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Baltic Exchange

2020 Xinhua-Baltic International Shipping Centre Index Report

Xinhua-Baltic International Shipping Centre Index

(2020)

China Economic Information Service
Baltic Exchange

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This index research has received great support and enthusiastic help from several professionals in shipping industry around the world. Their insights allow us to gain in-depth and multi-faceted knowledge of the natural orders of shipping centres, as well as understanding of many aspects of global shipping development. Their input has played a crucial role in forming the viewpoints of this report.

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Preface

An international shipping centre is an important port city with a range of key characteristics, including excellent port facilities, advanced logistics systems and a strategic geopolitical location. It also has highly efficient shipping services as its core driver, as well as global shipping resources.

In 2014, China Economic Information Services in collaboration with the Baltic Exchange introduced the first "Xinhua-Baltic International Shipping Centre Development Index" to the world. Since its inception six years ago, it has been gaining international influence.

Impacted by various factors, the international shipping industry has encountered numerous challenges in recent years. It remains uncertain how the global shipping industry will be affected by factors such as trade protectionism, contractions in supply chain and environmental changes in the long run. Recently, the price volatility of crude oil and the global outbreak of the coronavirus (COVID-19), have had a significant effect on the international shipping industry in 2020.

The research team has taken into account feedbacks from industry experts on index construction over the past six years to improve the model and index hierarchy. This year's report includes more in-depth regional research and offers a summary of the development characteristics of major shipping routes and regions. It also explores topics such as the development of major cities and the impact of the COVID-19 pandemic.

There will inevitably be inadequacies in this research report. We will constantly keep the report updated taking into consideration the ongoing development of the global economy and trade – as well as new shipping concepts and emerging business models - while the index research remains stable. We aim to reflect, as much as possible, the differences in operating environment amongst domestic shipping cities within a large country. This report places greater emphasis on the development of the global supply chain landscape due to their importance in the construction of an international shipping centre. We continuously optimise the construction of the data collection network, strive to gather the most up-to-date data and enhance the availability and reliability of data.

We welcome and encourage feedback to help us improve our methodology, achieve objective and impartial evaluation results and promote the development of international shipping centres.

Editorial Board,
Xinhua-Baltic International Shipping Centre Development Index
July 2020

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2020

Xinhua-Baltic International Shipping Centre Development Index

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New Understanding in Global Shipping

1. Challenges Faced by the Global Economy in 2020

Since early 2020, the world has been disrupted by COVID-19, the most contagious pandemic of the 21st century. It swept across the world in just a few weeks and all major economies worldwide have been impacted by the outbreak. The International Monetary Fund (IMF) said in its World Economic Outlook published in April 2020 that the global economy in 2020 was anticipated to see a drastic downturn of 3%. In a business-as-usual scenario, assuming that preventive and control measures are gradually lifted as the outbreak subsides in the second half of 2020, supportive policies and measures will restore economic activities, boosting the estimated global economic growth in 2021 to 5.8%. Currently, a timely containment of the global spread of COVID-19 pandemic to rejuvenate economic activities represents the biggest and most pressing challenge faced by the global economy.

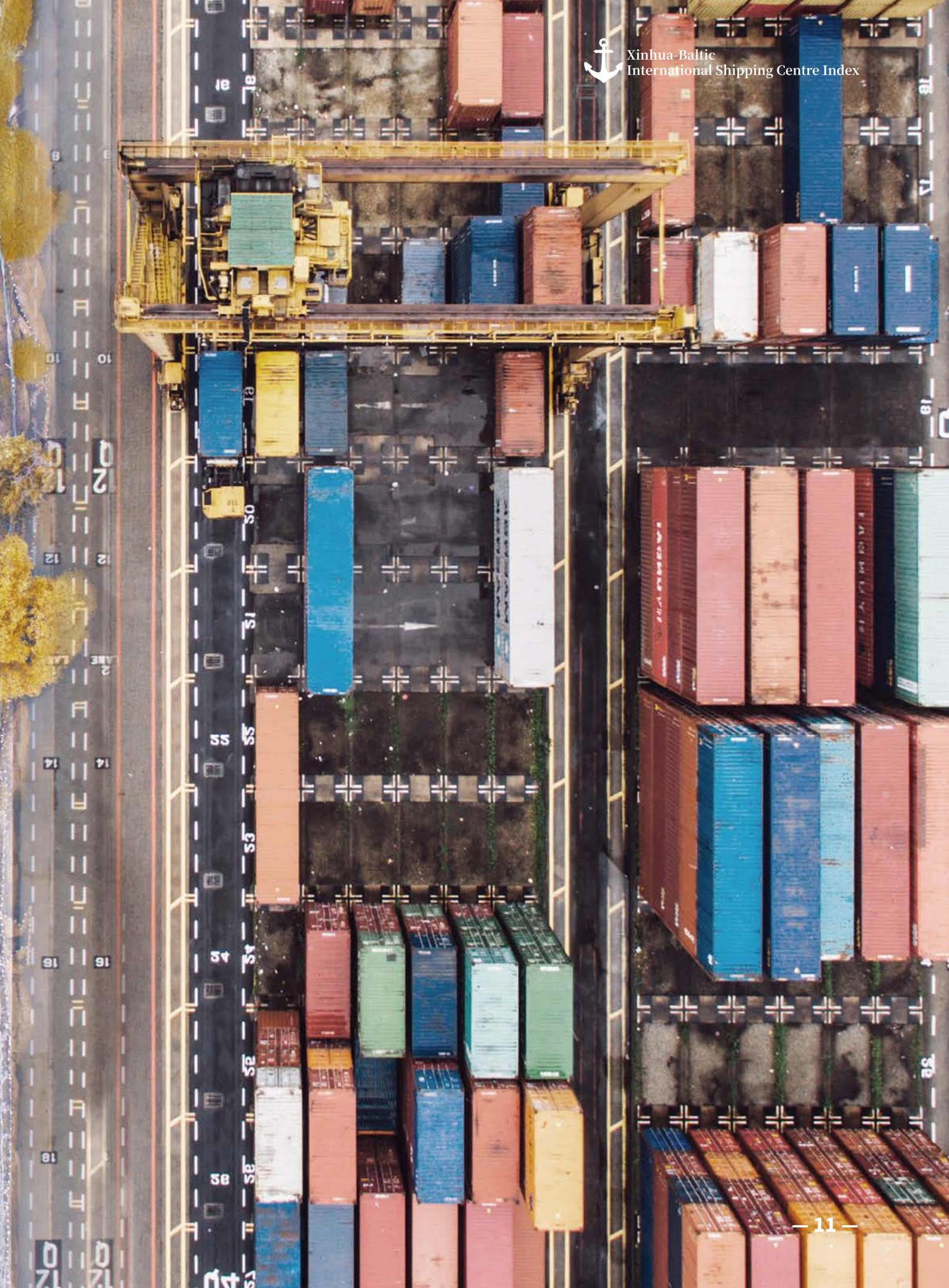
In the medium to long term, the global economy faces additional challenges besides the pandemic. The consequences of the slowdown of economic growth in developed economies persist. For now, it is difficult to assess how the trade protectionism advocated by some countries - and the potential change in the landscape of the global supply chain - will impact international trade and, in turn, the global economy. In the first quarter of 2020, crude oil prices experienced abnormal fluctuations, resulting in a plunge in the capital markets of many economies within a short period of time. From a medium to long-term perspective, it remains to be seen what sort of impact abnormal crude oil prices will bring to the global energy landscape and the development of new energy industries.

Judging by the IMF forecast in 2020 - while emerging economies including China, India and the ASEAN will maintain positive economic growth - developed economies will face increasing pressure of economic contraction. Emerging economies remain important driving forces for global economic development.

2. Prosperous Development of Global Shipping Driven by Globalisation

Over the past 40 years, the world has made tremendous progress in poverty alleviation, living conditions and education, offering more opportunities to develop a broader vision through convenient and affordable domestic and overseas travel. Emerging economies, led by China, have caught up in a very short time to the development level achieved by mature economies over the past 100 to 150 years. With a rising population and increasing affluence across the world, more vessels have been required to support increasingly robust trade activities. According to the data from the United Nations Conference on Trade and Development, seaborne movements of merchandise and cargo reached a record high of 11 billion tons in 2018. Global trade has penetrated into every aspect of people's lives, such as buying necessary electrical appliances for new homes and purchasing soybeans as feed for livestock.

Over these 40 years, benefitting from the general prosperity brought about by globalisation and deepening global trade activities, the 43 sample shipping centres selected in our research have all made good progress. Vessels and ports have become increasingly large and efficient, while supply chains have been continuously expanded and refined. The supporting hardware infrastructure and digital infrastructure for fleet operation have been continuously enhanced. Also, ancillary service industries such as maritime law, shipping finance and shipping insurance have consistently made improvements. A large number of jobs have been created as fleets, ports and dockyards continued to scale up. Shipping-derived service industries have attracted a huge number of professionals to join the shipping industry. The growth in global trade played an important role in boosting the economic development of established trade cities such as London, Singapore and Shanghai as well as emerging trade cities such as Dubai.



3. New Challenges Faced by the Global Shipping Industry in 2020

Shipping is an important supporting element of global trade and would be meaningless without global trade activities. For the time being, global trade is facing a complex situation. The challenges presented by the suspension of operations and production due to the COVID-19 pandemic, coupled with the subsequent drastic fall in global demand, have tremendous impact on various aspects of the shipping business.

In the short term, some unfortunate crew members bear the brunt for being unable to disembark after serving a contractual term of six months or above in the ship due to the restrictions on crew member replacement in ports. This resulted in a much longer voyage duration for the crew members, which poses a great threat to their physical and mental well-being.

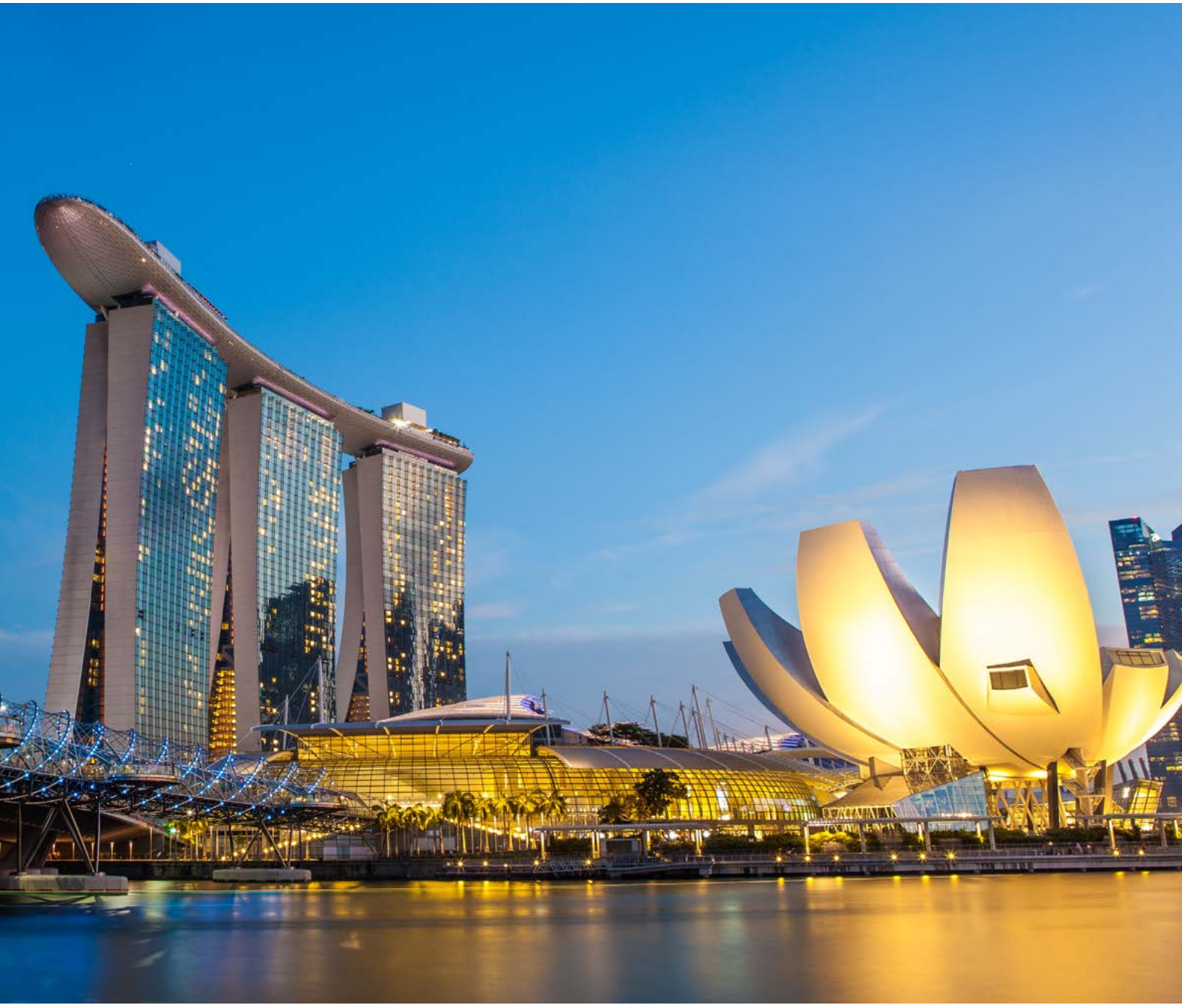
Regular inspection is an essential mechanism for safeguarding maritime safety. The COVID-19 pandemic has disrupted routine on-board inspection, prompting certain competent authorities of flag states and port states to extend the validity period of some certificates and seek alternative solutions such as remote inspection.

The sharp drop in oil prices has stimulated the oil tanker industry in the short term. As traders eagerly pursued every possible means of storage, charter rates charged by oil tanker owners rose significantly. However, the fundamentals of oil demand remain unchanged in the long term. The oil price fluctuations may not have a prolonged influence on the oil tanker market.

In the container market, the COVID-19 outbreak has had a huge impact on both large-scale and small-scale liner companies, causing risks of insolvency in some serious cases. In the event of material changes to the global supply-chain landscape, the prospects for large container vessels over 20,000 TEU would become unpredictable.

In the dry bulk market, economic activities in China continue unabated. There is relatively robust demand for the raw materials from South America and Australia, which underpin the dry bulk market. Currently, as some steel mills have started to increase their production capacity to compensate for the suspension of operations and production in the first quarter of 2020, the Baltic Dry Index has shown a slow and steady upturn.

From the medium to long-term perspective, the outbreak of COVID-19 may accelerate the imposition of international trade barriers in various countries. For many, this pandemic has exposed the negative repercussions of global interconnectivity and may give rise to opportunities for populist politicians to restrict cross-border movement of people and trade. In 2019, both China and the United States imposed certain trade restrictions. This has highlighted the close ties between different economies and demonstrated the impact of trade barriers between economies on global trade volume. Under such circumstances, the far-reaching influences brought by the outbreak of COVID-19 and ever-spreading populism on global trade is uncertain. It will be the biggest challenge faced by global shipping in the future.



4. New Trends in Global Shipping Development

(1) Energy Transformation

The nature of the energy cargo carried by ships - and the fuels used to power ships - is undergoing changes.

The shipping industry contributed 2.2% of the global greenhouse gas emissions, causing air pollution in coastal areas and affecting the health of surrounding residents. Upon recognising such hazards, the shipping industry has been committed to accelerating energy transformation and popularising the application of cleaner energy. In order to achieve a 50% reduction in total emissions by 2050 and gradually move towards the emission reduction target of zero carbon emissions, the International Maritime Organization (IMO) has formulated a series of strategies: controlling carbon emissions through measures such as eliminating market barriers and improving operational energy efficiency in the short run while promoting technological innovation, developing zero carbon emission fuel technology, and starting to deploy alternative fuels from 2023 to 2030, ultimately reaching the scheduled target for emission reduction.

Presently, the use of liquefied natural gas (LNG), a cleaner primary energy source than petroleum, is proliferating. However, it is only a short-term alternative. Researchers, energy specialists, engine manufacturers, ship owners and regulatory institutions are working together to develop a cleaner and more environment-friendly propulsion system and relevant ancillary facilities and safety regulations. Areas being explored include biofuel, hydrogen fuel, alcohol and other compound fuels, clean electrical energy and nuclear power.

As for energy freight transportation, the increase in both production and consumption of renewable energy implies that the demand for coal shipments may decrease. With a significant increase in the use of new energy vehicles, the demand for oil freight may decrease. These factors may contribute to structural changes in transportation in the future.

(2) Climatic changes

Climate disruption poses a growing threat to economic prospects. Recent cases of bushfires in Australia, Europe and the United States, floods in Japan, India and Europe, hurricanes in the Caribbean Sea and the United States, and erratic conditions on major waterways such as the Rhine and the Mississippi River have demonstrated the tremendous effects brought by global climate changes. Such changes will have a significant impact on the infrastructure of ships and ports.

(3) Digitalisation and Hi-Tech Advancement

With the increase in coverage of satellite telecommunications across the globe and advancements in technology, vessels and ports are able to access and share voluminous data instantly. The round-the-clock communications and interconnected devices can not only monitor vessels' conditions in a remote location, but also allow vessels' owners and companies to comprehend and respond to local and global events at all times. With continuous enhancement and advancement in sensor systems applied in vessels, ports and regulators, the amount of data collected by sensors has also increased exponentially. System optimisation, meanwhile, may be expedited through data collation and analysis.

Driven by digitalised technology, the efficiency in operating supply chains has been improved continuously, which brings a positive effect on relieving the environmental burden from transportation. For instance, the optimisation of call signs from the port utilises those connected vessels and ports to form a fast turnaround of call signs from the port. This minimises any congestions and delays caused from within.

The flag states, classification societies and insurance companies and other relevant institutions, in a time when developments in new technology are driven by information technology with the coming of new standards, are becoming gradually familiar with the concept of automated transportations. In time, it is possible to have vessels control from land-based control centres in the future. Small merchant-vessels that apply to coastal waters are under development at the moment. But, to put the system of automated transportation in ocean-going vessels, there is a long way to go. The current development we observe is that the more extensive the application of digital technology, the higher the level of automation applied in cabins and cockpits. The use of automated transportations will move forward in the foreseeable future.

The International Shipping Markets – Outlook Mid 2020

Nigel Gardiner
Group Managing Director
Drewry Shipping Consultants Ltd

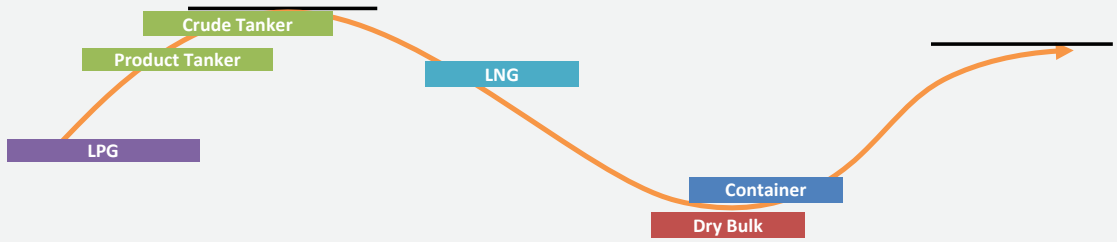
The most recent forecast from the International Monetary Fund (IMF) points to a 3% contraction in the global economy in 2020 as a result of COVID-19, followed by a 5.8% rebound in 2021. The projection assumes that the pandemic will be contained in most countries during the second quarter and recede in the second half of 2020. Nevertheless, despite the anticipated bounce-back in 2021 the cumulative two-year loss to global GDP is estimated to be approximately $9 trillion and this loss of growth will have severe implications for international shipping markets as the following figures suggest.

Seaborne Trade Outlook

sector		Seaborne Trade 2019	Seaborne Trade 2020	Seaborne Trade 2021	Change - % 19/20	Change - % 20/21
Oil (Mill Tonnes)	Crude	2,059	1,917	2,036	-6.9	6.2
	Fuel Oil	231	220	230	-4.8	4.5
	Clean Products	714	607	716	-15.0	18.0
	Total Oil	**3,004**	**2,744**	**2,982**	**-8.7**	**8.7**
Dry Bulk(Mill Tonnes)	Iron Ore	1,520	1,495	1,561	-1.6	4.4
	Coal	1,342	1,319	1,367	-1.7	3.6
	Grain	337	338	350	0.3	3.6
	Minur Bulks	1,061	1,030	1,088	-2.9	5.6
	Total Bulks	**4,260**	**4,182**	**4,366**	**-1.8**	**4.4**
Containers('000 Teu)	**Total Throughput**	**801,392**	**737,265**	**833,262**	**-8.0**	**13.0**

Source: Drewry

Sectors of Shipping – Now At Different Points in the Cycle



Source: Drewry

Containers

In the container sector, most if not all, regions will face reduced container volumes in 2020 as a direct consequence of COVID-19, but those with greater connectivity to advanced economies will suffer disproportionally. Overall, global container throughput is forecast to decline by 8.0% in 2020, before growing by 13.0% in 2021.

