Changing dynamics affecting the shipping sector and their impacts to Malaysia:
A policy perspective

Nazery Khalid
Senior Fellow
Center for Maritime Economics and Industries

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Nazery Khalid,
Senior Fellow
Maritime Institute of Malaysia
nazery@mima.gov.my

Abstract

Shipping facilitates much of the world’s trade, and this applies to the Malaysia’s trade as well. The shipping sector is influenced by many internal and external drivers that affect its operations, development and direction. Shipping sector players and stakeholders in Malaysia, a country which depends shipping to facilitate much of its trade and to power its economic growth, must develop a good grasp of the changing dynamics affecting the sector. This is important for them to adjust to the demands of the sector and its competitive environment, and for Malaysia to retain and enhance its competitiveness and attractiveness as a maritime and trade nation and as an investment destination. The paper outlines the changing dynamics in the sector arising from key trends and developments, highlighting how they are changing seaborne transport. Among them are the emergence of the BRIC economies; growing size, capacity and sophistication of ships; growing focus on environmental protection in shipping; increasing focus on maritime security; and the effects generated by the global recession and credit crunch. These trends and developments present challenges for the Malaysian shipping sector to overcome and opportunities to reap, demanding adequate resources, infrastructures, capability and support services, and nimble policy response. The paper concludes that there is bright prospect for Malaysia to command greater share in the global seaborne trade if it can adjust to the trends and developments in the affecting the shipping sector.

Keywords: Malaysia, shipping sector, dynamics, trends, shipping, ports, shipbuilding
Executive summary

The merchant shipping is a facilitator of much of much of the world’s trade. Being a demand derived service, merchant shipping is subjected to a wide array of influences and factors that determine its regulation, operations and direction. Trends and developments related to size and sophistication of ships; rules, regulations and transport law; investment; production; consumption; distribution; supply chain management; security; navigation safety and human capital development, among many others, directly or indirectly affect the activities in the maritime industry.

There are many drivers, internal to the shipping sector and external ones, that affect the shipping sector. Their effects cover the way ships are financed, designed, built, operated, deployed, sold, converted and eventually disposed of. The key drivers are listed in the table below:

### Key drivers in the shipping sector

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The drivers affect the way ships are constructed, financed, operated and even disposed of. Given the broad range of drivers influencing the shipping sector, it is essential that industry players and other stakeholders such as regulatory authorities, financiers, shippers, port operators and economic planners pay close attention to the dynamics of each of the drivers to enable them to react to the challenges and opportunities that the drivers bring.

The developments affecting the merchant shipping sector bring about a wide range of issues, challenges and opportunities to players in the merchant shipping sector and other stakeholders such as shippers, port operators, supply chain management practitioners, shipbuilders and regulatory authorities. The dynamic nature of the merchant shipping sector generated by the
developments present not only challenges to the sector’s players and stakeholders but also opportunities to them.

Changing patterns of trade and production greatly influence the way ships are designed, the way their owners operate and the directions to which they sail. Improvements in the design and development of ships have made bigger trade volumes possible and affect the way goods are produced, distributed and consumed. These ships are increasingly big in size and require adept handling by ports in terms of physical features such as deep draught and equipment such as cranes. These vessels also require adequate land-based logistics to minimize turnaround time for ships and cargo. Their sophisticated onboard equipment require skilful handling by well-trained seafarers. In addition, the cargo they carry must be transported in a manner which is safe and environmentally friendly, and must be protected against various threats during voyage. These ships also require huge capital expenditure to finance.

For a country like Malaysia which is surrounded by seas and depends largely on the oceans to transport much of its trade and generate economic growth, it is important for the stakeholders in the merchant shipping sector to have a good grasp of these developments to adjust to the changing landscape and the competitive environment. This is important if Malaysia is to retain and enhance its competitiveness and attractiveness as a maritime nation, as a growth area for trade and as an investment destination.

This paper outlines 10 key developments affecting the merchant shipping sector and highlights how they affect the operations and are changing the sector. These developments cover various aspects such as rules, regulations, law, technology, company ownership structure, environmental concern, safety, security, financing, human capital and business strategies. They are, in order of importance:

i) The emergence of the so-called BRIC (Brazil, India, China, Russia) economies that has spurred demand for various raw materials and manufactured goods and boosted demand for merchant shipping services to transport the bulk of them.

ii) Increasing use of information technology (IT) and technology in facilitating seaborne trade and in the shipping sector in particular.

iii) Growing size, capacity and sophistication of ships.

iv) Growing focus on protecting the environment and reducing carbon emissions in shipping.

v) Increasing focus on maritime security.

vi) Global recession and credit crunch which have affected global consumption, production and trade; demand for shipping services; and availability of financing for shipowners.

vii) High price of oil which has eaten into the profit margins of shipping companies.

viii) Increasing demand for door-to-door transportation of cargos.
ix) Growing activities in the offshore oil and gas sector.

x) Global developments and trends in a wide range of areas and sectors such as geopolitics, environment, economy, trade, investment and technology that affect production and consumption of materials, goods and services; investment; infrastructure development; human capital; trade and more directly shipping.

The trends and developments discussed unleash changes that affect seaborne transport and the maritime industry. The dynamics emanating from these changes have reshaped the landscape of seaborne trade and the activities that facilitate it, and will no doubt continue to reconfigure and influence the industry. Players, including those in the shipping sector, must be ready, willing and able to adjust their operations, strategies and even mindset along with these changes or risk being out of touch, losing competitiveness and becoming irrelevant.

The study recommends a set of practical responses and plan of actions for the local stakeholders in the sector to enable them to face and overcome the challenges and to reap the opportunities arising from these developments. The paper stresses that although Malaysia enjoys strategic advantage for its location along busy shipping lanes and boats well-developed maritime trade infrastructures, there are huge challenges ahead for local shipping companies and other stakeholders to overcome the intense completion in the merchant shipping sector and harnessing the opportunities in the sector. It concludes that there is bright prospect for local shipping companies to capitalize on the opportunities arising from these trends and for Malaysia to emerge as a truly competitive maritime global player if it can adjust to the developments affecting the merchant shipping sector.
1. Introduction: Changing landscape of the shipping sector

An estimated 95% of Malaysia’s trade is carried by seaborne transport\(^1\) and offshore oil and gas contributed to around 20% of its economy in 2010.\(^2\) In addition, activities such as fishery, marine tourism, passenger transport, port operations and many others depend on ships of many types and sizes.

Merchant shipping is an activity which is subject to the influence of many internal and external factors. The developments in areas such as economy, environmental protection, financing, law, safety, security, trade, transport and even geopolitics have a bearing on the industry’s operations and direction. They generate dynamics that will continue to shape and reshape the landscape of the shipping sector.

Given the immense importance of shipping to Malaysia’s economy and strategic interest, it is important for industry players and stakeholders to have grasp of the dynamics that shape the landscape of the shipping sector. Shipping is a global business that is in constant flux and is influenced by so many factors, trends and developments. As such, shipowners/operators and other stakeholders such as shippers and regulatory authorities must constantly be on their toes and constantly keep abreast of the changes in the sector. This is crucial to enable them to overcome the challenges the changes present and to reap the opportunities arising from the changes. Those slow to react and fail to anticipate the changes will risk lagging behind in an unforgivably competitive business environment.

1.1. Objectives of the study

The objectives of this study are:

- To highlight the changing dynamics of the merchant shipping sector and put into context how they affect Malaysia’s interests.
- To flesh out the challenges and opportunities arising from the developments.
- To propose recommendations on how to overcome the challenges and reap the opportunities.

1.2. Problem statement

As the main mode of transport for a majority of the world’s trade and an enabler of many economic activities, shipping is influenced by many factors and trends. For a country like Malaysia whose trade is largely carried by seaborne transport and depends greatly on the shipping sector to facilitate its oil and gas industry, it is crucial for industry players and other stakeholders in the sector to stay abreast of these trends. Failure to adapt to the fast-paced operating environment in the shipping sector will result in local players being ill-prepared to face the challenges and failing to reap the opportunities presented by the trends.

