap to decarbonize the domestic maritime sector. This includes the aims of (a) having all new vessels operating in UK waters capable of zero-emissions by 2025; and (b) making zero emission bunkering widely available across the UK by 2035.
- ✓ In May 2021, the Port of London Authority ("PLA") commissioned a study on the future of energy needs of ships calling in the port, with a view to shaping the port to be zero carbon in the future. The study will look into the changing demands for green technologies such as LNG[(6)], hydrogen and biofuels and infrastructure needed to meet the future energy demand.
- ✓ In July 2021, the Department for Transport published the Transport Decarbonisation Plan to set out the government's commitments and the actions needed to decarbonize the entire transport system in the UK. On green shipping, the government will consult on (a) a planned phase-out on the sale of new non-zero emission domestic vessels; and (b) appropriate steps to support and, if needed, mandate the uptake of shore power in the UK.

(2) Other initiatives to reduce maritime emission

- ✓ In 2017, the Port of London introduced the Green Tariff Scheme which gives port charge discounts to international ships with lower emissions.
- ✓ Collaborative government-industry bodies such as the Clean Maritime Council have been established to act as a strategic advisory board for policy on emission from the maritime sector.
- ✓ The UK government has pledged £206 million (HK$2.1 billion) in new funding for the development of clean maritime technologies – with a new unit to be established to oversee the country's move towards greener shipping. The new unit, the UK Shipping Office for Reducing Emissions, was established under the Department for Transport in March 2022 tasked to tackle shipping emission and advance the UK towards a sustainable shipping future.

(6) LNG bunkering is currently not available in the Port of London.

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Enhancing Hong Kong's position as a maritime centre

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註：^ 本節所列互聯網資料是於2022年5月讀取。
Note: ^ Internet resources listed in this section were accessed in May 2022.
粗體的參考資料 — 建議作深入研究的文件。
References in bold print - documents recommended for more in-depth study.