However, the strength of the recovery will largely depend on how far the economic rescue measures go and the extent that they can maintain business and consumer confidence, something that will inevitably come under strain if the virus pandemic prevails. But for now governments around the world are slowly starting to relax lockdown measures, although at this point in time it is not known the extent to which everyday life and business activity will be changed.

Inevitably COVID-19 has caused immediate disruption to container shipping and the wider supply chain and it remains to be seen what the longer-term impacts will be. The short-term reaction by carriers to sudden production and demand outages around the world has been widespread capacity reductions in the form of blank sailings, which have helped prop up freight rates. But there have also been knock-on equipment availability issues, congestion and slower turnarounds at terminals and warehousing capacity shortages.

Longer-term, there are questions about what the supply chain of the future will look like, as the pandemic has exposed some of the frailties of long-distance supply chains. It seems likely that the move towards more diverse sourcing that was already evident during the tariff disputes will accelerate, and less reliance on China could be beneficial to container shipping, as the country has effectively developed its internal export machine to the extent that it requires fewer and fewer foreign raw materials and intermediate goods.

Oil Tankers

Under normal circumstances, freight rates in the tanker market move in tandem with oil demand. Therefore, weak oil demand usually leads to lower refinery runs and weak oil trade, which in turn translates into lower freight rates. But COVID-19 has turned tanker market fundamentals upside down, as rates have surged higher when oil demand and oil prices are at record lows.

In the International Energy Agency's (IEA's) latest and worst case forecast global oil demand will fall about 23 mbpd year on year in 2Q20 and 9.3 mbpd in 2020, with demand for jet fuel, gasoline and diesel being the worst hit markets. Despite the decline in oil demand oil producers have kept pumping oil at full output which in turn has led to an oil glut of some 30 mbpd that has overwhelmed global onshore storage capacity and led to a steep contango in oil prices. As a result there has been a sudden and sharp rise in oil tankers being used for floating oil storage.

As oil demand is expected to recover gradually in 2H20 with easing COVID-19-enforced lockdowns, oil stored on vessels will be the first to come out of storage. Most of the incremental vessels currently locked in floating storage are therefore expected to return to trade by the end of 2020, which in conjunction with the expansion in fleet will inflate vessel supply in the market.

Although there is still huge uncertainty, oil demand is forecast to rebound in 2021 to the levels seen in 2019 with the improvement in global economic activity and an increase in road transportation and air travel. However, global crude oil trade will still be well below 2019 levels because of the overhang in crude and refined products inventory from 2020.

Overall, the demand-freight equation is likely to remain inversely proportional until 2021, that is, with a gradual recovery in oil demand in 2H20 and 2021, crude tanker rates will go down. However, the pace of recovery in oil demand will decide how quickly or slowly the freight rates will decline.

The turmoil caused by the virus spread may also alter crude oil trading patterns. Before COVID-19, US crude oil was expected to contribute most of the growth in global trade in 2020-21. However, the pandemic has proved to be a major game changer for US shale oil producers as depressed oil prices will not only hurt the US crude exports in 2020, but the steep cut in upstream investment will keep the country's exports depressed in 2021. This will have negative impact on tonne-mile demand for tankers.

Dry Bulk

COVID-19 has also had a severe impact on the dry bulk market. Reduced economic activity has adversely affected both the demand and supply of dry bulk commodities and as a result seaborne trade in dry bulk commodities is forecast to decline by 1.8% in 2020, before rebounding by 4.4% in 2021.

Steel production, a major driver of the dry bulk shipping market, has plummeted in 2020 owing to a slump in manufacturing and construction activities. This in turn has reduced trade in iron ore and coking coal. Many car manufacturers across Europe have halted production making 2Q20 one of the worst quarters in recent memory. Low industrial activity has also aggravated the situation for non-coking coal as traders are finding it difficult to sell non-coking coal to Europe with the region swiftly shifting towards renewable energy. However, simultaneously rising imports of coking coal in Asia are supporting overall trade, but low economic growth will dent the demand for coal even in Asia.

In China renewed economic growth has started to provide some respite to shipowners. Steel production and iron ore imports are growing once more and the huge steel stockpiles which had soared in early 1Q20 during the height of the pandemic have started to recede at Chinese steel mills. If global economic activity bounces back by the end of 2020 as expected, freight rates for dry bulk carriers will start to recover in 2021. But although a comparatively low orderbook and the scarce availability of finance for newbuilding will constrain short-term fleet growth, increases in supply ingrowth will still outpace changes in demand and any gains in freight rates are likely to be modest.

Environmental Regulatory Perspective ——A Look Over The Horizon

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Despite decades of improvement and being a relatively environmentally friendly mode of transportation, enhancing shipping's environmental performance is a high priority. Further work is necessary to keep pace with the United Nations' Sustainable Development Goals and decarbonize this sector. This is in line with the International Maritime Organization's (IMO's) roadmap on reduction of Greenhouse Gas (GHG) emissions from ships.

Air emission controls under the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI have been successfully implemented over the last 15 years since discussions on air emissions were formally initiated at the IMO in the 1980s. Now, with the 0.50% fuel oil sulphur content standard in rear-view, maintaining vigilance over potential fuel oil quality and safety issues remains paramount.

Similarly, the current technical design requirements for new ships, known as the Energy Efficiency Design Index (EEDI), were developed as a product of discussions initiated when MARPOL Annex VI was adopted in 1997, in light of the relationship between Carbon Dioxide (CO2) and other marine pollutants.

The industry is now looking onward to a new horizon. Continuing in its work to develop policies and practices related to the reduction of GHG emissions from ships, and in accordance with the IMO Initial GHG Strategy, various new measures are being developed to build on the progress and successes of the existing energy efficiency regulatory framework.

The following brief examination of future regulatory developments is aimed at environmental initiatives and associated trends specifically related to controlling air emissions. These include amendments to regulations that are presently under development or have not yet been formally adopted according to treaty amendment procedures, but are expected to impact the shipping industry in the near future.

FUTURE MILESTONES:

2021	Baltic Sea/North Sea Nitrogen Oxide (NOx) Emission Control Area (ECA)
2022	EEDI phase 3 (advanced) Revised fuel oil sampling/testing protocols
2023	Adoption of revised IMO GHG Strategy Short-term GHG measures finalized/in-place
2024	EEDI Phase 3 (non-advanced)
2025	Target-40% reduction of carbon intensity Mid-term GHG measures finalized
2050	Target - 70% reduction of carbon intensity Target - 50% reduction of total GHG emissions

BALTIC SEA AND NORTH SEA ECA

As a result of amendments adopted in 2017, the existing Baltic Sea and North Sea areas, which are presently designated ECAs for more stringent Sulphur Oxide (SOx) emission controls, have now been designated for additional NOx control. Marine diesel engines installed on ships constructed on or after 1 January 2021 will be required to comply with the most stringent weighted NOx emission limits specified under MARPOL Annex VI (Tier III) when operating in these designated areas.

FUEL OIL SAMPLING AND TESTING PROTOCOLS

Following on from efforts at IMO to address the consistent implementation of the 0.50% fuel oil sulphur content standard, draft amendments to enhance the fuel oil sampling and testing aspects of MARPOL Annex VI were approved at the last session of the IMO Marine Environment Protection Committee (MEPC). The draft amendments now recognize fuel oil "in-use" and "on-board" sampling for the purpose of verifying compliance with regulatory limits. These amendments were expected to have been adopted at the 75th session of the MEPC, which was originally scheduled for the first week of April 2020. However, with the postponement of IMO meetings due to COVID-19 restrictions, it is not clear exactly when these revisions will enter into force. Due to the tacit amendment procedures of MARPOL, a minimum of 16 months is required between adoption of amendments and their subsequent entry into force to allow Parties to the convention an acceptance period and time to incorporate the new binding provisions into national laws.

SAFETY RELATED ASPECTS ASSOCIATED WITH THE USE OF FUEL OIL

Another product of the work on consistent implementation of the 0.50% fuel oil sulphur content standard relates to potential safety concerns associated with the use of new fuel blends. The IMO Maritime Safety Committee (MSC) is presently developing mandatory measures to enhance ship safety when using fuel oil. Flashpoint has been prioritized as a critical parameter. However, other fuel oil safety parameters are to be addressed. In the meantime, interim recommendations have been provided (Resolution MSC.465 (101)) encouraging Member States to notify the IMO of confirmed instances where fuel oil was delivered exceeding the International Convention for the Safety of Life at Sea (SOLAS) requirements for minimum flashpoint. Subsequent amendments to SOLAS to mandate reporting and establish verification protocols for fuel oil safety related parameters are presently under development. When completed, the amendments are intended to complement provisions under MARPOL Annex VI addressing fuel oil quality.

EEDI

Although EEDI regulations have been in force since 2013, the Initial GHG Strategy calls for strengthening of EEDI requirements for new ships. To this end, changes have been approved to advance the starting year for EEDI Phase 3 requirements from 2025 to 2022 for gas carriers, liquid natural gas (LNG) carriers, containerships, general cargo ships, and cruise passenger ships having non-conventional propulsion. The required EEDI reduction rates for containerships were also revised according to a step-wise scale based on dead weight tons (DWT). The existing EEDI Phase 3 starting year and reduction rates are otherwise retained for all other applicable ship types and sizes. Additionally, IMO Member States and organizations are working to consider possible introduction of further phases with associated time periods and reduction rates.

INITIAL GHG STRATEGY

Good progress has been made towards developing concrete proposals for short-term measures as envisaged in the Initial GHG Strategy. A combination of technical and operational approaches are under consideration for the near term. The technical short-term measures will be goal-based, meaning that the method for meeting requirements will not be prescribed, and ships can utilize the most appropriate approach to improve performance. The operational measures under consideration essentially build on the existing framework of optimization measures, such as by mandating ship specific energy efficiency management practices and requiring periodic auditing of those procedures. To meet the timelines of the Initial GHG Strategy, short-term measures should be finalized and agreed by 2023. However, recognizing the need for early action to achieve a reduction in the carbon intensity of international shipping by at least 40% by 2030 (and 70% by 2050), regulatory amendments need to be finalized before the end of this year to enter into force before 2023, subject to resumption of the IMO meeting schedule.

Work on candidate mid- and long-term measures has also progressed, with a focus on the effective uptake of alternative low-carbon and zero-carbon fuels, including the development of life cycle GHG/carbon intensity guidelines. Progress in this area will be critical to meet the Initial GHG Strategy levels of ambition to reduce the total annual GHG emission from international shipping by at least 50% by 2050, and the eventual decarbonization of the sector this century.

REGIONAL REQUIREMENTS

Investments and decisions will need to be made as early as possible to meet the aspirational goals set in front of the industry. Regulatory certainty of future requirements is essential to facilitate such planning. Additionally, a cohesive and meaningful regulatory framework is required to avoid commercial distortions and facilitate effective implementation. For this reason, the regulatory regimes developed under the non-discriminatory principles of IMO instruments are ideally suited for controlling air emissions from international shipping. Additionally, measures developed under the Initial GHG Strategy must also be guided by differing national circumstances to avoid disproportionate adverse impacts on some countries.

As policy makers at IMO strive to develop regulations in this context, progress must also be demonstrated to avoid proliferation of unilateral restrictions by national authorities, which may not be compatible with ultimately agreed measures. It should be cautioned that patchwork systems of directives based on precautionary principles complicates compliance efforts, creates additional burdens for ships and their crews, and may work against the spirit of the international treaty regimes delicately negotiated by IMO Member States. On the other hand, the benefits of clear and effective policies in this regard will see market barriers removed, raise awareness throughout the industry towards improving energy management, while maintaining the safety and effectiveness of the world fleet.

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Xinhua-Baltic International Shipping Centre Development Index

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Fundamental Elements of International Shipping Centre Development Index

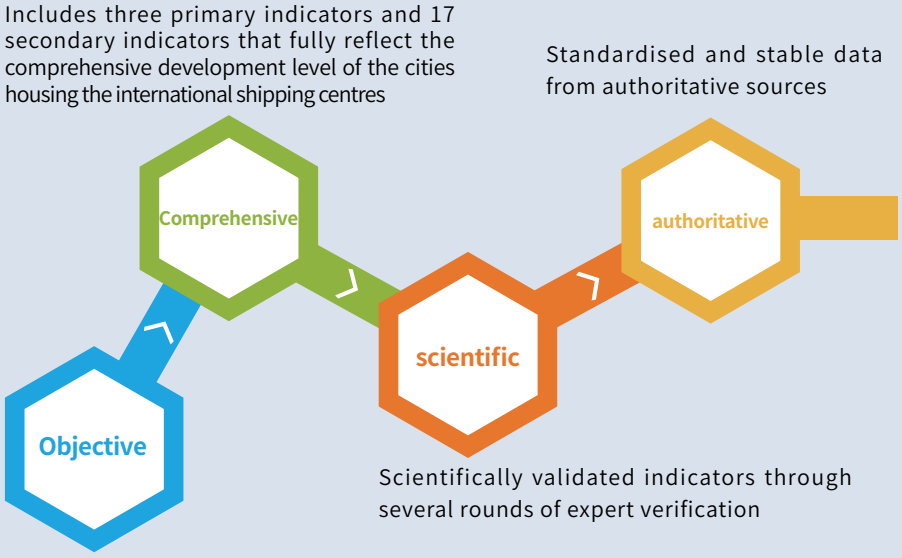


Figure 1 Design principles of the Xinhua-Baltic International Shipping Centre Development Index

1. Functional Significance

Xinhua-Baltic International Shipping Centre Development Index is a numeric grading of selected shipping centres, against certain set criteria. It is a systematic and comprehensive evaluation model that employs corresponding indexing methods to quantify assessments with the goal of measuring the true reflection of a port city's general strength at a predefined time period. A simple, intuitive, objective and impartial measure of the level of development and state of international shipping centres, the index will be a valuable guide and reference for the development of international shipping centres. It will also have a role in promoting sustainable development and optimal allocation of resources in the world's maritime trades.

2. Design Principles

Objective: The emphasis is on using actual operational data that can be tested and verified whilst minimising the use of synthetic indicators. Fundamental indicators that can be tested and are accessible will be used. The method allows for weighted computation with adjustment mechanisms to prevent ambiguity while preserving traceability of the index. The analysis method for the index is objective and reproducible.

Comprehensive: The index system comprises three primary indicators and 17 secondary indicators to comprehensively reflect the level of development of international shipping centres. The index has some extensibility to cater to future research and allows for improvement by way of amendments and supplements in response to industry feedback and suggestions.

Scientific: The index system's indicators have undergone several rounds of verification through feedback by both domestic and foreign experts and confirmed by an expert committee. Each indicator reflects a certain aspect of the cities positioned as international shipping centres. Taken together, all indicators will coalesce into an index system that meets the requirements of being logical, concerted, representative, relevant and has relative independence.

Authoritative: All the selected indices are derived from domestic or foreign authoritative statistics that are standardised and stable data sources. Such data is easy to compare and compute - and the assessment indicators are clear.

3. Framework of Indicators

Based on the indicator selection principles of the Xinhua-Baltic International Shipping Centre Development Index, the index establishes an objective evaluation system. All indicators came from authoritative organisations, whose raw data can be obtained from public sources or computed systematically and scientifically. The indicators are maintained by a professional team that regularly updates the data sources.

The index system includes three primary indicators and 17 secondary indicators. Primary indicators characterise the inherent development pattern of the cites which are international shipping centres through three dimensions – namely, port factors, shipping services and general environment. Secondary indicators extend primary indicators based on specific functional attributes. The various levels of indicators are weighted and combined progressively in consideration of their authenticity, comprehensiveness and availability of data. After comprehensive study, the research team excluded ship repair services as a primary indicator of shipping services from this year's index system. This is because the indicator uses a different perspective for analysis as compared to relevant indicators of other modern shipping services. In the future, we will explore the possibility of conducting individual analysis on ship repair, construction and the demolition industry.

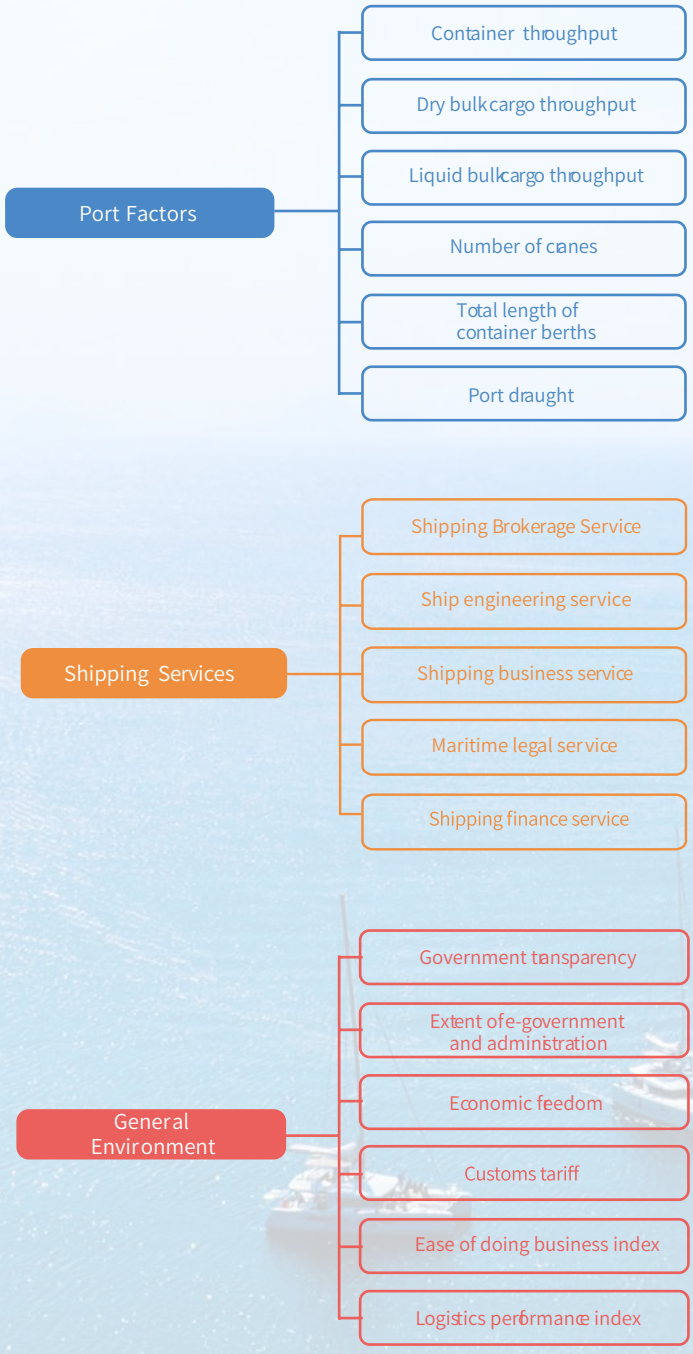


Figure 2 Framework of indicators for the Xinhua-Baltic International Shipping Centre Development Index

4. Sample Selection

The selection of samples for the International Shipping Centre Development index is based on several basic principles: it not only observes compliance with data standards for port city core indicators, but also takes into full consideration comments and opinions of an expert committee. The synthesis of qualitative and quantitative analysis is primarily achieved through the use of data standards and supplemented by experts' opinions.

Step 1

Basic sampling criteria is based on the data standards of a port city's core indicators with a focus on indicators such as container throughput, bulk cargo throughput, port draught, economic hinterland of the port city and shipping services development.

Step 2

Based on professional assessment and recommendations by members of an expert committee jointly formed by China Economic Information Service and the Baltic Exchange, the committee, by way of vote, selected port cities shortlisted in the initial sampling pool that may satisfy the following port category conditions to form a refined sampling pool:

1) For some ports included in the initial sampling pool, even though their current throughput may be relatively large, they may be weak in the function of shipping services. The expert committee, by way of vote, decided if these ports should be excluded. For example, there are numerous such emerging port cities in the Asia-Pacific region;

2) For some port cities not included in the initial sampling pool, even though their current throughput may be relatively small, they may have a high level of shipping services and a good general business environment. The expert committee, by way of vote, decided if these ports should be included in the sampling pool. For example, there are such port cities in Europe and America that provide traditional shipping services.