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1.3. Significance of the study

Given Malaysia’s dependence on the shipping sector to power its economic growth, it is essential that local shipping companies and regulatory authorities keep abreast of changing dynamics of the shipping sector and trends and developments affecting it. The changes generated have a bearing on their business and activities and also the nation’s interests. Developing an understanding of the dynamics affecting the shipping sector is crucial in enabling local shipping companies to make the necessary adjustments and provisions to confront the challenges and seize the opportunities presented by the changing landscape of the shipping sector. The recommendations provided in this paper may be useful to policymakers in coming up with options to help local shipping stakeholders and to safeguard Malaysia’s interests.

1.4. Research methodology

This study was conducted by way of:

- Conducting interviews with stakeholders.
- Organizing a brainstorming session on 29 February 2012 attended by local shipping players and scholars to solicit views and gain insights on the latest trends in shipping and how the affect local interests.
- Reviewing literature on trends and changes in the shipping sector.
- Drawing out lessons from the assistance given by the governments of leading shipping countries to support their local shipping players.

1.5. Literature review

The maritime literature is rich with analyses and discussions on changing trends in shipping. Bohme (1984) analysed the prospects and policy options for shipping in the context of three major influences: changes in seaborne trade; technical and organisational innovation; and changes in the political environment of shipping. Waters et al (2000) assessed the changes in shipping technology and navigation trends on the use and design of channels, a useful study applied to merchant ships that use man-made shipping routes like Panama Canal and Suez Canal. Magirou et al (2000) explored from a wide range of changes in merchant shipping including freight rates, speed of ships, routing, scheduling, financing, chartering and brokering from a quantitative perspective. Branch (2006) and Stopford (2010) discussed in great details a wide range of factors influencing the shipping sector which include economics, financing/investment, geography, law, politics, technology and trade, among many others.

These literature suggest the wide range of factors that influence the shipping sector. They have a significant bearing on the way the shipping sector is run, managed and regulated. The changes they bring demand that shipping players and other stakeholders make the necessary investment and adjustments to adapt to the dynamics emerging therefrom. The literature lends credibility to
the problem statement of this study on the importance of shipping stakeholders to be up to speed with the fact-changing operating environment of the shipping sector. Failure to adjust to the dynamics arising from the changes would result in the shipping sector players being left behind and losing out on the opportunities generated by the changes.

UNCTAD (2010) estimated that 80% of global trade was facilitated by seaborne transport. This makes the merchant shipping sector a sector of immense importance as a key facilitator of trade. Meanwhile, MASA (2010) stated that 95% of Malaysia’s international trade (by volume) is carried by merchant ships, and that 95% of its international trade is carried by foreign vessels. By virtue of these facts, the reliance of Malaysia, a major trading nation, on shipping for its economic wellbeing cannot be overemphasized. It is crucial that it puts in place a policy to develop its merchant shipping sector in a cohesive manner and to ensure that there is sufficient merchant shipping capacity to carry the its trade. This is one of the key recommendations of this study that proposes the introduction of a strategic plan for the merchant shipping sector to provide a roadmap for the long-term development of the sector.

Khalid (2006) stressed that shipping and seaborne trade trends resulting from the emergence of East Asia as a global economic powerhouse region and the changing trade patterns it spawns have had an influential impact on the development of seaport terminals in Asia. These trends have implications on port planning, development and management to facilitate the role of ports as trade conduits, including ports in Malaysia. Local ports have benefited tremendously from growing intra-Asian and intra-ASEAN trades in terms of the growing throughput volumes handled of these trades. Testimony to this, Port Klang, the national load center, is handling more transhipment trade (most of which comprising intra-Asian and intra-ASEAN trades) than import-export trade, and Port of Tanjung Pelepas has emerged as one of the world’s fastest growing container ports by handling mainly transhipment containers generated by from the two trades.3

Khalid, Zamil & Farid (2007) said that the increasing use of IT and technology has become widespread along the maritime supply chain. They emphasized that shipping companies, port operators and shipyards have increased the use of IT and technology to enhance productivity and efficiency and gain competitive advantage in this very competitive sector. This is evidenced in the fact that shipping companies, ports and shipyards have been spending on IT and the latest, high-tech onboard and shore equipment to facilitate activities such as route planning, cargo handling, information tracking, emissions reduction, shipbuilding and ship repairing. This is in line with the recommendation of this study for Malaysian shipping companies to intensify the use of IT and technology to increase their efficiency and productivity and to conduct their business in a safe and secure manner.

3 In 2011, Port Klang handled 7 mil. TEU, of which 55% were transshipment containers. In the same year, PTP handled 6 mil. TEU, 95% of which were transshipment containers. Statistics obtained from Ministry of Transport Malaysia.
2. **Key drivers in the shipping sector**

There are many drivers, internal to the shipping sector and external ones, that affect the shipping sector. Their effects cover the way ships are financed, designed, built, operated, deployed, sold, converted and eventually disposed of. The key drivers are listed in Table 1 below:

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3. **Trends affecting the shipping sector**

3.1 **Emergence of BRIC economies**

The emergence of the so-called BRIC (Brazil, India, China, Russia) economies has been one of the most endearing economic success stories of the 21st century. What is striking is that these four countries, namely developing nations with enormous population and natural resources, have emerged almost simultaneously on the world stage as the new economic powers and growth centers. Together, the BRIC group signifies the shift of global economic center of gravity from

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4 The term ‘BRIC’ was first coined by Jim O’Neill in a paper published in 2011 titled ‘Building Better Global Economies : BRIC’. South Africa was included in this grouping in 2010.
the G7 economies\(^5\) to the newly advanced economic regions, and by all accounts, it will gain from strength to strength in the years to come, barring a dramatic shift in the status quo of the global economy.\(^6\)

The growth of China’s economy in the last two decades or so has been especially striking. The breakneck growth the country with the largest population has propelled tens of millions of its citizens out of poverty and has made China the world’s second largest economy after the United States. Although China’s economic growth has slowed down in recent years due to the global recession, it has still registered growth rates that can be considered in the present circumstances. No less impressive is the growth rate in India, the world’s second largest population, in the past decade.

The emergence of the BRIC grouping has generated a mammoth effect in the global economic and trade landscape. For a start, it has resulted in changing trends in the production, manufacturing and consumption of products and raw materials. Many multinational companies (MNCs) have shifted their factories to these countries to take advantage of the lower cost of labor and land and to be close to the huge markets provided by the BRIC nations.\(^7\) The rise of their economies has taken many people among their population out of poverty and has created a huge middle class with whose purchasing power and demand for various goods and materials have been a key driver of world economic growth in the last two decades.

Among other effects of the emergence of BRICs include:

- Increase in the focus of many developing countries on trade to serve the demands of BRIC nations,
- boost in the development of trade infrastructures in BRIC countries and their trading nations to generate economic activities that can produce goods and commodities to meet the demand of BRIC nations and to facilitate their growing economies,
- increase in investments from the BRIC countries, thanks to their growing economic clout, in other countries, and vice versa, and
- proliferation of Free Trade Agreements (FTAs) between BRIC nations and their trading partners on the bilateral and multinational platforms.

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\(^5\) G7 is a international grouping of Finance Ministers from the world’s seven largest economies namely Canada, Italy, France, Germany, Japan, United Kingdom and United States. It comprised 50% of the world’s nominal GDP and 40% of its GDP based on Purchasing Power Parity (PPP) in 2011. Information retrieved from [https://www.cia.gov/library/publications/the-world-factbook/](https://www.cia.gov/library/publications/the-world-factbook/) on 13 August 2012.


\(^7\) For a succinct account of the emergence of BRIC and their economic successes, see among others Friedman, T. (2007), The world is flat : A brief history of the twenty-first century. New York, NY : Farrar, Straus & Giroux. Various literature also is available discussing the rise of political and military clout of BRIC nations, for example James, H. (2008), ‘The rise of the BRICS and the new logic in international politics, The International Economy, Summer 2008.
Ever-growing demand for raw materials and manufactured goods from the combined huge population of these countries has also changed the global shipping patterns. Asia-Europe, Intra-Asian and Transpacific trades have emerged among the key trade routes in the shipping sector to facilitate the trade between India and China and the rest of the world. This has spawned the emergence of many new ports along the routes and the expansion of existing ones to take advantage of the huge volumes seaborne trade in these trades. It has also benefited the maritime sectors of countries doing trade with BRIC nations to meet the demand for a wide range of services related to seaborne trade such as financing, legal advisory, logistics, shipbuilding, ship repairing and many others.

