

Growing trade set to result in launch of mega ports across Asia

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With increasing need for efficiency, shipping companies are focusing on procuring larger ships. Although mega ships provide cost advantages and are more fuel-efficient and environment-friendly, they pose significant challenges in terms of infrastructure needs. Singapore has taken a step in this direction by developing a mega port that will be future-ready. However, with increasing competition from other Asian countries, the ports will also need to offer value-added services.

Singapore building a mega port

Singapore has the world's second busiest port after Shanghai, with a cargo capacity of more than 33.55 million twenty-foot equivalent unit (TEU) in 2014.¹ The Port of Singapore Authority (PSA), a leading global port group, operates the most significant terminals in Singapore and has an annual handling capacity of up to 40 million TEU.² Additionally, PSA is developing Phases 3 and 4 of the Pasir Panjang Terminal, with an investment of SGD3.5 billion (US\$2.6 billion). The terminal is scheduled to become fully operational from 2017. This expansion will increase Singapore's annual container handling capacity to 50 million TEU.³

To establish Singapore as a key trade and logistics hub in the long term, the Maritime and Port Authority of Singapore (MPA) and the PSA have been focusing on investing in port infrastructure, and creating bigger, consolidated and efficient ports.⁴ To consolidate container operations, Singapore announced in October 2012 that it will relocate its transshipment port operations to the Tuas Port and build one of the first mega ports in Asia.⁵ The mega port aims to add 65 million TEU capacity annually, nearly twice the current capacity of PSA terminals.⁶

The Tuas terminal's consolidation will be conducted in a phased manner. The first phase will be completed in the next 10 years, much ahead of the expiration of leases for other major terminals of the country.

- As a first step, MPA has signed a SGD2.42 billion (US\$1.8 billion) contract agreement with the Dredging International Asia Pacific-Daelim Joint Venture (DDJV) for the Tuas Terminal Phase 1 project. The project involves dredging waters, construction of wharfs and reclamation of 294 hectares of land.
- The new port terminal under this phase 1 project will have a total capacity of 20 million TEU per year.⁷
- Further, Terminals 1 and 2 of Pasir Panjang will also be merged with Tuas, increasing its capacity further.⁸

The initiative has begun attracting foreign investment. Toll Group, a major logistics company, plans to invest SGD228 million (US\$166.4 million) in a 100,000-square-meter logistics facility in Tuas. Named Toll City, the facility will provide warehousing and logistics services to the retail, consumer, and healthcare sectors in the Asia-Pacific region.⁹ Other logistics companies will follow and explore opportunities around the new mega port.

Factors driving the mega port creation

Singapore, being a global shipping hub, needs to focus extensively on making efficiency gains. The country is strategically located along the Straits of Malacca in the center of the East-West shipping route. In terms of port connectivity, Singapore is located near some of the world's most dynamic economies. It is linked by about 200 shipping lines to about 600 ports worldwide, largely in the Southeast Asia region.¹⁰

According to Singapore's transport minister, Lui Tuck Yew, "Consolidating all transshipment operations to Tuas will bolster efficiency and economies of scale, eliminating the need for inter-terminal transfers, for example."¹¹

The need to invest in efficient ports is also augmented by a growing intra-Asia trade, which has resulted in cascading large vessels into regional trades after being displaced from the Asia-Europe and Transpacific sea routes.¹² By 2014, intra-Asia trade accounted for 25 percent of Asia's total annual exports, and is one of the fastest growing trade corridors in the world.¹³ Singapore-based container carrier APL recently

announced that it will expand its intra-Asia network amid growing demand on this trade route. The announcement follows several such moves by other major container lines.¹⁴ However, this growth has put high pressure on the existing infrastructure, resulting in port congestion and delays, and led to a pressing need to not only build new ports but also upgrade the existing ones.^{15,16}

Mega port creation: A necessity for sustainable growth

The shipping industry is a highly cyclical sector. However, the current fall in freight rates has been significant, with freight rates from Asia to Europe declining to about one-sixth of the 2014 average. It has become imperative for shipping companies to bring down their unit costs to survive. Consequently, shipping companies are focusing on commissioning mega-sized container ships to reduce costs of moving a container, as well as fuel and port-handling costs.¹⁷ A mega-sized container ship may have a capacity up to 24,000 TEU.

Although shipping lines have, over the years, focused on increasing the size of container ships, the recent growth in mega ship orders is unusual. The average container ship size growth (in dead weight tons) over 1996-2015 was 90 percent, compared with 55 percent for bulk carriers and 21 percent for tankers.¹⁸

As seen from Table 1, trade lines between the Far East and rest of the world, and within Asia will witness a significant increase in ship capacity.

Accommodating such mega ships will require large-capacity ports.

Further, various environmental regulations are also encouraging the use of large vessels. Regulations such as Sulphur Emission Control Areas (SECAs) have resulted in high fuel costs, forcing shipping lines to focus more on optimum utilization of fuel. Such environmental regulations further strengthen the reasons behind the industry's requirement for bigger and more efficient ships that produce less emissions per TEU.¹⁹

"Whether 10,000 TEU are unloaded into a port facility from one ship or two consecutive 5,000 TEU ships, the facility will need to be able to efficiently handle 10,000 TEU... It is also worth reflecting on how congested high-volume ports would be if all containers were transported via small vessels," said a World Shipping Council report.²⁰

Growing intra-Asia trade

As shipping companies are constantly trying to increase efficiency, concentration of cargo on larger vessels, instead of on numerous smaller vessels, provides a number of advantages. For instance, a larger vessel allows high-crane density and increased moves per hatch, resulting in productivity enhancements for both the carrier and terminal operator.²¹ Such productivity enhancements are more necessary in cases of increased trade between hub ports.