Supplementary explanation of the voting mechanism for inclusion of samples: the process of "nomination – research – voting" is adopted. During the nomination process, emphasis must be put on recognition of the port city's position in the world. The research process focuses on advanced integration of capital flow, information flow and cargo flow - as well as the level of contribution by the port function towards the city's development. The voting process focuses on fairness by drawing judgement from a number of experts.

Step 3

After the two selection processes mentioned above, a final sampling pool for international shipping centres is established. This sampling pool is adjusted dynamically according to changes in annual data. Only port cities that meet the screening criteria are eligible for global competitiveness assessment.

2020

Xinhua-Baltic International Shipping Centre Development Index

03

Evaluation Results of International Shipping Centre Development Index

1. General Evaluation

The evaluation results show that the top 10 international shipping centres in 2020, by order of ranking, are: **Singapore, London, Shanghai, Hong Kong, Dubai, Rotterdam, Hamburg, Athens, New York-New Jersey and Tokyo.** The overall results have been relatively stable throughout 2014 to 2020, the period during which the development index has been published on an annual basis.

Singapore maintained its leading position as the most important shipping hub in the Asia-Pacific region, ranking first for seven consecutive years. London, with advantages accruing from providing high-end shipping services, has climbed back to the second place after dropping to third place in 2018 and 2019. As the biggest port in terms of container throughput, Shanghai has seen a steady improvement in port facilities, distribution networks, shipping service levels and the general business environment in recent years, and has ascended to the top 3 for the first time. Hong Kong fell from second to fourth place mainly due to a decrease in cargo throughput and a drop in rankings relative to other centres in areas such as shipping brokerage, insurance and legal services. Dubai, as the pre-eminent shipping hub in the Middle East, ranked fifth for the third consecutive year.

Rotterdam and Hamburg have also retained their positions since 2018, ranking sixth and seventh respectively. Benefiting from its location is a key node in the "Belt and Road" initiative, Athens rose to eighth. New York-New Jersey slipped by one place, while Tokyo rose one place, returning to the ranks of the top 10.

Table 1 Top 10 Port Cities of the Xinhua-Baltic International Shipping Centre Development Index

Ranking	2020	2019	2018	2017	2016	2015	2014
1	Singapore	Singapore	Singapore	Singapore	Singapore	Singapore	Singapore
2	London	Hong Kong	Hong Kong	London	London	London	London
3	Shanghai	London	London	Hong Kong	Hong Kong	Hong Kong	Hong Kong
4	Hong Kong	Shanghai	Shanghai	Hamburg	Hamburg	Rotterdam	Rotterdam
5	Dubai	Dubai	Dubai	Shanghai	Rotterdam	Hamburg	Hamburg
6	Rotterdam	Rotterdam	Rotterdam	Dubai	Shanghai	Shanghai	Dubai
7	Hamburg	Hamburg	Hamburg	New York-New Jersey	New York-New Jersey	Dubai	Shanghai
8	Athens	New York-New Jersey	New York-New Jersey	Rotterdam	Dubai	New York-New Jersey	Tokyo
9	New York-New Jersey	Houston	Tokyo	Tokyo	Tokyo	Busan	New York-New Jersey
10	Tokyo	Athens	Busan	Athens	Athens	Athens	Busan

2. Tier Evaluation

In the process of globalization, major shipping centres around the world have provided significant support to global trade. This report analyses the contribution of three different functions, namely supply chain nexus, logistics hub and modern high-end shipping services. Some cities have strengths on multiple fronts but we have cited several outstanding examples below for the sake of illustration.

(1)Supply Chain Nexus

Shipping plays an essential role in the expansion and development of global supply chains. Global supply chain integration in turn provides a foundation for globalization. Typical characteristics of cities which serve as a nexus for supply chains include having relatively large port throughput, abundant economic resources or excellent manufacturing industry clusters. Major shipping centres in the People's Republic of China (PRC) are typical examples. The economic activities of the PRC require a large amount of resources, while the products produced by its developed manufacturing sector need shipping centres to make delivery to other parts of the world.

Ningbo Zhoushan, for instance, has a large cargo throughput and plays an important role in supporting the supply chain of imported resources (such as iron ore) the export of the output from manufacturing sectors in Shanghai, Hangzhou and Ningbo. In 2019, the bulk cargo throughput of Ningbo Zhoushan port amounted to 352 million tons, ranking first globally while the container throughput amounted to 27.53 million TEU, ranking third globally. The port's aggregate cargo throughput amounted to 1,119 million tons, making it the only port in the world with a throughput exceeding 1,100 million tons and therefore irreplaceable within the global supply chain system.

(2) Logistics Hub

Logistics hubs tend to enjoy unparalleled advantages with regards to geographical location and policies. Singapore and Hong Kong are prime examples. These cities do not have their own abundant resources or support from large manufacturing industry clusters. Nevertheless, leveraging on their unique advantages in terms of geographical location and favourable tariff and other policies, they have been successful in attracting companies to transit their cargos. Such shipping centres usually have a superior business environment and shipping service capacity.

For example, situated in the Strait of Malacca (known as the "Eastern Crossroads"), Singapore has a unique geographical location which operates as a source of competitive advantage in reinforcing Singapore's position as a logistics hub. Building on this, Singapore has consistently strived to optimize its business environment, maintain relatively low tariffs and enhance shipping service levels to develop itself into the most important shipping hub and shipping service centre in the Asia-Pacific region and even the world.

(3) Modern High-End Service Centre

Benefiting from various factors such as historical presence and reputation, talent cultivation and policy support, modern high-end shipping service centres offer a concentration of high-end shipping finance, insurance and legal resources, allowing them to provide services for shipping players around the world unhindered by geographical constraints.

London is notable example. The city's performance as a shipping hub has been less prominent in recent years and the cargo throughput volume is not large. Nevertheless, with its long maritime history, London still maintains a leading role in aspects of maritime law and shipping finance. The number of global maritime arbitrators registered in London is double all other sample cities combined. The number of maritime partnership lawyers in the city totalled almost 3,000, representing approximately one third of such lawyers across all sample cities. London also has the largest shipping insurance industry and the greatest number of shipping brokerage companies. All in, London offers the greatest breadth and depth of high-end shipping services among shipping centres globally.

Shanghai is the largest port around the globe in terms of container throughput. In 2019, the city handled 43.30 million TEU, representing a year-on-year increase of 3.1%. Being an important import and export channel for commodities in China, the city not only serves as a supply chain nexus but has also sought to develop its high-end shipping service sector. In 2019, the number of maritime partnership lawyers in Shanghai amounted to 629, coming in just after London, New York-New Jersey and Singapore despite being a relatively newer centre for maritime legal matters. Thanks to Shanghai's enormous container throughput, nearly half of the world's top 100 container companies have set up branches in the city. Shanghai, having integrated its functions as a supply chain nexus and location for high-end shipping services well, has become one of the world's most developed shipping centres.

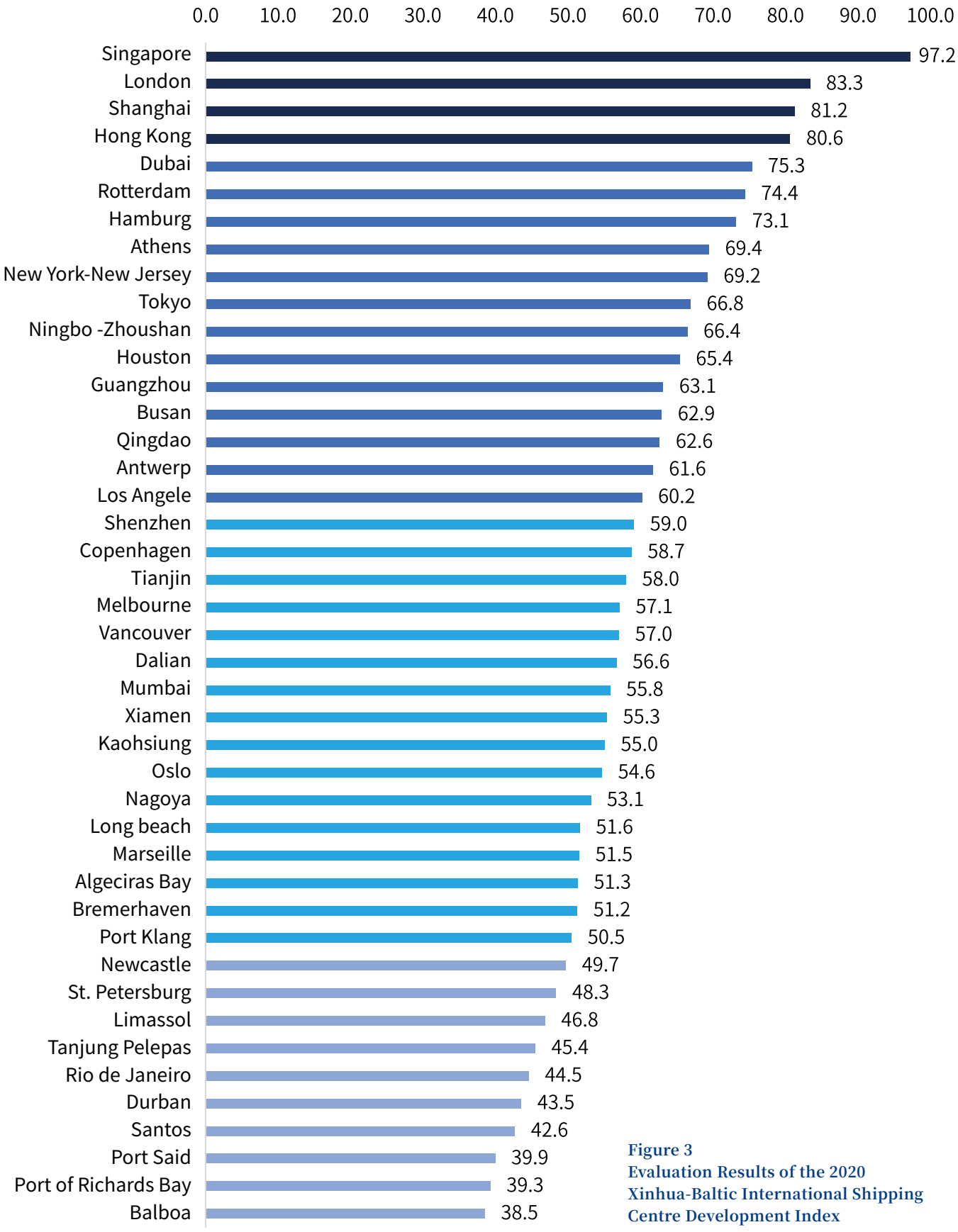


Figure 3
Evaluation Results of the 2020 Xinhua-Baltic International Shipping Centre Development Index

3. Stability Evaluation

The ranking of international shipping centres in 2020 showed only small changes compared to 2019 and generally remained stable. Specifically, there were 30 international shipping centres with a stable or relative stable ranking. This accounted for 69.8% of the total sample count. Ten shipping centres saw a relatively volatile ranking shift, accounting for 23.3% of the total sample count. Three shipping centres saw an extremely volatile ranking shift, accounting for 7.0% of the total sample count.

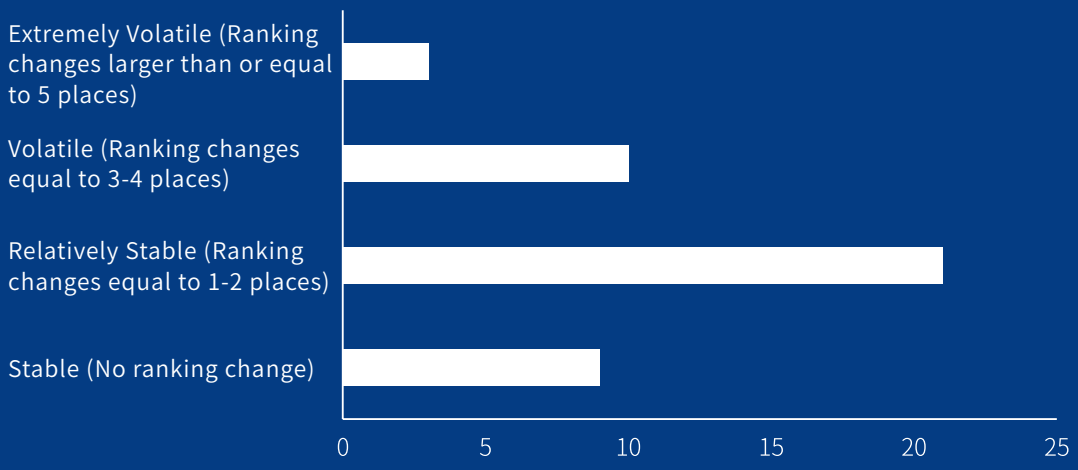


Figure 4 Analysis of Ranking Changes Between 2019 and 2020

4. Regional Evaluation

The evaluation results of the 2020 index show that amongst the top 10 shipping centres in the world, five are located in Asia, four in Europe and one in America. When comparing the ranking of Asia shipping centres between 2019 and 2020, 11 cities moved up in rank, accounting for 61.1% of the total sample in Asia. Cities with a higher or unchanged ranking account for 72.2% of the total sample in Asia. Overall, cities in Asia showed a relatively positive development trend.

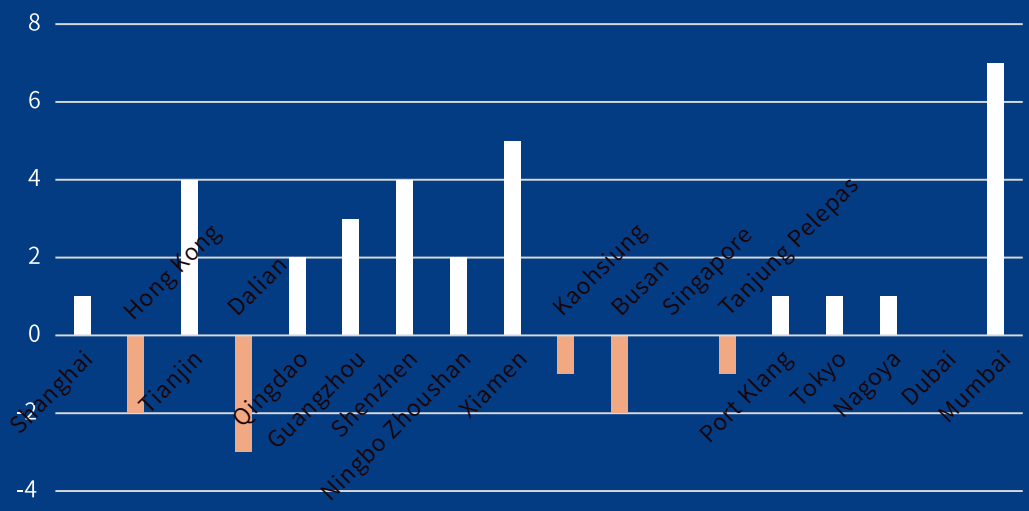


Figure 5 Comparison of Ranking Changes of Asian Cities Between 2019 and 2020

Table 2 Scores of International Shipping Centres and Their Distribution by Continent

2020 Ranking	Continent	City	Total	2020 Ranking	Continent	City	Total
1	Asia	Singapore	97.2	23	Asia	Dalian	56.6
2	Europe	London	83.3	24	Asia	Mumbai	55.8
3	Asia	Shanghai	81.2	25	Asia	Xiamen	55.3
4	Asia	Hong Kong	80.6	26	Asia	Kaohsiung	55.0
5	Asia	Dubai	75.3	27	Europe	Oslo	54.6
6	Europe	Rotterdam	74.4	28	Asia	Nagoya	53.1
7	Europe	Hamburg	73.1	29	America	Long beach	51.6
8	Europe	Athens	69.4	30	Europe	Marseille	51.5
9	America	New York-New Jersey	69.2	31	Europe	Algeciras Bay	51.3
10	Asia	Tokyo	66.8	32	Europe	Bremerhaven	51.2
11	Asia	Ningbo -Zhoushan	66.4	33	Asia	Port Klang	50.5
12	America	Houston	65.4	34	Oceania	Newcastle	49.7
13	Asia	Guangzhou	63.1	35	Europe	St. Petersburg	48.3
14	Asia	Busan	62.9	36	Europe	Limassol	46.8
15	Asia	Qingdao	62.6	37	Asia	Tanjung Pelepas	45.4
16	Europe	Antwerp	61.6	38	America	Rio de Janeiro	44.5
17	America	Los Angeles	60.2	39	Africa	Durban	43.5
18	Asia	Shenzhen	59.0	40	America	Santos	42.6
19	Europe	Copenhagen	58.7	41	Africa	Port Said	39.9
20	Asia	Tianjin	58.0	42	Africa	Port of Richards Bay	39.3
21	Oceania	Melbourne	57.1	43	America	Balboa	38.5
22	America	Vancouver	57.0	-	-	-	-

Note: Different colours represent different continents in which the shipping centres are located. Asia is shown as green; Europe blue; America purple; Africa yellow; and Oceania red.

(1) China-Japan-South Korea Area

China, Japan and South Korea are three major economic and trade powers. The total GDP of the three countries accounts for approximately 20% of the world's GDP, and approximately 70% of Asia's GDP. Benefiting from their closely connected business networks and highly complementary economic structures, China, Japan and South Korea have become important trading partners. The trade volume among the three countries increased from US$130 billion to US$720 billion during the 20 years from 1999 to 2019.

There are 13 sample cities within the China-Japan-South Korea area. Of these, Shanghai, Hong Kong and Tokyo, which all rank among the top 10, are representative of international shipping centres in East Asia. Ningbo Zhoushan, Guangzhou, Busan and Qingdao, which rank 11th, 13th, 14th and 15th, respectively, are the second echelon representative cities. The overall level of development of shipping centres in China, Japan and South Korea is relatively high.

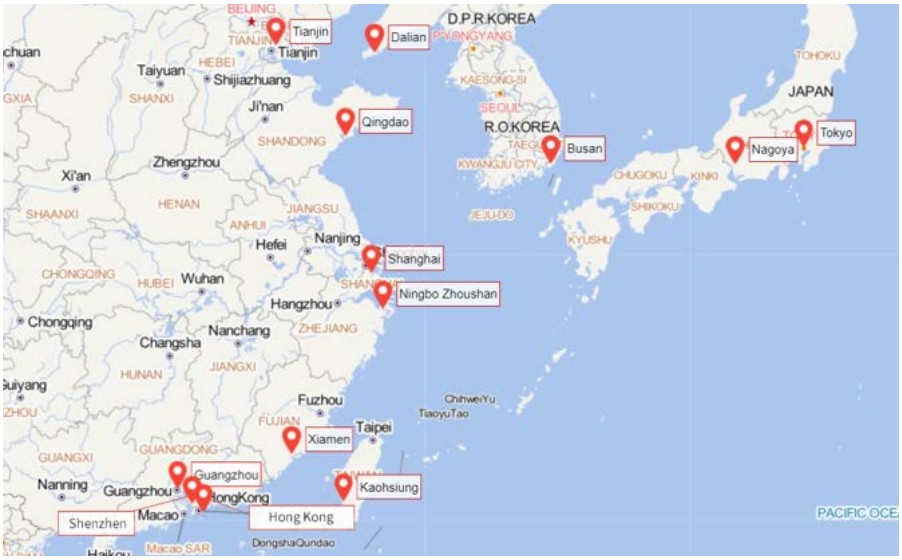


Figure 6 Distribution of Shipping Centres in the China-Japan-South Korea Shipping Route Area

(2) Southeast Asia Area

ASEAN is an important economic and political organisation in Southeast Asia. The area covered by ASEAN member countries represents an important economic sector in the Asia-Pacific region. Close to the vital maritime channel that is the Malacca Strait, ASEAN attaches great importance to seaborne trade. In the past ten years, with the rapid development of manufacturing and entrepot trade in ASEAN member countries, throughputs in the various ports of these countries have grown tremendously.

There are three sample cities within the Southeast Asia area. For the seventh consecutive year, Singapore ranked first in the overall score both within Southeast Asia and globally, and maintained its solid position as a major shipping hub. According to IMF forecasts taking into account the impact of the novel coronavirus epidemic, no major economies, except China, India and ASEAN member countries, are expected to have positive economic growth in 2020. This reflects the economic vitality of the ASEAN bloc.

Figure 7 Distribution of Shipping Centres in the Southeast Asia Shipping Route Area

(3) Indian Ocean Area

The North Indian Ocean is the only waterway for shipping routes between Europe and Asia; it is an important passage between the Gulf of Aden and the Malacca Strait. The Strait of Hormuz, dubbed the "lifeline of maritime trade", is the most important shipping route for transportation of crude oil. All crude oil from the main oil-producing countries in the Middle East must pass through the Strait of Hormuz before delivery to international buyers, mostly in Asia.