The effects of the rise of BRIC nations on Malaysia’s trade, economy and maritime sector have been telling. They were among Malaysia’s largest trading partners in 2011, as seen in Table 2 below:

**Table 2. Malaysia’s trade with BRIC nations in 2011**

<table>
<thead>
<tr>
<th>Rank as biggest trading partner</th>
<th>Nation</th>
<th>Import (RM bil.)</th>
<th>Export (RM bil.)</th>
<th>Total trade (RM bil.)</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China</td>
<td>75.55</td>
<td>91.25</td>
<td>166.80</td>
<td>13.2</td>
</tr>
<tr>
<td>12</td>
<td>India</td>
<td>10.18</td>
<td>28.18</td>
<td>38.36</td>
<td>3.02</td>
</tr>
<tr>
<td>22</td>
<td>Brazil</td>
<td>5.42</td>
<td>3.40</td>
<td>8.82</td>
<td>0.07</td>
</tr>
<tr>
<td>Not known</td>
<td>Russia</td>
<td>1.11</td>
<td>2.70</td>
<td>3.81</td>
<td>0.03</td>
</tr>
</tbody>
</table>

*Source: MATRADE*

Among the effects of increasing trades between Malaysia and BRIC nations on the country’s maritime sector are:

- increased throughput volumes at local ports
- expansion of port infrastructures and logistics services to cater to growing trade volumes
- increased number of shipping services between Malaysia and BRIC nations

These have changes brought positive economic effects to Malaysia and especially to the growth of companies involved in the maritime sector and in facilitating seaborne trade. Although Malaysia’s trade was expected to record slower growth between 5% and 6% in 2012 owing to the projection of ongoing Eurozone crisis and slower economic growth in developing economies such as China and India, its trade with BRIC countries was not expected to dramatically decline.  

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3.2 Increasing use of IT and technology in seaborne transport

Information technology (IT) and technology have assumed a pivotal role in facilitating seaborne trade and in the shipping sector in particular. Their use can enhance the level of competitiveness of players along the maritime supply chain.

The smoothness of modern-day cargo transportation along the chain hinges on the pillars of speed and efficiency, two criteria that have become critical success factors to facilitate the increasingly huge volume of international maritime trade. Supply chain management concepts such as just-in-time (JIT) production, door-to-door delivery and zero inventory underline the obsession of producers and shippers to deliver goods in a speedy and efficient manner. More than ever, facilitating the delivery of cargo speedily and efficiently depends on IT and technology as enablers of cargo transportation.

Underlining the paramount role of IT and technology in seaborne transportation today, the leading shipping companies and commercial ports are less dependent on labor and more reliant on cutting-edge IT systems and state-of-the-art technologies and equipment in their operations. To underscore the high-tech nature of shipping operations, take the carriage of LNG which involves huge, highly sophisticated vessels. An Aframax tanker, a vessel with high-tech onboard equipment and system featuring a capacity of 120,000 DWT, has a crew of around 15.9 The world’s leading ports and Malaysia’s tops ports feature super post-Panamax cranes and cutting-edge IT systems to plan and manage operations like cargo loading/unloading. The use of IT and technology helps boost port productivity and efficiency and increase their throughput volumes.

The growing trend of bigger and more sophisticated ships coming into play has greatly enhanced the role of IT and technology in enabling players along the maritime supply chain to handle such vessels. Such ships require efficient handling that can only be made possible with the support of IT and technology. The loading and unloading of thousands of containers at one go requires meticulous planning to ensure minimal berthing time for ships and efficient stacking and tracing of containers at the container yards. IT-enabled systems and high-technology equipment enable this task to be carried out in an efficient, effective and safe manner.

Beyond ship and cargo handling, IT is also important in other aspects of port operations. They enable Electronic Data Interchange (EDI) that allows the sharing of information among players along the entire maritime supply chain and between the players in the chain and parties involved in seaborne trade and transport outside the chain on a real-time basis and enables pre-clearance of cargo. The use of IT and technology help provide and improve linkage between ports and their users, hence enhancing the competitiveness of the ports by way of providing such value-added services. Port community systems (PCS), as used in Port Klang for example, have been developed to assist the rapid flow of information between firms involved in moving goods in and out of ports. The application of PCS ensures the accuracy and reliability of information amongst port users, and facilitates speedy and advanced cargo clearance which is essential in facilitating significant trade volumes.

9 Information obtained from an executive of MISC Bhd. on 16 April 2012.
The success of post-9/11 maritime security measures such as ISPS Code and Container Security Initiatives hinge largely upon the use of IT and technology. For example, the enormous task of inspecting enormous amounts of containers at ports for high-risk cargos would not be possible without technologies such as Radio Frequency Identification (RFID) system and Global Positioning System (GPS). These technologies help secure the maritime supply chain and at the same time facilitate the smooth transit of cargos along the chain.

In addition to these examples, there is a notable rise in the focus among players along the maritime supply chain in their use of IT and technology in various activities such as transportation, warehousing, inventory management, cargo handling, shipbuilding and ship repairing. Without a doubt, the use of IT and technology contributes to greater productivity, accuracy and efficiency in these activities, and helps facilitate growing volumes of seaborne trade and a host of activities at sea such as offshore energy exploration and production and marine tourism. The convergence of IT and infrastructures in the maritime industry and specifically the shipping sector has led to the generation of greater volume of trade and faster, safer and more efficient flow of goods, capital and information across the maritime supply chain.

3.3 Growing size, capacity and sophistication of ships

Shipbuilding technology, yard capacity/capability and availability of financing have combined to enable the construction of larger and sophisticated merchant ships. Investment in ports, logistics sector, and various trade infrastructures and facilities has also enabled ship to grow bigger and carry more cargo.

The growth in capacity of container vessels in the last decade underlines the growth of merchant ships and the drive by shipowners to attain economies of scale. The world’s largest container ships in service today are the Triple-E class ships owned by Maersk, the world’s largest container shipping company in terms of fleet capacity, with a capacity of 18,000 TEU.\(^{10}\) In contrast, the largest container ship deployed in 1990 had a capacity of around 4,400 TEU. Similarly, bulk carriers have also undergone tremendous increase in size. The largest bulker, with an astounding capacity of 400,000 DWT, owned by Brazil’s giant mining company Vale entered into service this year.\(^{11}\) In comparison, the largest bulk carrier in service in 1990 had a capacity of 68,000 DWT.\(^{12}\)

These big ships also have sophisticated onboard equipment such as engines and navigation equipment. They demand adequate port facilities and land-based support which can match their size and sophistication. Cargo handling capability must match the enormous variety and volumes of cargos carried by the ships. Waiting time and the length stay of ships at ports must

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be minimized and this requires ports and players providing logistics services to bet at their optimal level of productivity and efficiency.

Reflecting the growing volumes of seaborne trade and growing demand for shipping services, there has been a corresponding rise in the demand for seafarers. Shipowners covet well-trained, skilled workforce to match the increasingly large and sophisticated features of ships which has changed the nature of shipping. Modern-day seafarers are expected to be multi-skilled and multi-taskers to match the increasingly sophisticated demand of shipping. As a result, Malaysian maritime education and training institutes have seen an increase in the number of enrolment of students over the years.

With growing volumes of seaborne transport, focus is also increasing on the welfare and well-being of seafarers who work under challenging circumstances to facilitate much of global trade. The so-called ‘Manila Amendments’ to the International Convention for Standards of Training, Certification and Watchkeeping 1978 covers new training/certification requirements, training in modern technology such as Electronic Chart Display and Information System (ECDIS) and Dynamics Positioning (DPS), marine environment awareness and competence of crew of tankers address the complex and challenging working environment of seafarers.

The growing size of ships has benefited Malaysian companies involved in various shipping-related activities such as feeder services, ship management and ship supplies. This trend has also prompted Malaysian ports to improve their features and increase their capacity and capability to host them. These include deepening their drafts, expanding their berths and container yards, increasing the number of equipment and port vehicles, and adopting high-tech IT systems in areas such as berth allocation and cargo handling. On the land side, infrastructures supporting trade such as roads, railways and warehouses have also been developed and logistics services such as freight forwarding and haulier have also grown to support growing throughput volumes at local ports carried by larger ships. Marine Department Malaysia has also enhanced navigation system along Malaysia’s coasts to improve safety of these big ships traversing the nation’s waterways.