Traditionally, sea trade has been dominated by the hub and spoke model, which is also employed in intra-Asia and Asia-Europe trade. Subsequently, intra-

Table 1: Estimated development of ship dimension by trade lanes, 2015–20E

| Trade routes | Maximum capacity (TEU), 2015 | Maximum capacity (TEU), 2020E |
|------------------------|------------------------------|-------------------------------|
| Far East-North Europe | 19,200 | 21,999 |
| Far East-Mediterranean | 14,000 | 21,999 |
| Far East-North America | 13,400 | 19,200 |
| Europe-North America | 8,800 | 13,000 |
| Intra-Asia | 14,000 | 19,200 |

Source: The Impact of Mega-Ships, International Transport Forum, May 2015

“A centralized system will therefore accrue enormous savings in time and expenditures for port operations, ultimately increasing efficiency and productivity.”

Lui Tuck Yew, Singapore Transport Minister²⁵

Asia trade is dominated by small vessels with a capacity of less than 2,500 TEU.²² However, with the recent increase in trade activities within the region, use of several small vessels may result in problems, such as port congestion.

As of November 2013, container trade volumes within Asia nearly doubled from the volumes recorded in 2007. Further, annual trade between the Associated Southeast Asian Nations (ASEAN) and China has grown about 10 percent annually since 2008.²³ An expanding middle class, which led to increased consumer spending, and a shift in manufacturing from China to Southeast Asian countries, such as Vietnam, Malaysia, and Thailand, primarily led this trade volumes growth.

- Consumption rates in the Southeast Asia region stood at 53 percent of GDP that is higher than that of Russia, Brazil, and China.
- The region's population is young; by 2030, more than half of its 650 million population is expected to be aged less than 30 years.²⁴

Large ships are required to carry the rising trade volumes along the intra-Asia trade routes to meet the rapidly increasing market demand and also reduce port congestion. Intra-Asia trade is expected to emerge as an ideal market for mid-size units of about 4,700 TEU.²⁶

Other countries are looking to capitalize on the opportunity

To address infrastructural challenges and gain from the opportunities provided by an increased cargo volume, other Asian countries are also investing in port and trade route development.

One such initiative is China's Maritime Silk Road (MSR) plan, which would

facilitate trade between China and other Asian countries in the South China Sea. China has signed a memorandum of cooperation with Thailand to develop the Kra Canal, located in southern Thailand, as part of its MSR.²⁷

Myanmar too is eyeing this opportunity. It signed a memorandum of intent with Japan and Thailand in July 2015 to build a major port and a special economic zone, called the Dawei project, with an investment of US\$50 billion. Located between Southeast Asia, China, and India, the port will benefit from the MSR. The project, if successful, will enable ships to avoid the Strait of Malacca, enabling a shorter trade route from the Middle East and Africa to China and Japan.^{28, 29}

The Incheon Port Authority (IPA) of South Korea is also preparing to increase its port capacity. The new port, located along the southwestern part of Song-Do International district, can accommodate a capacity of 8,000 TEU. By 2017, the country aims to expand the port's draft depth from 14 meters to 16 meters to accommodate 13,000 TEU. With predictions of the MSR changing the sea trade route dynamics, Incheon is set to become a key logistics hub and figure among the world's top 30 ports.^{30, 31}

Outlook: How can mega ports stand out in the crowd?

Asian port development activities have been increasing gradually, creating challenges for the countries to stay competitive in the long run. As one of the busiest ports in the region, Singapore's mega port project faces many challenges in terms of increasing efficiency and remaining environment-friendly. The Singapore MPA's focus has been on increasing competitiveness through technological

advancements, such as using smart sensors, automation and encouraging sustainability through resource optimization. Among many of the MPA's initiatives, the SGD25 million (US\$18 million) Maritime Cluster Fund (MCF) is a program directed at raising the standards of services, particularly within the re-engineering, automation, ship agency and harbor craft industry in Singapore.³² MPA also has an extensive research and development fund—Maritime Innovation and Technology (MINT) Fund—which aims to develop next-generation ports.³³

Further, MPA's sustainability initiatives have been praised for promoting good practices within the maritime sector. The Maritime Singapore Green Initiative, a SGD100 million (US\$74 million) initiative by the MPA, encourages companies to adopt environment-friendly shipping practices. The initiative has three programs: Green Ship Program, Green Port Program and Green Technology Program. Maersk Line, Høegh Autoliners and Ocean Tankers (Pte) Ltd are some of the top shipping companies that are part of the MPA's Green Port Program.^{34, 35}

The prevailing port development trend, therefore, proves that enhancing port infrastructure and creating smart ports, which offer value-added services, will help in attracting shipping companies and remaining competitive in the ever-changing trade landscape.

Source

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