There are two sample cities within the Indian Ocean area. Dubai, once again ranked among the top 5, is the most important shipping hub in the region. Mumbai has improved its overall score greatly compared to last year to take the 24th position, primarily benefiting from India's rapid economic growth and continuous improvement in business environment.

Figure 8 Distribution of Shipping Centres in the Indian Ocean Shipping Route Area

(4) The Mediterranean Area

The Mediterranean Sea connects three continents – Asia, Africa and Europe – and thus plays a vital role in maritime traffic.

There are five sample cities within the Mediterranean area, including four European cities and one African city. Of these, Athens is the highest ranked, climbing two ranks to eighth place in terms of overall score. This is closely attributed to the conducive effect of the "Belt and Road Initiative".

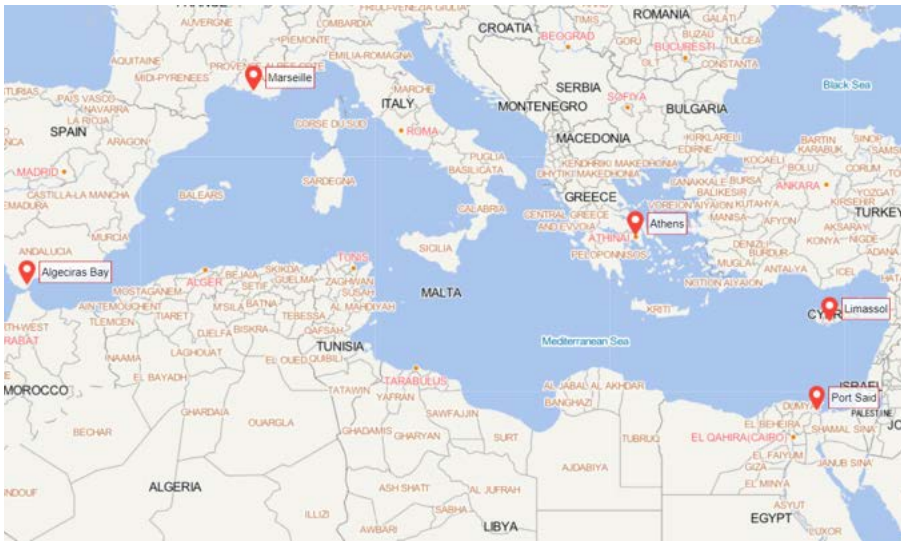


Figure 9 Distribution of Shipping Centres in the Mediterranean Shipping Route Area

(5) North Sea Area

Since the era of medieval maritime exploration, the European North Sea area has always been a key region for global navigation and trade. For centuries, it has led the development of global shipping. Port development in the North Sea region began to slow down at the dawn of the 21st century due to development of emerging economies in the Asia-Pacific region. However, as the traditional leader of global shipping, cities within the North Sea area retain advantages in the areas of shipping brokerage and maritime legal services. Therefore, their overall evaluation scores and rankings are relatively higher.

There are eight sample cities within the North Sea area, of which London, Rotterdam and Hamburg are ranked second, sixth and seventh, respectively in terms of the overall evaluation. The North Sea area dominates the top 10 rankings in terms of overall score. London has absolute global dominance in shipping brokerage and maritime legal services, while Rotterdam possesses the best port conditions in the North Sea area and even in Europe.

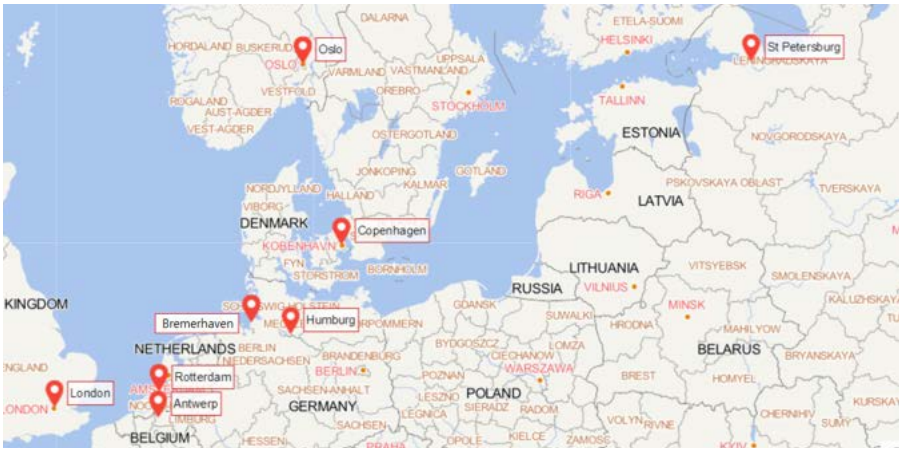


Figure 10 Distribution of Shipping Centres in the North Sea Shipping Route Area

(6) The Central and North America and Caribbean Sea Area

The North American region is currently the region with the highest GDP in the world. The Panama Canal, the gateway between the Pacific Ocean and Atlantic Ocean, is one of the most important shipping waterways in the world. There are six sample cities within the Central and North America and Caribbean Sea area, of which New York-New Jersey, Houston, Los Angeles and Vancouver in North America are ranked ninth, 12th, 17th and 22nd respectively, marking a slight decline in overall rankings.

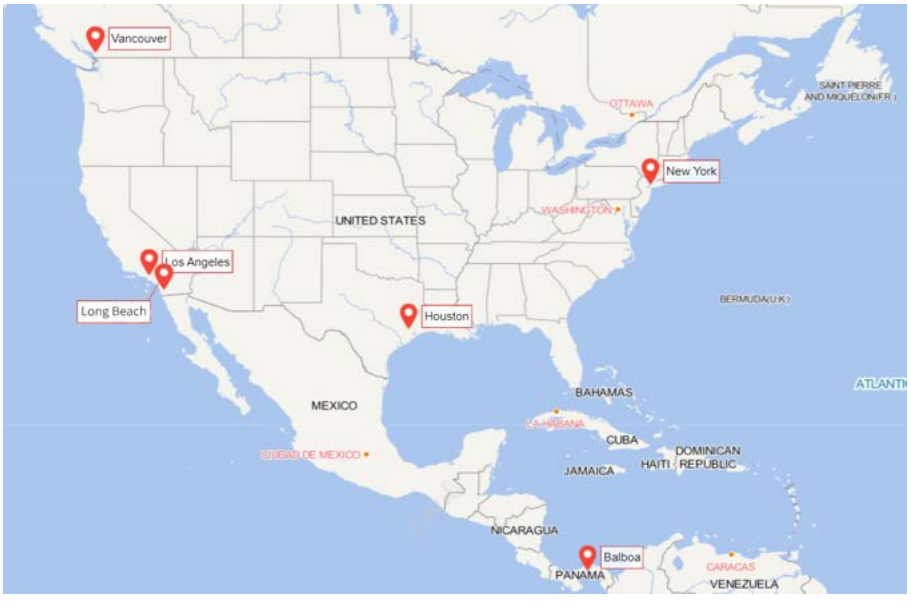


Figure 11 Distribution of Shipping Centres in the Central and North America and Caribbean Sea Shipping Route Area

2020

Xinhua-Baltic International Shipping Centre Development Index

04

Featured Topic Research: Global Shipping Services

Shipping services are core factors in assessing the competitiveness of international shipping centres. A comprehensive assessment of shipping services primarily focuses on five categories, namely shipping finance, shipping brokerage, maritime legal services, shipping business services and ship engineering.

According to the evaluation results, the top 10 cities with the best shipping services in the world are, in order of ranking, London, Singapore, Shanghai, Hong Kong, Dubai, Athens, Hamburg, Mumbai, Houston and New York-New Jersey, which are same cities as in 2019 with minor changes in ranking. London and Singapore remain the top 2 in shipping services with an edge accumulated over the years. Shanghai continues to perform at a high level and retains third position after surpassing Hong Kong in 2019, while Dubai rounds out the top 5 after slipping to sixth place in the previous year.

Table 3 Top 10 Centres for Shipping Services

Ranking	2020	2019	2018	2017	2016	2015	2014
1	London	London	London	London	London	London	London
2	Singapore	Singapore	Singapore	Singapore	Singapore	Singapore	Singapore
3	Shanghai	Shanghai	Hong Kong	Hong Kong	Hong Kong	Hong Kong	Hong Kong
4	Hong Kong	Hong Kong	Shanghai	Shanghai	Shanghai	Shanghai	Dubai
5	Dubai	Athens	Dubai	Athens	Athens	Athens	Shanghai
6	Athens	Dubai	Athens	Dubai	Dubai	Dubai	Hamburg
7	Hamburg	Mumbai	Hamburg	Hamburg	New York-New Jersey	Hamburg	Tokyo
8	Mumbai	Hamburg	New York-New Jersey	New York-New Jersey	Tokyo	New York-New Jersey	Mumbai
9	Houston	Houston	Tokyo	Mumbai	Hamburg	Tokyo	Athens
10	New York-New Jersey	New York-New Jersey	Houston	Tokyo	Mumbai	Mumbai	New York-New Jersey

1. Shipping Finance Services

Shipping is a capital-intensive industry and requires significant capital investment in infrastructure and shipbuilding. Shipping finance service therefore plays a vital role in the shipping industry and the development of international shipping centres. The scope of shipping finance service mainly encompasses four areas, namely; ship financing, maritime insurance, capital settlement and shipping derivatives.

Further analysis of the maritime insurance and ship financing segments is set out below.

Maritime Insurance

In 2018, global maritime insurance gross premium income continued the slight upward trend it has been on since 2016 and approached the level it set in 2015. Annual maritime insurance fees amounted to US$27.87 billion, an increase of 2.5% from 2017.

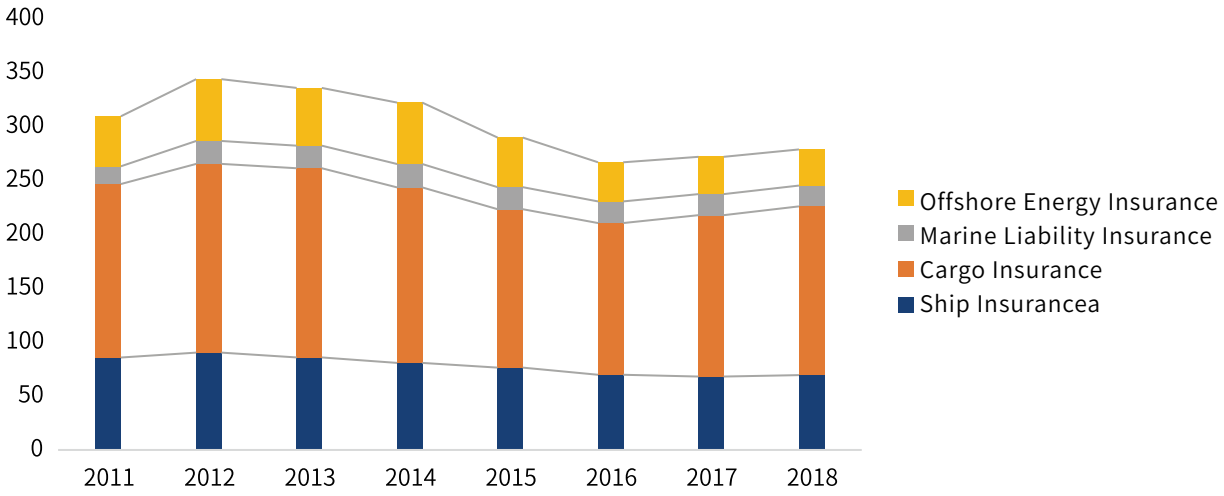


Figure 12 2011-2018 Global Maritime Insurance Gross Premium Income (US$' 000 million) by Insurance Category

In terms of proportion of maritime insurance premium income, cargo insurance premiums accounted for 56.2% in 2018 while ship insurance, offshore energy insurance and marine liability insurance premiums accounted for 24.9%, 120% and 6.9% respectively. The proportion of cargo insurance premiums rose slightly and the proportion of ship insurance and offshore energy insurance premiums continued to decline. Geographically, the aggregate proportion of the European and Asia-Pacific regions amounted to 77.7%, representing the major global maritime insurance markets.

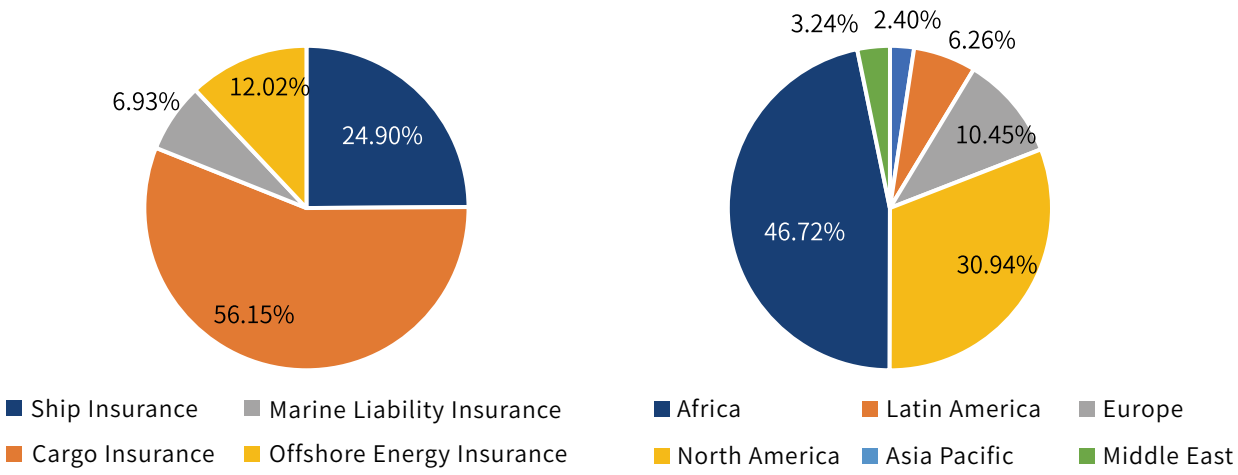


Figure 13 Proportion of 2018 Global Shipping Insurance Premiums by Category and by Region

A challenging time for marine insurance

Lars Lange, Secretary General, International Union of Marine Insurance (IUMI)

The size of the marine insurance market, valued in terms of global premium income, was US$29.8 billion in 2018 representing only a very modest 1% increase on the previous year. Premiums from hull underwriting were unchanged from 2017, cargo premiums rose by 2.5% while those from offshore energy slumped by 3%. Overall, the single percentage point rise can be attributed to the performance of the cargo sector, but when set against a similar growth in global trade, it is clear that marine insurance is not performing well. Recent years have been characterised by a run of technical losses (where claims costs exceed 60%-70% of premium); and current indicators, including the uncertainty surrounding COVID19, predict no obvious improvement.

In the hull market there continues to be a divergence between growth in tonnage and the premium base. In effect, this means the amount of premium per tonne is falling which leaves the sector exposed. Fortunately – and until relatively recently – shipping had suffered few major losses although attritional losses were beginning to creep up. But the months from the end of 2018 and into 2019 delivered a significant number of sizeable claims and, in particular, fires onboard large container vessels. This will severely impact the 2019 and 2020 underwriting performance. Coupled with this, ships are getting bigger and this presents a much higher single risk exposure – a growing feature of the overall risk profile.

On a more positive note, the frequency of total losses continues to fall and now appears to have stabilized at a historically low level. Similarly, there is a long-term downward trend in the frequency of claims which also appears to be stabilising. In general, vessel earnings and sale & purchase prices are rising and this should have a positive effect, but the impact of COVID19 together with the current oil price squeeze is having a mixed impact on the sector as a whole.

The cargo line was the only marine insurance sector to record any growth in 2018 and this was largely attributable to a general increase in global trade and cargo volumes. Therefore, it was unlikely that any real market development was seen. Going forward, national and regional trade restrictions are likely to make themselves felt in terms of future cargo volumes but even this will be over-shadowed by COVID19. The virus has put the brakes on trade in many sectors, particularly for containerised cargoes, and this will make itself known when the performance of cargo underwriters is reported for 2019 and 2020.

Cargo insurance is also coming under increasing threat from accumulation risk. Sizeable amounts of cargo stowed on ever larger vessels presents a significant risk which is exacerbated when similar vessels are berthed together in ports where onshore storage facilities are also located. The risk can become catastrophic in some cases. The years 2017 and 2018 saw a large number of cargo losses resulting from natural catastrophes (nat-cats) such as hurricanes, earthquakes and flooding.

Recently, the cargo market has been severely affected by a number of outlier incidents. The Amos 6 satellite, the Maersk Honam and a number of other large containership fires also had a significant impact on underwriting results. Overall, premiums collected in this sector have not been technically adequate to cover losses and expenses in recent years.

The offshore energy insurance sector has been hit extremely hard. Annual premium income has reduced by 21%, 5% and 3% each year since 2015, largely as result of the slump in oil prices. The modest price rally seen in 2018/2019 was beginning to reverse the fortunes of this sector even though the risk profile - caused by re-activating dormant assets – was causing concern. Optimism was short-lived, however. Oil prices fell drastically in early 2020 driven by global tensions and a lack of output control by OPEC+. As a result, offshore activity has slowed considerably and this will

have a devastating impact for offshore energy underwriters going forward.

Global marine insurance in many regions and many sectors is struggling to maintain profitability. Sadly, the impact of COVID19 is likely to make matters worse in both the short and longer term. In the short-term, COVID19 related client procedures and specific regulations will give rise to an increased claims potential that marine insurers have to deal with. In the mid and long-term, the macroeconomic impacts and lessons-learned may cause the marine insurance industry to adapt to a new way of working; less business and less premium volume may be a consequence; there may also be requests for new or adapted wordings and coverage.

In addition, potential claims scenarios might arise in a number of areas including:

For hull, there are likely to be delays, and problems with availability of personnel, both on-board vessels and in ports, either through illness or regulation. The availability of spare parts may also cause problems. Vessel lay-ups may occur and will have to be taken into account.

For cargo, a decline in trade and transportation volumes generally means less business. Uncertainty and interruptions in the supply chain may lead to delay and business interruption. Warehouse overflow and congestion in port areas may cause additional losses.

In many businesses such as the cruise industry, special business interruption policies or clauses may be affected.

In some countries such as the US and the UK, policy makers have seemingly focused on business interruption claims and the fact that many of those insurance policies either contain pandemic exclusions and/or have not been specifically extended to provide COVID-19 related cover. There are some initial calls for mandatory retroactive cover despite specific exclusions. Such an approach would cause severe solvency issues and be potentially ruinous to the insurance market.

Marine insurance continues to deliver a vital service to global trade but recent years have hit the sector extremely hard. Until the outbreak of COVID19, the market as whole was beginning to feel more optimism, particularly as oil prices were recovering and excess underwriting capacity was reducing. However, COVID19 combined with the crash in oil price has introduced a new level of uncertainty to all corners of global business which marine underwriters – together with all maritime and shipping companies – will need to overcome. Marine insurance is one of the oldest industries in the world – it has survived challenging times in the past - and these current difficulties, whilst uncertain, will not be insurmountable.

IUMI collects premium income data from all relevant marine insurance markets which are released as global market averages. The most recent data given in this article are from the 2018 underwriting year. 2018 numbers will be adjusted and 2019 numbers published in September 2020 at IUMI' s annual conference which, this year, will be held online.

About IUMI

The International Union of Marine Insurance (IUMI) represents 44 national and marine market insurance and reinsurance associations. Operating at the forefront of marine risk, it gives a unified voice to the global marine insurance market through effective representation and lobbying activities. As a forum for the exchange of ideas and best practice, IUMI works to raise standards across the industry and provides opportunities for education and the collection and publication of industry statistics. IUMI is headquartered in Hamburg and traces its roots back to 1874.

More information can be found at www.iumi.com

discalimers

We've Been Here Before

The COVID-19 pandemic is only the latest in a decade of challenges faced by shipping industry.

Campbell Houston, Senior Research Analyst, Marine Money International

The SARS-CoV-2 virus which emerged in early 2020 wreaked havoc on the globalized world. As supply chains came to a standstill, borders were closed and people were told to stay home, globalization and global trade faced its greatest challenge in decades and shipping, the quintessential globalized industry, had dire prospects. The challenges faced by the pandemic were unique, but the ingenuity and adaptability needed to survive were not. Since the Global Financial Crisis of 2008, shipping has been in turmoil more often than not and shipowners became accustomed to limited access to public debt and equity and a declining availability of bank finance. As a result, the sell-off in global markets may not have affected shipping companies as deeply as some other industries.