3.4 Growing focus on environmental protection in shipping

Shipping offers a more carbon-efficient mode of transportation compared to other modes of transport. Shipping, by far, offers much greater payloads per trip compared to land and air transport, and emits far less CO2 per ton/mile of cargo than any other modes of transport.\(^\text{13}\)

However, ships use bunker fuel and diesel engines, hence release into the atmosphere carbon dioxide (CO\(_2\)), a very harmful substance for the environment. Despite shipping contributing a mere 3.3\% of the global total of carbon emissions (see Table 3),\(^\text{14}\) it has been estimated that carbon emissions from shipping has doubled since 1990.\(^\text{15}\) It was also projected that carbon emissions from shipping will grow by a factor of two to three by 2050 from 2007 levels should

\(^\text{13}\) World Shipping Council (September 2009). The liner shipping industry and carbon emissions policy. 5.
\(^\text{14}\) Lloyd’s List (December 2009). Future of shipping : Why CO2 is changing the world and shipping with it. 4.
\(^\text{15}\) Ibid, p. 6.
no regulatory measures are put in place to lower the emissions.\textsuperscript{16} The levels of sulphur oxide (SOx) emanated by merchant vessels which use normal high sulphur fuel require urgent actions to reduce.\textsuperscript{17}

Table 3. Percentage of industrial sectors to global carbon emissions

<table>
<thead>
<tr>
<th>Industry</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity &amp; Heat Production</td>
<td>35%</td>
</tr>
<tr>
<td>Road Transport</td>
<td>25%</td>
</tr>
<tr>
<td>Manufacturing &amp; Construction</td>
<td>20%</td>
</tr>
<tr>
<td>Other Energy Industries</td>
<td>15%</td>
</tr>
<tr>
<td>International Shipping</td>
<td>10%</td>
</tr>
<tr>
<td>International Aviation</td>
<td>5%</td>
</tr>
<tr>
<td>Domestic Shipping &amp; Fishing</td>
<td>2%</td>
</tr>
<tr>
<td>Rail</td>
<td>1%</td>
</tr>
</tbody>
</table>

\textit{Source: International Maritime Organization}

Beside GHG emissions, there are other pollutants from ships which need attention, including invasive alien species and ballast water. Annex III of MARPOL covers pollution from packaged goods carried by ships and includes issues relating to the implementation of ballast water management. To this end, it is heartening to note the support garnered among nations toward the International Convention for the Control and Management of Ships' Ballast Water and Sediments.

At present, no targets have been set to limit or reduce CO$_2$ emission from ships. In the absence of regulation, CO$_2$ emission is predicted to rise to 6% of the total global emissions by 2020.\textsuperscript{18} Other activities in the maritime sector such as port operations, shipbuilding, ship repairing and other ancillary services also emit carbon and harmful gases into the atmosphere. On this count, it is essential that urgent actions are taken by the International Maritime Organization (IMO), industry players, governments and other stakeholders to ensure that activities in the maritime sector are carried out in an environmentally friendly manner.

\textsuperscript{18} Lloyd’s List (2009).
Underscoring the emphasis it puts on protecting the marine environment while facilitating shipping activities, the International Maritime Organization (IMO) has adopted the motto ‘Safe, secure and efficient shipping in clean oceans’. Although originally mandated to oversee maritime safety, the role of IMO has expanded to include safeguarding the seas and the environment from pollution.

The International Convention for the Prevention of Pollution from Ships, or better known as MARPOL 73/78 is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. It was formulated with the aim of minimizing or eliminating the adverse impact of operations of every type of vessels on the environment by regulating the discharge of pollutants.\(^\text{19}\) The convention was subsequently amended by the Protocols of 1978 and 1997 and constantly updated with relevant amendments to address pollution from ships.\(^\text{20}\) MARPOL 73/78 contains six annexes which establish discharge standards for six main groups of pollutants, as summarized in Table 4:

**Table 4. MARPOL 73/78 Annexes**

<table>
<thead>
<tr>
<th>Annex</th>
<th>Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Regulations for the prevention of pollution by oil</td>
</tr>
<tr>
<td>II</td>
<td>Regulations for the control of pollution by noxious liquid substance in bulk form</td>
</tr>
<tr>
<td>III</td>
<td>Regulations for the prevention of pollution by harmful substances carried by sea in packaged forms, or in freight containers, portable tanks or road and rail wagons</td>
</tr>
<tr>
<td>IV</td>
<td>Regulations for the prevention of pollution by sewage</td>
</tr>
<tr>
<td>V</td>
<td>Regulations for the prevention of pollution by garbage from ships</td>
</tr>
<tr>
<td>VI</td>
<td>Regulations for the prevention of air pollution from ships</td>
</tr>
</tbody>
</table>

*Source: International Maritime Organization*

Two other international conventions on shipping and environment worth elaborating are the Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS Convention) 2001,\(^\text{21}\) and Convention for the Control and Management of Ships’ Ballast Water

\(^\text{19}\) In 1999, the IMO’s Assembly adopted at is 21\(^{st}\) session resolution which identifies IMO’s main objectives for the new millennium. Among them are ‘taking measures to implement the proactive policy agreed in the 1990s more actively than in the past, so that trends which might adversely affect the safety of ships and those on board and/or the environment may be identified at the earliest feasible stage and action taken to avoid or mitigate such effects’, and ‘ensuring the wide early acceptance of those Annexes to the MARPOL Convention which have not yet entered into force’. The special mention of MARPOL as one of the organization’s objectives in the 2000s underlined its commitment to ensure all the Annexes of the convention are complied with.

\(^\text{20}\) Such pollution can come from oil spills, chemical substances carried in bulk, harmful substances in packaged form, sewage, garbage, air pollution from ships, anti-fouling paints, bio-fouling by invasive alien species in ballast water and recycling of ships.

\(^\text{21}\) AFS Convention bans the use of organotin compounds which act as biocides in anti-fouling paints on ships, specifically tributyltin (TBT) based anti-fouling paints which can cause harmful effects to marine species. With effect from 1 January 2008, with minor exceptions, ships are required to either remove any organotin compounds that are on their surfaces or to ensure that any organotin compounds on their external surfaces are sealed to prevent
and Sediments (BWM Convention) 2004. These conventions have either come into force or nearly achieved the number of required contracting states for enforcement. The introduction of these conventions underscores the seriousness of IMO, its Member Governments and the shipping industry players to play their part to reduce carbon emissions.

In addition to these, IMO has also introduced several international codes relating to environmental protection and pollution. These codes guide shipowners, ship operators, port authorities, terminal operators and other players in the maritime sector in their operations to ensure that the environment is protected and to avoid pollution. The codes are listed in Table 5.

**Table 5. International codes and procedures aimed at preventing pollution**

<table>
<thead>
<tr>
<th>Codes/procedures</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Code on Construction and Equipment for Ships Carrying Liquefied Gases in Bulk (IGC) Code</td>
<td>Provides an international standard for the safe transport by sea in bulk of liquefied gases and certain other substances</td>
</tr>
<tr>
<td>International Code for Safe Carriage of Packaged of Irradiated Nuclear Fuels, Plutonium, and High Level Radioactive Waste on Board Ships (INF) Code</td>
<td>Sets out how irradiated nuclear fuel, plutonium and high-level radioactive wastes should be carried, including specifications for ships.</td>
</tr>
<tr>
<td>Code on Noise Levels on Board Ships</td>
<td>Stimulates and promotes noise control at a national level within the framework of internationally agreed guidelines.</td>
</tr>
<tr>
<td>Port State Control</td>
<td>Inspection of foreign ships in national ports to verify that the condition of the ship and its equipment comply with the requirements of international regulations and that the ship is manned and operated in compliance with these rules.</td>
</tr>
</tbody>
</table>

*Source: International Maritime Organization*
These codes and procedures are aimed at reducing carbon emissions in response to the growing pressure for the maritime sector to clean up its act.