Like all business, the global lockdowns had a massive effect on doing business. However, a number of deals that launched before the pandemic were successfully closed by staff working remotely. Deal origination during the pandemic though has become more challenging. Without conferences, meetings, and other in-person events, finding the right people to get a deal off the ground can be a hurdle. Relationship banks may be more important than ever, but for others, Marine Money has begun offering live webinars, virtual conferences, and other forms of community outreach to continue fostering industry connections.

$1.1 billion was raised on capital markets 1Q20 thanks to a strong January and February. In March, when the lockdown began in the United States, capital market proceeds totalled just $35 million, the lowest monthly amount since 2004. Deal volume improved slightly in April and May with $222 and $155 million in proceeds, respectively. Dealogic meanwhile reported a relatively strong $21.4 billion of syndicated loans to the marine industry during 1Q20, partially due to the cruise and container industry which saw several large loan facilities at the start of the pandemic. The greatest impact of the pandemic may be to Chinese leasing. The segment, which has become a pillar of ship finance in recent years, effectively came to a halt with the pandemic. When will the leasing houses resume business and will their deal flow pick up to account for the lost months are key questions which will impact the ship finance market moving forward.

Of course, no industry is immune to a long-term decline in demand. If a global recession persists, container and dry bulk rates will not recover. The tanker market, which experienced record rates due to the tremendous need for floating storage, has already cooled significantly. Offshore meanwhile is bracing for a new wave of restructurings and the cruise and ferry sectors are perhaps the most challenged of them all. Marine Money has helped the maritime industry through many difficult times over its 30 plus years in business and during COVID-19 has heard from around the industry how these new challenges are successfully being met. As economies continue to reopen and trade reignites, the shipping industry will be there to faithfully serve the World's needs.

2. Shipping Brokerage Services

Shipping brokerage links many facets of shipping transactions. An important component of shipping services, shipbrokers provide professional agency, brokerage and consulting services riding on various other industries including transportation, insurance, finance and commerce, all of which facilitate shipping development.

The number of shipping brokerage companies did not change significantly from the previous year. London continued to have the most brokerage companies and resources relating to brokerage services remained relatively concentrated.

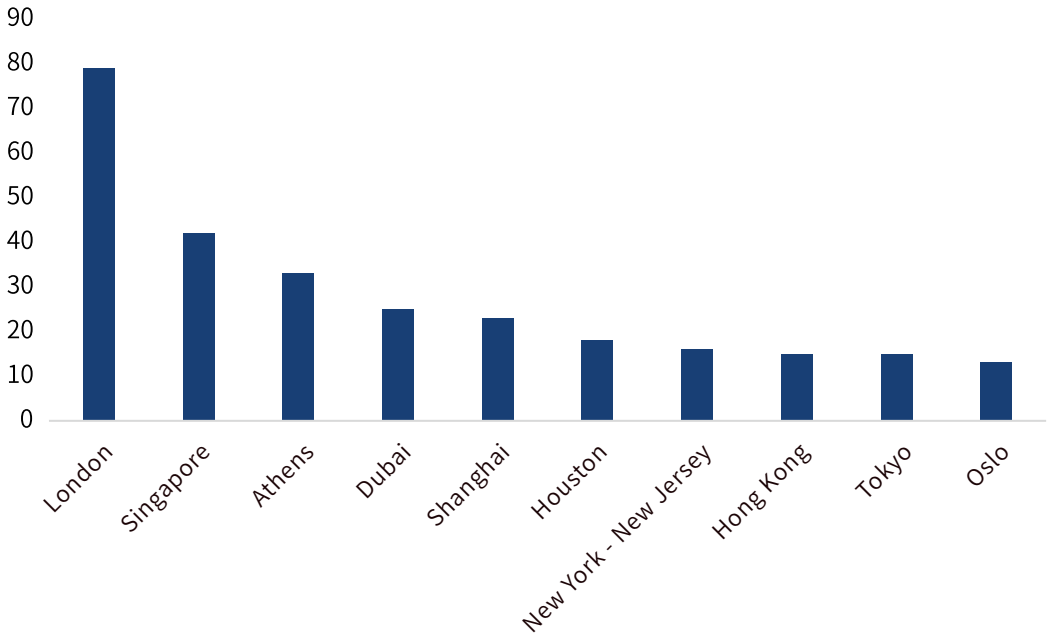


Figure 14 Top10 Cities by Number of Shipping Brokerage Companies

3. Maritime Legal Services

Maritime legal services primarily tackle legal issues related to ship or property loss compensations or share of losses arising at sea or along navigational waterways. As a component of maritime legal services, international maritime arbitration is a high-end industry which denotes a country's soft power in maritime trade.

(1) Maritime Arbitration

The geographical distribution of maritime arbitration services remained stable. With a wealth of maritime legal resources accumulated throughout the years, London has cultivated and attracted a huge amount of maritime arbitration talent and is, by far, the leading international maritime arbitration centre. According to data from the London Maritime Arbitrators Association, Singapore Chamber of Maritime Arbitration and Society of Maritime Arbitrators in the US, there were 422 maritimearbitrators inLondon in 2019. Maritime arbitration resources are highly concentrated and are unlikely to change significantly in the near term.

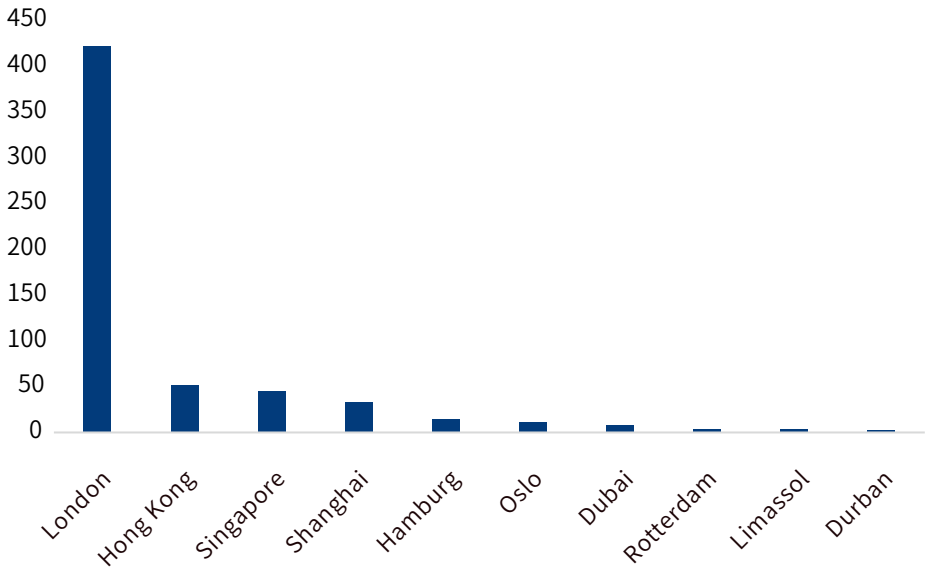


Figure 15 Top10 Cities by Number of Maritime Arbitrators

(2) Maritime-Related Law Firms

Apart from maritime arbitration, maritime-related law firms also form an important part of maritime legal services. According to data on maritime-related law firms and partners in 2019, maritime litigation services resources were mainly concentrated in the following locations: London, New York-New Jersey, Shanghai, Singapore, Dubai and Hong Kong. London hosts the largest number of maritime-related law partners by some margin.

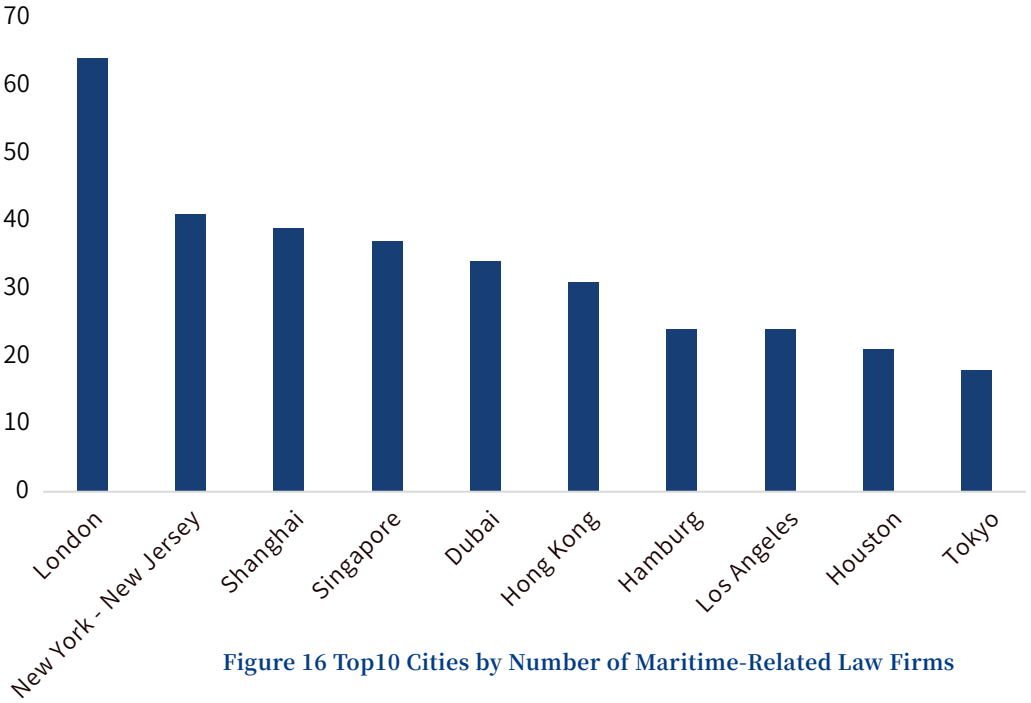


Figure 16 Top10 Cities by Number of Maritime-Related Law Firms

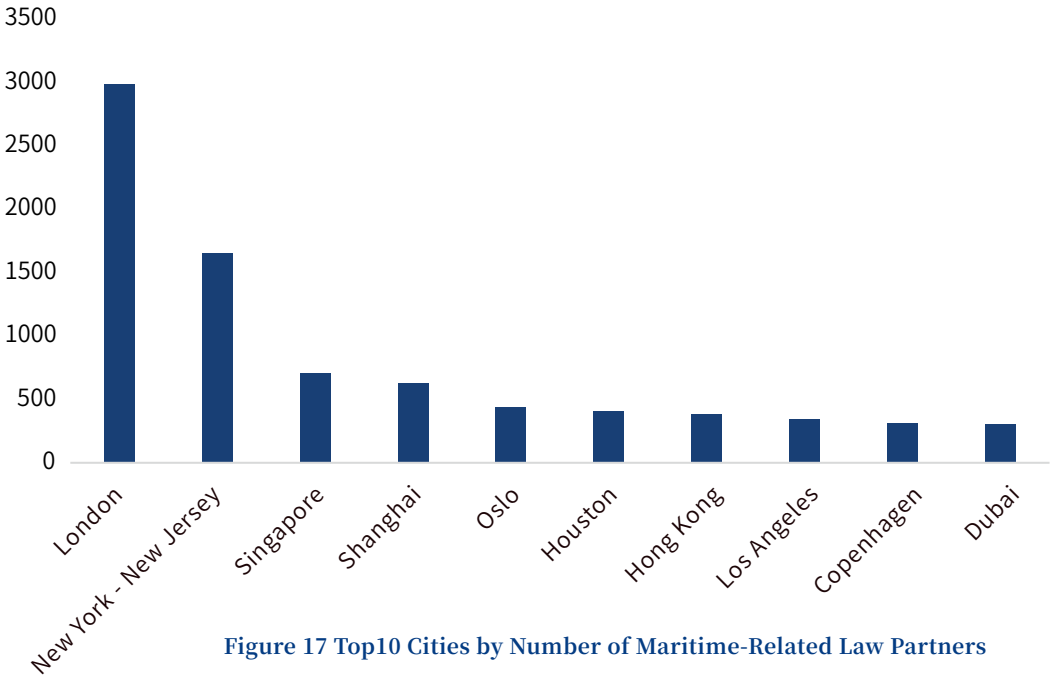


Figure 17 Top10 Cities by Number of Maritime-Related Law Partners

In terms of the global distribution of maritime-related law partners, the majority are based in Europe, followed by America and Asia, while representation is scarce in Oceania and Africa.

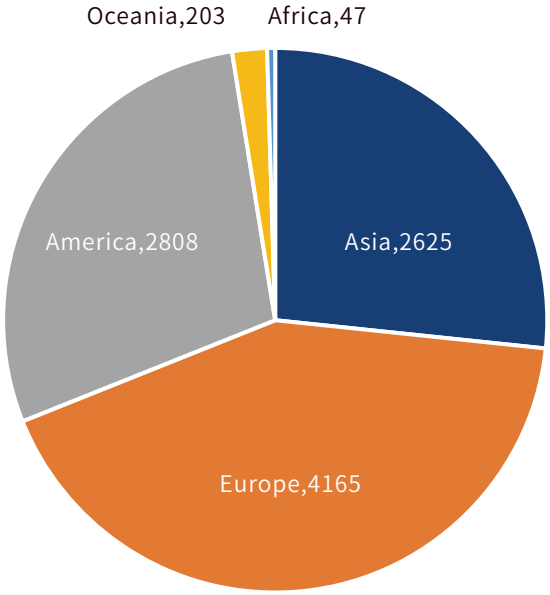


Figure 18 Geographical Distribution of Maritime-Related Law Partners (number)

4. Shipping Business Services

Shipping business services refer to ship operation and management services. A company may manage its own or third-parties' vessels on an engagement basis. The main assessment criteria include the number of ship management companies and the number of branch offices of the top 100 container shipping and dry bulk carrier companies.

Based on the findings, Singapore possesses outstanding strengths in terms of shipping business services with a larger number of top 100 bulk carrier companies, top 100 container shipping companies and ship management companies based there than other shipping centres. Meanwhile, more container shipping companies tend to set up branch offices in Shanghai, which is currently the port with the highest container throughput globally.

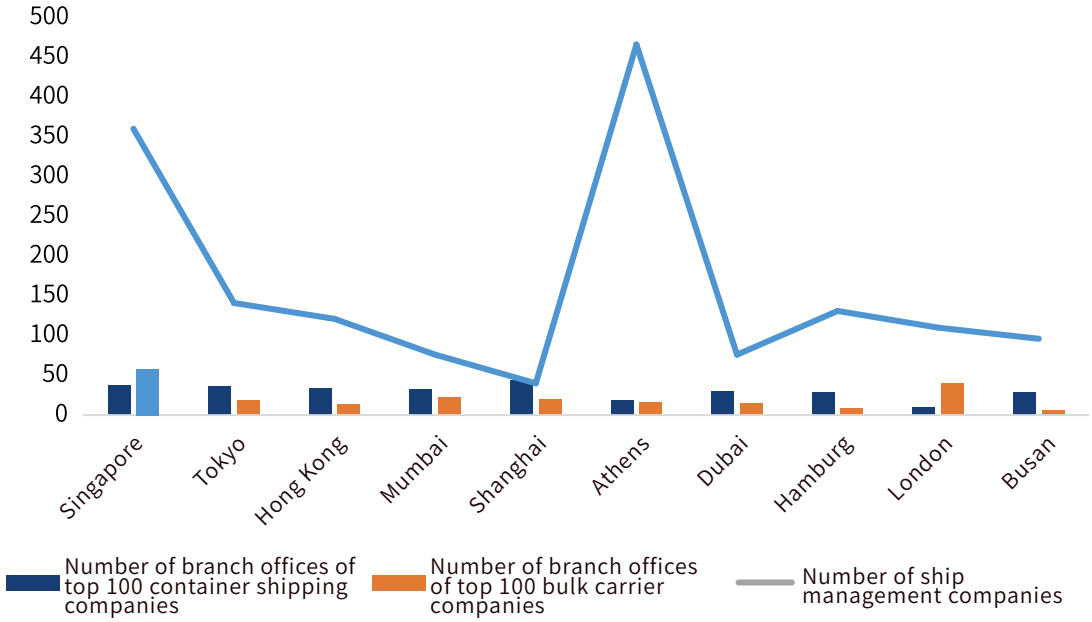


Figure 19 Top 10 Shipping Centres for Shipping Business Services

2020

Xinhua-Baltic International Shipping Centre Development Index

05

Featured Analysis on Cities as Shipping Centres

An international shipping centre is a global hub where shipping elements and resource allocation capacities gather. Due to the broad diversity of elements and resources, different shipping centres have distinctive characteristics, different advantages and areas of focus, and follow varied development paths.

An international shipping centre often refers to a port-based city, which, leveraging on its unique advantages at a particular geographical location in its early days, becomes a connecting hub for ships and cargos supporting the logistics of international trade. As the shipping industry continues to evolve and the industry ecosystem keeps expanding, more and more elements of shipping services have emerged: shipping finance services make available more diversified and comprehensive financing options for shipbuilding; vessel brokerage services provide a convenient channel for ship sale and purchase transactions; freight brokerage services facilitate more efficient matching of cargos and vessels. Shipping insurance services and maritime legal services, which feature throughout the entire shipping industry ecosystem, are essential in ensuring the orderly operation of and risk mitigation on the part of the international shipping industry. In order to support these services, manpower training has also played a crucial role. Due to each shipping centres' distinctive characteristics, varying stages of development and different development goals, international shipping centres have evolved in diverse ways.

In the seven years since the publication of the first Xinhua-Baltic International Shipping Centre Development Index, Singapore has always ranked in the top position, while London and Hong Kong consistently secured a top three position before 2020. Shanghai, after many years of steady development, has improved its ranking over the past few years. This chapter mainly focuses on the advantages and characteristics of these four leading port cities.

Singapore

The world’s leading maritime capital with a well-established ecosystem

The Malacca Strait, along which Singapore is situated, connects the Pacific Ocean and Indian Ocean. Known as the "lifeline" of maritime shipping, it is a shipping passage connecting countries in East Asia, Oceania, South Asia, West Asia, Africa and Europe. Being situated near the Malacca Strait is Singapore's most significant geographical advantage. Since 2000, emerging economies in the Asia-Pacific region, most notably China, have developed rapidly, with the sophisticated manufacturing industries in China, Japan, South Korea and ASEAN supporting the booming development of global trade. This has in turn spurred strong shipping demand in the Asia-Pacific region, which makes Singapore's geographical advantage even more prominent.

A comprehensive shipping industry ecosystem

Relying on its unique geographical advantage and building on the development of the traditional freight sector, Singapore has attracted a variety of maritime enterprises, and gradually built a comprehensive shipping industry ecosystem. It has not only successfully congregated the greatest number of the world’s international shipping groups, but has also attracted international commodity traders, which enriches its shipping and trade business network. The gathering of resources with respect to shipping insurance, maritime law and arbitration, shipping financing and shipping brokerage has strengthened Singapore's shipping service sector, while the scientific research strength of universities, research centres, technology companies, start-ups and other institutions has injected Singapore with innovation capabilities for shipping development in the future.

Strong government and policy support

The Singapore government has played a vital role in facilitating the development of the city state as an international shipping centre. The Singapore government provides forward-looking planning and guidance in many aspects, including the integration of the shipping industry chain, harbour industry development and intelligent and green port technology, which is instrumental in promoting Singapore’s development as an international shipping centre. Meanwhile, Singapore's favourable business environment, supportive tariff policy, flexible and user-friendly registration and management system regarding ships and crew, as well as a variety of shipping-related incentive policies, all foster positive conditions to attract a large amount of shipping resources.

London

A city with established high-end shipping services

Straddling the GMT and BST time zones, London is bordered by the Atlantic Ocean to the west, at the far side of which is North America; to the east, it is separated from continental Europe by the North Sea, and the English Channel and the Strait of Dover to the south. Meanwhile, the estuaries of Elbe, Weser, Rhine, Seine and other rivers have strengthened the connection between Britain and other countries in Europe, rendering London a prime geographical location. In the 1760s, after the first Industrial Revolution, Britain's demand for import of raw materials and export of industrial products stimulated the rapid development of London's shipping industry. As Britain became the hegemon of global economy and trade, London also developed into the first globally recognized international shipping centre. Following the transformation of the global supply chain system, London no longer has an absolute comparative advantage in performing the function of a logistics hub. Nevertheless, with its unrivalled strengths in modern high-end shipping services, London remains a global maritime powerhouse.

Sophisticated shipping service industry cluster

As the oldest international shipping centre, through over a century of development, London has formed a comprehensive modern high-end shipping service industry cluster covering shipping brokerage, maritime insurance, shipping finance, maritime law, maritime consulting and others. From the perspective of market share, London has secured a leading position globally in maritime litigation and arbitration, shipping finance, shipping insurance, shipping brokerage and other service sectors. Taking maritime arbitration as an example, the London Maritime Arbitrators Association handled 2,952 cases in 2019, accounting for over 70% of the world's cases.

A central location for international maritime organizations

Many international maritime organizations, including but not limited to the International Maritime Organization (IMO), Baltic Exchange, International Group of P&I Clubs, International Chamber of Shipping (ICS) and International Association of Classification Societies (IACS) are headquartered in London, due to its early participation and dominant position in global shipping and trade.

Shanghai

A steadily emerging shipping centre in the Asia-Pacific region

Nestled at the T-junction of China's coastline and the "Golden Waterway" of Yangtze River, and adjacent to the mainstream of the world's east-west waterways, the Port of Shanghai enjoys the unique geographical advantage of having a collection and distribution transportation network with high connectivity. Besides leveraging on the vast and resourceful Yangtze River Delta and Yangtze River Basin as its main economic hinterland, the Port of Shanghai is located in the region with the most vibrant economic development, the highest degree of openness and the strongest innovation capability in China. Similar to the internal driving forces behind London's development into an international shipping centre in the 18th century, the buoyant economic activities of the hinterland bring about huge demands for the import of raw materials and the export of goods. The complementary roles of the port and economic hinterland help shape a virtuous circle of economic development, constantly pushing forward the development of Shanghai as an international shipping centre.

Efficient modern logistics service system

Centring on the seaport and airport, Shanghai has developed a modern logistics service system which is thoroughly integrated with its collection and distribution transportation network. Shanghai has established itself as a globally recognized aviation and shipping hub: Shanghai's seaport is ranked first in terms of container throughput and port connectivity globally, while its port operations efficiency and service quality stand tall among its international counterparts. It has successfully established an urban airport system of "One City with Two Airports", the first of its kind in China, with the largest network of links among Asian cities and world-leading passenger and cargo throughput. Shanghai's distribution and transportation network has been enhanced, with cruise ships and other large vessels now able to pass through at the same time at the estuary of Yangtze River. The proportion of water-to-water transshipments for containers is 48%, while those of international transfers account for over 10%. As shipping logistics goes green and intelligent, the entire process flow of port business has become paperless, achieving a 98% paperless rate for customs clearance in each link at the port. Control measures are strictly implemented in ship emission control areas and the use of clean energy sources, such as shore power, is promoted. Information sharing and business coordination are in place for river-sea coordinated transport of containers along Yangtze River.

Strong policy support

Favourable government policy relating to a pilot free trade zone platform and improvements to the business environment have contributed to the continuous development of Shanghai's shipping market. Firstly, the trading environment has improved, according to the World Bank's "Doing Business 2020" report, China has risen from 65th to 56th in the ranking of "Trading across Borders". Secondly, efforts in promoting the openness of the shipping service industry have been enhanced. Except for domestic waterway transportation businesses involving national sovereignty and security matters, other shipping businesses have been opened to external parties. Thirdly, supporting policies have started to bear fruit through the recruitment of additional shipping talent, implementation of subsidies and enhancement of the port transportation and distribution network to further support Shanghai's development as an aviation hub and encourage innovation of modern shipping services.

UBS
建設銀行 CCB
恒生銀行

Hong Kong

The Pearl of the Orient that connects the global market

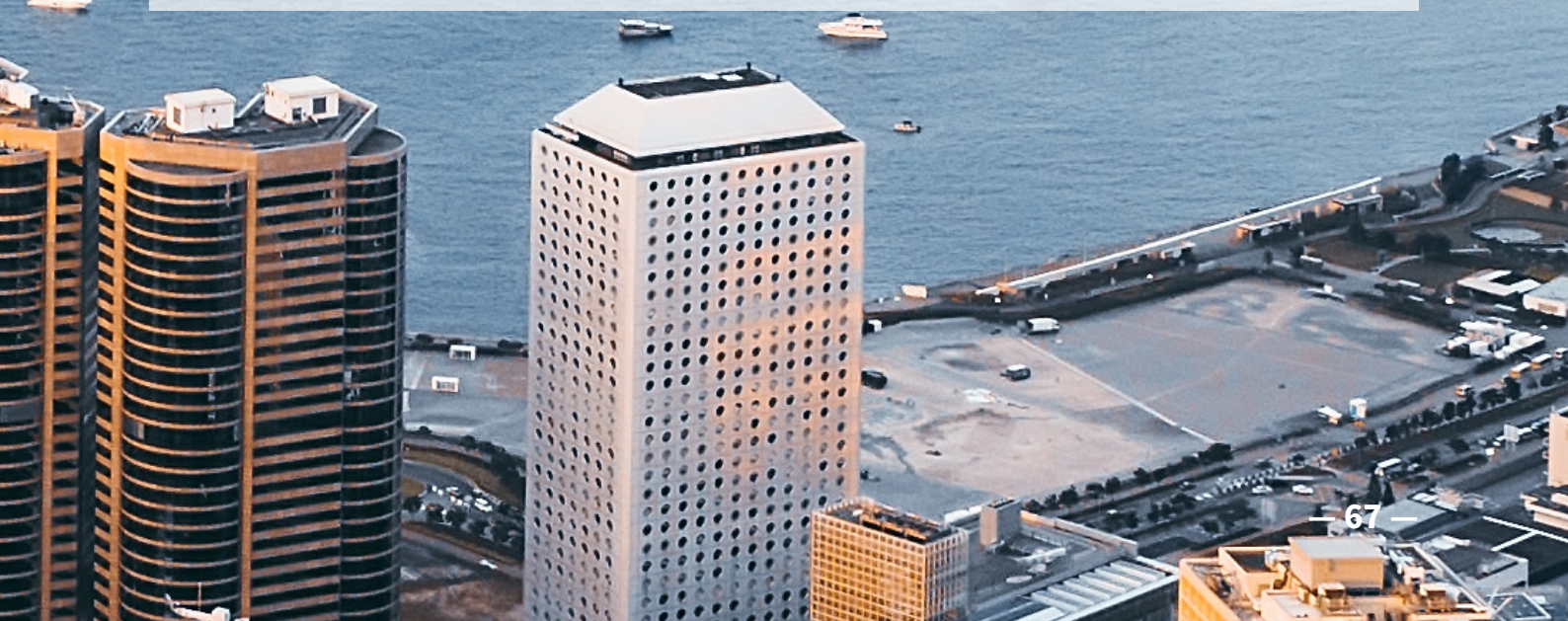
Hong Kong is located at the southern part of mainland China and on the east side of the mouth of the Pearl River. The northernmost part of Hong Kong, New Territories, shares borders with the Shenzhen Special Economic Zone in Guangdong Province, and its maritime areas on the east, west and south part are embraced by the territorial waters of Guangdong Province. Not only is it located at the centre of countries on the West Pacific Rim, Hong Kong is also a maritime hub in the Pacific Ocean and Indian Ocean. It is a pivotal transit point for both east-west routes and north-south routes. Victoria Harbour, which offers wide views and deep, sheltered waters, is a natural harbour that enjoys global reputation. Hong Kong is adjacent to Southeast Asia and has played an important role in connecting mainland China with international markets with its exceptional strengths as a multicultural melting pot.

Shipping finance and insurance business

As an international financial centre, Hong Kong possesses premium financial infrastructure, well-established financial regulations and a deep talent pool of financial professionals for enterprises to raise funds. In terms of market capitalization, Hong Kong's stock market ranks third in the world and second in Asia, and it is the top-ranked stock market in the world in respect of fund raising through initial public offerings. Shipping finance activity in Hong Kong has been scaling up in the past decade and it is becoming the leading ship leasing centre of the East Asia region. Hong Kong provides cutting-edge, comprehensive and world-renowned commercial insurance facilities to maritime businesses. To promote the development of marine insurance and underwriting of specialty risks in Hong Kong, the government will implement tax relief proposals for the marine insurance sector and streamline regulations for international P&I (Protection and Indemnity) clubs.

Development opportunities from the integration with Greater Bay Area

In February 2019, China's government officially introduced the outline development scheme of the Greater Bay Area, which is composed of 3 provinces (special administrative regions) and 11 cities including Hong Kong SAR, Macau SAR and nine cities in Guangdong Province with the coverage amounting to 56,000 square km in aggregate and a total population of approximately 70 million. The integrated development strategy of city clusters in the Greater Bay Area could to some extent mitigate the current constraints faced by Hong Kong including high transportation costs, insufficient development space and a remote hinterland, so that Hong Kong's strengths in shipping financing and maritime law can be used to further promote as well as concentrate its development in the area of high-end maritime services and generate continuous growth momentum.



Key challenges facing the international port community in both the short and long term

Dr Patrick Verhoeven, Managing Director- Policy and Strategy,
International Association of Ports and Harbours (IAPH)

A complex mixture of geopolitical changes, digitisation and automation and decarbonisation will shape the future of the port sector.

Continued exponential growth in intra-Asian trade as well as the expansion of China's Belt and Road vision will transform the geopolitical map by the second half of this century. Population growth in developing regions such as Africa and the Indian Subcontinent will redraw principal seaborne trade lanes.

Nearly every segment of the global supply chain is now seeking to rationalise its operations through mergers or strategic alliances. This includes shipping lines, terminal operators and shippers. Port authorities remain the one notable exception to far-reaching cooperative arrangements, at least in relative terms, vis-à-vis other economic actors in the supply chain. Closer cooperation between ports will become inevitable in future, given the search for scale and scope economies, but also environmental and societal pressures. Successful cooperation will depend upon well-defined, future governance models.

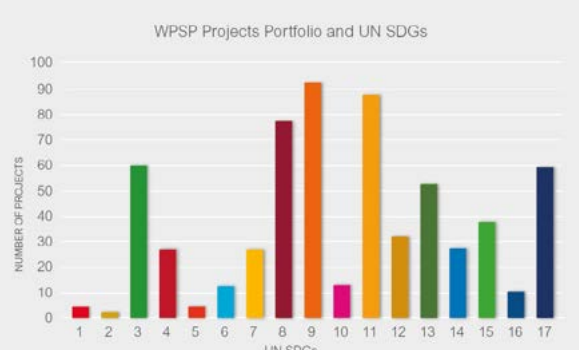
The International Maritime Organization's (IMO) 2020 sulphur cap and 2050 target for greenhouse gas reductions heralds the start of a structured approach towards capping harmful emissions, where ports are already playing their role as providers of alterative clean marine fuels. The emergence of alternative non-carbon fuels like hydrogen and methanol will also power the ships of the future within 50 years. How fast that transformation takes place will depend on the willingness of ship owners and shipyards, and preparedness of service providers and innovators alike to invest in fuel cell technology and infrastructure in ports. Ports will need to ensure that all the necessary standards, processes and expertise are in place for the safe and efficient supply of these new alternative fuels.

A growing number of initiatives in the field of the circular economy is expected, whereby port authorities will be expected to work together with neighbouring industrial clusters to generate their own energy and give new economic purpose to waste products. This will challenge the conventional principal role of port authority as a landlord of port terrain.

One of the major outcomes of the COVID-19 crisis is the very urgent need for ports to digitalize processes and data exchange. To date, only 49 of the 174 Member States of the IMO possess functioning Port Community Systems. Exchanging paper by hand and relying on person-to-person interaction will need to be replaced by more efficient electronic transactions.

We may reach a point where automation and standardized real time data handling between port players converge with the application of artificial intelligence and predictive forecasting using big data collated from devices throughout the port, i.e. the 'internet of things'. This could improve efficiency in areas such as port call optimization and trade facilitation. The speed of development will depend upon the readiness of the ports, enterprises, relevant authorities and logistics players to adopt new technology such as 5G, share sensitive data, and the willingness of port authorities and their governing bodies to encourage or even impose this openness.

To help ports preparing for this future, IAPH established the World Ports Sustainability Program. Guided by the 17 UN Sustainable Development Goals (SDGs) the program is aimed at enhancing and coordinating future sustainability efforts of ports worldwide and fostering international cooperation with partners in the supply chain.



Since its inception, over 120 projects have been registered from IAPH port members from all over the world in the fields of resilient infrastructure, energy transition, safety and security, community outreach and governance. 71 ports have developed these concrete projects from 38 countries all over the globe.

Community outreach and port-city dialogue are on top of ports' agendas worldwide. This is hardly surprising, given that ports are granted and maintain their license to operate and grow by their local communities.

Climate and energy and resilient infrastructure also score relatively high, no doubt driven by societal, political and commercial pressures to embrace decarbonization and digitalization. Governance as well as Safety and Security appear to be relatively underdeveloped areas in need of more attention. Safety and security will surely become prominent in the post-COVID19 environment, where we see all ports now having to significantly change the way in which they operate to meet heightened health and safety standards.

Governance will also receive more attention in the future, in particular to address the age and gender imbalances in the industry overall. The quality of accelerated skills development will have to aim at changing the age and gender demographic, which currently shows 89 and 91 percent of positions occupied by males at respective directorship and C-levels, and a skew towards seniority versus performance-based

promotion and job rotation. Ports will need to work towards attracting new young talent as port professionals in future in order determine success in transforming the industry.

	2018	2019	TOTAL
Resilient Infrastructure	7	31	38
Climate and Energy	15	28	43
Community outreach and Port city dialogue	24	44	68
Safety and Security	3	8	11
Governance and Ethics	8	11	19

Reflections on the Building of Shanghai International Shipping Centre

Zhang Jieshu,
Deputy Secretary-General of Shanghai International Shipping Institute

Construction of the Yangshan Deepwater Port kicked off 20-odd years ago, marking the start of hardware construction of the Shanghai International Shipping Centre (SISC). Since the issuance of the State Council document (GF2009, No.19) in 2009, the building of SISC has been driven by both hardware construction and "software development" (or preferential policy support). The city has experienced tremendous changes over the past 20 more years, during which the shipping industry has deepened their understanding of the international shipping centre. In 2020, let's reconsider and learn more about Shanghai International Shipping Centre while reviewing the past and looking forward to the future.

1. Reflections on the Allocation of International Shipping Resources

As proposed by the State Council document, Shanghai shall substantially develop into an "international shipping centre with the capability to allocate global shipping resources". Here, several issues are involved: what are shipping resources, what is resource allocation (or distribution), what are the development stages of resource allocations?

With regard to shipping resources, there is no universal definition. In the World Trade Organization's service trade negotiations (WTO, 1994), the shipping industry is divided into three segments, namely, shipping, shipping auxiliary services, and access to ports. London's definition of the shipping industry includes shipping, shipping laws and regulations, industry management, the shipping service sector, and shipping associations, without mentioning the port industry. The shipping industry as defined by the Netherlands includes what it is strong at: ports, river transportation, ship building, navigation equipment, harbour engineering projects, etc. As for the construction of SISC, it includes not only ports, shipping and shipping services, but also airports and cruise ports, which are characteristic of SISC.

With regard to resources allocation and its development stages, and in terms of the flow of essential shipping factors, the building of an international shipping centre can be divided into three stages: First, the stage of convergence of essential shipping factors. Through attracting such essential factors as cargo, ships and personnel, the local trading services arise. The focus of this stage is to cut costs and improve service at the shipping centre.

Second, the stage of radiation of the essential factors. Through investment, construction, business expansion, export of management modes, cultural influence dissemination, and institutional innovation and replication, the shipping centre can promote its superior shipping factors to reach out, infiltrate into and influence other shipping markets at home and abroad. The prerequisite for this radiation ability is the shipping centre's comparative advantages in some areas.

Third, the stage of the power of speech. The power of speech is mainly embodied in the ability to formulate rules and standards and to be an accepted authority, and these are the results of the concentration, radiation and accumulation of abundant shipping factors—supported by technologies.

The above three stages of resource allocation are interdependent, with the development of one stage building on the solid foundation of the preceding stage.

With regard to the subjects that allocate resources, studies show that the coefficients of various international shipping businesses such as shipbuilding, ship management, ship financing and ship insurance have been decreasing, indicates that different shipping areas have become more specialized and independent, without a single country being dominant in all shipping areas.

Athens is the city where ship owners boast the largest carrying capacity. In Oslo, banking and finance service providers have the leading professional marine capability. Shanghai is the world's best in port operation and ship management. It is obvious that the strength of SISC is in line with the countr's overall economic (social, sci-tech and managerial) development.

With regard to the reach of resource allocation, it reflects the domestic or international radiation reach of the shipping business, and SISC is often which is criticized in this regard. There is no denying that Shanghai's ability to allocate global shipping resources needs further improvement. However, it is worth noting that since China is about the same size as the whole Europe, Shanghai ability to allocate domestic shipping resources is amazing.

2. A Review of the Construction of Shanghai International Shipping Centre

2.1 The Achievements of the construction of SISC

At the end of 2019, Shanghai was a mainland port that offered the largest number of container shipping routes,

ran the most frequent sailings, and was connected to the largest number of ports. It has ranked the world's No.1 in container throughput for ten consecutive years and also No.1 in port liner shipping connectivity index for nine successive years. Yangshan Phase IV project is the world's largest automated terminal with its own proprietary intellectual property rights. The passenger throughput of Shanghai Airport ranks fourth globally for four years in a row. The air cargo and mail throughput of Pudong Airport ranks third in the world for twelve years on end.

Shanghai offers the most comprehensive shipping service categories and essential shipping factors in the Chinese mainland and even in the world. Many international and state-level institutions with shipping functions have converged in Shanghai, including the International Maritime Organization Maritime Technology Cooperation Centre for Asia (MTCC Asia), the Association of Asian Classification Societies (ACS), the International Maritime Rescue Federation Asia-Pacific Regional Centre, the Baltic and International Maritime Council Shanghai Centre, and China Shipowners' Association. Six of the worlds' top ten ship management institutions, ten of the official members of the International Association of Classification Societies, 39 of the worlds' top 100 liner companies, and all top five cruise enterprises in the world have set up regional headquarters or branches in Shanghai.

China COSCO Shipping Corporation Ltd., headquartered in Shanghai, ranks first in the world in comprehensive shipping capacity, third in container fleet capacity, first in energy transport fleet capacity, and first in crew management scale. Shanghai Zhenhua Heavy Industries Co., Ltd. is the world's largest port machinery and heavy equipment manufacturer, representing the world's largest share in the international container crane market.

The Secretariat of Global Shipping Think Tank Alliance is permanently located in Shanghai. Shanghai's ship and cargo insurance premiums come only after London and Singapore, and the number of maritime law firms and partners in Shanghai ranks fourth in the world. The China Shipping Prosperity Index is frequently quoted by the shipping industry, while the China Containerized Freight Index has attained worldwide influence. Thanks to the efforts of the past generations of the workers in the shipping industry, Shanghai has delivered satisfactory results.

2.2 Problems in the construction of SISC and causal analysis.

It is true that construction of SISC has scored remarkable achievements in expansion of the port capacity, convergence of shipping service factors, and further opening of the market. However, many problems remain unsolved such as insufficient usable shorelines and portside land resources, a not very efficient cargo collecting and distribution system, inadequate innovative ability for the modern shipping service, limited ability for radiation to other parts of the country, a less-than-perfect taxation policy, etc. At present reform has entered a challenging stage, and it entails strenuous effort to forge ahead with the implementation of a new policy and allocation of various resources.

First, problems with the taxation system and financial regulations cannot be resolved by Shanghai itself—they call for long-term negotiation and communication.

Second, the cultivation of a congenial soft environment is also necessarily an extended systematic project that requires coordinated operation, prolonged effective governance, and continuous evaluations

Third, it takes time to develop and acquire the capability for radiating to other parts of the country and the ability for innovation, and this is restricted by the education level, talent level, the market milieu, and the cultural environment, and therefore cannot be accomplished overnight.

3. An Outlook on the Building of Shanghai International Shipping Centre

In respect of the development directions, in addition to strengthening its position as an international shipping hub, SISC should lay more emphasis on the improvement of high-end shipping service functions so as to improve the profile of Shanghai's shipping service. Meanwhile, SISC should conscientiously foster four new development directions--green shipping, intelligent management, sci-tech driven development, and rule-based operation, thereby reaching a new height as the country's knowledge-driven shipping centre.

In respect of development paths, SISC should focus on four joint actions. First, it should step up joint action with other international shipping centres to seek business connections between shipping economies, identify opportunities for scientific and educational cooperation, and jointly develop and carry out new international standards. Second, it should increase joint action with related sectors (such as logistics and commodity trade) and strive to create values from complementary industries. Third, it should intensify joint action of the different functions of developed cities and reinforce collaborative innovation through close integration of shipping centres, financial centres and scientific innovation centres.