Several technical and operational measures to reduce emissions from ships have also been introduced. Of particular note are IMO-led initiatives such as the introduction of Energy Efficiency Design Index (EEDI), Energy Efficiency Operational Indicator (EEOI) and Ship Energy Efficiency Management Plan (SEEMP), which it plans to make compulsory to the shipping industry. Regulations for the prevention of air pollution from ships have also been introduced, including the type and size of vessels to which they will apply.

Several Malaysian shipping companies have responded positively to various green shipping initiatives introduced. For example, MISC has collaborated with Universiti Teknologi Malaysia to establish EEOIs and EEDIs for its fleet, and has set aside a US$3.5 mil. budget to adopt greener technologies in enhancing energy savings and reduce emissions. Future ‘green initiatives’ to cut down carbon emissions will have an impact on shipping companies worldwide. Malaysian shipping companies would do well to pay attention to the convention, codes and procedures to reduce carbon emissions and prepare ahead of their introduction.

3.5 Increasing focus on maritime security

Since the September 11, or ‘9/11’ attacks, concerns over security have gripped the attention of policymakers and the public. Amid the dramatically changed, and still changing, post 9/11 landscape, the maritime sector has also undergone tremendous changes from a security perspective with the introduction of various maritime security measures to mitigate the threats of maritime terrorism and piracy. This underscores concerns of the vulnerability faced by seaborne transport and lives and assets in the maritime sector to these and other threats at sea.

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24 The Council for Security Cooperation in the Asia Pacific (CSCAP) Working Group has come up with an arguably useful and reasonable definition for ‘maritime terrorism’ as “...the undertaking of terrorist acts and activities within the maritime environment, using or against vessels or fixed platforms at sea or in port, or against any one of their passengers or personnel, against coastal facilities or settlements, including tourist resorts, port areas and port towns or cities”. Jane’s Intelligence Review defines ‘maritime terrorism’ as “... the deliberate creation and exploitation of fear through violence or the threat of violence in the pursuit of political change, in the maritime domain”. Meanwhile, Burns (2004) defined ‘maritime terrorism’ as “... terrorist acts executed within, or with the intent of compromising the features of the maritime domain”.
25 Article 101 of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) offers the only legal definition of piracy available to date:

a) “any illegal acts of violence or detention, or any act of depredation, committed for private ends by the crew or the passengers of a private ship or a private aircraft, and directed: (i) on the high seas, against another ship or aircraft, or against persons or property on board such ship or aircraft; (ii) against a ship, aircraft, persons or property in a place outside the jurisdiction of any State;

b) any act of voluntary participation in the operation of a ship or of an aircraft with knowledge of facts making it a pirate ship or aircraft; or

c) any act inciting or of intentionally facilitating an act described in sub-paragraph (a) or (b).”
While measures undertaken to boost security along the maritime supply chain have added a sense of security to players along the maritime supply chain, those in charge of security should not be complacent. New, asymmetrical and non-conventional threats are always evolving. The attacks on vessels in recent years underscore the vulnerability of maritime assets to terrorists’ strikes.

Initially received with reluctance by industry players, these measures have now become part and parcel of the maritime trade supply chain. Security, which used to be peripheral to the core work of shipping companies, port operators and many players along the maritime trade supply chain, has now become central to their operations.

In recent years, there has been a spate of attacks on merchant ships by pirates, especially in the critical Gulf of Aden off the Horn of Africa. This has caused loss of lives and incurred huge costs to shipowners, charterers and shippers, and has impeded the smooth flow of goods and materials across supply chains.

Post 9/11, several security measures have been introduced to protect supply chains. Most focus on protecting transport and logistics system related to cargo handling and movements from security threats. They include:

i) Container Security Initiative (CSI), an initiative by the US Customs and Border Protection (CBP) under the Department of Homeland Security, CSI is based on four principles, namely using intelligence and automated information to identify and target containers that pose a risk for terrorism, pre-screening those containers that pose a risk at the port of departure before they arrive at US ports, using detection technology to quickly pre-screen containers that pose a risk, and using smarter, tamper-evident containers.

ii) Customs Trade Partnership Against Terrorism (C-TPAT), an initiative of the US CBP under which shippers commit to improving the security of their cargo shipments, and in

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26 In the context of this paper, ‘maritime supply chain’ refers to the network that links producers and consumers that includes a maritime transportation component and consists of maritime-related assets such as ships and ports.

27 Among the notable attacks on ships in recent years are the hijacking of cruise ship Achille Lauro in Egyptian waters in 1985 which claimed the life of a disabled passenger; the attack on United States Navy ship, USS Cole by a explosive-laden speedboat in waters off South Yemen in 2000; the attack on Our Lady of Mediatrix in waters off Manila in 2000; and the attack on French tanker Limburg by a explosive-laden speedboat in waters off South Yemen in 2002 which killed a crew member of the tanker.

28 In a nutshell, a supply chain is a network containing organizations, people, technology, activities, information and resources involved in facilitating the movement and delivery of goods, materials and services from the producer to the consumer, and transforms raw materials, natural resources and components into finished products. The Council of Supply Chain Management Professionals defines ‘supply chain management’ as ‘the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities’.

29 The measures are aimed at among others: (i) Accrediting personnel in the maritime supply chain, (ii) Screening and validating the contents of cargos transported along the chain, (iii) Providing advance notification of the contents of containers from the point of origin to the point of destination, (iv) Ensuring the security of cargo while in-transit by using locks and tamper-proof seals, and (v) Inspecting cargos at points of entry.
return, receive a variety of benefits from the US Government such as pre-clearance of cargos.

iii) International Ship and Port Facility Security Code (ISPS Code), a comprehensive set of measures introduced by IMO in 2002 to enhance the security of ships and port facilities. It was introduced in response to the perceived threats to ships and port facilities in the wake of the 9/11 attacks.

iv) Megaports Initiative, introduced in 2003 as part of the Second Line of Defence Program of the National Nuclear Security Administration of the US Department of Energy. The initiative focuses on high-risk and high-volume ports based on their attractiveness to smugglers of nuclear materials and weapons, and entails maximum inspection of containers at those ports regardless of their origin and destination.

v) Proliferation Security Initiative (PSI), introduced by the US Government in 2003 to curb the spread of weapons of mass destruction (WMD) and related materials. PSI provides a platform to coordinate governmental non-proliferation activities globally in the face of advanced communications technologies and expanding global trade that have facilitated the smuggling of WMD.

vi) Regional Maritime Security Initiative (RMSI), a partnership of willing regional nations with varying capabilities and capacities to identify, monitor, and intercept transnational maritime threats under existing international and domestic laws. This rather controversial initiative empowers participating nations with the timely information and capabilities they need to act against maritime threats in their own territorial seas, deciding for themselves what response, if any, they need to take.

vii) Secure Freight Initiative (SFI), an initiative by the US to inspect all containers at high-risk ports through an integrated inspection system with the international shipping company to secure the global supply chain against the threat of terror.

viii) 24-Hour Rule, an initiative led by the US that requires 24-hour notice before cargo is loaded on vessels. High-risk containers, identified prior to vessel load, are inspected at the port of origin.

ix) ISO/PAS 28000, introduced by International Standards Organization, a series of standards for the establishment and management of supply chain security. It contains specification for security management systems for supply chains which offers public and private enterprise an international high-level management standard that enables organizations to utilize a globally consistent management approach to applying supply chain security initiatives.

x) Framework of Standards to Secure and Facilitate Global Trade in 2005, an initiative introduced by World Customs Organization (WCO) in 2005 which consists of supply chain security standards for Customs administrations.
Some of these initiatives have been adopted in Malaysia, including ISPS Code and Container Security Initiative. They have to a certain extent enhanced security along the local maritime supply chain and have increased awareness among local stakeholders along the maritime supply chain, including in the shipping sector, of the need to secure their end of the chain. Shipping companies and port operators can be seen to have taken a more supply chain management approach towards security today, compared to pre-9/1 when they used to just addressing security in an operations-centric kind of way. They are notably taking a holistic view of the maritime supply chain, displaying greater awareness of the interdependence among the players along it.

### 3.6 Global recession and credit crunch

Being the bellwether of economic activities, owing to the fact that it carries an estimated 90% of global trade, the shipping industry is closely related to the ups and downs of the world economy. The current dire situation in the shipping market has not been helped by the uncertain outlook of global economic recovery owing to the ongoing Eurozone debt crisis, the depressed US economy, the slower pace of growth in China and geopolitical unrests worldwide. These, combined with the overcapacity situation in the shipping sector, has exerted downward pressure on the shipping markets and prevented rebounds such as in the container trade in 2009 and in the bulk trade earlier this year from sustaining.