In respect of the development environment, SISC should not only establish a business environment featuring low costs and high efficiency, but also nurture an elegant cultural atmosphere by improving regional quality and living standards, thus attracting excellent companies and high-calibre specialists.

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Chapter 6 Analysis of Global Shipping Capacity amid COVID-19

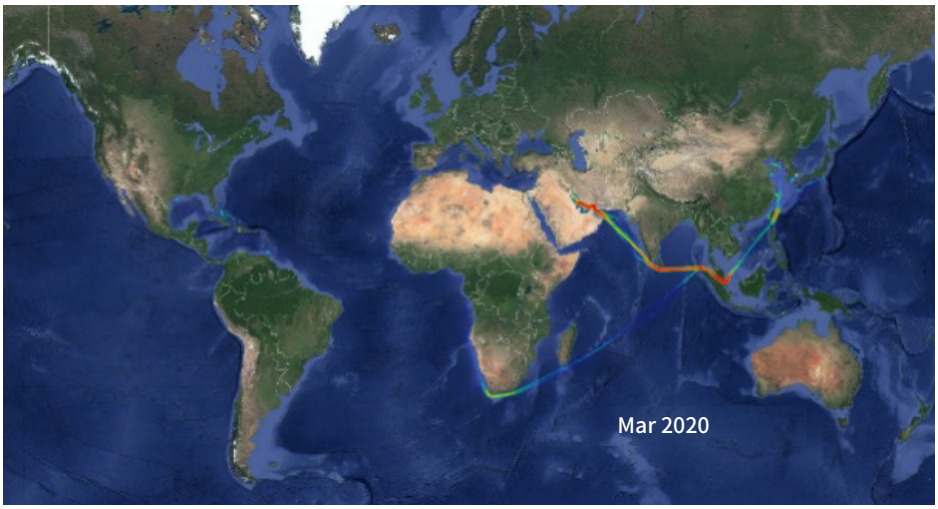
As COVID-19 continues to wreak havoc, many ports around the world have experienced disruption. Port operations and crew changes have been negatively impacted. In order to prevent and control the spread of the pandemic, various shutdown and suspension measures of different degrees have been adopted across the world. This has brought a halt to commodity production, and international shipping has been significantly affected.

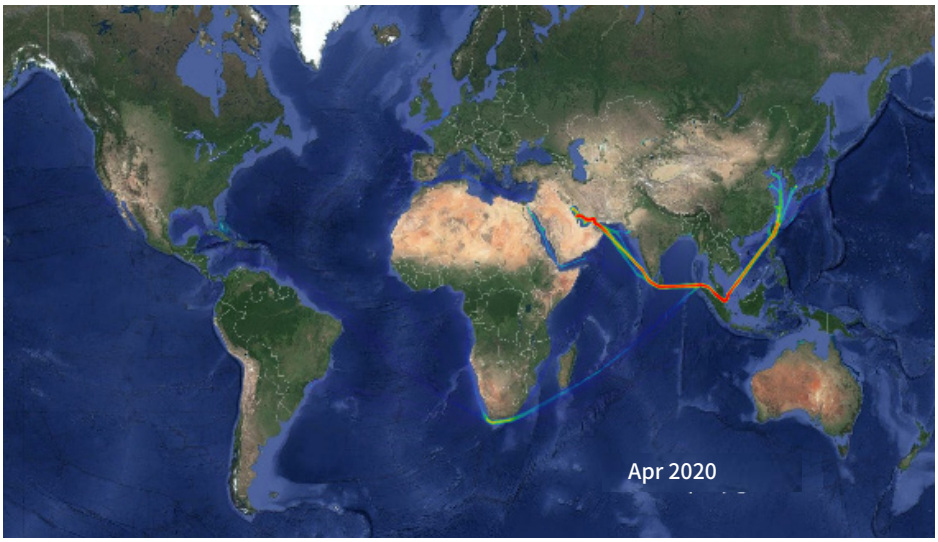
Set out below are thermal maps of vessels for global crude oil, containers and bulk shipping segments, provided by Elane Inc. and compiled based on AIS data between December 2019 and April 2020. They provide a window into changes in global shipping capacity amid the outbreak and escalation of COVID-19.

1.Crude oil tankers

The thermal maps for crude oil tankers worldwide of 200,000 tonnes or above between December 2019 and April 2020 show that the most significant shipping routes for large scale crude oil tankers are the Persian Gulf-Arabian Sea-Bay of Bengal-Singapore route and Singapore-China route. Throughout February, when China was hit hardest by the pandemic, the thermal distribution of the Singapore-China route was somewhat weakened. Subsequently in March and April, when the operation of global ultra-large tankers gradually resumed, shipping activity gradually concentrated along the coastal areas of China.

Based on data on ultra-large tankers between December 2019 and February 2020, thermal values along the Persian Gulf-Singapore shipping route were relatively higher, with mild differences found between the three months, while that of the Singapore-China route were lower, with a higher activity level in January compared to the other two months.



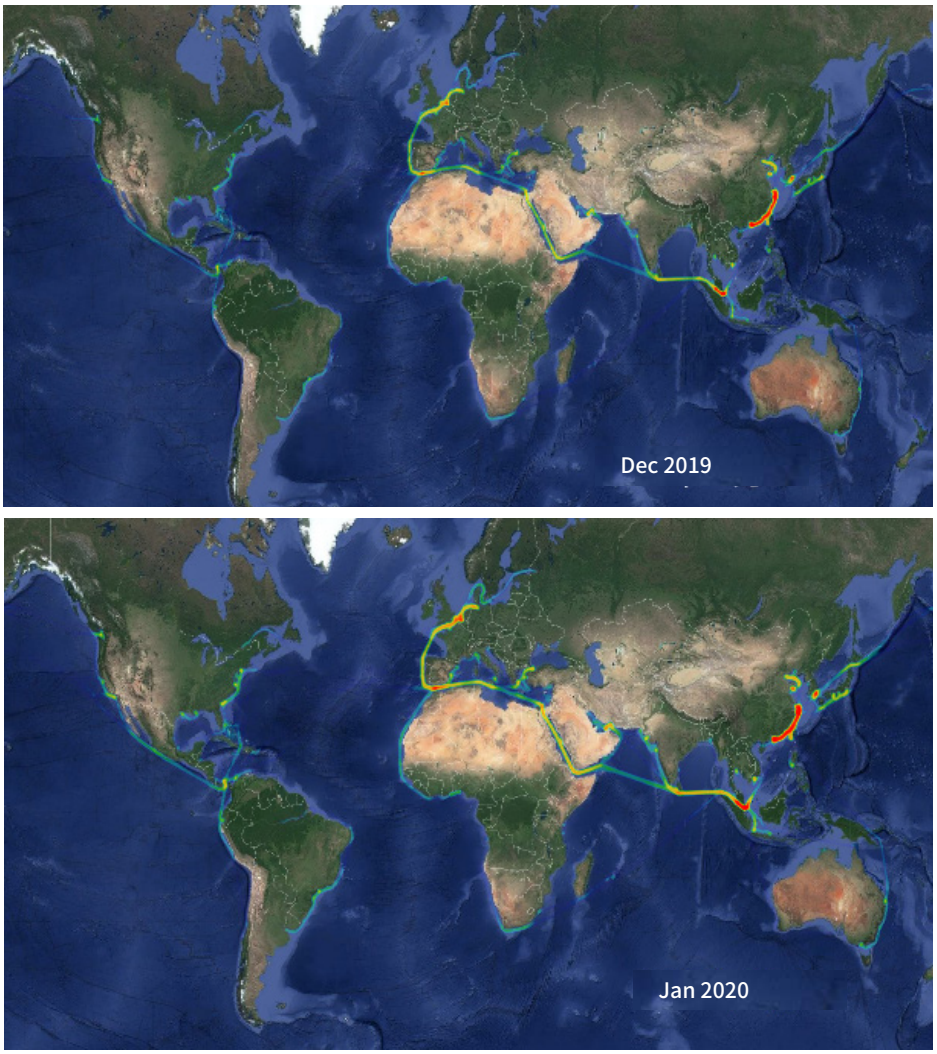


Going into March, the activity level of the Singapore-China route started to rise, with thermal values in March surpassing those in January. By April, the shipping activities of ultra-large tankers were robust across the globe with a persistent uptrend in thermal values of the Persian Gulf-Singapore route while the Singapore-Southeast Asia route, in particular, the Singapore-China route, reached a record high in terms of thermal values.

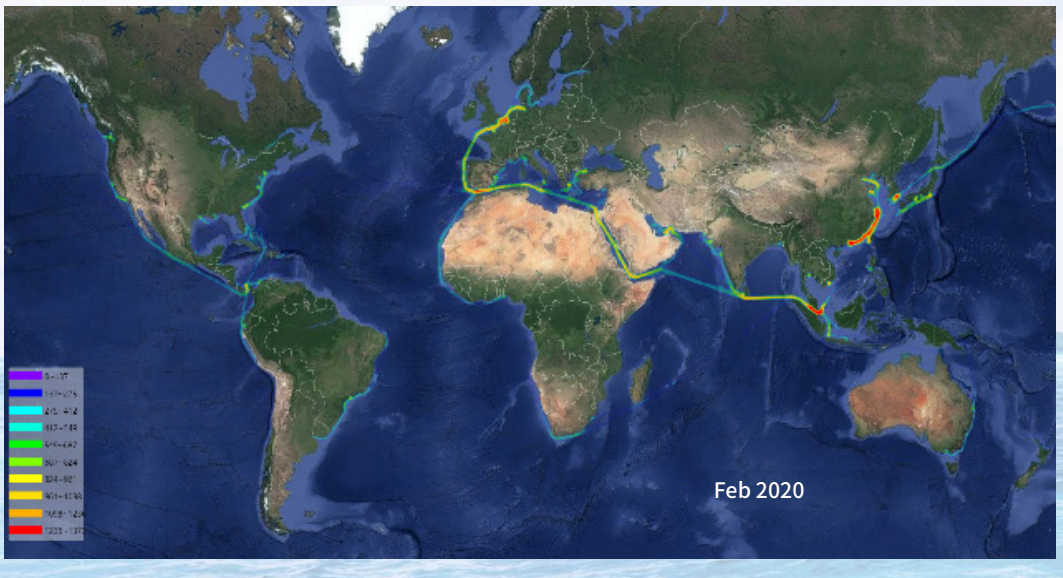
Judging from changes in the thermal maps over the five-month period for global ultra-large tankers, the onset of COVID-19 did not pose any significant impact on crude oil transportation. In February when China was badly affected by the pandemic, the decline in activity level of crude oil shipping was not notable. However, going into April, due to falling crude oil prices in the Middle East, shipping activities of ultra-large tankers increased sharply amid the global spread of the COVID-19.

2. Container vessels

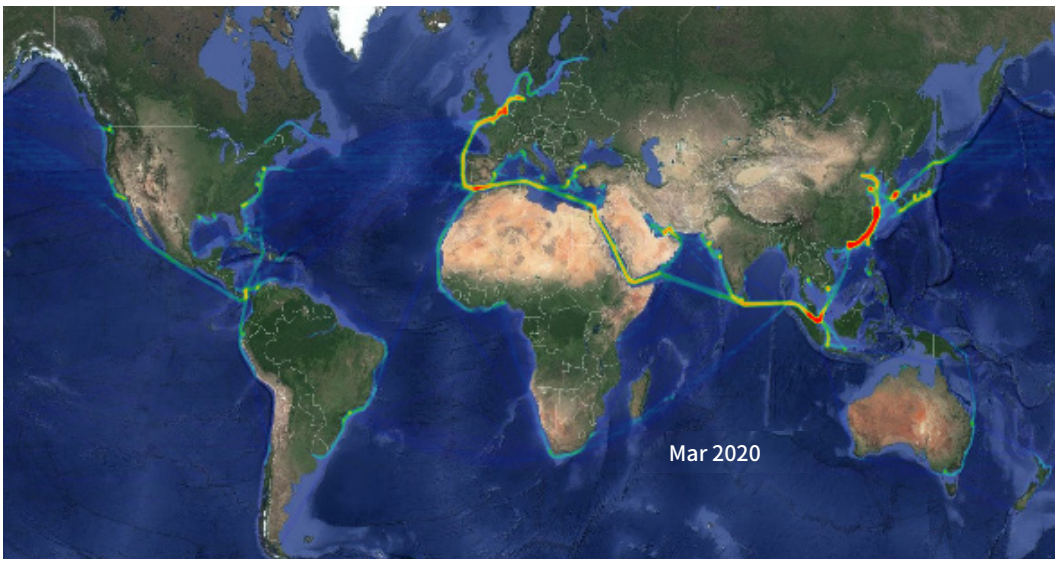
Based on the thermal map for container vessels from December 2019 to April 2020, shipping activity in the container segment was more susceptible to the impact of the pandemic.



Two months before the outbreak, the thermal value of global shipping activities of container vessels had been on the rise. Activity in January 2020 was noticeably higher than December 2019. According to the thermal map, activity along the North Sea-Mediterranean route as well as from the Mediterranean to Singapore via the Suez Canal demonstrated a significant increase.



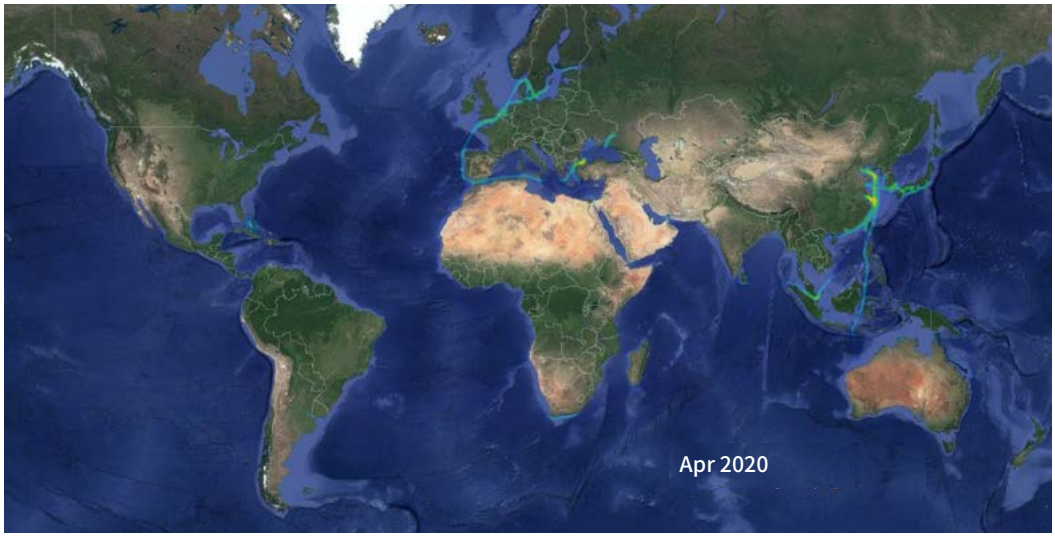
In February 2020, there was a contraction in global container shipping activity. Activity along China's coastline as well as along the North Sea-Mediterranean-Suez Canal-Indian Ocean-Singapore sea lane connecting Europe, Africa and Asia recorded a stark decline compared to January. The level of activity in the Americas, on the other hand, remained robust with no discernible dip.



Following the containment of COVID-19 in China, nationwide work and production resumed and container shipping capacity along China's coastal regions gradually recovered in March and April. Activity in shipping routes across China, Japan and Korea also progressively resumed as Japan and Korea effected containment measures against COVID-19. Activity along the North Sea-Mediterranean-Suez Canal-Indian Ocean-Singapore route also returned to pre-outbreak levels. In the Americas, a short-term rise was recorded in March followed by a decline in April as the pandemic continued to spread across the region.

3. Bulk carriers

According to the thermal map for global bulk carriers, shipping activity in this segment in February and March was relatively unaffected by the pandemic. The level of activity has decreased since April but the trend is not obvious.



In summary, shipping activity involving crude oil vessels and bulk carriers was less affected by the pandemic, whilst COVID-19 exerted a greater impact on container shipping. In February, there was a significant decline in container shipping activity due to the intensive outbreak of the pandemic, which eventually swept across other parts of Asia, Europe, the Americas and Africa. Container shipping levels in Asia, especially East Asia, have increasingly recovered as economic activities in the region continue to pick up.

2020

Xinhua-Baltic International Shipping Centre Development Index

Appendix

Appendix I

Methodology for International Shipping Centre Development Index

Appendix II

Message from Baltic Exchange Chief Executive

Appendix I

1.General Approach

The research process for the Xinhua-Baltic International Shipping Centre Development Index consists of 7 steps:

Step 1

Theoretical research: collate and study relevant literature to achieve a comprehensive understanding of the theoretical foundation of international shipping centres and their current state of development; conduct in-depth interviews with government organisations, university academia and professional experts to collate their suggestions on the methodology, rationale and indicator selection for index computation.

Step 2

Index system design: Xinhua-Baltic International Shipping Centre Development Index methodology is jointly developed by China Economic Information Service and the Baltic Exchange, and authenticated by an expert committee.

Step 3

Data collection and processing: initial data for indicators is collected by China Economic Information Service and the Baltic Exchange. This data then goes through a normalisation process to form the relevant indicator data.

Step 4

Index model construction and computation: based on the preliminary theoretical research, an index model is constructed in accordance with correlations between indicators. Subsequently, index results are computed using the model.

Step 5

Report writing: a report is prepared under the guidance of the index expert committee.

Step 6

Organise an expert team to authenticate the scientific foundation of the research results and confirm the final result.

Step 7

Announcement of index results.

2. Index System

Table 5 Index System and Associated Weightings for the Xinhua-Baltic International Shipping Centre Development Index

Primary Tier		Secondary Tier
Name	Weight	Name
Port Factors (A_1)	0.20	Container throughput (B_1)
		Dry bulk cargo throughput (B_2)
		Liquid bulk cargo throughput (B_3)
		Number of cranes (B_4)
		Total length of container berths (B_5)
		Port draught (B_6)
Shipping Services (A_2)	0.50	Shipping brokerage service (B_7)
		Ship engineering service (B_8)
		Shipping business service (B_9)
		Maritime legal service (B_{10})
		Shipping finance service (B_{11})
		Government transparency (B_{13})
General Environment (A_3)	0.30	Extent of e-government and administration (B_{13})
		Economic freedom (B_{14})
		Customs tariff (B_{15})
		Ease of doing business index (B_{16})
		Logistics performance index (B_{17})

A_1 Port Factors

This mainly refers to infrastructure of the port city and the actual throughput of various types of cargo.

A_2 Shipping Services

This mainly refers to the level of shipping services provided by the port city.

A_3 General Environment

This mainly refers to the business and economic environment together with government policy measures to support the development of the port city, which is an important condition for the development of an international shipping centre.

B_1 Container throughput

Container throughput is an important indicator for measuring the size of the port. It refers to the number of containers passing through the boundary of the port via its waterway for loading or unloading within the eported period. Container throughput data used in this report is container count. The computation unit is "10,000 TEU".

Source of data: China Economic Information Service database

B_2 Dry bulk cargo throughput

This refers to the quantity of dry bulk cargo passing through the boundary of the port via its waterway for loading or unloading within the reported period. The unit is "ton".

Source of data: China Economic Information Service database

B_3 Liquid bulk cargo throughput

This refers to the quantity of liquid bulk cargo passing through the boundary of the port via its waterway for loading or unloading within the reported period. The unit is "ton".

Source of data: China Economic Information Service database

B_4 Number of cranes

Cranes are used to load and unload containers in the wharf area. The operating capacity of cranes can determine the cargo handling capacity of a wharf.

Source of data: Drewry

B_5 Total length of container berths

Berths refer to locations within the port where ships can dock. A single location equipped with berthing facilities to accommodate a single ship is called a berth. The length of a berth is determined by the length of ships it can accommodate and the safety distance required for two adjacent ships. These include quayside berths for accommodating ships, pontoon berths for mooring ships and anchorage berths for berthing ships.

Berthing facilities are an important indicator reflecting the ability of a port to accommodate berthing ships. It is one basis for measuring the size and capacity of the port. Total length of a container berth refers to the actual length of berth available – including various types of fixed or floating wharf – for berthing of ships and for loading and unloading of containers at the end of the reported period. The computation unit is "metre".

Source of data: Drewry

B_6 Port draught

Draught of a ship refers to the maximum depth of the ship that is under the water line. Different ships have different draughts. The draught of a ship may even differ depending on its load and the salinity of water in the region. Port draught is an important indicator that reflects the deadweight of a ship that can be accommodated by the port. Port draught in this report refers to water depth statistics of the deepest container berth in the port.

Source of data: Drewry

B_7 Shipping brokerage services

Characterised by its intermediary services, brokerage is the key service provided by shipping agencies. As an important component of shipping services, shipbrokers provide professional agency, brokerage and consultancy services riding on various other industries including transportation, insurance, financial and commerce, all of which facilitate shipping development.

In this report, shipping brokerage services will be assessed based on the distribution of Baltic Exchange – Global Shipping Brokers membership.

Main source of data: The Baltic Exchange

B_8 Ship engineering services

Ship engineering aims to nurture professionals on advanced applied technologies who master basic theories and technical skills in seamanship and transportation, meet the relevant occupational certification by the authorities and have the ability to navigate vessels.

In this report, ship engineering service is assessed based on the number of branches set up by the member societies of the International Association of Classification Societies (IACS) in each port city. IACS member societies establish and maintain standards for the construction and operation of marine vessels and offshore structures. They classify and certify marine vessels and structures on the basis of their structure, design and safety standards.

Main source of data: International Association of Classification Societies (IACS)

B_9 Shipping business services

A shipping company may manage its own vessels or vessels commissioned by other owners. In this report, shipping business services consist mainly of the following three indicators: the number of ship management companies available in each port city as published on the Lloyd's List website, the number of branches of top 100 container shipping companies and top 100 bulk carrier companies available in each port city.

Main source of data: Lloyd's List

B_{10} Maritime legal services

In this report, maritime legal services are assessed from two perspectives, namely maritime arbitration services and partners practicing in maritime-related legal offices. Maritime arbitration refers to a system in which parties involved in a maritime dispute shall transfer the dispute to an agreed arbitration institution for arbitration in accordance with the arbitration agreement (terms) entered into before or after the dispute.

In this report, maritime arbitration services are collectively assessed based on the number of arbitrators located in three international arbitration centres, namely London, Singapore and New York, together with other factors. Partners practicing in maritime-related legal offices are collectively assessed based on the Legal 500 Law Firm Index and enquiries on the number of partners through Chambers and the websites of respective law firms.

Main sources of data: London Maritime Arbitrators Association, Singapore Institute of Arbitrators, Society of Maritime Arbitrators (US), Legal 500, Chambers.

B_{11} Shipping finance services

The scope of shipping finance services mainly covers four segments: ship financing, capital settlement, maritime insurance and maritime financial derivatives.

Ship financing includes syndicate loans, debt capital markets and equity capital markets. Maritime insurance refers insurance taken on cargo or ships against the potential risks, loss or unforeseen expenses suffered from the transportation of cargo and ship. The types of maritime insurance include cargo insurance, ship insurance, freight and protection & indemnity (P&I) insurance. Statistics collated by the International Union of Marine Insurance (IUMI) include maritime insurance premiums for ship insurance, cargo insurance, maritime liability insurance and offshore energy insurance.

In this report, shipping insurance service is assessed based on maritime insurance expenses of the port city. To compute maritime insurance expenses of a city, the sum of ship and cargo insurance premiums of each country is first computed and the total premium to each port city is then distributed based on the port's cargo throughput.

Source of data: Marine Money, IUMI

B_{12} Government transparency

Government transparency is a concept about publicised rules, plans, processes and operations so that the general public understands the why, how, what and how much of policies. Government transparency can ensure that the conduct of public officials, civil servants, administrators, company board members and businessmen is open and understandable. Reports can also be made against them so that they would be held accountable for their conduct. This is the most reliable way to prevent corruption and help increase confidence towards the people and institutions that are closely linked to a shipping centre's future.

Source of data: Transparency International

B_{13} Extent of e-government and administration

E-government and administration refers to the government's willingness and ability to implement information technology in the provision of public services. Ability, as used here, refers to the extent of support provided by the government towards national finance, infrastructure, human resources, management, administration and system function. The willingness to provide information and knowledge to empower its citizens is a measure of the government's commitment.

Source of data: United Nations e-Government Development database

B_{14} Economic freedom

Economic freedom means each individual has the fundamental right to control his/her own labour and property. In a society with free economy, an individual is free to work to engage in production, consumption and investment in any way. The government allows free flow of labour, capital and goods, and avoids forcibly applying excessive constraints on freedom to protect and maintain freedom itself.

Source of data: Wall Street Journal and The Heritage Foundation, Index of Economic Freedom Report

B_{15} Customs Tariff

Customs tariff refers to the rate applicable to computation of tax on targeted taxable goods stipulated in customs regulations.

Source of data: Wall Street Journal and The Heritage Foundation, Index of Economic Freedom Report

B16 Ease of Doing Business Index

Economies are ranked on their ease of doing business from 1 (easiest to do business) to 189 (hardest to do business). A higher rank means the regulatory environment is more conducive to business operations. The index is derived from simple averages of national ranking by percentage scores on 10 themes under the "doing business" ranking by the World Bank.

Source of data: World Bank database

B_{17} Logistics Performance Index

Logistics performance index is a score that reflects the following logistics attributes of a country: the efficiency of customs clearance process; quality of trade and transport related infrastructure; the ease of arranging competitively priced shipments; quality of logistics services; ability to track and trace cargo; and the frequency with which shipment reaches the recipient within the expected delivery schedule. The index ranges from 1 (low) to 5 (high); a higher score means better logistics performance. The data are derived from the Logistics Performance Index Survey, which is jointly conducted by the World Bank in cooperation with academic institutions, international organisations, private enterprises and international logistic professionals.

Source of data: World Bank database

3. Data Processing

Data for secondary indicators required for the Xinhua-Baltic International Shipping Centre Development Index are mainly sourced from authoritative organisations including the Baltic Exchange, Drewry and World Bank.

Due to the different nature of various indicators (size, ranking, ratio, etc.), if the raw values of these indicators are applied directly in analysis, indicators with large quantitative values may dilute the effects of indicators with smaller quantitative values in a comprehensive analysis; thus resulting in unequal contribution of each indicator to the computation. To avoid this, each indicator is normalised – through relative processing to make its statistical variables dimensionless – before its application in index computation.

Raw data are divided into two categories. The first category comprises indicators with score values ranging from 0 to 100, which can be used directly for computation. The second category comprises indicators with absolute score values, which will be normalised by applying the standard deviation approach based on data distribution patterns.

(1) Determining sample mean and standard deviation

Supposing that the data distributions of secondary indicators are all normal distributions, bootstrap sampling is applied to these samples. After 500-times resampling, the mean value and standard deviation are computed from the normal distribution of each indicator.

$$mean_{l,m} = \frac{1}{a}\sum_{i=1}^{a} \bar{x}_{l,mi}, sd_{l,m} = \frac{1}{a-1}\sum_{i=1}^{a}(\bar{x}_{l,mi} - mean_{l,m})^2$$

Where, l = 1,2,3, m = 1,2, ..., 6, $\bar{x}_{l,mi}$ is sample mean of each sampling of the m-th indicator, a = 500 indicates a total of 500-times resampling, $mean_{l,m}$ indicates the mean value obtained after bootstrapping the m-th secondary indicator, and sdl,m indicates the standard deviation obtained after bootstrapping the m-th secondary indicator.

(2) Computing the score for secondary indicators of sample cities

The indicator' s quantile score for each city is computed based on the mean value and variance of each indicator.

The quantile score of the m-th indicator for the p-th city is computed with the following formula:

$$y_{l,mp} = \phi\left(\frac{x_{l,mp} - mean_{l,m}}{sd_{l,m}}\right)$$

Where, $y_{l,mp}$ is the quantile score of the m-th secondary indicator for the p-th city, $x_{l,mp}$,mp indicates the indicator value of the m-th secondary indicator for the p-th city, and ϕ( ) is the distribution function of standard normal distribution.

4. Model Computation

(1) Design of weighting system

The design of the weighting system for the Xinhua-Baltic International Shipping Centre Development Index employs analytic hierarchy process (AHP algorithm).

The basic principle of AHP is to break down the problem into a hierarchical structure consisting of goals, sub-goals (guidelines), constraining criteria and departments to analyse the various factors. From the hierarchical structure, pair-wise comparison is applied to determine the judgement matrix. By deriving the components of the eigenvector corresponding to the largest eigenvalue of the judgement matrix, these components represent the corresponding coefficients that will be used to compute the weight of each factor (degree of priority).

AHP algorithm can be generally broken down into the following 6 basic steps:

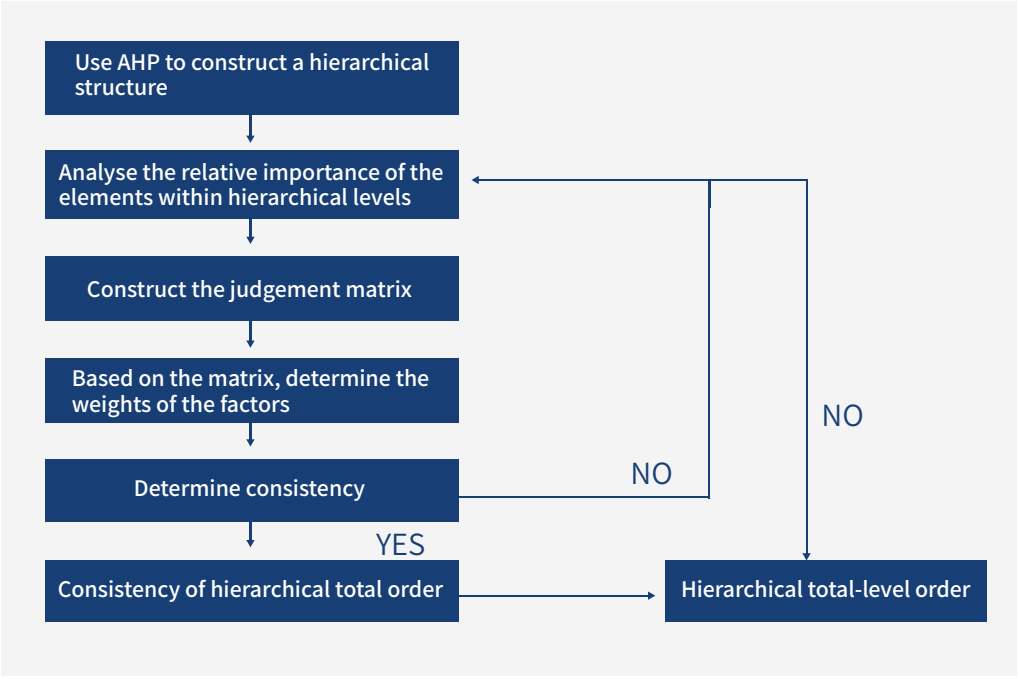


Figure 20
Basic steps of AHP algorithm

(1) Defining the problem: Clarify the problem in terms of scope, contributing factors and the relationship between different factors in order to have sufficient understanding of the problem.

(2) Construct a hierarchical structure: In this step, the factors are assigned to different hierarchical levels. It comprises the goal at the top level (goal level), several intermediate levels (guidelines levels) and the bottom level (solutions level). If an element is linked by all elements from the next level immediately below it, this element is said to have complete hierarchical relationship with the next level. If an element is linked by only some elements from the next level immediately below it, this element is said to have incomplete hierarchical relationship with the next level. A sub-level can be inserted between two hierarchical levels. This sub-level is subordinate to one element on the main level. The elements of the sub-level may be linked with the next level, but the sub-level may not constitute an independent level.

(3) Construct judgement matrix: This is the critical step in AHP. The judgement matrix defines the relative importance of relevant elements within a hierarchical level that is linked to an element in a higher level. For n indicators, $\{A_1, A_2, \cdots, A_n\}$, a_{ij} is the judgement value that signifies the importance of A_i relative to A_j. A_i is generally assigned a 5-grade rating scale of 1, 3, 5, 7, 9. A rating value of 1 means A_i and A_j are of equal importance; 3 means A_i is slightly more important than A_i; 5 means A_i is relatively more important than A_j; 7 means A_i is significantly more important than A_i; and 9 means A_i is extremely more important than A_j. The mid values of 2, 4, 6, 8 may also be used for intermediate judgement, especially when five grades become insufficient to represent the level of importance.

(4) Single-level order: The purpose of single-level order is to sort elements in the current level in order of their importance with respect to a linked element in a higher level. It is the basis for ordering all the elements in the current level in terms of importance with respect to an immediate higher level.

If we take the weight vector, $W = \left[w_1, w_2, \cdots, w_n\right]^T$, then we have:

AW=λW

If λ is the largest eigenvalue of A, then W is the eigenvector of A with respect to λ. Hence, single-level order process can be achieved by solving the judgement matrix for the values of λmax and its corresponding eigenvectors to obtain the relative weighting of this group of indicators.

$$CI = \frac{\lambda_{\max} - n}{n-1}$$

In order to test the consistency of judgement matrix, we need to calculate its consistency index:

When CI =0, judgement matrix is complete consistency; conversely, a larger CI value indicates lesser consistency in judgement matrix.

(5) Hierarchical total-level order Using the results of single-level order of all the levels with respect to the same level, we can compute the weight values representing the importance of all elements in this level with respect to the immediate higher level. This is known as total-level order. Total-level order must be carried out layer by layer from top to bottom. For the highest level, its single-level order is the same as total-level order.

If total-level order for all elements $A_1, A_2, \cdots, A_m$ of a higher level is completed, and the corresponding weight values $a_1, a_2, \cdots, a_m$, a_j are obtained, $B_1, B_2, \cdots, B_n$ then the results of single-level order for corresponding to elements

in the current level are $\left[b_1^j, b_2^j, \cdots, b_n^j\right]^T$. Now, if B_i is not linked to A_j , then b_i^j =0, and total-level order is achieved.

(6) Analyse consistency Similar to single-level order, we need to assess the consistency of the results of total-level order. Therefore, we perform consistency check as follows:

$$CI = \sum_{j=1}^{m} a_i CI_j$$

$$RI = \sum_{j=1}^{m} a_j RI_j$$

$$CR = \frac{CI}{RI}$$

CI is the consistency index for total-level order; CI_j is the consistency index of judgement matrix RI_j corresponding to level B; RI is the random consistency index of judgement matrix RI_j corresponding to level B; and CR is the ratio of total-level order consistency index to random consistency index. Similarly, when CR<0.10, the consistency of computation results of total-level order is deemed to be satisfactory; otherwise, the judgement matrices for the current level need to be adjusted until satisfactory consistency is obtained for total-level order.

(2) Model for Index Computation

Specific computation formulae for the Xinhua-Baltic International Shipping Centre Development Index are as follows:

Use weighted sum method to compute the primary index:

$$y_{lp} = \sum_{m=1}^{l_m} y_{l,mp} * w_m = \sum_{m=1}^{l_m} \phi(\frac{x_{l,mp} - mean_{l,m}}{sd_{l,m}}) * w_m$$

Where, w_m are the weights of m secondary indicators; and 1 is the score of the l -th primary indicator of the p -th city.

The computation formula for comprehensive score of the sample cities is:

$$y_p = \sum_{l=1}^{3} y_{lp} * w_l = \sum_{l=1}^{3} (\sum_{m=1}^{l_m} y_{l,mp} * w_m) * w_l = \sum_{l=1}^{3} (\sum_{m=1}^{l_m} \phi(\frac{x_{l,mp} - mean_{l,m}}{sd_{l,m}}) * w_m) * w_l$$

Where, w_l is the weight of ^{y_p} -th primary indicator; and y_p is the score of the p -th city.

5. Survey Questionnaire

Dear experts,

Greetings! China Economic Information Service and the Baltic Exchange have embarked on joint research to develop the Xinhua-Baltic International Shipping Centre Development Index. The aim is to produce an objective, impartial and scientific review and assessment of the competitiveness of cities with international shipping centres.

This questionnaire serves a vital purpose, to obtain important information regarding weight assessments for the analytic hierarchy process (AHP). Your response is of utmost importance to this research and we therefore sincerely seek your support to complete the questionnaire carefully. Thank you for your support.

(1) Explanation for scoring

The scoring rules used in this questionnaire are based on the 1-9 scoring scale method of AHP:

- 1 means elements i, j are equally important;
- 3 means element i is slightly more important than element j;
- 5 means element i is relatively more important than element j;
- 7 means element i is significantly more important than element j;
- 9 means element i is extremely more important than element j;

2, 4, 6, 8 represent the medians for the adjacent values 1-3, 3-5, 5-7, 7-9, respectively.

An example is shown below (the vertical column represents element i, while the horizontal row represents element j):

Technological innovation capability (A)	B_1	B_2	B_3
Innovative output capability (B_1)	—	(3)	5
R&D capability (B_2)	—	—	2
Innovation management capability (B_3)	—	—	—

In the above table, the value 3 (2nd row and 3rd column) means that for Technology Innovation Capability (A) on the target level, Innovative Output Capability (B_1) is slightly more important than R&D Capability (B_2).

(2) Scoring by experts

1. Scoring for primary indicators

Please fill in the value of importance between the primary indicators (A_1-A_3) with respect to the ultimate indicator (D). The shaded areas need not be filled (same for all tables below).

Xinhua-Baltic International Shipping Centre Development Index (D)	A_1	A_2	A_3
Port Factors (A_1)	—		
Shipping Services (A_2)	—	—	
General Environment (A_3)	—	—	—

2. Scoring for secondary indicators

(a) Please fill in the value of importance between the secondary indicators (B1-B6) with respect to the primary indicator (A_1).

Port Factors (A_1)	B_1	B_2	B_3	B_4	B_5	B_6
Container throughput (B_1)	—					
Dry bulk cargo throughput (B_2)	—	—				
Liquid bulk cargo throughput (B_3)	—	—	—			
Number of cranes (B_4)	—	—	—	—		
Total length of container berths (B_5)	—	—	—	—	—	
Port draught (B_6)	—	—	—	—	—	—

(b) Please fill in the value of importance between the secondary indicators (B_7-B_{11}) with respect to the primary indicator (A_2). Shaded areas need not be filled.

Shipping Services (A_2)	B_7	B_8	B_9	B_{10}	B_{11}
Shipping brokerage service (B_7)	—				
Ship engineering service (B_8)	—	—			
Shipping business service (B_9)	—	—	—		
Maritime legal service (B_{10})	—	—	—	—	
Shipping finance service ($B1_1$)	—	—	—	—	—

(c) Please fill in the value of importance between the secondary indicators (B_{12}-B_{17}) with respect to the primary indicator (A_3). Shaded areas need not be filled.

General Environment (A_3)	B_{13}	B_{14}	B_{15}	B_{16}	B_{17}	B_{18}
Government transparency (B_{12})	—					
Extent of e-government and administration (B_{13})	—	—				
Economic freedom (B_{14})	—	—	—			
Customs tariff (B_{15})	—	—	—	—		
Ease of doing business index (B_{16})	—	—	—	—	—	
Logistics performance index (B_{17})	—	—	—	—	—	—

Appendix II

Message from Baltic Exchange Chief Executive, Mark Jackson

Mark Jackson
Chief Executive

For the past six years the Baltic Exchange and Xinhua have been looking at the performance of the world's top maritime cities. This year's report reflects a pre-COVID 19 world: a time when there was unrestricted international travel and economies were fully open for business.

But everything has changed. It is still unclear as to whether COVID-19 can be defeated or whether we face living in a world which has to do its best to cope with the virus.

The response of government and the business clusters which make up the world's maritime cities is going to be crucial to their future. Successful maritime cities are huge accelerators for a national economy, but how are they going to respond to a significant drop in international trade? Trends such as economic nationalism, reshoring of manufacturing and shorter supply chains, digitisation, automation and decarbonisation were already underway. COVID-19 has accelerated many of these developments.

Port cities play a vital role in a national economy. Changes in cargo flows will encourage many to explore new markets. Local logistics service providers, terminal operators as well as the port authorities, national and regional governments will need to work hand-in-hand to develop new strategies and implement changes. There will undoubtedly be winners and losers.

From the professional maritime services perspective, the need for experience and expertise is never greater than during a crisis. We saw this during the financial downturn and are seeing this repeated today.

But will location be as important as before? The success of the financial and maritime centres of London, Singapore, Shanghai, Hong Kong and New York have been based on locating highly skilled and productive workers together in expensive central locations. A post-COVID-19 world might make the future of these commercial centres look very different as offices empty out and professionals work from home. Will the distinctions between these centres become less obvious? It is much to early to say what the future of work will look like, but it is clear that business relationships need to be maintained and cultivated.

The successful clusters will be the ones that continue to build on their strengths, are able to communicate a clear vision for the future and diversify beyond the physical port hub. They will work closely with the local authorities and they will continue to support education, training and new services. They will be open to foreign talent, invest in R&D and offer an attractive international business environment.

I remain positive for the future and the Baltic Exchange will continue to innovate, developing new products and services to support the international maritime industry.

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