The sharp downturn in the shipping market has had an adverse impact on the business of shipping companies worldwide. This, in turn, has spiraled down to the port operators, shipyards and companies providing a host of maritime support services players whose business has also been badly affected. Malaysian shipping companies have not been spared of the dire situation in the shipping market. MISC, the nation’s largest carrier, had to pull out of the liner business as a result of incurring huge losses in the container trade amid the global recession and tonnage oversupply in the trade.

The credit crisis that started from the Wall Street crisis in 2008 has slowed investment in shipping. Banks have cut back lending to the shipping sector and investors have also hesitated to invest in the sector. This has prevented several shipping companies from growing and some have struggled to raise financing even for their working capital.

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32 Alphaliner estimated that half of container newbuildings delivered in 2012 were vessels over 10,000 TEUs. Ships of such huge capacity can only be deployed in a handful of trade lanes, namely Asia-Europe and Trans-Pacific. However, trades in these regions are spluttering, amid the Eurozone crisis and the expected slower-growth of China’s economy this year. More tonnage coming into trades which are already under tremendous pressure will further exacerbate an already tough operating environment and pile on more pressure on freight rates.
In addition to the economic downturn and credit crisis, several other developments exert downward pressure on the shipping markets from staging a convincing recovery. These include disruption and uncertainties in the production of manufactured goods and agricultural commodities arising from natural disasters such as earthquake, tsunami, drought, cyclone and flooding. There are also the geo-political unrests such as in West Asia and tensions in key sealanes such as in the South China Sea that can disrupt production of key commodities like oil and gas and impede the movement of merchant ships and activities in the offshore oil and gas industry.

The entrance of huge new tonnage flooding into several shipping trades has come at a time when demand for shipping services is low and freight rates are under pressure. This combination exerts tremendous downward pressure to the recovery of the shipping markets. The persistent delivery of new tonnage into key shipping trades, namely bulk, container and tanker, causing huge capacity overhang in these markets, have halted recovery in the shipping markets.

Take the container trade, which is facing difficult times amid lower trades and low freight rates. As if these conditions are not hard enough to deal with, the trade has to saddle the unbearable weight of more huge new tonnage that it can bear. Already reeling from the global recession, liner shipping companies have to bear with the entry of new ships with large capacity. These are newly completed ships ordered from shipyards several short years ago when the global economy was growing full steam, demand for containerized goods was high, liner operators were bullish and investors and financiers scene was favorable to the shipping industry.

Several liner operators have cancelled orders of newbuildings, which makes more economic sense than taking deliveries of ships which have no cargos to carry. Some even send newly delivered vessels straight to the scrapping yard to cut their losses. However, some have no choice but to honor the contracts with shipyards and pick up completed ships which have been fully paid for.

The current global economic recession and credit crunch resulted in a dramatic drop in trade, industrial outputs and business activities. As a result, the shipping market has suffered from the kind of downturn which is unprecedented in the history of modern merchant shipping. Freight rates have been on a free-fall as demand for goods and materials slumps, correspondingly resulting in lower demand for shipping services. As a measure of this desperate situation, freight rates for Panamax-size bulk carriers fell to a 45-month low in mid September 2012.33

As major economies such as the US, Eurozone and Japan splutter and China trends towards slower growth, demands for manufactured goods and raw materials are expected to slow, and industries and businesses will scale back production. This will result in lower demand for container shipping services and will exert downward pressure on freight rates.

The Governments of several countries have stepped in to assist their shipping sector to weather the storm in these trying times. They include the governments of developed nations. For example, South Korea has introduced a fund worth 4 trillion Won (approximately US$3 billion) to purchase vessels from struggling Korean shipowners to retain the nation’s merchant shipping

33 RS Platou Monthly, October 2012. 7.
tonnage and to ensure its shipping and shipbuilding sectors remain internationally competitive. The Korean government has also expanded credit lines to shipowners ordering vessels from local shipyards and also to Korean shippers, while easing regulations related to their activities. China has also extended help to its shipping companies and shipyards to weather the global recession by setting up a shipping fund to assist local shipping companies to expand their fleet ordered at local shipyards. Its state-owned steel mills have been developing their own fleet of bulk carriers and have commissioned state-owned shipyards to build vessels. This keeps the shipyards occupied and helps them stave off bankruptcy.

The global recession and credit crunch have had adverse effects on several Malaysian shipping companies. MISC exited from the liner business after incurring huge losses in the trade. Several smaller local shipping companies have sold off vessels amid the recession, and some have even folded. Most notable among the casualties is Swee Joo which filed for bankruptcy in 2011.

3.7 Rising cost of oil

The sharp rise in bunker fuel cost has eaten into the profit margins of shipping companies which are already saddled with the rise of other rising costs. It adds further to the operating costs of shipping companies which are already high.

Fuel cost represents as much as 60% of total ship operating cost (depending on the type of ships and services), hence the rise in oil price cannot be taken lightly. It was estimated that ships consume two billion barrel or seven billion tons of oil a year. If oil price were to reach US$200 (RM600) per barrel level, the cost to ship a standard TEU (20-foot) container from Shanghai in China to the Port of Los Angeles in the US, could go up to US$15,000 (RM45,000). In comparison, when oil was at US$20 (RM60) a barrel in the year 2000, transporting a TEU box cost US$3,000 (RM9,000).

Several local shipping companies have taken various austerity measures such as redeploying their vessels along major trade routes to optimize their cargo load, consolidating services through multi-carrier alliances, consolidating routes to serve more locations with fewer ships, monitoring hull and propeller conditions to reduce resistance and sailing at lower speeds to conserve fuel, as permitted by their sailing schedules. MISC has adopted a fuel management strategy to enhance its operations through effective bunker management, enhanced engine monitoring and maintenance, improved hull and propeller condition, greater focus on voyage efficiency and greater attention to propeller management.

36 Estimate provided by a Kuala Lumpur-based shipping executive on 14 April 2012.
37 These calculations were projected by Zahar M Hashim Zainuddin at the MIMA Seminar on High Oil Price and its Impact on the Shipping Industry: Staying Afloat in a Sea of Change’ held at MIMA, Kuala Lumpur on 6 August 2008.
These measures notwithstanding, the oil price increase has been so dramatic that even the bunker adjustment factor adopted by shipping companies has not helped cushion their burden. It is feared that shippers and eventually consumers may have to pay for higher price of shipping services as shipping lines undertake measures to mitigate their cost arising from high fuel prices.

3.8 Increasing demand for door-to-door transportation of cargos

Growing size of trade, distance between markets and trends such as globalization and outsourcing have spawned demand for integrated logistics service involving very complex arrangements of delivering huge volumes and variety of goods and materials across boundaries. It has also given rise to the need to carry cargos using more than one transport mode to ensure good are delivered in the right quantity and quality.

Multimodal transport\(^{38}\) presents a means to move goods across the supply chain using a combination of transport modes in a synchronized manner. It promotes strategic partnership amongst players in the transportation industry dispersed and divided across various transport modes. It is a concept supported through a seamless network that allows stakeholders along the trade network to pool resources and harmonize their operations for greater efficiencies. Multimodal transport serves the growing need among companies and businesses to control costs across their supply chains and to provide the ‘lowest cost network’ to customers while generating revenues and market shares.

Various activities in the logistics sector\(^{39}\) helps facilitates multimodal transport which enables producers to connect with their customers on a ‘door to door’ basis to meet the growing need to deliver goods in huge volumes across large distances at competitive costs. Seamless transport of trade, as espoused by multimodal transport, integrates transport modes and synchronizes the activities of transport service providers, improving the flows between customers and producers. It enables efficient management and facilitates better control over the flow of goods and services throughout the supply chain. It also helps keeps cost low and movement of goods faster, and assists moving more goods to consumers faster and at a lower cost.

The emergence of reliable and competitive door-to-door multimodal transport services can contribute to and foster new trading opportunities as well as enhancing competitiveness of

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\(^{38}\) The United Nations Convention on International Multimodal Transport of Goods (UNCIMTG)\(^{38}\) defines multimodal transport as “The carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country.” The ASEAN Framework Agreement on Multimodal Transport defines multimodal transport as: “The carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country.

\(^{39}\) Logistics is a part of the supply chain process that plans, implements and controls the efficient and smooth flow and storage of goods, services and related information to meet customers’ requirements, from the point of origin to the point of consumption. The logistics sector consists of a range of activities that enables goods and commodities to be transported from the point of production to the point of consumption. This involved sourcing and procuring those goods and commodities, and organizing, managing, controlling and executing their flow across supply chains.
Multimodal transport can lead to the creation of a competitive environment in the transportation sector in which the following can be fostered:

- Encouraging the private sector to invest in infrastructure and in operating transport services.
- Improving the capacity, efficiency and productivity of transport modes.
- Creating trans-border partnerships and stimulating greater intra-modal and intra-regional cooperation and trade.
- Simplifying and harmonizing documentation and procedures.

This development has not escaped Malaysia. To a certain degree, there is already some form of intermodal connectivity and linkage between transport modes in Malaysia. The nation’s roads, railways and inland waterway systems are port-oriented, having been initially laid out to carry the country’s natural resources to the sea and to the then industrial world for processing. Over the years, transport infrastructure and systems have been extensively developed to meet demands of a fast growing and developing nation. The quality of transport infrastructures such as maritime, air and road in Malaysia are of very high standards, and the development of the transport sector continues has helped boost the nation’s trade and create positive multiplier effects in terms of investment and employment creation.

The government has designated the sector as a strategic sector that warrants putting a long-term plan to develop it systematically and promote it over the long term. To this end, the government has established the Malaysian Logistics Council (MLC) under the Ministry of International Trade and Industry to deliberate logistics-related issues and chart the way forward for the sector to enhance its efficiency and contribution to the nation’s trade and economy. The establishment of the MLC was a recommendation made in the Third Industrial Master Plan 2006-2020 to act as the national focus point to discuss issues pertaining to the sector and to take it to greater heights. Under the MLC, a study was commissioned Roadmap for the Development of the Freight Logistics Service Sector’ commissioned by the Malaysian Logistics Council. The study recommended, among others, improving intermodal linkages in Malaysia to facilitate smooth flow of trade transport and boost trade volumes.

3.9 Growing activities in the offshore oil and gas sector

The oil, gas and energy industry is crucial to Malaysia’s economic wellbeing, contributing RM127 bil. or 19% to its GDP in 2009.\textsuperscript{41} It has been designated as a National Key Economic Area (NKEA) under the Economic Transformation Program (ETP) to transform Malaysia’s economy into a high-income one by 2020. PEMANDU has set a target for the oil and gas industry to contribute RM241 bil. to the nation’s GDP by 2020.\textsuperscript{42}

The spate of exploration and production activities in Malaysian waters in recent decade has been a boon to players providing support services to this industry. Players in the offshore support

\textsuperscript{40} UNCTAD (1995), Multimodal Transport Handbook, Geneva.
\textsuperscript{42} Ibid, 167.
vessel (OSV) sector and offshore structures fabrication have been among those reaping the benefits of the growth in the industry.

Malaysia has stated the target of becoming South East Asia’s deepwater hub. This is underscored by the commitment of Petronas, the national oil company, and its production sharing contractors to spend RM183 bil. over the next five years to enhance oil and gas production.\(^{43}\)

As Petronas becomes more active in local waters by farming out marginal fields and aggressively pursue its enhanced oil recovery (EOR) strategy,\(^{44}\) and with the recent announcement of discovery of a prolific oil and gas field off Pahang, the demand for a range of OSV – including accommodation barges, anchor handling tug supply (AHTS) vessels, pipe and cable-laying vessels, platform supply vessels, seismic vessels and tugboats - is set to be high in the coming years.

### 3.10 Global developments and trends

In addition to the changing dynamics discussed, there are global developments and trends in a wide range of areas and sectors that affect production and consumption of materials, goods and services; investment; infrastructure development; human capital; trade and more directly shipping. It is important for stakeholders in the maritime industry to pay attention on these developments and trends to keep abreast with the changes they bring to the industry.

Several emerging geo-political and geo-strategic developments such as the uprising in the Middle East and North Africa region, the tension in key sealanes such as South China Sea and East Sea arising from multiple maritime claims and disputes, and potential conflict involving Iran and North Korea may have an effect on international trade and flow of goods. Developments related to the economy and trade can also imposition of trade and technical barriers, shifting demographics, currency fluctuations, prolonged Eurozone crisis, negative effects of quantitative easing of the US economy and slower growth of China’s economy can continue to significantly affect seaborne trade and related activities such as shipping, port operations, shipbuilding, ship repairing and logistics services. There is also the threat of natural disasters such as drought, earthquake, flood, hurricane and tsunamis that can disrupt production of materials and commodities and transportation of goods. National agricultural, economic, fiscal, industrial, monetary, trade and transport policies can also affect seaborne trade and transport as well, either directly or indirectly.

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\(^{43}\) Anon. (2012, October 1). “Petronas and PSC partners to invest RM183 billion in oil and gas production’. The Star.

\(^{44}\) EOR is a term for techniques used to enhance oil production in existing wells. According to the United States Department of Energy, up to 60% of oil can be enhanced using EOR. Petronas announced in October 2012 that it was looking at enhanced oil recovery (EOR) to increase output from existing production area. Undercoring this intention, Petronas sealed a 30-year deal valued at RM37.3 billion for the world's largest EOR projects offshore Sabah and Sarawak.
These are among the developments that stakeholders in the maritime industry and shipping sector need to constantly pay attention to as they can give rise to dynamics that affect their business and operations. As trade becomes global, events on the international stage may affect the production, consumption and distribution of goods. The stakeholders would do well to develop an understanding of these developments and how they can affect seaborne transport and related activities in order to face the challenges they bring and reap the opportunities they present.

4. Conclusion

Owing to the global nature of trade and transport, stakeholders in the maritime industry and especially shipping sector which facilitates much of global trade must be in constant tune with developments affecting seaborne transport.

The trends and developments discussed unleash changes that affect seaborne transport and the maritime industry. The dynamics emanating from these changes have reshaped the landscape of seaborne trade and the activities that facilitate it, and will no doubt continue to reconfigure and influence the industry. Players, including those in the shipping sector, must be ready, willing and able to adjust their operations, strategies and even mindset along with these changes or risk being out of touch, losing competitiveness and becoming irrelevant.

The fast moving trends and developments affecting seaborne trade and the shipping sector require Malaysia’s shipping companies and stakeholders to constantly keep track of them and the effects they generate. Those in the business of shipping must develop deep understanding of the underlying factors affecting global seaborne trade and merchant shipping in order to be ready to face the threats and challenges they pose and reap the opportunities they present. Doing so calls upon them to come up with appropriate strategies, allocate resources and prepare contingency plans to respond quickly and face the eventualities arising from these developments. Also needed is the necessary policy push to help shipping companies overcome the challenges and ill-effects generated by the changing dynamics in the shipping business. This is especially so in these trying times for the shipping sector amid the global recession and credit crisis, as several governments have extended help to their shipping sector and maritime industry to survive the downturn in the shipping market and in seaborne trade.

It cannot be overemphasized that local shipping companies are facing a dire situation amid the downturn in the shipping market which is unparalleled in modern history. It has claimed several casualties including among Malaysian shipping companies. Those still in the game are hanging on dearly as they continue to reel from the global recession, low freight rates and overcapacity in key shipping trades. It is feared that they will not be able to carry on if the current grim situation continues. They urgently need assistance in whatever form to survive the calamitous shipping market. Given the importance of shipping to Malaysia’s economic, trade and even strategic interests, local shipping players deserves help in the form of policy to weather the rough operating environment. Policy intervention is also needed to position the shipping sector on a stronger footing to realize the national goal of making Malaysia a regional shipping hub and other aspirations such as attaining global competitiveness and developed nation status by 2020.
5.  **Recommendations**

Arising from the discussion on the key trends, developments and changing dynamics affecting the shipping sector, several recommended responses are made to overcome the main challenges rising from them. Also listed are the agencies that should be in charge of the responses and the performance measures that can be used to gauge the effectiveness of the responses.

5.1  **Recommended responses to the challenges**

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Recommended responses</th>
<th>Lead agencies</th>
<th>Performance measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Attracting main line operators (MLOs) and large ships to call at our ports</td>
<td>Deepen draft at major ports. Equip ports and landside with necessary capacity, features and services. Enhance logistics and support services. Provide incentives for MLOs to hub at major ports and set up offices here. Develop maritime clusters to create critical mass of cargos to attract</td>
<td>EPU MOT MOF MOHE Port authorities Port operators Logistics players</td>
<td>More big ships calling at major ports. Increase in throughput at local ports. More main shipping lines and owners of large ships setting up offices here. Generation of multiplier effects to the economy. More business for maritime ancillary service providers.</td>
</tr>
<tr>
<td>2  Helping local shipping companies to survive the downturn and grow their business</td>
<td>Set up funds to assist shipping companies in difficulty. Encourage GLCs to use services of qualified local companies. Banks providing relief on companies to serve their loans.</td>
<td>Banks MASA MOT MOF GLCs MOHR</td>
<td>Few local shipping companies folding or in distress. High utilization rates of local tonnage. Low level of shipping loan defaults Maintenance of local workforce.</td>
</tr>
<tr>
<td>Challenge</td>
<td>Recommended responses</td>
<td>Lead agencies</td>
<td>Performance measures</td>
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<td>3</td>
<td>Preparing adequate and well-trained local workforce to meet the demands of the workplace</td>
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<td></td>
<td>Do a stock-take of all maritime academies to assess if they are churning out manpower that meets industry requirements.</td>
<td>MOHE MET academies Industry associations</td>
<td>Production of workforce that requires minimal training before the personnel can become productive.</td>
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<td></td>
<td>Encourage MET institutions to consolidate.</td>
<td></td>
<td>Acknowledgment of the quality of local MET institutes and their graduates.</td>
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<td></td>
<td>Persuade shipping companies to provide training berths to cadets.</td>
<td></td>
<td>High income earned by Malaysian seafarers and those trained at local METs.</td>
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<td></td>
<td>Promote tie-ups b/w local MET academies with established foreign ones.</td>
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<td>4</td>
<td>Ensure stakeholders are kept abreast with latest IMO conventions and shipping rules and regulations to prepare them for the oncoming changes and challenges.</td>
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<tr>
<td></td>
<td>Improving communication between regulatory authorities and industry players on latest conventions, rules and regulations</td>
<td>MOT MarDep MOFA MIMA Industry associations</td>
<td>Greater awareness among stakeholders of the latest conventions, rules/regulations and their impacts on local/national interests.</td>
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<td></td>
<td>Conducting studies on feasibility of ratifying conventions and impacts on local players/interests.</td>
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<td>Ratification of key conventions by Malaysia that serves its interests.</td>
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<td></td>
<td></td>
<td></td>
<td>Safeguarding of national interests.</td>
</tr>
<tr>
<td>Challenge</td>
<td>Recommended response</td>
<td>Lead agencies</td>
<td>Performance measures</td>
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<tr>
<td>5 Preparing local shipping companies to adapt to changing business landscape and trade environment</td>
<td>Provide institutional and/or financial support for shipping companies intending to vertically or horizontally grow. Promote consolidation among local shipping companies. Encourage PFI and participation in high-income activities among local shipping players.</td>
<td>MOT MOF PEMANDU Industry associations</td>
<td>Emergence of local players with bigger paid-up capital, fleet size, market share and international competitiveness, with the ability to provide high-income, value-adding services. Emergence of Malaysia as a regional shipping hub.</td>
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</tbody>
</table>

### 5.2 Recommended responses to the opportunities

The trends discussed also present opportunities for local players and other stakeholders in the shipping sector to reap. They are listed below:

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Recommended response</th>
<th>Lead agencies</th>
<th>Performance measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Increasing market share in growing volumes of intra-Asian, intra-ASEAN and transshipment trade.</td>
<td>Provide financial incentives and institutional support to local shipping companies and boost landside facilities to accommodate greater volumes of these trades. Live up to commitment to eliminate trade barriers &amp; improve market access Increase promotion of Malaysia’s trade</td>
<td>MITI MATRADE MOT EPU Port authorities Terminal operators Logistics players</td>
<td>More volumes of such trades handled by local shipping companies / ports. Growing market share of local ports in the trades Bigger slice of intra Asian /ASEAN trades in Malaysia’s total trade.</td>
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<tr>
<td>Opportunity</td>
<td>Recommended Response</td>
<td>Lead agencies</td>
<td>Performance measures</td>
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<td>2</td>
<td>Tapping into shipping traffic in Straits of Malacca and South China Sea by leveraging Malaysia’s strategic location and excellent infrastructures. &lt;br&gt;Increase capacity, efficiency and productivity of local shipping companies and provide landside facilities and logistics services to handle larger trades &amp; specialized cargos. &lt;br&gt;Speed up FTA negotiations with trade key partners and liberalization of trade. &lt;br&gt;Increase trade promotion efforts.</td>
<td>MITI MATRADE MOT EPU Port authorities Terminal operators Logistics players</td>
<td>Growing share of Malaysian ports and players along logistics chain in handling throughput of growth trade areas and specialized cargos i.e. halal, oil and gas, reefer items.</td>
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<td>3</td>
<td>Opportunity for local shipping companies to adopt technologies, use equipment and undertake measures to reduce fuel consumption and increase ship efficiency to reduce operating cost of ships. &lt;br&gt;Provide relief to shipping companies on duty of imports of green equipment &amp; technology. &lt;br&gt;Offer incentives to conduct R&amp;D leading to solutions to reduce emissions and promote green shipping. &lt;br&gt;Promote exploration and development of clean, renewable alternative energy in shipping.</td>
<td>MOT MOF MITI Industry associations Research institutes MIMA</td>
<td>Emergence of shipping companies exploring/using alternative/renewable energy. &lt;br&gt;Emergence of feasible locally-developed solutions in green shipping. &lt;br&gt;Meeting of national GHG emissions reduction target.</td>
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### Opportunity

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Recommended response</th>
<th>Lead agencies</th>
<th>Performance measures</th>
</tr>
</thead>
</table>
| 4 Availability of niche areas in which Malaysian shipping companies and others in the maritime industry can participate and establish strong foothold. | **Conduct comprehensive studies on areas in shipping and maritime industry in which Malaysia enjoys advantage and has commanding lead.**  
**Promote participation of local shipping companies in these areas.**  
**Encourage GLCs to support Malaysian companies in shipping/maritime industry.** | MIMA  
The academia  
PEMANDU  
Industry associations | **Emergence of internationally renowned Malaysian companies or global champions in the maritime industry.**  
**Creating of high income, value adding activities in the sector/industry.** |
| 5 Capitalizing on growing demand for the handling of specialized cargo. | **Increasing capacity and capability in the handling of specialized cargos at Malaysian ports and by local logistics service providers.**  
**Increasing efforts to promote Malaysia as a halal and oil/gas hub in the region.** | Port authorities  
Port operators  
Logistics service providers | **Growing throughput at local ports of specialized cargos such as halal, oil/gas and refrigerated cargos.** |

It is hoped that the recommendations can be useful to policymakers in shaping the appropriate policy response to help local shipping players overcome the challenges and harvest the opportunities presented by the changing dynamics affecting the shipping sector.

### Areas for future research

Among the areas that warrant further inspection based on this study are:

i) Projection of local port throughputs based on global and regional developments in trade, for example in the context establishment of the Trans-Pacific Partnership promoted by the US to which Malaysia is a party.

ii) Potential effects of introducing market-based mechanism on Malaysia’s shipping sector.
iii) Potential impact of the establishment of ASEAN Single Shipping Market, a measure under the Roadmap Towards an Integrated and Competitive Maritime Transport in ASEAN on Malaysia’s shipping interests.

iv) Possible activities in the shipping sector, including ancillary services, in which Malaysian companies can be involved.

7. **Acknowledgment**

The author would like to thank representatives from the following organizations who provided inputs and comments to the study:

- Executives from several logistics services companies
- Gagasan Carriers Sdn Bhd
- Malaysian Shipowners Association
- Ministry of International Trade and Industries
- MISC
- OSV Malaysia
- Shipping Association Malaysia
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